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on

## **Agricultural Inputs Liberalization**

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- Opinions and judgments expressed are the authors' only. FAO proposes the text as basis for starting the discussion among scholars and policy makers on the issues related to the subject of the study.

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## GLOSSARY AND ABBREVIATIONS

ACB	Agricultural Cooperative Bank
AMN	Ammonium Nitrate containing either 30 % or 33 % N
DAA	Directorate of Agricultural Affairs
DAP	Di-Ammonium Phosphate containing 18 % N and 46 % P
DPA	Directorate of Price Affairs in the MSIT
DPP	Directorate of Plant Protection
DPS	Directorate of Planning and Statistics
Dunnum	Area equal to about a tenth of ha
GECI	General Establishment for Chemical Industry
refers to Foreign Trade Organization for Chemicals & Foodstuffs – in charge of imports – previously referred to by acronym TAFCO	
GFC	General Fertilizers Company
GFU	General Farmers' Union
GOF	General Organization for Fodder
GOTGP	General Organization for Trade and Grain Processing
Ha	Hectare
K	Potassium (K <sub>2</sub> O)
MAAR	Ministry of Agriculture and Agrarian Reform
Mantika	District
Mohaffazat	Provinces or Governorates
MSIT	Ministry of Supply and Internal Trade
N	Nitrogen
Nahia	Group of villages
P	Phosphorus Pentoxide (P <sub>2</sub> O <sub>5</sub> )
SAC	Supreme Agricultural Council
SK	Sulphate of Potash containing 48% K
SP	Syrian Pound
Tpd, tpa	Tons per day, tons per annum
TSP	Triple Super Phosphate containing 46 % P
Urea	Containing 46 % N
Zone	referred to also as Settlement Zones and numbered 1 to 5 according to rainfall quantum and dependability – zonal classification transcends administrative division borders
Currency	One US \$ = 46.50 SP

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## **Executive Summary**

### **Background**

1. In the Agricultural sector, as in other sectors of the economy, Syria has in recent years been gradually introducing several reforms shifting the economy from a centrally planned system that prevailed over several decades to a market system. Further pace to the reform process is currently at the stage of resolving issues concerning redefinition of the role of public institutions, selection of appropriate policy instruments for a competitive environment and engineering a smooth transition at minimum hardship and social cost

### **Agriculture**

2. The population of 16 million is growing at over 2.5 % per annum expected to reach 24 million by 2010. Although the current calorie per capita of 3200 is considered satisfactory, food production is required to keep pace with growing population, increasing per capita incomes and changing food habits. Meeting the growing needs would not be a simple issue of motivating 25% of the holdings with 76% of the area for higher production as any growth strategy has to consider the majority of relatively smaller households farming under uncertain climatic conditions.

### **Policy Environment**

3. Since the mid-eighties there have been many important policy changes - such as: unification of exchange rates, private sector entry into defined areas of agricultural procurement, private sector export of vegetables and fruits, reduced rigidities in crop planning, removal of explicit subsidies and fixation of prices according to production costs.

## **FERTILIZER**

### **Fertilizer Production and Delivery System**

4. About 60% of total fertilizer requirement are produced locally at the only manufacturing unit located at Homs and the balance is met by imports. The Agricultural Cooperative Bank distributes imported and locally produced material to farmers directly and through cooperatives. The ACB is both dispenser of farm loans and distributor of inputs. The quantity of fertilizer and other inputs are pre-determined according to a recommended crop plan (earlier it was a mandatory plan subject to severe penalties for non-adherence but now made "indicative") and formalized by the issue of a crop license to every farm at the beginning of each crop year. Farmers wishing to purchase fertilizer on cash terms also need crop licenses indicating the quantity of fertilizer they are entitled to.

### **Fertilizer Production – Role of GFC and GECM**

5. The General Fertilizer Company, located in Homs, is a public sector organization and is the only fertilizer manufacturing unit in Syria. It has an annual installed capacity of 120,000 tons of ammonium nitrate, 330,000 tons of urea and 450,000 tons of triple superphosphate. The plant is located centrally with good and easy reach to most fertilizer consuming parts of the country. The source of natural gas is about 700 km at Hassake and is piped to the fertilizer unit and the neighboring refinery. Rock Phosphate deposits are also nearby at Palmyrah. Power supply is not a problem and is available at 97 piastres per kWh. The capacity of the ammonia plant is not matched by capacities in the downstream ammonium nitrate and urea plants, which seems to be the major reason for under utilization. These plants as well as the sulfuric acid and phosphoric acid plants need revamping requiring further investment. Considering the local availability of rock phosphate and natural gas (sulfur is imported from nearby sources) and the inherent comparative advantage that the country has for manufacture of nitrogenous and phosphatic fertilizer it is worthwhile investing in this unit and expanding it further.

### **Fertilizer Importation – Role of GEZA**

6. Fertilizer import is entrusted to the public sector organization called the Foreign Trade Organization for Import of Chemicals and Foodstuffs – referred to as GEZA. Private sector is not permitted to import fertilizers. A few weeks ago, however, a decree has been published allowing private sector entry for fertilizer import. GEZA hands over the shipping document itself to ACB duly endorsed in favor of the latter. As such GEZA's role is confined to calling for tenders, obtaining the best price and terms, concluding the contract and following up the shipping schedule to ensure conformity with the program laid down by MAAR., national peasant bureau, ACB and GFU

### **Fertilizer Distribution**

7. Private sector is not involved in distribution except at retail level. Retail outlets run by agricultural engineers are registered EITHER with the agriculture engineers' syndicate or with the farmers' union in the Governorate. Most of these outlets are predominantly engaged in sales of plant protection products and vegetable seeds. To deal in fertilizer, they have to enter into a contract with the syndicate whereby, against the syndicate's guarantee, ACB extends credit not exceeding SP 300,000 for working capital and in return for this support these outlets (called joint ventures) pay 40% of the profit to the syndicate.

8. Judging by field reports the possibility of leaks in the system leading to informal flow of material to the market for sale at higher prices cannot be ruled out. In times of planting, especially in zone 1 where pressure of demand builds up with rains, private prices sometimes command premiums of SP 800-1000 per ton. The restrictive distribution system tends to create these "rents" in fertilizer prices even under conditions of plentiful availability at the macro level.

## **SEED**

### **Seed Usage**

9. A notable feature of the seed production and delivery system in Syria is the high seed replacement ratio for wheat. Considering that in respect of self-pollinated crops farmers ordinarily tend to plant home-saved seeds and do not replace them with fresh processed seeds from outside the high ratio is commendable.

### **Seed Production and Delivery System**

10. Seeds for all strategic crops – wheat, barley, lentils, chickpeas, cotton, and sugar beet – are produced only by GOSM, public sector organization, for distribution through their branches and through ACB warehouses. Hybrid seeds for vegetables are imported and marketed by private sector seed companies through a network of stockists spread across the country.

11. State nurseries in seventy locations with a combined area of 50,000 dunnums under the control of the Directorate of Agricultural Affairs raise seedlings for fruit trees. The seedlings are distributed to farmers direct and through extension units at nominal prices that reflect a subsidy of about 50% (for instance, olive seedlings sold for SP 13 against the cost of SP 25). The seedlings are sold both for new plantings in reclamation areas in hilly areas and for replacement in old areas.

12. Government's encouragement of forest tree planting through supply of free seedlings is an important initiative in the seed sector. The Directorate of Forestry has 40 nurseries raising seedlings for free supply to public organizations and at a very nominal cost of SP 1 per seedling to the public against the average cost of SP 15. Of the total forest area of 461,000 ha natural forests occupy 232,000 ha and the rest are man-made forest.

### **Seed Processing**

13. In the prevalent system the processing unit is not responsible for the genetic purity of the material they process. GOSM's technical staff is expected to test this in farmers' fields. The processor is also not responsible for the germination and as such they do not have laboratory facilities for these tests. The quality of seed produced by GOSM is tested and passed by its own quality control department. The large capacities of the processing plants increase capital cost (about SP 80-90 million each) and, thereby, the cost of seed, especially as the operation is of a seasonal nature leading to unavoidable under utilization of capacity. Smaller decentralized units seem to be a more practical proposition. These could also fall within reach of average sized town entrepreneurs and encourage private sector participation

14. The following weaknesses were reported during field visits. (a) At times wheat and cottonseed availability from the official source is found inadequate during planting and farmers resort to the private market to meet their needs. (b) Farmers complain of lack of uniformity of species and yields not being up to expectations. This was also mentioned of fruit seedlings.

## **PLANT PROTECTION PRODUCTS**

### **Plant Protection Product Usage**

15. The usage of plant protection products is under two sectors – the public system for control of pests on a community scale where government takes responsibility to protect crops against migratory pests and, second, private sector marketing of products where responsibility for protection rests with individual farmers. About 60% of the chemicals imported and distributed by the government are herbicides, especially for wheat. Private-sector market for plant protection products has been registering a steady growth resulting in a reversal of shares between the two sectors from 1987. Although figures for the last two years are unavailable



experts in the industry estimate that demand in the private sector market has been growing at 15-25% per year.

### **Delivery System**

16. Private-sector market being well defined there is a smooth flow of material from the importer through the dealer network to farmers. Broadly, public procurement covers the strategic crops – wheat barley, lentils, chickpea, cotton and sugar beet – and the private sector covers the non-strategic crops. Apart from fixing prices, government allows a free hand to distributors retaining responsibility for demand estimation, registration, licensing and quality enforcement.

### **PRICING PROCEDURES**

17. Pricing norms and the agencies involved in the pricing process for fertilizers, seeds for strategic crops, vegetable seeds and plant protection products are summarized in the tabulation under paragraph 8.1 of the main text. Government fixes prices for all inputs based on production or procurement cost.

### **CREDIT**

18. Most retailers support the business through their own cash and borrowing from friends and relatives as they find bank borrowing cumbersome. The maximum credit limit eligibility for retail business is SP 250,000 but more often the actual sanction is only about SP 125,000. A major source of financing is supply on credit from the distributor but as distributors are themselves under pressure the facility they can give to their dealers is restricted. Discount for cash purchase is fixed as high as 2-3% per month reflecting the cost of capital in the informal money market and the severe working capital pressure in the system. Credit for inputs is extended in kind according to the limits in the crop license. About 85% of fertilizer sales are on credit and the balance for cash.

### **QUALITY**

19. No major complaints were heard from farmers regarding quality of fertilizers. Poor quality and non-effectiveness of agricultural chemicals were, however, raised at some of these meetings with farmers. Importers and distributors of plant protection products of good standing (and formulators of veterinary products) complained of inadequate quality enforcement in the field. Weak enforcement could lead to sale of spurious material, wide price differences causing confusion in farmers' minds, eroding confidence in use of plant protection methods and generally placing genuine operators at a disadvantage.
20. The sole player in seed production and marketing being the public sector, the need for formal publication of quality standards and their enforcement has not been felt. However, in the new policy environment these will become necessary. There should not only be enforcement but this should be seen by farmers to be happening to increase their confidence in the system and strengthen quality awareness among producers.
21. A seed law is necessary embodying these provisions, prescribing packaging standards and minimum disclosure requirements, identifying enforcement authorities and stipulating penalties for violation. Similarly, for fertilizers and agricultural chemicals, quality standard laws are also needed especially in the context of the

government recently permitting private sector to import and market fertilizers.

#### **EXTENSION**

22. Workload on extension staff is quite high considering the facilities available to them in terms of vehicles, petrol allowance, promotion aids, motivation and incentives for good performance. They play a very vital frontline role in the country's agriculture. Government extension effort is functioning in a separate compartment without involving the private sector. Having opened the market for plant protection products, there is hardly any dialogue between the government and private sector in coordinating development activities, demand-supply planning and other issues. Experience in other countries is that close involvement of private sector in supporting and participating in government's extension programs through manpower and materials has yielded good results besides presenting a unified message to the farmer and making the private sector develop a sense of social responsibility.

#### **DEMAND PROJECTIONS**

23. In the demand projection for fertilizer, based on population growth, income growth and expenditure elasticity, plant nutrient requirements have been translated to fertilizer types and the import gap each year has been calculated. Import needs are derived for two scenarios – one for current level of production at Homs and the other for 90% capacity utilization. The difference between the two scenarios shows that utilizing the comparative advantage in manufacture of nitrogenous and phosphatic fertilizers there could be an annual saving of over 50-70 million dollars in foreign exchange – import dependence in the terminal year reduces from 73% to 29%.

24. Higher productivity being critically dependent upon use of improved seed the company would perhaps be safe in planning for a 5% growth in demand (slightly above the estimated fertilizer demand growth rate of 4.3%) per year for cereals and legumes on the plan quantities for 2000. As seed supplies cannot be obtained at short notice and as natural calamities like drought and floods cause serious shortages of planting material it is advisable to err on the right side in targeting for slightly higher quantities than the expected demand while planning production.

25. Market has recently been growing at an annual 15% for agricultural chemicals, which means that from the SP 1124 million in 1997 it has grown to about SP 1700 million in 2000. On the other hand, government's policy and concerted effort to reduce application of chemicals to protect the environment through an integrated approach to pest management is bound to have a retarding effect on chemical use. As such a growth rate of 15% may not sustain. Perhaps an annual growth rate of 7.5% for the next ten years may be a reasonable estimate. Since all requirements are imported, the estimated demand will be met by corresponding imports to maintain the demand-supply balance.

## IMPLICIT TAXES AND SUBSIDIES

Activity	Implicit Tax on Farmer	Implicit Subsidy to Farmer	Implicit Subsidy to Organization	Net Position
Seed Production	0	2398	0	2398
Fertilizer Production & Imports	0	795	595	1390
Fertilizer Distribution	31	0	466	435
Total	31	3193	1061	4223

Figures are in SP million

26. Implicit subsidy in respect of fertilizer production and imports reflects the extra cost over the border price. The tax on fertilizer distribution represents the extent to which sub-optimal efficiency in the system is passed on to the farmer. Implicit subsidies are the un-recovered part of legitimate cost of production/services and for policy reasons not charged to the farmer. Implicit subsidies to the organizations represent the cost of sub-optimal efficiency which is not recovered in price affecting the company's financial health and eventually absorbed by the state budget one way or the other.

27. About SP 60 million per year on fruit seedlings and SP 336 million per year on forest seedlings represent the uncovered part of the cost for reclamation of hilly areas for fruit trees, by way of seedlings, and for promotion of social forestry and environmental improvement.

### Subsidy Implications under Different Scenarios

28. Annex 20 - 3 contain an analysis of the implications of pricing decision on subsidy for estimated fertilizer consumption for 2001 and 2004. The latter year is compared to observe the effect of increased production efficiency at Homs, as the revamping project would take two to three years to be completed, depending upon how soon the investment decision is taken. Without higher production at Homs, subsidy would further increase from SP 795 million to SP 830 million in 2004 on a higher volume– the increase is moderated by the fact that higher proportion of demand is met by cheaper imports. Increased production would wipe out the implicit subsidy of SP 795 million – mainly because of improved production efficiency accounting for a saving of SP 595 million.

## **INPUT POLICIES IN RELATION TO AGRICULTURAL GROWTH AND SECTOR POLICY**

29. Syrian agriculture has responded well over the years to rapidly increasing population, over 3% annually till the eighties and close to that number thereafter, by providing adequate supply of calories. Irrigated wheat production increased from 1.2 million tons in 1991 to 2.5 million tons in 1998, ignoring the steep fall in 1999 because of acute drought conditions – an increase of 101%. Similarly wheat, barley, lentils and chickpeas, the principal food items, registered increases over the same period of 46%, 67% (but in 1996 after which there has been a decline), 213% and 216% respectively, presenting, on the whole a very good performance.

30. During this seven-year period plant nutrient consumption increased by only 19% from 303294 tons to 361363 tons. Productivity has lagged behind by quite large margins, except in the case of rain-fed barley, suggesting that increased production has come about more through area extension rather than increased yield. To this extent the input policy and system can be said to have under-performed.

31. Figures of loans classified by crops in Table 128 of the Annual Agricultural Abstract 1999 shows that 71% of the kind loans went to wheat and 19% for cotton. All other crops took up the remaining 10% of loan issues. This is indicative of a narrow consumption base for fertilizer considering the rich variety of crops in the country. This is another area of under-performance by the input system.

32. While production has increased to match rising demand for food, the following areas of concern need attention: slow growth in fertilizer use, effectiveness of extension effort to increase input response and land productivity and the extent to which the crop plan is useful as an instrument to promote productivity.

## **RECOMMENDATIONS – IN BRIEF**

### **FERTILIZER**

#### **33. Production**

Phase 1 – Invest and remove technical constraints and inter-plant capacity imbalances so that full capacity could be attained at the Homs factory at the earliest possible. This would save about SP 595 million annually, which is ultimately a burden on the budget, as the government owns the company. Higher production would also save annually over \$ 50-70 million in foreign exchange

Phase 2 (24 months from commencement of action under phase 1) – on completion of the revamping program, when the unit's value and salability improves, various options of operating the plant through joint venture, leasing etc could be considered in line with government's policy of ensuring a smooth change over from existing systems

#### **34. Importation**

Phase 1 – Parallel imports by GEZA, ABC's marketing arm and private entrepreneurs on level playing ground, in terms of availability of foreign exchange, rate of conversion and such critical considerations, could be introduced immediately without causing any major dislocation. This arrangement has the advantage of retaining existing expertise with GEZA as "importer of last resort" should ACB and the private sector, in the initial stages, fall short of their procurement plans causing a demand-supply gap.

#### **35. Marketing**

Phase 1 – Private importers, at their option, would be allowed to limit their activity to importing and handing over the material to ACB. However, this option would be limited to the first full year of operation, the objective being to give them time to muster resources, install a distribution network and understand the business. The option could be extended for one more year if circumstances warrant. Thereafter, it is obligatory to market the products

they import. It has been suggested that the Peasants' Federation may also wish to participate in import/marketing. This is to be encouraged.

Phase 2 – All marketers, ABC or private, would be obligated to take a quantity equal to their imports (or such ratio as may emerge according to volume of local production with reference to total estimated demand) from Homs for distribution. Homs would enroll approved importers as Distributors for its production along with ACB. Homs would be equipped with a marketing manger and supporting staff.

### **36. Distribution**

Phase 1 – Under current regulation fertilizer can be handled at the retail level only by joint ventures of agricultural engineers in collaboration with the syndicate and the ACB. Many of them are constrained by lack of working capital to expand even existing product lines and a capital-intensive product like fertilizer is often beyond their capacity. Therefore, it is necessary to mobilize other private dealers who are active in the market for various other products including farm requisites subject to basic qualifications of a place of business and enough storage. They would be required to register with the nominated authority in the Governorate. The registration and its obligations are dealt with later. This measure would widen the retail base and enable importers/marketers, including ACB, to develop an extensive network.

Phase 2 - Credit procedure would need reorganization. Farmers should be enabled to take inputs against credit from the cooperative or joint venture or private outlets, by their choice, against the cropping permit or credit coupon without restriction on the quantity they wish to buy.

Phase 3 – when action under phase 1 is functioning well, say, in year 3 or 4, private dealers would be allowed to distribute seeds and plant protection products. In fact, the ideal situation is one in which the farmer is able to go to a retailer of his choice who offers the best terms and service and buy everything that he needs.

### **37. Agricultural Cooperative Bank**

Phase 1 – ACB's marketing arm has a valuable residual and balancing role to play in the process of creating a competitive market for inputs. ACB would gradually have less to do with direct retailing of inputs and more to do in distribution and marketing.

Phase 2 - At the end of two years, that is, on completion of Phase 2 under Marketing and Distribution, ACB's distribution activity will be formed into a separate organization without disturbing its cooperative affiliation and structure. ACB would continue to be in agricultural banking while the newly formed organization, say, the Agricultural Input Marketing Organization (AIMO), would be engaged in importation and marketing of agricultural inputs. AIMO is free to have a distribution network consisting of cooperatives and private dealers. Nothing stops AIMO, if they function efficiently, from entering other businesses such as imports of agricultural machinery, micro-irrigation equipment, vegetable seeds and exports.

### **38. Proposed Pricing and Coordination Mechanism and Pricing Options**

A coordinated pricing mechanism will be needed with the simultaneous operations of AIMO and the private sector on the one hand and simultaneous availability of domestic production and imports on the other. The proposed arrangements are covered in Annexes 24 and 25.

### 39. Summary of price recommendations

For explanation of rationale for these recommendations see main text – paragraph 16.8

Ammonium Nitrate	Stop imports. Increase price for local production by SP 450 per ton
Urea:	Allow import prices to rule the market, Homs matching import prices. Prices may rise by a marginal SP 184 per ton
Triple Superphosphate	Marketers would average import and local production prices as at present. After expansion raise price by SP 632 or in 2 or 3 doses from now. No averaging after expansion as there would be no need to import.
All Products	Higher capacity operation at Homs is essential and of priority, especially for urea and TSP. Withdraw subsidy on raw material prices
Sulfate of Potash	Under the new system price is likely to fall by SP 1000 per ton
Features	None of the above involve increase in implicit subsidies – farmer price increases for ammonium nitrate by SP 450 per ton, urea by a possible SP 184 and by SP 632 for TSP, in stages. Substantial saving of implicit support costs when local production is at high capacity.

### 40. Fertilizer Policy

Policy guidelines on importation and adequate mechanisms to gather and disseminate market information would create an atmosphere of certainty and stability to reassure the private sector that the time has come for bold investments in input marketing. Government would take early action to formulate and publicize a Fertilizer Policy covering, among other issues, the following aspects: promotion of usage, supply management, availability of foreign exchange for import, pricing and subsidy, utilization of local resources, encouragement of the private sector, including cooperatives, rural credit, extension strategy, support for research, quality standards and enforcement and environmental protection.

### 41. Quality Control and Regulation

Existing legislation covering fertilizer being inadequate, it would be replaced by a new Fertilizer Law covering the following aspects: to stipulate quality standards for different fertilizer types, prescribe testing procedures and tolerance limits for deviation, nominate enforcement authorities, make it obligatory for anyone wishing to manufacture or import or sell or offer to sell fertilizer to seek registration with the nominated authority, prescribe as a condition of registration the obligation to furnish information as required on stocks, arrivals and prices, make it also obligatory to display at the premises the stock and prices and stipulate that in every case a sale is made a bill of sale bearing the name and land identity of the buying farmer is issued.

### SEED

#### 42. GOSM

Phase 1 - GOSM should use private sector for multiplication and processing based on competitive offers for services. GOSM would supervise field production, sub-contract processing to private sector. Contractor-producers should have the option to buy a part of the output for distribution through their own channels. GOSM should commence marketing through private fertilizer importer/marketers besides AIMO.

Phase 2 – In stages, existing processing units under the Ministry of Supply would be leased out and it is likely that processing costs would get reduced through utilization of installed capacity in the off-season for other activities like wheat crushing and lentil splitting.

Also Phase 2 - Production, processing and marketing of public bred hybrid varieties for strategic crops could be thrown open for the private sector in Phase 1. Seed being a critical input the present policy of selling seed at cost by GOSM is justified considering the enormous

social advantage in the form of higher production. However, to facilitate private sector participation, it is necessary to provide a level playing field by extending the reimbursement of subsidy to all producers – GOSM as well as private sector.

#### **43. Quality Control**

Also Phase 2 - Strengthen the seed quality inspection system by making the quality division of GOSM an independent organization as a National Seed Development & Certification Agency (NSDCA). With privatization, it would be more appropriate to install an independent quality enforcement organization since it is not appropriate that GOSM, as seed producing agency along with private sector, should don the role of both “player” and “referee”. NSDCA would certify quality (seal carried on every bag), verify quality in the market, assist the variety release authority in making independent pre-release variety evaluation, give guidance on quality maintenance in the field and in processing, provide project guidance and advice to intending private entrepreneurs and administer subsidy reimbursements.

#### **44. Coordination**

Also Phase 2 – An annual seed coordination meeting chaired by the Minister or Deputy Minister and with representation from all seed producers, public and private, Directorates of Agriculture of the Governorates, Directorates of Extension and Research at the Center would review the production and supply plan for the ensuing season.

#### **45. Seed Law**

Also Phase 1 – At an early date a Seed Law would be promulgated containing the following: making it illegal to produce, stock or sell seed unless it is an approved variety, packed, sealed, certified and the packing and label comply with disclosure requirements, stipulating procedures for new releases and registration of varieties, specifying quality standards, conferring legal powers on NSDCA, laying down penalties for deviation, prescribing obligations of seed producers and dealers, specifying disclosure requirements (variety name, producer’s name and address, purity percentages, production date and date of expiry for viability) and similar issues.

#### **46. Pricing and Subsidy**

Pricing for barley, lentil and chickpea seeds need review to encourage a higher seed replacement ratio – see paragraphs 8.4 and 8.5 of main text. There are also reports of seed growers’ unwillingness to accept a premium of 20% over the commercial price for seed crops resulting probably in interruptions of the seed multiplication chain. To avoid diversion and to ensure continuity of the seed chain, the premium may have to be reviewed.

Subsidy to promote use of improved seed being a critical factor in agricultural production and with the need to administer subsidy evenly between the public and private sectors an easy-to-administer subsidy system has to be in place

Presently, the government fixes the maximum prices of imported seeds. This could be modified into a system of requiring the importer to file the cost of import and marketing, waiving the price fixation part of the procedure and allowing him to fix his own pricing. The market could be allowed to determine what price each variety deserves. The cost data filed by importer would be useful for watching market prices to be able to identify undue market price increases and to take up the matter with the marketers.

#### **47. Research and Extension**

A special study and evaluation of various aspects of research relating to seed development would be useful in determining shortcomings and evaluating needs in terms of, say, breeder strength and supporting facilities, equipment, review mechanisms, integration of research with extension and linkage with farmers.

An independent expert study of the extension system in terms of capacity, staff motivation, facilities, monitoring systems, efficacy, strategy content and effectiveness as a link between farmer and research would be valuable.

## **PLANT PROTECTION PRODUCT**

### **48. Pricing**

Phase 1 – It is recommended that the present practice of fixing prices be withdrawn immediately (see paragraph 8.6). Importers/marketers would be required to file with the directorate of plant protection and not the Ministry of Supply, the cost of import of each consignment.

### **49. Re-packing and Formulation**

Phase 1- Current regulations require chemicals to be imported and sold in their original packing. There could be a considerable reduction of cost by importing in bulk and re-packing locally since handling costs in exporting countries are much higher than under Syrian conditions.

Phase 2 – Further cost reductions could be achieved if private parties were to be encouraged to import the technical ingredient and formulate it in to various forms and concentrations.

### **50. Quality and other Regulations**

Phase 1 - The existing weak field inspection mechanism, confined to verifying the date of expiry at the retail counters, is inadequate to check smaller outfits looking for temporary gains at the cost of the farmer selling spurious or substandard materials and unregistered chemicals at seemingly lower prices. The need for increasing quality verification facilities at important centers and strengthening field inspection staff and training them in regard to quality aspects cannot be over-emphasized.

Also Phase 1 – The promulgation of a comprehensive legislation incorporating the provisions of Resolution 34 of 1997 and covering with various aspects of a healthy production and delivery system that serves the cause of higher agricultural productivity consistent with safety and environmental considerations, is urgently needed.

## **51. ORGANIZATIONAL**

Currently a multiplicity of government organizations is involved in coordinating activities without responsibility resting centrally with any one of them. In place of this, it is suggested that central coordination and control of each major input should be the responsibility of one Directorate. Planning & Statistics or Land Directorate could be entrusted with fertilizers, Plant Protection Directorate with plant protection products and Agricultural Affairs with seeds. Private sector operators also would find this single window system easier for getting all policy clarifications and clearances and to be answerable to, on critical issues such as supply management, quality, fair trade practices and price maintenance.

## **52. PROJECT PROFILE**

Identification of other requisites to support effective implementation of policy and institutional changes is detailed at Annex 27

## **BROADER ISSUES**

### **53. Output Reform**

It is assumed that input reforms would be accompanied by corresponding changes in output policies and institutions to improve farm services and margins. Privatization of output markets must be accompanied by installation of a method by which farmers' capacity to hold the produce is fully supported. Without this wholesalers would gain overpowering bargaining advantage to depress post-harvest prices.



#### **54. ACB**

Substantial improvement in farmers' capacity to hold the produce is to be promoted through micro-level institutions with stores and refinance facilities to advance monies against the grain deposited. These are the kind of development lending and support activities that ACB, Banking Division, should look at for future expansion. ACB should get out of retail lending and move more into wholesaling of credit, operating through micro-finance institutions which have closer contacts with farmers and, therefore, more effective in enforcing repayments.

#### **55. Working Capital**

Paucity of working capital, stringent eligibility norms and procedural complexities are perceived as serious handicaps to private sector initiatives to entry in to new areas of activity or expansion of existing ones. If private sector is to go beyond trading in order to utilize local resources, generate employment, export or substitute import, set up nation-wide marketing organizations (for fertilizer, for instance) these need to be supported through appropriate development lending policies governed by norms different from those of commercial lending. Development of the distribution sector, especially, depends on recognition by the banking system that small traders may not be able to offer real estate collateral and may be unfamiliar with formal procedures. (See paragraphs 9.3 and 9.4).

#### **56. Government-Private Sector Dialogue**

Many business owners feel that while policies have changed for the better these have not percolated down to frontline officials or that their attitudes are still oriented to "restriction" and not facilitation. There is not enough meaningful dialogue between government and industry to resolve common issues e.g. how to reduce costs, reduce procedural bottlenecks, increase consumption, improve extension and other services and such issues of common interests.

#### **57. Tax on Profits**

Tax on profits, at the top marginal slab, reported to be as high as 63%, raises the acceptable threshold for post-tax return on equity rendering many activities financially infeasible. This high rate may also encourage evasion defeating the revenue objective.

#### **58. Competition Law**

While it is necessary to encourage formation of industry and trade associations, to counteract tendencies of associations to emerge as cartels, an effective anti-monopoly legislation is essential in a free market environment to spell out the rules of fair practices and competition.

### **IMPACT OF PROPOSALS IN TERMS OF BENEFITS, RISKS AND ADJUSTMENT COSTS**

#### **59. Risks**

The sources of risks to the implementation of input reforms could arise from any of the following factors. (a) Stability of macroeconomic indicators such as inflation, interest rate and currency valuation. (b) More

development oriented banking norms and emergence of private banks may not take place in the short run and may affect extensive participation by the private sector. The proposals in this report support continuance and re-invigoration of the existing system to facilitate higher effectiveness and as such even in the face of delays in private participation, services to farmers will not suffer. (c) The speed with which rural credit is reorganized would be an important factor influencing wide participation of private traders in retail distribution. (d) Undue fluctuations in international fertilizer prices, at the time of introduction of the new measures, could lead to a negative balance in the equalization fund (see Annex on Pricing Mechanism) in the short or medium term but this is not a serious impediment to reform (e) Late and inadequate imports by distributors because of limited working capital availability could result in some part of the demand remaining unsatisfied. The incentives being built into the system would minimize this possibility and still, should this eventuality arise, the role of “buyer of last resort” conferred on GEZA would take care of such a contingency.

#### **60. Social Adjustment Costs**

The parallel operation of the public system, phased introduction of the private sector, installation of additional quality enforcement facilities and the recurring expenditure on them, incentives for early imports and carry-over stocks, to ensure adequacy and institution of an equalization fund to smoothen the adverse effects of world price fluctuations on indigenous production - but without insulating it from competition – constitute the social adjustment costs of the proposed reforms.

#### **61. Benefits**

The following benefits are expected to flow from the proposals.

- (a) Smooth change over to a competitive system without abandoning the useful parts of the existing structure.
- (b) The public , cooperative and private sectors would have their respective roles to play
- (c) No retrenchment of personnel from public institutions nor any other form of hardship is envisaged
- (d) The competitive environment emerging from these reforms is likely to result in better service at less cost.
- (e) Implicit subsidies estimated to reduce without unduly high price increases in farmer prices and releasing these resources for investment in infrastructure
- (f) Potential for increased private sector investment in the input production and distributive sectors increasing the scope for public resources to be invested in larger measure on critical infrastructure such as research and extension.
- (g) Shifting of public resources from revenue expenditure like implicit subsidy to investment securing benefit flows over the years having a more lasting effect on farmer welfare.

- (h) Release of government energies and resources from doing things to getting them done  
– from that of doer to facilitator, umpire, regulator and doer of last resort
- (i) By offering inputs (fertilizer) at world prices, in due course, the proposals constitute an important step toward preparing the agro-food system for a competitive world market.

### Summary of Project Profile and Components

(see Annex 27 for details)

No	Subject	Component
1	Reorganization of ACB as ACB and AIMO, GOSM as GOSM and NSDCA and formation of FCU	Technical Assistance – National – 3 months to asses restructuring needs
2	Quality testing and enforcement facilities for fertilizer, seed and pesticide	Investment – needs would be assessed by expert under item 1.
3	Optimizing production at Homs – studying technical options and estimating investment	Two-member team of national experts
4	Implementation of Input System, Policy and Institutional Reforms – assistance	International Expert in input marketing – 12 months
5	Study of present organization of research and extension and assessing investment and reorganization needs (research with reference to breeding and release of varieties to meet farmer needs	Two member International team - two months
6	Fertilizer, seed, pesticide – Policy Reform and Quality Control aspects – formulation of specific proposals by a special teams and workshop for finalization	Three international experts in fertilizer, seed and pesticide quality standard and enforcement aspects – three months each. And one international expert in input marketing – two months (ALL these are at the government’s option if they consider assistance necessary in formulation and finalization
7	Training for senior staff in input marketing	Two camps – to be conducted by an international training institution
8	Dealer training for JVs, cooperatives and private dealers in input marketing	Two in each Governorate
9	Training for dealers in plant protection products in marketing,, safety and environmental aspects	Two in each Governorate
10	Senior level study team to observe policy and implementation aspects on inputs provisioning and distribution	Thirteen members to visit in two batches to different developing countries and pool their findings
11	Senior level study team to observe quality standard, testing and enforcement aspects in other countries	Sixteen members to visit in two batches to different developing countries and pool their findings
12	National Sample Survey	By Market Research department of the University of Damascus or by Central Bureau of Statistics

## **PROJECT GCP/SYR/006/ITA**

### **Implications for the Agricultural Sector of the Liberalization of Input Markets**

#### **Report of the Input Marketing Consultant**

**First Mission - 2<sup>nd</sup> September – 27<sup>th</sup> September 2000**

**Second Mission – 15<sup>th</sup> November 2000 – 26<sup>th</sup> December 2000**

## **1. BACKGROUND**

1.1. In the Agricultural sector, as in other sectors of the economy, Syria has in recent years been gradually introducing several reforms shifting the economy from a centrally planned system that prevailed over several decades to a market system. The reorientation is characterized by a sense of caution with a view to minimize possible adverse social costs of major structural changes over a relatively short period of time. Government's commitment to reform and the political will to introduce further consequential measures are critically dependent upon resolving issues concerning redefinition of the role of public institutions and government agencies, selection of policy instruments for a competitive environment for economic growth and engineering a smooth transition at minimum hardship and social cost. Against this background, the Government of Syria with financial support from the Government of Italy and technical collaboration from the FAO successfully implemented Project GCP/SYR/002/ITA, which concluded in July 1996. The Government of Syria requested continuance of assistance to strengthen the capacity of the Ministry of Agriculture and Agrarian Reforms (MAAR) in the formulation and implementation of policy reforms to make the economy globally competitive over a period of time. The present Project GCP/SYR/006/ITA is the response to this request and is a follow-up on the earlier project. One of the critical pre-requisites for agricultural growth is an efficient and competitive input production and delivery system. This report is by the International Consultant on input marketing\*.

