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DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
Washington, D.C. 20523

CAPITAL ASSISTANCE PAPER

Proposal and Recommendations
For the Review of the
Development Loan Committee

391-22-190-419
391-T-166

PAKISTAN - AGRICULTURAL INPUTS

AID-DLC/P-2129

UNCLASSIFIED

DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C. 20523

UNCLASSIFIED

AID-DLC/P-2129

December 10, 1975

MEMORANDUM FOR THE DEVELOPMENT LOAN COMMITTEE

SUBJECT: Pakistan: Agricultural Inputs

Attached for your review are the recommendations for authorization of a loan to the Islamic Republic of Pakistan ("Borrower") in an amount of Forty Million United States Dollars ($40,000,000) to assist in financing the foreign exchange cost of agricultural inputs such as fertilizer, seeds, and small-scale farm equipment.

You will be advised of the date of the Development Loan Staff Committee meeting at a later date.

Development Loan Committee
Office of Development Program
Review

Attachments

Summary and Recommendations
Annexes A-I

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT PAPER FACESHEET

TO BE COMPLETED BY ORIGINATING OFFICE

1. TRANSACTION CODE (IX' APPROPRIATE BOX)
[X] ORIGINAL [ ] CHANGE [ ] ADD [ ] DELETE

PP

DOCUMENT CODE 3

2. COUNTRY/REGIONAL ENTITY/GRANTEE
PAKISTAN

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4. PROJECT NUMBER
391-4041

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6. ESTIMATED FY OF PROJECT COMPLETION
FY 78

7. PROJECT TITLE - SHORT (STAY WITHIN BRACKETS)
Pakistan Agricultural Inputs

8. ESTIMATED FY OF AUTHORIZATION/OBLIGATION
A. INITIAL MO. YR. 12 75 B. FINAL FY 77

9. SECONDARY TECHNICAL CODES (MAXIMUM SIX CODES OF THREE POSITIONS EACH)
011

10. ESTIMATED TOTAL COST ($000 OR EQUIVALENT, $1= ____)

A. PROGRAM FINANCING	FIRST YEAR B. FX	C. L/C	D. TOTAL	ALL YEARS E. FX	F. L/C	G. TOTAL
AID APPROPRIATED TOTAL						
(GRANT)	( )	( )	( )	( )	( )	( )
(LOAN)	(40,000)	( )	(40,000)	(100,000)	( )	(100,000)
OTHER U.S. 1.						
OTHER U.S. 2.						
HOST GOVERNMENT						
OTHER DONOR(S)						
TOTALS	40,000		40,000	100,000		100,000

11. ESTIMATED COSTS/AID APPROPRIATED FUNDS ($000)

A. APPROPRIATION (ALPHA CODE)	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH. CODE	FY 1976 D. GRANT	E. LOAN	1976 FY 5th Qtr. F. GRANT	G. LOAN	FY 77 H. GRANT	I. LOAN	ALL YEARS J. GRANT	K. LOAN
FN	110	010		40,000		25,000		35,000		100,000
TOTALS				40,000		25,000		35,000		100,000
12. ESTIMATED EXPENDITURES				40,000		10,000		50,000		

13. PROJECT PURPOSE(S) (STAY WITHIN BRACKETS) [ ] CHECK IF DIFFERENT FROM PID/PRP

To achieve increased and better balanced use of fertilizer and other agricultural production inputs by all farmers, especially low-income farmers.

14. WERE CHANGES MADE IN THE PID/PRP FACESHEET DATA NOT INCLUDED ABOVE? IF YES, ATTACH CHANGED PID AND/OR PRP FACESHEET.

[ ] YES [ ] NO

15. ORIGINATING OFFICE CLEARANCE

SIGNATURE
/s/ Joseph Wheeler

TITLE
Director, AID/Pakistan Mission

DATE SIGNED MO. 09 DAY 09 YR. 75

16. DATE RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION
MO. 09 DAY 16 YR. 75

AID 1330-4 (5-75)

PROJECT PAPER

PAKISTAN - AGRICULTURAL INPUTS LOAN

October 15, 1975

MISSION LOAN COMMITTEE

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Gary R. Redman, C/ASIA, Commodity Advisor

Peter Bloom, GC/ASIA, Legal Advisor

SUMMARY AND RECOMMENDATIONS

1. Background and Project Purpose

The problem to be addressed by this loan proposal is that of stagnant agricultural production, particularly an insufficient rate of increase in basic food output relative to the ever-growing needs of Pakistan's population. In general, the major constraints to achieving an adequate rate of growth in food production can be summarized as the failure to optimize management of the country's ample land and water resources, the absence of an effective seed multiplication and distribution system (especially in the case of high-yielding varieties of wheat), and a seriously inadequate use of chemical fertilizer and other production inputs. The focus of the assistance proposed herein is on the last of the above-mentioned constraints; the other two problem areas are being or will soon be addressed separately, as described later in this paper. Proceeds of the loan would be used to assist Pakistan in procuring adequate amounts of agricultural inputs - - primarily fertilizer - - required to ensure sufficient availabilities throughout the country, especially to low-income farmers.

2. Borrower

The Islamic Republic of Pakistan (Government); the importing agency will be the Federal Directorate of Agricultural Supplies (FDAS).

3. Loan Amount and Terms

$40.0 million, to be repaid within 40 years, including a 10-year grace period on the repayment of principal, with interest at 2% per annum during the grace period and 3% per annum thereafter.

4. Total Cost of the Project

Based on the data currently available (which are presented in Sections III, E and IV of this paper), it is estimated that Pakistan will need to import a minimum of $250 million in fertilizer and seeds over the next 2 years. The amount of phosphates alone (in the form of Diammonium Phosphate) that must be imported during this period is expected to cost at least $131 million, and could be as much as $194 million if the higher usage targets are achieved. AID's contribution to this cost is planned to be $100 million over the same time period. The initial portion of this loan is proposed to be $40 million.

5. Summary of Findings

It is concluded that the purpose of this project (i.e. increased and better balanced use of fertilizer and other agricultural production inputs by Pakistani farmers, especially low-income farmers) is likely to be achieved, through a combination of (a) the significant policy and other measures undertaken and to be undertaken by the Government, and (b) the assured availabilities of the required inputs which will be made possible by this loan. There are no known impediments to the timely implementation of the Project, and the Project meets all applicable statutory criteria (see Annex I).

6. It is recommended that a loan to the Government of Pakistan in the amount of $40 million be authorized for the purpose and on the terms and conditions set forth in the Draft Loan Authorization attached as Annex G.

AGRICULTURAL INPUTS PROJECT PAPER

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F. Loan Application Letter

G. Draft Loan Authorization

H. Section 611 Certification

I. Checklist of Statutory Criteria

Glossary of Terms

CURRENCY EQUIVALENTS

Rs. 1.0	US$0.101
Rs. 9.9	US$1.00
Rs.1 million = US$101,010	

WEIGHTS AND MEASURES

1 Metric Ton (t)	= 1,000 kilograms (Kg)
1 Metric Ton (t)	= 2,204.6 pounds
1 Kilometer (km)	= 0.62 miles
1 Hectare	= 2.47 acres
Bushel	= 60.0 pounds
1 Maund	= 82.3 pounds

PRINCIPAL ABBREVIATIONS AND ACRONYMS USED

CAN	Calcium Ammonium Nitrate (26-0-0, i.e. 26% Nitrogen)
DAP	Diammonium Phosphate (18-46-0, i.e. 18% Nitrogen, 46% P_2C_5)
K_2O (abbrev. K)	Potassium Oxide, the Indicator of Potassium Content of Fertilizer
MAP	Mono-Ammonium Phosphate (11-48-0, i.e. 11% Nitrogen, 48% P_2C_5)
N	Nitrogen, the Indicator of Nitrogen Content of Fertilizer
NP	Nitrophosphate (23-23-0)
P_2O_5 (abbrev. P)	Phosphorus Pentoxide, the Indicator of Phosphorus Content of Fertilizer
TSP	Triple Super Phosphate (0-46-0, i.e. 46% P_2O_5)
DH	Dawood Hercules Chemicals Limited (fertilizer producer)
DCL	Dawood Corporation Limited (fertilizer distributor)
Fauji-Agrico	Fauji Agrico Fertilizer Limited
GOP, Government	- Islamic Republic of Pakistan, The Borrower
IBRD	International Bank for Reconstruction and Development
NFC	National Fertilizer Corporation
PADSC	Punjab Agricultural Development and Supplies Corporation
SASC	Sind Agricultural Supplies Organization
ESSO	ESSO Pakistan Fertilizer Company Limited

CROP YEAR

Summer (Kharif)	-	March to September
Winter (Rabi)	-	October to February

I. INTRODUCTION

1.01. In its application dated April 1, 1975, the Government of Pakistan ("Government") requested AID loan assistance for a "program that will increase its agricultural output substantially over the next few years." The application noted that wheat and other crop production targets had been raised, and the Government was adopting new measures to achieve those targets. The measures included establishment of crop and production input price relationships favorable to increased use of fertilizer and other inputs; steps to expand the amount and efficiency in use of irrigation water; and a number of specific policy and procedural actions directly aimed at wider distribution of fertilizer. In the specific context of these measures the Government of Pakistan requested AID development loan financing of $100 million, over a 2-year period, to assist in securing imported fertilizer and other inputs.

1.02. The purpose of the project is to achieve increased and better balanced use of fertilizer and other agricultural production inputs by all farmers, especially low-income farmers. The use of such inputs in Pakistan is far below optimum levels or even the average use in comparable LDCs such as Egypt. The more "progressive", more advantageously located, and usually richer farmers in Pakistan have most ready access to these inputs. Low-income farmers (this group will be defined elsewhere in this paper) have less access to these inputs. It is the development hypothesis of this project that the Government's efforts to assist small farmers with credit and technical information will succeed in increasing their productivity and thereby their income on a permanent basis only if the barriers to use of the required agricultural inputs that plague almost all farmers are lowered. Thus the project, while focused on small farmer access to inputs, will help all farmers, while contributing to the sector goal of increasing overall agricultural output in Pakistan.

1.03. AID and predecessor agency financing of imports of fertilizer extends back into the early 1950's, but the bulk of AID's assistance has been over the past 10 years, during which fertilizer use has expanded sharply. The total of AID financing for fertilizer imports stands at $193.9 million. AID has also provided substantial funding for establishment of fertilizer manufacturing plants. A total of $62.8 million has been extended in dollar grants and loans, including the FY 1975 $40 million loan for the Fauji-Agrico urea plant. In addition, AID and the US Government have provided $25.8 million in

grants and loans in Pakistani rupees, $22.1 million of which was in the form of Cooley Loan funds to finance the establishment of the ESSO Pakistan and Dawood Hercules urea plants.

1.04. Experimental quantities of seed have been provided to Pakistan under the AID program with the assistance of the United States Department of Agriculture. These imports, which included cereal grains, oilseeds, forages, vegetables, and others, have enabled Pakistan to test new varieties throughout the country. Regular and systematic imports and testing of varietal and breeding material has continued.

1.05. Other donor assistance to Pakistan for fertilizer imports in 1974-75 and planned for 1975-76 is as follows:

Table 1. Other Donor Assistance for Fertilizer

Country	Type	Quantity of fertilizer in product tons in 1974-75	expected in 75-76
West Germany	CAN	10,900	-
	NP	700	2,000
	NPK	5,000	-
Japan	Urea	22,900	-
Holland	Urea	11,500	-
	DAP	-	10,000
Norway	NP	9,200	20,000
Canada	MAP	19,700	35,000
France	NP	-	30,000
Food & Agriculture Organization (FAO)	NP	14,000	-
	Urea	-	1,060

1.06. In another area, the International Bank for Reconstruction and Development (IBRD) is investigating a loan project to help Pakistan in the development of a seed production, certification, and distribution system over a 5-year period.

II. AGRICULTURAL SECTOR

A. Agricultural Production

2.01. Although production of major crops in Pakistan increased dramatically in the late 1960's with the introduction of new, high yielding varieties and expanded fertilizer use, agricultural output since 1970 has not continued at a pace to meet the needs of a growing population. Between 1966 and 1970, wheat production in Pakistan (then West Pakistan) nearly doubled, increasing over that period from 3.8 million tons to 7.1 million tons. Production of rice increased by nearly 80% over that period, from 1.29 to 2.3 million tons. (See Table II-I in the Annex.) Since 1970, however, the record has been disappointing. Wheat production has yet to exceed 7.5 million tons, and rice production has been increased only to 2.4 million tons. Production of other key crops -- principally cotton and sugarcane -- has also stagnated over the past 5 years. The annual growth rate of output in Pakistan's agricultural sector was less than 1.5% in the 1970-75 period, compared to a population growth rate of at least 3% per annum.

2.02. Causes of this stagnation have been examined by a number of groups. A recent high level Government of Pakistan Agricultural Committee[1/] identified the single most important cause of the stagnation as failure to develop an effective seed multiplication and distribution system. The import of 17,000 tons of wheat seed from Mexico this year, coupled with plans for a reproduction program intended to cover the entire wheat acreage with pure, high yielding seed by next year, is a response to the Committee's concern. In the view of many other experts, however, the pause in the growth of fertilizer use was the major reason that productivity in agriculture stopped growing. The committee did identify inadequate fertilizer use as a key problem, and recommended 1) mounting a massive promotional campaign to expand fertilizer use and 2) reviewing the adequacy of the fertilizer distribution system.

1/ Government of Pakistan, Ministry of Food and Agriculture, Report of the Agricultural Enquiry Committee, June 1975.

2.03. One consequence of this agricultural stagnation has been a steady increase in wheat imports to meet food deficits in the country. Wheat imports have risen from a level of about 123,000 tons in 1969-70 to over 1.1 million tons in each of last three years. (See Annex Table II-2). The 1974-75 wheat crop turned out much better than the first projections suggested. Early estimates of the crop were as low as 6.5 to 6.7 million tons. However, very favorable rains during the growing season, plus top dressings of nitrogen fertilizer induced by a mid-season price discount, brought production to a currently estimated 7.5 million tons. Still, nearly 1.7 million tons of wheat will need to be imported during the 1975-76 wheat year. (A wheat year in Pakistan runs from May 1 to April 30,) The United States provided PL-480 Title I financing for 465,000 tons of this in FY 1975, and so far this fiscal year has formally agreed to provide another 300,000 tons under PL-480 Title I financing, and about 133,000 tons with CCC Credits. The U.S. delegation at the May 1975 Paris meeting of the Aid to Pakistan Consortium indicated that at least 500,000 metric tons of wheat would be available with PL-480 Title I help if the wheat, the funds, and the need existed. U.S. wheat on PL-480, on cash, on CCC, and on commercial credit terms has helped Pakistan over several years. Sizeable wheat imports have also come from Australia, Western Europe, and Canada under a similar range of terms, including some grant arrangements.

B. Structure of the Agricultural Sector

2.04. Pakistan is climatically well suited to greatly expanded agricultural production. Crops can be grown throughout the year where water is available. Rice, cotton, maize, sorghum, and millet are grown in the summer (or kharif) season, which stretches roughly from March through September. Monsoon rains come during part of this period, principally in the months of June, July and August. Wheat is the major crop grown during the winter (or rabi) period, here defined to cover the months of October through February . 1/ Sugarcane stands in the fields during both winter and summer and therefore competes with other crops in both seasons. Approximately 41 million acres are cropped annually in Pakistan, of which 18 million acres are in the summer and 23 million are in the winter. Nearly 80% of the cropped acreage (or 32 million acres) receives irrigation water. By season, 84% of the summer acreage and 75% of the winter acreage is cropped under irrigated conditions.

1/ These month-wise definitions of winter (or rabi) and summer (or kharif) seasons are only rough. The 5-month winter and 7-month summer periods correspond approximately to fertilization periods of principal winter and summer season crops. Planting and harvesting of all crops do not fall neatly within these bounds. For example, wheat is not harvested until March-April.

2.05. Pakistan's agriculture is characterized by what on world standards would be considered small land holdings (Annex Table II-3). Sixty-eight per cent of the farmers and 30% of the farm area are in holdings of less than 12.5 acres each. Eighty-nine per cent of the holdings are less than 25 acres in size, and 97% are less than 50-acre holdings. Holdings of less than 50 acres each constitute 76% of the farm area. The average farm size in Pakistan is 13 acres. Of the 3.7 million farms in Pakistan, 42% are operated by individuals who both own and rent acreage (Annex Table II-4). Farmers who own their own land show the heaviest concentration in the very small (up to 7.5 acres) and very large (above 150 acres) categories. Farmers who operate only rented land constitute a large proportion (46%) of those in the 7.5 - 12.5 acre category.

2.06. Cropping intensity, defined as the ratio of acres cropped in a year to acres croppable, is one measure of the intensity of agricultural resource utilization. Since more than one crop per year can be grown in nearly all agricultural regions of Pakistan, where and when sufficient raintall or irrigation water is available, the cropping intensity can exceed 100%. Annex Table II-5 indicates an overall cropping intensity of 111% in Pakistan. The cropping intensity is highest (139%) on very small farms, and progressively declines with increasing farm size (88% for farms larger than 150 acres). Explanations for the overall cropping intensity being so far below 200% are many, but far from definite. A lack of irrigation water is the usual and most emphasized explanation. However, Pakistan could clearly have a much greater cropping intensity even with existing water supplies. More efficient use of water supplies would make possible larger planted acreages within existing water-course command acres.

2.07. More than 50% of Pakistan's rural households had annual incomes in 1971-72 of less than Rs. 2,400 (approximately $240). Less than 10% had incomes greater than Rs. 4,800 (approximately $480) per year (Annex Table II-6). These data refer to all income of rural households, not just to farm income. Although it is not known how precise the correlation is between farm size and household income, it is probably safe to infer that the 89% of Pakistan's farmers who operate less than 25-acre holdings generally had incomes in 1971-72 of less than $500. The 68% who farmed less than 12.5 acres each probably earned in most cases no more than $300 per household. 1/

1/ Both of these inferences are drawn from an examination of the data in Annex Tables II-3 and II-6.

It is these low-income farmers -- who operate holdings ranging in size from a little as 2 or 3 acres up to about 25 acres -- at whom this Agricultural Inputs Loan and its associated policies are principally aimed.

C. Strategy for Agricultural Development

2.08. Pakistan has the land and water resources to increase its agricultural production several fold. It could quickly move from a net importer of food to a net exporter. In general, yields of major crops average only 25-35% of averages for the same crops under similar rainfed and irrigated conditions in some other countries. Further, the amount of irrigation water available should be sufficient to irrigate twice as much crop area as is currently irrigated. Thus, with scientific farming (as known and used elsewhere), with adequate fertilizer and other inputs, and good water management, it should be possible to increase Pakistan's total crop output by 5 to 6-fold or even more.

2.09. In the 28 years since the partition of India and Pakistan, population growth has absorbed most of the increases in production, and per capita food availability has improved very little. Given the resource base, it is assumed that a doubling of crop output over the next 15 years would be a minimum target. Assuming continuation of a forceful population effort, this would permit a substantial increase in per capita food consumption in Pakistan to more optimal nutrition levels, as well as net exports to help meet world food shortages.

2.10. Five of the major actions needed to achieve such agricultural growth which offer favorable benefits relative to costs are:

1. Getting assured, adequate supplies of fertilizers within the country;

2. Provision of an effective fertilizer distribution system;

3. Keeping the ratio of fertilizer prices to crop prices such that farmers are given a positive incentive to increase their use of fertilizers on both irrigated and non-irrigated (barani) lands;

4. Major investments in the control of waterlogging and salinity, reduction of water losses in irrigation ditches, and improvement in efficiency of water use on farms;

5. Special efforts to get farmers in rainfed areas to use fertilizer, pesticides, improved crop varieties and improved small equipment.

Some of the steps above are specifically among the inputs to this project supplied by the Government of Pakistan, either alone or with help from the U.S. and/or other donors. The other steps are also being taken, again by the Government of Pakistan and in some cases with the help of AID and other donors.

2.11. Plans for several new, large fertilizer plants are currently underway which by the end of the decade should make Pakistan self-sufficient in nitrogen fertilizers. The major additional need is assurance of adequate supplies during the interim period to permit an adequate growth in use by the time the new plants are on stream. This means a growth in use from about 450,000 nutrient tons of nitrogen (N) and phosphate (P) fertilizers in 1974-75 to a million or more by 1979-80. In the interim before self-sufficiency in domestic production is reached, imports of more than one million nutrient tons of fertilizer will be required to permit this growth.

2.12. Given the time required for planning and implementing a massive attack on the problem of water management practices, major investments for this purpose will not be possible until 4 to 5 years from now. During this time period, projects for water development will be adequately detailed, some additional experience gained, cost/benefit studies completed, and personnel trained. A water management program will be prepared to start initially on a modest scale, but rapidly increasing about 2 years hence. By that time, returns from increased fertilizer use will already be flowing.

2.13. While fertilizer and improved water management are the two major input items in terms of total costs, other essential inputs are needed to maximize returns from large investments in fertilizer and water. Most important of these are pesticides and higher yielding crop varieties (in some areas, new crops). In addition, for small farmers, better small-scale equipment is needed to improve and accelerate cropping and harvesting practices.

2.14. Since the separation of Bangladesh from Pakistan in 1971, 5-year plans have been replaced by a series of annual plans. No 5-year plan has yet been adopted for the 1975-80 period, but "Working Papers"[1]

1/ Government of Pakistan, Planning Commission, Working Papers for the Development Perspective (1975-80). These papers are not official, but are indicative of Government thinking at high levels.

indicate that agricultural growth will be a central feature of Government development efforts in this period. More than 35% of Pakistan's GNP and the largest portion of its exports flow from the agricultural sector, so continued growth in productivity and value added in this sector is vital to overall economic development. In addition, the Government of Pakistan objectives of increasing employment and total income and more equitably distributing income among rural people are dependent upon the growth of this sector.

2.15. The Government has settled on an official target of 8.4 million tons of wheat in its 1975-76 Annual Plan (Annex Table II-7), though it still hopes to achieve 9 million tons this year, which was the goal at the time the Government applied for this Agricultural Inputs Loan. Three crucial factors in achievement of wheat production targets over the next 5 years (Annex Table II-8) are (1) the availability and effective distribution of ample supplies of both nitrogen and phosphate fertilizers, (2) effective utilization of Tarbela Dam and other irrigation water supplies, and (3) a well implemented program for dissemination and multiplication of new, high yielding variety seeds the Government has recently imported from Mexico.

2.16. Rice production targets of 2.7 million tons in 1975-76 and 3.9 million tons in 1979-80 have also been set, compared to the 1973-74 production of 2.4 million tons. The Government hopes to see maize production increase from the 1973-74 level of 755 thousand tons to 810 thousand and 1.05 million tons in 1975-76 and 1979-80, respectively. Targets for sugarcane of 25 million tons in 1975-76 and 30.4 million tons in 1979-80 (1973-74 production equalled 23.5 million tons) have been set. Achievement of the various targets will depend on a combination of acreage and yield increases. (See Annex Tables II-7 and II-8 for details of these targets and for targets of other major crops in Pakistan.)

D. Agricultural Product Prices

2.17. Wheat prices in Pakistan have historically been held artificially low by Government procurement prices and subsidized sales to consumers through ration shops, coupled with policies that have restricted the private sale and movement of food grains. However, starting with the wheat crop harvested in 1975, the Pakistan Government indicated the procurement price would serve as a floor price, and not as a ceiling. The overt pressure placed on farmers in past years to sell to procurement authorities was this year largely

avoided. There were, however, some restrictions on inter-district movements of wheat. The more than doubling of wheat procurement prices between the 1972 and 1975 crops (Annex Table II-9) has now brought the price to Rs. 37/maund, or $100/metric ton. At the time the new price was announced, the Chicago wheat price was falling, and this did not seem unreasonable. Since then, however, world market prices have risen again, and in August 1975 the Chicago price was up to $143/metric ton ($3.90/bushel). The market price has varied among areas within Pakistan, but has averaged around Rs 41/maund ($111/ton) in major Punjab markets from spring harvest through late August of this year (Annex Table II-11). This compares to market prices in major north Indian markets of about $145/ton, using an exchange rate of $1.00 = Indian Rs 8.50. However, the Indian rupee may be somewhat overvalued relative to the Pakistani rupee. At parity between the two rupees, wheat prices have only been about 12% higher on the Indian side of the Punjab border this year. Wheat sold for around $120/ton in Afghanistan in August, but had sold for around $100/ton some months before that.

2.18. Prices paid to farmers for rice and cotton are held down both by export duties and by the prices paid by the Government export monopolies for these crops. The price paid to millers for coarse milled rice under Government procurement is about Rs. 40/maund ($108/metric ton), about half its current. falling export price. The price received by farmers for paddy is probably half that amount. Milled basmati rice 1/ is procured at Rs. 90/maund ($244/ton). (See Annex Table II-10.) The Government also has an export monopoly on cotton. Last year (the cotton crop picked in the fall of 1974) it purchased seed cotton and managed to support the domestic price of seed cotton at about Rs. 80/maund, or approximately $0.10/pound.

Prices of sugarcane and sugar have been controlled, but at price levels at or near world market levels, until the abnormal increases in sugar prices that began in 1974. The minimum guaranteed prices for sugarcane at mill gate for 1975-76 runs from Rs5.50 to Rs 5.90/maund in the three sugarcane producing provinces. (However, only 25% of the cane is procured for processing at the mills.) No support price program exists for other crops, though current planning documents indicate such support is under consideration for oilseed and pulse crops. (See Annex Tables II-9, 10 and 11 for procurement/support and harvest prices of major crops.)

1/ A high quality, fine rice grown in Pakistan. Basmati rice is an important agricultural export commodity for Pakistan.

III. FERTILIZER

A. History

3.01. Historical data on nitrogen and phosphate fertilizer sales in Pakistan are shown in Tables III-I and III-2 of the Annex. Pakistan experienced very rapid growth in fertilizer use from 1965-66 to 1971-72. The increase in nitrogen sales over this 7-year period was nearly 500%. Nitrogen fertilizers sales declined in 1973-74, however, and recovered only slightly in 1974-75.[1/]

3.02. The imbalance between nitrogen (N) and phosphate (P_2O_5) fertilizer applications continues to be a major constraint to increasing crop yields in Pakistan. The ratio of N to P_2O_5 use in 1974-75 was 6:1 in Pakistan, compared to about 2:1 in the United States and about 1.5:1 in Japan at present. Agricultural planners realize a better balance between N and P_2O_5 use must be achieved, and are aiming for at least 3:1 ratio by 1979-80. The present practice of selling diammonium phosphate (18-46-0) to farmers at the same price as urea (0-46-0) represents one aspect of attempts to induce greater use of phosphates.

3.03. Several studies conducted since 1970 provide information on fertilizer use by farm size and tenurial status of farmers. Results of these studies, including preliminary findings of a study just now being completed by economists at the University of Islamabad, are described in Annex B. Data from the 1972 Agricultural Census, only recently released in preliminary form, are also cited in that Annex.

1/ The decline in fertilizer use in 1973-74 has been attributed to a number of factors, including: (1) sharp increases in fertilizer prices in August 1973 and April 1974; (2) the flood of August 1973, which impeded sales in some areas; (3) disruption of sales at the time of the Punjab's takeover of much of the fertilizer distribution system in that province; and (4) a delay in initiation of the Government credit program for farm input purchases during the summerseason. The disappointing overall performance in 1974-75 is at least partially attributable to the very poor rainfall and lack of irrigation water supplies in 1974. A poor monsoon resulted in 1974-75 river flows that were only 70% of the mean, and lower than any since 1940. Fall rains were also unusually late, with no rainfall from the middle of September until December 10. Much of the wheat was planted nearly a month late. However, with the arrival of exceptionally good winter rains in December-February, and a fertilizer price discount in December and January, fertilizer sales shot up. Farmers apparently did a good deal of top-dressing, which helped boost the wheat crop above early expectations. However, some of the fertilizer purchases made during the December-January discount period were carried over for sugarcane and other summer crops, causing sales in February, March, and April to be abnormally low.

Evidence from the several surveys is very mixed with regard to the question of whether "small" or "large" farmers use more fertilizer, but clear evidence on that question may not be essential for policy purposes. The evidence does clearly indicate that large numbers of farmers in all size categories are aware of, and use, fertilizer. At the same time, many in each size category do not use fertilizer or apply it in amounts that would be considered sub-optimal from a national economy standpoint. The more immediate policy question is how to increase substantially the incidence and level of use in each size category and in the aggregate. This requires a better understanding of the socio-economic factors which influence fertilizer purchase decisions of farmers with differing resources at their command. AID is cooperating with the Government of Pakistan in several studies to identify the points where interventions and actions will increase farmers' use of fertilizer. One of these studies is a direct input to this Agricultural Inputs Project, and others are included in AID project activities such as Barani and Water Management. Farm surveys carried out in preparation for a proposed Water Management Loan have been on-going since June 1975, and some results will be forthcoming by early 1976. Field surveys conducted as part of the Barani Project and this Agricultural Inputs Project are now being planned, and initial surveys will be conducted during FY 1976.

B. Domestic Production

3.04. Pakistan's domestic fertilizer industry produced around 310,000 nutrient tons of nitrogen fertilizer and about 6,000 nutrient tons of phosphate fertilizer in 1974-75. The great bulk of the nitrogen production (85%) came from two private sector urea plants, owned by the firm Dawood Hercules Chemicals Ltd. in Punjab Province and by ESSO Pakistan Fertilizer Co. Ltd. in Sind Province. The remainder of the nitrogen fertilizer, and all of the phosphate fertilizer, produced domestically came from public sector plants operated by the government owned National Fertilizer Corporation (NFC) at Daud Khel, Multan, and Lyallpur/Jaranwala. Production from each plant is shown in Table III-5 of the Annex.

3.05. Although the two private sector plants in Pakistan have been producing in excess of rated capacity, and are expected to continue to do so, some of the existing public sector plants have not yet been able to reach rated capacity. The NFC single super-phosphate (SSP) plant has been producing at less than 60% of its rated capacity of 10,000 nutrient tons of phosphate (P_2O_5). An expansion of that plant's capacity -- from 10,350 to 18,600 nutrient tons -- is to be completed in late 1975. The NFC fertilizer complex at Multan, with assistance from the IBRD, Asian Development Bank, and Abu Dhabi is being completely revamped and greatly expanded. This complex has also been operating below rated capacity (less than 60% of rated capacity). An efficiently operated, enlarged Multan complex will make sizeable contribution to both the nitrogen and the phosphate fertilizer needs of Pakistan.

3.06. In addition to the NFC plant expansions now underway, several new plants are being planned for construction and operation before the end of the decade. A 1,725 metric ton per day urea plant, to be owned by the Fauji Foundation of Pakistan, Agrico Chemical Company of the U.S., and other investors, will be built over the next 4 years with financing from AID,[1/] IBRD, and Germany's KFW. The NFC is in the advanced planning stage for a urea plant of about the same size as Fauji-Agrico, at Mirpur Mathelo, and will also build a fertilizer complex in Hazara District of N.W.F.P., which will produce urea, UAP (urea-ammonium phosphate), and TSP (triple superphosphate). These new plants are scheduled to come on stream in the 1977-79 period. If these plants perform well, Pakistan will be producing nearly 1 million nutrient tons of nitrogen by 1980-81, somewhat more than enough to meet domestic needs at that time. Phosphate fertilizer production in country should be over 130,000 nutrient tons by 1980-81. Since Pakistan should be using nearly 300,000 nutrient tons of P_2O_5 by that time, the Government will need to continue exploration and feasibility studies at a rapid pace for additional phosphate fertilizer production capacity. Some preliminary exploration work has begun in the Hazara area. (See Tables III-5 and III-6 in the Annex.)

C. Agronomic

3.07. Research on crop response to fertilizer is carried on at a number of locations in Pakistan. Some of this research is in cooperation with and partially supported by AID and the U.S. Department of Agriculture. The AID Loan in support of the Pakistan Agricultural Research Council is to be focused on crops research, with major emphasis on fertilizer use, variety selection, and related agronomic practices. In addition, an AID institutional grant contract with Colorado State University, for on-farm water management research in Pakistan, has fostered studies on fertilizer - water interactions aimed at producing yield increases while conserving water and fertilizer. Another AID - supported project, to demonstrate that increased agricultural output can be obtained on small farms in rainfed, unirrigated areas, is also producing data on crop responses to fertilizer applications. Systemmtic research on fertilizer - crop response is done at the provincial agricultural research institutes. These institutes are located at Lyallpur (wheat and other major irrigated crops), Kala Shah Kaku (rice, including aromatic type), Multan (cotton), Tandojam (sugarcane and other crops), Tarnab (multicrop), Pirsabak(maize), and Quetta(multicrop). In addition to the more precise research done at the experiment stations, each major crop research program includes extensive testing of fertilizer rates and varietal response on farmers' fields. The most widespread of these tests compare only two varieties, with and without fertilizer, and serve to link the research and extension programs.

1/ AID Loan 391-T-164, authorized June 30, 1975, for $40,000,000.

3.08. Wheat yield response to fertilizer seems to range widely. In one study of nitrogen fertilizer applications under irrigated conditions, responses were found to range from 1:18 (18 pounds of grain per pound of nitrogen nutrient) at 50 lbs. of nitrogen (N) per acre to negative marginal responses at application levels above 150 pounds of N. In the same study, the response to phosphate (P_2O_5) was found to be 1:4.5 at 10 lbs. of P_2O_5 per acre. Another study on wheat grown under irrigated conditions found a yield response to N of 1:11. FAO/GOP soil fertility trials run in Pakistan in 1969-71 indicated a yield response to N and P_2O_5, combined, of 1:14 on high yielding, Mexi-Pak wheat. Results obtained in the AID Barani project have also ranged widely. At applications of N and P_2O_5 up to 20 lbs. per acre, many of the trials have shown responses of over 1:25. At higher fertilizer application levels, the response has been about 1:10. (See Annex Tables III-7 and III-8 for some of the trial results.)

3.09. Similarly, wide ranging results have been found in studies on rice. One recent study found the response from fertilizer applied to rice to be 1:50 in terms of paddy1/ (1:32 in terms of rice), at up to 100 nutrient pounds of N per acre. By contrast, at levels of N application above 100 pounds per acre, the marginal response was very low or negative -- depending on the amount of P_2O_5 also applied. (See Annex Table III-9.) The FAO - GOP soil fertility trials gave approximately 1:7 response rates (in terms of rice) for N and P_2O_5 combined, at fairly high application levels. The AID Barani project maize plots have shown responses to N and P_2O_5 combined of 1:10 to 1:15. The FAO/GOP trials, at much higher levels of fertilizer application, showed a response rate on maize of 1:7. The response of sugarcane to N and P_2O_5 in the FAO/GOP trials was 1:164.

3.10. Although crop response to fertilizer in experiments is fairly high with applications up to 100 pounds or more of nutrients, actual application levels in Pakistan are far below that at the present time. N and P_2O_5 sales per cultivated acre in Pakistan's Punjab in 1974-75 were 19.3 and 3.3 nutrient pounds, respectively. In Sind Province, sales were 24.3 and 5.3 nutrient pounds of N and P_2O_5, respectively. Applications per acre seem to be the highest in Pakistan on sugarcane, at over 70 pounds of N per acre according to some studies. Wheat, rice, and cotton apparently receive 50 or more pounds of N per acre in some of the better irrigated areas of Pakistan. (See Annex B and Annex Table III-10.) However, the general picture is one of fertilizer use far below its potential. This is particularly true in many barani areas, where fertilizer use is in its infancy.

1/ Unmilled rice

D. Factors Affecting Fertilizer Use

Several factors interact to influence farmers' decisions on purchase and use of fertilizer, including (1) water availability, (2) effectiveness of the fertilizer distribution system, (3) credit availability, (4) adequacy of extension services, and (5) price relationships. Each of these is discussed in turn in the sections to follow.

Water availability

3.11. Water availability is a key factor in the determination of fertilizer demand. The Tarbela Dam will add 9.3 million acre feet of live storage capacity to Pakistan's irrigation system. This water is planned primarily for use on winter crops, principally wheat. About 4 million cropped acres should receive supplemental irrigation water and another 1.25 million cropped acres can be brought under irrigation as Tarbela becomes fully operational. Since water and fertilizer tend to have positive interaction, as well as additive, yield response effects, the increase in irrigation water availability provides part of the basis for a projected significant increase in fertilizer demand and use over the next few years. In addition to Tarbela, irrigation water supplies will also be increased over the next 5 years by Hub and Khanpur Dams (0.17 MAF), by the Chasma Right Bank Canal (1.80 MAF) by canal remodeling (2.00 MAF), and by small canal irrigation schemes of the four Provincial Irrigation Departments (0.30 MAF). Some 7,500 additional public tubewells with an estimated yield of 4.06 MAF are planned for SCARP (Salinity Control and Reclamation Project) areas by 1980, as well as 3,000 additional public tubewells with an estimated yield of 1.62 MAF in barani, non-perennial canal, and certain less developed areas of Pakistan. Twenty thousand private tubewells are expected to be installed over the next 5 years. In all, Tarbela and other storage projects, coupled with the additional tubewells, are expected to add supplemental irrigation supplies to 4.28 million cropped acres (0.28 million in the summer and 4.00 million in the winter) and to bring under irrigation an additional 5.93 million acres (2.12 million in the summer and 3.81 million in the winter).

3.12. Better use of existing supplies of water is also essential. Much valuable fertilizer is probably leached out under existing water management practices. A large scale program of improved on-farm water management would increase the yield response from given applications of fertilizer, as well as save water for application to

additional acres. The proposed AID On-Farm Water Management Project, for which a development loan is planned during the current fiscal year, will help with a major initial effort. Over a 5-year project period, it is planned that 1500 watercourses serving 60,000 farmers will be improved, and 600,000 acres of farm land which is not level and is therefore wasteful of irrigation water will be scraped and leveled. A cadre of professional, sub-professional, and extension specialists will also be trained as an integral part of the project. The AID assisted project will serve essentially as a pilot effort for a greatly expanded on-farm water management program in the 1980's.

3.13. Non-irrigated land also requires substantial amounts of fertilizer. Trials conducted over the past year under AID's barani area activities have shown the potential for increasing yields on unirrigated fields in Punjab and Northwest Frontier Provinces. Results from demonstrations show that production of wheat and maize can be doubled or tripled in the barani areas by using improved varieties, fertilizer, and, in the case of maize, an insecticide to control the stem borer insect. At present, only 900,000 tons of wheat are being produced annually on 3.9 million barani acres because of the negligible amounts of fertilizer and largely local seed varieties being used. Use of high yielding varieties of wheat seed and application of about 75 nutrient pounds of N and 50 nutrient pounds of P_2O_5 per acre could raise wheat production on this barani acreage to 3.9 million tons. Thus, potential exists even in Pakistan's unirrigated areas for greatly expanded production. Exploitation of this potential, however, depends on ample and readily available supplies of seeds and fertilizer.

Marketing and Distribution:

3.14. Fertilizer is marketed in Pakistan through both public and private sector distribution systems. Prior to mid-1973, fertilizer sales expanded rapidly with the private distributors playing the major role in promotion and distribution. In 1973, the authority to regulate fertilizer distribution was transferred from the Central Government to the provinces. Soon thereafter, three of the four provinces proceeded to reorganize their distribution systems in such a way that public agencies in these provinces began to play a major role. Sind set up the Sind Agricultural Supplies Organization (SASO), which began operations in August 1973. Punjab followed suit, creating the Punjab Agricultural Development and Supply Corporation (PADSC). Both agencies were charged with responsibility for wholesale and retail trade and for operating fertilizer storage depots. In Baluchistan, fertilizer distribution was turned over to the Provincial Department of Agriculture. Only in the NWFP was the distribution system left unaltered. The table below shows the approximate, relative importance of the public and private sectors in the four provinces as of 1974. It also indicates that 90 percent of Pakistan's fertilizer supply was consumed in the Punjab and Sind (actually 93% in 1974-75). Therefore, the performance of distribution agencies in Punjab and Sind is obviously of critical importance to the movement of fertilizer in Pakistan.

Table 2. Public and Private Sector Fertilizer Marketing

(1974, approximate)

Province	% of National Consumption	Share Marketed by: Public Sector	Private Sector
Punjab	67.0%	83%	17%
Sind	22.5%	54%	46%
NWFP	9.0%	23%	77%
Baluchistan	1.5%	55%	45%
Pakistan	100.0%	70%	30%

Source: "The Fertilizer Marketing System in Pakistan"; FAO Working Paper, June 1974, p.6.

3.15. Prior to the partial "nationalization"[1/] of the fertilizer marketing system in 1973, four large commercial companies known as "principal agents" operated throughout Pakistan, dealing in both domestically produced and imported fertilizers. Each principal agent had its own distribution network; these private sector dealers competed among themselves and with two public sector bodies--the Rural Supply Cooperative Corporation (RSCC), which handled most of the public sector's production, and the Agricultural Development Corporation (ADC), which confined itself primarily to newer fertilizers or geographic areas where the private sector was not operating. The developments of 1973 put two of the principal agents [Jaffer Brothers Ltd., and Pakistan National Oils Ltd., (PNO)] temporarily out of the fertilizer business in Punjab and Sind. The 1973 actions also required ESSO to withdraw to the southern part of the Punjab and concentrate its marketing efforts in the Sind. Although Dawood-Hercules was prohibited from selling to Jaffer Brothers and PNO in Punjab, its own distribution subsidiary was allowed to continue to operate there and in NWFP.

3.16. A definitive assessment of the performance of the fertilizer distribution system, since 1973, is difficult to arrive at. Although fertilizer sales were disappointing in both 1973-74 and 1974-75, the retail fertilizer market was buffeted by a number of events in addition to the market reorganization. A major flood in August and September 1973 caused widespread damage to roads and some railroads, destroyed crops, and disrupted normal farm operations. To offset this, a major winter season credit program was launched. In the Punjab alone, Rs. 146 million in fertilizer credit was distributed. The net effect of each of these separate events is difficult to measure. Perhaps most important of all, during this same period, the retail price of fertilizer was abruptly raised on two separate occasions, partly following world fertilizer price trends. In August 1973, the price went from Rs. 840/ton to Rs. 1100/ton, and it then went to Rs. 1500/ton in April 1974 (prices quoted for urea). Finally, an unusually dry 1974 summer and fall reduced acreage and undoubtedly adversely affected fertilizer use in 1974-75. So, while it is safe to conclude that the market reorganization was disruptive, how well the public sector portion of the distribution system can perform in the long run remains to be seen.

1/ This term here refers to steps by the Sind and Punjab governments to restrict private sector distribution.

3.17. No reliable estimate of the number of fertilizer retail agents operating just prior to the 1973 "nationalization" exists. However, by comparing the distribution system of 1970 with the post-nationalization market structures of 1974 and 1975 it is apparent that the distribution system contracted. Details of the "before" and "after" market reorganization are summarized in Table 3 below. The 1970 information undoubtedly understates the actual number of agents operating in 1973, as both the public and private sectors must have expanded during these years when total fertilizer consumption was rising steadily. The actual number of fertilizer agents operating inthe Punjab in mid-1973 was probably about 1800, with another 700 (perhaps many more) sub-agents working alongside the formal marketing channels. The present total of 1,226 retail agents in the Punjab represents a reduction in the size of the sales force by one third to one half, depending on whether the sub-agents operating prior to the reorganization are counted. The dramatic increase in the number of public sector agents in the Sind and NWFP and in the private sector in NWFP between 1970 and 1974 may be more apparent than real. The 1974 data included licensed commission agents but it is unclear in the 1970 survey whether commission agents were counted among the retail agents. Whatever definition of "retail agents" is accepted, the general pattern is unmistakable. The total number of agents in Pakistan decreased between 1970 and 1974--by at least 150. If the 505 commission agents counted in the 1974 data were in fact excluded in the earlier count, the decline becomes dramatic (a reduction of over one-fourth of the total number of agents). Within each province, except NWFP where no market reorganization took place, the pattern was the same; the public sector increased the number of its outlets between 1970 and 1974 at the expense of the private sector.

Table 3. Estimated Number of Fertilizer Retail Agents Operating in 1970, 1974 and 1975 1/

Province	Private			Public			Total		
	1970	1974	1975	1970	1974	1975	1970	1974	1975
Punjab	928	657	670	161	600	556	1089	2/ 1257	1226
Sind	403	204	476	53	359	94	456	563	570
NWFP	101	300	315	36	105	159	137	405	454
Baluchistan	11			4	36	36	15	36	36
Pakistan	1443	1161	1461	254	1100	845	2408 2/	2261	2286

1/ Due to the length of explanatory footnotes, this table is repeated with footnotes as Annex Table III-11. 2/ The 1973 total was 1800 in Punjab. Therefore, the column total (of 2408) assumes 1800 in Punjab.

3.18. Over the past year, dealer numbers (retail outlets) appear to have increased slightly. Structurally, the Sind system has changed somewhat by a re-opening of distribution there to Pakistan National Oils (PNO), a firm which had distributed fertilizer in both Sind and Punjab until 1973. The number of private sector outlets in Sind has thus expanded in the last year, though largely at the expense of public sector outlets.1/ Dealer outlets have also expanded in NWFP, where a rather diverse market organization exists. The structural organizations of dealers in each of the three principal provinces are depicted in Annex Figures 1, 2 and 3.

3.19. Improving farmers' access to fertilizer supplies was given as a major reason for the "nationalization" of distribution, especially in the Punjab. Greater geographic dispersion of fertilizer outlets was announced to be a "nationalization" objective. Before reorganization, fertilizer outlets were concentrated in mandi (market) towns. A 1971 survey showed that 70% of all fertilizer consumed by farmers was purchased from mandi town agents, and only 30% was procured in villages. The actual number of locations at which fertilizer was available before market reorganization is a point of some controversy. The PADSC stated that private distributors operated at only 285 sites in the Punjab, whereas the Dawood distributor maintained that it alone had distributors at 312 different locations. ESSO, Jaffer Brothers, and PNO were also operating in the Punjab at this time, and it is certain that their distribution networks did not precisely duplicate Dawood's or each other's networks. Whatever the location of these outlets, PADSC states that 75% of its outlets are located in rural areas, thus greatly increasing farmers' access to fertilizer supplies. The actual number of PADSC sales points varies from 5 in Jhelum District to 82 in Multan District. When all distributors are included, the range in number of dealers in each District is from 7 to 194 in Punjab, from 4 to 88 in Sind, and from 9 to 155 in NWFP2/. Cultivated acres per dealer averages 21,000 in Punjab, 14,000 in Sind, and 7,000 in N.W.F.P. Punjab, Sind, and NWFP dealers sold, respectively, an average of 218, 194, and 55 nutrient tons of fertilizer in 1974-75. Thus, Punjab and NWFP are at opposite extremes --Punjab with fewer (per acre), higher volume dealers and NWFP with more (per acre), lower volume dealers.

1/ Though PNO is now a nationalized firm, it has been categorized as "private sector" in the data because of its traditional private sector orientation.

2/ This does not include tribal "Agencies" in NWFP.

3.20. To a varying degree, the two private sector fertilizer producers market their own output, and will soon be marketing imported fertilizer. ESSO of Pakistan markets all of the fertilizer (urea) it produces, through its own dealers in Sind and Punjab, while Dawood Corporation Ltd., (DCL) markets urea through private, licensed dealers, roughly one-half of Dawood Hercules' production. The remainder has been distributed by public sector outlets since 1973. During 1974, all imported fertilizers marketed in the Punjab and Sind were distributed by SASO and PADSC, the public sector distribution agencies. However, SASO in Sind started allocating some of its imported fertilizer to PNC in 1975 (thereby allowing that corporation back into the fertilizer business), and also made a small allocation of phosphate fertilizers to ESSO in about June 1975. Very recently, on September 21, 1975, the Government announced that both ESSO and DCL would receive imported phosphates--on a regular basis and on a par with public sector distributors--starting with the next arrivals in November and December 1975.[1/] This Government action will have the effect of making phosphate fertilizers much more widely available throughout Pakistan than has been the case over the past 2 years. It should contribute significantly to increasing phosphate fertilizer sales and thereby improving the balance of N and P_2O_5 use. Allocations of phosphates among the various public and private distributors will initially be on the basis of each distribution agency's share of the nitrogen fertilizer market. In addition to the decision to allocate phosphate imports to all existing distributors, the Government plans to allocate both imported nitrogen and phosphate fertilizers to Fauji-Agrico and NFC 2 to 3 years prior to their new plants coming on stream. This will allow Fauji Agrico and NFC to develop "seeding" programs for the marketing organizations they intend to assemble.

3.21. A significant marketing policy change was announced by the Government on October 5, 1975. All territorial marketing restrictions were lifted, thus permitting private sector distributors to market their products in response to market demand, rather than on the basis of predetermined territorial allocations. Since 1973, territorial sales quotas had been the basis for allocating domestic and imported fertilizers among the four provinces. This policy had been instituted when fertilizers were in short supply.

1/ Private dealers in N.W.F.P. already have access to imported phosphate fertilizers.

Dawood Hercules was required to sell 12% of its urea in NWFP, and the remainder was marketed in Punjab. ESSO was required to market most of its product in Sind, but was allowed to sell some in lower Punjab. NFC and imported fertilizers were then so allocated to provide the remainder of targeted requirements of each province. The total N and P_2O_5 allocations to each province were based upon the national fertilizer use targets and the assumed share of each province in country-wide fertilizer use. Because each province's actual fertilizer sales as a percentage of the national total sometimes differed from that projected beforehand, relative imbalance in regional stocks often occured, making it more difficult for distributors to move fertilizer in one province than in another. It was this problem which led to the Government's decision to lift all territorial marketing restrictions. With the new policy now in effect, ESSO and DCL will be able to market their products country-wide as they see fit. Dawood Hercules, however, will continue to sell part of its urea to PADSC, and this product will of course be marketed in Punjab. PADSC and the other provincial public sector distribution entities will continue to discharge their mandates, marketing fertilizers in their separate provinces. Their supplies from imports and domestically produced products will presumably continue to be allocated on the basis of a formula of projected requirements. Where actual demand differs from projected requirements, adjustments will supposedly be made, at least annually, in the shipments despatched from the port of Karachi and the public sector fertilizer plants. The marketing flexibility associated with the new policy sanctions is expected to result in more efficient allocation of fertilizer stocks and larger total sales because supplies will now flow to markets in response to actual consumer demands.

3.22. Licensing of private sector retail fertilizer agents is required in Punjab and also in theory in N.W.F.P., but no licensing provision exists in Sind. The system, as it is designed in Punjab, is intended to prevent malpractices such as charging retail prices in excess of those fixed by the Government, selling bags of less than standard weight, or selling adulterated products. PADSC is the Punjab regulatory agency charged with issuing licenses and dealing with malpractices. Licensing by PADSC involves a transaction between private distributor companies and PADSC. The retail dealers themselves have no contacts with PADSC. DCL, for instance, informs PADSC when it wishes to open a new distributorship, and gives PADSC the necessary details regarding name and location of dealership. A nominal fee of Rs. 10 is charged in issuing the license.

3.23. Although the licensing system has been operating smoothly in Punjab during 1975, with no limitations on the number of dealerships, the Government has recently announced an even more open dealership policy.[1] The Government has declared that prospective retail agents applying for licenses may receive supplies from public, as well as private sector wholesalers. Up to now, private agents in Punjab could receive supplies only from DCL or ESSO. Now, private dealers throughout Pakistan can also obtain fertilizer supplies directly from public distribution agencies-- such as PADSC in Punjab and SASO in Sind.[2] This official policy of open licensing and dealer access to both public and private distribution agency fertilizer supplies is designed to stimulate an increase in dealer numbers. Adjustments being made in the incidentals (marketing margins) allowed dealers will complement this policy. Both of these policy changes are direct Government inputs to this project.