## **2. METHODOLOGY**

2.1. The study (Terms of Reference in Annex 1) has been conducted through the following steps.

- (a) Field studies and interviews with experts in each area nine days of field visits and over fifty interviews were completed during the mission covering a cross section of stakeholders and experts (Annex 2 for list of meetings)
- (b) Analysis of published and collected data and reports - see Annex 3 for references
- (c) Rapid Rural Appraisal (questionnaire attached as Annex 4 - impressions gathered by the survey were presented by the trainees who conducted the interviews)
- (d) Estimation of the impact, in terms of explicit and implicit subsidies and levies, within data constraints

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\*N. S.Parthasarathy, Consultant FAO, Input Marketing Specialist

The study draws heavily upon findings and impressions gathered during tours of production areas of Tartus, Homs, Aleppo, Hassake, Sweida and Damascus and on in-depth interviews with stakeholders at Damascus and in the Governorates (mohafazat), districts (mantekas) and sub-districts (nahias). The consultant met with senior officials of the Government of different Ministries, officials, extension staff, farmers, village officials, public institutions, port authorities, processing units and factories, farmer unions, agricultural bank branches, transporters, retailers and importers.

### **3. DATA SOURCES**

3.1. The sources of data used in this report are the following: (a) published statistical information from the Annual Agricultural Statistics Abstract, Statistical Abstract (Office of the PM, Central Bureau of Statistics) and the Country Profile compiled by the Project Center (b) information from MAAR during discussions (c) information provided by GOSM, GFC, GECM, ABC and the Seed Processing Unit – during discussions and through extracts of documents (d) Annual Accounts of the ACB. Documents given by the institutions are available in the archives at the Project Center in original Arabic along with the translation.

### **4. AGRO-CLIMATIC SETTING**

4.1. The WESTERN part of Syria consisting of the mountainous and coastal regions is the area of heaviest rain. Second in order is the northern region of Aleppo. From the climatic point of view, the country may be divided into four regions according to the rainfall caused by the Syrian mountain range and the western Lebanese mountain. The coastal area is characterized by heavy rainfall in winters and moderate temperature and high relative humidity in summer. Rainy winters, hot, dry summers and large diurnal range of temperature is the feature of the interior area. The mountainous area with an altitude of 1000 meters or more is known for rainy winters where rainfall may exceed 1000 mm and a moderate climate in summer. The desert region is characterized by a small amount of rainfall in winter and hot dry summers. The mountainous and coastal regions are the regions of heaviest rain. Second in order is the northern region.

4.2. Of the total area of 18.5 million ha 5.9 million ha is cultivable and about 8.2 million ha is area of very low rainfall and are largely pasture and steppe lands. In 1997, irrigated area totaled 1.2 million ha. Rain fed areas totaled 3.6 million ha divided into five agro-climatic zones out of which 0.6 million ha was planted with trees and 3.0 million ha with annual crops. Pump irrigation from rivers accounted for 20% of the total irrigated area, pump irrigation from wells 60% and from springs 20%. The major rivers and their lengths within the country are: Euphrates (680 km), al Aassi and its tributaries (366 km.) Al khabour and its tributaries (442 km) and Al baleekh (116 km)

4.3. The total cultivated area of 5.5 million ha is classified into five settlement zones according to quantum of rainfall and its reliability, such demarcation transcending administrative borders. The first zone has average annual precipitation of more than 350 mm and cultivated area of 1.521 million ha. The second zone with average annual rainfall between 250 and 350 mm. with a reliability rating of two out of three seasons has 1.750 million ha. The third zone has an average annual rainfall of more than 250 mm in more than half the number of seasons with 0.823 million ha. The fourth zone with average annual rainfall between 200 and 250 mm in more than half of the seasons and about 0.889 million ha. The fifth zone with average annual rainfall of less than 200 mm in more than half of the seasons consists of rangelands and desert areas and has about 0.519 million ha of cultivable area.

4.4. The average land holding is 7.95 ha which is much higher than that in many developing countries. Aleppo, Al rakka and Al hassake account for more than 60% of the cultivated area.

Al rakka and Al hassake also have average holding size of 27.81 and 18.22 ha respectively, much higher than other governorates. In all there are 532,691 holdings and 28.6% of the country's labor force is in agriculture.

4.5.Syrian agriculture has a wide range of crops – wheat, barley, lentils, chickpeas, cotton, sugar beet, tobacco and a variety of fruits and vegetables. Wheat and barley account for two thirds of the cultivated area and cotton is the main cash crop. Wheat is raised both under irrigated and rain-fed conditions. Cotton is cultivated under irrigation. Barley, lentils and chickpeas are raised almost entirely under non-irrigated conditions. The distribution of area among the main crop groups in 1999 is as follows.

**Crop Groups - Area Distribution 1999**

	Cereals & Legumes	Industrial Crops	Vegetables	Fruits	Fodder	Total
Area '000 ha	3332	320	115	790	76	4633
Percentage	71.9	6.9	2.5	17.1	1.6	100

4.6.Livestock contribute 32% of agricultural production besides holding good prospect for exports in the form of live animals and meat. The most important animals bred in Syria are cattle, sheep, goats and chickens. From 1980 to 1993, the cattle population varied between 706,000 and 800,000 heads. Since then there has been an increasing trend reaching 932,000 heads in 1998.Total sheep number shows a long term increasing trend from 9.3 million heads in 1980 to 15.4 million heads in 1998.Total goat number was slightly above 1.1 million in 1998. Over the last two decades, total meat production increased by 78%. Seven governorates produce almost 75% of all lactiferous meat, and four of them account for 52% of total production - namely Deir Ezzor (16%), Homs (13%), Al Hassake (12%) and Damascus (11%). Milk production reached 1.8 million tons in 1998 doubling in the last two decades. The total number of milking animals increased by 22% over the same period, while cow milk production increased by 128% (from 0.5 million tons to 1.1 million tons). Chicken population increased by almost 48% in the period 1980-98 reaching 20.5 million heads. Chicken meat production has increased by 139% over the last two decades reaching 97,000 tons in 1998.

4.7.The population of 16 million is growing at over 2.5 % per annum expected to reach 24 million by 2010. Although the current calorie per capita of 3200 is considered satisfactory food production is required to keep pace with growing population, increasing per capita incomes and changing food habits. Meeting the growing needs would not be a simple issue of motivating the 25% of the holdings with 76% of the area for higher production as any growth strategy has to consider the majority of relatively small households, farming under uncertain climatic conditions.

4.8.Opportunities and limitations inherent in the prevailing agricultural situation demand policy and institutional designs that factor these considerations for speedy achievement of growth with equity. Limiting our present scope to the input side, the following design aspects seem to emerge as important and critical considerations for success.

4.9.Because of the vast variation in the natural situation of farm holdings and its unavoidable impact on costs and risk bearing capacities, any universal policy is bound to affect or benefit farmers unevenly and inequitably – for example, between the small holding in Zone 3 or 4 compared to a large holding in Zone 1. Policy considerations could also vary for different segments in the sense that the state may wish to further the objective of food security and

maximize aggregate availability from large holdings while ensuring that reasonable incomes are generated for the small farm sector.

4.10. Much room for flexibility is needed by farmers to take planting decisions as late as feasible in the season depending on climatic factors. The system should be capable of providing timely inputs, in the form of seeds and fertilizers, in particular, and techno-economic guidance in planting decisions.

4.11. As basic per capita calorie needs are satisfactory and food needs are met, efforts to increase production should not run the risk of imbalances in supply-demand and fall in “effective” prices artificially kept up at the cost of the exchequer. Increases in production through higher productivity, elimination of systemic and institutional inefficiencies and crop diversification appropriate to climatic limitations and demand are essential policy ingredients to take advantage of a much wider market base extending beyond the country’s boundaries. Future growth in input consumption would depend upon the successful pursuit of these output-related strategies.

## **5. ADMINISTRATIVE SET-UP**

5.1. The country is divided into 13 governorates (mohafazat), besides the capital at Damascus, each governorate divided and sub-divided as mantikas (equivalent to districts) and nahias (sub-districts). There are 60 mantikas in the country, excluding those located at the mohafazat, 204 nahias, excluding those at the mantikas and 6541 villages as at 1997. The Governor nominated by the President is the chief executive of the governorate. He chairs the agricultural council at the governorate level.

5.2. The Prime Minister chairs the Supreme Agricultural Council at the national level. At the administrative apex of agriculture is the Ministry of Agriculture and Agrarian reforms (MAAR) headed by the Minister and assisted by two Deputy Ministers, each having allotted functions headed by Directors. As will be seen from the organization chart at Annex 5 there are forty functions/Directorates in MAAR at the country level. The main functions such as Statistics & Planning, Extension, Agricultural Affairs (in charge of implementation of the crop plan), Plant Protection, Livestock, Animal Health are replicated at the mohafazat and mantika levels, suitably grouped, according to workload, under sub-directors reporting to the Director. The functions finally converge at the service units below the mantika. The service units thus play a crucial front-line role dealing with almost all aspects of agriculture management. The organization of a typical Directorate at the country level is set out in Annexes 6.



## 6. POLICY ENVIRONMENT FOR INPUTS AND THEIR IMPLICATIONS

6.1. Agriculture has been a part of the centrally planned economic system with government organizations and agencies closely involved in all production and distribution activities. Since the mid-eighties there has been a graduated and cautious shift toward allowing private sector participation and competition in specific areas where risks of privatization, as perceived by the policy makers, are considered minimal. Fixed and multiple end-use oriented exchange rates, government monopolies in procurement of all produce, fixed crop prices with balancing subsidies to neutralize production cost increases, rigidly enforced crop plans down to the individual farm level, strict control on imports through licensing and negligible use of private sector resources and energies to generate competition and efficiency were the main characteristics of the economy till the mid-eighties. Since then there have been many major changes such as: unification of exchange rates, private sector entry into defined areas of agricultural procurement, imports of certain inputs and export of vegetables and fruits, reduced rigidities in crop planning, removal of explicit subsidies, fixation of prices according to production costs and similar measures. Dominant presence of the public sector and the cautious approach to private sector participation in the economic process continue to prevail partially due to a hang-over of the past and, more importantly, out of a justifiable anxiety to avoid widespread hardships that rapid policy and institutional changes might bring. Experience in some African countries that took to major changes over a relatively short span without alternative effective private participation and regulatory mechanisms does lend credence to this anxiety. It is very clear from various discussions and documents, however, that the government is committed to reform “with a human face” through a carefully crafted management of the transition.

6.2. A summary of important policy decisions in recent years that affect the input production and delivery system is in the following page.

**6.3. Implications:** Policy and institutional reforms will necessarily have to address the following aspects.

- (a) Changes should not lead to major hardships even in the short run
- (b) Recommended reforms should result in improved resource use and greater competitiveness
- (c) Transformation should be smooth, phased out in easy stages to make it manageable
- (d) Proposed changes should infuse confidence in the private sector that government is serious about reform and assigning it a role in the production and marketing system
- (e) Incorporation of appropriate checks and balances to ensure that pursuit of even legitimate profit is not in conflict with larger social objectives
- (f) Sensitization of bureaucracy to the benefits of market economy and the new responsibilities of government as regulator and facilitator would be critical for success.

<b>POLICY MILESTONES AFFECTING INPUTS</b>
<b>Exchange Rate System</b>
1980s – multiple rate system 1992 – reduced to two effective rates
<b>Foreign Trade</b>
Before 1987 – monopolized by public sector organizations From 1987 – liberalization of foreign trade – private sector allowed to export vegetables, fruits, barley and legumes and to retain foreign currency for import of greenhouses and agricultural machinery
<b>Taxes</b>
1991 – law 20 amended legislative decree 85 of 1949 exempting farm income from income tax, exempting cooperatives from profit tax, giving machinery, pesticides and improved seeds customs tariff reduction
<b>Levies on Agriculture and Livestock</b>
1957 – law 437 taxed agricultural products 9 – 12 % on value at exportation or at entry at processing plant 1958 – law 25 levies on livestock at SP 2.25 per head of sheep/goat, SP 4 per camel, SP 74 per buffalo and SP 11 per pig 1962 – law 27 exempts fruits and vegetable products for export from law 437 levies
<b>Input Subsidies</b>
Till 1987 – input subsidies played a major role for strategic crops (wheat, barley, lentils, legumes, chickpea, cotton, sugar beet, tobacco) – output prices fixed and remained constant with input subsidy increasing to compensate for production cost increases After 1987 – SAC resolution eliminated subsidies on pesticides and bags – gradual elimination of subsidies on fertilizer and farm machinery followed – subsidy on fuel and irrigation from public systems still continues 1989 – law 19 increased irrigation fee from SP 70 per ha to SP 1075 1996 – legislative decree 8 increased irrigation fee to SP 2500 – and TO 3500 in 99 - still subsidy element continues
<b>Output Prices</b>
After 1987 – prices of strategic crops determined centrally according to production cost and profit margin – for other crops “indicative prices” were fixed
<b>Produce Marketing</b>
Before 1987 – heavily restricted with very little role for private sector – farmers obliged to deliver all crops to public sector organizations at official prices– the obligation was strictly enforced 1987 – compulsory delivery limited to cotton, sugar beet and tobacco processed by government factories – government intervenes if market prices varies on basis of production cost plus 10 % profit margin – MSIT monitors prices of vegetables and fruits sold in domestic markets 1993 – SAC resolution 8 and 9 allowed all sectors in domestic and international trade in lentils and chickpeas
<b>Inputs Marketing</b>
Currently seedlings for fruits and forest trees produced directly and sold by MAAR at subsidized prices Private sector can import vegetable seeds with approval of MAAR Other seeds are produced by GOSM – it also imports seeds for potato, sugar beet and soybean – distributing through ACB and its own branches Fertilizers produced by GEKM and imported by GEZA are distributed by ACB through cooperatives and to farmers who are not members of cooperatives Agricultural chemicals are imported and distributed by private sector 1996 – minutes 106-108 of Chemicals Committee stipulates that agricultural chemicals can be imported only from producers of active material with some exceptions 1997 – resolution 34 of MAAR lays down conditions for approval of new chemicals and lays down procedures Livestock medicines and vaccines distributed free of cost by government through official channels – GEZA imports what is not locally produced
<b>Agricultural Planning</b>
1975 - law 14 lays down procedures for crop planning and its enforcement specifying accountability at different levels of administration and penalties for deviation Before 1987 – centralized – cropping plans laid down and enforced After 1987 – shift to “indicative objectives” for strategic crops – objectives limited to identification of major crops and planting areas – farmers can choose minor crops – farmers with less than 0.5 ha have freedom to choose any crop

## **7. IMPACT OF POLICY ON INPUT SYSTEM AND ROLE OF INSTITUTIONS**

7.1. Ensuring availability of inputs to farmers through a comprehensive planning process involving different layers of the government from the center down to the nahia and extension units near the villages is one of the crucial elements of agricultural policy. In this chapter, we will briefly describe and review the procedural, system and institutional aspects of input production and delivery. It has been agreed that, essentially, “inputs”, for the purpose of this report, would be limited to fertilizer, seeds and agricultural chemicals (plant protection products).

## FERTILIZER

### Fertilizer Usage

7.2. The popular forms of fertilizers used are: ammonium nitrate of both 30% and 33% grades, urea, triple superphosphate with 46% P<sub>2</sub>O<sub>5</sub> (TSP), also commonly referred to in this country as just superphosphate, sulfate of potash with 50% K and, occasionally, diammonium phosphate (DAP) with 18%N and 46% P<sub>2</sub>O<sub>5</sub>. Of these, the first three are locally produced and supplemented by imports to meet the gap between demand and local production. From the following Table it will be seen that N consumption steadily increased from 1988-89 to 1995-96 and maintained ground thereafter whereas P consumption has been showing a declining trend following the growth phase persisting till 1993-94. K consumption has been falling after reaching the peak of 9186 tons in 1991-92. The growth trend is erratic and heavily subject to weather conditions and perhaps governed by market uncertainty for cash crops, particularly fruits. Al Hassake and Aleppo governorates are the biggest consumers of fertilizers accounting for nearly 50% followed by Hama, Al Raqqa, Idlib and Dair Ezzor altogether making up about 85% of the total country consumption.

### Fertilizer Consumption – Nutrients – rounded to thousand tons

	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O
1988-89	161	100	9
1989-90	103	91	5
1990-91	185	112	6
1991-92	193	138	9
1992-93	204	140	6
1993-94	230	139	6
1994-95	217	128	6
1995-96	237	128	8
1996-97	227	125	6
1997-98	237	118	7
1998-99	218	105	7

7.3. Concerning the level of current usage and the scope for further increases in the future, the following observations can be made from the analysis in Annex 7. Going by the recommended usage dosages of N, P and K for different crops, wheat, barley, cotton, and fruit trees emerge as the main potential consumers of fertilizers which does not necessarily imply that, in fact, the actual consumption by these crops is in the same pattern and in line with this theoretical potential. From figures of loans to different crops it emerges that, in actual practice, wheat and cotton account for 90% of fertilizer sold on credit. The analysis also shows that assuming only two-thirds of farmers adopt 66% of the recommended dosages, the actual consumption is well above 100% indicating that adoption ratio is much higher than 66%. there is also imbalance in the plant nutrient ratio of usage with scope for higher application of p<sub>2</sub>o<sub>5</sub> and k<sub>2</sub>o in relation to n. the high price of sulfate of potash could be a hindrance to higher application where it is needed.

7.4. About 75% of the cultivated land is concentrated in 25% of the holdings and the balance 25% of land spread over 75% of about 600,000 holdings. There is no reliable statistical information about the effect of holding size on fertilizer usage levels but the odds are that high input – high output practices are adopted by larger farms with resources and ability to withstand the risk of weather fluctuations. This risk is significant under Syrian conditions as 76% of the cultivated land is rain-fed. The last two years have been subject to inadequate rainfall and drought in many parts causing low yields, loss of livestock, widespread loan defaults and, generally, leading to a setback in farmers' economic conditions.

7.5. In the circumstances, the question concerning fertilizer usage is integrally related to reforms on the output side that can lead to improved farm profitability, higher productivity, lower costs, crop diversification compatible with marketability, expansion of agro-based industries and establishment of export oriented farming systems. Specifically in regard to fertilizer, the issues are primarily of widening the consumption base in terms of crop and holding size, increasing the effectiveness of application for higher productivity and bringing about savings in the cost of fertilizer per hectare as one of the defenses against weather risks.

#### **Fertilizer Production and Delivery System**

7.6. About 60% of total fertilizer requirement is produced locally at the only manufacturing unit located at Homs and the balance is met by imports. The Agricultural Cooperative Bank distributes the imported and locally produced material to farmers directly and through cooperatives. The ACB is both dispenser of farm loans and distributor of inputs. The ACB also disburses the proceeds of produce tendered by farmers to the General Establishment for Grain deducting the loan dues. Funds for this purpose are transferred to ACB by the Grain Establishment as and when they collect produce.

7.7. Farmers or the cooperatives, on their behalf, take delivery of materials from the ACB branch warehouses. The quantity of fertilizer as well as other inputs are pre-determined according to a recommended crop plan (earlier it was a mandatory plan subject to severe penalties for non-adherence but now made "indicative") and formalized by the issue of a crop license at the beginning of each crop year. Farmers wishing to purchase fertilizer on cash terms also need the crop license indicating the quantity of fertilizer they are entitled to. Cash purchases, in such cases, can be made either from the ACB warehouse or from outlets run by agricultural engineers who are registered with the agricultural engineers' syndicate. Revised licenses are issued to meet variations in fertilizer requirements caused by deviations from the crop plan by accommodating such changes within the combined plan of all the farmers of the nahia. More often informal adjustments are made among farmers themselves through transfers of surpluses to those needing more.

7.8. Integration of loan disbursement, input distribution and output collection substantially reduces the risk of non-recovery of loans through willful default and is an advantageous feature of the current production and delivery system. The centralization of all functions relating to these aspects in the hands of one organization, on the other hand, leads to rigidities, high costs and lack of incentives to improve services to farmers.

#### **Fertilizer Production – Role of GFC and GECEM**

7.9. The General Fertilizer Company, located in Homs, is a public sector organization and is the only fertilizer manufacturing unit in Syria. It has an annual installed capacity of 120,000 tons of ammonium nitrate, 330,000 tons of urea and 450,000 tons of triple superphosphate. The plant is located centrally with good and easy reach to most fertilizer consuming parts of the country. The transportation matrix in Annex 8 shows that freight from this plant is most economical to meet 29% of the consumption and as economical as imported stocks moved from Latakia port for another 57.3%. Thus, for 86.3% of the areas the Homs unit is logistically well situated. The Company reports to the General Establishment for Chemical Manufacture with its headquarters in Damascus.

7.10. The GFC hands over its production to ACB as and when it produces and does not have its own warehouses. The sales realization to GFC is made up of cost of production plus a profit margin and this compensation is determined by a Special Committee of representatives of GECEM, ACB and the Farmers' Union and is submitted to sac for approval and for consolidation in the plan. Large sums are owed by ACB to the GFC, to the tune of SP two billion, as ACB, in turn, faces delays in recovering farmer dues.

7.11. The production at this unit has been erratic in relation to the installed capacity as will be seen from the following Table.

**Capacity Utilization – Production in tons**

	1995-96	1996-97	1997-98	1998-99	2000 Plan
<b>Ammonium Nitrate</b>					
Production	74800	77466	70449	108707	56000
Capacity					
Utilization %	62%	65%	59%	91%	47%
As % of Total Supply	21%	20%	33%	67%	
<b>Urea</b>					
Production	90500	92150	156100	189957	77000
Capacity					
Utilization %	27%	28%	47%	58%	23%
As % of Total Supply	44%	35%	40%	55%	
<b>Triple Superphosphate</b>					
Production	100900	197974	166015	172780	150000
Capacity					
Utilization %	22%	44%	37%	38%	33%
As % of Total Supply	37%	81%	84%	70%	

Total Supply = Production + Imports

7.12. The impact of under-utilization of capacity is summarized hereunder, extracted from the analysis in annex 19 (see section B of the analysis). With improved production, it is possible either to give farmers the benefit of cost reduction or, if this is already passed on to them as implicit subsidy, to reduce the budgetary support without affecting farmer price. The following does not take in to consideration the impact on cost if phosphate rock and gas were supplied at international prices. These aspects are dealt with in a later part of the report.

**Cost of Production – Potential Savings per ton SP**

	Ammonium Nitrate	Urea	Triple SuperPhosphate
Cost at 2000 Plan Production	5966	6978	9161
Cost at 90% of capacity	4557	4215	7612
Saving	1409	2763	1549

7.13. The plant has many advantages besides being centrally located. The source of natural gas is about 700 km at Hassake and is piped to the fertilizer unit and the neighboring refinery. Rock Phosphate deposits are also nearby at Palmyrah. Power supply is not a problem and is available at 97 piastres per kWh. The capacity of the ammonia plant is not matched by capacities in the downstream ammonium nitrate and urea plants, which seems to be the major reason for under utilization. These plants as well as the sulfuric acid and phosphoric acid plants seem to need revamping and upgradation of capacity requiring further investment. Considering the local availability of rock phosphate and natural gas (sulfur is imported from nearby sources) and the inherent comparative advantage that the country has for manufacture of nitrogenous and phosphatic fertilizer it is worthwhile investing in this unit and expanding it further.

7.14. The “cost plus” approach deprives the system of a yardstick for measurement of achievement and efficiency; the current pricing policy is hardly conducive to improving productivity and higher asset utilization. As such it appears that the natural advantage of the vicinity of critical and transport-sensitive raw materials is being dissipated.

### **Fertilizer Importation – Role of GEZA**

7.15. Fertilizer import in its entirety is entrusted to the public sector organization called the Foreign Trade Organization for Import of Chemicals and Foodstuffs – referred to as GEZA, formerly known by the acronym TAFCO. Private sector is not permitted to import fertilizers; a few days ago, however, a decree has been published allowing entry for fertilizer import. GEZA imports through Tartous and Latakia ports - bulk urea cargo mostly through Tartous and bagged cargo through Latakia. Bulk urea is unloaded and bagged by automatic bagging equipment on the wharf and directly loaded on to trucks saving about \$3 per ton compared to import in bagged form. The purchase contracts are on C&F free out basis with the responsibility for wharfages resting with the seller. North Africa, East Europe and Russia are the main sources which offer advantages of short voyage time and distributed deliveries in lots of 5-7000 tons. There are no constraints of truck availability at either port. Foreign exchange availability for fertilizer import is not a constraint.

7.16. Like the GFC the GEZA also hands over the material to ACB. GEZA is given a small compensation of 1% for its effort (typical cost build up in Annex 9). The dollar cost of imported fertilizer was being converted at discounted rates, thereby passing on a subsidy, till the second half of 1992 at rates varying from SP 11.25 per \$ to SP 35. The current rate of conversion is SP 46 per \$ compared to the neighboring country rate that varies from SP 46 to SP 51 per dollar. Fertilizers are exempt from customs duty. As such, it could be said that there is still an element of implicit subsidy in the fertilizer price. The effect of implicit taxation arising out of the monopoly distribution and cost plus pricing is to be considered as an offsetting factor.

7.17. The GEZA hands over the shipping document itself to ACB duly endorsed in favor of the latter. As such GEZA's role is confined to calling for tenders, obtaining the best price and terms, concluding the contract and following up the shipping schedule to ensure conformity with the program laid down by MAAR. The import plan for the year stipulating the types and quantities of fertilizers to be imported and the months of shipments are provided to GEZA by MAAR at the beginning of each crop year.

7.18. The good infra-structure for importation, availability of foreign exchange, vicinity of supply sources, convenient small shipments, two ports with adequate on-shore facilities, transport availability and good road system are important advantages not prevalent in many developing countries. The government has taken the right step in deciding to allow private sector to import fertilizers. However, the operation of more than one agency in importation would give rise to various other complicated issues of coordination. These are not spelt out in the recent announcement. Coordination would be needed to ensure adequate availability and competition, avoid over-stocking and dissipation of foreign exchange and maintain coherent prices between domestic production and imports. These issues will be addressed later in this report.

### **Inputs Distribution – Role of the Agricultural Cooperative Bank**

7.19. The ACB plays a central role in the distribution of fertilizers and seeds for strategic crops. As stated earlier, on it converges the functions of disbursement of loans, distribution of inputs and payment of crop proceeds. This section deals with ACB's role in distribution.

7.20. All stocks of fertilizers from local production or from imports are taken over by the Bank as and when they are produced or imported. ACB is allowed an administrative charge of 2% on imported fertilizers – which was till recently 4%. Stocks are stored in warehouses located in different parts of the country and delivered to cooperatives and farmers at ex-warehouse prices. Warehouses are of capacities ranging from 1000 to 4000 tons. Sales are both by cash and by credit. Quantities delivered are strictly according to those permitted in each farmer's crop license, even if the purchase is on cash terms. Private sector is not involved in distribution with the exception of retail outlets run by agricultural engineers who are

registered with the agriculture engineers' syndicate in the governorate. Most of these outlets are more involved in sales of plant protection products and vegetable and fruit seeds. To deal in fertilizer, they have to enter into a contract with either the agriculture engineers' syndicate or the peasants' union and against the guarantee of the syndicate/union, ACB extends credit not exceeding SP 300,000 for working capital and in return for this support these outlets (called joint ventures) pay 40% of the profit to the syndicate/UNION.

7.21.ACB has 108 branches in the country handling close to a million tons per year of fertilizers. This is equivalent to an average load of 9000 tons per branch.

7.22.Stocks at different prices are taken over by ACB – local production at cost plus a margin to the producing unit and imported material at varying C&F costs for different parcels plus 1% to GEZA. Therefore, the Bank has to go through a complex averaging process to arrive at a uniform farmer price for each fertilizer type regardless of the source. These selling prices are recommended by the Special Committee and submitted for approval of the SAC. The typical margins retained by ACB as set out in their circular dated 7<sup>th</sup> February 2000 are summarized hereunder.

#### **ACB Margins on Fertilizers**

Fertilizer	Average Cost SP per ton	Sale Price SP per ton	Margin SP per ton	Margin % on Cost
Ammonium Nitrate 30%	5500	5400	-100	Minus 2%
Urea	7080	7700	620	8.75%
Triple Super Phosphate	7630	8200	570	7.5%
Potassium Sulfate	10940	12100	1160	10.6%

7.23.Farmers buy fertilizer from private outlets in the following circumstances: (a) as many of them do not follow the crop plan there is need to buy the extra fertilizer needed and they find it more convenient to take this from private outlets; (b) in the event of defaults farmers cannot purchase from ACB even on cash terms but it is said to be available at “additional costs” and as such higher private prices are found acceptable and procedurally far more convenient. Judging by field reports the possibility of leaks in the system leading to informal flow of material to the market for sale at higher prices cannot be ruled out. In times of planting, especially in zone 1 where pressure of demand builds up with rains, private prices command premiums of SP 800-1000 per ton. The restrictive distribution system tends to create these “rents” in fertilizer prices even under conditions of plentiful availability at the macro level.

7.24.seeds are delivered from ACB stores as well as from GOSM branches. this again is according to the permitted quantities stipulated in crop licenses. in regard to agricultural chemicals ACB has a limited role of recovering from crop proceeds the nominal value of chemicals distributed to farmers by the directorate for control of weeds and wheat bugs. The SAC decides upon the need for community control of pests of an epidemic proportion or in times of emergencies like drought when free livestock protection is extended. Chemicals for control of pests that are part of farmer's own responsibility are marketed by private sector.

#### **SEED**

##### **Seed Usage**

7.25.A notable feature of the seed production and delivery system in Syria is the high seed replacement ratio it has been able to achieve in respect of self-pollinated crops. In respect of these crops farmers ordinarily tend to plant home-saved seeds and do not replace them with fresh processed seeds from outside. Private sector seed producers also do not evince the same interest as on hybrid and high value seed varieties. Involvement of the state sector in this segment of the seed business, for these reasons, is inevitable in the interests of maintaining production. However, costs could be reduced by sub-contracting operations to private sector.

Annex 10 shows seeds distributed in 1999 and planned for 2000 by GOSM. Based on the recommended seed rate the Annex indicates the approximate coverage or seed replacement ratio. It is seen that 48-60% is registered on wheat, 13-16% on lentils and chickpea but only a poor rate of 3 % on barley.

### **Seed Production and Delivery System**

7.26. Seeds for all strategic crops – wheat, barley, lentils, chickpeas, cotton, and sugar beet – are produced only by GOSM for distribution through their branches and through ACB warehouses. ACB is expected to return unsold stocks within fifteen days of close of season and also pay for the seeds sold. ACB gets a commission of 2% for this service. Farmers get supply of seeds according to the quantities stipulated in their respective crop licenses. The procedures are similar to those for fertilizer, described earlier.

7.27. Hybrid imported seeds for vegetables of high value are imported and marketed by private sector seed companies through a network of stockists spread across the country. They employ technical staff to propagate their brands and inform farmers about the special agro-technical practices to be adopted for good results. As these companies also invariably deal in agricultural chemicals and soluble fertilizers they sell all the materials through composite outlets handling the whole range and thereby derive economies of a comprehensive range and scale. For instance, Debane and Co have a network of over 200 dealers. Material is stored in 3 warehouses from where supplies are made at short notice. According to members of the trade, demand for vegetable seeds is growing at an annual rate of well over 20%. Retail outlets dealing in seeds and agro-chemicals seemed happy with the supply arrangements and the pricing structure offering them a reasonable margin. The importer/marketer supports dealers with a good turnover and track record of reliability for monetary commitments with credit and quantity discounts. These outlets are centrally located in main towns and have attractive display of the product range to draw farmers for purchase and advice.

7.28. State nurseries in seventy locations with a combined area of 50,000 dunnams under the control of the Directorate of Agricultural Affairs raise seedlings for fruit trees. The seedlings are distributed to farmers direct and through the extension units at nominal prices that reflect a subsidy of about 50% (for instance, olive seedlings sold for SP 13 against the cost of SP 25). The seedlings are sold both for new plantings in reclamation areas in the hills as well as for replacement in old areas. About 500,000 ha have been reclaimed in the hilly regions and most of them are under zones 2 and 3 in terms of rainfall quantum and reliability. The objective of subsidized supply backed up by soft loans is to encourage reclamation of land in these areas for productive use without affecting the existing production base. Support to participating farmers is critical in the initial stages as the trees take 4-6 years, depending on the variety, for initial yield and 10-15 years for yields of commercially viable scale. Private entrepreneurs also have nurseries to raise fruit seedlings and sell to farmers determining their own prices without interference from the government. Seedlings sold by the government fell from 6 million (numbers) in 1998 to 4.5 million in 1999 because of drought. In 2000 the expectation is that about 10 million will have been sold.

7.29. Government's encouragement of social forestry through supply of free seedlings is an important initiative in the seed sector. The Directorate of Forestry has 40 nurseries raising seedlings for free supply to public organizations and at a very nominal cost of SP 1 per seedling to the public against the average cost of SP 15. Of the total forest area of 461,000 ha natural forests occupy 232,000 ha and the rest are man-made forests. A part of the production of seedlings is supplied to Lebanon. The object of the program is to encourage community forestry, discourage deforestation, attain a green cover all over and improve the environment. The plan is to plant about 24,000 ha every year. Understandably, because of the non-profit nature of the activity, there is hardly any private sector participation in the forestry sector.



7.30. The following weaknesses were reported during field visits. (a) At times wheat and cottonseed availability from the official source is found inadequate during planting and farmers resort to the private market to meet their needs. (b) Farmers complain of lack of uniformity of species and yields not being up to expectations. This was also mentioned of fruit seedlings.

#### **Seed Production – Role of GOSM**

7.31. The General Organization for Seed Multiplication, with its head office in Aleppo, is in the public sector entrusted with producing and distributing seeds for strategic crops. The private sector role is in the form of farmer participation in the multiplication activity. Seeds are multiplied through poly-generation method passing from nuclear seed through foundation, registered and certified I stages and finally to certified II which is sold to farmers as commercial seed for raising the crop. The first two stages are multiplied in six stations at different locations directly under the supervision of GOSM and the remaining two stages are produced on farms by cooperative members and by private farmers. Seed material is supplied to the farmer for multiplication to the succeeding stage at the same price as for the commercial grain and not at its appropriate cost which naturally would be higher. Farmers raising the registered seed are paid a 25% premium over the commercial crop price for the output and those raising the certified seed I and II are paid a premium of 20%. Breeder seed is obtained, free of cost, from ICARDA, research stations and sources outside the country.