3.24. To maintain the uniform fertilizer price system, the Government of Pakistan establishes retail prices, ex-factory prices,[3] and officially allowed incidentals (marketing margins) on fertilizer.[4] The amount by which the standard retail price (Rs. 1,500/metric tons of urea) exceeds the sum of ex-factory price plus incidentals is taken by the Government as a "development surcharge" or tax. In those cases in which the costs of producing and distributing domestically produced fertilizer exceed the retail price, a government subsidy to the producer or purchaser exists. For a given retail fertilizer price, an increase in allowed incidentals on fertilizer produced in Pakistan's private sector must come at the expense of the development surcharge assessed by the Government. The same is true for an increase in the ex-factory price. Thus, proposals to increase either the ex-factory price or the incidentals on domestic fertilizer have to be viewed by the Government in budgetary as well as efficiency and market development terms. As a consequence, adjustments in the allowed marketing incidentals have sometimes lagged behind cost increases incurred by distribution agencies and their dealers.

1/ Press announcement in Pakistan Times, September 22, 1975.

2/ As previously noted, PNO had already been receiving supplies from SASO in Sind. Also, some private dealers had already been receiving supplies indirectly from the public distribution agency in NWFP (the Agricultural Development Authority).

3/ The price allowed the manufacturer for costs incurred up to the point the product leaves the factory gate.

4/ The Ministries of Industry, Agriculture and Finance are involved in the decision making process that leads to establishment of these allowed prices or costs.

3.25. To encourage more aggressive marketing and wider distribution of ESSO's and DH's urea products, the Government announced an increase in their official marketing incidentals in letters to the companies dated October 6, 1975. Effective retroactively to January 1, 1975, ESSO's incidentals were raised from Rs. 99/ton to Rs. 123/ton. DCL's incidentals were also raised retroactively; effective July 1, 1975, incidentals were increased to Rs. 98/ton from Rs. 87/ton. As of October 1, 1975, the dealer commission portion of the incidentals allowance was raised from Rs. 22 per ton to Rs. 28 per ton for both ESSO and DCL. This is now the minimum commission that these distribution companies can pass on to their sales agents. Thus, ESSO's incidentals have been raised a total of Rs. 30, to Rs. 129 per ton, a 30% increase. DCL's incidentals have been raised a total of Rs. 17, to Rs. 104 per ton, an increase of approximately 20%. This increase in incidentals, particularly in the dealer commission portion, is expected to have a positive impact on the incentives of retail sales agents to stock and sell fertilizer. The dealer commission of Rs. 22 per ton had initially been established in December 1964, when ESSO fertilizer entered into its basic agreement with the Government of Pakistan. It had not been revised since, despite very significant increases in all of the operating expenses dealers must cover. (For example, retail prices have risen from Rs. 280/ton to Rs. 1500/ton over this 11-year period; obviously, the amount of capital tied up in maintaining inventories has increased greatly.) The increase in incidentals should provide additional incentives for existing dealers to market their products more aggressively and for more people to engage in fertilizer marketing. This could increase the market area served and farmers' physical access to supplies[1].

1/ For a view of the "official" incidentals allowed on all domestically produced fertilizers as of early September, 1975, see Table III-15. Note that the schedule of incidentals shown for ESSO and DCL does not reflect the increases announced on October 6, 1975. The data reflect officially allowed incidentals, as distinguished from actual cost incurred. It is important to note that neither line item incidentals nor total incidentals for different products and different distribution entities are directly comparable, due to differences in accounting procedures and the nature of markets served. That is to say, lower incidentals do not necessarily imply greater marketing efficiency. Since data sources on incidentals that were drawn upon sometimes conflicted, caution should be exercised in utilizing the information contained in Table III-15.

Transportation and Storage

3.26. Fertilizer competes for transportation with wheat and other crops, industrial raw materials, and goods locally produced and imported. The Pakistan Railway (PR) estimates that 8% of its traffic is concerned with shipment of fertilizer. Shipment by rail of imported fertilizer from the port at Karachi to points throughout the country and from domestic fertilizer plants to markets is from time to time subject to delay due to the non-availability of freight cars. Despite the PR's fleet of 37,000 freight cars, problems periodically arise in scheduling rail shipments of fertilizer, when harvested crops and fertilizer scheduled for new crop use coincide in their freight car demands. As a general policy, movement of fertilizer is given high priority in the allocation of freight cars, but defense materials and wheat are usually given precedence. Domestic producers of fertilizer have complained that not enough cars are being assigned for their needs and that movement of imported fertilizer is handled before their own product. The consequence for local fertilizer producers is that they must often ship by truck, which is relatively expensive when long distances are involved. Since fertilizer is sold at a uniform price throughout the country and distributors are allowed to retain only designated margins for specific expenses and profit, cost of transportation can limit or influence the pattern of market distribution.

3.27. In the future, low cost transport of fertilizer, as well as other commodities, will require careful planning. The PR must increase the precision of its traffic forecasting, adopt new systems to increase operational efficiency, and invest in new equipment and facilities. All of these activities have already begun. The Railway authorities are meeting with fertilizer and other shippers to review traffic forecasts and discuss methods by which shippers can assist the Railway in meeting current and future demands. The IBRD is currently studying the Railway's operations with a view to possibly assisting in new investments in signalling, railway sidings, and marshalling yards. For the immediate future, a new system which has just been introduced, involving rescheduling of the despatch of passenger trains, offers promise of increasing the Railways' freight handling capacity by an estimated 15%. Current facility expansion projects involving the marshalling yard near Karachi and the railway bridge at Kotri should, when completed, also enable the PR to assemble freight trains and move them away from the congested Karachi area with greater speed.

3.28. Truck transport of fertilizer and other commodities is used by shippers for shorter distances, up to 150 or 200 miles. All principal cites and many small towns and market centers in Pakistan are linked by roads suitable for truck movement. Beyond these cities and centers, fertilizer must often move by bullock cart and other primitive methods to reach remote villages and farms. Expansion of Pakistan's rural road network will have the effect of broadening fertilizer distribution and directly benefiting low income farmers. A program of rural road expansion is now included in Pakistan's development plans and AID loan assistance for this rural road effort is planned for FY 1977.

3.29. Adequate and well-located fertilizer storage facilities are essential in bringing the product close to the consumer, reducing transportation scheduling problems, and preventing losses due to exposure to weather and pilferage. Although systems for storing fertilizers in Pakistan may warrant improvement, storage facilities do exist at the factory, major distributor, and dealer stages of delivery.

3.30. Imported fertilizer enters Pakistan at the port of Karachi, where it is consigned to the Federal Directorate of Agricultural Supplies (FDAS), the central government's agency for receiving such imports. Unloading is accomplished directly from the holds of vessels to rail freight cars or trucks for despatch to provincial distributors. Warehousing at the port has not been felt to be needed. Some open space is reserved at the port for storage of damaged, bagged material. About 5,000 metric tons (MT) can be accommodated in that area.

3.31. Domestic fertilizer producers have storage facilities at their plant sites. Dawood Hercules can store 30,000 MT under cover at its plant , and ESSO can store 10,000 MT. Problems have on occasion arisen at both plants when the demand for fertilizer slacked and unusally heavy rains damaged product not stored under cover. Additional ad hoc storage has been arranged by the producers at locations near distribution points when stocks accumulated at the plants.

3.32. The several public sector distributors -- SASO, PADSC, the Agricultural Development Authority (ADA) in NWFP, and the Agriculture Department in Baluchistan -- take delivery of fertilizer at the port (though the Government's FDAS pays inland freight), or at producing plants' sites and carry the cargo by rail or truck to their main warehouses. These main warehouses, generally known as "bulk depots," are located at the district and sub-district levels of each province. There are 65 main warehouses operated by PADSC in all the 19 districts of Punjab; 18 warehouses operated by SASO in the 12 districts of Sind; and 5 main warehouses operated by ADA in NWFP. The storage capacity of these warehouses differs from one place to another, depending on the requirements of the area being served by the warehouse. A warehouse in Jhelum district, for instance, is of 1,500 tons' capacity, while another at Multan has a capacity of 20,000 tons. The main warehouses serve as outlets for the 556 PADSC sale points in Punjab, 94 sales points in Sind, and 159 sales points in NWFP. The number of sale points within each district or sub-district served by an individual main warehouse varies from 6 to 23, depending upon the requirements of the areas. Generally, the warehouses operated by the public sector agencies are rented rather than owned. They are not of a high standard, having been cheaply constructed. Storage facilities at sales depots are often informally arranged. Fertilizer dealers may use rooms of private homes, rural market shops, stables, or cattle sheds.

3.33. The three largest "private sector" wholesale distributors are DCL, ESSO, and PNO,[1/] who make similar arrangements. Private wholesalers, after obtaining deliveries from the local producing plants and the FDAS (for imported product), despatch fertilizer to their distributing agents and sub-agents located in sub-districts, market, towns, and villages. Responsibility for storing the fertilizer rests with the agents and sub-agents. Currently, DCL and ESSO have 670 sales points in Punjab. ESSO and PNO have 476 distribution points in Sind, while PNO, DCL, and other private dealers have 315 distribution points in NWFP. The private dealer warehouses at the 1461 sales points do not generally differ in size and physical condition from those used by the public sector distributors. (Figure 4 in the Annex shows "bulk depots" of the public sector distributing agencies.)

1/ DCL and ESSO are the dealers for their own principal manufacturers; i.e., Dawood Hercules and ESSO Pakistan Limited. PNO, as explained elsewhere, is actually government owned and obtains imported fertilizer and local production from NFC for distribution in Sind and NWFP.

Credit[1/]

3.34. Evidence gathered to date suggests that lack of credit continues to be one of the reasons why fertilizer use is limited on the majority of farms in Pakistan. Survey results show that three-fourths of the non-fertilizer users mentioned lack of resources as the main reason for not using fertilizer. Among fertilizer users, the same proportion cited lack of funds as the major reason for not pushing fertilizer use to the economic-optimum level. The obvious consequence is that national average fertilizer consumption in relation to arable land has stagnated at the very low level of 12 pounds per acre (21.8 pounds per farm acre). Fertilizer users have attained the present use level partly by using their own savings and partly by borrowing from non-institutional lenders. The fertilizer credit contribution by institutional lenders has been quite meager. A recent study conducted in the irrigated area of Punjab showed that 30% of the fertilizer purchases were financed by farmers' own savings, non-institutional credit cum personal savings funded 56% of the fertilizer bought, and personal savings combined with both institutional and non-institutional credit accounted for 13% of the fertilizer purchases by farmers. Non-institutional lenders are charging over 20% per annum interest (often up to 40%), compared to the subsidized 10-13% charged by institutional lenders. The current pattern of financing fertilizer purchases has worked as a deterrent to fertilizer use by small or low-income farmers, who have had relatively little access to institutional credit facilities, and have thus been largely restricted to the more expensive sources of credit. Much of the discussion that follows in this section dwells on institutional credit, but the significance of non-institutional credit should not be overlooked. The results of a countrywide survey conducted in the early 1970's dramatize the significance of non-institutional sources of rural credit. Over 90% of all rural credit came from non-institutional sources.

3.35. The Government is now making efforts to enlarge and overhaul the operations of the institutional components of the rural credit market, and this effort is proceeding smoothly. There has been a sizeable expansion in commercial banks' participation in the field of agricultural credit. The level of commercial banks' outstanding credit to the agricultural sector, both for production and development purposes, increased by Rs. 110 million during the period July 1, 1974 through March 28, 1975. This compares favorably with the expansion of Rs. 119.7 million during the entire course of FY 1973-74. The Agricultural Development Bank of Pakistan (ADBP) also performed reasonably well. It disbursed Rs. 381 million during FY 74-75 (provisional figures). Total institutional credit available to the agricultural sector, net of

1/ See Annex C for a more thorough discussion of fertilizer credit.

taccavi loans[1/], increased slightly, from Rs. 666.5 million in FY73-74 to Rs. 677.7 million in FY 1974-75. For FY 75-76, the National Credit Consultative Council has assigned the commercial banks a target of Rs. 600.5 million. Out of this total, Rs. 520 million are to be disbursed as small loans (less than Rs. 5,000) for agricultural production, and the balance is to be loaned for tractors, tubewells, land improvements, etc. In order to ensure that farmers of various sizes are able to avail themselves of the institutional credit facilities, broad guidelines are prescribed by the Consultative Council in its Annual Credit Plan. For instance, during FY 1974-75, the commercial banks were required to split the assigned loan target of Rs. 450 million between large and small farmers[2/] in the ratio of 1:2. Whether actual disbursements were in conformity with the directives is not known, because the necessary statistics are not yet available. Nevertheless, several significant conclusions are possible: (1) substantial credit allowances for the rural sector's fertilizer needs have been made. (2) institutional lenders have been instructed to have more small farmer loans in their portfolios, (3) more branch banks in rural areas have been opened, and (4) a number of innovative programs have been initiated.

3.36. Details are lacking on how rural credit loans were used in 1974-75, except for records of the Agricultural Development Bank of Pakistan and the National Bank of Pakistan (NBP). For those two, however, fertilizer credit was the major production credit item in their short term loaning profiles. During the year 1974-75, fertilizer credit disbursed by the ADBP and by the NBP through its Small Farmers' Credit Program amounted to Rs. 69 million and Rs. 18.87 million respectively, compared to Rs. 112.85 million and Rs. 14.17 million they disbursed for fertilizer in the year 1973-74. The decline in the ADBP fertilizer loans was due to that institution's discontinuation of its spot lending program, which it had expanded rapidly during the winter of 1973 to rehabilitate flood-affected farming communities. Low recovery rates constitute the basic reason for the discontinuation of the spot lending program. As Pakistan has again been affected by floods in 1975, the Government has directed the ADBP to engage in spot lending. The ADBP's present policy on spot credit is to extend it only in emergency situations. The ADBP administration, accordingly, envisages opening 52 centers in flood affected areas of Sind for the disbursement, interest free, of Rs. 34 million, the major part of which will go for fertilizer. However,

1/ Emergency loans, generally issued on a personal surety basis.
2/ The definition of small farmer varies by province; in Punjab and NWFP, a small farmer is one who farms 12-1/2 acres or less, in Sind 16 acres or less, and in Baluchistan 32 acres or less.

the spot lending will now be against passbooks[1/], and sureties will only be accepted in exceptional cases. This restriction may severely limit small farmers' access to this interest-free credit.

3.37. More important than the absolute levels of institutional credit has been the change in policy which has shifted relatively larger amounts of credit to small farmers. Under the influence of the policy directives of the State Bank and the National Credit Consultative Council, the ADBP and the commercial banks are now channelling major components of their disbursements to small and medium sized farmers[2/]. Ninety percent of all agricultural credit, extended by commercial banks is supposed to go to small and medium sized farmers. The National Bank of Pakistan has launched a special program exclusively for small farmers. Whereas borrowers with holdings of more than 25 acres are still required to obtain loans through regular bank branches, small farmers are being served right at their door steps. The village level credit officer of the National Bank's new Agricultural Credit Program, who is required to have a Bachelor's degree in Agriculture, completes all the loan documents for production credit right in the village and later on arranges the disbursements of credit in kind at the door step of the farmer. Because of the NBP loan officer's educational background, he also functions as a kind of extension worker. Thus, under the NBP program, small farmers have access to a program that delivers the three things they most need: credit, supplies, and knowledge. Loans of up to Rs. 3,000 are extended under this system against two personal sureties. For larger loans, a charge is created in the passbook.

3.38. To offset the effect of its declining spot lending program, the ADBP has approved a new scheme to facilitate disadvantaged farmers' (disadvantaged with respect to size, household income, or distance from ADBP branch banks) access to agricultural credit. The so-called "Village Banker Scheme" seeks initially to serve 500 villages. One hundred-sixty villages will be served by the branch bank managers of the 160 ADBP branch banks. One day a week the

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1/ The passbook is a government issued credit book, which describes a farmer's land holdings and assets. It is issued by a provincial revenue and land registration official (the Tehsildar--equivalent to an Assistant District Commissioner for these purposes). The passbook thus is a land related paper, which contains a record of the farmers assets, liens, and repayment record.

2/ The definition of small farmers is the same as found in the footnote to paragraph 3.35. Medium farmers are defined as those operating 12-1/2 to 50 acres in the Punjab and NWFP, 16 to 64 acres in Sind, and 32 to 64 acres in Baluchistan.

manager will visit a selected village in his territory. The effect of this scheme will be to extend regular ADBP services to the selected villages on a weekly basis. The other 340 villages will be served by "Village Bankers", who are residents of the selected villages and are appointed to serve as official representatives of the ADBP in the particular villages. The Village Bankers will accept, process, and make recommendations on loan applications and then forward applications to the ADBP branch bank in his area. The Village Banker will also assist in loan recoveries, but he will not handle money at any time. This scheme has recently been approved, but implementation had not commenced as of early September 1975. The scheme is new and without precedent, and is believed to have potential for extending credit facilities to farmers who do not presently enjoy access to institutional credit. However, it may prove difficult to effectively manage the scheme, particularly because the policy emphasizes reaching low income farmers. It is possible that village 'elites' will attempt to control or pre-empt the new service. However, this is a possibility in virtually any rural credit scheme. The scheme's success can eventually be measured by the number and type of farmers served, the amount of credit extended, and the recovery rate on loans advanced. Undoubtedly, it will take several years to adequately test the viability of this innovation.

3.39. It should also be pointed out that the State Bank has made strides in taking services to the countryside. Today, there is no rural community with a population of more than 5,000 that does not have a bank branch.

Extension

3.40. The Agricultural Extension Service in Pakistan has been actively engaged in fertilizer trials and demonstrations since 1954. Extension Agents also sold fertilizers and other agricultural inputs to farmers up to 1962, when the Agricultural Development Corporation was established to handle fertilizer distribution in the country. There are nearly 900 Agricultural Assistants (who are Agriculture Graduates) in Pakistan's Extension Service. There are also an estimated 3,065 Field Assistants of the Agriculture Departments located in an equal number of Union Councils in Pakistan. Each Field Assistant is required to conduct fertilizer trials on major crops (such as wheat, rice, cotton, sugarcane, and maize) within his jurisdiction. These trials and demonstrations are conducted on farmers' fields. Each Field Assistant conducts as many as 20 trials a year. In spite of these activities, actual Extension Service contact with small farmers is reportedly very limited.

3.41. The Agriculture Extension Service has staff with special communication media skills. More than 30 persons were trained in the United States in the early 1960's in the field of Agriculture Information. There are about 20-25 Assistant Publicity Officers in the Agricultural Extension Service in Pakistan, who arrange to publish handbills, posters, and agricultural bulletins for distribution to rural areas. One Agriculture Graduate Extension Agent has been posted by the Agriculture Departments at each radio station in the country. These persons make arrangements for radio spot announcements. The Punjab Agriculture Department has a program for the rural population every evening. It also has Agricultural Information and Agricultural Publications Wings attached to the Agricultural Secretariat. The Agricultural Information Wing coordinates with radio and television stations on spot announcements, arranges interviews with specialists, and shows films and slides in rural areas through local extension agents. The Agricultural Publications Wing publishes periodicals and a fortnightly agricultural bulletin which is distributed widely through-out Pakistan. The bulletin contains articles and recommendations from the Agricultural Research Stations on the use of fertilizers.

3.42. The Integrated Rural Development Program (IRDP), in collaboration with AID and CARE/Pakistan, initiated a wheat and maize demonstration program during 1973-74 in selected rainfed (barani) areas of Punjab and N. W. F. P. In order to have an extended trials and demonstration program, AID has recently signed a Project Agreement with the Government of Pakistan for a 3-year grant-funded project.

It is anticipated that a Dryland Agriculture ("Barani") Loan Project will follow. The grant project will be handled by the Extension Departments. The AID-supported Barani efforts in Pakistan are focused on adapting and extending known fertilizer, seed, and related technologies to small farmers.

3.43. Pakistan's private sector entered into fertilizer distribution in 1967 and played an important role in accelerating use of fertilizers. In order to motivate their dealers and keep them abreast of agricultural developments, formal training sessions, sales contests, and conventions are organized periodically by ESSO, DCL, and other private distributors. Each of the private sector firms maintains a team of aggressive, professional sales personnel. These sales personnel assist dealers in moving products by means of soil testing, arranging for technical personnel to conduct farmer meetings, setting out farm demonstrations, and organizing field days. Private companies are also engaged in fertilizer trials in collaboration with Agriculture Departments. To date, more than 5,000 trials have been conducted by private firms. In general, sales promotion and extension activities of private companies can be categorized as follows:

1) Salesmen visit rural areas to advise farmers on crop production programs. Meetings are organized by their respective dealers, with slides shown and discussion sessions held in local languages. The economics of fertilizer use are highlighted.

2) Representatives of various companies explain soil testing at farmer meetings. ESSO and PNO have small soil testing laboratories where soil samples are tested at the farmer's request. Recommendations are then given on use of fertilizer. These laboratories are geared to analyze 20,000 samples annually and are headed by qualified chemists. Also, Dawood-Hercules has recently developed a small soiling testing kit which the farmer or an extension agent can use.

3) Farm demonstrations with recommended fertilizer applications are laid out at selected sites where soils have been tested. Demonstrations are conducted on 1/4-acre plots owned by farmers. The objective is to highlight how yields can be increased by judicious fertilizer use under local conditions.

4) Field days are organized before the harvesting of demonstration plots. Farmers of the area are invited to observe fertilizer responses.

5) The recommendations that are made at farmer meetings are also presented in the form of crop production folders, wall charts, and fliers. These materials, in color and simple-to-read language, are distributed to farmers. Since 1967, more than 8 million of these crop folders, wall charts, and fliers have been distributed by private companies.

6) The companies also publicize through radio and television programs. More than 2 million television and radio spots have been presented since the private sector's entry into fertilizer distribution in 1967.

3.44. The Punjab Agricultural Development and Supplies Corporation (PADSC) has, since its inception, taken various steps to persuade farmers to increase their use of fertilizer. Its promotional work has been in the following areas:

1) Staff make contacts with farmers to persuade them to use fertilizers.

2) The PADSC arranges radio talks by its officers, which are broadcast from Lahore and Multan stations. Commercial spots are also being arranged on the availability of fertilizers.

3) Pamphlets, leaflets, and wall charts are distributed to farmers, highlighting the importance of each type of fertilizer and recommended applications.

4) Two documentary films have been produced for television, featuring interviews with progressive farmers.

5) The PADSC also gives incentives to farmers for increased use of fertilizers. A Farm Delivery Service Scheme provides free transport of truck-load lots to the village. Groups of farmers may combine orders to form truck-load lots.

6) Slides in movie houses and touring film shows in rural areas are being shown to emphasize fertilizer use.

3.45. In the summer of 1975, the National Fertilizer Corporation (NFC) began demonstrations of their fertilizers on farmers'

fields. A total of 95 demonstration plots for cotton, rice and maize were established throughout Pakistan. The NFC staff also plans to hold farmers meetings and field days. In addition, the NFC sponsored 750 radio spot advertisements for their fertilizers during the summer of 1975, and is now evaluating the success of this promotional medium.

Prices

3.46. Retail prices of fertilizer in Pakistan underwent a series of increases in 1972 through 1974 (See Annex Table III-16) after holding fairly steady from 1966 to 1972. Prices of urea more than doubled in the 1973-74 period -- from Rs 35 ($3.54) per 110 lb. bag in March 1973 to the present Rs 75 ($7.58) per bag which was set in April 1974. Over the same period, agricultural product prices did not rise proportionately (Annex Tables III-17, III-18, and III-19), which contributed substantially to the stagnation in fertilizer sales since 1972. It took more than 4 pounds of wheat (at Government procurement prices) to purchase a pound of nitrogen in 1973-74, as compared to around 2.4 to 2.8 pounds of wheat during the late 1960's and early 1970's when fertilizer use was increasing very rapidly. The pounds of coarse rice (at Government prices) required to purchase 1 pound of fertilizer increased from 1.9 in 1969-70 to as high as 4.5 in 1973-74. This has changed over the last 2 years. The procurement and harvest prices of major crops have increased (the Government procurement price of wheat, for example, was increased by 45% in 1974-75), while most fertilizer prices have not been increased since April 1974. This has improved fertilizer /crop price relationships, but not to the incentive levels of a few years ago. The Pakistan Government may find it necessary to allow market prices of major crops to rise and to further strengthen support prices before any additional fertilizer price increases take place. The current softening of world fertilizer prices might even allow a slight rollback of fertilizer prices, though any future rollbacks may have to be left in place for at least 6 months or a year. The 12-1/2% price discount on fertilizer from December 20, 1974 through January 31, 1975 boosted sales dramatically; offtake of nitrogen fertilizer in January 1975 was 160% higher than January of the previous year. Although much of this fertilizer was carried over by traders and farmers for sale or use after the discount period, the discount apparently did cause an increase in fertilizer top-dressings on the wheat crop. However, because of administrative problems -- of inventorying stocks and compensating dealers for losses they incur on stocks carried into a discount period -- price reductions might achieve greater results if left in place much longer than was the case in December 1974- January 1975.

3.47. Fertilizer is cheaper in Pakistan than in neighboring countries. Though the retail price of urea in Pakistan ($152/ton) is nearly the same as that in neighboring Afghanistan ($154/ton), it is about 30% lower than that in I dia($217/ton[1]).DAP is retailed in Pakistan ($152/ton) for 12% less than in Afghanistan ($173/ton) and 54% less than in India ($329/ton[2]). While Pakistan's DAP price appears low both in relation to its own urea price and in relation to DAP prices in neighboring countries, it is intended as a special inducement to farmers to increase their use of phosphate absolutely and in relation to nitrogen. With world market prices for urea and DAP presently falling, pressures to increase retail prices of fertilizer in Pakistan for budgetary reasons are expected to lessen. Expected budget subsidies on fertilizer for the next two years, assuming C&F costs in Karachi of $225/product ton for urea and DAP, are worked out in Annex Tables III-20, III-21, and III-22. Costs of producing and distributing urea in Pakistan's private sector have been less than the retail sales price. The difference -- Rs. 627/ton in the case of Dawood Hercules urea and Rs. 545/ton in the case of ESSO urea -- is taxed by the Government in the form of a "development surcharge". This flows into a general revenue fund, rather than specifically into any price equalization pool. Urea and ammonium nitrate produced by the National Fertilizer Corporation (NFC) are also produced and distributed at costs lower than their respective retail prices. NFC - produced ammonium sulphate and single superphosphate, however, cost more to produce and distribute than is captured in their sales prices. How the "excess profits" and "subsidies" on NFC's various products are handled within both NFC and overall Government accounts and budgets is not readily apparent. From the standpoint of Governmental flows of funds as a whole, the private and public sector domestically produced fertilizer should result in net flows to the Government of about Rs. 326 million ($33 million) in 1975-76 and Rs. 313 million ($32 million) in 1976-77 (Annex Table III-21).

1/ The retail price of urea in India is $217/ton if one values the Indian rupee at 8.5 to $1.00, or $187 if one values it at 9.9 to $1.00 (the same as the Pakistan rupee).

2/ This assumes Indian Rs. 8.5 = $1.00. Alternatively, at Indian Rs. 9.9=$1.00, the price of DAP equals $283/ton.

3.48. Imported fertilizer has been subsidized in Pakistan. Using import costs for DAP and urea of $225/ton C&F, the apparent subsidy on imported fertilizers would be about Rs 424 million[1/] ($43 million) in 1975-76 and Rs 700 million ($71 million) in 1976-77 (Annex Table III-22). The net effect of the fertilizer surcharges (taxes) and subsidies is a Government outflow (net subsidy) of Rs 98 million ($10 million) in 1975-76 and Rs 387 million ($39 million) in 1976-77 (Table 4). The increase in the net subsidy during 1975-76 is of course due to a projected increase in fertilizer use, to be made possible primarily by a larger flow of imports.

Table 4 - Net Surcharges and Subsidies on Domestic and Imported Fertilizer

	1975-76 (Rs. million)	1976-77 (Rs. million)
Subsidy on imported fertilizer	424	700
Net development surcharge on domestic fertilizer	326	313
Net cost to Government accounts	98	387

3.49. The projected subsidy costs in the near future, at C&F import costs of $225/ton for DAP and urea, are far lower than they would be at the prices which prevailed less than a year ago. Prices of at least phosphate fertilizer are not expected to rise significantly over the next 2 or 3 years, and may even further decline. Thus, Pakistan may wish to increase fertilizer prices only very modestly, if at all, in the period before the several new fertilizer plants come on stream. The subsidies on imported fertilizer during this period are apparently within Pakistan's budgetary capacity, and will pay high economic dividends if they lead to wheat self-sufficiency and expanded production of other crops.

1/ The budgetary allocation in the 1975-76 Annual Development Plan is quite close to this -- Rs 431 million.

Economics

3.50. Pakistan's economy in predominantly agricultural, with over 57 percent of the working labor force employed directly in agriculture and many more workers in related activities with both forward and backward linkage to agriculture. Growth in agricultural productivity and output is therefore seen as an essential condition for the economy's continued development, for substantial improvement in the real standard of living of the population, and, as a minimum, to the maintenance of the present level of nutrition while population continues growing at current rates.

3.51. Even to preserve the current and inadequate per capita foodgrain consumption level of about 11.2 ounces, Pakistan will have to increase either its grain output or its grain imports. The latter alternative is not feasible unless it (1) finds large amounts of concessional financing, or (2) increases its exports far beyond any foreseeable short run possibility, or (3) sharply reduces other imports essential to general welfare and the continued growth of its economy.

3.52. The most direct means of achieving an improvement in Pakistan's economic growth rates and living standards is a sharp increase in agricultural output. Some modern, production-increasing technology is being used, but much more widespread use is planned, particularly on small farms. These improvements involve a more widespread use of fertilizer, pest control, high yielding seed, and, in some cases, new crops, as well as more efficient use of irrigation water. Early achievement of success will require adequate, timely supplies of these essential inputs in all farm areas.

3.53. Since one-half or more of the fertilizer to be imported under this loan will likely be used on wheat crops, the economic implications for the economy of importing fertilizer rather than food are best illustrated with wheat. One nutrient ton of fertilizer would cost $351, if imported in the form of DAP (18% N and 46% P_2O_5), at a C&F cost in Karachi of $225.[1/] This $351 worth of fertilizer could be expected to produce 7 to 10 tons of wheat, worth $1,260 to $1,800, with wheat coming into Karachi at $180/ton. The simple ratio of benefits to costs in terms of foreign exchange savings would therefore be 3.5 or 5 to 1, depending on the fertilizer-wheat response assumed. Even though other

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1/ 1.56 product tons DAP provides 0.72 nut. tons P_2O_5 and 0.28 nut. tons N; 1.56 product tons x $225 = $351, the cost of 1.0 nutrient ton of fertilizer.

real costs are incurred in getting fertilizer from the port to farmers and in producing and harvesting the incremental wheat, the net benefits to the economy of importing fertilizer rather than wheat are clearly evident.

3.54. Benefits of additional fertilizer applications exceed costs for farmers under a wide range of response assumptions. (Annex Table III-23) However, the mere presence of positive benefit/cost ratios for fertilizer use does not assure rapid expansion in its use in less developed countries. The FAO has stated that benefit/c st ratios below 2.0:1 or 2.5:1 are generally insufficient to foster rapid increase in fertilizer use.[1/] By this standard, the ratios for fertilizer use on wheat in Pakistan appear to be just adequate at present--- ranging from 2.2:1 to 3.0:1 when fertilizer response rates are between 4.5 and 9. At the higher response rates obtained under some conditions, benefit/cost ratios for wheat appear very favorable. However, where fertilizer use is only just beginning, as in Pakistan's barani areas, quite high ratios are necessary to induce fertilizer use. Clearly, Pakistan will wish to consider carefully any move to let fertilizer prices increase until market forces bring higher prices to farmers for their wheat. In fact, a support price on wheat slightly higher than the existing Rs. 37/maund ($100/metric ton), coupled with continued freedom for farmers to sell their grain at the higher of support or market prices, would increase the likelihood of Pakistan achieving the fertilizer use and wheat production targets which have been established. Benefit/cost ratios for fertilizer use on Pakistan's maize crop also appear adequate by the FAO standard. However, as in the case of barani area wheat, maize is grown by small farmers with little experience in fertilizer use, thereby necessitating especially strong economic incentives. With respect to sugarcane, existing cane prices assure benefit/cost ratios in excess of 5:1 for fertilizer use. On rice, benefit/cost ratios for fertilizer use are less than 2.5:1 except in cases of fertilizer response such as some of those obtained at experiment stations. Existing rice procurement prices of Rs. 40/maund[2/] result in paddy prices of perhaps Rs. 20/maund ($54/metric ton). This seems inadequate, given current fertilizer prices. A higher support price on rice, or perhaps a support on paddy itself, is necessary to promote greater fertilizer use on Pakistan's rice acreage.

1/ Dalrymple, Dana, Evaluating Fertilizer Subsidies in Development Countries. AID Discussion Paper No. 30, Wash., D.C. Bureau for Program and Policy Coordination, U.S. Agency for International Development, 1975.

2/ There are actually several different procurement prices for rice varieties of various qualities.

3.55. For most of Pakistan's major crops, the individual farmer, including the low-income farmer, will receive a very substantial positive return from greater use of fertilizer and the other inputs to be financed under this loan. Given the size distribution of Pakistan's operating farms (Annex Table II-3), small farmers will receive a large proportion of these benefits. From a national economic perspective also, the return to Pakistan's economy from increased fertilizer use is substantial. As noted above, the simple return in foreign exchange terms is over 3.5 to 1, or 350%. It is clear that even after all the other costs involved in the activity this loan is assisting (such as the improvement of the fertilizer distribution system) are taken into account, the returns to the economy exceed those available on alternative uses of aid financing and Pakistan's own resources.

E. Projected Needs

3.56. Projections of nitrogen and phosphate fertilizer requirements are shown below in Table 5.[1/] Both sets of projections shown indicate 1 million nutrient tons of nitrogen (N) and phosphate (P_2O_5) will be required in 1979-80. This is consistent with the 1979-80 target laid out in the Government of Pakistan's Working Papers for the Fifth Plan Period. The high estimates assume a 9-million ton wheat crop in 1975-76 and a 10-million ton crop in 1976-77, whereas the "low" estimates conform to requirements of the official, revised 1975-76 wheat target of 8.4 million tons. It is assumed that phosphate demand will grow more rapidly over the next 5 years than will nitrogen demand, since there is currently such an imbalance in the use of these two fertilizer nutrients in Pakistan and the Government has set as an objective rectifying this imbalance. Pakistan hopes to have at least a 3:1 ratio of N to P_2O_5 in use by 1980, in contrast to the current ratio of more than 5:1. A ratio close to 2:1 is believed to be optimal.

1/ See Annex Tables III-24 and III-25 for seasonal breakdowns.

Table 5. Projected Nitrogen and Phosphate Fertilizer Requirements for Pakistan

Year[1/]	Low Estimates			High Estimates[2/]		
	N	P_2O_5	Combined	N	P_2O_5	Combined
	1,000 nutrient tons					
1974-75[2/]	379	67	446	379	67	446
1975-76	445	100	545	535	115	650
1976-77	540	130	670	610	145	755
1977-78	630	160	790	660	170	830
1978-79	690	205	895	705	210	915
1979-80	750	250	1,000	750	250	1,000

1/ Year runs from October to September; i.e., 1974-5 covers October 1974 to September 1975.

2/ Estimates based upon data available through July 1975.

3.57. If the objective of 1 million nutrient tons of N and P_2O_5 is to be achieved by 1979-80, to compare with the estimated 446,000 nutrient tons used in 1974-75, a 17.5 % compound annual growth rate will be necessary over the 5-year period. Although this is a high rate of growth, it is attainable with a sound set of fertilizer and crop pricing, distribution, and credit policies. A number of alternative projections of fertilizer demand have been made through 1980 in various official and non-official reports. An October 1974 study by ESSO Pakistan Fertilizer Company presented "low", "medium", and "high" estimates of fertilizer demand. 1/ The medium estimate for calendar year 1980 was 692,000 nutrient tons of nitrogen. A study by the Government of Pakistan's Ministry of Industries also projected fertilizer demand through 1980. 2/ Although more than one set of estimates was presented in that report, the more conservative estimates showed 1980 nitrogen and phosphate fertilizer demands of 810,000 and 240,000 nutrient tons, respectively. Given this range of estimates, the 1979-80 targets of 750,000 tons of N and 250,000 tons of P_2O_5 used in the Government's Working Papers for the Fifth Plan Period (and used in this Project Paper) seem reasonable.

3.58. Since domestic production will not be able to meet Pakistan's full needs for N until 1979 or 1980 and P_2O_5 until some later date, substantial imports will continue to be necessary. Estimating these needs has been undertaken by AID and the Government of Pakistan under various assumptions. Fertilizer imports received in 1974-75 and either received or scheduled thus far in 1975-76 are shown in Tables III-26 and III-27 of the Annex. 3/

1/ ESSO Pakistan Fertilizer Co., Ltd., "Pakistan Nitrogen Demand Forecast Study," Karachi, October 1974.

2/ Ministry of Industries, Government of Pakistan, "Requirements and Production of Nitrogenous and Phosphatic Fertilizers in the Years 1974-75 and 1979-80," Report of the Committee set up by the Fertilizer Board September 1974.

3/ The only additional known imports not shown in Annex Table III-27 are some phosphates which may be imported this year under a possible $ 3 million European Economic Community Grant.

The additional nitrogen and phosphate fertilizer imports which AID believes will be required over the next 2 years appear in Annex Tables III-28 through III-31. A brief summary, however, appears immediately below.

Table 6. Required Nitrogen and Phosphate Fertilizer Imports

Time period in which to be imported	Nitrogen (1,000 nutrient tons)	Phosphate (1,000 nutrient tons)
September 1975 (deficit)	-	8-26
October 1975-February 1976	0-15	7-4
March-September 1976	75-172	72-90
October 1976-February 1977	76-129	48-45
March-September 1977	183-178	85-103
Total:	334-494	220-268

3.59. The government of Pakistan estimates that 250,000 nutrient tons of nitrogen fertilizer were on hand in the country July 1. It is believed that about 260,000 nutrient tons were on hand October 1. If the low fertilizer offtake estimates are used, additional nitrogen fertilizer imports need not to be brought into Pakistan until March-September 1976, to be used on the 1976-77 winter crops. Achievement of the higher 1975-76 summer season fertilizer use targets would necessitate importation of 15,000 nutrient tons of nitrogen, in addition to that already scheduled, between now and February 1976. Major requirements for nitrogen fertilizer imports, using either the high or low offtake estimates, begin in the summer of 1976.

3.60. Phosphate fertilizer data in Annex Tables III-30 and III-31 show Pakistan going into the 1975-76 winter (rabi) growing season with a deficit in phosphates (8,000 to 26,000 nutrient tons).

Some allowance for stocks tied up in the distribution system is made in each set of projected import requirements. If Pakistan is able to draw down its phosphate stocks completely during the fall and winter of 1975-76, it could achieve the lower offtake target of 55,000 nutrient tons. There do not appear to be sufficient stocks in the system, however, to attain the higher target of 70,000 nutrient tons. To replace the stocks that will be drawn down and also accumulate the stocks necessary to move into the next summer (kharif) growing season, phosphate fertilizer imports must be undertaken this fall. The required phosphate imports between now and about February 1976 thus range from about 15,000 - 30,000 nutrient tons (Table 6). Additional large quantities of phosphates will need to be imported in the March-September 1976 period, if they are to arrive in time for the 1976-77 wheat campaign.

3.61 The balance of payments burden will be very heavy. If imported urea and DAP were to cost Pakistan an average of $ 225/product ton over the next 2 years, the fertilizer import bill would be between $238 million and $324 million, depending on which set of fertilizer use targets is achieved. The amount of DAP alone that must be brought into the country during this period is expected to cost $ 131-194 million.[1/] Concessional financing for these imports is critical if Pakistan is to be in the kind of supply position necessary for liberal distribution policies and rapid expansion of fertilizer use, particularly by small farmers. Though Pakistan hopes to continue to be able to arrange some grants and credits from Canadian, Western European, and other sources, other developmental financing will be needed to assure that adequate quantities of fertilizer, particularly phosphates, are available for Pakistani farmers.

1/ See Annex Tables III-32 and III-33.

F. The Low-income Farmer

3.62. This Agricultural Inputs Loan is aimed at increasing food production in Pakistan and is intended to engage low-income farmers actively in that production process. Eighty-nine percent of the farm holdings in Pakistan are less than 25 acres in size, and most of the farmers operating those holdings earn what would be considered on world standards to be low-incomes.[1/] Evidence cited elsewhere in this paper indicates that small farmers certainly have not been bypassed by Pakistan's fertilizer-seed revolution. However, the percentage of farmers using fertilizer and the levels of application per acre are far below potential in all farm size categories. Less than 60 % of farmers with holdings smaller than 25 acres used fertilizer in Pakistan in 1971-72. Application rates on farms where fertilizer is used range from a few pounds to generally not more than 50 or 60 pounds of N per acre. This loan, and the Government of Pakistan policies being implemented in association with it, can help boost the use of fertilizer — and thereby enhance production and incomes — on the holdings of low-income farmers by :

(1) Assuring the availability of fertilizer supplies in all regions and at all sales points. An abundant supply of fertilizer is the best means of assuring that unofficial fertilizer prices remain close to or below the official ceiling prices and that low-income farmers have ready access to supplies. In times of scarcity, larger higher-income farmers are best able to pay premium prices for fertilizer and to expend greater time, money and effort seeking out supplies. This loan would provide part of the foreign exchange necessary for Pakistan to purchase the fertilizer imports required to maintain fully adequate supplies.

(2) Encouraging expanded dealer networks. The prospect for an assured flow of fertilizer imports in the next few years while new plants are being constructed makes it possible for Pakistan to encourage expansion of distribution networks and to provide

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1/ Household incomes in 1971-72 of about $ 40 or less per month.

supplies to a larger number of dealers. Banking on this flow of imports, the Government has decided to make dealer licensing virtually automatic (where licensing exists at all), to allow private dealers to obtain supplies from both public and private sector wholesalers, to remove territorial restrictions on fertilizer marketing, and to increase the incidentals (marketing margin) allowance. This set of policies should help encourage new and more active dealerships. A large and active fertilizer distribution system is essential if low-income farmers -- particularly those located some distance from mandi (market) towns or in rainfed areas (where fertilizer use thus far has been low) -- are to have ready access to supplies.

(3) Making phosphate fertilizers available at all distribution points. The decision to make phosphate fertilizers available to private as well as public distributors should encourage a better balanced use of N and P_2O_5. This is particularly true for small farmers, who are less able than large farmers to expend the time and effort required to contact more than one dealer. Under the new policy, a farmer can purchase both nitrogen and phosphate fertilizer at one sales point.

(4) Increasing the access of small farmers to institutional credit. No easy solutions exist for the credit problems of low-income farmers. However, the Government is attempting to streamline the procedures associated with administration of agricultural credit. A directive has been issued that all farmers are to be given passbooks (the land ownership records used in securing loans), within 4 years. The National Bank of Pakistan's special credit program for small farmers and the Agricultural Development Bank of Pakistan's "Village Banker Scheme" are attempts to make credit more accessible to low-income farmers. The Agricultural Development Bank, the National Bank of Pakistan, and the Banking Council have been advised by the Government to "extend their activities widely to ensure availability of credit particularly to the small farmers." 1/ These credit policies of the Government, if accompanied by high loan recovery rates, could be both financially viable and stimuli to increased fertilizer use by low-income farmers.

The supply conditions and distribution policies outlined above should assure that low-income farmers benefit from the imported fertilizer financed by this loan.

1/ Press release in Pakistan Times, Sept. 22, 1975

IV. OTHER AGRICULTURAL INPUTS

A. Wheat Seed

4.01. During 1965-66, Pakistan imported 400 tons of wheat seed from Mexico for wide-scale testing. The tests proved successful and 42,000 tons of wheat seed were purchased. After 1970, several local varieties of wheat were developed that were superior to the original imports. The new varieties however, were found to be somewhat susceptible to leaf rust and black stem rust.

4.02. Early in 1975, the Government appointed a high level committee to look into reasons for low agricultural output. The Committee, known as the "Agricultural Enquiry Committee", prepared its report in June 1975 and concluded that an inadequate supply of improved seeds was a prime cause of low productivity. It also noted that there was a lack of arrangements for multiplication and distribution of improved seed, particularly wheat. The Committee recommended (1) that immediate arrangements be made to import improved wheat seed from Mexico, for multiplication; and (2) that the Government move to establish the seed industry in Pakistan on a permanent footing. The Government has begun to implement both recommendations.

4.03. On the basis of the Committee recommendation, the Government proceeded, in the summer of 1975, to procure 17,000 metric tons of seed for high yielding varieties of Mexican wheat. The seeds arrived in the early fall. Prior to the purchase, the Government asked AID to authorize reimbursement for the purchase under the proposed Agricultural Inputs Loan. Subject to later approval of the loan and to observance of AID regulations governing informal bidding procedures, AID agreed to consider financing the purchase on an "early eligibility date" (May 14, 1975).

4.04. The cost of the imported wheat seed turned out to be approximately $ 7.7 millions at $ 451.425 (Rs. 4,469.108) per metric ton or Rs. 186.940 per maund (82.28 lbs). The seed is now being sold to registered growers for multiplication purposes at Rs. 70.00 per maund. The difference between the landed cost and the selling price is being subsidized in equal proportions by the Federal and Provincial Governments. The Government allocated 12,000 metric tons to Punjab Province, 4,000 metric tons to Sind Province, 500 metric tons to NWFP, and 500 metric tons to Baluchistan.

4.05. To implement the second of the Committee's recommendations, the Government is now negotiating a World Bank group credit of over $ 20 million which will provide part of the financing needed to establish a multiplication and distribution system for certified, improved seeds. It is the Government's estimate that if the seed multiplied from imported stock, and that produced locally from the forthcoming winter crop, are procured and kept in reserve, it will be possible to make available improved seed to meet 100% of the requirements for the 1976-77 wheat crop.

B. Other Seeds

4.06. To establish a full-spectrum, permanent seed industry, as the 1975 Agricultural Enquiry Committee recommended (above), imports of potato, vegetable, oil, forage, and fodder seeds may be undertaken soon with financing requested under the proposed loan. All of these crops have major potential for expansion and are particularly well-suited for small farm agriculture. It is estimated that imports of these seeds over a 1 to 2 year period might amount to $ 2 million for potato seed; $ 200,000 for vegetable seed; $100,000 for oilseed; and $1.0 - $1.5 million for forage and fodder seed.

C. Equipment Suited for Small Farms

4.07. To date, imports of farm tractors and equipment have been limited mainly to large wheel and crawler-type tractors and related equipment, suitable mainly for large farms. Under this project, some small, 2- and 4-wheel tractors, small implements, small threshers, and small scale tubewell pumps may be imported for sale to small farm operators or for testing purposes. Not more than $500,000 will likely be allocated for this purpose, since the objective is to test for suitability and adaptation to Pakistani conditions.

V. ISSUES AND RECOMMENDATIONS

A. Policy Actions:

5.01. The small farmer, receiving a minimal return from cultivation of his land, is disadvantaged from a number of standpoints. Lack of both personal capital and credit, lack of knowledge about markets and new technology, distance from market centers, and the non-availability of convenient transport, all serve to place limitations on his participation in Pakistan's agricultural and economic growth. One constraint -- the quantity of fertilizer, seed, and other inputs conveniently available to him in the market -- will be removed, or reduced, by this project. In times of fertilizer shortage, especially, it is the small, low-income farmer who is most likely to have to go without.

5.02. The Government, in its Loan Application Letter, indicated its intention to review and implement policies necessary for widespread use of key agricultural inputs. Recent policy actions of the Government are designed to facilitate and encourage the distribution and use of fertilizer. These actions should result in greater small farmer participation in the country's agricultural growth. The critical policy actions taken by the Government can be summarized as follows:

1) Price policies of the Government over the past year and a half have improved crop/input price relationships; fertilizer prices have been kept low by the Government while official Government procurement prices for wheat and other crops have been raised. The system of Government procurement of crops was itself changed in the summer of 1975, farmers being given the option of selling to the Government or on the open market.

2) The marketing environment for fertilizer distributors and dealers has been improved. Increased numbers of dealers and more aggresive marketing are expected to result from --

a) simpler, almost automatic licensing of dealer applicants in some areas (and the absence of all licensing requirements in other areas);

b) private sector distributors have been given access to imported phosphates to enable them to offer farmers a full range of N and P products;

c) private dealers are being given the right to obtain fertilizer from both public and private wholesalers;

d) marketing margins have been increased;

e) and, finally, territorial restrictions on marketing of fertilizer by private producers have been removed.

3) Attempts to reach low-income farmers with loans, through special programs of the Agricultural Development Bank and the National Bank, are being made.

The above policy actions will assure that inputs financed by this project will benefit low-income farmers. (See the section on "the low-income farmer.")

5.03. In addition, technical problems -- of stock accumulations and insufficient rail transport -- are now attracting Government concern and attention. The Government, through the National Fertilizer Corporation, is joining AID in a study of fertilizer distribution and credit to gain a better understanding of constraints to increased fertilizer use. The study is described in the "evaluation plan" section and in an annex of this Loan Paper.

B. Recommendations:

5.04. It is recommended that:

1) AID and the Government periodically consult on the progress of studies to identify and measure the problems of low-income farmers;

2) the Government be asked to periodically advise AID, during the course of implementation of this project, on steps taken to:

a) strengthen credit programs for low-income farmers;

b) expand guidance programs on fertilizer and other inputs use, such as in connection with the AID-supported Dryland Agriculture and On-Farm Water Management projects;

c) maintain favorable crop/fertilizer price relationships; and

d) promote increased input availability in the more remote areas of Pakistan.

3) the Government be asked to periodically advise AID, during the course of implementation of this project, of its evaluation of the environment for distribution of fertilizer in both the public and

private sectors. This would include evaluations of:

a) the adequacy of marketing margins for distributors and dealers;

b) procedures and policies governing the expansion of distribution/dealer networks; and

c) access of all distributors/dealers to the full range of fertilizer products available in Pakistan.

C. Loan Agreement Covenants

5.05 The Loan Agreement will include covenants appropriate to the policy actions and recommendations described above (see Annex G, Draft Loan Authorization).

VI. IMPLEMENTATION

Loan funds will be made available for the importation of particular commodities after the initial conditions precedent are met and the AID procurement procedures governing each case are followed. AID Regulation I procedures will be applied unless AID in Washington agrees to modifications. Procurement documents, IFB's, contracts, evaluations, and recommendations for award will be submitted to A.I.D./Washington for approval.

VII. HOST COUNTRY CONTRIBUTION

7.01. Pakistan's import bill for fertilizer is expected to run in the neighborhood of $150-200 million per year until domestic production of nitrogenous fertilizers closes the supply-demand gap in 1979 or 1980. Phosphatic fertilizers will continue to be imported in substantial amounts even after those years. While some of the foreign exchange needed to meet these requirements can be expected to come from international assistance agencies besides AID, it is estimated that at least 25% of the fertilizer, other inputs, and related project costs will be financed from Pakistan's own resources.