7.32. Candidate seed from farmers' fields are cleaned and treated at processing stations under the control of the Ministry of Supply for which a service charge is paid by GOSM. There are eleven processing stations. The typical capacity is 10,000 tons per year although, in actual practice about twice the quantity is processed over 6 months operating two shifts

7.33. The processing unit is not responsible for the genetic purity of the material they process which is expected to be tested by the GOSM technical staff at farmers' fields. The processor is also not responsible for the germination and as such they do not have laboratory facilities for these tests. The quality of seed produced by GOSM is tested and passed by its own quality control department. The large capacities of the processing plants increase capital cost (about SP 80-90 million each) and, thereby, the cost of seed, especially as the operation is of a seasonal nature leading to unavoidable under utilization of capacity. At an average capital servicing cost of 25% (10% for depreciation, 10% for interest and 5% as return) the annual standing charge alone, without other reckoning costs, is SP 2000 per ton (80,000,000 x 0.25 divided by 10,000 tons). To this must be added the extra cost of movement of the processed material over a larger radius for distribution – at a seed rate of 250 Kg per ha 10,000 tons would cover 40,000 ha. Smaller decentralized units seem to be a more practical proposition. These could also fall within reach of average sized town entrepreneurs and encourage private sector participation – either as processors and sellers or as contract processors for GOSM - under the supervision and guidance of the GOSM.

7.34. The annual turnover of GOSM is about SP 4 billion. About 12-13,000 tons of wheat, barley, lentil and chickpea seeds are exported to Arab countries. GOSM is expected to sell seeds at cost and make no profit and later in this report we analyze the cost and selling prices, within limitations of available information, to estimate the extent of implicit subsidy (annex 20).

7.35. From the following Table it is observed that wheat, cotton and potato constitute the bulk of GOSM's activity and the demand for these crops is steadily on the increase.

### Seed Sales by GOSM - tons

Variety	1995	1996	1997	1998	1999
Cotton	26337	28236	34611	36879	32536
Wheat	166519	17478	110000	139376	148533
Barley	4129	5507	4800	3500	6986
Potato	36912	16581	18567	27334	32771
Maize	1540	1497	1557	1548	812

### Seed Importation by Private Sector

7.36.Importers are required to apply to the Directorate of Agricultural Affairs for approval of the seed variety before seeking an import license. The seeds are tested in the government's research stations for two seasons and depending on the findings approval is given or refused. The difficulty expressed by importers is that imported seed varieties keep changing rapidly and often when the approval is given after two years it is possible that the same variety may not be available.

7.37.At the time of import, on arrival of the consignment at the port of entry, the customs take a sample and send it to Aleppo for analysis. The consignment is allowed for clearance after the sample is approved. A local facility for analysis could reduce the delay in clearances of consignments.

## PLANT PROTECTION PRODUCTS

### Plant Protection Product Usage

7.38.The usage of plant protection products is under two sectors – the public distribution or application of pesticides for control of pests on a community scale where government takes responsibility to protect crops against migratory pests and, second, private sector marketing of products for control of pests in respect of which the responsibility for protection rests with individual farmers. The migratory pests that are the concern of the government program are locusts, grasshoppers, rats etc. The policy of the government is to propagate the concept of Integrated Pest Management through adoption of practices such as crop rotation, biological control and use of hormones and attractants rather than heavy application of chemicals with risk to the environment. In addition to protecting the environment, biological control methods reduce the cost of protection. The application of pesticides on cotton, which is usually a high consumer of chemicals, has been reduced and the control of fruit fly in citrus has met with success. The government believes that with this approach the use of chemicals would steadily get reduced.

7.39.The usage of plant protection products in the two sectors is set out in detail in Annex 11, including carry-over stocks. A summary is presented in the following Table. The figures are in SP converted from \$ cost of imports and for purpose of comparability the same rate of conversion has been used over all the years although, in actual fact, the conversion rates in earlier years were lower than the market rate treating farm chemicals as a priority item.

### Plant Protection Products Distribution – in SP million

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Govt.	627	354	447	613	464	817	1113	621	684	451
Pvt Sector	274	310	407	400	426	856	856	1124	NA	NA
Total	901	654	854	1013	890	1673	1969	1745	NA	NA

NA – not available

7.40.Private-sector market for plant protection products has been registering a steady growth resulting in a reversal of shares between the two sectors from 1997. Although figures for the last two years are unavailable industry experts estimate that demand in the private sector

market has been growing at 15-25% per year. About 60% of the chemicals imported and distributed by the government are herbicides, especially for wheat. Annex 12 is a typical summary made at the end of the planning process, which also lists the chemicals normally, imported in the government sector.

#### **Plant Protection Product - Delivery System**

7.41. Hormones, attractants and trap devices are distributed, free of cost, under supervision of Governorate directorates through their extension units. The cost of control of migratory pests is not recovered from farmers. Aerial spraying for sumibug in wheat is recovered at half a piastre per kg of the produce. As earlier stated, distribution under special programs is also carried out through the ACB network.

7.42. Private-sector market being well defined there is a smooth flow of material from the importer through the dealer network to farmers. Broadly, public imports cover the strategic crops – wheat barley, lentils, chickpea, cotton and sugar beet – and the private sector covers the non-strategic crops. In respect of private sector operation, apart from fixing prices, government allows a free hand to distributors retaining responsibility for demand estimation, registration, licensing and quality enforcement.

7.43. A typical marketing organization maintains 3 warehouses located at logistically convenient centers like Tartous, Homs and Aleppo for supply to dealers who number 200-300 according to the turnover and size of the organization. Supplies from warehouses reach dealers within a day or two of the order placements. Dealers are given discounts based on volume of purchase and prevailing competition. In special cases credit is given to dealers depending on their purchase volumes and track record of honoring commitments. Technical sales staff of the marketing organization call on dealers regularly to check their stocks and to book fresh orders for replenishment. The visiting sales officers assess the presence of competitors' products on dealer shelves, evaluate the strength of competition and the dealer's commitment to promote the company's products. Under current regulations any dealer selling farm requisites is required to employ an agricultural engineer who is registered with the agricultural engineers' syndicate.

7.44. Marketing organizations do not confine to agricultural chemicals and do import and distribute a wide range of farm requisites like vegetable seeds, soluble fertilizers, green houses and micro-irrigation equipment.

#### **Plant Protection Product - Importation**

7.45. The estimated demand for the year as approved by the committee for pesticide supply management after adjusting for stocks on hand is scheduled according to the months in which the shipments are needed and given to GEZA. GEZA calls for tenders and enters into contracts for shipments.

7.46. Imports by private sector are generally from Western Europe and USA. Under resolution 15T of 1996 imports are permitted only from those organizations that manufacture the chemical and not from formulators. The procedure for registration is spelt out under Law 34 of 1997 and requires that every chemical imported for use in the country shall be registered with the Directorate of Plant Protection. Chemicals eligible for registration should be in use in the country of origin, failing which in at least two developing countries, which have environmental and biological regulations. The chemicals should not contain any ingredient harmful to the environment. The registration and approval of any new chemical takes two to three years to undergo all the tests in the government laboratory.

7.47. When the material is imported, the customs authorities check the consignment, draw samples and send them to the laboratory at Damascus (for fertilizer and chemicals and to

Aleppo for seed). The clearance from the laboratory takes up to three weeks while the consignment is awaiting clearance at the port. The imported material is allowed to be sold only in the original packing and is not permitted for local re-packing. Once a chemical is registered the procedure for obtaining the import license is fairly speedy. A blanket license can be obtained for the whole year to obviate the need for applying for import of each consignment.

## **8. PRICING – FERTILIZERS, SEEDS, PLANT PROTECTION PRODUCTS**

8.1. The following chart is a summary of the pricing procedures, norms and the agencies involved in the pricing process for fertilizers, seeds for strategic crops, vegetable seeds and plant protection products marketed by the private sector.

### **Fertilizer**

8.2. Prices approved for local production and for imports are those at which ACB, the sole distributor, pays for supplies from the two sources. ACB averages these costs along with costs of carry-over stocks to arrive at a uniform ex-warehouse selling price for the country. Onward costs from the warehouse are borne by the buyer. It is to be expected that costs of production would vary from year to year due to increases in some items and decreases or increases in the way the fixed costs are absorbed by quantity produced. Imported costs also would not remain the same. In spite of these factors and even after elaborate pricing procedures fertilizer prices have remained the same over the last 9 years – that is SP 5400 per ton for ammonium nitrate, SP 7700 for urea, SP 8300 for TSP and SP 12100 for sulfate of potash. A summary of average import prices, Homs unit's realization and ACB's ex-warehouse farmer prices appears in Annex 13.

8.3. Fertilizer prices in terms of crop prices – that is, the number of kgs of crop required to buy a kg of fertilizer – are analyzed in Annex 14 applying both the official crop prices and private market prices. These are summarized in the Table hereunder for wheat and barley from which it is seen that with private crop prices for soft wheat and barley, farmers can get a kg of urea with lesser kg of the crop and that this is particularly pronounced in the case of barley. It is also noticed that although absolute urea price has not changed recently, its value has decreased, compared to 1995, in terms of crop, by 5% for wheat and 12% for barley because of increase in output prices. For a detailed analysis for different crops and urea and TSP, reference may be made to the Annex.

<b>Fertilizer Local Production</b>	<b>Fertilizers Imported</b>	<b>Seed GOSM Production</b>	<b>Seed Marketed By Private Sector</b>	<b>Plant Protection By Private Sector</b>
<b>Initiated by:</b>				
GECM with cost Of production	GEZA with landed Cost	GOSM with cost of Production	Company with Landed cost	Company with landed Cost
<b>Submitted to and scrutinized by:</b>				
Special Committee Of reps of GECM GFU and ACB	Ad hoc Committee Of reps of Ministries of Agriculture, Industry, Economics, Foreign Trade, Supply	Special Committee Of reps of Agriculture, Supply and GFU	Ministry of Supply And Internal Trade	Ministry of Supply And Internal Trade
<b>Approved by:</b>				
Through Minister For Agriculture to The Supreme Agricultural Council	Same Ad hoc Committee	THROUGH Minister of Agriculture TO Supreme Agricultural Council	Ministry of Supply And Internal Trade	Ministry of Supply And Internal Trade
<b>Margins</b>				
Not more than 10% on cost of production	1% on landed cost	At cost of production	Landed cost is On average 1.33 Times CIF cost - CIF cost + 15% to Wholesaler + 15% to retailer - That is, 1.33 x 1.15 x 1.15 = 1.76 times cif cost (app)	24% on landed cost to wholesaler and 10% thereon to retailer

#### **Urea-Crop Trade-off - Kgs of Crop needed to buy a Kg of Urea**

Crop		1991	1995	1999
Wheat Soft	Official Price	0.64	0.74	0.71
	Open Market Price	0.60	0.68	0.70
Wheat Hard	Official Price	0.58	0.68	0.65
	Open Market Price	0.60	0.63	0.68
Barley	Official Price	0.93	1.18	1.03
	Open Market Price	0.78	0.99	0.94

## Seed

8.4. Farmers tend to compare the price they get for a kg of the commercial grain (the output) with the price per kg of seed although this may not be sound economic reason considering the value of the incremental output. This price sensitivity is noticeable particularly in self and open pollinated varieties where the farmer switches to home-saved seed year after year if he considers the seed price to be high in relation to the crop price. The impact on yield and quality through continuous use of home seed is not realized. A comparison of crop and seed prices will be of interest in this context.

### Comparison of Crop and Seed Prices

Crop	Crop Price SP/Kg	Seed Price SP/Kg	Seed Price/Crop Price
Wheat Soft	10.80	10	0.93
Wheat Hard	11.80	16	1.36
Barley	7.50	12.10	1.61
Lentils	16	20	1.25
Chickpeas	17.80	28	1.57

8.5. The low usage of seed in the case of barley, lentils and chickpea, to which reference was made earlier, could be due to high seed/crop price ratios. This is exacerbated by the high ratio of seed rate to yield per ha - 18% for barley, 8% for lentils and 5% for chickpea, all under non-irrigated conditions and the uncertainty attached to it, compared to an average of 8% for wheat.

### Plant Protection Products

8.6. Since the base costs as furnished by the importing companies are not audited, nor is it worthwhile to do so, it is possible that real margins are higher than what is officially allowed in price fixation. This is supported by market observations of products being sold even lesser than approved prices. Official prices have little significance unless they are made known to buyers. With a wide range of varieties and packing, it is impractical to make farmers aware of them. Even without officially fixed prices, because of adequate supplies and competition there is every possibility of these products being sold at competitively low prices. The current system may be conferring dignity on a higher price than what market competition can bring about.

## 9. INPUT SYSTEM AND ITS LINKAGE WITH CREDIT POLICY

9.1. Credit is needed to support the following functions in the input distribution system. (a) Credit for the farmer to buy inputs and repay after the crop is harvested and realized – called production credit (b) Credit for retailers to purchase inputs and stock them ahead of the season – known as redistribution credit and (c) finance for large volumes of purchase by wholesalers and country-wide distributors in advance of the season – referred to as distribution credit. We shall cover these aspects of credit in the reverse order.

### Distribution Credit

9.2. In regard to fertilizer, ACB is the sole distributor for the whole country. ACB finances its purchases from the GFC and from GEZA with original government capital and additional infusions, if any, monies from depositors on which an interest of 8% is payable and by rediscounting its sale bills with the Central Bank of Syria at rates ranging from 2-3%. The rediscounting rate is dependent upon the term of loans under re-discount and whether the loans are to cooperative or other sectors, the former getting a preferential rate. Liquidity gaps arising out of defaults are covered by commercial borrowings from other banks or from the public debt fund. Whenever loans are rescheduled at the behest of the government, under drought and similar natural calamities, it funds the delayed cash inflow.

9.3.GOSM meet its working capital requirements through commercial borrowing from the banking system. Private sector importers and distributors of seeds and agricultural chemicals mostly rely on owners' funds and borrowings from associates as they feel that borrowing from the Commercial Bank of Syria is fraught with procedural hurdles eventually resulting in credit limits that are too small for the scale of operation. The interest on borrowings from Commercial Bank is 9% for private sector and 7.5% for the public sector. Private borrowings from associates and from informal sources cost as much 30-40% per annum. External commercial borrowings, at favorable rates, are resorted to at times although this is not permissible under present regulations.

#### **Re-distribution Credit**

9.4. Most retailers support the business through their own cash and borrowing from friends and relatives as they find bank borrowing cumbersome. The maximum credit limit eligibility for retail business is SP 250,000 but more often actual sanction is only about SP 125,000. A major source of financing is supply on credit from the distributor but as distributors are themselves under pressure the facility they can give to their dealers is restricted. Discount for cash purchase is fixed as high as 2-3% reflecting the cost of capital in the informal money market and the severe working capital pressure in the system. Agricultural engineers having contracts with the syndicates and the ACB (referred to as Joint Ventures) get credit for supplies from the latter up to a limit of SP 300,000 payable at the end of six months and the syndicate is given a commission by ACB (said to be 10% but this seems too high to be correct) in return for their guarantee.

#### **Production Credit**

9.5. Short-term loans for a period of 300 days are given in cash and in kind as inputs at 4% for cooperative members and 5.5% for individual farmers (referred to as private farmers) for loans less than SP 50,000. For those eligible for a higher sum than this the respective rates are 6 and 7.5%. For private farmers two sureties are needed and in the case of cooperative members any single default would render the entire group ineligible for the next loan. Loan amounts are determined strictly on the basis of input eligibilities determined in the crop license. Loan sums and inputs in kind are given to the cooperative for disbursement to individual members according to their eligibility. For this service cooperatives are given 1% besides a commission of 1.34% on fertilizers. The following Table gives the sums lent by ACB under different categories – loans in kind is the focus of interest for input distribution.

#### **Loans Advanced by ACB – SP million**

Term	1997	1998	1999
Long Term 10 years	252	181	123
Medium Term 5 years	1978	1701	1278
Short Term 300 days	4248	4023	3442
Loans in Kind Short Term	6920	6735	5366

9.6. It is significant that, of the above, private farmers got 53% and cooperative members 45%. Many non-member farmers stated that they wanted "to be free" and that they did not wish to be penalized for others' defaults. They did not mind the extra interest and the inconvenience of having to process crop license documents and collect the inputs from the bank warehouse by themselves. Some wished that they could buy inputs from a nearby source for cash.

9.7. The kind loan of SP 6920 million, which is the highest in the last three years, is meant for seed and fertilizer. Assuming that 60% of the loan in kind is used for fertilizers and that the average fertilizer cost per ton is SP 6000, the quantity of fertilizers sold on credit in 1997 would be approximately 692,000 tons against a total sale that year of about 800,000 tons. This represents 85% credit sales and 15% cash sales.

9.8. The loan in kind of SP 6920 million, at an average sum of SP 4000 per ha for seed and fertilizer, covers an area of 1.73 million ha out of a total cultivated area of 5.5 million ha. The cash sale of 15% may cover, proportionately, another .34 million ha. About 60% of the area under crops and fruit trees and vegetables seem to be uncovered for inputs either by cash or by credit.

9.9. ACB incurs expenditure equivalent to about 11.85% of the total advances, which seems very high in relation to the spread between the borrowing and lending rates. Even with appropriate weight for medium and long-term loans on which interest earnings are spread over 5 and 10 years, the effective transaction cost would still be about half of the 11.85% i.e. nearly 6%. This is more than the spread. A detailed analysis of ACB operations is at annex 18.

9.10. From the foregoing review, the following observations emerge. Private sector is mostly dependent on high cost money from the informal market for input business. This limits the scope of operations and its profitability restricting their capacity to play an increasingly important role. Production credit system does not encourage cash sales, savings and a process of progressive self-funding. Inter-linking of public sector organizations in production, financing and distribution of inputs makes the overall system complex in terms of working capital over-runs, mutual over-dues and borrowings from banks and public debt fund rendering it difficult to establish accountability for viability of operations.

## **10. REDISTRIBUTION NETWORK FOR INPUTS**

10.1. The 5361 agricultural cooperatives in the country play an important part in the redistribution of seeds and fertilizers from ACB to farmer members. We have seen in the earlier section that in regard to fertilizer 85% is on credit and that 45% of this is percentage represents cooperative member sales – that is, effectively 38% of fertilizer redistribution is done by cooperatives. The balance 62%, comprising both credit and cash sales to non-members, is mostly sold direct to farmers by ACB barring a small percentage routed through joint ventures whose interest in fertilizer is limited because it is capital intensive. Thus, virtually, ACB is 38% wholesaler and 62% retailer and this may be one reason why their transaction costs are high.

10.2. Of the total 17655 agricultural engineers registered with syndicates, about 10% have registered for business in agricultural inputs, representing a retail network of approximately 1700 such outlets for redistribution of vegetable seeds, soluble fertilizers, plant protection products, spraying equipment and micro-irrigation assemblies.

## **11. QUALITY CONTROL OF INPUTS**

11.1. The following is a summary of field observations on quality control aspects of inputs.

- (a) No major complaints were heard from farmers regarding quality of fertilizers. Poor quality and non-effectiveness of agricultural chemicals were, however, raised at some of these meetings though they such complaints were not many.
- (b) Importers and distributors of plant protection products of good standing (and formulators of veterinary products) complained of inadequate quality enforcement in the field leading to sale of spurious material, wide price differences causing confusion in farmers' minds, eroding confidence in use of plant protection methods and generally placing genuine operators at a disadvantage.
- (c) Responsibility for quality enforcement is delegated to the sub-directorate of plant protection at the governorate and the staff have powers to freeze stocks and close sale, if



the sample analyzed at the Central Pesticide Laboratory, Duma, built in 1993, showed quality deviation.

- (d) Quality tests by governorates seems generally confined to examining the expiry date. No formal data was available regarding the number of inspections made, deviations noticed and of action taken on such cases. There is no laboratory with basic quality verification facilities, either for fertilizer or for chemicals or for seed, at least at the bigger governorates.
- (e) Individual stamping of thousands of small packings of plant protection products seems more aimed at checking smuggling than at quality control. If local re-packing of imported bulk material and import of technical ingredients for local formulation are permitted, in stages, with powers and facilities to government to inspect facilities, verify quality on the production floor and calibrate formulators' laboratory facilities, the causes of both checking smuggling and quality assurance would be better served. Prices also are likely to reduce substantially as it is very expensive to handle small packages under cost and wage conditions prevailing abroad.
- (f) Facilities for quality verification of incoming chemicals, fertilizers and seeds at the port of entry is necessary to obviate delays in clearance of consignments, a common difficulty experienced by importers
- (g) Central laboratory facilities for quality testing are with GOSM at Aleppo. In a future situation of permitting private sector participation in seed production and marketing, this laboratory should be made independent of the public sector producer. The functions of field inspection for genetic purity and germination standards and of cleaning and treating the seed are bifurcated between GOSM and the Ministry of Supply. Although GOSM have internal minimum standards for each variety regarding genetic purity, germination and maximum limits for moisture and inert material, these should be declared on the packing and made known to the user. Under the sole operation of the government sector in seed production and marketing the absence of formal publication of such standards and their enforcement is understandable. However, in the new policy environment these will become necessary. There should not only be enforcement but this should be seen by farmers to be happening to increase their confidence in the system and strengthen quality awareness among producers. A seed law is necessary embodying these provisions, prescribing packaging standards and minimum disclosure requirements, identifying enforcement authorities and stipulating penalties for violation.
- (h) Similarly, for fertilizers and agricultural chemicals, quality standard laws are also needed especially in the context of the government recently permitting private sector to import and market fertilizers.

## **12. INPUT SYSTEM AND ITS LINKAGE WITH TECHNOLOGY AND EXTENSION**

12.1. Extension activities in the country are directed and coordinated from the Directorate of Extension in MAAR. Each Agriculture Directorate in the governorates has a sub-directorate responsible for field level implementation of programs. Reporting to the sub-directorate, in respect of extension matters, are the mantika administrations (agricultural service sections), which supervise the extension units. There are 869 extension units in the country as of 1999 and there has been a further increase in the number since then. The extension units comprise of agronomists, agricultural supervisors, veterinarians and veterinary supervisors. Of the total country strength of 5916 extension staff 3524 are agricultural extension staff. Each service section is equipped with 1-3 motorcycles, depending on size, and one four-wheeler. Responsibilities of extension staff include, but not necessarily confined to, crop planning, pest surveillance, crop plan implementation, random surveys and cutting experiments to estimate

production, implementation of extension programs and targets, carrying out special programs like land reclamation, desalination and rural women development and being available to deal with farmers' production problems.

12.2. The following observations arise from the field visits and discussions with concerned officials.

- (a) Workload on extension staff is quite high considering the facilities available to them in terms of vehicles, petrol allowance, promotion aids, motivation and incentives for good performance. They play a very vital frontline role in the country's agriculture.
- (b) Records of specific targets and timetable for each activity, allocation of responsibilities for these and the reports upon these at periodic intervals reflect a good system of monitoring of extension programs.
- (c) Land and crop records, including details of ownership and well licenses, maintained by service units in respect of every farm holding is systematic and valuable
- (d) Although there are periodic training programs the linkage between farmers and research seems sporadic, weak and not formalized. The concept of shuttle breeding involving the local station and farmers in the area in identifying specific characteristics they are looking for in new varieties to answer their field problems has led to successful introduction of location tailored varieties and speedy adoption of such varieties by farmers in Indonesia. Further, the full potential of varieties can be attained with greater attention to technical guidance to extension staff whenever new varieties are introduced.
- (e) Crop demonstrations do not seem to be much in vogue to teach to farmers the benefits of specific packages or practices
- (f) The systematic monitoring of extension programs prevailing at the governorate level was not evident at the national level; there does not appear to be a sense of theme and direction in the extension effort as part of the overall agricultural strategy.
- (g) Government extension effort is functioning in a separate compartment without involving the private sector; having opened the market for plant protection products, there is hardly any dialogue between the government and private sector in coordinating development activities, demand-supply planning etc. For example, from discussions with private sector it appears that they strongly support the Integrated Pest Management concept. Experience in other countries is that close involvement of private sector in supporting and participating in government's extension programs through manpower and materials has yielded good results besides presenting a unified message to the farmer and making the private sector develop a sense of social responsibility.

### **13. PROJECTED DEMAND, SUPPLY AND BALANCES FERTILIZER**

#### **Demand Estimation and Inventory Management – Current Situation**

13.1. The Land Directorate of MAAR initiates the demand estimation process by identifying the nutrient requirement for each crop according to soil status and sending them to Agricultural Directorates in the governorates for their guidance in annual crop plan preparation. Governorates compile the crop plan from plans given by the mantikas in consultation with the nahia and extension units and farmer unions. The plan evolved on this basis embodying the demand projection based on areas planned for planting in the year under planning, is forwarded to the Land Directorate at the center by July for the crop beginning 1<sup>st</sup> October. The Land Directorate works closely with the Statistics & Planning Directorate to

work out the total requirement taking in to consideration the following: (a) need for moderation and refinement of the plan and projections received from Governorates for consistency with overall production objectives (b) maintenance of soil nutrient status (c) actual consumption in the immediately preceding seasons (d) expected carry-over stock and (e) planned production by Homs factory. The proposals are placed for finalization by a special demand planning committee consisting of representatives of the Directorates of Land, Planning and Agricultural Affairs of MAAR, Ministry of Industry, ACB and the Farmers' Federation chaired by the Minister for Agriculture. The finalized plan is duly scheduled for shipments and sent to GEZA for arranging imports. The final plan is circulated to all concerned and the governorates are advised their respective approved plans.

13.2. The fact that plans are not made based unrealistically based on ideal considerations and that they are, in fact, moderated by the Directorates of Land and Planning is evident from the following: (a) Table below shows quantities finalized for 2000-01 compared with quantities projected as demand and (b) the efficient levels of carry-over stocks (see Annex 15) at the end of 1997, 1998 and 1999, the percentages being lower than in earlier years suggesting sound inventory management.

**Fertilizer Demand versus Plan Adopted – 2000 -01**

	N	P	K
Demand Projection	361,115	216,624	57,619
Plan Adopted	295,000	150,000	20,000

Source: Land Directorate

**Fertilizer Demand Projection for Future**

13.3. There are several approaches to demand projection for fertilizers depending on the country context. Measurement of potential through agronomic method is essentially idealistic and tells us what fertilizer demand could be and not what it is likely to be. The calculations based on agronomic recommendations in Annex 7 arrives at two sets of potential demand – the first is 1.015 million tons of N, 0.512 million tons of P and 0.351 million tons of K totaling 1.878 million tons of nutrients based on recommendations for different crops and soil types. This is far higher than the present consumption of 0.361 million tons of NPK, about one-fifth. The potential figure assumes that all the farmers without exception would adopt the recommendations fully. This is highly unrealistic. So we have another set of NPK figures in the same Annex reflecting the potential if two-third of the farmers were to adopt two-thirds of the recommended dosages - 0.442 million tons of N, 0.223 million tons of P and 0.153 million tons of K. Current consumption is 54% of this potential for N, 53% for P and 5% for K.

13.4. Another method is the time-series projection, which assumes that future is a continuation of the past. This is useful for developed stabilized economies and that too for consumer goods where direct influence of government policies and investments on demand for a product is relatively less important than in the case of agricultural inputs and outputs. In the case of the latter, governments in developing countries naturally want to stimulate demand for inputs and, thereby production, through its policies and investments and, therefore, a mere projection of the past in to the future is of little value.

13.5. The need-based approach is useful for under developed countries with mal-nutrition and low calorie intake, where it is necessary to aim at and promote more food production over the future through appropriate policies and investments to raise per capita calorie intake to meet at least minimum nutritional standards. This does not fit Syria where food calorie consumption level (3200) is satisfactory. We have, in the circumstances, assumed that population growth and per capita income increases would dictate future food needs and, going by the track record of the government in ensuring adequate food for the growing population, it is justifiable to assume that increasing food needs would be met and accordingly input

usage would grow correspondingly. The bases of these simple calculations are set out in annexes 16 – 1 to 6 projecting N, P and K requirements till 2010. Input consumption being a function of availability of ready market for the crop and its profitability it is not possible to consider input in isolation. Crop related reforms, crop diversification, incentives for exports and promotion of post harvest agro-based industries will all have a vital bearing, especially as many crops are close to or already in excess of the self-sufficiency threshold.

13.6. In the projections, nutrient requirements have been translated to fertilizer types and the import gap each year has been calculated. Import needs are derived for two scenarios – one for current level of production at Homs and the other for 90% capacity utilization. The difference between the two scenarios shows that utilizing the comparative advantage in manufacture of nitrogenous and phosphatic fertilizers that Syria has, by virtue of availability of gas and phosphate rock very near the plant, there could be a substantial saving of about 60 million \$ foreign exchange – import dependence in the terminal year reduces from 73% to 29%. The projections do not take into account expansion of demand arising from enlarged production for incremental exports. Increased productivity from fertilizer as well as the effect of non-fertilizer inputs, including better management practices, has been factored in. Correction in nutrient balance and a possible increase in the K ratio have not been provided for.

### **Competitiveness of Domestic Fertilizer Production**

13.7. To establish the competitiveness of domestic production it is necessary to determine the international price primarily for urea and TSP, which constitute a major portion of installed capacity at Homs. To take any one season's or year's price would be misleading as prices tend to fluctuate from year to year depending on the world market, the volume of purchase by major buyers like India and China and the demand generated by domestic season in the exporting countries. Prices at which fertilizers are traded in the international market are more market driven than cost driven. At times, prices offered are based on marginal costing with a view to maximize recovery after covering variable costs. Annexes 18 record the price history of fertilizer materials. The following is a comparison of actual prices at which Syria has imported fertilizers over the last three years. The average prices compare favorably with border prices derived from international price trends (annex 17). The lower actual procurement prices have been adopted for all comparisons.

#### **GEZA/GFC - Import Prices CIF SP million**

Year	Amm. Nitrate	Urea	TSP
1997-98	4836	6417	8804
1998-99	4273	5538	8649
1999-00	3115	6231	7600
Average	4075	6062	8351

13.8. The competitiveness of domestic production compared to these prices are summarized in the following Table at current efficiency of capacity utilization, which is very low, and at 90% of capacity as most such plants do work at these capacities. "Cost" in the Table is inclusive of profit margin.

13.9. Domestic production has to maximize capacity utilization to be competitive with imported prices in the case of all the three products. This is possible if technical bottlenecks are eliminated. Ammonium Nitrate would continue to need raw material subsidy and, in fact, even more of it, to match its prices with imports even at 90% production levels. Urea and TSP are competitive even without subsidy if production levels are increased.

**Domestic Production – Assessment of Competitiveness – Values in SP per ton**

	Ammonium Nitrate	Urea	Super Phosphate
Import Prices (landed Cost)	4492	5549	8918
Cost at current production level	5966	5978	9161
Cost at current production level without raw material subsidy	5463	5351	9606
Cost at 90% production level	4557	4110	7612
Cost at 90% production level without raw material subsidy	5054	5588	8057

these numbers are derived from annex 19 – 1.

Shaded areas indicate that local production is not competitive

**Buy or Make?**

13.10.A logical question that follows from the fact that local production has the potential to be internationally competitive is whether it is worthwhile to set up additional capacities of urea and TSP utilizing the local resources of gas and phosphate rock. The domestic demand gap at the end of 10 years is likely to be about 250,000 tons of urea and TSP will have been fully met, assuming that these products are produced at 90% capacity in the existing Homs unit – see Annex 17 - 5. The gap is too small to justify installation of additional manufacturing facility for urea solely for local consumption, especially considering that modern ammonia plants have typical capacities of 1000 – 2000 tons per day equivalent to half to one million tons of urea per year. An important consideration is whether the country would be better off buying urea from world market especially because urea is available at low prices from countries making it from associated gas, which is priced very low as it has to be flared if it is not used. Gas could be used for strategically more important purposes like power which may be more difficult to buy from outside. Natural gas combined cycle power plants, combining gas turbines with steam turbines, have the highest energy efficiency and investments are lower than that for other fuels or feedstocks. As regards TSP or DAP additional capacities, dependence on sulfur from outside sources and the volatility of DAP and phosphoric acid prices make selling phosphate rock in its raw material form relatively more attractive.

**SEED**

**Current Situation**

13.11.In the case of seed, the seed rate for different crops and the finalized cropping plan together determine the quantity of seed needed for the ensuing seasons. The finalized crop plan provides the basis for GOSM’s production plans. The quantity GOSM can make available is limited by the fact that seed is produced through poly-generational stages spread over several seasons and as such the quantity that can be made available is limited by the quantity of seed material available to produce the certified II for use in the immediately following season.

### Seed production - Plan versus Execution

	Wheat	Barley	Lentil	Chickpea	Cotton
<b>1998</b>					
Plan – tons	210000	10000	1500	1000	28000
Execution – tons	186603	2110	1044	1014	39505
Execution	89%	21%	70%	101%	147%
<b>1999</b>					
Plan – tons	160000	33000	2000	600	32000
Execution – tons	148533	30250	168	310	33830
Execution	93%	92%	8%	52%	106%
<b>2000</b>					
Plan – tons	190000	10000	1500	600	32000
Execution – tons	221274	1071	400	321	29262
Execution	116%	10%	27%	53%	92%

### Demand Projection

13.12. Precise quantification of likely future demand for seeds is more complex as production through various stages takes several seasons and is often a limitation on demand. Use of seeds may be affected in drought years and low production in the drought year may give rise to a bigger demand in the season following drought. Higher productivity being critically dependent upon use of improved seed the company would perhaps be safe in planning for a 5% growth in demand (slightly above the estimated fertilizer demand growth rate of 4.3%) per year for cereals and legumes on the plan quantities for 2000 in the above Table. As seed supplies cannot be obtained at short notice and as natural calamities like drought and floods cause serious shortages of planting material it is advisable to err on the right side in targeting for slightly higher quantities than the expected demand while planning production.

### PLANT PROTECTION PRODUCTS

#### Current Situation

13.13. The central Plant Protection Directorate maintains regular touch with plant protection sub-directorates at the Governorates and close surveillance on signs of outbreak of pests. Periodic reports are received from the field staff, which enables the Directorate to initiate timely control measures. Before the beginning of the crop year, based on past field observations and in consultation with farmers' unions, associations and extension staff, the sub-directorates prepare a statement of present and potential problems and an estimate of needs. The Plant Directorate studies these reports, assesses the needs and consults the governorates and the concerned Ministries to finalize the plan for the year. The plan is placed before the committee for pesticide supply management for consideration and approval. The plan, in so far as it relates to public supply of chemicals, is conveyed to GEZA for procurement staggered according to timing of application. The general agricultural sector requirements are also estimated which could form a sound basis for assessment of demand catered to by the private sector. However, there is no mechanism for formally involving the private sector in this planning process although they play a useful role in the overall effort toward plant protection.

#### Future Demand

13.14. As regards future demand reference is made to Annexes 11 showing the consumption of plant protection products in the government and the private sectors. It is seen that public spending on community protection has varied from SP 684 million to SP 1113 and it can be expected that the base figure of, say, SP 1000 million may be budgeted to grow at 5% a year. The private sector sales represent the farmers' individual responsibility to protect his crop, as distinct from protection from migratory pests. On the one hand, generally farmers tend to

assign a high priority for plant protection as they do not like to lose what they have spent money and energy on to raise and as such they do set aside the money for buying pesticides. This is also reflected in the estimate of industry experts according to whom the market has recently been growing at an annual 15%, which means that from the SP 1124 million in 1997 it has grown to about SP 1700 million in 2000. On the other hand, government's policy and concerted effort to reduce application of chemicals to protect the environment through an integrated approach to pest management is bound to have a retarding effect on chemical use. As such a growth rate of 15% may not sustain. Perhaps an annual growth rate of 7.5% for the next ten years may be a reasonable estimate. Since all requirements are imported, the estimated demand will be met by corresponding imports to maintain the demand-supply balance.

#### **14. IMPACT OF INPUT POLICIES ON BUDGET AND INSTITUTIONAL PERFORMANCE**

##### **Impact on Budget**

14.1. Annexes 18 and 19-1 analyze the financial implications of current operations at the fertilizer production unit as well as ACB's distribution and loan activities. Annex 19-3 shows deficits/surpluses under different scenarios of prices and production levels. Similarly, in annex 20, in the absence of gosm's annual accounts, the position for seed production is reconstructed with available information. We have tried to highlight budget implications of implicit tax/subsidy to offset sub-optimal efficiencies and subsidies extended as deliberate government policy. The former indicates areas in which attainment of normative efficiencies would automatically bring down the pressure on the budget, and importantly, without affecting farmer price of inputs and services. sub-optimal efficiencies thrown up by this analysis manifest as disproportionate transaction cost, poor return on capital investment and under-utilization of productive assets. Implications of a negative interest rate and its correction are outside the scope of this report and as such these have not been included in the calculations. The following summary is reproduced for convenience from the annexes referred to.

##### **implicit taxes and subsidies – in sp million**

activity	implicit tax on farmer	subsidy to farmer	implicit subsidy to organization	net position
seed production (ann 20)	0	2398	0	2398
fertilizer sales and production* (ann 19-1)	0	443	344	787
distribution (ann 18)	31	0	466	435
total	31	2841	810	3620

14.2 the basis and workings of the subsidy/tax on fertilizer and production are as follows.

- (i) When ACB selling prices, adjusted to equivalent of landed cost of world prices, are below landed cost of world prices there is a subsidy. When ACB adjusted prices are higher than landed cost of world prices there is a tax. This subsidy or tax occurs on the entire volume sold.
- (ii) At the same time the local production unit's material has a cost borne by the government, directly or indirectly, and is sold at ACB prices, adjusted to landed cost, the difference would represent the implicit subsidy to the producing organization when the ACB selling price is above landed cost of world price. when ACB price is, however, below landed cost of world price, the latter is taken to compare with social cost of production to determine the net element of subsidy to production unit because a part of the subsidy compared to world price goes to the farmer. Production cost, in turn, is considered at current sub-optimal efficiency and at social prices. Production

cost does not need adjustment, as this is the equivalent of landed cost of imports. the subsidy to production unit naturally occurs on the volume produced.

subsidy/tax on farmer on fertilizer sales volume			
	amm. nitrate	urea	tsp
Landed cost of imports – sp per ton	4492	6549	8918
Acb selling price equivalent of landed cost – sp per ton	4587	6657	7107
Minus indicates subsidy, plus indicates tax – sp per ton	+95	+108	1811
Estimated annual sales quantity – tons	56000	483522	276200
Value of subsidy/tax – million SP	+ 5.32	+ 52.22	- 500.20
Net total – million SP			- 442.66 say 443
Implicit subsidy to producing organization on volume of production			
	amm. nitrate	urea	tsp
Social cost of production at current efficiency – SP per ton	6463	8351	9606
ACB equivalent of landed cost for amm & urea and landed cost of world price for tsp – SP per ton	4587	6657	8918
Implicit subsidy – SP per ton	1876	1694	688
Production 2000 plan	56000	77000	158000
Value of implicit subsidy – million SP	105.06	130.44	108.70
total – million SP			344.20

### Deficit/Surplus Implications under Different Scenarios

14.3. Annex 19 - 3 analyses the DEFICIT/SURPLUS implications of pricing decision on subsidy for estimated fertilizer consumption for 2001 and 2004.

### Exchange Rate Implications

14.4. Today the conversion rate is in line with the common rate although it may still be low compared to what is referred to as the “neighboring market rate” which varies between 46 and 51 per dollar. If the exchange rate is to be adjusted for fertilizer imports by, say, 2 SP per \$ representing the mid-point of the neighboring rate range the import costs would go up by 48/46 by 4.3 %. The revaluation on this basis for imports, to determine the extent of implicit subsidy, has not been possible for want of detailed C&F costs of each shipment. Assuming that 50% of requirements are imported the un-recovered cost could be very roughly estimated to be about 2.15 % (half of 4.3%) on the total value of all consumption. This could be around SP 100 million per year and would come down as local production increases.

14.5. The exchange rate revaluation would increase the border price and make local production correspondingly more competitive against imports.



14.6. As regards the effect of adopting “real” exchange rates on local production cost, in the Syrian situation, its impact is limited as seen from the following figures. Sulfur is the only major imported material apart from spares. The cost of sulfur is SP 2325 and 0.430 tons of sulfur are required to make a ton of TSP (at 0.34 t sulfur/ton of H<sub>2</sub>SO<sub>4</sub>, 2.8 tons of H<sub>2</sub>SO<sub>4</sub> to make a ton of P<sub>2</sub>O<sub>5</sub> and TSP contains 46% of P<sub>2</sub>O<sub>5</sub>). This would result in local production cost of TSP going up by  $2325 \times 0.34 \times 2.8 \times 0.46 \times 0.043$  (that is, 4.3 %) = SP 43.78 per ton of TSP. Against this correspondingly, the imported cost of SP 8351 would go up by 4.3 % = SP 334 per ton of TSP.

#### **Seedlings for Fruit Trees and Forest Trees**

14.7. About SP 60 million per year on fruit seedlings and SP 336 million per year on forest seedlings represent the uncovered part of the cost, that is, an approximate total subsidy for reclamation of hilly areas for fruit trees, by way of seedlings, and for promotion of social forestry and environmental improvement.

#### **Institutional Performance**

14.8. Allowing for limitations of data availability, estimates of implicit taxes and subsidies still do give a fair amount of assistance in identifying areas that are draining resources unproductively and directions in which repairs need to be carried out. Public organizations have been made autonomous and as such they are required to operate within budget discipline and find their own resources for operations and productive investment, the latter with the approval of the State Planning Commission. There are no problems when institutions are making profits and cash surpluses. Those working below norms may be faced with either of two situations. One, they are making losses and so run out of cash. Two, they are making even good book profits but, paradoxically, suffer acute cash shortage due to poor working capital management reflected in heavy stocks and/or large receivables. As regards the first category the government which is still the deciding authority on pricing issues ensures that a cost plus margin is allowed so that losses are avoided which, in effect, could and does lead to inefficiencies in the system being underwritten at the cost of the farmer or where it is not covered by price, from the budget. Deliberate policy decisions to pass on benefits to farmers taken by the government are rightly compensated from the budget. Cases of cash shortages caused by poor working capital management have to be met by these institutions either through commercial bank borrowings or through assistance from the Public Debt Fund, with the approval of the Ministry of Finance. In either case, so long as the lending is from one public lending resource or institution to another public institution it casts indirectly a burden on the exchequer. Artificial pricing, inter-institutional dues and public debt fund supports could result in inefficiencies in one sub-system to spread like contagion to another unit in the system. Autonomy, zero budgeting and MBO are excellent first steps taken by the government which have to be followed up by letting the institutions seek a market price – and not an administratively fixed cost plus price – and operate under pressure of competition to raise the level of excellence. ( mbo: management by objectives – system under which quantified objectives are set for different functions and operational levels of an organization for measuring progressive achievement with reference to these objectives as basis for continuous monitoring of activities and for timely corrective management decisions)

14.9. Study of the financial analysis clearly indicates that action in the following directions are needed to correct the situation in order to check further accumulation of deficits in the system.

- (a) Increasing fertilizer production level close to installed capacity is a matter of urgency. Implicit subsidy of app SP 595 million annually to support low production efficiency could be invested capitalized at 20%, justifying a capital expenditure of nearly SP 3000 million, if need be, to restore the plant’s comparative advantage in urea and TSP. From Annex, it can be seen that by 2004, after restoration of the plant, it is possible for it to

match its costs with world prices, without raw material subsidy, and generate more than normative returns by SP 285 million and SP 257 million on urea and TSP respectively. Ammonium nitrate continues to register a negative return of SP 61 million even at 90% capacity. Gradual phasing out of the ammonium nitrate plant may be considered as it is far cheaper to import than to invest further sums on its local production.

- (b) By increasing production foreign exchange of over 60 million \$ per year can be saved (see Annex 18), prices of urea and TSP can be reduced to world levels and export prices can be charged for raw materials supplied to the plant
- (c) Problems in distribution and loan activities are more complex as there are no machines, which could be revamped to produce more! More effective working capital and expense management is needed and these take training, strict accountability and time. Problems in this area are unlikely to be resolved until commercial and lending activities are separated and distribution at wholesale and retail levels is handed, in stages, to private sector operating on fixed margins.

## **15. INPUT POLICIES IN RELATION TO AGRICULTURAL GROWTH AND SECTOR POLICY**

### **Aggregate Performance**

15.1. Aggregate performance of the agricultural sector in terms of production growth and profitability and on primary resource use are influenced by several factors of which input policies and delivery system is one. Although input and output policies can be said to be mutually influencing, in the sense that the efficiency of the input system would affect production and productivity, in reality, farmers find it worthwhile to adopt modern practices and resort to input application to increase production and protect it, if market certainty and stability and a return consistent with risk level are perceived as assured. In such a situation they even overcome liquidity problems in several ways, if the formal credit is unable to cope with pressures, to seek supplies of seeds, fertilizers or plant protection chemicals to cash in on market opportunity. Sound output policies creating these market benefits and support through investments in infra structural facilities like research, extension, road network, market places for price formation in a fair manner and market information, induce farmers to apply more inputs – sometimes more than is what is even good. The suction, as it were, originates from the output side and, then, if the requisite efficiency in the input system is lagging the process gets frustrated. A similar frustration could also arise if, after successful activation of sound output and matching input systems, large harvests and farm incomes do not find consummation in the form of availability, in the vicinity, of goods and services that contribute to better living. Notwithstanding the basic mutual dependence of the input and output systems, it is to be recognized that an input system, however good, cannot by itself increase production and productivity but has to depend on the necessary motivation to be stimulated from the output side.

15.2. Syrian agriculture has responded well over the years to rapidly increasing population, over 3% annually till the eighties and close to that number thereafter, by providing adequate supply of calories. From annex 21, it will be observed that irrigated wheat production increased from 1.2 million tons in 1991 to 2.5 million tons in 1998, ignoring the steep fall in 1999 because of acute drought conditions – an increase of 101%. Similarly wheat, barley, lentils and chickpeas, the principal food items, registered increases over the same period of 46%, 67% (but in 1996 after which there has been a decline), 213% and 216% respectively, presenting, on the whole a very good performance.

15.3. During this seven-year period nutrient consumption increased by only 19% from 303294 tons to 361363 tons. From the Annex it is seen that yield growth or productivity has lagged behind by quite large margins, except in the case of rain-fed barley, suggesting that increased

production has come about more through lateral growth than vertical intensification. To this extent the input policy and system can be said to have under-performed.

15.4. Figures of loans classified by crops in Table 128 of the Annual Agricultural Abstract 1999 shows that 71% of the kind loans went to wheat and 19% for cotton. All other crops took up the remaining 10% of loan issues. Out of the total fertilizer sales, loans by ACB account for approximately 85% of the fertilizer value, after due allowance for the fact that these loans cover other inputs like seeds, leaving about 15% as cash sales. Even if all these cash sales accounting for 15% of the volume had been taken up by fruit trees that constitute a large portion of the country's agricultural production base – this is unlikely as wheat, a major consumer, would have accounted for a part of these cash sales - it is still indicative of a narrow consumption base for fertilizer considering the rich variety of crops in the country. This is another area of under-performance by the input system.

15.5. The positive results of the input policy are as follows: (a) inputs availability to farmers without major interruptions (b) timely demand estimation to ensure macro availability without unduly large inventory costs (c) imports at reasonably competitive rates (d) availability of foreign exchange for all inputs without difficulty (d) private sector participation in plant protection product import and marketing successfully launched (e) high replacement ratio for improved seeds especially for open pollinated crops in respect of which farmers tend not to renew seeds often enough (f) credit availability for inputs

15.6. On the other side of the Balance Sheet are the following aspects: (a) fertilizer consumption has not increased productivity enough to avoid large increases in the cultivated area (b) K ratio is lagging - the theoretical overall country ratio of NPK is 1: 0.5: 0.35 compared to the actual of 1: 0.5: 0.03 perhaps because of insufficient use of fertilizers in the fruit production areas and/or high price of potash fertilizer © low urea prices or for that matter low N and P fertilizer prices should not lead to use of them as substitutes for good management (d) no thrust to encourage saving among farmers and to make them independent of outside credit support for inputs (e) practically no participation by private sector in fertilizer marketing either at the apex level – which has been by a decree opened up for private sector participation – or at the retail level (f) no involvement of the private sector in the input planning and execution process even in the agro-chemical sector where private sector has already been allowed in (g) quality standards not formalized, publicized and enforced visibly to impart confidence to farming public and to encourage genuine operators in distribution.

15.7. Value-cost ratios, worked out on a national basis on the figures from the Agricultural Abstract (see annex 21), are not very encouraging considering that agriculture in the country is predominantly rain-fed. Ineffective timing and other application deficiencies giving insufficient yield responses to fertilizer application could be another reason for extensification taking precedence over intensification. Considering that inputs are given at almost constant prices and that output absorption by the public system at assured prices is automatic – protected from proverbial market fluctuations caused by varying harvest volumes - the only space left for the farmer, to improve profitability, is to increase yield with available inputs and better management practices. Paradoxically, however, in the case of lentils and chickpeas in spite of relatively much lower VCRs, compared to wheat and barley, substantially increased production came about both through yield increases and expansion. The report of the output market consultant would undoubtedly throw light on whether this is due to a more spontaneous market structure provided for produce of these crops by a comparatively wider private sector participation. It is also a point for study, beyond the scope of this report, to evaluate the extent to which, because of slow yield growth, the rigid crop plan system has unintentionally encouraged farmers to over-exploit ground water, reduce fallows and expand cultivation in to marginal and environmentally fragile areas.

15.8. Moisture availability being a critical factor to ensure fertilizer response, semi-arid regions need to pay special attention to use of organic material to hold water and nutrient in the soils combined with moisture retention techniques. Not much attention by extension to these concerns was evident. Preservation and proper utilization of land quality and water, which constitute the primary resources, should be placed high on the agenda of extension.

15.9. In summary, while production has increased to match rising demand for food, the following areas of concern need attention: slow growth in fertilizer use, effectiveness of extension effort to increase input response and land productivity, the extent to which the crop plan is useful as an instrument to promote productivity.

### **Sector Policy**

15.10. The government is committed to policy and institutional reform and increasing the role of the private sector in agriculture. Old decrees and laws have already become inconsistent with many current pro-reform actions of the government. For instance, the crop planning and enforcement system embodied in Law 14 is currently observed for the procedural aspects but without enforcement of its draconian penalties and disentitlement without compensation for failure to comply with the crop plan.

15.11. There is need for enacting comprehensive new laws embodying the New Reform Policy of the government shedding the language of a centralized authoritarian economy which is fast giving way to a market oriented mixed economy where both private sector and public sector complement and compete with each other on level playing ground to establish new standards of efficiency, service and excellence. The New Reform Policy, couched in pro-active language and expressing keenness to utilize private resources in economic development has to be widely publicized and dramatized in its launch by the high authorities of the land and articulated by senior politicians and Ministers at various forums such as Chamber and association meetings in order to create a new mind-set among all stakeholders. These are important steps to improve effectiveness of the agricultural policy in the new context and to make it sustainable.

15.12. Low interest rate on agricultural loans much below the inflation rate may be encouraging borrowings even by large farmers who have the resources to depend on the public credit system crowding out those in genuine need. Consequently, the consumption of inputs gets limited to what the public system can offer by way of loans. Increase in the interest rate purely for this reason and not for wider economic ones, seems necessary to encourage cash buying thereby create a strong cash sector which the private retail outlets could serve.

15.13. The document titled “The Sectoral Plan for Agriculture, Forests and Fisheries in the 8<sup>th</sup> Five-Year Plan” states that all sectors would “import production inputs funded by the export of foreign exchange”. It is hoped that the recent October 2000 decree permitting private sector to import fertilizers is not subject to this condition. As the sums for fertilizers are large it would virtually reduce the permission to a nullity if this condition were applied.

15.14. The same document also refers to enhancing the capacity of GOSM while there may be avenues for GOSM to continue to play its important role by enlisting the services of the private sector through sub-contracting production activities, leasing out processing facilities and encouraging smaller decentralized units for processing to be set up in production areas.

15.15. Autonomy to public sector organizations would remain ineffective so long as the government holds the power to fix their selling prices. There would be no pressure or motivation to enhance efficiency, produce at competitive cost and offer good services if shortcomings in these respects can be made up by a cost plus price.

## **16. RECOMMENDATIONS**

16.1. Presence of an energetic but under-utilized private sector, absence of any major exchange availability concerns for ensuring continuous supply of inputs, government's initiatives in achieving a high percentage of seed renewal rate for self-pollinated crops, integration of inputs and outputs in the credit system, good land records, excellent road access to farming areas and a strong cooperative system well-knit from the farm to the national level are strengths that are of immense significance to the Syrian agricultural economy. These are the very areas of weakness and concern in many developing countries. Therefore, the issue is to utilize these strengths through appropriate policy and institutional instruments.

16.2. Absence of competition in production, procurement and distribution and unnecessary restrictions on private sector participation at the retail level could be denying farmers the benefits of a more open system in the form of better service and lower costs. The public system in fertilizers and seeds is characterized by performance of services that could be decentralized for greater flexibility, efficiency and cost-effectiveness. The government, instead, could assume the more critical responsibilities of facilitating and regulating the private sector, umpiring between stakeholders when there is inconsistency of interests, intervening, when necessary, to ensure continuity and adequacy of supplies and donning the role of a market operator of last resort.

16.3. In reviewing the existing policies and institutional arrangements, weaknesses and strengths in each area have been highlighted in the earlier parts of the report and the recommendations herein will try to address those concerns to the extent they lie within the scope of this mission's study and brief. References to those earlier parts of the report are cited, wherever necessary, for convenience and to avoid repetition of the background.

## **FERTILIZER**

### **16.4. Production**

- (a) Phase 1 – To save the high cost of poor production efficiency at Homs, it is necessary to invest and remove technical constraints and inter-plant capacity imbalances so that full capacity could be attained at the soonest. This would save about SP 595 million annually, which is ultimately a burden on the budget, as the government owns the company. Higher production would also save annually over \$ 60 million in foreign exchange by substituting imports without increasing farmer price, since domestic production enjoys comparative advantage at normative capacity. (see paragraphs 7.12 and 7.13)
- (b) Phase 2 (24 months from commencement of action under phase 1) – on completion of the revamping program, when the unit's value and salability improves, various options like joint venture, leasing etc could be explored according to government's policy of introducing changes from existing system as smoothly as possible. An option could be to lease out the unit to a private operator on condition of offering to the domestic market, say, a guaranteed minimum of 60% of capacity at an agreed price formula based on critical input costs. The one offering the lowest price linked to input prices could be given the award, of course, after primary screening through pre-qualification technical bids. The contract term could be 10-15 years with mutual option for renewal and during the term all maintenance, replacements and capital expenditures would be the lessee's responsibility. The lessee would not be allowed to retrench existing staff except on disciplinary grounds or alter their emoluments adversely. Reduction of staff by attrition would be permitted. Another option could be to sell the assets, based on an expert-evaluated fallback price and award it to the bidder who offers the best price related to the fallback. A condition would be that the plant is run for a minimum of, say, 10-15 years and that a minimum of 60% of capacity is made available for local marketing. Under this option, the existing company would continue to exist with all its employees and receivables and liabilities. Employees can join the services of the buyer of the asset at his option and selection. The rest will have to be given voluntary separation benefit that will put adequate cash in their hands to set up some profitable activity on their own. Some of them could be considered for dealership of fertilizers. these are various possibilities and the choice would depend on minimality of repercussions.

### **16.5. Importation**

- a) Phase 1 – Parallel imports by GEZA, ABC's marketing arm and private entrepreneurs on level playing ground, in terms of availability of foreign exchange, rate of conversion and such critical considerations, could be introduced immediately without causing any major dislocation. Peasants' Federation may wish to participate in import and/or distribution and this to be encouraged. Government has already issued a decree allowing private sector to import fertilizers. An amendment may be needed to include ACB and the Federation. This arrangement has the advantage of retaining existing expertise with GEZA as "importer of last resort" should ACB and the private sector, in the initial stages, fall short of their procurement plans causing a demand-supply gap. Issues of coordination and monitoring assume importance in the new situation and the necessary institutional and procedural arrangements and safeguards are outlined in Annex 24.
- b) Phase 2 – Monitored and umpired by the government several private sector importers with their independent marketing organization and distribution structure operating in a competitive environment will have emerged. This might take a few years – sometimes 3-5 years, going by the experience in other countries – and during this interim period, there is no institutional vacuum as ACB's marketing arm would continue to be playing its role as at present and with the additional strength of being its own importer.

- c) The unit cost of nutrient in DAP is often cheaper than that in TSP (see table below). Besides this, DAP is not hygroscopic and is easier to handle and apply besides containing a starter dose of nitrogen, needed at the basal stage for many crops.

#### DAP - TSP Price Comparison

1	CIF price of TSP – Last 3 years' average SP/ton	8351
2	Per kg cost of nutrient – 46% in one ton or 460 kg per ton – 1 divided by 460	18.15
3	DAP nutrient content 18% N and 46% P = 64% that is, kgs per ton	640
4	Price of DAP nutrients of 640 kgs at TSP nutrient cost per kg – $2 \times 3 =$ SP per ton	11616
5	Actual last price of DAP – (GEZA) - \$ 195.95 or SP per ton at 46.5	9112

Considering the lower nutrient cost in DAP and the substantial cost saving per ha it is advisable to gradually switch to DAP. Homs unit should also examine the techno-economic feasibility of converting capacity from TSP to DAP by utilizing the extra ammonia capacity if ammonium nitrate, which is not competitive, is shut down.

#### 16.6. Marketing and Distribution

- (a) Phase 1 – Private importers, at their option, would be allowed to limit their activity to importing and handing over the material to ACB. However, this option would be limited to the first full year of operation, the objective being to give them time to muster resources, install a distribution network and understand the business. The option could be extended for one more year if circumstances warrant. Thereafter, it is obligatory to market the products they import.
- (b) Phase 2 – All marketers, ABC or private, would be obligated to take a quantity equal to their imports (or such ratio as may emerge according to volume of local production with reference to total estimated demand) from Homs for distribution. Homs would enroll approved importers as Distributors for its production along with AIMO. Homs would be equipped with a marketing manger and supporting staff.

#### 16.7. Wholesale and Retail Structure

Phase 1 – Under current regulation fertilizer can be handled at the retail level only by joint ventures of agricultural engineers in collaboration with the syndicate and the ACB. These outlets are doing excellent work with plant protection products, vegetable seeds and micro-irrigation equipment. However, many of them are constrained by lack of working capital to expand even existing product lines and are obliged to borrow from the informal money market at high interest rates. A capital-intensive product like fertilizer is often beyond their capacity. Therefore, it is necessary to mobilize other private dealers who are active in the market for various other products including farm requisites. Fertilizer dealership at the wholesale and retail levels should be open to anyone wishing to deal with it, subject to basic qualifications of a place of business and enough storage, by registering with the nominated authority in the governorate. The registration and its obligations are dealt with later. This measure would widen the retail base and enable importers/marketers, including ACB, to develop an extensive network. Eventually, the market structure that emerges would consist of joint ventures operated by agricultural engineers, cooperatives and private dealers.

Phase 2 - Credit procedure would need reorganization. Farmers should be enabled to take inputs against credit from the cooperative or joint venture or private outlets, by their choice, against the cropping permit or credit coupon without restriction on the quantity they wish to buy. Credit, however, would be limited to eligibility, any excess input needed over the credit limit made available on cash terms. The outlet delivering the material would cash the coupon from ACB, against due evidence of delivery. This would

relieve ACB of the retailing function and help reduce their costs. This would forge closer relations between farmers and their retailers.

Phase 3 – when action under phase 1 is functioning well, say, in year 3 or 4, private dealers could be allowed to distribute seeds and plant protection products. In fact, the ideal situation is one in which the farmer is able to go to a retailer of his choice who offers the best terms and service and buy everything that he needs.

#### **16.8. Agricultural Cooperative Bank**

Phase 1 – ACB being allowed to import fertilizer is a logical backward integration to their existing activity as they are already handling the physical part of all incoming shipments, only the contractual part resting with GEZA. ACB would gradually have less to do with direct retailing of inputs and more to do in distribution and marketing.

Phase 2 - At the end of two years, that is, on completion of Phase 2 under Marketing and Distribution, ACB's distribution activity will be formed into a separate organization without disturbing its cooperative affiliation and structure. ACB would continue to be in agricultural banking while the newly formed organization, say, the Agricultural Input Marketing Organization (AIMO), would be engaged in importation and marketing of agricultural inputs. AIMO is free to have a distribution network consisting of cooperatives and private dealers. Nothing stops AIMO, if they function efficiently, from entering other businesses such as imports of agricultural machinery, micro-irrigation equipment, vegetable seeds and exports.

#### **16.9. Proposed Pricing Mechanism and Pricing Options**

(a) A coordinated pricing mechanism will be needed with the simultaneous operations of AIMO and the private sector on the one hand and simultaneous availability of domestic production and imports on the other. The proposed arrangements are covered in Annexes 22 and 23

To be able to diagnose the price corrections needed in the proposed marketing environment where Homs unit would act independently and compete with imported prices, comparisons are made of “private” (Homs) costs of production at current efficiencies, current price compensation to the Homs unit (which is to be distinguished from ACB selling prices to farmers), world prices (adjusted to landed cost) and social costs of production at current and optimal efficiencies. All these values are taken from Annex 19-1. The term “private prices” of revenues and costs is not to be confused with those of the private sector production as it merely refers to the revenues and costs at the micro level (i.e. the Homs unit) as distinguished from what these are at the social level.

#### **Ammonium Nitrate**

(b) There is no comparative advantage in Ammonium Nitrate even after producing at 90% capacity as will be seen from the following table. If gas were sold to the unit at border price, increasing private cost from SP 4557 to SP 5054, private cost would be in line with social cost of this product. If price compensation to the unit is also raised by SP 450 to SP 5615 per ton - since “cost”, by definition, includes profit - then private profit would be SP 561 and social loss would be the same sum. The latter could be wiped out by recovering the surplus from the unit. Ammonium nitrate is being sold at high prices in the informal market and the price increase would help to curb this premium.



At current sale realization, world price, subsidized cost, 90% production			
Ammonium Nitrate at 90% of production capacity	Revenue	Cost	Surplus
Private	5165	4557	608
Social	4492	5054	-562

At revised sale realization and unsubsidized cost			
Ammonium Nitrate at 90% of production capacity	Revenue	Cost	Surplus
Private	5615	5054	561
Social	4492	5054	-561

Thus, the option regarding Ammonium nitrate is one of the following. (i) maintain current selling price and incur a social loss and private loss without raising capacity utilization (ii) raise capacity utilization as early as possible and improve the situation as in the first Table above, without changing selling price (iii) change selling price and recover the surplus from the unit or by adjusting against normative compensation for urea/TSP (iv) shut down the plant or allow it to run down without further infusion of investment and import at cheaper cost. Simultaneous production and import at two different costs would necessitate a tax on imports to equalize its cost with that of local product. Therefore, under alternative (i) to (iii) it is advisable to stop imports and depend solely on domestic production or levy a tax on imports. Ammonium nitrate is a low analysis fertilizer and leads to additional carrying and handling costs by about one and half times that of urea. Its import could be allowed only by specific permission to meet specific soil and crop needs, if local production is inadequate.

#### Urea

(c) Current urea realization allowed to the production unit is lower than imported landed prices by about SP 184. The unit's negative margin reflects the cost of low efficiency and raw material subsidy supported by the state (see first Table below). As the difference between import and present selling price is narrow it is possible to allow import prices to rule the market, the effect being only a small rise of SP 184 per ton. From the second table below it is seen that even this does not make a major difference to private and social situations, both remaining negative. The implicit subsidy to the unit for low efficiency would continue till Homs is placed in a position to produce to high capacity when world prices can be matched without subsidy (see third table below).

Current Situation			
Urea – cost at 2000 plan production	Revenue	Cost	Surplus
Private	6365	6978	-613
Social	6549	8351	-1802

If Sale realization is increased by SP 184 per ton to match import price			
Urea – cost at 2000 plan production	Revenue	Cost	Surplus
Private	6549	6978	-429
Social	6549	8351	-1802

Situation after high capacity utilization at Homs – matching import price and at unsubsidized cost			
Urea at 90% of production capacity	Revenue	Cost	Surplus
Private	6549	5588	1066
Social	6549	5588	1066

#### Triple Superphosphate

- d) As regards TSP, current sales realization to the local production unit is lower (SP 7425) than landed cost of imports (SP 8918). However, the ACB sale price is higher (SP 8200) than Homs' realization (SP 7425) because ACB averages the lower local cost (SP 7425) with higher imported cost (SP 8918). This same practice would continue, in the

future, with AIMO and private marketers till expansion. After expansion there would not be any need to import as the entire requirement would be met from production. Current ACB farmer selling price of SP 8200 (equivalent to SP 7107 landed cost of imported, after removing distribution cost) being lower than landed cost of import (SP 8918) cannot be sustained. After expansion, it is advisable raise the realization to the Homs unit at least by SP 632 to SP 8057 equal to cost at 90% production – this could be done in two or three stages, if necessary. This is a price that enables the producing unit to meet its cost and is at the same time below landed cost of world price by SP 861 indicating that there is comparative advantage in TSP reflected in the social surplus of like amount of SP 861 as seen from the second Table.

Current situation			
TSP – cost at 2000 plan production	Revenue	Cost	Surplus
Private	7425	9161	-1736
Social Prices	8918	9606	-688

After expansion and without raw material subsidy			
TSP at 90% of production capacity	Revenue	Cost	Surplus
Private Prices	8057	8057	0
Social Prices	8918	8057	861

#### Raw Materials

- e) In Phase 2 under “Production”, that is, after the Homs unit is in a position to attain full capacity, it is advisable to bring the rock phosphate price charged to Homs unit in line with the rock export price of \$ 21 per ton after deducting FOB and incremental transport costs. Similarly, increase gas price for ammonia production at Homs, from SP 1 per cubic meter to be in line with \$ 2.5 per mmbtu, (equivalent to SP 3.75 per cum), which according to the writer’s information is the international price prior to the recent oil price increases. The gas price is subject to verification. These are not likely to affect the profitability of Homs so long as it at high capacity.(annex 19 –2) for gas and phosphate rock prices and calculation of implicit subsidy element)

#### Sulfate of Potash

- f) By allowing import price of sulfate of potash at landed cost plus a distribution margin of 10%, its price is likely to fall by about SP 1000 per ton as seen from the following calculations. CIF price \$ 196 at 46.50 SP/\$ is equal to SP 9114. To this should be added 3.5% for insurance and finance charges and SP 275 for customs and clearance.  $SP\ 9114 \times 1.035 + 275 = SP\ 9708$ . With a 10% mark-up and an average transport of SP 303 the ex-warehouse price would be SP 10,982, say, SP 11,000 against the current price of SP 12,100.

**g) Summary**

Ammonium Nitrate	Stop imports OR PLACE A LEVY. Increase price for local production by SP 450 per ton
Urea:	Allow import prices to rule the market, Homs matching import prices. Prices may rise by a marginal SP 184 per ton
Triple Superphosphate	Marketers would average import and local production prices as at present. After expansion raise price by SP 632 or in 2 or 3 doses from now. No averaging after expansion as there would be no need to import.
All Products	Higher capacity operation at Homs is essential and of priority, especially for urea and TSP. Withdraw subsidy on raw material prices
Sulfate of Potash	Under the new system price is likely to fall by SP 1000 per ton
Features	None of the above involve increase in implicit subsidies – farmer price increases for ammonium nitrate by SP 450 per ton, urea by a possible SP 184 and by SP 632 for TSP, in stages. Substantial saving of implicit support costs when local production is at high capacity.

**16.10. Price Support Policy**

- (a) With the possibility of reforms in the output sector, free pricing of produce would impose a considerable disadvantage on farmers raising crops under more difficult conditions and as such the need for reducing input costs to such farmers may become necessary. It is difficult to offer different prices to farmers for the same crop but relatively easier to differentiate on the cost of input. A uniform subsidy benefits farmers regardless of their economic capacity and productivity levels and makes no allowance for higher production costs in zones with less rainfall and greater uncertainty. As such within available resources, and consistent with production objectives, the system should ideally target the benefit to neutralize the natural disadvantage without encouraging uneconomical production in marginal areas. Criteria for targeting could be the low rainfall and marginal geographical contiguous segments. This consideration is significant in the Syrian situation where climatic conditions are so varied as to confer differential natural advantages and handicaps thereby causing different productivity levels and production costs for the same effort. However, implementation of targeted subsidy has many implementation problems. Sufficient safeguards would also be needed to ensure that benefits extended to the disadvantaged are not “bought over” by the advantaged. A detailed study of the feasibility of targeted subsidy in the Syrian context may be needed. It would be extremely useful, for such policy purposes to initiate a study of the production costs of different areas, identify target segments and suggest a methodology for aiming benefit of lower input costs to farmers with higher production costs. This lies within the scope of strategic crop study and other commodity studies.
- (b) Subsidy, implicit or explicit, should not support sub-normative efficiency in input production or distribution. In public companies that are in need of reorganization or investment in additional technical capabilities, the support should be limited to a specific period to allow recovery. The suggestions made under production and distribution are guided by these considerations.

**16.11. Fertilizer Policy**

Fertilizers, both organic and inorganic, are critical for increasing productivity. Policy guidelines on importation and adequate mechanisms to gather and disseminate market information would create an atmosphere of certainty and stability to reassure the private sector that the time has come for bold investments in input marketing. Government would take early action to formulate and publicize a Fertilizer Policy covering, among other issues, the following aspects: promotion of usage, supply management, availability of foreign

exchange for import, pricing and subsidy, utilization of local resources, encouragement of the private sector, including cooperatives, rural credit, extension strategy, support for research, quality standards and enforcement and environmental protection.