7.02. In the effort to reach small farmers with agricultural inputs, Pakistan is adopting a series of new policies, described elsewhere in this paper, to broaden fertilizer distribution geographically and quantitatively, increase farm profitability, expand credit facilities, and provide guidance to farmers in optimum fertilizer use. In sum, this loan is only part of a much larger Government of Pakistan effort to revolutionize agriculture in Pakistan and spread the benefits of improved production technology to low-income farmers throughout the country.

VIII. EVALUATION PLAN

8.01. A joint AID-Government of Pakistan input into this project is a set of three closely intertwined surveys: one of farmers, one of credit sources, and one of retail fertilizer dealers. (See Annex E.) The first is to obtain baseline data on farmer use, purchase, and knowledge of fertilizer. All three are intended to examine hypotheses about barriers to greater farmer use of fertilizer and to design further steps to eliminate these barriers. Because of the timing of this study (winter of 1975-76), it will already reflect some impact of the significant changes in Pakistan's administrative practices regarding fertilizer that are Government inputs to the project. However, it

will still provide a baseline for the measurement of increased and better balanced use of fertilizer by low-income farmers, which is part of the project's purpose.

8.02. It is anticipated that the sample survey of farmers will be partially replicated in 1976-77 and 1977-78 in order to measure the extent to which low-income farmers have in fact increased and better balanced their use of fertilizer. These surveys will also be diagnostic -- i.e., they will help identify remaining barriers to achievement of the project purpose. These surveys may in part be carried out in conjunction with similar work on the AID-assisted Dryland Agricultural Development (Barani) Project. There will also be smaller and simpler surveys of the retailers in the distribution system.

8.03. During the life of this activity, AID and the Government of Pakistan officials will hold semi-annual reviews, which in addition to examining the adequacy of the price ratios between agricultural inputs and outputs for this project's purpose, will also examine progress toward other output targets and the project purpose. The numbers of sales points, the adequacy of stocks, and the operation of the price support mechanism will be among the factors to be examined.

8.04. The schedule for these evaluation activities is as follows:

Winter of 1975-76: Baseline survey of farmers carried out.

Winter of 1975-76 and Summer of 1976: Dealer and credit source surveys executed.

April 1976: First joint, semi-annual review meeting held.

Winter of 1976-77: Sample survey of farmers carried out.

October 1976: Second semi-annual review meeting held.

February 1977: Second survey of dealers carried out.

April 1977: Third semi-annual review meeting held.

October 1977: Fourth semi-annual review meeting held.

Winter of 1977-78: Sample survey of farmers carried out.

February 1978: Sample survey of distributors carried out.

April 1978: Fifth semi-annual review meeting held.

April 1980: Final evaluation of progress toward purpose and goal.

IX. ENVIRONMENTAL ASSESSMENT

A. Introduction

The borrower will use the funds from this loan to purchase fertilizer, seeds, and possibly some farm machinery. This chapter discusses the potential effects of these inputs on the environment of Pakistan.

B. Fertilizer

Pakistan has a land area of 196.7 million acres of which about 48 million acres are cultivated. The application of fertilizer will increase the yields per acre, which are among the lowest in the world. Thus the use of fertilizer will have a significant beneficial effect in helping Pakistan increase food production.

The potential adverse effects of fertilizers occur when nitrates and phosphates are released into surface and ground waters. There are no adverse effects on the soil or air from the use of these fertilizers.

In surface waters, such as lakes and other standing bodies of water, nitrates and phosphates contribute to the overgrowth of algae and other objectionable plant forms. This can be a serious problem in lakes that are used for recreational purposes. However, the few lakes that are used for recreation in Pakistan are in mountainous regions and do not receive significant runoff from cultivated land.

In a few parts of the world, ground waters containing high concentrations of nitrates have caused hemoglobinemia in infants. The United States Drinking Water Standards have therefore set a nitrate limit of 10 milligrams per liter (determined as nitrogen). Data are not available on the nitrate content of drinking waters in Pakistan nor is there any evidence of the incidence of hemoglobinemia. This condition, if it exists, is unlikely to be aggravated by the small amounts of fertilizer normally applied in Pakistan and by the even smaller amounts that would enter the ground water if the fertilizer is properly applied.

C. Seeds

The import of high-yielding, disease-resistant seeds presents no environmental risk.

D. Farm Machinery

The small amount of farm machinery to be imported will be distributed widely throughout rural areas of the country. The air and noise pollution generated will be inconsequential.

X. BALANCE OF PAYMENTS AND REPAYMENT CAPACITY

10.01. An important part of the justification for this loan arises from Pakistan's international trade, payments, and reserve positions. The activity which this loan will in part finance has as its goal an increase in Pakistan's agricultural production. Such an increase is absolutely required if Pakistan is to continue to feed its people because, as noted elsewhere in this paper, despite sharp increases in wheat and other agricultural production in the late 1960's, Pakistan has had to import large quantities of wheat since 1971 to maintain the already inadequate nutritional standard of its population. During Fiscal Year 1974-75, wheat imports accounted for 14% of the country's total import bill.

10.02. This loan was requested by Pakistan to finance the fertilizer and other agricultural inputs needed as part of the Government's program to build on the country's natural resource endowment and reduce its dependence on imported wheat. The country cannot finance the fertilizer without foreign aid, unless it is willing to cut other essential imports, including capital imports that are also part of the same development strategy.

10.03. In Fiscal Year 1975-76 Pakistan will find itself in a particularly narrow international payments position. We estimate the economy will have to make about $1,432 million of foreign payments from a combination of foreign assistance, short term credits, and international reserves, because its normal foreign exchange inflows will fall short of its payment needs by that amount. This large foreign exchange gap arises from a combination of factors, including the continued impact of the rise in petroleum prices, a sharp drop in the world price of rice (one of Pakistan's principal exports), and the need to repay short term credits obtained largely to finance wheat imports.

10.04. The impact of the increase in petroleum prices has fallen upon Pakistan's international payments position both directly, in the form of a sharply increased bill for POL imports (this payment item increased from $50 million in FY 1972-73 to a projected $390 million in FY 1975-76) and fertilizer imports, and a cut in its export receipts from yarn and textiles, due to the recession in the developed countries.

Table 7. Pakistan's Balance of Payments in millions of U.S. Dollars, by Fiscal Years

	1974/75 Preliminary Actuals	1975/76 USAID Projections	1976/77 USAID Projections
Exports (FOB)	1039	1050	1335
Cotton	155	100	150
Yarn	86	127	250
Textiles	220	198	250
Rice	233	245	245
Other	345	380	440
Imports (FOB)	(2139)	(2073)	(2398)
(Freight for Imports)	(193)	(151)	(170)
Imports (C&F)	2332	2224	2568
Wheat	320	160	80
POL	349	390	410
Fertilizers	102	90	163
Edible Oil	131	85	80
Tea	65	70	75
Iron and Steel	103	35	60
Capital Goods	568	700	900
Other	694	694	800
Trade Balance	-1293	-1174	-1283
Invisibles (net)	176	106	144
Remittances	203	213	234
Investment	-	-5	35
Freight, Insurance	12	-28	-25
Government nie	-39	-74	-100
Debt Service	271	364	359
Gap	-1388	-1432	-1498
Foreign Aid	1023	981	1081
Short term credits	124	100	100
IMF	210	200	150
E&O	124	-	-
Reserves	-93	151	167
(Overall Balance)	(117)	(351)	(317)

10.05. As a result of these combined payment factors, Pakistan's debt service to export earnings (including remittances from service exports in the form of emigrant laborers, principally to the Islamic oil exporting states) in FY 1975-76 is a high 29%. Fortunately, the combination of a set of debt rescheduling and relief agreements with the members of the Aid to Pakistan Consortium and other creditors, the anticipated growth of export earnings, and a reduced need for foreign borrowing resulting from the import substitution plan of which this proposed loan is an integral part will reduce this ratio to acceptable levels. In FY 1976-77, we anticipage that the ratio will drop to 23%, and in the following years go even lower. As a result, the repayment prospects for this loan are reasonable.

XI. THE ROLE OF WOMEN

Agriculture is the largest single sector in Pakistan's economy. Economic growth requires optimum utilization of agricultural resources, both human and physical.

The purpose of this loan project is to assist Pakistan in increasing agricultural production by making available adequate agricultural inputs, with emphasis on increased benefits for low-income farmers. Women form almost half (47%) of the total population of Pakistan, 75% of which is rural. Women play a significant role in agricultural production, which is in addition to their usual responsibilities of looking after the household and family. Therefore, their contributions in the agricultural sector cannot be ignored.

"Purdah" traditionally has been considered a major constraint to women's involvement in certain activities. However, current socio-economic conditions have weakened the institution of purdah in urban areas, and the majority of women in rural areas who are active in farm activities seldom observe purdah. Purdah mainly exists in middle class families as a symbol of prestige.

Women of certain castes, such as Baluch, Jats, Arians and Gujars, are traditionally involved in farm activities, whereas Rajput women often remain confined to the house because of family prestige.

The average size of farm holding in Pakistan is less than 15 acres. Since most farm households with holdings smaller than 25 acres have quite low incomes, all family members, including women, are actively involved in farm operations in order to save expenditures on farm labor. Women on low income farms work side by side with their men in the fields.

There may be great diversity in the farm activities performed by women, however, depending on the size of holdings, tenancy status, and nature of the particular community. For example, their participation in ploughing and leveling fields is not great, but they do participate in seeding and fodder-cutting operations. Their busiest time is at the harvest season, as it is for all family members. Approximately 40% of Pakistan's women are involved in wheat cutting and about 65% help in wheat threshing. Cotton picking, sugar cane processing, and fodder-cutting are mainly female responsibilities. Women are also extensively involved in cleaning and storing grain in the village. Also, women have primary responsibility for feeding and care of farm animals, including milking of cows and water buffaloes and cleaning of cattle sheds. They are involved in marketing milk products (such as ghee or yoghurt), eggs, and vegetables.

In addition to their above-mentioned responsibilities, women carry food for male members working in the fields. They also spin, weave, sew, knit, and do other handwork.

Although this project will not result in any major social change, attention can be given to the role of women in assessing the likely effectiveness of the project. Women are not only capable of harnessing their own talents, but guiding those of their children and other family members.

In the realization of higher farm incomes, women and men will, of course, benefit equally from this project. Moreover, rural women could utilize part of the incremental household earnings for investments in further development of cottage industries, which provide sustenance to many a rural household, and thereby further improve their family's well-being.

XII. SOCIAL EFFECTS

12.01. The socio-cultural characteristics of the four provinces (Baluchistan, Sind, Punjab and the Northwest Frontier) significantly differ. Even within provinces there are large differences, particularly in Punjab and the Northwest Frontier.

12.02. Baluchistan represents one extreme of the spectrum in that this province reflects a typically feudal system. The pressure on land is low and is coupled with low productivity. In Baluchistan, even with the low population density of 24 persons per square mile, there are at least four distinct linguistic groups--Barohi, Baluchi, Pashtoon, and Persian. Allegiances are based primarily on tribal and ethnic ties. These feudal ties and tribal relations are strong. They have not been disturbed by the pre- and the post-independence economic and political changes.

12.03. The province of Sind has a feudalistic background, but not to the extent still visible in Baluchistan. A larger proportion of the rural population consists of tenants (haris), whose families have been tied to the same land over long periods of time. The irrigation networks introduced in the 19th and 20th centuries led to irrigation and the cultivation of cash crops (primarily cotton) in an otherwise

desert climate. The largely hari rural population has limited access to inputs such as fertilizer and seeds, which could significantly increase yields. A typical hari depends on the landlord for his supply of inputs. Despite such vulnerability, a small Sindhi farmer is aware of the advantages of high yielding seed varieties and fertilizer, partly because of the leadership of big landlords who are receptive to improvements in agricultural technology. However, complete knowledge and the actual use of the improved inputs has not fully filtered down to the small hari, who continues to be a fatalistic subsistence farmer. Although many gains have accrued to individual small farmers over the last 50 or more years in the form of irrigation, improved seed varieties, and fertlizers, in the mass these have been largely offset by population growth and waterlogging (as a consequence of canal irrigation).

12.04. Punjab is the most populous province of Pakistan. It has the world's largest single canal irrigation network, built during the last part of the 19th century. Socio-cultural variance within the province is considerable, in that the southern Punjab is semi-feudal desert country consisting of large land holdings, coextensive with the Sind, while the northern Punjab is a densely populated irrigated area without any significant incidence of feudalism. There the land ownership pattern is not skewed in favor of large land holders. Throughout the province, only one language (Punjabi) is spoken, but with significant regional variations. The extreme northern areas of Punjab bordering the Indus River are primarily rainfed mountainous areas with very low productivity. The tribal affinities so visible in the 19th century have now become history. At most, the family alliances in the middle and northern Punjab extend to the village headman as a mark of respect. Only rarely are there signs of a tribal or feudal chief commanding subservience.

12.05. The socio-cultural break between Punjab and the Northwest Frontier Province, even though the two provinces adjoin, is distinct. Except for the mountainous regions of Kohistan and Hazara Districts, the socio-cultural scene changes suddenly from the left (Punjab) bank of the Indus River to the right (Northwest Frontier) bank. The language changes abruptly, and signs of strong, traditional feudal ties emerge in the Northwest Frontier. Here tribal affiliations emerge as a binding force, despite the fact that there are proportionately far fewer big landlords in Northwest Frontier than in Sind and Baluchistan. It is of interest to note that, unlike Punjab and Sind, where to some extent socio-cultural patterns interact with land holding size and climate conditions, the tribal bonds in the Frontier are strong regardless of climatic, terrain, demographic, and soil variations.

12.06. Despite the significant socio-cultural variation from one region to another, the one common characteristic found in Pakistan's rural scene is the lack of formal organization and the virtual vacuum created by the non-existence of local institutions as agents of change at the village level. The village headman (Numberdar) was an institution formally recognized even by the British. This institution was utilized in the 1960's under a new political structure titled Basic Democracies. The 1970 countrywide elections wiped out the Basic Democracies structure without establishing an alternative political-administrative structure at the village level. Only very recently has the Northwest Frontier Government revived the old Numberdari system at the village level, but other provinces have not revived or proposed a similar system. Despite the vacuum created by the non-existence of an institutional arrangement at the village level, the village population still looks to the family of an ex-Numberdar for leadership. This recognition is natural, because it is difficult to completely destroy an institutional arrangement which has existed for centuries in a period of 5-10 years, and because there is a continuing need for local ability to handle administrative matters such as inter-and intra-family disputes.

12.07. As noted elsewhere in the Project Paper, this loan aims to more actively engage low-income farmers in the production process. An abundance of fertilizer supplies in all regions at all sale points, as made possible by this loan, will be of great benefit to the small farmers who would not otherwise have ready access to fertilizers. Fertilizer scarcities and consequent distributional bottlenecks, which lead to advantageous situations for larger, more influencial farmers, will tend to be mitigated by this loan.

12.08. It has been noted elsewhere in the Project Paper that the available evidence regarding the use of fertilizer by small farmers suggests that many of them are aware of the increased productivity associated with fertilizer usage. For small farmers, the principal bottlenecks to increased production are generally neither the existing social values and beliefs nor the social structure. The major limiting factors are lack of purchasing power (for fertilizer and seed), inadequate input distribution mechanisms, and, in some areas, lack of knowledge of the full effects of improved inputs. The abject poverty in the more remote rural areas is accentuated by the lack of local organization and by fatalistic values and beliefs. Increased fertilizer availability as a result of this loan will not change the socio-cultural environment, nor will the increased agricultural

production lead to social disruption. The increased agricultural production associated with higher fertilizer usage may lead to increased consumption of non-farm products by rural people and to an awareness that development is possible. The lack of local organization will not be affected by this loan.

12.09. Increased fertilizer availability and use will lead to greater labor utilization both in applying the fertilizer and harvesting the additional yield. If increased fertilizer use is associated with increased cropping intensity, even greater utilization of labor will occur. This would reduce underemployment and unemployment in rural areas and thereby improve income distribution.

12.10. The spread effects of fertilizer availability are not known with certainty. The loan is not proposed to spread a new technology from a specific pilot project area to surrounding areas. Although much of the rural population is already aware of the benefits of fertilizers, the proposed loan would markedly improve the fertilizer availability situation and thereby increase fertilizer consciousness and use in remote areas.

Annex A

Supporting Tables and Figures

Table II-1. Production of Principal Crops

Year	Crop Production			
	Wheat	Rice	Cotton(Lint)	Sugarcane
	----Million of m.tons---		(Ml.bales)	----------
1947-48	3.3	0.68	1.0	5.4
1950-51	3.9	0.85	1.40	5.4
1958-59	3.8	0.97	1.50	12.2
1959-60	3.7	0.97	1.60	10.4
1964-65	4.5	1.36	2.11	18.3
1965-66	3.8	1.29	2.30	21.9
1966-67	4.2	1.31	2.60	21.6
1967-68	6.3	1.47	2.90	18.3
1968-69	6.5	2.00		21.6
1969-70	7.1	2.30	3.00	25.9
1971-72	6.7	2.22	3.97	19.6
1972-73	7.3	2.28	3.95	19.6
1973-74	7.5	2.40	3.70	23.5
1974-75	7.5	2.28	3.57	22.0

Source: Year Book of Agricultural Statistics -1971-72, 1973-74.
Ministry of Food, Agriculture and
Under-Developed Areas(Agriculture Wing)Islamabad.

Crop in a year refers to kharif then rabi, i.e. 1973-74 refers to 1973 kharif and 1973-74 rabi in the data.

Source for 1974-75 Rabi(Wheat)
Final Crop Estimate, Ministry of Food, Agriculture and Rural Development (Agriculture Wing), Islamabad.

Table II-2. Wheat Balance Sheet

Wheat	Year 1972-73	1973-74	1974-75
	---------- 000 metric tons ----------		
Local production 1/	6,782	7,325	7,500
Seed + losses 10%	678	932 2/	750
Net availability	6,104	6,393	6,750
Imports	1,464	1,134	1,250
Opening Stocks	74	86	200
Closing Stocks	86	200	200
Net availability	7,728	7,413	8,000
Per capita availability (ozs per day)	11.67	10.88	11.42

1/ These wheat production figures are for the previous fiscal years, but represent the new availability for the year indicated.

2/ Includes estimated flood losses of 200,000 tons.

Source: Current Economic Situation and Issues in Pakistan, (1975)-Vol.II
Report No: 658-PAK
Document of the International Bank for Reconstruction and Development
International Development Association.

Table II-3. Number and Area of Farms Classified According to Operational Farm Size in Pakistan, 1972.

Farm Size in Acres	Absolute		Relative (%)		
	Number of Farms (1,000 Acres)	Farm Area (1,000 Acres)	Number of Farms	Farm Area	Average Farm Size in Acres
1	2	3	4	5	
Up-to 7.5	1,639.0	5,995	44	12	3.7
7.5-12.5	920.8	8,913	24	18	9.6
12.5-25.0	793.9	13,067	21	27	16.6
25.0-50.0	289.2	9,219	8	19	31.9
50.0-150.0	102.6	7,406	3	15	72.2
Above 150.0	16.2	4,485	+	9	277.5
To a :	3,761.7	49,084	100%	100%	13.1

+=value less than .5 percent

Source: Government of Pakistan, 1972 Pakistan Census of Agriculture, Ministry of Agriculture (Provisional data)

Table II-4. Classification of Farms according to Land Tenure and Operational Farm Size in Pakistan, 1972.

(Number in percent)

Farm Size in Acres	Type of Land Tenure: Owner	Owner-cum-Tenant	Tenant	Total
1	2	3	4	5
Up-to 7.5	54	16	30	100
7.5-12.5	29	26	46	100
12.5-25.0	31	32	37	100
25.0-50.0	38	34	28	100
50.0-150.0	49	35	16	100
Above 150.0	63	28	9	100
Total Farms (Number 1,000)	1,569	897	1,296	3,762
Percent	42	24	34	100

Source: Government of Pakistan, 1972 Pakistan Census of Agriculture, Ministry of Agriculture (Provisional data)

Table II-5. Cropping Intensity According to Operational Farm Size in Pakistan 1972-Provincewise

(In percent)

Farm Size in Acres	Punjab	Sind	NWFP	Baluchistan	Pakistan
1	2	3	4	5	6
Up-to 7.5	132	146	146	93	139
7.5-12.5	117	126	119	80	119
12.5-25.0	111	116	105	82	111
25.0-50.0	101	104	91	71	103
50.0-150.0	104	93	77	65	97
Above 150.0	102	86	75	55	88
Over All	112	118	109	71	111

Source: Government of Pakistan, 1972 Pakistan Census of Agriculture, Ministry of Agriculture (Provisional data)

Table II-6 Distribution of Household Income in Rural Areas

Monthly Income Group (Rupees) 1/	Annual Income Groups (Rupees)	Percentage of Households in each category
Less than 50	Less than 600	0.4
50-99	600-11[illegible]	[illegible].3
100-149	1200-17[illegible]	19.[illegible]
150-199	1800-23[illegible]	23.9
200-249	2400-29[illegible]	16.6
250-299	3000-35[illegible]	11.0
300-399	3600-47[illegible]	11.0
400-499	4800-[illegible]	4.3
500-74[illegible]	6000-[illegible]	3.1
750-999	9000-11,[illegible]	0.[illegible]
1000-1499	12,000-17,[illegible]	0.5
1500-1999	18,000-23,[illegible]	0.1
2000 & above	24,000 & above	0.2

Source: Household Income & Expenditure Survey, 1971-72, Statistical Division, Ministry of Finance, Planning and Development, Government of Pakistan.

1/ Rs. 9.90=U.S. $ 1.00; was officially Rs. 4.76=$ 1.00 before May 1972.

Table II-7. Acreage, Production and Acre Yield of Major Crops During 1973-74 Actual and 1975-76 Targets

Crop	1973-74 1/ Area 000 acres	1973-74 1/ Production 000 m. tons	1973-74 1/ Acre-yield mds/acre 2/	1975-76 Area 000 acres	1975-76 Production 000 m. tons	1975-76 Acre-yield mds/acre 2/
Wheat	15,105	7,50[illegible]	13.5	15,4[illegible]0	[illegible],4[illegible]	14.[illegible]
Rice	3,736	2,416	17.6	4,[illegible]00	2,7[illegible]	17.9
Maize	1,563	755	13.1	1,[illegible]5	[illegible]10	13.9
Other foodgrains	3,774	[illegible]55	6.2	3,76[illegible]	[illegible]	6.5
Sugarcane	1,564	23,533	40[illegible].5	1,569	25,[illegible]	43[illegible]
Edible Oilseeds						
Seed Cotton	4,559	1,297	7.7	5,010	1,400	7.6
Rape and Mustard	1,331	288	5.9	[illegible],350	315	6.3
Sesamum	81	12	3.9	[illegible]1	12	3.9
Groundnut	94	53	15.4	105	63	16.3
Others	N.A.	N.A.	N.A.	20	[illegible]	10.9
Tobacco	115	65	15.3	120	70	15.9
	000 bales			000 bales		
Cotton Lint	4,559	3,704	3.9	5,010	4,000	3.9

1/ All final figures for 1974-75 are not yet available: figures for 1973-74 have been used instead.

2/ One "maund" equals 82.286 lbs. or .03732 metric tons.

Source: Annual Plan, 1975-76, Government of Pakistan, Ministry of Food & Agriculture (Planning Wing)

Table II-8. Production of Major Crops 1973-74, 1974-75 and Targets for 1975-76 and 1979-80

(In thousand metric tons)

Crop	1973-74	1974-75 1/	1975-76	1979-80
Wheat	7.508	7,460	[illegible],400	12,770
Rice	2,416	2,277	2,700	3,900
Maize	755	735	810	1,050
Other Foodgrains	655	685	900	910
Total foodgrains	11,534	11,157	12,810	18,630
Sugarcane	23,533	22,000	25,000	30,450
EDIBLE OILSEEDS				
Rape and Mustard	268	2[illegible]	315	423
Sesamum	12	12	12	15
Groundnut	53	56	63	132
Cottonseed	1,297	1,240	1,400	2,170
	---in thousand bales---			
Cotton (Lint)	3,704	3,567	4,000	6,200

1/ Some are estimates for 1974-75.
Crop-year refers to kharif, then rabi, i.e. 1973-74 refers to 1973 kharif (Summer) and 1973-74 rabi (Winter) in the data.

Sources: Annual Plan 1975-76 - Agriculture Sector, Government of Pakistan, Ministry of Food & Agric. (Planning Wing)

Working Papers for the Development Perspective (1975-80).

Agriculture and Food Sector, Government of Pakistan, Planning Commission.

Table II-9. Government Support and Harvest Prices of of Wheat in Pakistan

Year	Date of Enactment of Support Prices	Support Price (Rs. /maund)	Harvest Price[2/] (Rs. /maund)
1960-61	May, 1960	13.50	
1961-62	May, 1961	13.50	14.22
1962-63	May, 1962	13.50	13.61
1963-64	May, 1963	13.50	14.79
1964-65	May, 1964	13.50	15.00
1965-66	May, 1965	13.50	15.87
1966-67	21st Jan. 1968 May, 1966	14.50 14.50	19.06 16.00
1967-68	May, 1967	17.00	16.00
1968-69	May, 1968 to 11th April'69	17.00	18.33
1969-70	12th April 1969 to 3rd Oct. 1969 4th Oct. 1969	15.00 17.00	18.83
1970-71	May, 1970	17.00	19.44
1971-72	May, 1971	17.00	21.25
1972-73	May, 1972 Sept., 1972	17.00 20.00	23.56
1973-74	30th March, 1973 Rabi 1973	22.50[1/]	26.50 33.0
1974-75	April, 1974	25.50	33.0
1974-75	17th Sept. 1974	37.00	41.0

Cont.....