#### **16.12. Quality Control and Regulation**

Existing legislation covering fertilizer being inadequate, it would be replaced by a new Fertilizer Law covering the following aspects: to stipulate quality standards for different fertilizer types, prescribe testing procedures and tolerance limits for deviation, nominate enforcement authorities, make it obligatory for anyone wishing to manufacture or import or sell or offer to sell fertilizer to seek registration with the nominated authority, prescribe as a condition of registration the obligation to furnish information as required on stocks, arrivals and prices, make it also obligatory to display at the premises the stock and prices and stipulate that in every case a sale is made a bill of sale bearing the name and land identity of the buying farmer is issued. It should be made obligatory for the importer to declare by clear markings on the bag the name of fertilizer, identification of the importer, including the address of his place of business, percentage of primary nutrients, total weight (gross or net). A special corps of fertilizer quality inspectors is not necessary, as this would be impractical in terms of cost and coverage. Instead the governorate and mantika authorities, with special powers under this legislation, could be nominated as designated inspecting authorities under the quality law. The project would support initiatives to establish quality standards and the necessary testing and related facilities at important centers, as the existing central testing facility at one location does not convey seriousness about quality assurance to the farmer. Technical Assistance of one international and one national expert to assist in drafting the quality law and standards and design the enforcement system. (See paragraph 11.1).

#### **16.13. Planning and Monitoring**

this is covered in annex 23.

### **SEED**

#### **16.14. Seed Policy**

Seed production and usage is too important to the country's food production to be left to natural forces for development. A twin approach of sustaining the production and distribution base through the public system and creating a favorable environment for private sector participation could be a practical means of achieving the desired ends.

#### **16.15. GOSM**

- (a) Phase 1 – Private sector plays a valuable role in many countries in producing quality seed and propagating its use. In respect of open and self-pollinated varieties GOSM should use private sector for multiplication and processing based on competitive offers for services. GOSM would supervise field production, sub-contract processing to private sector. Contractor producers should have the option to buy a part of the output for distribution through their own channels. GOSM should commence marketing through private fertilizer importer/marketers besides AIMO.
- (b) Phase 2 - Existing processing units under the Ministry of Supply would, in stages, be leased out to private sector and it is likely that processing costs would get reduced through utilization of installed capacity in the off-season for other activities like wheat crushing and lentil splitting.
- (c) Also Phase 2 - In competition with GOSM, production, processing and marketing of public bred hybrid varieties for strategic crops could be thrown open for the private sector in Phase 1. However, it is necessary to give producers a reasonable return on capital. Seed being a critical input the present policy of selling seed at cost by GOSM is justified considering the enormous social advantage in the form of higher production. However, to

facilitate private sector participation, it is necessary to provide a level playing field by extending the reimbursement of subsidy to all producers – GOSM as well as private sector.

- (d) Phase 2 - Strengthen the seed quality inspection system by making the quality division of GOSM an independent organization as a National Seed Development & Certification Agency (NSDCA). With privatization, it would be more appropriate to install an independent quality enforcement organization since it is not appropriate that GOSM, as seed producing agency along with private sector, should don the role of both “player” and “referee”. NSDCA would certify quality (seal carried on every bag), verify quality in the market, assist the variety release authority in making independent pre-release variety evaluation, give guidance on quality maintenance in the field and in processing, provide project guidance and advice to intending private entrepreneurs and administer subsidy reimbursements.
- (e) Also Phase 2 – An annual seed coordination meeting chaired by the Minister or Deputy Minister and with representation from all seed producers, public and private, Directorates of Agriculture of the Governorates, Directorates of Extension and Research at the Center would review the production and supply plan for the ensuing season. The meeting would be held well in advance of the season to permit enough time for alternate action to multiplication or placement of stocks in areas of expected consumption. The decisions of the meeting would be translated to specific time-bound responsibilities of the participating parties and communicated to them for compliance. Another meeting of the same format would be held on the eve of the season to review implementation of the plan.

#### **16.16.Seed Law and Quality Assurance**

- (a) Complaints of inconsistent quality, mixture of “rogue” species, yields below expectations were heard during field visits indicating the need to tighten the quality assurance system. While there may be field supervision to ensure that the intended seed material, for genetic purity, is planted, there is no declaration on the bag to assure the farmer of minimum standards of genetic and physical purity of the given variety. Such open declarations and the requisite verifications in the field and market place are not only quality assurances but also quality education to farmers. (See paragraphs 7.30 and 7.33).
- (b) Phase 1 - Toward the above end, the NSDCA would be established with the functions listed in the earlier paragraph, supported by seed laboratories at important production locations with adequate staff, equipment, computers and vehicles. NSDCA would charge a certifying fee, which would not be so high as to make evasion attractive.
- (c) Also Phase 1 – At an early date a Seed Law would be promulgated containing the following: making it illegal to produce, stock or sell seed unless it is an approved variety, packed, sealed, certified and the packing and label comply with disclosure requirements, stipulating procedures for new releases and registration of varieties including imported varieties, specifying quality standards, conferring legal powers on NSDCA, laying down penalties for deviation, prescribing obligations of seed producers and dealers, specifying disclosure requirements (variety name, producer’s name and address, purity percentages, production date and date of expiry for viability) and similar issues.

#### **16.17.Pricing and Subsidy**

- (a) Pricing for barley, lentil and chickpea seeds need review to encourage a higher seed replacement ratio – see paragraphs 8.4 and 8.5. There are also reports of seed growers’ unwillingness to accept a premium of 20% over the commercial price for seed crops resulting probably in interruptions of the seed multiplication chain. To avoid diversion and to ensure continuity of the seed chain, the premium may have to be reviewed by experts in the industry.

- (b) Subsidy to promote use of improved seed being a critical factor in agricultural production and with the need to administer subsidy evenly between the public and private sectors an easy-to-administer subsidy system has to be in place. As envisaged earlier, the NSDCA would administer the subsidy. The system could be as follows: (i) fix the seed selling price based on expected commercial grain price – a standard premium on commercial price (ii) fix also a normative price per kg for cost plus return at acceptable efficiency levels (iii) those selling at or below the prescribed selling price could be compensated at difference between the two foregoing values (iv) pay this difference every month on packed certified production. NSDCA, which in any case, has to certify production, would have the production figures every month as the basis for compensation. This avoids individual audit of accounts and complicated procedures and settlement delays. By this normative system, those operating at higher efficiencies stand to gain while those below liable to lose. The basic objective is that as long as subsidy is necessary, procedures should be made easy and simple so that subsidy, because of its procedures, does not become a disincentive to producers – private or public.

#### **16.18.Imported Seeds**

- (a) Time taken for approval of new varieties is such that, at times, when approval is received the variety had gone out of date in the originating country and had become unavailable. Is there a way of shortening the approval time without compromising on environmental considerations? This needs to be examined in the light of practices followed in other countries like, say, Thailand, Egypt, India
- (b) Presently, the government fixes the maximum prices of imported seeds. This could be modified into a system of requiring the importer to file the cost of import and marketing, waiving the price fixation part of the procedure and allowing him to fix his own pricing. The market could be allowed to determine what price each variety deserves. The cost data filed by importer would be useful for watching market prices to be able to identify undue market price increases and to take up the matter with the marketers.

#### **16.19.Research and Extension**

- (a) Continuous research to give farmers new varieties with higher productivity consistent with soil and climatic conditions and varieties that answer local agro-climatic and cultural characteristics is the basic input that determines the need and utility of other inputs. A special study and evaluation of various aspects of research relating to seed development would be useful in determining shortcomings and evaluating needs in terms of, say, breeders, equipment, review mechanisms, integration of research with extension and linkage with farmers.
- (b) Chapter 12 summarizes the mission's observations on extension and its usefulness as a bridge research and the farmer. An independent expert study of the extension system in terms of capacity, staff motivation, facilities, monitoring systems, efficacy, strategy content and effectiveness as a link between farmer and research would be extremely valuable.

### **PLANT PROTECTION PRODUCTS**

#### **16.20.Registration and Marketing**

Phase 1 - Resolution no.34 of 1997 provides clear guidelines for registration of new chemicals or new forms/concentration of chemicals already registered for a different form/concentration. However, perceptions of the marketers that the period taken for registration is longer than the duration envisaged in the Resolution need to be discussed with them to explore alternatives for speeding up the process without compromising on environmental and safety aspects. The involvement of the private sector in the planning

process and extension efforts also would be valuable. These dialogues could be formalized by forming a Standing Committee on Plant Protection, meeting once a quarter, chaired by the Director of Plant Protection with representation from private marketers and Directorates of Extension and Directorate of Agricultural Affairs. Similar Standing Committees would be formed at the Governorates.

#### **16.21.Pricing**

Phase 1 – It is recommended that the present practice of fixing prices be withdrawn immediately (see paragraph 8.6). Importers/marketers would be required to file with the DIRECTORATE of Plant Protection and not the Ministry of Supply, the cost of import of each consignment. This information could be circulated to all Governorates in order that it is used as yardstick by the plant protection sub-directorates to detect undue price increases in the market. These issues could be taken up at the Standing Committee meetings. Although importers are free to fix prices for their products, competition would make it necessary to work on minimum margins, streamline operations to cut overheads and contract out services. Recovery of credit is often affected by poor seasonal conditions and the resultant cost of capital and provision for bad and doubtful debts are an important cost element not always reflected in a cost sheet.

#### **16.22.Re-packing and Formulation**

- (a) Phase 1- Current regulations require chemicals to be imported and sold in their original packing. There could be a considerable reduction of cost by importing in bulk and re-packing locally since handling costs in exporting countries are much higher than under Syrian conditions. Re-packed material selected at random would be sent from every batch to the Plant Protection laboratory for verification of quality before clearance is given for release in to the market. This would also obviate the present practice, with a view to checking smuggling, of stamping every individual container, running in to thousands, involving much labor and expense. If necessary, the re-packers could be obligated, as a condition of the re-packing license, to have basic testing facilities to verify quality and send these batch-wise quality verification reports to the Directorate to facilitate the latter's surprise checks.
- (b) Phase 2 – Further cost reductions could be achieved if private parties were to be encouraged to import the technical ingredient and formulate it in to various forms and concentrations. These and similar issues could form subjects of valuable discussion at the Standing Committee meetings.

#### **16.23.Quality and other Regulations**

- (a) Phase 1 - The existing weak field inspection mechanism, confined to verifying the date of expiry at the retail counters, is inadequate to check unscrupulous operators looking for temporary gains at the cost of the farmer selling spurious or substandard materials and unregistered chemicals at seemingly lower prices. This could do considerable harm through resistance among target pests and outbreak of new ones besides potential risk to beneficial insects and farm animals. Marketers of good standing with long term commitments who have good in-house quality control and extension facilities get under-mined by availability of adulterated material in the market. The need for increasing quality verification facilities at important centers and strengthening field inspection staff and training them in regard to quality aspects cannot be over-emphasized.
- (b) Also Phase 1 – The promulgation of a comprehensive legislation incorporating the provisions of Resolution 34 of 1997 and covering with various aspects of a healthy production and delivery system that serves the cause of higher agricultural productivity consistent with safety and environmental considerations, is urgently needed. This legislation would cover, among other aspects, the following: quality standards, testing procedures and tolerance limits, nomination and empowerment of enforcement

authorities, obligations of anyone wishing to import, formulate and/or re-pack or stock or sell or offer to sell plant protection materials, their registration with the nominated authority, conditions of registration and obligations to furnish information as required on stocks, arrivals and prices, to display at the premises the stock and prices. It should be made obligatory for the importer to declare by clear markings on the bag the name of the chemical, identification of the importer/formulator/re-packer, including the address of his place of business, strength of concentration, volume/weight of contents, date of expiry, number and date of registration of chemical with the concerned authority in Syria.

#### **16.24.Organizational**

Currently a multiplicity of government organizations is involved in coordinating activities without responsibility resting centrally with any one of them. In place of this, it is suggested that central coordination and control for each major input should be the responsibility of one Directorate. Planning & Statistics or Land Directorate could be entrusted with fertilizers, Plant Protection Directorate with plant protection products and Agricultural Affairs with seeds. Private sector operators also would find this single window system easier for getting all policy clarifications and clearances and to be answerable to, on critical issues such as supply management, quality, fair trade practices and price maintenance.

#### **16.25.Project Profile**

Policy and institution related recommendations are covered in the foregoing chapter. Identification of other requisites to support effective implementation of policy and institutional changes is detailed at annex 25

### **17. BROADER POLICY AND INSTITUTIONAL MEASURES**

#### **Proposals on Institutional Reform**

17.1.Proposals in the report make the minimum restructuring needed to ensure efficiency, reduce costs, provide clarity of objectives and separate unrelated functions. As several studies and recommendations have already been made on restructuring of institutions, it is neither necessary nor feasible to cover this aspect comprehensively in this report. For instance, based on other expert studies, public institutions engaged in production and commercial activities have been made autonomous with independent budgets and revised mandates to operate within budget limits. The concept of Management By Objectives is under introduction. The effect of these measures would get diluted if price fixation for these units is in the hands of government and is flexible, and not subject to a normative discipline, to allow artificial pricing to creep back into the system to neutralize inefficiencies creating implicit taxes on users. Clear policy statements and necessary legislative changes are needed to prevent public sector organizations continuing unchanged despite political intentions to the contrary. Clear new mandates in writing, freezing and transferring past losses out of the books for creating a new beginning, absorption of existing debts, essential re-capitalization, constitution of new Boards of Management with independent outside experts including representatives of outstanding private sector industrialists are steps necessary to revitalize the institutional sector and enable it to play an effective balancing role against private competition.

#### **Output Reform**

17.2.It is assumed that input reforms would be accompanied by corresponding changes in output policies and institutions to improve farm services and margins. Privatization of output markets must be accompanied by installation of a method by which farmers' capacity to hold the produce is fully supported. Without this wholesalers would gain overpowering bargaining advantage to depress post-harvest prices. Annex 26 analyzing private prices for maize, lentil and chickpea shows that the temporal arbitrage is as much as 60% or more between harvest and off-season prices whereas holding cost inclusive of additional return for holding the produce for long periods is, generally, not more than 30%. Farmers' capacity to hold the produce for some time till the emergence of better prices would have a salutary effect on



grain prices, farm incomes and returns from use of inputs. Augmenting farmers' holding capacity has the potential to increase their share of the pie without unduly increasing the final price. The capacity is to be viewed in terms of physical facilities, know-how on preservation and financial ability. Home storage methods should be promoted through extension staff. Some assistance on building home silos could also be considered for project intervention.

#### **Agricultural Cooperative Bank**

Substantial improvement in the farmers' capacity to hold the produce is to be promoted through micro-level institutions with stores and refinance facilities to advance monies against the grain deposited. These are the kind of development lending and support activities that ACB, banking Division, should look at for future expansion. ACB should get out of retail lending and move more into wholesaling of credit, operating through micro-finance institutions which have closer contacts with farmers and, therefore, more effective in enforcing repayments.

#### **Import Price and Conversion Rate**

17.3. The pricing mechanism spelt out in Annex 25 would be flexible enough to accommodate varying options regarding price supports including adoption of world prices for fertilizer. In the initial stages imports are converted at full official exchange rate which is about 10% less than the market rate and the advantage of the local factory would be further strengthened if imports were converted at the market rate. This would increase the farmer price and adversely affect the return from the crop. As such this measure can be taken for consideration when output reforms are completed.

#### **National Farm Sample Survey**

17.4. Weaknesses noticed in the data system need rectification. Examples are – country average crop budgets aggregating different farming systems are of little practical value; lack of information on level of input application compared to recommended dosages under different systems; absence of data on the extent to which farmers observe the cropping plan as stipulated in the license and at what cost or benefit compared to those who deviate from the plan. It is worthwhile commissioning a national sample survey on these and other aspects to throw light on cropping, buying, selling, saving and other behavioral aspects under different conditions

#### **Working Capital**

Paucity of working capital, stringent eligibility norms and procedural complexities are perceived as serious handicaps to private sector initiatives to entry in to new areas of activity or expansion of existing ones. If private sector is to go beyond trading in order to utilize local resources, generate employment, export or substitute import, set up nation-wide marketing organizations (for fertilizer, for instance) these need to be supported through appropriate development lending policies governed by norms different from those of commercial lending. Development of the distribution sector, especially, depends on recognition by the banking system that small traders may not be able to offer real estate collateral and may be unfamiliar with formal procedures. (See paragraphs 9.3 and 9.4).

#### **Government – Private Sector Dialogue**

Many business owners feel that while policies have changed for the better these have not percolated down to frontline officials or that their attitudes are still oriented to “restriction” and not facilitation. There is not enough meaningful dialogue between government and industry to resolve common issues e.g. how to reduce costs, reduce procedural bottlenecks, increase consumption, improve extension and other services and such issues of common interests. In the absence of a clear, well advertised Policy document private sector tends to act cautiously in an atmosphere of uncertainty apprehending that, in regard to an essential commodity like fertilizer, seed or agro-chemical, control and interference may be re-imposed; this undermines long term commitment and investment in input marketing.

### **Tax on Profits**

Tax on profits, at the top marginal slab, reported to be as high as 63%, raises the acceptable threshold for post-tax return on equity rendering many activities financially infeasible. This high rate may also encourage evasion defeating the revenue objective.

### **Competition Law**

While it is necessary to encourage formation of industry associations to voice their collective views and suggestions, to counteract tendencies of associations to emerge as cartels, an effective anti-monopoly legislation is essential in a free market environment. The authority constituted under this law should be non-political and on par with the judiciary of the land and would be required to adjudicate on actions of business houses and discriminate between actions that promote social welfare and those hindering it.

## **18. IMPACT OF PROPOSALS IN TERMS OF BENEFITS, RISKS AND ADJUSTMENT COSTS**

### **Risks**

18.1. The sources of risks to the implementation of input reforms could arise from any of the following factors.

- (a) Stability of macroeconomic indicators such as inflation, interest rate and currency valuation
- (b) More development oriented banking norms and emergence of private banks may not take place in the short run and may affect extensive participation by the private sector. The proposals in this report support continuance and re-invigoration of the existing system to facilitate higher effectiveness and as such while there may be delays in private participation, basic services to farmers will not suffer.
- (c) The speed with which rural credit is reorganized would be an important factor influencing wide participation of private traders in retail distribution.
- (d) Undue fluctuations in international fertilizer prices, at the time of introduction of the new measures, could lead to a negative balance in the equalization fund (see Annex on Pricing Mechanism) in the short or medium term. However, this is not a serious impediment to reform except that initial liquidity for the equalization fund may have to be provided from the budget or the public debt fund.
- (e) Late and inadequate imports by distributors because of limited working capital availability could result in some part of the demand remaining unsatisfied. The incentives being built into the system would minimize possibilities of this happening and still, should this eventuality arise, the role of “buyer of last resort” conferred on GEZA would take care of such a contingency.
- (f) Insufficient response from private sector at various levels is a distinct risk considering that many have expressed uncertainty over policy changes; announcement of the reform package at the earliest possible date and wide publicity for it should go a long way in reassuring private sector that they have a role to play and that it would be facilitated and not hindered. The project design also includes institutionalized mechanisms to hold continuous dialogues with the stakeholders and consultations with them on major policy improvements and changes.

### **Social Adjustment Costs**

18.2. Parallel operation of the public system and phased introduction of the private sector inevitably would result in carrying additional expenditure till a cost-effective competitive system gets fully established. The cost of regulation and monitoring and that of additional facilities for enforcement of quality and legal compliance are necessary and would more than pay for themselves by the incremental social benefit flowing from a competitive efficient market. The cost of re-training AIMO staff on marketing techniques to gear them to responsibilities in a new environment has been built in to the project profile. Incentives for early imports and on carry-over stocks to ensure adequacy of supply and institution of an equalization fund to smoothen the adverse effects of world price fluctuations on indigenous production - but without insulating it from competition – are other social adjustment costs of the proposed reforms. The extra manpower in the Homs unit would either continue to be a burden or capitalized once for all through an attractive separation incentive payment. The manpower employed by GEZA on fertilizer import cannot be so large as to constitute a large social cost. And, in any case, for some years to come, this staffing may have to remain in position to perform the role of the “importer of last resort”

### **Benefits**

18.3. The following benefits are expected to flow from the proposals.

- (a) Smooth change over to a competitive system without abandoning the useful parts of the existing structure.
- (b) The public , cooperative and private sectors would have their respective roles to play
- (c) No retrenchment of personnel from public institutions nor any other form of hardship is envisaged
- (d) The competitive environment emerging from these reforms is likely to result in better service and at less cost.
- (e) implicit subsidies estimated to reduce by sp 1277 million selling at world prices (see annex 19 - 3), eventually, reducing the burden on the general budget, without unduly high price increases in farmer prices and releasing these resources for investment in infrastructure
- (f) Potential for increased private sector investment in the input production and distributive sectors increasing the scope for public resources to be invested in larger measure on critical infrastructure such as research and extension.
- (g) Shifting of public resources from a revenue item like implicit subsidy to investment secures benefit flows over the years having a more lasting effect on farmer welfare.
- (h) By offering inputs (fertilizer) at world prices, in due course, the proposals constitute an important step toward preparing the agro-food system for a competitive world market.

## Terms of Reference

### Implications for the Agricultural Sector of the Liberalization of Input Markets.

<b>Duration:</b>	1st Mission	3½ weeks
	2nd Mission	5½ weeks
<b>E.O.D.:</b>	1st Mission:	As soon as possible
	2nd Mission:	6 weeks after the conclusion of first mission
<b>Duty Station:</b>	Damascus, Syria	
<b>Language:</b>	English	

**Rationale:**

During the last 10 years, agricultural input markets have been gradual liberalize by (a) allowing the entrance of the private sector in input production, importation and marketing, and (b) progressively adjusting prices to domestic production and/or import costs, the main exception being kerosene and irrigation water.

The proposed study is expected to provide a systematic description of the present structure, conduct and performance of the agricultural input production and distribution system. The performance of the system will be assessed in terms of both economic efficiency and effectiveness in fulfilling agricultural production needs. Based on this assessment, the study will point out policy actions required for improving the input delivery system in terms of cost efficiency and ability to serve a more market oriented agriculture able to compete on international markets. The study will highlight the potential risks involved in the suggested policy actions, with special reference to the impacts on stability and levels of domestic production, prices and farmers' income. The study will also provide insights desirable timing and sequencing for the suggested policy actions, under the alternative assumptions of benefit maximization and risk minimization.

**Activities:**

Under the direct supervision of the FAO Operations Service in the Near East (RNER) and the Technical supervision of the Policy Assistance Branch (RNEP), and the CTA and in close collaboration with the Director of NAPC / National Project Director, Agricultural Economist and the National Task Force, the Consultant will prepare a detailed Policy study on the above subject (Implications for the agricultural sector of the liberalization of input market)

In particular the consultant will:

1. Review the present structure, conduct and performance of the agricultural input production and delivery system, pointing out roles played by main public and private agents.
2. Estimate current and projected demand, supply and balances for agricultural inputs, and assess the competitiveness and potential of the domestic agricultural requisites vis-à-vis international markets.
3. Review recent and relevant input policies with special reference to input production, price setting, international trade, delivery systems, information dissemination, and their linkages with other agricultural policies, such as credit, and technology policies.
4. Assess the impacts of the present input policies on structure and performance of the public system of enterprises for input production, international trade, and delivery.

5. Estimate implications for government budget of the present policy and institutional setting and, specifically, of the current implicit and explicit input subsidies/taxes.
6. Assess the impacts of present input policies on aggregate performance of the agricultural sector, particularly in terms of production growth and profitability, efficiency and sustainability of complementary primary resource use and farming practices.
7. Summarize the assessment of the impacts of the present input policies in terms of sustainability, effectiveness, and consistency with the present agricultural policy setting.
8. Identify and advance practical policy recommendations for improving the input production, trade and delivery system in terms of cost efficiency and effectiveness, within the presently prevailing institutional setting.
9. Identify broader policy and institutional measures to be introduced in the input production, trade and delivery system in order to allow the agro-food system to be competitive in a world market oriented scenario.
10. Provide an assessment of the expected impacts of the proposed policy actions, evaluating benefits, risks and adjustment costs, under alternative scenarios in terms of timing, sequencing and comprehensiveness of the policy reform process.
11. Prepare project profiles for provision of technical assistance in key areas of implications for the agricultural sector of the liberalization of input markets that can be submitted to funding sources.
12. Prepare a Technical report including the results of his/her study.

To accomplish the above tasks, the consultant shall undertake two missions to Syria.

In the first mission of three weeks duration in Syria, the consultant will:

- Undertake field visits and conduct interviews with concerned parties to have a preliminary understanding of the implications for the agricultural sector of the liberalization of input markets in Syria;
- Prepare a plan of work and develop a detailed scheme of analysis;
- Provide detailed account of the data and information required for the successful completion of the suggested study and appropriate methodologies for its collection and preliminary processing;
- Propose a time schedule for data collection and analysis;
- Train members of the task force on data collection and processing;
- Supervise initial stages of data collection and provide on-time guidance; and
- Prepare a report in English on his preliminary findings and indications on the main areas of concern he / she plans to address in the second mission and an annotated outline of the final study-report, and submit to the FAO Operation Service in Cairo.

In the second mission of five weeks duration in Syria, the consultant will:

- Review and validate the data collected by the task force, identify gaps and take necessary action for quickly filling these gaps;
- Organize and implement a short training session for the project trainees to illustrate the methodology employed in this study, and highlight its main findings;
- Give a seminar at the end of the assignment for senior Government officials of MAAR, other relevant institutions and parastatals, concerned political and professional organizations, concerned agents in the private sector and representatives of the donor community, to present and discuss the results of the study.
- Prepare while in Syria, a draft technical report in English (with an executive summary) including the main findings, conclusions and policy recommendations on the environmental impacts of agricultural production practices in Syria and submit it to FAO for clearance; and

- Provide a brief evaluation of the support provided by each member of the task force, excluding the trainees.

The Consultant will finalize the report, including FAO comments and submit it to FAO, both as hard copy and on diskette, within two weeks from receiving those comments.

**Qualifications:**

Advanced degree in agricultural economics with 10 years experience in economics of agricultural inputs sector and relevant policies.

**List of Meetings  
(Chronological order)**

1. Directorate of Statistics and Planning, MAAR, Damascus  
Dr. Nahi Al Shibani, Director  
Dr. Shabab Nasier
2. Directorate of Extension, MAAR, Damascus  
Mr. M. Adnan Sharaf, Deputy Director
3. Directorate of Agricultural Affairs, Damascus  
Mr. Nabil Khouri
4. Citrus Bureau, Tartus  
Dr. Waljieh Al Mouic, Director
5. Sub-Directorate of Agricultural Affairs, Tartus  
Mr. Mustafa Mohammed, Director
6. Agricultural Cooperative Bank, Tartus Branch  
Mr. Taher Tarsesa, Head of the Branch
7. Port Authority, Tartus  
General Director  
Mr. Nihad Karazi, Finance Director
8. Agricultural Directorate, Homs  
Mr. Ali Al Akari, Director  
Mr. Hasan Al Wayah, Sub-Directorate, Statistics and Planning
9. Nakira Village, Homs  
Farmer Group  
Ghado Al Melhem, Agricultural Engineer Extension
10. Retailer in Agricultural Chemicals and Seeds, Homs  
Samer Khourdi
11. General Organization for Seed Multiplication, Head office, Aleppo  
Dr. Ali Nasr Dibeh, General Director  
Mr. Abdul Wahab Madarati, Deputy General Director  
Mr. Kazem Al Dendal, Marketing Director  
Mr. Mohi Al Den Abou Dan, Statistics and Planning Director
12. General Farmers' Union, Aleppo Governorate  
Mr. Gasem Al Said Mohamed, Director
13. Agricultural Cooperative Bank, Aleppo Branch  
Mr. Mohamed Mosbah Sakal
14. General Establishment for Ginning and Marketing Cotton, Aleppo  
Mr. Asim Mansour, Director, Statistics and Planning

15. Attanmiah Agricultural Company and Khoury & Compnay  
Dr. Elias Terzikhan, Branch Manager
16. Agricultural Trading & Olive manufacturing Co.  
Mr. Fadel S. Kenno, Agricultural Engineer
17. Agriculture Sub-Directorate, Al Zorba Nahia, Aleppo  
Mr. Ahmed Mansour, Director-in-charge
18. Ghamaini Village, Al Zarba Nahia  
Farmer Group
19. Aleppo Chamber of Commerce  
Mr. M. Saleh Al Mallah, President , Aleppo Chamber and Vice-President, Federation of Syrian Chambers of Commerce
20. Debbane & Co., Homs  
Mr. Omar Farouk Merheb, Administration & Commercial Affairs Manager  
Mr. Rafie Tomani, Agronomist, Technical Department
21. General Fertilizers Company  
Ahmad Al Ama, Production Director
22. Agriculture Engineers' Syndicate, Homs Branch  
Mr. Mohamed Faez Kojok, Director
23. Directorate of Veterinary Medicines  
Dr. Fedaa Al Akhras, Director
24. Adamco Life Sciences (Manufacturer of Livestock Medicines)  
Mr. Naji S. Ali-Adeeb, President  
Dr. Khaled Khoder, Marketing & Technical Manger
25. Directorate of Soil (Land), MAAR  
Dr. Joumah Abdul-Karim, Director
26. Plant Nutrition & Fertility Sub-Directorate, Lands Directorate, MAAR  
Ms Budoor Al Bunni , Head of Section
27. Fertilizer Sub-Directorate, Land Directorate, MAAR  
Mr. Talal Al Khadra
28. General Establishment for Chemical Industry  
Mr. Kamal Tumek, Director of Planning and Statistics
29. Foreign Trade Organization for Chemicals and Foodstuffs (known as GEZA and TAFCO being the old name)  
Mr. Yousef Jeha, Director, Chemicals Division  
Ms Mari Aboudeh, Cost Section, Accounting Division
30. Central Bank of Syria  
Dr. Goerge Al Ozon, Director of Foreign Relations
31. Directorate of Plant Protection, MAAR  
Dr. Khalil Abdul Haleem, Director



32. National Center for Agricultural Information and Documentation  
Mr. Madmoon Ruhhal
33. Ministry of Supply and Internal Trade  
Dr M Jamal Alsatel, Price Affairs Director
34. Irrigation & Water Use Directorate  
Dr Gorge Soumi
35. Dept. of Agricultural Scientific Research  
Mr Ali Shehadahi, Wheat Researcher
36. Agricultural Directorate, Daraa  
Mr Fares Al Faleh, Director  
Mr Isam Aba Zaid, Statistics & Planning
37. Agricultural Bank, Daraa – Warehouse  
Mr Khalel Gebara, Warehouse-in-charge
38. Extension Unit (Sub-Section), Tafas Town, Daraa
39. Farmer Group, Tafas, Daara
40. Grain Wholesaler, Tafas, Daara  
Mr Ahmed Abu Jaish
41. Agricultural Cooperative Bank, Damascus  
Mr Mustaf Al Dawwa, Director, credit  
Mr Ahmed Zahri, Director, Accounts  
Ms Sahar Hag Saleh, Finance section
42. General Establishment for Geology and Mineral Resources  
Dr Mohd. Talal Ballani, Director General  
Dr Rabah Hussein, Director, Planning
43. Directorate of Agricultural Affairs  
Mr Abdul Moen Kadamani, Director
44. Debbane & Co.  
Mr Mounir Haddad, General Manager  
Mr Elias Salhani, Marketing Manager
45. Directorate of Forestry  
Mr Hassan Ibrahim, Director
46. Directorate of Agriculture, Al Hassake  
Mr Husein Bakkour, Deputy Director
47. Joint Venture Retail Outlet  
Mr Sameer Fahed, Agricultural Engineer
48. Seed Processing Unit, Ministry of Supply  
Mr Antar Fakman, Soils Branch Director, Eastern Silos  
Mr Faheem Jarjour, Manager Seed Processing Unit

49. Private farmer, Sfayya Town, Hassake  
Mr Rushdi Zouba
50. Directorate of Agriculture, Deir Ezzor  
Mr Maan Al Akka, Deputy Director
51. Agricultural Section, Mouhasan Town, Deir Ezzor  
Mr Hagen Al Sameer, Chief of Agricultural section
52. Group of Farmers, Boulail village, Deir Ezzor
53. State Farm, Boulail
54. Seventh of April Research Station, Iselo, Deir Ezzor  
Mr Saleh Al Khlaif, Director
55. Directorate of Finance & Budget, MAAR, Damascus  
Mr Fuad Roumieh, Director

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13. Reform of Agricultural and Food marketing Policies in Sub-Saharan Africa, FAO-AGSM Occasional Paper No 3
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**Farmer Survey – Questionnaire**  
(based on last crop year experience)

**Zone No.:**-----

**Date:**-----

**Time:**-----

**A- Name of Farmer:**-----

Cultivated area (Dunnam):-----

Address: Village:----- Nahia:----- Mantika:----- Muhafaza:-----

Member of Farmer Cooperative :Yes-----No-----

**B- Crops raised last crop year: (in sequence)**

(Tick column applicable)

Name of crop	Rainfed	Irrigated/river	Irrigated pump	On remainder moisture after 1 <sup>st</sup> crop	Planting month
1-					
2-					
3-					
4-					
5-					

**C- General Information**

1- did you follow the crop plan? Yes----- No-----

2a- did you apply fertilizer? Yes----- No----- (if no go to 3a)

2b- what fertilizer did you buy? Amonnium Nitrate:----- Urea:----- Sulfate Potash:-----

2c- what price did you pay? SP----- SP----- SP-----

2d- source of supply? ACB:----- Private dealer:----- Other (specify):-----

2e- how did you take delivery? - delivery at the farm by: - cooperative:-----  
- dealer:-----  
- friend:-----

- I took delivery my self - distance:-----

2f- did you get the fertilizer in time? in time:----- late:-----

3a- did you use agricultural chemicals? Yes:----- No:----- (if no go to 4)

3b- source of supply? ACB:----- Private dealer:----- Other (specify):-----

3c- how did you take delivery? - delivery at the farm by: - cooperative:-----  
- dealer:-----  
- friend:-----

- I took delivery my self - distance:-----

4- where did you get the seed? - saved myself from last crop:-----  
- from a neighbor farmer:-----

- from Ag. Coop. Bank: -----
- from dealer: -----
- any other source (specify) -----

5a- did you apply organics? Yes:----- No:----- (if no proceed to 6)

5b- source of organics? from own farm:----- bought:-----

6a- was your soil analyzed? Yes:----- No:----- (if no proceed to 7)

6b- did you receive results? Yes:----- No:-----

7a- did you receive a loan? Yes:----- No:----- (if no proceed to 8)

7b- where did you get loan from?  
 - ACB (direct) : -----  
 - ACB (coop.) : -----  
 - from friend :-----  
 - other (specify):------

8- approximately, how much family labor did you use? - family labor: -----%  
 - outside labor: -----%  
 - total: 100%

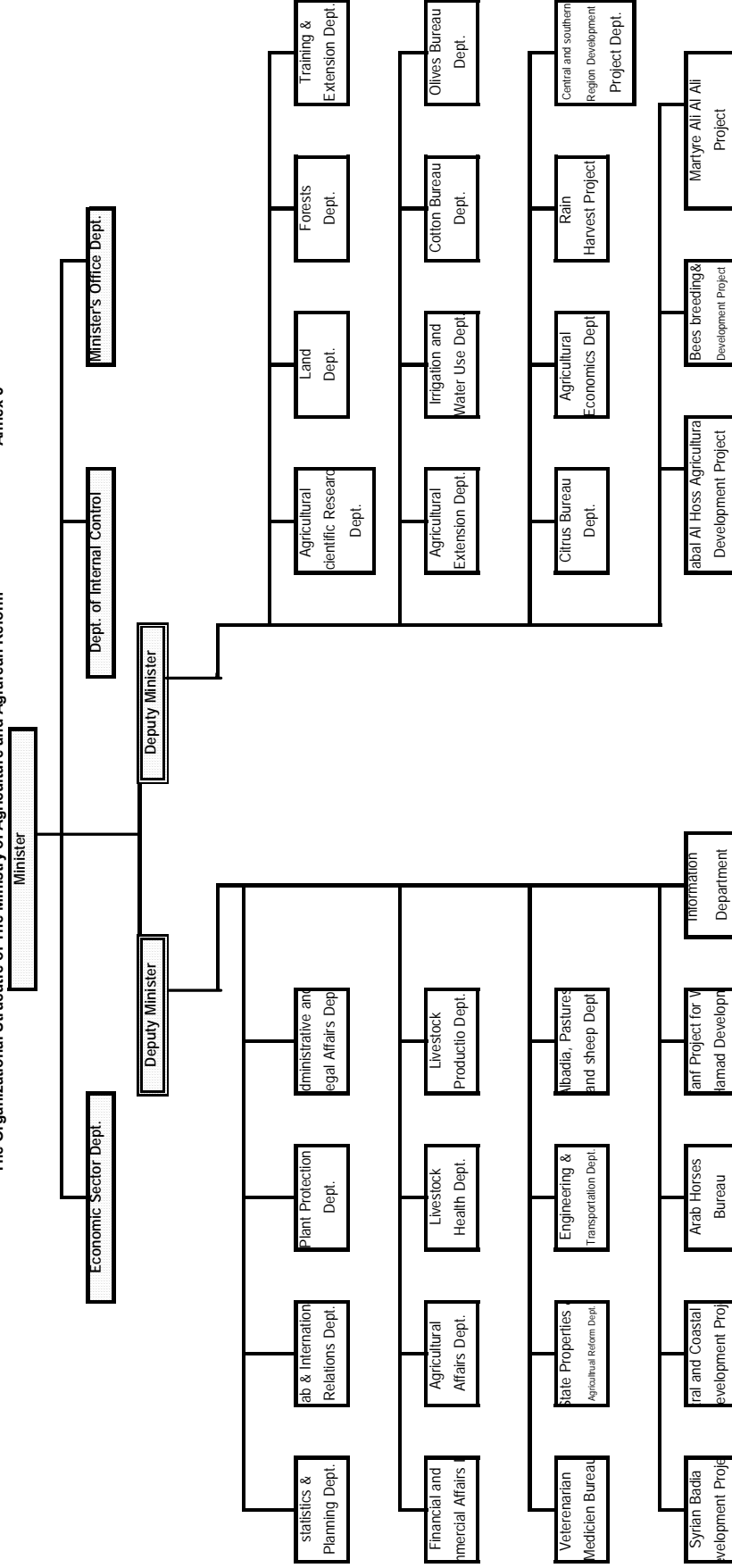
**D- Information on Crop**

9a- how much fertilizer did you apply (kg/d)?	Name of crop					
	Am. Ni.					
	Urea					
	TSP					
	Other (specify)					
9b- what was approximate yield?	KG/D					
9c- what price did you get for the crop	SP/KG					
9d- to whom did you sell your crop	- ACB					
	- Dealer					
	- Factory					
	- Other (specify)					

**Any other information not mentioned in the questionnaire may be mentioned here:**

The Organizational Structure of The Ministry of Agriculture and Agrarean Reform

Annex 5



**Department of Agricultural Affairs**

Sub – Administrative Consists of <u>Sections:</u> Divan and Correspondence Personnel	Sub – seedlings Production Consists of <u>Sections:</u> Seedlings Production Mother orchards Newly entered plants Banana Palm Monitoring and Evaluation	Sub – Fruit Trees Consists of <u>Sections:</u> Fruit trees project Green belt project Food Aid Project Monitoring and Evaluation of fruit Trees Technical studies	Sub – Vegetables Consists of <u>Sections:</u> Green – House Planting Field Vegetables Import and Export Floriculture	Sub – Sugar Beet Consists of <u>Sections:</u> Planning and Continuation Agricultural Services Monitoring and Evaluation	Sub-crops Consists of <u>Sections:</u> Cereals Pulses Maize Potato Cotton Fodder Tobacco and Medical Plant
--	--	---	---	--	--

## FERTILIZER USAGE VERSUS POTENTIAL

	Area ha	N - kg/ha	P - kg/ha	K - kg/ha	N tons	P tons	K tons	NPK Total	Share
Wheat	1721412	50	50	20	86071	86071	34428	206569	0.11
Barley	1542619	67.5	65	0	104127	100270	0	204397	0.11
Lentils	142649	30	60	0	4279	8559	0	12838	0.01
Chickpea	108012	30	60	0	3240	6481	0	9721	0.01
Cotton	274585	225	72	0	61782	19770	0	81552	0.04
Sugar beet	28663	220	130	80	6306	3726	2293	12325	0.01
Fruit trees Irrigated	1363532	400	70	200	545413	95447	272706	913566	0.49
Tobacco	15022	250	200	150	3756	3004	2253	9013	0.00
Vegetables	2300628	87	82	17	200155	188651	39111	427917	0.23
Theoretical Potential					1015128	511980	350792	1877899	1.00
Actual Usage 1998					236815	117597	6951	361363	
Actual Usage/Potential Ratio					0.23	0.23	0.02	0.19	
At 66% of farmers adopting 66% of recommended usage					442190	223018	152805	818013	
Actual usage / 66% adoption ratio					0.54	0.53	0.05	0.44	
		NPK ratio	Theoretical		1	0.50	0.35		
		NPK ratio	Actual		1	0.50	0.03		

**Assumptions**

1. Areas from Statistical Abstract 1999
2. 1998 adopted for comparison as 1999 was an acutely bad year for seasonal conditions
3. Nutrient recommendations as per schedule provided by lands Directorate
4. Wheat - the average of local wheat for zones 1 and 2 taken
5. Cotton - as provided by the Extension Directorate based on 4-ton yield and low N and P status
6. Fruits - only irrigated area reckoned and at medium NPK status
7. Vegetables - weighted average as per working below

Vegetables	Area ha	N - kg/ha	P - kg/ha	K - kg/ha	Total N tons	Total P tons	Total K tons
Winter Irrigated	574346	140	120	20	80408440	68921520	11486920
Summer Irrigated	1398632	70	70	20	97904240	97904240	27972640
Summer Non-irrigated	327650	70	70	0	22935500	22935500	0
Total	2300628				201248180	189761260	39459560
Weighted Average kg/ha					87	82	17



## ANNEX 8 (PARA 7.9)

## TRANSPORTATION COST FROM SUPPLY SOURCES TO GOVERNORATES

distances in kilometers

Destination	From Homs	From Tartous	From Lattakia	Proximate Source and km difference		Consumption pa tons*	Consumption % to total
Sweida	268	364	454	Homs	96	1204	0.2
Dara	263	359	449	Homs	96	22470	3.1
Quneitra	229	325	415	Homs	96	1204	0.2
Damascus	162	258	348	Homs	96	17289	2.4
Homs	0	96	186	Homs	96	24589	3.4
Hama	47	143	233	Homs	96	85283	11.9
Idleb	168	230	132	Lattakia	36	59530	8.3
Tartous	96	0	90	Tartous	90	19798	2.8
Lattakia	186	90	0	Lattakia	90	19407	2.7
Aleppo	193	289	186	Latt/Homs	96	172702	24.0
Al-Raqqa	388	484	381	Latt/Homs	96	61398	8.5
Dair-Ezzor	378	474	506	Homs	96	55752	7.8
Al-Hassake	545	641	538	Latt/Homs	96	178643	24.8
						719270	100.0

Note: \*N, P and K consumption for 1999 as base, from Annual Agricultural Statistics Abstract 1999, converted to material at average of 46% nutrient

**GEZA****General Establishment for Foreign Trade for Chemicals and food stuff****Accounting division**

**Import license no.**  
**LC no.**  
**Goods**  
**Net weight**  
**Gross weight**  
**Value in foreign currency**  
**Origin**  
**Shipment condition**

**Estimated cost statement for consignment no. \_\_\_\_\***

Description	SP
Stamp, documents fees	250
License extension, renewal and correction costs	124
Insurance (2% of the value) C&F free out	
Banks' commissions (2% of the value) to the correspondent bank	
Value (\$) free exchange rate 46.5 SP	
Interests and other bank costs 14% of the value in the past for three months, now 7% for one month	
Juridical fees 1500 SP, radiation check up 1000 SP (for the labs) for each consignment	
Handling costs	54.68 SP/ton (gross weight)
Customs fees	Exempted
Clearance costs	12 SP/ton (gross weight)
Demurrage	No demurrage
Chemical and germs analysis	1000 SP (for labs) for each consignment
Other costs	30 SP
Supervision	23 SP
Storage	no costs
Shipping agent	14.85SP/ton (gross weight)
Defects	0.5% of the total cost
Total cost	
Capital interest	7.5% for one month
Profit	1% of the total cost

Note: credit is given to ACB without interest

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\* Source: GEZA, accounting division (collected by consultant), 18/9/2000

## SEED DISTRIBUTION AND COVERAGE

## ANNEX 10 (PARA 7.25)

## Sources:

1. Ag. St. Abstract 1999 for areas under crops
2. Country profile page 47-48 for 1997 seed usage
3. Planning & Statistics Directorate for 2000-2001 Plan

S No	Unit	1997 Actual					2000 Plan				
		Wheat	Barley	Lentil	Chickpea	Cotton	Wheat	Barley	Lentil	Chickpea	Cotton
1	Irrigated Area	684802	3741	1	212	250600	669937	5266	214	218	243835
2	Rainfed Area	1075997	1568452	120299	94251	0	933083	1408961	147427	50426	0
3	Total Area	1760799	1572193	120300	94463	250600	1603020	1414227	147641	50644	243835
4	Seed Rate - Irrigated Area	251	100	90	60	100	251	100	90	60	100
5	Seed Rate - Rainfed Area	180	100	90	40	0	180	100	90	40	0
6	Weighted Seed Rate	208	100	90	40	100	210	100	90	40	100
7	Actual Usage/Plan	175000	5100	1400	600	34600	200000	10000	2000	700	30000
8	Area Covered by Improved Seeds	842914	51000	15556	14983	346000	953869	100000	22222	17462	300000
9	Coverage	%	48	3	13	138	60	7	15	34	123

Note: it is possible that on cotton more than the recommended seed rate is used showing a value of more than 100%

**Plant Protection Products Distribution - Government Sector**

Value - '000 \$ except last col in SP mill

Year	Procured	Opening Stock	Closing Stock	Consumed	Stock as % of Consumption	Consumption in SP mill
1988-89	18667	8657	17819	9505	187	442
1989-90	9916	17819	14243	13492	106	627
1990-91	7882	14243	14511	7614	191	354
1991-92	9719	14511	14614	9616	152	447
1992-93	13672	14614	15104	13182	115	613
1993-94	10740	15104	15861	9983	159	464
1994-95	17133	15861	15434	17560	88	817
1995-96	13569	15434	5070	23933	21	1113
1996-97	10748	5070	2457	13361	18	621
1997-98	14102	2457	1846	14713	13	684
1998-99	10779	1846	2926	9699	30	451

Note: Conversion from \$ to SP at uniform rate of 46.5 for all the years to make figures comparable

**Plant Protection Products Distribution by Private Sector**

Year	Imported '000 \$	Imported in SP mill	Consumed SP mill
1990	1748	81	274
1991	na	na	310
1992	6886	320	407
1993	5447	253	400
1994	6555	305	426
1995	12999	604	856
1996	15258	709	856
1997	15881	738	1124
1998	25637	1192	na

Note: Conversion from \$ to SP at uniform rate of 46.5 for all the years  
to  
make figures comparable

**Value of imported chemicals\***

Value of Planned imports	150 898 75 \$ out of which 2 353 220 \$ for seed sterilizers
Stock value	4 772 312 \$ out of which 2 926 108 \$ for seed sterilizers
Actually received imports value	10 778 618 \$
Received/required	98.97% due to the cancellation of one of the wheat herbicides contract
Secured quantities value (stock + received)	15 550 930 \$ out of which 2 926 108 \$ for seed sterilizers
Secured/planned	99% for chemicals 124% for sterilizers

**Quantity of public imports of chemicals**

Decis pp 0.1%	61 120 kg
Decis 50 EC	220 liters
Dimilin 12.5 WP	525 kg
Dimilin 45 ODC	333 5 liter
Karate 2 ULV	16 200 liter
Sumithion 95 ULV	41 360 liter
Zinc phosphide	20 000 kg
K-othrin flow 25	2 000 liter
Sobrom 98 methyle promide	3 500 kg
Phostozin round tablets	39 075 kg
Dettia gas EX-B680g	4 500 kg
Puma super 75 EW	50 640 liter
Illoxan 36 EC	10 720 liter
Assert 250 EC	53 400 liter
Topik 240 EC	33 040 liter
Granstar DF	17 540 liter
Combi-dicopur	650 liter
Treflan EC	67 160 liter
Triflur 480 EC	135 000 liter
Velpar 90	2 825 liter
Hyvarx	1 925 kg
Karmex	6 525 kg

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\*MAAR, Planning and Statistics Dept. (collected by the consultant), 19/9/2000

**Summary of Prices and Costs Reduced to Comparable Equivalents**

**ANNEX 13 (PARA 8.2)**

		Amm Nitrate	Urea	TSP
1	World Prices - Average CIF prices last 3 years	4075	6062	8351
2	World Prices - Landed Cost	4492	6549	8918
3	Current Ex-warehouse Prices	5400	7700	8200
4	Current Ex-warehouse Prices reduced to equivalent of Landed cost	4587	6657	7107
5	Homs Unit's Current Realization	5165	6365	7425
6	Homs Unit's Current Cost of Production	6463	8351	9606
7	Homs Unit's Cost of Production at 90% capacity utilization	5054	5483	8057

Note: 2,4,5,6 and 7 are on comparable basis at port landed/factory

"Costs" include profit margin and raw materials costed at export price

Above figures drawn from Annex titled "Analysis of fertilizer Production Costs"

ANNEX 14-1 (PARA 8.3)

**FERTILIZER - CROP PRICE TRADE-OFF - official prices**  
expressed as ratio and as index with  
1990 as 100

		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
<b>Wheat Soft</b>	urea	0.58	0.64	0.81	0.81	0.75	0.74	0.73	0.75	0.71	0.71
Ratio	TSP	0.61	0.69	0.87	0.87	0.81	0.80	0.79	0.81	0.77	0.77
Index	urea	100	112	141	141	130	129	127	130	124	124
	TSP	100	113	143	143	132	131	129	132	126	126
<b>Wheat Durum</b>	urea	0.52	0.58	0.73	0.73	0.68	0.68	0.68	0.68	0.65	0.65
Ratio	TSP	0.55	0.62	0.79	0.79	0.74	0.73	0.73	0.73	0.70	0.70
Index	urea	100	112	142	142	133	132	132	132	127	127
	TSP	100	113	144	144	135	134	134	134	129	129
<b>Barley</b>	urea	0.89	0.93	1.18	1.18	1.18	1.18	1.10	1.10	1.03	1.03
Ratio	TSP	0.95	0.99	1.28	1.28	1.28	1.28	1.19	1.19	1.11	1.11
Index	urea	100	104	133	133	133	133	123	123	115	115
	TSP	100	105	135	135	135	135	125	125	117	117
<b>Lentil</b>	urea	0.41	0.47	0.55	0.55	0.55	0.43	0.48	0.48	0.48	0.48
Ratio	TSP	0.43	0.51	0.59	0.59	0.59	0.47	0.52	0.52	0.52	0.52
Index	urea	100	116	135	135	135	106	118	118	118	118
	TSP	100	117	137	137	137	108	120	120	120	120
<b>Chickpea</b>	urea	0.37	0.39	0.48	0.48	0.48	0.46	0.43	0.43	0.43	0.43
Ratio	TSP	0.40	0.41	0.52	0.52	0.52	0.49	0.47	0.47	0.47	0.47
Index	urea	100	104	129	129	129	123	116	116	116	116
	TSP	100	105	131	131	131	125	118	118	118	118
<b>Cotton</b>	urea	0.29	0.32	0.42	0.39	0.31	0.28	0.25	0.25	0.25	0.25
Ratio	TSP	0.31	0.34	0.45	0.43	0.34	0.30	0.27	0.27	0.27	0.27
Index	urea	100	112	144	137	109	95	87	87	87	87
	TSP	100	113	147	139	111	97	88	88	88	88
<b>Sugar beet</b>	urea	3.92	3.05	4.05	3.95	3.67	3.42	3.42	3.42	3.42	3.42
Ratio	TSP	4.16	3.26	4.37	4.26	3.95	3.69	3.69	3.69	3.69	3.69
Index	urea	100	78	103	101	94	87	87	87	87	87
	TSP	100	78	105	102	95	89	89	89	89	89



**FERTILIZER - CROP PRICE TRADE-OFF - open market prices**

expressed as ratio and as index with 1990  
as 100

		1990	1991	1992	1993	1994	1995	1996	1997	1998
<b>Wheat Soft</b>	urea	0.53	0.60	0.75	0.78	0.76	0.68	0.70	0.69	0.70
Ratio	TSP	0.56	0.64	0.81	0.84	0.82	0.73	0.75	0.75	0.76
Index	urea	92	104	131	135	132	118	121	120	122
	TSP	92	105	133	137	134	120	123	122	124
<b>Wheat Durum</b>	urea	0.54	0.60	0.72	0.73	0.69	0.63	0.65	0.65	0.68
Ratio	TSP	0.57	0.65	0.78	0.79	0.74	0.68	0.70	0.70	0.73
Index	urea	104	117	140	142	133	122	127	126	131
	TSP	104	118	142	144	135	124	129	128	133
<b>Barley</b>	urea	0.61	0.78	0.94	1.03	1.06	0.99	1.06	0.93	0.94
Ratio	TSP	0.64	0.83	1.01	1.11	1.14	1.07	1.14	1.00	1.02
Index	urea	68	87	105	115	119	112	119	104	106
	TSP	68	88	107	117	121	113	121	106	108
<b>Lentil</b>	urea	0.27	0.29	0.36	0.35	0.33	0.32	0.33	0.29	0.27
Ratio	TSP	0.28	0.31	0.39	0.38	0.36	0.34	0.35	0.32	0.29
Index	urea	66	72	89	86	81	77	80	72	65
	TSP	66	72	90	88	82	78	82	73	66
<b>Chickpea</b>	urea	0.28	0.26	0.32	0.38	0.33	0.24	0.23	0.25	0.31
Ratio	TSP	0.30	0.27	0.34	0.41	0.35	0.25	0.25	0.27	0.33
Index	urea	76	69	85	101	88	63	62	68	83
	TSP	76	69	86	103	89	64	63	69	85

**FERTILIZER SUPPLY DEMAND BALANCE****ANNEX 15 (PARA 13.2)**

Source for data: MAAR

	<b>91-92</b>	<b>92-93</b>	<b>93-94</b>	<b>94-95</b>	<b>95-96</b>	<b>96-97</b>	<b>97-98</b>	<b>98-99</b>
Availability - Nutrient tons								
Nitrogen	244728	236280	272346	236000	238000	276712	294500	265817
Phosphate	193345	183195	201673	170000	198000	200077	196200	167100
Potash	17263	13063	12481	14000	16200	15632	13500	10167
Consumption - Nutrient tons								
Nitrogen	192546	204055	229982	217000	236000	227447	236800	218436
Phosphate	137023	139031	138884	128000	128000	124011	117600	105000
Potash	9176	5917	5947	6300	6500	5778	6950	7365
Carry-over - Nutrient tons								
Nitrogen	52182	32225	42364	19000	2000	49265	57700	47381
Phosphate	56322	44164	62789	42000	70000	76066	78600	62100
Potash	8087	7146	6534	7700	9700	9854	6550	2802
Carry-over as % of Consumption								
Nitrogen	27	16	18	9	1	22	24	22
Phosphate	41	32	45	33	55	61	67	59
Potash	88	121	110	122	149	171	94	38

Growth rate and projection of fertilizer demand to 2009. (Nitrogen) N Unit mt. ANNEX 16- 1 (PARA 13.4)

governorate Years	Dannascus		Dara		Al swaita		Alqunatra		Hons		Hamah		Tartous		Latakia		Eileb		Aleppo				
	Observed	Trend	Observed	Trend	Observed	Trend	Observed	Trend	Observed	Trend	Observed	Trend	Observed	Trend	Observed	Trend	Observed	Trend	Observed	Trend			
1992	6453.0	6412.1	4033.0	3991.8	107.0	73.9	283.0	294.3	8387.0	9174.6	20930.1	19989.0	21421.0	21901.8	6485.9	6499.0	7215.3	7206.9	14076.6	15563.6	15425.6	35832.4	
1993	5903.5	6399.9	4033.7	4378.2	142.7	101.0	242.5	311.8	9106.0	9068.0	21421.0	21901.8	21421.0	21901.8	6485.9	6499.0	7215.3	7206.9	14076.6	15563.6	15425.6	37640.2	
1994	6757.0	6387.6	4932.0	4764.6	92.0	128.2	369.0	329.3	9269.0	8961.4	24497.0	22873.5	24497.0	22873.5	6402.0	6415.6	7104.0	7092.5	15268.0	15701.5	15701.5	39448.1	
1995	6179.0	6375.4	4953.0	5151.0	153.0	155.3	469.0	346.8	9013.0	8854.8	23261.0	23845.3	23261.0	23845.3	6611.0	6332.1	6608.0	6978.0	15772.0	15839.5	15839.5	41256.0	
1996	6745.0	6363.2	5728.0	5537.4	148.0	182.4	275.0	364.3	9983.0	8748.2	25646.0	24817.0	25646.0	24817.0	6410.0	6248.6	7177.0	6863.6	16450.0	15977.4	16450.0	43063.9	
1997	6372.0	6351.0	6360.0	5923.8	147.0	209.5	442.0	381.8	8101.0	8641.6	25979.0	25788.7	25979.0	25788.7	6460.0	6165.2	6770.0	6749.1	12717.0	16115.4	16115.4	44871.7	
1998	6782.0	6338.8	6600.0	6310.2	173.0	236.7	355.0	399.3	9026.0	8535.0	27585.0	26760.4	27585.0	26760.4	6205.0	6081.7	6782.0	6634.7	17834.0	16253.3	16253.3	46679.6	
1999	5763.0	6326.5	6114.0	6696.6	388.0	263.8	409.0	416.8	7527.0	8428.4	26271.0	27732.2	26271.0	27732.2	5476.0	5998.3	6354.0	6520.2	17559.0	16391.3	16391.3	48487.5	
2000		6314.3		7083.0		290.9		434.3		8321.8		28703.9		28703.9		5914.8		6405.8		16529.2		50295.4	
2001		6302.1		7469.4		318.0		451.8		8215.2		29675.6		29675.6		5831.3		6291.3		16667.2		52103.2	
2002		6289.9		7855.8		345.2		469.3		8108.6		30647.3		30647.3		5747.9		6176.9		16805.1		53911.1	
2003		6277.7		8242.2		372.3		486.8		8002.0		31619.1		31619.1		5664.4		6062.4		16943.1		55719.0	
2004		6265.4		8628.6		399.4		504.3		7895.4		32590.8		32590.8		5581.0		5948.0		17081.0		57526.9	
2005		6253.2		9015.0		426.5		521.8		7788.8		33562.5		33562.5		5497.5		5833.5		17219.0		59334.7	
2006		6241.0		9401.4		453.7		539.3		7682.3		34534.3		34534.3		5414.0		5719.1		17357.0		61142.6	
2007		6228.8		9787.8		480.8		556.7		7575.7		35506.0		35506.0		5330.6		5604.7		17494.9		62950.5	
2008		6216.6		10174.2		507.9		574.2		7469.1		36477.7		36477.7		5247.1		5490.2		17632.9		64758.4	
2009		6204.3		10560.6		535.0		591.7		7362.5		37449.4		37449.4		5163.7		5375.8		17770.8		66566.2	
		SLOP	-12.22024	SLOP	386.39881	SLOP	27.125	SLOP	17.494048	SLOP	-106.5952	SLOP	971.72619	SLOP	-83.45833	SLOP	-114.4464	SLOP	137.95238	SLOP	137.95238	SLOP	1807.875
		INTERCEI	6424.30	INTERCEI	3605.42	INTERCEI	46.78	INTERCEI	276.84	INTERCEI	9281.18	INTERCEI	19588.36	INTERCEI	6665.93	INTERCEI	7435.80	INTERCEI	15287.66	INTERCEI	15287.66	INTERCEI	34024.48
		GROWTH	0.00	GROWTH	0.08	GROWTH	0.20	GROWTH	0.05	GROWTH	-0.01	GROWTH	0.04	GROWTH	-0.01	GROWTH	-0.02	GROWTH	0.01	GROWTH	0.01	GROWTH	0.04

**Growth rate and projection of fertilizer demand to 2009. (Phosphate) P2O5 Unit m.t ANNEX 16 -2 (PARA 13.4)**

governorate	Damascus		Dar'a		Al swaida		Alqunatra		Homs		Hamah		Tartous		Lattakia	
	Observed	Trend	Observed	Trend	Observed	Trend	Observed	Trend	Observed	Trend	Observed	Trend	Observed	Trend	Observed	Trend
1992	2583.0	2358.5	3632.0	3935.6	68.0	107.8	102.0	138.1	4710.0	4960.6	11400.0	11837.7	3314.0	3086.0	2886.0	2702.2
1993	2013.0	2276.1	4136.0	4014.9	127.0	107.2	111.0	139.4	4807.0	4707.3	11861.0	11903.5	2675.0	3014.9	2277.0	2606.4
1994	2115.0	2193.7	4227.0	4094.3	90.0	106.6	142.0	140.8	4575.0	4454.0	12512.0	11969.4	2785.0	2943.9	2344.0	2510.6
1995	2147.0	2111.3	3864.0	4173.6	161.0	106.0	264.0	142.1	4506.0	4200.7	11614.0	12035.2	2898.0	2872.8	2357.0	2414.8
1996	2126.0	2028.9	4404.0	4252.9	108.0	105.5	92.0	143.4	4029.0	3947.3	12755.0	12101.0	2984.0	2801.7	2651.0	2319.0
1997	1899.0	1946.5	5008.0	4332.3	128.0	104.9	217.0	144.8	3116.0	3694.0	12169.0	12166.9	2897.0	2730.6	2564.0	2223.2
1998	1926.0	1864.1	4580.0	4411.6	74.0	104.3	85.0	146.1	3681.0	3440.7	12557.0	12232.7	2917.0	2659.6	2203.0	2127.4
1999	1752.0	1781.8	3855.0	4490.9	90.0	103.7	129.0	147.4	3168.0	3187.4	11677.0	12298.6	2228.0	2588.5	1653.0	2031.6
2000		1699.4		4570.3		103.1		148.8		2934.1		12364.4		2517.4		1935.8
2001		1617.0		4649.6		102.5		150.1		2680.8		12430.3		2446.4		1840.0
2002		1534.6		4728.9		101.9		151.4		2427.5		12496.1		2375.3		1744.2
2003		1452.2		4808.3		101.3		152.8		2174.2		12562.0		2304.2		1648.4
2004		1369.8		4887.6		100.7		154.1		1920.9		12627.8		2233.1		1552.6
2005		1287.4		4966.9		100.1		155.4		1667.6		12693.7		2162.1		1456.8
2006		1205.0		5046.3		99.5		156.8		1414.3		12759.5		2091.0		1361.0
2007		1122.6		5125.6		98.9		158.1		1160.9		12825.3		2019.9		1265.2
2008		1040.2		5204.9		98.3		159.4		907.6		12891.2		1948.9		1169.4
2009		957.8		5284.3		97.7		160.8		654.3		12957.0		1877.8		1073.6
	SLOP	-82.39286	SLOP	79.333333	SLOP	-0.595238	SLOP	1.3333333	SLOP	-253.3095	SLOP	65.845238	SLOP	-71.07143	SLOP	-95.79762
	INTERCEI	2440.89	INTERCEI	3856.25	INTERCEI	108.43	INTERCEI	136.75	INTERCEI	5213.89	INTERCEI	11771.82	INTERCEI	3157.07	INTERCEI	2797.96
	GROWTH	-0.04	GROWTH	0.02	GROWTH	-0.01	GROWTH	0.01	GROWTH	-0.06	GROWTH	0.01	GROWTH	-0.02	GROWTH	-0.04

**Growth rate and projection of fertilizer demand to 2009. (Potash) K2O Unit m.t. ANNEX 16 - 3 (PARA 13.4)**

governorate	Damascus		Dar'a		Al swaida		Alqunatra		Homs		Hamah		Tartous		Lattakia	
	Observed	Trend	Observed	Trend	Observed	Trend	Observed	Trend	Observed	Trend	Observed	Trend	Observed	Trend	Observed	Trend
1992	398.0	283.0	232.0	180.1	40.0	34.7	2.5	2.9	1079.0	953.8	1206.0	938.9	1564.0	1172.6	1209.0	991.4
1993	227.0	295.8	179.0	209.5	39.0	39.3	8.0	3.9	817.0	898.6	883.0	953.9	845.0	1203.5	743.0	994.3
1994	275.0	308.6	215.0	239.0	32.0	43.9	4.0	4.8	806.0	843.5	811.0	969.0	1106.0	1234.4	849.0	997.2
1995	314.0	321.4	235.0	268.4	52.0	48.5	5.0	5.8	776.0	788.4	951.0	984.0	1343.0	1265.3	989.0	1000.1
1996	294.0	334.1	295.0	297.8	58.0	53.0	6.0	6.8	721.0	733.3	972.0	999.0	1204.0	1296.2	1176.0	1002.9
1997	303.0	346.9	351.0	327.3	63.0	57.6	3.0	7.8	595.0	678.2	789.0	1014.0	1250.0	1327.1	1145.0	1005.8
1998	373.0	359.7	391.0	356.7	46.0	62.2	6.0	8.8	677.0	623.1	1038.0	1029.1	1531.0	1358.0	981.0	1008.7
1999	438.0	372.5	367.0	386.2	76.0	66.8	16.0	9.8	616.0	568.0	1282.0	1044.1	1403.0	1388.9	920.0	1011.6
2000		385.3		415.6		71.4		10.7		512.9		1059.1		1419.8		1014.5
2001		398.1		445.0		76.0		11.7		457.8		1074.1		1450.7		1017.3
2002		410.9		474.5		80.6		12.7		402.7		1089.2		1481.6		1020.2
2003		423.6		503.9		85.2		13.7		347.6		1104.2		1512.5		1023.1
2004		436.4		533.4		89.8		14.7		292.5		1119.2		1543.4		1026.0
2005		449.2		562.8		94.4		15.6		237.4		1134.2		1574.3		1028.9
2006		462.0		592.3		99.0		16.6		182.3		1149.3		1605.3		1031.8
2007		474.8		621.7		103.6		17.6		127.1		1164.3		1636.2		1034.6
2008		487.6		651.1		108.2		18.6		72.0		1179.3		1667.1		1037.5
2009		500.4		680.6		112.8		19.6		16.9		1194.3		1698.0		1040.4
	SLOP	12.79	SLOP	29.44	SLOP	4.60	SLOP	0.98	SLOP	-55.11	SLOP	15.02	SLOP	30.90	SLOP	2.88
	INTERCEI	270.21	INTERCEI	150.64	INTERCEI	30.07	INTERCEI	1.89	INTERCEI	1008.86	INTERCEI	923.89	INTERCEI	1141.68	INTERCEI	988.54
	GROWTH	4.0%	GROWTH	12%	GROWTH	10%	GROWTH	19%	GROWTH	-7%	GROWTH	2%	GROWTH	2%	GROWTH	0%

**FERTILIZER DEMAND PROJECTION AND  
ASSESSMENT OF SUPPLY-DEMAND BALANCE**

**ANNEX 17 -1 (PARA 13.5)**

Fertilizer Consumption in Nutrients -  
tons

Year	N	P	K	Total	
1995	217603	128393	6397	352393	
1996	236295	128638	6549	371482	
1997	227447	124011	5778	357236	
1998	236815	117597	6951	361363	
1999	218436	105068	7360	330864	
Average	227319	120741	6607	354668	
Source: Agricultural Statistics 1999 Table 124					
<b>Basic Data</b>					
1	Base Consumption	227319	120741	6607	354668
	5 year Average 1995-1999	N	P	K	NPK
2	Population Annual Growth 1995-2000			2.54	percent
3	GDP Annual Growth rate assumed as in Explanatory Note on 8th V Year Plan - State Planning Commission January 1997			6.1	percent
4	Contribution of Crop segments to Production and their Expenditure Elasticity	Contribution to prodn	Ratio	Elasticity	
	Cereals	17	0.33	0.23	
	Industrial crops*	13	0.25	0.65	
	Fruits	14	0.27	0.65	
	Vegetables	6	0.12	0.56	
	Legumes	2	0.04	0.42	
	Livestock**	32	0.00	-	
	Others**	16	0.00	-	
		100	1.00		
	Note: 1. Contribution to production from P 59 of Country Profile				
	2. Expenditure Elasticity adopted from: Impact of GATT - Paper by Nouredin H. Mona, University of Aleppo/ICARDA, March 1996				
	*Elasticity is assumed to be the same as fruits				
	** No impact on fertilizer consumption assumed				

**Basis for calculating Annual  
Growth in Fertilizer Consumption**

**ANNEX 17 -2**

	in percentages				
1	Growth Rate of Population	2.54			
2	GDP Growth	6.10			
3	Per capita Income growth 2 minus 1	3.56			
4	Growth in cereals	0.27			
	per capita income growth x cereal elasticity x cereal ratio of contrbn to prodn				
5	Growth in industrial crops & fruits	1.20			
	per capita income growth x indl, fruit elasticity x indl, fruit ratio of contrbn to prodn				
6	Growth in vegetables	0.23			
	per capita income growth x vegetables elasticity x vegetables ratio of contrbn to prodn				
7	Growth in legumes	0.06			
	per capita income growth x legumes elasticity x legumes ratio of contrbn to prodn				
8	Combined Growth Rate- 1 plus (4 to 7)	4.30			
9	Combined Growth Rate reduced to 0.6 as	2.58			
	allowance for effect of non-fertilizer factors and for increased productivity of fertilizers on production				