Cont. **Table II-9.**

One maund= 82.286 pounds or 0.03732 metric tons.

1/ At sowing time, the support price was fixed at Rs. 20.00 per maund for the 1973-74 crop.

2/ Average harvest prices of local markets at D.I.Khan, Lyallpur and Multan.

Source:

Data for Support Prices

Source:

Agriculture and Food Section, Planning Division Government of Pakistan, Islamabad.

Data for harvest prices from 1960 to 1972-73

Source:

Cento Seminar Studies on Fertilizer Use, 10th Jan.1974

Data for harvest prices from 1973-74 to 1974-75

Source: Market and Price Bulletins, Agricultural Marketing, Government of Pakistan, Pakistan Secretariat, Karachi.

Table II-10 Support Price of Rice in Pakistan

	Varieties			
	Basmati (Fine Variety)	Kangni	Joshi	IRRI White 55% F.A.O.
	---------in rupees per maund---------			
1960-61	24.00	16.00	15.00	-
1961-62	25.00	16.00	15.00	-
1962-63	26.00	16.00	15.00	-
1963-64	28.00	16.00	15.00	-
1964-65	28.00	16.00	15.00	-
1965-66	28.00	16.00	15.00	-
1966-67	28.00	17.50	17.00	-
1967-68	31.00	20.00	18.50	-
1968-69	38.00	19.00	18.50	19.00
1969-70	35.00	19.00	18.50	19.00
1970-71	32.00	19.00	18.50	19.00
1971-72	38.00	19.00	19.50	19.00
1972-73	46.00 1/	20.00	20.50	19.00
1973-74	62.00	26.00	26.00	27.00
1974-75	90.00	39.00	39.00	40.00

1/ At sowing time, the support price was fixed at Rs. 42.00 per maund. One maund= 82.286 pounds.

Source: Agriculture and Food Section, Planning Division, Govt. of Pakistan, Islamabad.

Table II-11 Prices of Major Crops

Year	Wheat		Rice (Basmati)		Rice (IRRI)		Maize	Seed Cotton	Sugarcane
	Procurement/ Support price	Harvest Price	Procurement/ Support price	Harvest price	Procurement/ Support price	Harvest price	Harvest price	Harvest price	Fixed price
	Rs./per md.								
1961-62	13.50	14.22	25.00	47.14	-	-	12.37	33.80	2.25
1962-63	13.50	13.61	26.00	47.53	-	-	14.27	29.80	2.00
1963-64	14.00	14.79	28.00	43.93	-	-	15.43	31.76	2.00
1964-65	14.00	15.00	28.00	36.40	-	-	14.61	36.62	2.00
1965-66	14.00	15.87	28.00	34.41	-	-	14.83	36.50	2.00
1966-67	17.00	19.06	28.00	40.52	-	-	15.96	38.25	2.00
1967-68	17.00	16.00	31.00	28.12	N.A.	N.A.	16.33	34.06	2.24
1968-69	17.00	18.33	38.00	27.53	N.A.	N.A.	15.00	35.75	2.75
1969-70	17.00	18.83	35.00	N.A.	21.00	N.A.	15.29	36.00	2.75
1970-71	17.00	19.44	32.00	35.18	21.00	23.50	15.97	49.12	2.75
1971-72	17.00	21.25	38.00	40.51	21.00	24.25	18.41	46.87	2.50
1972-73	17.00	23.56	46.00	71.62	21.00	44.20	23.70	55.24	3.35
(From Sept., 1972)	20.00								4.25
(From April, 1973)	22.50								

Cont. Table

Cont. Table II-11

Year	Wheat		Rice (Basmati)		Rice (IRRI)		Maize	Seed Cotton	Sugarcane
	Procurement/ Support price	Harvest price	Procurement/ Support price	Harvest price	Procurement/ Support price	Harvest price	Harvest price	Harvest price	Fixed price
1973-74	22.50	26.50	62.00	96.29	27.00	45.51	25.50	91.22	4.50
Rabi 1973	25.50	33.00							
April 1974	25.50	33.00							5.00
1974-75			90.00	130.00	40.00	45.51	41.42	75.65	
Spring 1975	37.00	40-42							5.75 5.50-5.90

Source: (1) Agriculture Statistics (1971-72, 1973-74), Ministry of Food & Agriculture (Planning Unit), Islamabad
(2) Annual Market and Price Bulletins (1965-1975), Agricultural Marketing, Government of Pakistan, Block No. 54, Pak Secretariat, Karachi
(3) CENTO Seminar Studies on Marketing, Distribution and Use of Fertilizer (10th Jan. 1974)
(4) Crops year: kharif, the rabi; i.e., 1973-74 refers to 1973 kharif (summer) and 1973-74 rabi (winter) in these data.

Table III-1. Pakistan Nitrogen Offtake: 1965-75
(1,000 Nutrient Tons)

Year	Winter season (Oct.-Feb.)	Summer season (March-Sept.)	Total for crop year (Oct.-Sept.)	Total for fiscal year (July-June)
1965-66	[illegible]	57	[illegible]5	65
1966-67	[illegible]2	69	12[illegible]	112
1967-68	75	113	[illegible]	17[illegible]
1968-69	[illegible]	132	220	197
1969-70	127	121	24[illegible]	23[illegible]
1970-71	134	161	295	257
1971-72	144	189	333	344
1972-73	163	216	379	3[illegible]6
1973-74	187	170	357	342
1974-75	194	[illegible]		361

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Table III-2. Pakistan Phosphate Offtake: 1969-75

(1,000 Nutrient Tons)

Year	Winter (Oct.-Feb)		Summer (March-Sept)		Total P_2O_5	
	P_2O_5	Ratio of N to P_2O_5	P_2O_5	Ratio of N to P_2O_5	Crop year (Oct.-Sept.)	Fiscal year (July-June)
1969-70	23	5.5:1		15.1:1	31	34
1970-71	18	6.3:1	16	11.3:1	34	30
1971-72	18	8.0:1	16	11.8:1	34	37
1972-73	21	7.6:1	32	6.9:1	53	49
1973-74	36	5.2:1	20	8.5:1	56	58
1974-75	37	5.2:1				60

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Table III-3. Offtake of Nitrogen Fertilizer in Pakistan: 1972-76, by Month

(1,000 Nutrient Tons)

Month	Year			
	1972-73	1973-74	1974-75	1975-76
July	23.1	32.5	29.3	40.4
August	23.6	24.6	45.5	
September	30.8	16.5	15.7	
October	29.8	19.4	12.0	
November	24.6	49.4	22.4	
December	32.6	52.6	44.1	
January	35.9	40.7	105.2	
February	37.4	24.5	10.6	
March	37.6	23.9	6.1	
April	38.7	29.6	13.5	
May	27.6	17.6	25.5	
June	39.[illegible]	17.3	30.9	
Total	3[illegible]	348.	361.9	

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Table III-4 Offtake of Phosphate Fertilizer in Pakistan: 1972-76, by Month

(1,000 Nutrient Tons)

Month	Year			
	1972-73	1973-74	1974-75	1975-76
July	1657	3032	2350	5014
August	499	1757	1243	
September	1195	2645	950	
October	3453	7039	4167	
November	973[illegible]	17743	15935	
December	3629	[illegible]3	5226	
January	1134	3702	1093[illegible]	
February	3346	3157	[illegible]30	
March	2[illegible]97	3[illegible]	1[illegible]25	
April	5552	4762	4026	
May	7033	3[illegible]	7[illegible]	
June	[illegible]27	3571	4937	
Total	4,730	[illegible]	6017[illegible]	

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FERTILIZER PRODUCTION, BY PLANTS: EXISTING AND PLANNED

PLANT	Product	Rated Capacity Metric Tons	Rated Capacity Nutrient Tons	PRODUCTION ACTUAL 1973 - 74	Rate	1974 - 75	Rate	PRODUCTION PROJECTED 1975 - 76	1976 - 77	1977 - 78	1978 - 79	1979 - 80	1980 - 81
A. Existing Production:													
1. NFC-DAUDKHEL	Amm. Sulph. (20.8% N)	90,000	18,700N	19,014N	102%	20,491N	110%	19,000N	19,000N	19,000N	19,000N	19,000N	19,000N
2. NFC-LYALLPUR & JARANWALA	SSP (20.7%P_2O_5)	50,000	10,350P	3,960P	38%	5,973P	58%	5,175P	7,813P	9,862P	9,862P	9,862P	9,862P
3. NFC-MULTAN	CAN (26.5% N)	98,100	26,000N	16,492N	63%	15,312N	59%	17,000N	17,000N	1/			
	UREA (46.3% N)	58,300	27,000N	15,134N	56%	9,579N	35%	16,000N	16,000N	1/			
4. DAWOOD HERCULES	UREA	345,000	158,000N	158,416N	100%	173,629N	110%	165,000N	165,000N	165,000N	165,000N	165,000N	165,000N
5. ESSO	UREA	173,000	80,000N	90,637N	113%	94,259N	118%	93,000N	93,000N	93,000N	93,000N	93,000N	93,000N
SUB-TOTALS:	N =			299,693		313,270		310,000	310,000	277,000	277,000	277,000	277,000
	P =			3,960		5,973		5,175	7,813	9,862	9,862	9,862	9,862
B. New And Expanded Production Coming Onstream:													
1. NFC-LYALLPUR & JARANWALA	SSP (20.7%P_2O_5)	40,000	8,250P					4,125P	6,187P	7,838P	7,838P	7,838P	7,838P
2. NFC-(Pak-ARAB)Multan													
i.	CAN (26.5% N)	450,000 2/	119,250N 2/							48,000N 3/	88,000N	106,000N	114,000N
ii.	NP (23:23)	304,500	70,035N							21,000N 3/	49,000N	61,000N	66,000N
			70,035P							21,000P 3/	49,000P	61,000P	66,000P
iii.	UREA	71,940 2/	33,308N 2/							21,000N 3/	28,000N	31,000N	33,000N
3. NFC-MIRPUR MATHELO	UREA	556,800	257,798N								77,000N	180,000N	225,000N
4. NFC-HAZARA COMPLEX													
(a) Chinese Urea Plant	UREA	95,897	44,400N							7,160N	17,000N	21,480N	23,270N
(b) Pak. Fert. Ltd.	UAP (27:27:0)	202,950	54,797N							8,840N	21,000N	26,520N	28,730N
			54,797P							8,770P	21,000P	26,470P	28,720P
(c) TSP Plant	TSP	98,000	45,080P							7,230P	17,300P	21,830P	23,680P
5. FAUJI-AGRICO	UREA	544,000	250,000N									162,500N	200,000N
SUB-TOTALS:	N =							-	-	106,000	280,000	588,500	690,000
	P =							4,125	6,187	44,838	95,138	117,148	126,238
GRAND TOTAL:	N =			299,693		313,270		310,000	310,000	383,000	557,000	865,500	967,000
	P =			3,960		5,973		9,300	14,000	54,700	105,000	127,010	136,100

1/ Production will stop in 1977-78 because of merging into the new and expanded plant. 2/ Includes the capacity of the old plants.
3/ Assumes commencement of commercial production summer of 1977.

CDE. Irshad:

Table III-6. Expected Domestic Production of Fertilizer in Pakistan: 1,000 Nutrient Tons

Type	Fiscal Year					
	1973-74 (actual)	1974-75 (actual)	1975-76 (est.)	1976-77 (est.)	1977-78 (est.)	1978-79 (est.)
Nitrogen						
a) annual	300	313	310	310	383	557
b) per month	25	26	26	26	32	46
P_2O_5						
a) annual	[illegible]	6	9	14	55	105
b) per month	.33	.50	.75	1.17	4.58	8.75

Table III-7. Marginal Products of Nitrogen on Wheat, 1973-74

N Application	Marginal Product (lbs. of wheat/1 lb. of N)
1 lb. /acre	26.53
50 " "	17.74
100 " "	8.99
150 " "	0.25
200 " "	-8.49

Assumptions:

1) Irrigation water - constant at 45 cm.

2) Application of P_2O_5 at 50 lbs. per acre.

3) Wheat seed-Semi Dwarf variety

Source: S.A. Qureshi, N.M. Choudhry, and D.F. Eckert, "Water and Fertilizer Interactions in Wheat Production", March 1975.

Table III-8. Marginal Products of Nitrogen and Phosphate Combinations on Various Crops

N&P Combined Application	Marginal Products (lbs. of crops/lb. of N&P)				
	Wheat (Mexi Pak)	Rice (IRFI-6)	Maize (JI)	Maize (DC 697)	Sugarcane
120 1/	14.0				
200 2/		6.5			
230 3/		7.5	7.0	5.1	
120 4/					163.9

Assumptions:

1/ 60 lbs. of N and 60 lbs. of P_2O_5

2/ 120 lbs. of N and 80 lbs. of P_2O_5

3/ 150 lbs. of N and 80 lbs. of P_2O_5

4/ 80 lbs. of N and 40 lbs. of P_2O_5

Source: Pakistan Appraisal of Multan Fertilizer Expansion Project (IBRD Report No. 373 PAK), April 3, 1974 (Annex 3.2 pages 16-18)

Based on FAO/GOP Soil Fertility Program 1969/71, and other programs.

Table III-9. Average Marginal Products of Nitrogen on Rice

N Application	Marginal Product (lbs. of Paddy/lb. of N)			
	If P=0	If P=50 lbs./acre	If P=100 lbs./acre	Average P Application*
0-100 lbs./acre	53.9	47.1	55.6	52.5
101-200 lbs./acre	-9.8	6.3	-7.4	-3.6

*50 lbs. average per acre

Assumptions: Applied to IR-6-945 variety

Source: A. Majid, S. Ahmed, and J. Eckert, ' Fertilizer Response and Input Interactions on Dwarf Rice in Punjab,' 1975.

Table III-10. Actual Applications of Nitrogen on Major Crops, 1974

	Crops					
	Wheat Mexi Pak	Wheat Local	Rice IRRI	Rice Local	Cotton	Sugarcane
N use (lbs./acre)	54.4	34.0	40.8	37.8	53.8	75.8
% area covered	79	40	57	56	79	80

Source: Pakistan Nitrogen Demand Forecast Study, October, 1974 by ESSO Pak. Fertilizer Company, Ltd. Tables 17 to 23. (Based on EPFCL Survey in 1966-67, updated in 1970/71.)

Table III-11 Estimated Number of Fertilizer Retail Agents Operating in 1970, 1974 and 1975

Province	Private			Public			Total		
	1970	1974	1975	1970	1974	1975	1970	1974	1975
Punjab	928	657	670	161	600	556	1089 1/	1257	1226
Sind	403	204	476	53	359 3/	94	456	563	570
NWFP	101	300 3/	315	36	105 3/	159	137	405	454 4/
Baluchistan	11	___	___	4	36 2/	36 2/	15	36	36
Pakistan	1443	1161	1461	254	1100	845	2408 1/	2261	2286

Source: 1970 data from Fertilizer Marketing & Distribution in West Pakistan, Chemical Consultants, Ltd. Lahore August 1970, p.61.

1973 data from PIDE monograph number 18, The Price of Agricultural Capital Inputs in Pakistan, p.12.

1974 data from The Fertilizer Marketing System in Pakistan, FAO Working Paper, Changez Shuja, Rome, June 1974, pp. 23-25.

1975 data collected in June-July from:
Punjab: Punjab Agricultural Development and Supplies Corporation, ESSO, Dawood Hercules.
Sind: Agricultural Supplies Organization, ESSO, PNO
NWFP: Agricultural Development Authority, PNO, Dawood Corporation Limited, National Farm Guide, and Sarhad Rural Cooperative Corporation.

1/ The 1973 total of retail agents in Punjab was 1800, with perhaps another 700 subagents. There were 1089 known retail agents in Punjab in 1970. The column total (of 2408) assumes 1800 in Punjab.

2/ Data for Baluchistan are incomplete. As of November 1973, 36 public sector retail outlets had been established.

Cont. Table III-11

3/ These estimates may not be comparable with the 1970 data, as they include what the Sind and NWFP call licensed commission agents. A breakdown of these totals into sub categories of sales agents and commission agents shows:

	Sales Agents	Commission Agents	Total
Sind Public Sector	84	275	359
NWFP Private Sector	150	150	300
NWFP Public sector	25	0	105
Total	259	505	764

4/ Total for NWFP eliminates double counting of dealers selling for more than one principal or special agent.

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Table III-12 Number of Dealer Outlets in Punjab (1974-75)

Districts	Public	Private			Grand Total
	PADSC	ESSO	DCI	Total Private	
Campbellpur	10		5	5	15
Rawalpindi	10		1	1	11
Jhelum	5		2	2	7
Gujrat	16		27	27	43
Sargodha	36		37	37	73
Lyallpur	47		75	[illegible]	122
Jhang	2[illegible]		2[illegible]	2[illegible]	56
Mianwali	19		21	21	40
Sialkot	35		39	39	74
Gujranwala	27		47	47	74
Sheikhupura	23		69	69	92
Lahore	36		49	49	85
Sahiwal	54	3	64	67	121
Multan	82	25	87	112	194
Muzaffargarh	35	1	30	31	66
D.G. Khan	20		7	7	27
Bahalpur	22		22	22	44
Bahwalnagar	22	4	10	14	36
Rahimyar Khan	29	11	6	17	46
Total	556	44	626	670	1,226

Data for No. of Dealers collected, June-July 1975
Source: Pakistan Agricultural Development Supplies Corporation
ESSO, Dawood Hercules.

Table III-13 Number of Dealer Outlets in Sind (1974-75)

Districts	Public SASO	Private ESSO	Private PNO Main Agency	Private PNO Sub Agency	Private PNO Total PNO	Total Private	Grand Total
Khairpur	9	20	4	15	19	39	48
Jacobabad	8	15	3	5		23	31
Sukkur	9	29	5	9	14	43	52
Nawabshah	9	32	10	37	47	79	88
Larkana	10	23	5	10	15	38	48
Sanghar	9	30	14	24	38	68	77
Tharparkar	-	31	21	26	47	78	78
Dadu	13	7	5	8	13	20	33
Hyderabad Mirpurkhas	13	23	18	29	47	70	83
Badin	6	5	1	4	5	10	16
Thatta	8	4	-	-	-	4	12
Karachi	-	4	-	-	-	4	4
Total	94	223	86	167	253	476	570

Data for No. of Dealers.
Collected June July 1975

Source: Sind Agricultural Supplies Organization, ESSO, PNO

Table III-14 Number of Dealer Outlets in N.W.F.P. (1974-75)

Districts	Public	Private										
	Principal Agents						Special Agents					
	ADA	PNO	DCL	NFG	Total Private Agents	Co-Ops SRCC	Gul & Co	G.T.Co.	K.F.Corp.	P.F. Service	Total Special Agents	Grand Total
N.W.F.P. Province												
1. Peshawar	40	15	13	24	45	23	8	1	2	6	17	122
2. Hazara	34	8	6	10	20	14	1		1	4	6	74
3. Mardan	46	24	9	40	70	22		3	3	11	17	155
4. Malakand Div.				10	10		2					
Malakand Distt.		1	1		2				2		2	
Swat Distt.	6	2	1		3	6			2		2	32
5. Kohat	4	2	2	1	5	2	1				1	12
6. Bannu	10	1		5	5	4						19
7. D.I. Khan	4	1	2	2	4	1	1		1		2	11
8. Dir	3					6						9
9. Agencies												
a. Mohmand	4											4
b. Kurram	3		5	2	7							10
c. North Waziristan	4											4
d. South Waziristan	1											1
e. Khyber			1		1							1
Total 1/	159	54	40	94	164	78	13	4	11	21	49	454

Cont. Table

Cont. Table III-14

Data for No. of Dealers collected, June-July 1975.
Principal Agents:-

(1) Agricultural Development Authority
(2) Pakistan National Oils (Agriculture Section)
(3) Dawood Corporation Limited
(4) National Farm Guide
(5) Sarhad Rural Co-operative Corporation

Special Agents:-

(1) Gul and Company, Peshawar
(2) General Trading Company, Nowshera
(3) Khyber Fertilizer Corporation, Mardan
(4) People's Farm Services Ltd., Peshawar.

1/ Total of Private Agents and Grand Total eliminates dealers mentioned more than once in the break-up.

Sources: Agricultural Development Authority, PNO, DCL, NFG and SRCC.

Table III-15. A Simplified Schedule of Marketing Incidentals (Margins)
(as of early Sept. 1975)

Rs. per metric ton

Distributor	ESSO	DCL	P A D S C (Punjab)					A D A (N.W.F.P.)		
Product	Urea	Urea	DH'S Urea	NFC'S Urea	NFC'S AS	NFC'S AN	NFC'S SSP	NFC'S AS	NFC'S AN	NFC'S SSP
INCIDENTALS										
1. Organization & Administration	1/ 50.50	8.00	2/ 30.00	3/ 22.00	3/ 10.00	3/ 10.00	3/ 10.00	10.00	10.00	10.00
2. Interest charged		11.00	11.00	12.50	7.00	7.50	6.50			
3. Dealer Commission	22.00	22.00								
4. Transportation, Storage, Handling	26.50	46.00	46.00	72.50	62.50	62.50	62.50	62.50	62.50	62.50
5. Other										
Total	99.00	87.00	87.00	107.00	79.50	80.50	79.00	4/ 72.50	4/ 72.50	4/ 72.50

1/ ESSO's margin includes an allowance for a profit on its marketing activities calculated at the rate of 2% of the ex-factory price of its urea. It has here been arbitrarily lumped with "organization and administration."

2/ PADSC is allowed the same marketing incidentals (Rs. 87/ton) on Dawood Hercules' Urea as DCL is allowed. PADSC does pay its dealers a salary rather than a commission. Therefore, "dealer commission" has been added to the costs of "organization and administration".

3/ Actually listed as selling commission rather than as organization and administration.

4/ ADA's marketing incidentals are lower than PADSC's on NFC's product by the difference of "interest charges". ADA is not allowed an incidental for interest because most of this fertilizer is marketed by ADA's principal agents and they bear that cost.

Table III-16. Sale Price of Different Types of Fertilizer

Year	Urea	Ammonium Sulphate	Ammonium Nitrate 1/	Ammonium Sulphate Nitrate	Single Super Phosphate	Triple Super Phosphate	Sulphate of Potash	Muriate of Potash	DAP	Nitro-Phosphate
				Rs. per bag of 110 lbs.						
1961-62	12.00	7.00	8.00		6.00					
1962-63	24.00	11.00	14.00		11.00					
July-Dec. 63	24.00	11.00	14.00		11.00					
Jan.-June, 64	14.00	8.00	9.00		7.00					
1964-65	14.00	8.00	9.00		7.00					
1965-66										
July-Oct. 65	14.00	8.00	9.00		7.00					
Oct. 65- June 1966	15.00	8.50	10.00		7.50					
1966-67	25.00	11.00	14.00	14.00	9.50	19.00				
1967-68	25.00	11.00	14.00	14.00	9.50	19.00				
July-Aug. 68	25.00	11.00	14.00	14.00	9.50	19.00				
Aug. 68- May 1969	26.00	11.50	11.40	14.50	9.50	20.00	20.00	17.50	28.00	21.00
May-June, 69	26.00	13.00	13.00	14.50	9.50	20.00	20.00	17.50	28.50	21.00
1969-70	26.00	13.00	13.00	14.50	9.50	20.00	20.00	17.50	28.50	21.00

Cont.

Cont. Table III-16.

Year	Urea	Ammonium Sulphate	Ammonium Nitrate 1/	Ammonium Sulphate Nitrate	Single Super Phosphate	Triple Super Phosphate	Sulphate of Potash	Muriate of Potash	DAP	Nitro-Phosphate
1970-71	28.50	17.00	17.00	18.00	9.50	20.00	20.00	17.50	28.00	21.00
1971-72	28.50	17.00	17.00	18.00	9.50	20.00	20.00	17.50	28.00	21.00
1972-73	28.50	17.00	17.00	18.00	9.50	20.00	20.00	17.50	28.00	21.00
July-Sept., 72 Sept. 72-Jan. 1973	35.00	17.00	17.00	18.00	9.50	20.00	20.00	17.50	35.00	21.00
Jan., 1973-March, 1973	35.00	17.00	17.00	18.00	9.50	20.00	20.00	17.50	35.00	35.00
March 30, 1973-June, 73	42.00	20.00	20.00	23.00	11.00	26.00	25.00		44.00	40.00
1973-74 July, 73- 10th Aug., 73	42.00	20.00	20.00	23.00	11.00	26.00	25.00		44.00	40.00
11th Aug. 73-19th April, 74	55.00	25.00	25.00	31.00	15.00	34.00	32.00		57.00	55.00
20th April, 1974	75.00	34.00	34.00	43.00	22.00	55.00			75.00	65.00
1974-75 2/	75.00	34.00	34.00	43.00	22.00	55.00	34.00		75.00	65.00

Source: Agriculture and Food Section, Planning Commission, Government of Pakistan.

1/ Weight of Ammonium Nitrate bag is 87.5 lbs.

2/ From December 20, 1974- Jan. 31st, 1975 there was a discount of 12-1/2% on all types of fertilizer.

Table III-17. Relationships between Procurement Price of Wheat and Sale Price of Fertilizer.

Year	Procurement price of wheat per maund	per lb.	Sale price of urea (bag of 110 lbs) 50.5 lbs of N	Sale price per lb. of N	lbs. of wheat needed to buy 1 lb. of N
			——rupees——		
1961-62	13.50	0.16	12.00	0.23	1.44
1962-63	13.50	0.16	24.00	0.47	2.94
1963-64	13.50	0.16	24.00 (July-Dec. 1963)	0.47	2.94
		0.16	14.00 (Jan. June 1964)	0.28	1.75
1964-65	13.50	0.16	14.00	0.28	1.75
1965-66	13.50	0.16	15.00 (Oct.-Jan. 1966)	0.29	1.81
	14.50	0.18	15.00	0.29	1.61
1966-67	14.50	0.18	25.00	0.49	2.72
1967-68	17.00	0.21	26.00	0.51	2.43
1968-69	17.00	0.21	26.00	0.51	2.43
1969-70	15.00	0.18	26.00	0.51	2.83
	17.00	0.21	26.00	0.51	2.43
1970-71	17.00	0.21	28.50	0.56	2.67
1971-72	17.00	0.21	28.50	0.56	2.67
1972-73	17.00	0.21	28.50 (July-Sept. 1972)	0.56	2.67
	22.50	0.27	35.00 (Sept. 1972 to March, 1973)	0.69	2.56

Cont. Table III-17.

Year	Procurement price of wheat per md.	per lb.	Sale price of urea(bag of 110 lbs) 50.6 lbs of N	Sale price per lb. of N	lbs. of wheat needed to buy 1 lb. of N
1973-74	22.50	0.27	42.00 (July-Aug. 1973)	0.83	3.07
	22.50	0.27	55.00 (Aug. 1973 to April, 1974)	1.09	4.04
	25.50	0.31	75.00 (April, 1974 to date)	1.48	4.77
1974-75	37.00	0.45	75.00	1.48	3.29
Spring'75	37.00	0.45	75.00	1.48	3.29

Table III-18. Relationships between the Procurement Prices of IRRI and Basmati Rice Varieties and Sale Price of Fertilizer

Year	Procurement Price of IRRI Per Kg.	Per lb.	Sale price of Urea (bag of 110 lbs) 50.5 lb. of N	Sale price of 1 lb. of N	Lbs. of IRRI needed to buy 1 lb. of N
			---------rupees---------		
			IRRI Rice		
1969-70	21.00	0.26	26.00	0.51	1.96
1970-71	21.00	0.26	28.50	0.56	2.15
1971-72	21.00	0.26	28.50	0.56	2.15
1972-73	21.00	0.26	28.50	0.56	2.15
			(July-Sept. 72)		
			35.00	0.69	2.65
		0.26	(Sept. '72 to March, 1973)		
1973-74	27.00	0.33	42.00		
			(July-August, 1973)	0.83	2.52
		0.33	55.00		
			(Aug. '73 to March, 1974)	1.09	3.30
		0.33	75.00		
			(April, 1974 todate)	1.48	4.48
1974-75	40.00	0.49	75.00	1.48	3.02
			BASMATI RICE		
1961-62	25.00	0.30	12.00	0.23	0.77
1962-63	26.00	0.32	24.00	0.47	1.47
1963-64	26.00	0.34	24.00	0.47	1.38
			(July-Dec., '63)		
		0.34	14.00	0.28	0.82
			(Jan., -June, 1964)		

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Cont. Table III-18.

Year	Procurement price of Basmati Per md.	Per lb.	Sale price of urea (bag of 110 lbs) 50.6 lb. N	Sale price of 1 lb. of N	Lbs. of IRRI needed to to buy 1 lb. of N
1964-65	28.00	0.34	14.00	0.28	0.82
1965-66	28.00	0.34	14.00 (July-Oct., 1965)	0.28	0.82
		0.34	15.00 (Oct.-June, 1966)	0.29	0.85
1966-67	28.00	0.34	25.00	0.49	1.44
1967-68	31.00	0.38	25.00 (July-Aug., 1967)	0.49	1.29
		0.38	26.00 (Sept., 67 June, 1968)	0.51	1.34
1968-69	38.00	0.46	26.00	0.51	1.11
1969-70	35.00	0.43	26.00	0.51	1.19
1970-71	32.00	0.39	28.50	0.56	1.44
1971-72	38.00	0.46	28.50	0.56	1.22
1972-73	46.00	0.56	28.50	0.56	1.00
		0.56	35.00	0.69	1.23
		0.56	42.00 (March-June, 1973)	0.83	1.48
1973-74	62.00	0.75	42.00	0.83	1.11
		0.75	55.00	1.09	1.45
		0.75	75.00	1.48	1.97
1974-75	90.00	1.09	75.00	1.48	1.36

Table III-19. Relationships between the Harvest Price of Maize and Sale Price of Fertilizer.

Year	Average harvest 1/ price of maize per md.	per lb.	Sale price urea (bag of 110 lb.) 50.6 lbs. of N	Sale price of 1 lb. of N	Lbs. of maize needed to buy 1 lb. of N
			----- rupees ----------		
1961-62	12.37	0.15	12.00	0.23	1.53
1962-63	14.27	0.17	24.00	0.47	2.76
1963-64	15.63	0.19	24.00 (July-Dec, 1963)	0.47	2.76
			14.00 (Jan. to June, 1964	0.2[illegible]	1.47
1964-65	14.61	0.18	14.00	0.28	1.55
1965-66	14.[illegible]3	0.18	14.00 (July-Dec., 1965)	0.28	1.55
			15.00 (Oct.-June 1966)	0.29	1.61
1966-67	15.[illegible]6	0.19	25.00	0.49	2.58
1967-68	16.33	0.20	25.00 (July-Aug., 67	0.49	2.45
			26.00 (Sept. 67 to June 68)	0.51	2.55
1968-69	15.00	0.18	26.00	0.51	2.83
1969-70	15.29	0.19	26.00	0.51	2.68
1970-71	15.97	0.19	28.50	0.56	2.95
1971-72	18.41	0.22	28.50	0.56	2.56
1972-73	23.70	0.29	28.50 (July-Sept. 1972)	0.56	1.93
	23.70	0.29	35.00 (Sept. '72-March'73)	0.69	2.38
1973-74	25.50	0.31	42.00 (July-Aug. 1973)	0.83	2.68

Cont.....

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Cont. Table III-19.

Year	Average harvest price of maize per maund.	per lb.	Sale price urea (bag of 110 lb.) 50.6 lbs. of N	Sale price of lb. of N	lbs. of maize needed to buy 1 lb. of N
		0.31	55.00 (Aug. '73-April'74)	1.09	3.52
		0.31	75.00 (April, '74 to date)	1.48	4.77
1974-75	41.42	0.51	75.00	1.48	2.90

1/ Average harvest prices of maize for Multan, Lyallpur, and Mardan Markets.

Table III-20. Official Components of Retail Sales Prices for Domestically Produced and Imported Fertilizer

Component	Product and Source							
	Dawood Hercules	ESSO	National Fertilizer Corporation				Imports	
	Urea	Urea	Urea	AS	AN	SSP	Urea	DAP
	Rs./Product Ton							
Ex-Factory cost 1/	786	856	951	694	591	952	2228 2/	2228 2/
Marketing incidentals 1/	87	99	107	80	80	79	345 3/	345 3/
Sub-total:	873	955	1058	774	671	1031	2573	2573
Development surcharge (+) or subsidy (-)	+627	+545	+442 4/	-94 4/	+189 4/	-591 4/	-1073	-1073
Retail sales price	1500	1500	1500	680	860	440	1500	1500

1/ These are "official" ex-factory costs of production and marketing incidentals, and not necessarily actual costs of producing and distributing fertilizer. These are the incidentals that were in effect in Sept. 1975.

2/ Equals $225/ton C&F.

3/ Midpoint of range from Rs. 320 to Rs. 370/metric ton.

4/ It is not known how NFC surpluses or deficits on sales of individual products are handled. It is probably not correct to label the surpluses as development surcharges.

Table III-21. Surpluses and Deficits on Domestically Produced Fertilizer: 1975-76 and 1976-77.

	1975-76				1976-77			
	1,000 nut. tons	1,000 prod. tons	Surplus 1/ Rs./prod. ton	Surplus 1/ Rs. Million total	1,000 nut. tons	1,000 prod. tons	Surplus 1/ Rs./prod. ton	Surplus 1/ Rs. Million total
Dawood Hercules urea	165 N	359	+627	+225	165 N	359	+627	+225
ESSO urea	93 N	202	+545	+110	93 N	202	+545	+110
NFC urea	16 N	35	+442	+ 15	16 N	35	+442	+ 15
NFC AS	19 N	91	- 94	- 9	13 N	91	- 94	- 9
NFC AN	17 N	64	+189	+ 12	17 N	64	+189	+ 12
NFC SSP	9 P_2O_5	45	-591	- 27	14 P_2O_5	68	-591	- 40
Total:	310 N 9 P_2O_5	796		+326 (net)	310 N 14 P_2O_5	819		+313 (net)

1/ The "surplus" is taken from Dawood Hercules and ESSO as a development surcharge. It is not known how NFC surpluses (+) and deficits (-) are handled.

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Table III-22 Subsidies (Deficits) on Imported Fertilizer: 1975-76 and 1976-77 1/

Fertilizer Type	1975-76 Total Offtake 1,000 Nut. Tons	1975-76 Domestic Production 1,000 Nut. Tons	1975-76 Deficit (apparent imports) 1,000 Nut. Tons	1975-76 Deficit (apparent imports) 1,000 Prod. Tons	1975-76 Total Subsidy Rs. Million 3/	1976-77 Total Offtake 1,000 Nut. Tons	1976-77 Domestic Prod. 1,000 Nut. Tons	1976-77 Deficits (apparent imports) 1,000 Nut. Tons	1976-77 Deficits (apparent imports) 1,000 Prod. Tons	1976-77 Total Subsidy Rs. Million 3/
Nitrogen	445	310	135	215 2/	221	540	310	230	401 2/	430
Phosphate (P_2O_5)	100	9	91	198 2/	203	130	14	116	252 2/	270
Total	545	319	226	413	424	670	324	346	653	700

1/ Imports are derived here on a straight-forward demand less domestic production basis. Beginning and end stocks are ignored. Therefore "apparent" imports shown in this table differ from actual import flows shown elsewhere in the Project Paper. This simplification does not, however, distort the general picture of actual subsidies involved over a 2-year period.

2/ The Urea requirements are derived after deducting the N provided in the DAP.

3/ Rs. 1,073/product ton subsidies.

Table III-23 Benefit/Cost Calculations for Farmers' Use of Fertilizer

Crop	Fertilizer application (lbs./acre)	Assumptions	Response (lbs. grain/ lbs. of Fert.)	Benefit/Cost Ratio At procurement or support price	Benefit/Cost Ratio At harvest price
Wheat 1/	50N, 50P	HYV, irrigated	18	5.5:1	6.1:1
Wheat 1/	100N, 50P	HYV, irrigated	9	2.7:1	3.0:1
Wheat 1/	50N, 9P	HYV, irrigated	4.5	2.2:1	2.5:1
Wheat 2/	12N, 8P	Barani conditions	25	9.1:1	10.2:1
Wheat 2/	70N, 50 P	Barani conditions	9.4	3.4:1	3.8:1
Wheat 3/	Unspecified	Unspecified	7	2.6:1	2.8:1
Rice 4/	100N, 100P	IRRI-6, irrigated	50(paddy)	8.4:1	9.5:1
Rice 5/	120N, 80P	IRRI-6, irrigated	6.5(rice)	2.0:1	2.3:1
Sugarcane 5/	80N, 40P	Irrigated	164(cane)	-	9.3:1
Sugarcane 3/	Unspecified	Unspecified	100(cane)	-	5.7:1
Maize 2/	70N, 50P	Barani conditions	10	-	4.1:1
Maize 3/	Unspecified	Unspecified	7	-	2.8:1

Basic assumptions:

1. Urea=Rs. 75/110 lb. bag; DAP=Rs. 75/110 lb. bag. Therefore, N costs farmer Rs. 1.48/lb., P (P_2O_5) costs Rs. 0.91/lb., and N and P combination cost Rs. 1.23/lb.

Cont. ———

Cont. Table III-23

2. Procurement or support price of wheat= Rs. 37/maund (Rs. 0.45/lb) and harvest price= Rs. 41/maund (Rs. 0.50/lb.).

3. Procurement or support price of course (IRRI) rice=Rs.40/maund (Rs. 0.49/lb) and harvest price= Rs. 45.50/maund (Rs.0.55). B/C ratios calculated on basis of farmer receiving 1/2 the price of rice for paddy he sells; i.e. Rs. 20/maund (Rs. 0.25/lb.) in case of procurement price and Rs. 22.75/maund (Rs. 0.28/lb.) in case of harvest price. One lb. paddy= .65 lbs. rice.

4. Price of sugarcane= Rs. 5.75/maund of cane (Rs. 0.07/lb.)

5. Price of maize= Rs. 41/maund (Rs. 0.50/lb.)

Footnotes

1/ Qureshi, Chaudhry, and Eckert, "Water and Fertilizer Interactions in Wheat Production," Prepared for CENTO meeting at Lyallpur, Pakistan, March 1975.
The first wheat trial shows the marginal product (MP) of N at 50 N and 50 P; the second trial shows the MP of N at 100 N and 50 P ; the third trial shows the MP of P at 50 N and 9 P.

2/ USAID sponsored Barani demonstration results. The results are average marginal products over the range from O fertilizer to the levels indicated.

3/ Government of Pakistan Planning Commission assumptions.

4/ Majid, Ahmed, and Eckert, "Fertilizer Response and Input Interactions of Dwarf Rice in Punjab," Unpublished Paper, 1975. This response represents the average marginal product of N over the range from O to 100 N, with P held at 100 lbs./acre.

5/ Based on FAO/GOP Soil Fertility Trials cited in IBRD Report 373-PAK, Multan Fertilizer Factory. These responses are to combined N and P applications. In the case of rice, the 6.5:1 response cited is very similar to the GOP Planning Commission assumption of 7:1.

Table III-24 Low Estimates of Fertilizer Offtake

(1,000 nut. tons)

	Winter (Rabi) (Oct.-Feb.)	Summer (Kharif) (March-Sept.)	Combined Winter and Summer (Oct.-Sept.)
Nitrogen			
1974-75	194 1/	185 2/	379
1975-76	225	220	445
1976-77	280	260	540
1977-78	325	305	630
P_2O_5			
1974-75	37 1/	30 2/	67
1975-76	55	45	100
1976-77	70	60	130
1977-78	85	75	160
N plus P_2O_5			
1974-75	231 1/	215	446
1975-76	280	265	545
1976-77	350	320	670
1977-78	410	380	790

1/ Actual
2/ Estimate

Table III-25 High Estimates of Fertilizer Offtake

(1,000 nut. tons)

	Winter (Rabi) (Oct.-Feb.)	Summer (Kharif) (March-Sept.)	Combined Winter and Summer (Oct.-Sept.)
Nitrogen			
1974-75	194 1/	185 2/	379
1975-76	250	285	535
1976-77	300	310	610
1977-78	325		
P_2O_5			
1974-75	37 1/	30 2/	67
1975-76	70	45	115
1976-77	85	60	145
1977-78	100		
N plus P_2O_5			
1974-75	231 1/	215	446
1975-76	320	330	650
1976-77	385	370	755
1977-78	425		

1/ Actual
2/ Estimate

Table III-26. Fertilizer Imports in FY 1974-75

Type	Source	Product tons (1,000)	C&F cost/ product. ton (U.S.$)	Financing	Nutrient tons N (1,000)	Nutrient tons P_2O_5 (1,000)
July[1/]						
CAN	W. Germany	10.9	.152	Credit	2.8	-
August[1/]						
Urea	Norway	1.2	207	U.S. Aid		
CAN	Holland	12.8	162	Cash		
NP	W. Europe	8.7	237	Cash		
NP	W. Germany	0.7	-	Gift		
	Sub-total	23.4			6.0	2.2
September[1/]						
Urea	Holland	16.7	217	Cash		
Urea	Italy	20.0	212	Cash		
Urea	Japan	9.0	186	Cash		
NP	Holland	6.4	227	Cash		
	Sub-total	52.1			22.5	1.5
October[1/]						
Urea	Italy	11.0	262	Cash		
Urea	Japan	5.8	186	Cash		
Urea	Japan	3.7	186	Credit		
Urea	Holland	9.3	217	Cash		
Urea	Holland	1.1	243	Credit		
DAP	U.S.A.	10.5	455(375 FOB)	U.S. Aid Loan		
	Sub-total	41.4			16.1	4.8
November[1/]						
Urea	Japan	6.5	186	Credit	2.9	-

Cont.

Cont. Table III-26.

Type	Source	Product tons (1,000)	C&F cost product. ton (U.S.$)	Financing	Nutrient tons N (1,000)	Nutrient tons P_2O_5 (1,000)
December[1/]						
Urea	Holland	10.4	243	Credit		
Urea	Japan	18.0	350	U.S. Aid		
Urea	USSR	0.1	410	Barter		
NP(23:23)	Norway	0.3		Grant		
NP(26:14)	Norway	8.9		Grant		
	Sub-total	28.7			15.5	1.3
January[1/]						
TSP	U.K.	11.0	385	Cash		
Urea	Kuwait	9.0	401	Cash		
Urea	Japan	9.0	350	U.S. Aid		
Urea	USSR	3.7	Barter			
	Sub-total	32.7			10.0	5.0
February[1/]						
Urea	USSR	3.6	410	Barter		
Urea	Japan	8.0	350	U.S. Aid		
NP(24:24)	France	10.0	378	Cash		
NPK(15:15:15)	W. Germany	5.0	-	Gift		
	Sub-total	26.6			8.5	3.2
March[1/]						
Urea	USSR	10.8	410	Barter	4.9	-
April[1/]						
MAP	Canada	8.7	461	Credit		
Urea	USSR	5.8	461	Barter	3.6	4.1
May[1/]						
Urea	Japan	6.0	373	Credit		
Urea	Romania	0.5	410	Barter		
NP(20:20)	FAO Ass.	14.0	-	Grant		
	Sub-total	20.5			5.8	2.8

Cont.

Cont. Table III-26

Type	Source	Product ton (1,000)	C&F cost/ product. ton (U.S.$)	Financing	Nutrient tons N (1,000)	Nutrient tons P_2O_5 (1,000)
June 2/						
Urea	Polland	13.7	418	Barter		
Urea	Japan	6.7	373	Credit		
Urea	Romania	9.5	410	Barter		
MAP(11:48)	Canada	11.0	461	Credit		
	Sub-total	40.9			14.9	5.2
	Total nutrient tons:				113.5	30.1

Total product tons (1,000)

Urea	=	199.1
CAN	=	23.7
DAP	=	10.5
NP	=	48.8
TSP	=	11.0
MAP	=	20.0
NPK	=	5.0
All types	=	318.1

1/ Already arrived as of May 31, 1975.
2/ On basis of information available July 21, 1975 from FDAS.

Table III-27. Fertilizer Imports Received or Arranged for FY 1975-76

Type	Source	Product tons (1000)	C&F cost/ production ton(US$)	Financing	Nutrient Tons N (1,000)	Nutrient Tons P_2O_5 (1,000)
July 1975						
Urea	Poland	10.2	418	Barter		
Urea	DRP Korea	4.0	360	Barter		
Urea	USSR	2.0	-	Barter		
NP(24:24)	France	10.0	405	Credit		
	Sub-Total:	26.2			9.8	2.4
August 1975						
NP(11:25)	West Germany	2.0	-	Grant	0.2	1.04
Sept. 1975						
Urea	FAO 1/	1.06	-	Gift	0.46	
Oct.-Dec., 1975						
Urea	USSR	25.0	155 C&F Bagged	Barter	11.5	
Nov.-Dec. 1975						
DAP	Canada	35.0 2/	214	CIDA Loan	6.3	16.1
Nov.-Dec. 1975						
NP(23:23)	Norwegian	20.0	200	Grant	4.6	4.6
Jan.-Feb. 1976						
DAP	Dutch	10.0	200	Credit	1.8	4.6
Jan.-Feb. 1976						
NP(23:23) 3/	French	20.0	200	Credit	4.6	4.6

1/ Had not yet arrived on September 18. 2/ From 30 to 35, depending on shipping costs, 3/ May actually arrive as early as November.

Table III-28. Low Estimates of Nitrogen Fertilizer Offtake, Domestic Supplies and Imports

	1974-75 Summer (Mar. - Sept.'75)	1975-76 Winter (Oct.'75- Feb.'76)	1975-76 Summer (March. - Sept.'76	1976-77 Winter (Oct.'76- Feb.'77)	1976-77 Summer (Mar. - Sept. '77)	1977-78 Winter (Oct. '77- Feb. '78)
Beginning Stocks	223	260	193	230	156	261
Production available for this season	130 1b/	78 1a/	130 1b/	78 1a/	130 1b/	96 1a/
Total available	353	338	323	308	286	357
Offtake	185 3/	225	220	280	260	325
Remaining within distribution system	168	113	103	28 2/	26 2/	32 2/
Production this period that is available for following season 1/	52 1d/	52 1c/	52 1d/	52 1c/	52 1d/	
Imports this period for following season						
a) already scheduled		40	28	-	-	-
b) additional required		-	-	75	76	183
End Stocks		260 3/	193	230	156	261

1a/ October-December production. 1b/ March-July production.
1c/ January-February production. 1d/ August-September production.

2/ Assumes 10% more than each season's requirement must be available, due to inability to totally clear stocks from each segmont of the distribution system.

3/ Estimates.

Table III-29, High Estimates of Nitrogen Fertilizer Offtake, Domestic Supplies, and Imports

	1974-75 Summer (Mar. - Sept. '75)	1975-76 Winter (Oct. '75 - Feb. '76)	1975-76 Summer (Mar. - Sept. '76)	1976-77 Winter (Oct. 76 - Feb. '77)	1976-77 Summer (Mar. - '76 - Sept. '77)	1977-78 Winter (Oct. '77 - Feb. '78)
Beginning stock	223	260	183	252	211	261
Production available for this season 1/	130 1b/	78 1a/	130 1b/	78 1a/	130 1b/	96 1a/
Total available	353	338	313	330	341	357
Offtake	185 3/	250	285	300	310	325
Remaining within distribution system	168	88	28 2/	30 2/	31 2/	32 2/
Production this period that is available for following season	52 1d/	52 1c/	52 1d/	52 1c/	52 1d/	
Import this period for following season						
a) already scheduled		40	28	-	-	-
b) additional required		-	15	172	129	178
End Stocks		260 3/	183	252	211	261

1a/ October-December production. 1b/ March-July production
1c/ January-February production. 1d/ August-September production.

2/ Assumes 10% more than each season's requirement must be available due to inability to totally clear stocks from each segment of the distribution system.

3/ Estimates.

Table III-30. Low Estimates of Phosphate Fertilizer Offtake, Domestic Supplies, and Imports

	1974-75 Summer (Mar-Sept'75)	1975-76 Winter (Oct'75-Feb'76)	1975-76 Summer (Mar-Sept'76)	1976-77 Winter (Oct. 76 Feb'77)	1976-77 Summer (Mar-Sept'77)	1977-78 Winter (Oct'77-Feb'78)
Beginning stocks	70	66 3/	52	84	68	102
Production available for this season	1 1a/	-	2 1a/	-	4 1a/	-
Total available	71	66	54	84	72	102
Offtake	30 3/	55	45	70	60	85
Remaining with in distribution system	41	11 2/	9 2/	14 2/	12 2/	17 2/
Production this period that is available for following season	2 1c/	4 1b/	3 1c/	6 1b/	5 1c/	
Imports this period for following season						
a) already scheduled		15	30	-	-	-
b) additional required		8(deficit)	7	72	48	85
End Stocks		66 4/	52	84	68	102

1a/ March-May production. 1b/ October-February production

1c/ June-September production

2/ Assumes 20% more than each season's requirement must be available, due to inability to totally clear stocks from each segment of the distribution system.

3/ Estimate.

4/ Required, if winter target to be met without stocks being unduly depleted.

Table III-31 High Estimates of Phosphate Fertilizer Offtake, Domestic Supplies, and Imports

	1974-75 Summer (Mar.-Sept'75)	1975-76 Winter (Oct'75-Feb'76)	1975-76 Summer (Mar-Sept'76)	1976-77 Winter (Oct.76-Feb'77)	1976-77 Summer (Mar.-Sept'77)	1977-78 Winter (Oct'77 Feb'78)
Beginning stocks	70	84 4/	52	102	68	120
Production available for this season 1/	1 1a/	-	2 1a/	-	4 1a/	-
Total available	71	84	54	102	72	120
Offtake	30 3/	70	45	85	60	100
Remaining within distribution system	41	14 2/	9 2/	17 2/	12 2/	20 2/
Production this period that is available for following season	2 1c/	4 1b/	3 1c/	6 1b/	5 1c/	
Import this period for following season						
a) already scheduled		15	30	-	-	-
b) additional required		26 (deficit)	4	90	45	103
End Stocks		84 4/	52	102	68	120

1a/ March-May production. 1b/ October-February production
1c/ June-September production
2/ Assumes 20% more than each season's requirement must be available, due to inability to totally clear stocks from each segment of the distribution system.
3/ Estimate.
4/ Required, if winter target to be met and some stocks to be left within distribution system.