**FERTILIZER DEMAND PROJECTION**  
in nutrients - tons

**ANNEX 17 - 3**

	N	P	K	Total	Growth Trend Method		
					N	P	K
Base 5 Year Average	227319	120741	6607	354668			
2000	233184	123857	6777	363818	239601	107199	6336
2001	239200	127052	6952	373205	243882	102728	6242
2002	245372	130330	7132	382833	248163	98256	6148
2003	251702	133692	7316	392710	252444	93785	6054
2004	258196	137142	7504	402842	256726	89313	5960
2005	264858	140680	7698	413236	261007	84842	5866
2006	271691	144310	7897	423897	265288	80370	5772
2007	278700	148033	8100	434834	269569	75899	5678
2008	285891	151852	8309	446052	273851	71427	5583
2009	293267	155770	8524	457560	278132	66956	5489
2010	300833	159789	8744	469365			



**BROKEN INTO DOMESTIC PRODUCTION AND LIKELY IMPORT REQUIREMENTS - SCENARIO A ANNEX 17 - 4**

material in tons

Assuming domestic production remaining stagnant at 2000 plan level equivalent to 56000\*0.3 of N (16800) plus 77000\*.46 of N (35420) and 150000\*.46 of P (69000)

Year	Homs Production				Imports			
	Amm Nitrate	Urea	TSP	Total	Urea	TSP	Sul. Of Potash	Total
2001	56000	77000	150000	283000	406522	126200	14484	547206
2002	56000	77000	150000	283000	419938	133326	14858	568122
2003	56000	77000	150000	283000	433700	140636	15241	589577
2004	56000	77000	150000	283000	447817	148134	15634	611586
2005	56000	77000	150000	283000	462299	155826	16038	634163
2006	56000	77000	150000	283000	477154	163716	16451	657322
2007	56000	77000	150000	283000	492392	171810	16876	681078
2008	56000	77000	150000	283000	508024	180113	17311	705448
2009	56000	77000	150000	283000	524059	188630	17758	730446
2010	56000	77000	150000	283000	540507	197367	18216	756090

Import as % of total consumption in the last column

**PROJECTIONS TRANSLATED TO FERTILIZER TYPES -**

**ANNEX 17 - 4**

**BROKEN INTO DOMESTIC PRODUCTION AND LIKELY IMPORT REQUIREMENTS - SCENARIO A**

material in tons  
 Assuming domestic production remaining stagnant at 2000 plan level equivalent to 56000\*0.3 of N (16800)  
 plus 77000\*.46 of N (35420) and 150000\*.46 of P (69000)

Year	Homs Production				Imports				Total Consumption					
	Amm Nitrate	Urea	TSP	Total	Urea	TSP	Sul. Of Potash	Total	Amm Nitrate	Urea	TSP	Sul Potash	Total	Import%
2001	56000	77000	150000	283000	406522	126200	14484	547206	56000	483522	276200	14484	830206	66
2002	56000	77000	150000	283000	419938	133326	14858	568122	56000	496938	283326	14858	851122	67
2003	56000	77000	150000	283000	433700	140636	15241	589577	56000	510700	290636	15241	872577	68
2004	56000	77000	150000	283000	447817	148134	15634	611586	56000	524817	298134	15634	894586	68
2005	56000	77000	150000	283000	462299	155826	16038	634163	56000	539299	305826	16038	917163	69
2006	56000	77000	150000	283000	477154	163716	16451	657322	56000	554154	313716	16451	940322	70
2007	56000	77000	150000	283000	492392	171810	16876	681078	56000	569392	321810	16876	964078	71
2008	56000	77000	150000	283000	508024	180113	17311	705448	56000	585024	330113	17311	988448	71
2009	56000	77000	150000	283000	524059	188630	17758	730446	56000	601059	338630	17758	1013446	72
2010	56000	77000	150000	283000	540507	197367	18216	756090	56000	617507	347367	18216	1039090	73

Import as % of total consumption in the last column

**PROJECTIONS TRANSLATED TO FERTILIZER TYPES -  
BROKEN INTO DOMESTIC PRODUCTION AND LIKELY IMPORT REQUIREMENTS - SCENARIO B ANNEX 17 - 5**

material in tons

Assuming domestic production remaining at 2000 plan level for first 3 years equivalent to 56000\*0.3 of N (16800) plus 77000\*0.46 of N (35420) and 150000\*0.46 of P (69000) and increasing to 90% of installed capacity thereafter equivalent to 108000\*0.3 of N as amm. Nitrate (32400), 297000\*0.46 of N as urea (136620) and 405000\*0.46 of P as TSP (186300)

Year	Homs Production				Imports				Total Consumption					
	Amm Nitrate	Urea	TSP	Total	Urea	TSP	Sul. Of Potash	Total	Amm Nitrate	Urea	TSP	Sul Potash	Total	Import%
2001	56000	77000	150000	283000	406522	126200	14484	547206	56000	483522	276200	14484	830206	66
2002	56000	77000	150000	283000	419938	133326	14858	568122	56000	496938	283326	14858	851122	67
2003	56000	77000	150000	283000	433700	140636	15241	589577	56000	510700	290636	15241	872577	68
2004	108000	297000	298134	703134	152566	0	15634	168200	108000	449566	298134	15634	871334	19
2005	108000	297000	305826	710826	165982	0	16038	182019	108000	462982	305826	16038	892845	20
2006	108000	297000	313716	718716	179744	0	16451	196195	108000	476744	313716	16451	914912	21
2007	108000	297000	321810	726810	193861	0	16876	210737	108000	490861	321810	16876	937547	22
2008	108000	297000	330113	735113	208342	0	17311	225654	108000	505342	330113	17311	960767	23
2009	108000	297000	338630	743630	223197	0	17758	240955	108000	520197	338630	17758	984585	24
2010	108000	297000	347367	752367	238436	0	18216	256652	108000	535436	347367	18216	1009018	25

There will be surplus TSP if 90% of production capacity is reached.

**SAVING IN FOREIGN EXCHANGE PRODUCING AT 90% OF INSTALLED CAPACITY ANNEX 17 - 6**

Year	Imports if Homs prodn is at 2000 Plan level		Imports if Homs prodn is at 90% of capacity		Reduced Imports - tons		Saving in Foreign Exchange mill US\$*		
	Urea	TSP	Urea	TSP	Urea	TSP	Urea	TSP	Total
2001	406522	126200	406522	126200	0	0	0.00	0.00	0.00
2002	419938	133326	419938	133326	0	0	0.00	0.00	0.00
2003	433700	140636	433700	140636	0	0	0.00	0.00	0.00
2004	447817	148134	152566	0	295251	148134	33.91	26.60	60.52
2005	462299	155826	165982	0	296317	155826	34.04	27.99	62.02
2006	477154	163716	179744	0	297410	163716	34.16	29.40	63.56
2007	492392	171810	193861	0	298531	171810	34.29	30.86	65.14
2008	508024	180113	208342	0	299682	180113	34.42	32.35	66.77
2009	524059	188630	223197	0	300862	188630	34.56	33.88	68.43
2010	540507	197367	238436	0	302071	197367	34.70	35.45	70.14

To calculate foreign exchange saving following 3 year average of CIF \$ prices obtained from the Homs unit are taken

Urea	SP	5341	US\$	115
TSP	SP	8351	US\$	180

**PRICE ANALYSIS - INTERNATIONAL PRICES - UREA**

**ANNEX 18 - 1 (PARA 13.7)**

Source: International Fertilizer Industry Association  
fob bulk US\$/mt

mid-value taken from price range for each month  
East Europe and Middle East markets taken for comparison these being the nearest sources of tradable surplus

East Europe	January	February	March	April	May	June	July	August	September	October	November	December	Averages	Fluctuation Index
1984	118.50	122.50	130.00	137.50	137.50	155.00	157.50	160.00	162.50	167.00	168.00	169.50	148.79	<b>1.24</b>
1985	166.50	165.00	137.50	135.00	124.00	113.50	103.50	92.50	84.00	87.00	86.00	85.00	114.96	<b>0.96</b>
1986	84.00	83.00	79.00	74.00	72.50	70.00	68.50	69.00	68.50	65.50	65.50	66.00	72.13	<b>0.60</b>
1987	65.50	73.50	74.50	84.00	85.00	85.00	86.00	87.50	90.00	87.50	92.50	92.50	83.63	<b>0.70</b>
1988	-	-	102.50	112.50	119.00	120.00	127.50	127.50	127.50	127.50	122.50	125.00	121.15	<b>1.01</b>
1989	122.50	120.00	119.00	118.00	113.00	104.00	91.50	80.00	72.50	75.00	78.50	80.00	97.83	<b>0.82</b>
1990	85.00	100.00	107.50	106.50	102.50	102.50	105.00	112.50	130.00	137.50	150.00	150.00	115.75	<b>0.97</b>
1991	148.50	153.50	153.50	145.00	140.00	140.00	132.50	135.00	137.50	138.50	130.00	123.50	139.79	<b>1.17</b>
1992	121.50	118.00	116.00	115.50	116.50	118.50	121.50	122.50	117.50	107.00	104.50	99.00	114.83	<b>0.96</b>
1993	94.00	89.50	83.00	80.00	81.50	81.00	77.50	75.00	76.00	79.50	86.50	94.00	83.13	<b>0.70</b>
1994	96.50	97.50	100.00	106.00	111.50	115.00	117.00	120.00	128.50	145.50	157.50	177.50	122.71	<b>1.03</b>
1995	180.50	197.50	208.50	-	176.50	163.50	165.00	172.50	184.00	198.50	214.00	197.50	187.09	<b>1.56</b>
1996	189.00	198.00	195.50	169.50	164.00	181.00	185.50	182.50	169.50	174.00	177.00	165.00	179.21	<b>1.50</b>
1997	161.00	144.00	142.00	132.50	122.50	116.00	105.50	102.00	92.50	102.50	107.50	107.50	119.63	<b>1.00</b>
1998	87.50	87.50	107.50	107.50	107.50	107.50	107.50	107.50	86.00	82.50	72.50	-	96.45	<b>0.81</b>
Average	122.89	124.96	123.73	115.96	118.23	118.17	116.77	116.40	115.10	118.33	120.83	123.71	<b>119.59</b>	<b>1.00</b>
<b>Seasonal Index</b>	<b>1.03</b>	<b>1.04</b>	<b>1.03</b>	<b>0.97</b>	<b>0.99</b>	<b>0.99</b>	<b>0.98</b>	<b>0.97</b>	<b>0.96</b>	<b>0.99</b>	<b>1.01</b>	<b>1.03</b>	<b>1.00</b>	
											Last 3 year	average	131.76	

**Middle East**

1984	127.50	145.00	150.00	150.00	149.00	166.00	172.50	172.00	174.00	176.00	174.50	176.50	161.08	<b>1.23</b>
1985	177.00	176.00	164.50	147.50	125.00	123.50	109.00	97.50	91.00	91.00	90.00	88.00	123.33	<b>0.94</b>
1986	86.00	86.00	84.00	84.00	69.00	72.50	72.50	69.50	70.50	72.50	71.00	70.50	75.67	<b>0.58</b>
1987	73.00	81.00	85.00	94.00	92.50	99.00	101.50	95.00	92.50	100.50	102.50	99.50	93.00	<b>0.71</b>
1988	-	-	112.50	120.00	127.50	128.00	135.00	136.50	136.50	135.00	135.00	132.50	129.85	<b>0.99</b>
1989	132.50	130.00	130.00	132.00	127.50	112.50	105.00	80.00	72.50	80.00	87.50	92.50	106.83	<b>0.82</b>
1990	102.50	115.00	120.00	120.00	120.00	122.50	122.50	125.00	150.50	150.50	162.50	157.50	130.71	<b>1.00</b>
1991	157.50	170.00	170.00	165.00	155.00	150.00	147.50	147.50	147.00	146.00	146.00	145.50	153.92	<b>1.17</b>
1992	145.50	136.50	131.50	131.00	136.50	140.50	146.50	146.50	142.50	127.00	124.50	116.00	135.38	<b>1.03</b>
1993	116.00	116.00	102.00	100.00	96.00	103.00	100.50	98.50	93.50	96.00	102.00	110.00	102.79	<b>0.78</b>
1994	110.00	113.50	113.50	114.50	121.00	126.50	131.50	141.50	150.50	167.00	174.50	199.50	138.63	<b>1.06</b>
1995	201.00	222.50	229.00	-	187.50	190.00	192.50	197.50	215.00	227.50	230.50	229.00	211.09	<b>1.61</b>
1996	206.50	207.50	212.50	192.00	190.00	197.50	199.50	197.50	192.50	183.00	183.50	-	196.55	<b>1.50</b>
1997	175.50	161.50	158.00	146.50	135.50	129.50	128.00	109.00	96.00	104.00	101.00	101.00	128.79	<b>0.98</b>
1998	86.50	82.00	101.00	111.50	103.00	90.50	92.00	94.50	90.00	81.00	75.00	72.50	89.96	<b>0.69</b>
Average	135.50	138.75	137.57	129.14	129.00	130.10	130.40	127.20	127.63	129.13	130.67	127.89	<b>131.08</b>	<b>1.00</b>
<b>Seasonal Index</b>	<b>1.03</b>	<b>1.06</b>	<b>1.05</b>	<b>0.99</b>	<b>0.98</b>	<b>0.99</b>	<b>0.99</b>	<b>0.97</b>	<b>0.97</b>	<b>0.99</b>	<b>1.00</b>	<b>0.98</b>	<b>1.00</b>	
											Last 3 year	average	138.43	

**AMMONIA, PHOSPHORIC ACID AND DAP - INTERNATIONAL PRICES**

**ANNEX 18 - 2**

Source: International Fertilizer Industry Association

fob US\$/mt

mid-values of annual average price ranges are taken

Year	Ammonia		Phosphoric Acid		DAP	
	Middle East	US Gulf	N Africa	US Gulf	N Africa	N Africa
1989	60.50	355.00	372.50	172.50		202.50
1990	94.00	280.00	335.00	165.50		191.00
1991	101.50	268.50	315.00	168.50		192.50
1992	92.50	255.00	285.00	149.00		170.50
1993	107.50	229.50	267.50	135.00		145.00
1994	167.50	255.00	295.00	174.50		186.00
1995	186.00	292.50	340.00	219.00		234.00
1996	190.00	317.50	350.00	199.50		232.50
1997	167.50	332.50	355.00	198.50		209.00
1998	131.50	340.00	367.50	201.00		207.50
1999	98.50	337.50	355.00	177.50		200.00
<b>Average</b>	<b>127.00</b>	<b>296.64</b>	<b>330.68</b>	<b>178.23</b>		<b>197.32</b>
Last 3 year's average	<b>132.50</b>			Last 3 yrs average		<b>205.50</b>
Middle East Ammonia				N Africa DAP		

## COMPARABLE BORDER PRICES

US\$/MT

## ANNEX 18 - 3

Base fob prices derived from the Price Trend Analysis (see previous statements)

Product	Basis adopted	FOB US\$/mt	Ocean Freight US\$/mt	C&F at Sp 46.50	Clearance charges p/t*	Clearance Charges as % of value**	Total Clearance Charges	Total landed Cost SP/mt
Urea	East Europe							
	Last 3 years' average	131.76	20.00	7057	140	332	472	7529
Ammonium Nitrate	Urea price pro-rated for 30.3% Nitrogen	86.79	20.00	4966	140	233	373	5339
TSP - see note	DAP N Africa 3-yr average (205.50) minus ammonia Middle East 3-yr average (132.50) at 0.221 per ton of DAP to remove the N part of							
	DAP	176.22	20.00	9124	140	429	569	9693
						Less Sp 1000	see footnote 3	8693

Note: 1. \* Handling SP 55, clearance cost SP 12, supervision and shipping agent SP 67.85 - all per ton - totalling 134.85 or, say 135. In addition stamp/document fee of SP 250, license extension fee SP 124, judicial fee of SP 1500, radiation check fee of SP 1000 and chemical analysis fee of SP 1000

are incurred for each consignment. Assuming each order of 10000 tons is delivered in 3 lots of 3333 tons these charges a translate to a per ton incidence of

SP 1 per ton (3874/333). The total of 135 plus 1 is rounded to 140 per ton

2.\*\* Insurance of 2% plus finance charges of 1.2% plus GEZA commission of 1% plus 0.5% toward provision for shortages/damages = 4.7% on C&F

The source for above charges is the GEZA Accounts section as per cost format provided by them

3. TSP price - usually 20\$ below the rate arrived at by eliminating value of ammonia from DAP. On this basis the SP Border price will be less by about SP 1000 per ton (20\*46.50=930 plus 4.5%= 971.85 or say 1000) i.e. 9693 minus 1000 = 8693



**ANALYSIS OF DISTRIBUTION and CREDIT COSTS - INPUTS****ANNEX 19 (PARA 9.9)**

Based on English translations of ACB Annual Accounts and Balance Sheets in arabic

Notes:

1. For convenience all inputs sold by ACB are reckoned in terms of fertilizers
2. Figures suitably rounded off
3. Units are SP million unless otherwise stated and values shown in italics for latter
4. Source references are to ACB Accounts for 1999 unless stated otherwise

No.	Item	Value	Source
<b>ACB's Input Distribution Activity</b>			
1	Capital employed on Inputs - stocks	1006	from Balance Sheet
2	Capital employed on Inputs - debtors	0	
3	40% of common capital of 9406 SP million	3762	from Balance sheet - common and direct items are separated for this allocation
			7040 of input sale and 10222 of advances constitute a ratio of 40:60 on input:banking
4	<b>Total capital employed on Inputs (1 to 3)</b>	<b>4768</b>	
5	Input marketing exps	662	column 3 of Bank's Expenditure, exclusive of procurement
6	Profit on Inputs	249	revenue minus exp under column 3 of expenditure
7	Sales Value	7040	under Revenue - Commercial activity
8	Weighted Average price of fertilizer - SP per ton	6662	weighted average price per ton for NPK
9	<b>Sales Volume of all inputs in terms of fertilizer - tons</b>	<b>1,056,000</b>	dividing sale value by weighted average price
<b>ACB's Loan Activity</b>			
10	Capital employed on banking activity - direct items	22598	from Balance Sheet
11	60% of common capital of 9406 SP million	5644	see item 3 above - same basis but allocating 60% of common capital
12	<b>Total capital employed on banking (10 plus 11)</b>	<b>28242</b>	
13	Expenses on banking activity	1211	from expenditure statement (total expenses of 1634 minus interest incurred of 433)
14	Interest incurred	433	from expenditure statement
15	Profit on banking activity	-142	from expenditure and revenue statements
16	<b>Total advances 1999</b>	<b>10222</b>	statement obtained from ACB Aleppo as this info is not clear from Balance Sheet
17	Cultivated area million ha	4.541	Agricultural Statistics 1999 Table 3

<b>B - ANALYSIS - INPUT DISTRIBUTION</b>			
<b>No</b>	<b>Item</b>	<b>Value</b>	<b>Explanation and Comments</b>
1	Capital Employed expressed as months of sales	8	A4 divided by A7 multiplied by 12 (months) - the capital employed is high assuming a sale period of 4 months and regular monthly buying over all 12 months
			working capital on stocks should not exceed 6 months' stock - see inventory model
2	Return needed on present efficiency of capital management	715	15% of A4 - 15% assumed as fair return on capital
3	Return needed on capital of 6 months instead of 8 months' sale value	528	half of annual sale value in A7 and 15% thereon
4	Expense to sales - percentage	9	A13 divided by A15
5	Percentage on normative efficiency	5	Generally distribution costs are 5% of sale value
6	Saving if exps are 5% of sales	310	Present expenses in A5 minus distn exps at 5% of sales value in A7
7	Net optimum return needed after adjusting expense savings 3 minus 6	218	
8	Cost of sub-optimal efficiency 2 minus 7	497	
9	Actual return	249	as in A6
10	Actual return minus return needed at optimal efficiency - 9 minus 7 - which represents over recovery from farmer ie implicit tax	31	transfer from farmer to fertilizer producer to meet sub-optimal efficiency cost
11	Balance cost of sub-optimal efficiency met by taxpayer 8 minus 10 which represents implicit subsidy to fertilizer producer	466	transfer from taxpayer to fertilizer producer
12	Implicit tax on farmer SP per ton	29	
13	Implicit subsidy from taxpayer to producer SP per ton	441	

<b>C - ANALYSIS - AGRICULTURAL CREDIT</b>			
<b>No</b>	<b>Item</b>	<b>Value</b>	<b>Explanation and Comments</b>
1	Capital Employed expressed as months of loan advances	33	A12 divided by A16 multiplied by 12 months - the capital employed is very high
2	Return needed on present efficiency of capital management	2824	see model showing adequacy of 24 months on a liberal basis 10% of A12 - 10% being assumed as return on capital currently employed
3	Return needed on capital of 24 instead of 33 months' loan value	2044	10% of normative capital equal to annual loan of 10222 / 12 x 22
4	Expense to loan advances value - percentage	5.92	A13 divided by A16 - due weight given to MT and LT loans from which interest flows over longer period
5	Percentage of transaction cost assumed	2	To lend at 5-6% and spend nly 6% of loan value is very high. 2% has been assumed
6	Saving if transaction cost is 2% of loan value	1007	Present expenses in A13 minus 2% of advances as in A16
7	Net optimum return 3 minus 6	1038	
8	Cost of sub-optimal efficiency 2 minus 6	1786	
9	Actual return	-142	as in A15
10	Actual return versus return needed at optimal efficiency - deficiency in 9 plus 7 represents subsidy to farmer	1180	transfer from taxpayer to farmer
11	Cost of sub-optimal efficiency met by tax-payer - item 8 - which represents implicit subsidy to lending bank	1786	transfer from taxpayer to bank
12	Implicit subsidy to farmer (exclusive of low interest rate) - SP per ton	1117	
13	Implicit subsidy from taxpayer to bank SP per ton	1692	

**ANALYSIS OF PRODUCTION COSTS - FERTILIZERS****ANNEX 20 - 1 (PARAS 7.12, 14.6 AND 18.3)**

Based on english translations of GECM's cost and accounts summaries in arabic - information not fully made available supplemented by expert judgements/estimates from contacts in Indian industry

<b>A - Basic Data</b>		<b>Amm. Nitrate</b>	<b>Urea</b>	<b>TSP</b>
1	Fixed Costs SP per ton in 1999	623	795	1564
2	Return per ton as provided by the unit	1000	1000	1000
3	Total fixed cost per ton incldgd return	1623	1795	2564
4	Actual Production in 1999 - '000 tons	101000	160000	144000
5	Total Fixed Costs per year by inference item 1 x 2 - SP million	163.923	287.200	369.216
6	Total Variable Costs 1999 SP million	306.931	519.680	964.795
7	Variable Cost per ton SP	3039	3248	6700
8	Production Capacity per year - tons	120000	330000	450000
9	90% of Production Capacity - tons	108000	297000	405000
10	Estimated production for 2000 - tons	56000	77000	150000
11	Current Realization ex-factory SP per ton	5165	6365	7425
12	Current ACB Sale price ex-warehouse	5400	7700	8200

**B - Production Costs and Prices**

		<b>Amm. Nitrate</b>	<b>Urea</b>	<b>TSP</b>
<b>1</b>	<b>At Expected production for 2000</b>			
	a: Fixed Cost per ton SP			
	A5 divided by A10	2927	3730	2461
	b: Variable Cost per ton - SP - as in A7	3039	3248	6700
	c: Total cost - private	5966	6978	9161
	d: add back subsidized portion of gas price for AN and urea and rock price for TSP (see calculations)	497	1373	445
	e: Total cost - social	6463	8351	9606
<b>2</b>	<b>At 90% of Production capacity</b>			
	a: Fixed Cost per ton SP			
	A5 divided by A9	1518	967	912
	b: Variable Cost per ton - SP - as in A7	3039	3248	6700
	c: Total cost - private	4557	4215	7612
	d: add back subsidized portion of gas price for AN and urea and rock price for TSP (see calculations)	497	1373	445
	e: Total cost - social	5054	5588	8057
<b>3</b>	<b>Border Price</b>			
	Average of 3 years' CIF prices			
	- source: Homs Unit			
	1997-98	4836	6417	8804
	1998-99	4273	5538	8649
	1999-00	3115	6231	7600
	Average of 3 years' CIF prices	4075	6062	8351
	Add 3.5% for insurance, finance charges and landing expenses of app 275 SP			
	per ton (see calculations of landed costs) to arrive at landed cost	4492	6549	8918
<b>4</b>	<b>Current ACB Sale price ex-warehouse reduced to obtain equivalent of landed cost of import</b>			
	minus transport at SP 1.01 per ton/km for 300 km	5400	7700	8200
		303	303	303
		5097	7397	7897
	Net of 10% as distribution margin till warehouse ie. 0.90	4587	6657	7107
<b>C</b>	<b>Deficits/Supluses per ton under</b>			

	<b>different scenarios</b>			
1	<b>Subsidy SP/t on current farmer compared to World Price 4 minus 3</b>	95	108	-1811
	positive values indicate negative subsidy			
2	<b>Cost of low production efficiency, selling at world prices</b>			
	Cost per ton SP at current Production Level	6463	8351	9606
	World Price	4492	6549	8918
	Deficit/surplus	-1971	-1802	-688
3	<b>Position if 90% of capacity is produced, selling at world prices</b>			
	Cost per ton SP at 90%	5054	5588	8057
	World Price	4492	6549	8918
	Deficit/surplus	-561	961	862
4	<b>Selling at current farmer price and producing at current level</b>			
	Cost	6463	8351	9606
	Current Sellin Price	4587	6657	7107
	Deficit/surplus	-1876	-1694	-2499
5	<b>Selling at current farmer price and at 90% production efficiency</b>			
	Cost	5054	5588	8057
	Current selling price	4587	6657	7107
	Deficit/surplus	-466	1069	-949

Determination of border prices of local raw materials

ANNEX 20 - 2

<b>Phosphate Rock</b>			
A	Price charged to Homs	565	SP/ton delivered
B	Export Price minimum	21	\$ - source GE for Mineral resources
C	Equivalent SP	976.5	SP/ton
D	Less Incremental transport	10	SP/ton
E	Less charges for FOB	140	SP/ton - based on fertilizer import costs
F	Net export realization	826.5	SP/ton
G	Rounded to	827	SP/ton
H	Subsidy element in price charged to Homs	262	SP/ton - G minus A
I	No of tons of rock rquired to		
J	Subsidy element in rock price per ton of TSP		SP per ton of TSP (I x H)
<b>Natural Gas</b>			
A	Price charged to Homs	1	SP per cum - source Homs unit
B	International Price	2.5	\$ per mmbtu (US prior to oil price rise)
C	Equivalent SP	116.25	SP per mmbtu equivalent to 31 cum or 252,000 kcal or 1 cum = app 8129 kcal
D	Equivalent SP per cum	3.75	SP/cum or for 8129 kcal (C divided by 31)
E	Subsidy element in price charged to Homs	2.75	SP per cum
F	No. of cum required per ton of ammonia	861	Arrived at by dividing 7 million kcal by 8129 kcal per cum - 7 million kcal of gas is needed to make 1 ton of ammonia
G	Ammonia required to make one ton of Ammonium Nitrate	0.21	tons - source Int Fert Industry Assn Tech Report
H	Ammonia required to make one ton of urea	0.58	tons - source Homs
I	Subsidy element in gas price per ton of Amm Nitrate	497	SP per ton of Amm Nitrate (G x F x E)
J	Subsidy element in gas price per ton urea	1373	SP per ton of urea (H x F x E)

Sulphur another raw material, is imported at international prices

Technical data from IFIA Technical Report No. 26 Part 1.

Gas is sold uniformly at SP one per cum to all users. It has been priced at the international price prior to the oil increase to test competitiveness.

**CROP AND FERTILIZER PRICES AND RATIOS 1990 -1999**
**Annex 22-2**

prices per SP/kg

		90	91	from 92							
Ammonium Nitrate price		3.4	4	5.4							
Urea price		4.9	5.8	7.7							
TSP price		5.2	6.2	8.3							
S/K price		7.7	9	12.1							
		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Wheat Soft Price		8.50	9.00	9.50	9.50	10.25	10.35	10.50	10.30	10.80	10.80
No of kg of crop required to buy 1 kg of fertilizer	nitrat	0.40	0.44	0.57	0.57	0.53	0.52	0.51	0.52	0.50	0.50
	urea	0.58	0.64	0.81	0.81	0.75	0.74	0.73	0.75	0.71	0.71
	TSP	0.61	0.69	0.87	0.87	0.81	0.80	0.79	0.81	0.77	0.77
	S/K	0.91	1.00	1.27	1.27	1.18	1.17	1.15	1.17	1.12	1.12
Wheat Durum Price		9.50	10.00	10.50	10.50	11.25	11.35	11.30	11.30	11.80	11.80
No of kg of crop required to buy 1 kg of fertilizer	nitrat	0.36	0.40	0.51	0.51	0.48	0.48	0.48	0.48	0.46	0.46
	urea	0.52	0.58	0.73	0.73	0.68	0.68	0.68	0.68	0.65	0.65
	TSP	0.55	0.62	0.79	0.79	0.74	0.73	0.73	0.73	0.70	0.70
	S/K	0.81	0.90	1.15	1.15	1.08	1.07	1.07	1.07	1.03	1.03
Barley Price		5.50	6.25	6.50	6.50	6.50	6.50	7.00	7.00	7.50	7.50
No of kg of crop required to buy 1 kg of fertilizer	nitrat	0.62	0.64	0.83	0.83	0.83	0.83	0.77	0.77	0.72	0.72
	urea	0.89	0.93	1.18	1.18	1.18	1.18	1.10	1.10	1.03	1.03
	TSP	0.95	0.99	1.28	1.28	1.28	1.28	1.19	1.19	1.11	1.11
	S/K	1.40	1.44	1.86	1.86	1.86	1.86	1.73	1.73	1.61	1.61
Lentil Price		12.00	12.25	14.00	14.00	14.00	17.80	16.00	16.00	16.00	16.00
No of kg of crop required to buy 1 kg of fertilizer	nitrat	0.28	0.33	0.39	0.39	0.39	0.30	0.34	0.34	0.34	0.34
	urea	0.41	0.47	0.55	0.55	0.55	0.43	0.48	0.48	0.48	0.48
	TSP	0.43	0.51	0.59	0.59	0.59	0.47	0.52	0.52	0.52	0.52
	S/K	0.64	0.73	0.86	0.86	0.86	0.68	0.76	0.76	0.76	0.76
Chickpea Price		13.15	15.00	16.00	16.00	16.00	16.80	17.80	17.80	17.80	17.80
No of kg of crop required to buy 1 kg of fertilizer	nitrat	0.26	0.27	0.34	0.34	0.34	0.32	0.30	0.30	0.30	0.30
	urea	0.37	0.39	0.48	0.48	0.48	0.46	0.43	0.43	0.43	0.43
	TSP	0.40	0.41	0.52	0.52	0.52	0.49	0.47	0.47	0.47	0.47
	S/K	0.59	0.60	0.76	0.76	0.76	0.72	0.68	0.68	0.68	0.68
Cotton Price		17.00	18.00	18.50	19.50	24.50	28.00	30.75	30.75	30.75	30.75
No of kg of crop required to buy 1 kg of fertilizer	nitrat	0.20	0.22	0.29	0.28	0.22	0.19	0.18	0.18	0.18	0.18
	urea	0.29	0.32	0.42	0.39	0.31	0.28	0.25	0.25	0.25	0.25
	TSP	0.31	0.34	0.45	0.43	0.34	0.30	0.27	0.27	0.27	0.27
	S/K	0.45	0.50	0.65	0.62	0.49	0.43	0.39	0.39	0.39	0.39
Sugarbeet Price		1.25	1.90	1.90	1.95	2.10	2.25	2.25	2.25	2.25	2.25
No of kg of crop required to buy 1 kg of fertilizer	nitrat	2.72	2.11	2.84	2.77	2.57	2.40	2.40	2.40	2.40	2.40
	urea	3.92	3.05	4.05	3.95	3.67	3.42	3.42	3.42	3.42	3.42
	TSP	4.16	3.26	4.37	4.26	3.95	3.69	3.69	3.69	3.69	3.69
	S/K	6.16	4.74	6.37	6.21	5.76	5.38	5.38	5.38	5.38	5.38



open market prices for crops as basis

90 91 from 92

Ammonium Nitrate price		3.4	4	5.4
Urea price		4.9	5.8	7.7
TSP price		5.2	6.2	8.3
S/K price		7.7	9	12.1

		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Wheat Soft Price		9.24	9.65	10.20	9.88	10.10	11.30	11.00	11.10	10.93	na
No of kg of crop required to buy 1 kg of fertilizer	nitrat	0.37	0.41	0.53	0.55	0.53	0.48	0.49	0.49	0.49	
	urea	0.53	0.60	0.75	0.78	0.76	0.68	0.70	0.69	0.70	
	TSP	0.56	0.64	0.81	0.84	0.82	0.73	0.75	0.75	0.76	
	S/K	0.83	0.93	1.19	1.22	1.20	1.07	1.10	1.09	1.11	
Wheat Durum Price		9.15	9.61	10.70	10.55	11.20	12.20	11.80	11.89	11.37	na
No of kg of crop required to buy 1 kg of fertilizer	nitrat	0.37	0.42	0.50	0.51	0.48	0.44	0.46	0.45	0.47	
	urea	0.54	0.60	0.72	0.73	0.69	0.63	0.65	0.65	0.68	
	TSP	0.57	0.65	0.78	0.79	0.74	0.68	0.70	0.70	0.73	
	S/K	0.84	0.94	1.13	1.15	1.08	0.99	1.03	1.02	1.06	
Barley Price		8.08	7.46	8.21	7.50	7.26	7.75	7.25	8.30	8.16	na
No of kg of crop required to buy 1 kg of fertilizer	nitrat	0.42	0.54	0.66	0.72	0.74	0.70	0.74	0.65	0.66	
	urea	0.61	0.78	0.94	1.03	1.06	0.99	1.06	0.93	0.94	
	TSP	0.64	0.83	1.01	1.11	1.14	1.07	1.14	1.00	1.02	
	S/K	0.95	1.21	1.47	1.61	1.67	1.56	1.67	1.46	1.48	
Lentil Price		18.30	19.80	21.30	21.83	23.30	24.40	23.50	26.11	28.81	na
No of kg of crop required to buy 1 kg of fertilizer	nitrat	0.19	0.20	0.25	0.25	0.23	0.22	0.23	0.21	0.19	
	urea	0.27	0.29	0.36	0.35	0.33	0.32	0.33	0.29	0.27	
	TSP	0.28	0.31	0.39	0.38	0.36	0.34	0.35	0.32	0.29	
	S/K	0.42	0.45	0.57	0.55	0.52	0.50	0.51	0.46	0.42	
Chickpea Price		17.30	22.70	24.30	20.44	23.60	32.70	33.40	30.48	24.82	na
No of kg of crop required to buy 1 kg of fertilizer	nitrat	0.20	0.18	0.22	0.26	0.23	0.17	0.16	0.18	0.22	
	urea	0.28	0.26	0.32	0.38	0.33	0.24	0.23	0.25	0.31	
	TSP	0.30	0.27	0.34	0.41	0.35	0.25	0.25	0.27	0.33	
	S/K	0.45	0.40	0.50	0.59	0.51	0.37	0.36	0.40	0.49	

**SUBSIDY UNDER DIFFERENT PRODUCTION, IMPORT, COST AND SELLING PRICE SCENARIOS ANNEX 20 - 3**

<b>Base Data</b>				
	<b>Amm Nitrate</b>	<b>Urea</b>	<b>TSP</b>	
Sale Quantity 2001 - estimated	56000	48352 2	27620 0	
Sale Quantity 2004 - estimated	108000	49086 1	29813 4	
Production Current Level	56000	77000	15000 0	
Production at 90% capacity - 2004	108000	29700 0	29813 4	
Imports 2001 - estimated allowing for local production	0	40652 2	12620 0	
Imports 2004 - estimated allowing for local production at high level	0	15256 6	0	
Imports 2004 - estimated allowing for local production at current low level	0	44781 7	14813 4	
<b>IMPORTS</b>				
Deficit/surplus - at current farmer prices	95	108	-1811	
Deficit/surplus - at farmer prices equal to world prices	0	0	0	
<b>PRODUCTION</b>				
Deficit/surplus at current farmer prices, current production efficiency	-1876	-1694	-2499	
Deficit/surplus at farmer prices equal to world prices, current production efficiency	-1971	-1802	-688	
Deficit/surplus at current farmer prices, 90% production efficiency	-466	1069	-949	
Deficit/surplus at farmer prices equal to world prices, 90% production efficiency	-561	961	862	
<b>Subsidies under Different Scenarios</b>				
				<b>Total</b>
<b>1 Subsidy 2001 at current production efficiency, at current farmer prices</b>				
On imports	0.00	43.96	- 228.55	- 184.5 9
On production	-105.04	- 130.41	- 374.81	- 610.2 6
Total	-105.04	-86.46	- 603.35	- 794.8 5

<b>2</b>	<b>Subsidy 2004 at current production efficiency, at current farmer prices</b>				
	On imports	0.00	48.42	-	-
	On production	-105.04	130.41	374.81	610.26
	Total	-105.04	-81.99	643.07	<b>830.11</b>
<b>3</b>	<b>Subsidy 2004, at 90% production efficiency, at farmer prices equal to world prices</b>				
	On imports	0.00	0.00	0.00	0.00
	On production	-60.64	285.47	256.89	481.72
	Total	-60.64	285.47	256.89	<b>481.72</b>
<b>4</b>	<b>Subsidy 2004, at 90% production efficiency, at current farmer prices</b>				
	On imports	0.00	16.50	0.00	16.50
	On production	-50.37	317.58	283.02	-15.81
	Total	-50.37	334.08	283.02	<b>0.68</b>

Notes:

1. Difference between 1 and 4 indicates the savings through improvement in production efficiency in respect of each product.
2. Difference between 1 and 2 indicates how subsidy rises if there is no production increase and how increased import moderates subsidy increase
3. Item 3 shows that with improved production efficiency it is possible to sell at world prices and still make a surplus except on AMN

**SEED COST RECONSTRUCTION FROM AVAILABLE DATA  
AND ESTIMATE OF IMPLICIT SUBSIDY**

**ANNEX 21 (PARA 7.34)**

	Item of Cost	Wheat soft	Wheat hard	Barley	Lentils	Chickpea
1	Crop price SP/kg	10.30	11.30	7.00	16.00	17.80
2	Premium on Crop price for seed procurement - % - as per GESM	20	20	20	20	20
3	Procurement price - SP/kg	12.36	13.56	8.40	19.20	21.36
4	Processing cost - SP/kg as per GESM	1.10	1.10	1.10	5.35	5.35
5	Total cost after processing - SP/kg	13.46	14.66	9.50	24.55	26.71
6	Process Loss - % as per GESM	0.2	0.2	0.2	0.2	0.2
7	Cost allowing for process loss - SP/kg	13.49	14.69	9.52	24.60	26.76
8	25% being cost of servicing capital cost of processing unit SP 90 million/10000 tons - per kg	2.25	2.25	2.25	2.25	2.25
9	Total Cost - SP/kg	15.74	16.94	11.77	26.85	29.01
8	Selling Price - SP/kg as per GESM price list	10.00	17.00	12.10	20.00	28.00
9	Gross margin - SP/kg	-5.74	0.06	0.33	-6.85	-1.01
10	Storage loss at 3% of 7	0.40	0.44	0.29	0.74	0.80
11	Transport over average 400 km at SP .71 per ton/km - SP/kg	0.28	0.28	0.28	0.28	0.28
12	Selling Commission to ACB - 2% of 8 as per GESM	0.20	0.34	0.24	0.40	0.56
13	Interest at 10% for 24 months i.e. 20 % on 7 based on GESM's indication of stock of wheat seed (280,000 tons equivalent to about 24 months' inventory)	2.70	2.94	1.90	4.92	5.35
14	Warehousing cost for 24 months at SP 12 per ton/month - SP/kg	0.24	0.24	0.24	0.24	0.24
15	Establishment costs at 5% of 7	0.67	0.73	0.48	1.23	1.34
16	Profit at 5% on 7	0.67	0.73	0.48	1.23	1.34
17	Total Costs items 10 to 16 - SP/kg	5.17	5.71	3.90	9.04	9.91
18	Deficit - SP/kg	-10.91	-5.65	-3.57	-15.89	-10.93
19	Quantity Sold 1999 - tons		154266	6986	1500	1475
20	Deficit SP million		-1276.902	-24.956	-23.830	-16.115
21	Total deficit - SP million					-1341.804
22	Sale value - SP million		2082.591	84.531	30.000	41.300
23	Total sale value of the 5 crops - SP million					2238.422
24	Total turnover as per GESM - SP million					4000.000
25	Proportionate adjustment of deficit for the total turnover of 4 billion - SP million					-2397.768

- 1 Process loss is 10% according to GOSM but the net loss after adjusting for gain in moisture is only 0.1 to 0.2% . The lower figure has been taken. The process cost per ton at the processing unit is SP 565 for seed treatment, 200 for packing, 50 for handling, 285 for depreciation and wages, that is a total of SP 1100. Seed treatment is not incurred for lentil and chickpea
- 2 Cost of servicing the asset at the processing unit has been taken under item 8 to cover current value of depreciation cost of money and upkeep costs, altogether at 25%
- 3 The above does not include subsidy on seedlings for fruit trees and for forest trees issued by the concerned Directorates. Fruit trees app 5 million per year at SP 13 against cost of SP 25 (basis - cost of olives) =SP60mill
- 4 Forest trees app 24,000 ha per year at 1000 per ha at SP 1 per seedling against cost of SP 15.= SP336mill
- 5 Breeder seed is available at no cost. Other classes of seed material are supplied to growers at cost of commercial crop implying a subsidy but the extent of it could not be determined for want of data

## **PROPOSED FERTILIZER COORDINATION UNIT (FCU)**

### **1. Need for a Centralized Coordination Unit**

A suitable mechanism for coordinating and monitoring the macro-inventory assumes importance with parallel participation of the private sector along with the present public sector agencies producing, importing and marketing fertilizer.

the fcu with an official of the rank of director as the coordinator, assisted by a Deputy Director, who would be full time in charge of this unit, a senior finance executive of Deputy Director's rank, equipped with necessary support staff, computers and vehicle. It would bring together all stakeholders, coordinate their activities and ensure a cost effective competitive market for fertilizer, facilitate increasing consumption and ensure adequate supplies. It would coordinate with desiring importers and facilitate the consolidation of their indents into shiploads, assist in coordinating arrival schedules to match seasonal demand, estimate regional and national demand through continuous exchange of information and views and ensure overall adequacy and continuity of supply. Importers capable of imports in shiploads would be free to do so and the FCU would render them all assistance in getting the necessary exchange.

### **2. Responsibilities of FCU**

FCU would coordinate the implementation of fertilizer use and development policy and strategies and maintain close contact with district and regional administrations. In particular the following would be its functions:

- (a) Coordinate imports of fertilizers of the right types in a timely cost-effective manner and ensure their placement in consuming areas according to their potential.
- (b) Execute government's pricing and subsidy policy through the price coordination mechanism.
- (c) Administer the Pricing System, the equalization fund and the related functions including the fixation and review of normative prices for the Homs Company, in coordination with the Ministry of Industry and the Finance Ministry (see Annex 24), including disbursement of normative compensation to Homs and subsidy vouchers to marketers.
- (d) Enrol importers/marketers based on eligibility norms and monitor their performance and compliance with the code of conduct as laid down from time to time.
- (e) Administer the fertilizer licensing system and ensure timely availability of foreign exchange to cover the supply-demand gap as estimated at the beginning of the year and revised and updated periodically. License eligibility would be to approved importer/marketers and subject to production of pro forma invoice and contract and verification of the reasonableness of price. The object of the licensing system is not to restrict the number of participants but to ensure that players with long term commitment and willing to set up a marketing system are enlisted. The other objective also is to ensure reasonableness of import prices. Mark-up percentage margins offered by contending importers would also be a criterion.

- (f) Supply to decision makers and others, timely information on international demand-supply situation, prices and costs of inputs and domestic consumption;
- (g) Coordinate the demand estimation process from the grass-root institutions, compile and moderate them and finalize the estimate and procurement plans at an annual workshop representing all stakeholders;
- (h) Provide stakeholders and policy makers regular feedback on fertilizer production, imports, placements, consumption and stocks;
- (i) Design, implement and maintain a market information system in coordination with the domestic manufacturer, importers, wholesalers, regional administrations, district administrations and any other body as necessary;
- (j) Prepare and submit short, medium and long term plans, work programs, progress reports;
- (k) Prepare, from time to time according to need, guidelines needed for effective implementation of fertilizer development in consultation with stakeholders and ensure their promulgation by the Government, where it is required, and implementation;
- (l) Maintain close relationship with private sector and cooperatives and such other agencies that are major players in the development of a competitive efficient market;
- (m) Continuously review fertilizer supply chain effectiveness and retail network coverage to strive for improving efficiencies and quality of service;

### **3. Selection of Importer/Marketers**

Foreign exchange and license would be issued to intending importers on condition that the minimum quantity per shipment is 5000 tons and that the minimum quantity to be imported during the season would be 30,000 tons. The objective is to have large marketers capable of building up a distribution network and covering more than one Governorate. A Committee convened by the FCU and constituted for the purpose would select and approve intending importers/marketers. Recognition by FCU as Importer/Marketer is a pre-requisite for grant of import license. The other criteria are spelt out in the Annex on Pricing Mechanism and in 2 (e) above.

### **4. Import Licenses**

The object of centralizing import license issue with FCU is to ensure that foreign exchange is effectively used and fertilizer is bought at internationally competitive prices. One way of achieving this purpose is to allot foreign exchange (i.e. import licenses) based on sealed offers, supported by firm quotations indicating grade, quantity and time of shipment, submitted by approved importers. Offers above a cut-off value would be rejected. This auctioning could be carried out monthly, two months ahead – example, in first week of September for November imports and so on.

### **5. Supply Plan**

The demand estimate is to be converted into a supply plan as part of the overall inventory management and this is done as follows. Supply Plan would comprise estimated consumption for the year minus opening inventory with importers and Homs Company plus any stock in transit plus “pipeline” requirement which could be about 10% of estimated consumption. The pipeline would also help to meet unforeseen demand spurts. The part of each participant in the Supply Plan would be clearly delineated in terms of quantity and fertilizer type to be imported, months of import, Governorates to be covered. The Supply Plan would be reviewed at required intervals to monitor compliance.

## **6. GEZA's role as Buyer of Last Resort**

In the eventuality of the sum total of the quantity proposed to be imported falling short of the projected requirements, or if shipments ordered by market participants were falling behind schedule, FCU would activate imports of appropriate quantities and fertilizer types by GEZA. Before doing so, however, FCU would try to persuade importers to increase the quantities or speed up their schedule.

## **7. Ensuring Adequate and Timely Supply**

There could be the risk of importers being overcautious in ordering shipments in such a manner that are fully sold out by the end of the season causing a shortage toward the close of the season. To avert this contingency and to encourage importers to provide for a normal carry-over, it is worthwhile offering an incentive at a predetermined percentage or unit rate per ton on carry-over stocks subject to certain limits and conditions. The incentive would contribute to carrying cost incurred by importers and its applicability would be limited to the actual stock or 10% of the quantity sold by the importer during the season whichever is less. It would also be subject to his having provided inventory and arrival returns at such periodicity and time schedules as prescribed by FCU. This incentive would reduce the risk of short ordering and minimize the role of GEZA as the buyer of last resort. This incentive could be paid from the equalization fund (see Annex on Pricing for the role of the equalization fund).

## **8. Forward Cover for Currency**

If the currency is allowed to float there could be an important element of cost in the price structure particularly if importers resort to supplier credit to avail of low LIBOR based external interest rates. The importer may have to pay more, in terms of local currency, on the due date if the currency had depreciated by then. Forward cover by the Central Bank of Syria or any authorized dealer in foreign exchange could offer forward cover for currency to protect against this risk.

## **9. Consultative Committee**

FCU would have a Consultative Committee meeting quarterly to review activities and provide policy guidelines. The Committee would be chaired either by the Minister or the Deputy Minister and would have representatives of all stakeholders including the Ministry of Finance, three Governorate Directors by rotation every year and three representatives of the private sector.

## **10. Information flow**

This could be on the following lines, fertilizer type-wise.

From the mantikas to Governorates with copy to FCU

- (a) Opening stock, arrivals, inter-district transfer, if any, every month (the following month's opening stock would automatically give the sale equivalent to consumption)
- (b) Is the closing stock enough to meet the following month's estimated consumption?
- (c) Approved estimate of consumption and the progressive actual up to the month and percentage
- (d) Assistance needed, if any

From the Governorates to FCU

- (a) Combined position of opening stocks of all districts, arrivals from into region from DSM or other regions. Inter-district movement within the region should be ignored.
- (b) Is the combined closing stock enough to meet the following month's estimated consumption for the region?
- (c) Approved estimate of consumption for the region and the progressive actual for the region up to the month and percentage
- (d) Action taken to make inter-district transfers to shift surplus from one to meet deficit in another to ensure no consumption is lost within available stocks in the region
- (e) Action taken on district requests for assistance
- (f) Assistance needed, if any

From FCU to Governorates

- (a) Action taken on requests from regions for assistance
- (b) Opening stock with Importers, quantity on order backed by LC, quantity in transit and under clearance
- (c) Progressive availability versus progressive requirement with reference to the country supply plan, comments on shortfall, if any, and action to correct deviations



## PROPOSED FERTILIZER PRICING MECHANISM FOR THE NEW COMPETITIVE CONTEXT

### Background and Objective

1. Farmer prices are fixed and have not been changed since 1992. Nor have crop prices been changed. From the marketing side, the objective of the new arrangement is to move gradually toward making fertilizers available to farmers at world prices and from the production side to make the pricing procedure such that the local production is self-reliant and held accountable for productivity.

2. "World prices" are difficult to define because they fluctuate from year to year and within the year. The domestic unit cannot be expected to take this fluctuating base as an indicator of efficiency as these prices are market driven. International suppliers who have large volume stakes in the market and are dependent on disposal for maintaining the cash flow, tend to depress prices below cost, in times of pressure, satisfied with recovering variable costs and any available contribution to fixed costs. Conversely, they recover much more than all the production cost and reasonable profit at other times when conditions are favorable. Therefore, this shock has to be absorbed by an equalization system, which can ensure the local unit of regularity of returns (at normative efficiency and not with a view to subsidize low efficiencies) and cash flow. Domestic production in Syria, because of local availability of critical raw materials, would be viable at high capacity utilization.

3. Another factor to be considered is the basic difference in the working capital situation between an importer and the production unit. The former imports on the eve of the season and has less carrying costs by way of interest, storage and storage losses. The latter produces throughout the year, fertilizer production being a continuous process, and waits for the season. The season in Syria is virtually a single season exacerbating this cost difference

4. A third factor is that importers procuring at the last moment would incur less costs and those buying and storing ahead, thereby performing an effective marketing service, would be at a disadvantage. This, unless neutralized, could lead to last minute scrambles and possibly to insufficient availability and shortage

### 5. Pricing Procedure

- (a) At the beginning of each financial year, normative prices would be fixed for the Homs unit for the purpose of compensation. The basis for this price would be the variable costs including interest on working capital per ton plus fixed costs including depreciation spread over 75% of production capacity. The return on capital would be either a fixed margin per ton or calculated as a percentage over the total capital employed and spread over the volume representing 75% of production capacity. The price per ton would be fixed on the foregoing basis. The annual review would, therefore, be a simple process, as the prices would change only if any of the basic parameter changes – such as the price of raw material or for allowance for a reasonable rise in wage bill.
- (b) The unit would be eligible for compensation at the normative prices. The company has the opportunity to maximize its profits by operating at more than 75% of capacity. It would justifiably suffer a reduction in profit if it operated below 75%.

- (c) Homs Company would sell either at prices fixed by the coordinating authority or exercise the freedom to match the import prices, as decided by the coordinating agency. The prices would be ex-factory, all onward costs added to the respective destinations. Both AIMO and private marketers would be distribute and market Homs production. Homs will offer off-season discounts to sell the material ahead of season or move the material to regional warehouses, hold them at their own cost and sell, nearer season, at ex-warehouse prices to AIMO and private marketers. The holding cost is included in the normative compensation price.
- (d) Importers – private as well as AIMO – would be allowed to cost their imports at landed cost plus a margin of 8 to 10 % covering their overheads and profit. Another option would be ask intending importer/marketers to indicate at the beginning of the operation what percentage margin they would add to the landed cost. The best offers could be one of the criteria for selection of Approved Importer/Marketers. The prices thus arrived (landed cost plus approved percentage) would be ex-port or warehouse at near port, all onward costs added to the respective destinations. Whenever the government wishes to subsidize the price, the percentage or amount per ton of subsidy would be indicated and to this extent the landed cost would be reduced and the approved distribution margin percentage marked up thereon. This subsidized portion would be given to importers by means of credit vouchers to be adjusted through purchases from Homs. The adjustment would not be in one installment but at a certain amount per ton, equivalent to the subsidy. The object is to induce purchases from the local unit in parallel with imports. Thus Homs would become the conduit for reimbursement of subsidies “in kind” and government would reimburse the subsidy so adjusted by Homs.
- (e) Sales made by AIMO and private marketers to their dealers would be at the above prices and the dealers, in turn, would mark up the onward costs to their respective destinations/stores plus a profit margin. This margin should, ordinarily, not exceed 5% and need not be controlled or fixed. Thus the prices would vary according to the distance from Homs or port and competition.
- (f) AIMO and private importers would be required to take from the Homs company a matching quantity or such proportion as may be relevant for a given year. This proportion would be declared, by the coordinating organization, at the start for the year based on plan figures of production and imports. Import license issues for imports would be limited on this basis.
- (g) Imports would arrive in different months and importers have the freedom to buy ahead of the season to avail of favorable prices. Those buying ahead would incur additional carrying costs compared to those buying close to or on the eve of the season. This imposes a differential cost and discourages buying ahead. To offset this, there would be a levy calculated at 2% for every month in advance of the season. For example, assuming that the seasonal sales are from November to April the levy would be for two months just prior to November to confer on the earlier importers a differential advantage to meet holding costs. The levy for shipment arrivals in October would be 4%, for September arrivals 2% and exemption for earlier months.
- (h) The proceeds of this levy would be kept in a separate equalization fund by the coordinating organization.
- (i) Now, everyone has a level playing field except for advantages gained by their management efficiency and skills of buying and production.
- (j) At the end of each year, the coordinating organization would arrive at the sale proceeds of the Homs Company based on its observing government fixed or subsidized pricing or on the need to

match import prices. It would calculate the sum to which the company is eligible – by multiplying production quantities by the normative prices. Should the latter be greater than the former, the company would be compensated with the difference from the equalization fund. If it were the other way, the company would pay the difference in to the fund.

## PROJECT PROFILE

### 1. Rationale

Economic growth is the essential basis of a long-term strategy to reduce poverty through increased employment and food production. This growth strategy has to be supported through a series of measures.

- (a) policy framework to stimulate production, marketing and private sector growth;
- (b) reliable flow of inputs for the productive sectors;
- (c) essential improvement and expansion of infra structure for agricultural management, quality and research;
- (d) environmental conservation and
- (e) institutional capacity essential for efficient participation in the market and for performance of critical functions of regulation, umpiring and facilitation.

The proposed project would ensure supply of the most critically needed inputs, namely, fertilizer, seed and plant protection to raise and diversify the country's agricultural production and make it competitive in a global context. Research, extension and other support services would function and contribute synergistically not only to maintain Syria's strategic concern of food security but also to facilitate a progressively increasing participation in export opportunities as well as to protect soil fertility and environment as sustainable foundation for all-round growth. The Government of Syria's ownership and commitment is strong for this project as evidenced by several important economic reforms undertaken over the last few years.

### 2. Institutional Strengthening

The project would support the strengthening of input related institutions with necessary staffing, equipment, machinery and vehicles, according to need, to facilitate fulfillment of their redefined roles. These institutions include the AIMO, NSDCA, FCU, and Plant Protection Directorate for quality control and fertilizer quality control institutions. In particular, the project would support the formation of FCU, as it has to handle the most critical part of current input reforms.

The major responsibility for implementation of development plans and performance of market and quality management functions devolves upon Governorate and local administrations. The need for additional facilities such as vehicles and computers need to be studied and assessed.

Reliable and timely market information being the very essence of a competitive market, the input project would support the critical gaps in terms of equipment, not covered by earlier or other current projects, would be supported.

### **3. Technical Assistance to assess institutional requirements under proposed reorganization**

Type of Assistance: A national expert in Public Administration from the Damascus University or a recently retired senior civil servant, not below the rank of Director.

Duration: Three months

Terms of Reference: The expert would conduct a study of the concerned institutions and their current facilities, assess further needs in terms of equipment, staffing both at managerial and operative levels and training in skills needed for performance of new or enriched functions, estimate costs and recommend any other re-organizational requirement he considers necessary for effective performance of their new role. The expert would closely coordinate with and consult the concerned technical departments of the government such as the Plant Protection Directorate for pesticide quality testing and enforcement facilities, GOSM's Quality Control Directorate for setting up NSDCA with all support facilities and the present fertilizer quality control laboratory.

An important component of the study is the proposal for appropriate organizational structures, including reporting and coordination relationships and accountability parameters, for institutions envisaged by the input project to be set up newly or whose scope of functions is to be enlarged substantially.

Cost estimates would be classified as capital expenditure and recurring costs and also as local costs and costs in terms of foreign exchange. It is possible that all the assessed requirements are not needed immediately and, therefore, a phased program of procurement should be suggested. The report would include suggestions for reallocation of existing resources, wherever possible, in order to ensure that existing resources are put to best and maximum use before seeking additional infusion.

The expert would exercise caution in distinguishing between normal staff and equipment needs and those strictly related to additional functions arising out of redefinition of roles under this project. He would also take into consideration any assistance already provided by any earlier or other currently on-going projects and ensure that there is no duplication. The existing and proposed institutions that have a role in the reform are listed in the preamble.

### **4. Fertilizer Production**

Technical Assistance to evaluate potential for optimizing production at Homs

Type of Assistance: A two-person Team consisting of national experts, one in fertilizer production technology and the other in costing and finance, preferably, the present production/technical Director and Finance Director of the Homs unit.

Duration: Three months

Terms of Reference: The study would consist of three parts.

- (a) Study existing facilities at Homs and propose, with full details of technology and equipment requirements, a revamping plan to attain production to the full original capacities of ammonium nitrate, urea and triple superphosphate. The proposal would take into account the need for balancing the capacities of the ammonia, sulfuric acid and phosphoric acid plants with those of the downstream units. In framing the proposals, the experts would examine and take into account reasons for low production in recent months and, in particular, assess and apportion the shortfall to fall in rated capacity or low stream efficiency or plant imbalances or any other reason.

- (b) Study the causes for the high cost of ammonium nitrate at Homs compared to world prices and suggest ways of restoring its competitiveness and if this is not feasible evaluate the possibility and implications of closing down this unit. In suggesting the latter, the experts would assess the possibility of correspondingly increasing production of urea with the excess ammonia available due to the proposed closure, within existing capacity of the urea plant, if feasible, and, if not, what additional capital cost would be entailed.
- (c) Study the technical feasibility of producing DAP in place of TSP and evaluate whether this would improve the profitability of the Homs unit, in terms of better utilization of installed assets and lower maintenance cost in terms of less corrosion and other benefits. Evaluate the capital cost for this alternative.
- (d) The foregoing studies should be supported by capital cost estimates classified as local and foreign currency, comparative financial evaluation, estimate of duration for implementation, estimates of product costs including return on investment. If the revamping operation is likely affect current production the loss of profit, if any, on such interruptions should be capitalized and included in the estimates.

### **5. Technical Assistance on Input Marketing**

Type of Assistance: International Consultant. Candidate should be conversant with policies and systems concerning marketing, price and subsidy administration and should have at least ten years' marketing experience in a senior position in a country practicing an open system of marketing.

Duration: One Year. Location Damascus

Terms of Reference for the Marketing Expert to be attached to FCU

The Consultant would coordinate closely with and work under the guidance of the Head of the Fertilizer Coordination Unit (FCU). He/she would be responsible for advising and assisting FCU in implementing the input market reforms in order to achieve the establishment of a cost-effective competitive market for inputs (primarily fertilizer, seed and plant protection products). He would specifically be responsible for assisting FCU in respect of the following.

- (a) Guide and assist FCU in its various functions concerning supply management, price administration, subsidy administration, import licensing administration, selection of importer/marketers and operation of the equalization fund. This would include assistance in respect of designing systems and procedures concerning these aspects.
- (b) Refining the existing demand estimation system and design formats for involving all stakeholders, including local administrations in the planning, implementing and monitoring supply management.
- (c) Assisting in the streamlining of procurement, importation, port handling, transportation and storage practices in order to achieve the maximum efficiency and cost reduction.
- (d) Designing effective distribution and marketing strategies in consultation with importers and assisting them in implementation and periodic review; these would be supported by specific quantitative time-bound plans and grass roots level mapping and planning. The strategy should achieve the objective of reaching to the farmer at the villages by an appropriate distribution mechanism the right fertilizer type, at the right time, in adequate quantities and in a cost-effective manner.

- (e) Evolving dialogue mechanisms, at various levels, with the private and cooperative sector to discuss issues relating to marketing of inputs and output with a view to establish a competitive marketing system through stakeholder involvement and participation
- (f) Helping in devising and implementing policies and procedures that encourage wider private sector participation in input importation and output marketing
- (g) Guiding the observance of sound inventory management practices at the micro and macro levels to ensure timely arrivals of shipments without bunching at the port, adequate overall availability at the country level to meet pipeline and unplanned demand increases and to keep carry over within reasonable limit.
- (h) Supervising and participating as trainer in training programs for retailers, wholesalers and importers.
- (i) Preparing procedural manuals and handbooks wherever required for the guidance of participants in the marketing system
- (j) He/she would prepare a quarterly progress report of achievements versus programs/targets and make suggestions for improvements.

## **6. Seed Related Research and Extension**

### **Technical Assistance to Evaluate Current Research and Extension**

Type of Assistance: An international expert from a research institution or a retired researcher of international repute and a senior extension expert from any research institution of international standing.

Duration: Two months

Terms of Reference: Two-member mission to review the current research activity and the extension organization and the effectiveness of linkage between the two to ensure that maximum benefits from research are placed within reach of farmers and particularly those with small holdings.

To assess the current research capabilities relating to seed development and release of new and improved varieties for strategic crops with a view to identify shortcomings and make recommendations for improvement in terms of adequacy of breeding programs and their effectiveness, additional support facilities needed for breeders, strength of breeder teams, adequacy of germplasm resources and their characterization and cataloguing, integration of entomology, pathology and physiology in breeding programs, resources, identification of equipment, review mechanisms, integration with extension and linkage with farmers. The expert should make recommendations to improve the system with specific proposals and cost estimates.

The extension part of the study would focus particularly on capacity, staff motivation, facilities, monitoring systems, efficacy, strategy content and effectiveness as a link between farmer and research. More specifically, the team would examine the current workload on extension staff, adequacy of extension materials and equipment and institutional mechanism for involvement of the private sector, current strategy, its efficacy and localization, identification of strategies and criteria for localizing messages, identification of effective media for reaching farmers and any other aspect considered relevant. The expert team would make specific practical recommendations on these aspects and, in particular on the institutionalization of linkages with farmers to take research findings to them as relevant to respective

locations and with a view to take farmers' local problems and cultural characteristics into designing new varieties that directly address these local needs.

## **7. Fertilizer, Seed and Pesticide – Policy and Institutional Reform, Quality Standards and Enforcement Technical Assistance (Optional)**

Visits by senior teams of officials have been suggested (see subsequent section titled “Human Resource Development”) to observe practices in other developing countries to benefit by their experiences of successes and failures. Following these visits, special teams in respect of each of these three areas would be constituted to formulate specific proposals to be incorporated into the respective policies and laws. The teams would have representation from all stakeholders in each area including a representative from private sector. The formulated proposals would be placed before a three-day workshop with as wide participation as possible, including all provincial Directorates and private sector. The proposals and changes as agreed upon at the workshop and as endorsed by the Supreme Agricultural Council, with any changes considered essential from a policy standpoint, would be made into Policy and Law in respect of these three major inputs. In this effort should international technical assistance be needed in formulating the proposals, presenting them at the workshop and in finalizing them, these would be provided for under the project. Three separate experts on quality standards and enforcement aspects – fertilizer, seed and plant protection – would be engaged for duration of three months each, in addition to one input marketing expert for two months to deal with Input System, Policy and Institutional Reform. The assistance from international experts is at the option of the Government.

## **8. Human Resource Development**

Human resource development through technical assistance, training, study tours and tailor-made programs is central to the project. Foreign technical assistance has been limited to the bare minimum, as it is the objective of the project to utilize the talented local resource to the maximum extent possible. Training of private distributors, dealers and cooperatives on effective marketing practices would go a long way to motivate extensive participation and strengthen the market structure. Study tours for senior officials at the national and regional level and for importers/marketers to observe successful practices elsewhere in the world would be supported by the project.

- (a) AIMO, Private importers/marketers, distributors training – to be conducted by an overseas training institution – at a retreat in Syria – 40 participants each training, two training camps, one each year – Syllabus: Marketing concepts, control of marketing costs, market development, working capital management, procurement methodologies, international price trends and timing of purchases in the international market, dealer development, storage and handling practices, pricing strategies, promotion
- (b) Dealer Training – private retailers, joint venture outlets, and cooperatives – regional camps, two in each region - Syllabus: basic knowledge about fertilizers, crop dosages, application methods, storage practices, farmer services, delivery mechanisms and techniques for reaching villages, merchandizing and display, pricing, working capital management, inventory management, quality aspects and obligations under laws
- (c) Training for plant protection dealers – regional camps, two in each region. Syllabus: product knowledge, dosages and applications, precautions in handling and safety aspects, environmental



aspects of pesticide usage, types of common pests and products to be used to control them, working capital management, display, farmer services, pricing, quality aspects and obligations under laws

- (d) Senior level study tour to observe input marketing practices and agricultural planning, implementation and monitoring methodologies at national and state levels in other developing countries – three each from the Ministry, AIMO and private marketers, one from Homs marketing department and six from the agricultural Directorates in the Governorates.
- (e) Study tour to observe fertilizer, seed and pesticide laws and regulations and approval, registration and quality enforcement practices in developing countries. The team would include two senior officials from each of the Directorates dealing with fertilizer, seed and plant protection, two from the private sector pesticide industry, two from NSDCA and six from the Governorate agricultural Directorates. The visiting team would be made responsible for drafting the fertilizer, seed and pesticide laws and regulations.
- (f) National Sample Survey of Farm Households – A framework for such a study has been suggested by Dr Alexander Sarris. A study carried out by the Ethiopian Bureau of Statistics sponsored by the World Bank would be a useful model to adapt.

**Seasonal Variations of  
Crop Prices**

**Annex 26**

Major crops prices (private - wholesaler)  
1998-1999-2000

crop	month	January	February	March	April	May	June	July	August	September	October	November	December	Total	price		difference
		ary	ary												lowest	highest	
maize	2000	9.5	8.7	8.1	7.5	8.8	9	8.9	8.8	8.7	9			87	7.5	9.5	2
	1999	10.4	11.1	10.9	10.6	11	11.2	11.6	10.2	11.4	11.4	7.5	10.1	127.4	7.5	11.6	4.1
	1998	10.8	10.6	10	10.8	9.6	9.3	10.7	11	11	11.2	11.5	11	127.5	9.3	11.5	2.2
lentils	2000	26	26	26	24.3	24.6	24.6	25.5	25.5	25.4	26			253.9	24.3	26	1.7
	1999	24.7	25.6	25.8	25.7	26.3	26	26.5	26	25.6	25.7	26.2	27.2	311.3	24.7	27.2	2.5
chickpeas	1998	31.9	32	30.4	31.5	28.8	27.8	25.5	27.6	28	28	26.5	27	345	25.5	31.9	6.4
	2000	31.4	32	31.1	29.3	31.3	32.9	32.6	31.3	33.7	35			320.6	29.3	35	5.7
	1999	24.5	25.7	26	26	26.8	27.4	29.2	30.9	30.6	30.3	30.1	31.3	338.8	24.5	31.3	6.6
	1998	26	25.4	25.8	25.4	25	23.7	23.6	23.9	23.6	24	25.2	26	297.6	23.6	26	2.4

calculation of monthly averages for the last three years

crop	January	February	March	April	May	June	July	August	September	October	November	December	Total
maize	10.2	10.1	9.7	9.6	9.8	9.8	10.4	10	10.4	10.5	6.3	7	114
lentil	27.5	27.9	27.4	27.2	26.6	26.1	25.8	26.4	26.3	26.6	17.6	18.1	303.4
chickpeas	27.3	27.7	27.6	26.9	27.7	28	28.5	28.7	29.3	29.8	18.4	19.1	319

average of monthly averages

crop	
maize	9.497
lentil	25.28
chickpeas	26.58

monthly seasonal index

crop	January	February	March	April	May	June	July	August	September	October	November	December	Total
maize	1.08	1.07	1.02	1.01	1.03	1.04	1.1	1.05	1.09	1.11	0.67	0.74	12
lentil	1.09	1.1	1.08	1.07	1.05	1.03	1.02	1.04	1.04	1.05	0.69	0.71	12
chickpeas	1.03	1.04	1.04	1.01	1.04	1.05	1.07	1.08	1.1	1.12	0.69	0.72	12