Table III-32 Low Estimates of Cost of Additional Required Imports

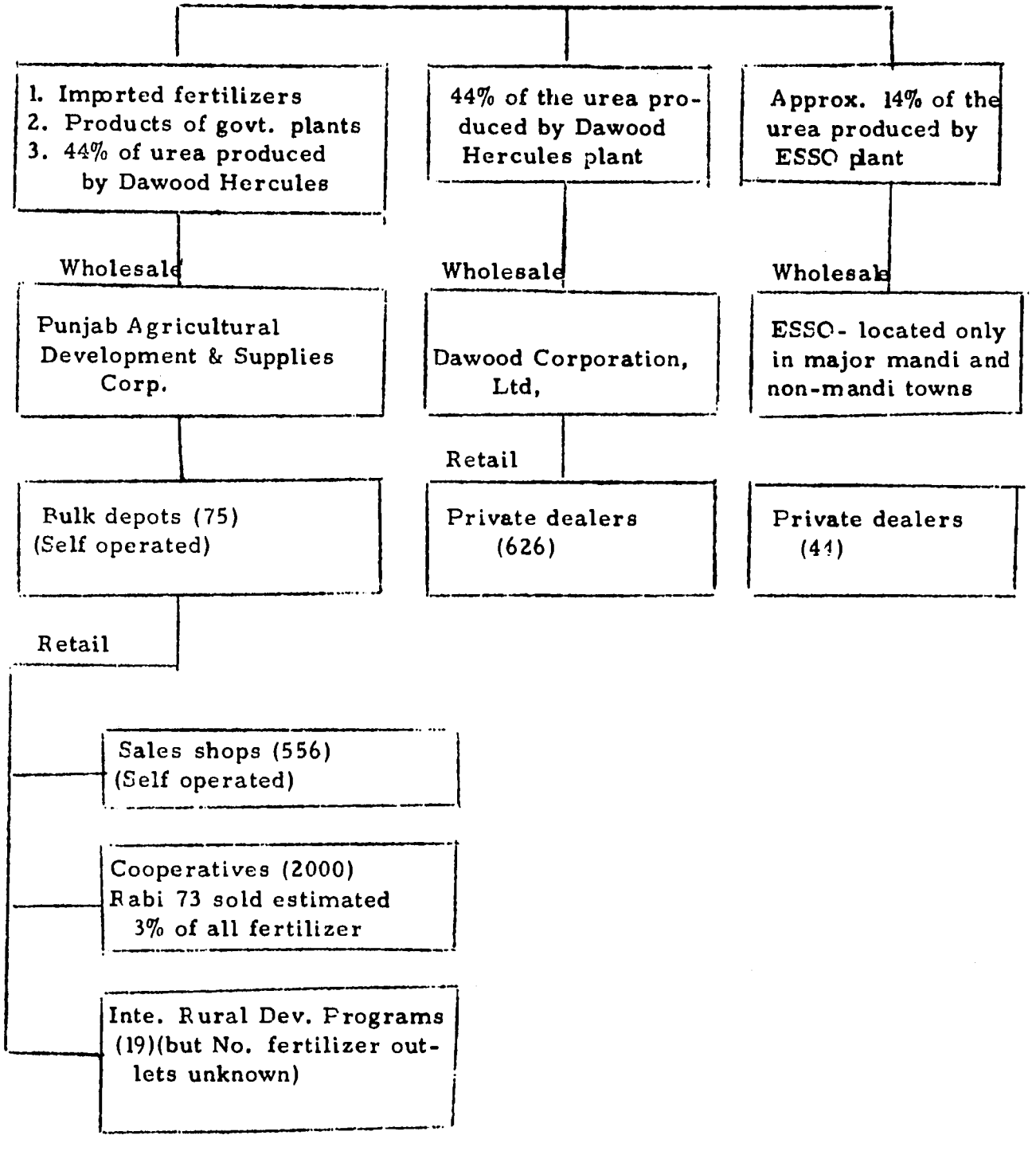
Fertilizer	Product tons (1,000)	Nutrient Tons N (1,000)	Nutrient Tons P_2O_5 (1,000)	Cost/ product tons($)	Total Cost ($ million)
Sept. 1975 (deficit)					
Urea	-	-	-	-	-
DAP	17	3	8	225	3.8
Sub-total	17	3	8		3.8
Oct. 1975-Feb. 1976					
Urea	-	-	-	-	-
DAP	15	3	7	225	3.4
Sub-total	15	3	7		3.4
March 1976-Sept. 1976					
Urea	134	62	-	225	30.0
DAP	156	13	72	225	35.0
Sub-total	290	75	72		65.0
Oct. 1976-Feb. 1977					
Urea	124	57	-	225	28.0
DAP	104	19	48	225	23.0
Sub-total	228	76	48		51.0
March 1977-Sept. 1977					
Urea	326	150	-	225	73.0
DAP	185	33	85	225	42.0
Sub-total	511	183	85		115.0
Sub-totals:					
Urea					131.0
DAP					107.0
Grand total:					238.2

Table III-33 High Estimates of Costs of Additional Required Imports

Fertilizer	Product Tons (1,000)	Nutrient Tons N (1,000)	Nutrient Tons P_2O_5 (1,000)	Cost Product tons($)	Total Cost ($ million)
Sept. 1975 (deficit)					
Urea	-	-	-	-	-
DAP	56	10	26	225	12
Sub-total	56	10	26		12
Oct. 1975-Feb. 1976					
Urea	28	13	-	225	6
DAP	9	2	4	225	2
Sub-total	37	15	4		8
March 1976-Sept. 1976					
Urea	298	137	-	225	67
DAP	196	35	90	225	44
Sub-total	494	172	90		111
Oct. 1976-Feb. 1977					
Urea	241	111	-	225	54
DAP	98	18	45	225	22
Sub-total	339	129	45		76
March 1977-Sept. 1977					
Urea	300	138	-	225	67
DAP	224	40	103	225	50
Sub-total	524	178	103		117
Sub-totals:					
Urea					194
DAP					130
Grand total:					324

Figure 1

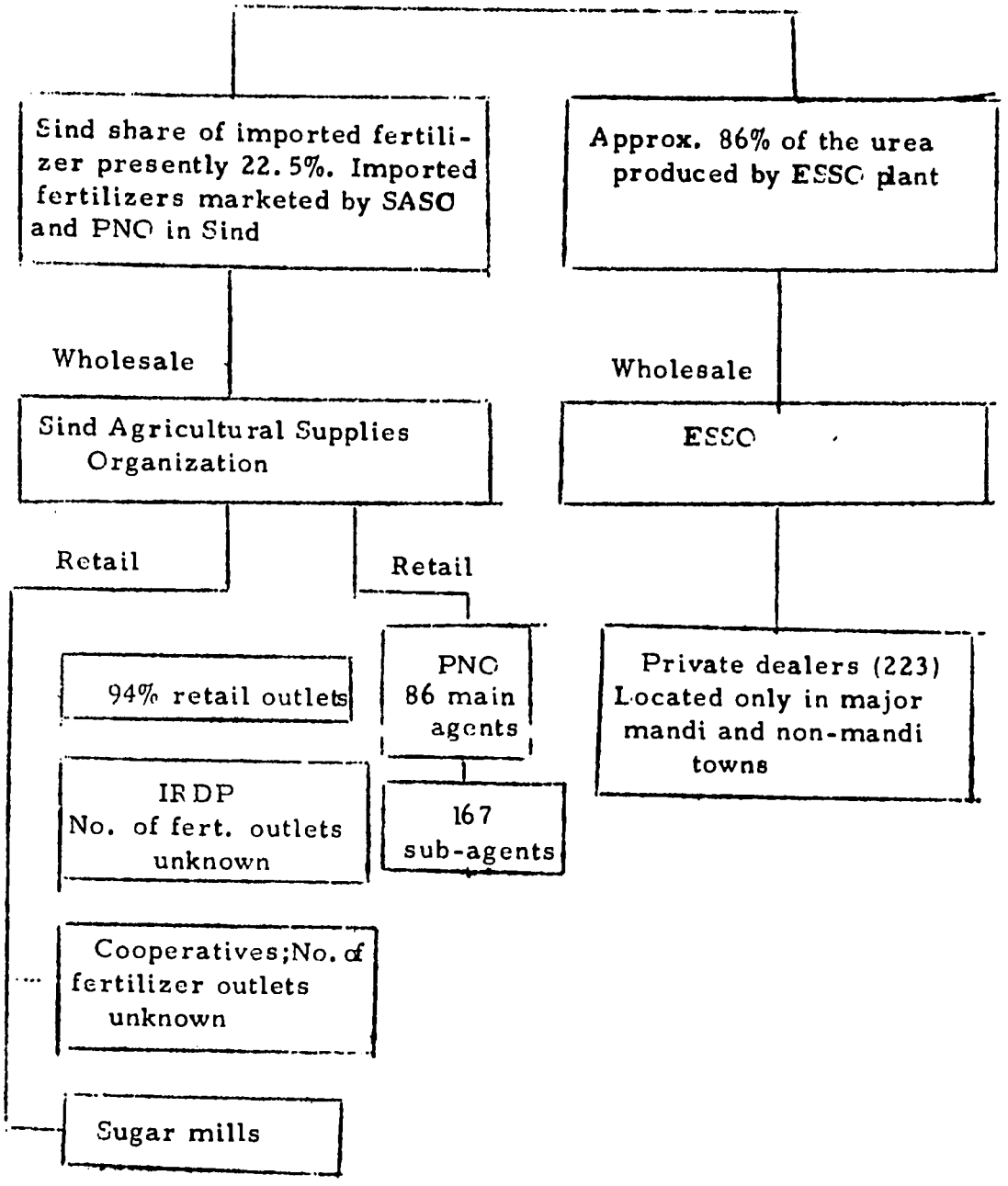
Marketing Channels for Fertilizer
in Punjab Province



Source: The Fertilizer Marketing System in Pakistan, FAO Working Paper Changez Shuja, Rome, June 1974, with revisions based upon data collected by USAID in June-July 1975.

Figure 2

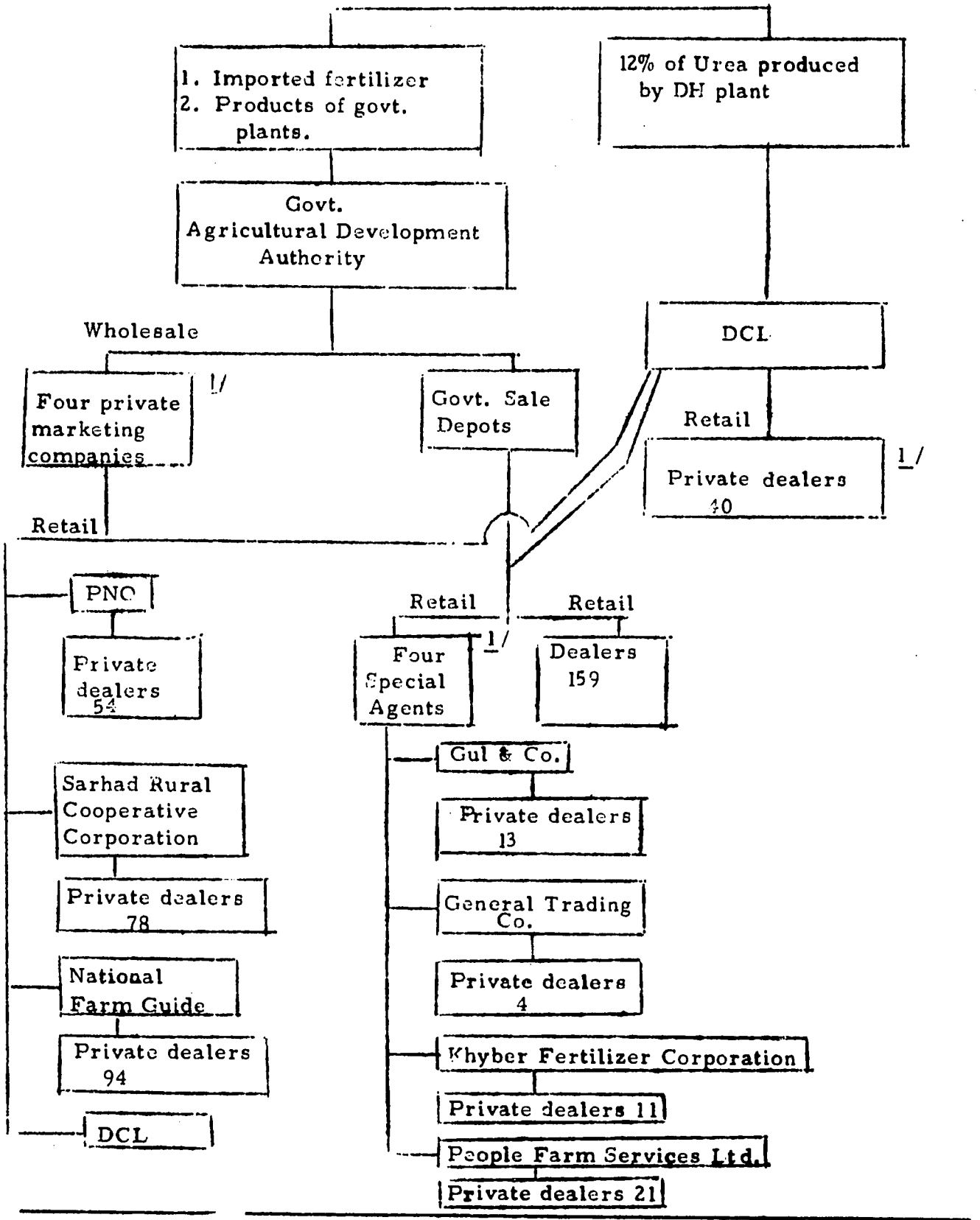
Marketing Channels for Fertilizer
in Sind Province



Source: The Fertilizer Marketing System in Pakistan, FAO Working Paper, Changez Shuja, Rome, June 1974, with revisions based upon USAID data collected in June-July 1975.

Figure 3

Marketing Channels for Fertilizer in North West Frontier Province



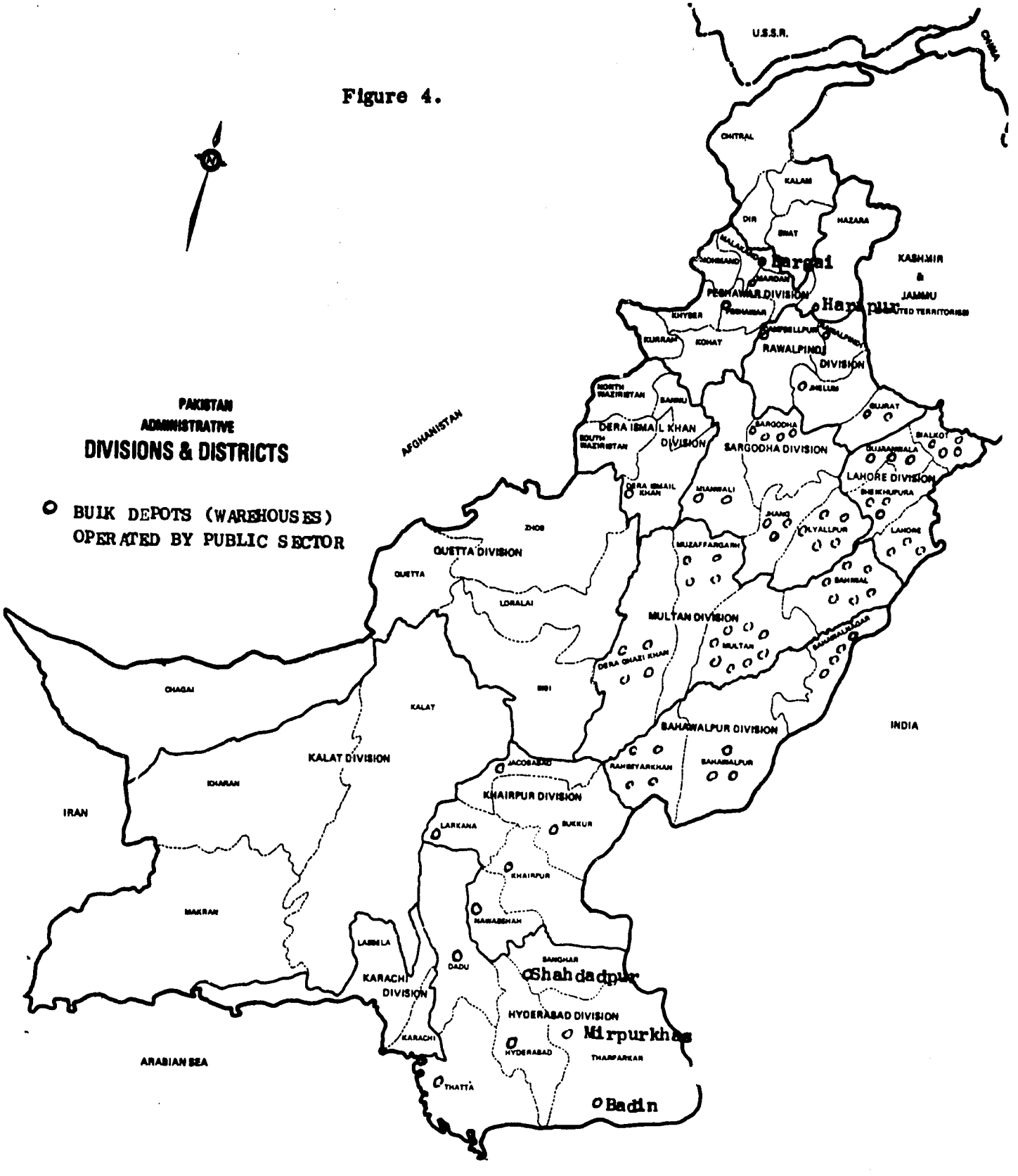
Cont. . . . . .

Cont. Fig. 3

1/ Many Principal Agents have un-licensed sub-dealers; total number unknown.

Source: The Fertilizer Marketing System in Pakistan, FAO Working Paper, Changez Shuja, Rome, June 1974, with major revisions based upon USAID data collected in June-July 1975.

Figure 4.


PAKISTAN
ADMINISTRATIVE
DIVISIONS & DISTRICTS
BULK DEPOTS (WAREHOUSES)
OPERATED BY PUBLIC SECTOR
U.S.S.R.
CHINA
AFGHANISTAN
IRAN
INDIA
ARABIAN SEA
KASHMIR & JAMMU
CHITRAL
KALAM
DIR
SWAT
HAZARA
MALAKAND
MOHMAND
MARDAN
PESHAWAR DIVISION
KHYBER
PESHAWAR
KURRAM
KOHAT
RAWALPINDI DIVISION
JHELUM
NORTH WAZIRISTAN
BANNU
SOUTH WAZIRISTAN
DERA ISMAIL KHAN DIVISION
DERA ISMAIL KHAN
SARGODHA DIVISION
SARGODHA
GUJRAT
SIALKOT
GUJRANWALA
LAHORE DIVISION
SHEIKHUPURA
MIANWALI
JHANG
LYALLPUR
LAHORE
ZHOB
QUETTA DIVISION
QUETTA
LORALAI
MUZAFFARGARH
BAHAWAL
MULTAN DIVISION
MULTAN
DERA GHAZI KHAN
BAHAWALPUR
CHAGAI
KALAT
SIBI
KALAT DIVISION
KHARAN
BAHAWALPUR DIVISION
RAHIMYARKHAN
JACOBABAD
KHAIRPUR DIVISION
LARKANA
SUKKUR
KHAIRPUR
NAWABSHAH
MAKRAN
LASBELA
DADU
SANGHAR
KARACHI DIVISION
KARACHI
HYDERABAD DIVISION
HYDERABAD
THARPARKAR
THATTA
Harnai
Haripur
Shahdadpur
Mirpurkhas
Badin

Annex B

Fertilizer Use by Farm Size and Tenurial Status

Information on fertilizer use by farm size and tenurial status of farmers is available in several studies conducted since 1970. Estimates of per acre rates of fertilizer consumption made on the basis of one survey conducted in 1972 indicated that:

1. On the average, farmers holding less than 5 acres spent slightly more for fertilizer per irrigated acre than large farmers (more than 50 acres), and farmers in intermediate size groups (5-15 acres, 15-25 acres, and 25-50 acres) used less fertilizer per acre than large farmers.

2. Within each tenurial class, this relationship held true. Small farmers used fertilizer most intensively, closely followed by large farmers. The various intermediate (size of farm) groups all used fertilizer less intensively, although there was no consistent pattern of relative intensity among these three intermediate (size of farm) groups.

3. Data on expenditure rates by tenurial class showed that owner-operators spent over twice as much per irrigated acre for fertilizer as did tenants. Owner-cum-tenants fell between, consuming about 20% less fertilizer per acre than did owner-operators. (For details of these patterns, see Tables 1, 2, and 3).

4. The data suggest that owner-operators spent 49% of the total spent but operated less than 40% of the irrigated acreage, whereas tenants spent less than one-fifth of the total but operated one-third of the country's irrigated acreage (Table 2 and 3). The data do not indicate the percentage of farmers in different size groups or income groups using fertilizer. The study showed almost no fertilizer is used on unirrigated lands.

In contrast to the above survey, evidence from several more limited surveys done approximately at the same time, but confined to between one and three districts in Punjab Province, produced quite different results. In these studies, large farmers used more nutrient pounds of nitrogen per acre than did small farmers. One of these studies concluded that owner-cum-tenants had higher application rates

than either owner-operators or tenants.

Three additional sources of information on fertilizer use by class of farmer in Pakistan have just become available in the last few months. One is a Ph.D. dissertation completed at the University of Hawaii in May 1975, which was based on a farm survey conducted in the fall of 1973. A second consists of preliminary results of the 1972 Agricultural Census. And, the most recent source is a study being conducted at the University of Islamabad. Preliminary results of the University of Islamabad study, based upon a field survey conducted in the winter of 1974-75, are now partially available.

The University of Hawaii dissertation[1/] was based upon data collected from 192 farmers in two Districts located in irrigated areas of the Punjab. The incidence of fertilizer use was fairly high in all farm size categories, and did not vary consistently by farm size (Table 4). However, Salam's data on fertilizer application levels indicate that farmers with holdings smaller than 12.5 acres used more fertilizer per acre on each of the major crops than did farmers with holdings larger than 12.5 acres (Tables 5 and 6).

Preliminary data obtained from the Agricultural Census show that the highest percentage of fertilizer users in 1972 was in the 12.5-25-acre category, with the size categories just above and below that running close behind (Table 7). In other words, farmers with holdings between 7.5 and 50 acres were more likely to use fertilizer than either very small or very large farmers. The percentage of cropped area fertilized varied hardly at all by farm size in 1972, except in the case of farms exceeding 150 acres in size; 49% of the cropped area held in these very large holdings was fertilized, compared to the overall average of 43% (Table 8).

A 1974-75 survey by economists at the University of Islamabad covered nearly 800 farmers in Punjab, Sind, and NWFP. Only farmers who used some fertilizer in 1974-75 were included in the survey. Farmers in the largest size category (30-39 acres) used the most fertilizer (as measured in bags per acre) in 8 out of 13 crop and region

1/ Abdul Salam, "Economic Analysis of Fertilizer Application in Punjab-Pakistan," Ph. D. Dissertation, University of Hawaii, May 1975.

cases (Table 9). Farmers in the 0-9-acre category used the most fertilizer in three cases. Fertilizer use per acre generally declined with decreasing farm size in Punjab, but showed a less consistent pattern in Sind and NWFP. It should be born in mind that the University of Islamabad data, as currently available, do not indicate rates of use in terms of nutrients. The farm size rankings by applications of fertilizer nutrients per acre could conceivably be different than the rankings by applications of fertilizer bags per acre.

The evidence from these various studies is quite mixed with regard to the question of whether "small" or "large" farmers use more fertilizer. Although the data on incidence of use indicate a fairly widespread awareness of fertilizer benefits, overall levels of use are disappointingly low in all size categories. Reasons for these low levels of fertilizer use will be examined in AID supported research, described elsewhere in this Loan Paper, as part of the Project.

Table 1. Average Fertilizer Usage by Size and Tenurial Class of Farmer (1972 Survey)

Size of Holding	All Farms	Owner-Operator	Owner-cum Tenant	Tenant
	(in Nutrient Pounds per Irrigated Acre)			
0-5	56.25	60.08	60.08	47.90
5-15	32.49	44.40	34.40	23.88
15-25	30.64	43.50	34.96	18.20
25-50	36.45	50.72	33.18	19.41
50+	54.26	55.75	57.03	35.74
Average 1/	38.58	50,19	39.93	23.68

1/ Weighted average
One bag of urea = 50.6 nutrient pounds of nitrogen.

Note: The relative magnitude of these figures is more important than their absolute values because of necessary assumptions employed to make the computations. These assumptions include:

(a) Rupee value of fertilizer purchases have been converted to nutrient pounds by assuming that all fertilizer purchases were in the form of urea. As urea is most concentrated form of fertilizer available, this overstates that actual average.

(b) These figures are not actual average use rates; rather they are average usage rates across the entire class, and therefore, the presence of non-users tends to understate the actual consumption rate. The average has been computed as:

$$\frac{\text{Total Fertilizer Purchases by given class of farmers}}{\text{Total Cultivated Irrigated Acreage by given class of farmers}}$$

Note that only irrigated acreage is used; the assumption is justified by evidence that suggests that negligible amounts of fertilizer were used in the barani areas at the time of the survey.

Because the cropping intensity on irrigated lands is greater than 1.0, the total acreage of irrigated land is less than total cultivated irrigated acreage. The effect of this will be to overstate the average per cropped acre fertilizer utilization rate.

Table 2. Access to Fertilizer Supplies by Tenurial Class: Irrigated Acreage Cultivated Vs Fertilizer Supplies Commanded (1972 Survey)

Tenurial Class	% of Total Irrigated Acreage Cultivated	% of Annual Fertilizer Supply Consumed
Owner-operator	39.5%	49.0%
Owner-cum-tenant	27.2%	26.8%
Tenant	33.3%	19.5%
Owner-non-operator		4.7%
TOTAL:	100.0%	100.0%

Table 3. Fertilizer Consumption by Size of Farm and Tenurial Status (1972 Survey)

Size of holding (Acres)	All Farms		Owner Operator		Owner-cum-Tenant		Tenants	
	% of irrigated lands by size of holding	% of fertilizer used by size of holding	% of irrigated lands by size of holding	% of fertilizer used by size of holding	% of irrigated lands by size of holding	% of fertilizer used by size of holding	% of irrigated lands by size of holding	% of fertilizer used by size of holding
0-5	5.0	7.2	6.6	7.9	2.9	4.3	4.7	9.4
5-15	37.2	31.3	27.9	24.6	34.0	29.0	50.9	51.3
15-25	19.6	15.6	14.6	12.6	21.5	18.8	24.0	18.4
25-50	17.1	16.2	17.7	18.0	19.4	16.1	14.5	12.0
50+	21.1	29.7	33.2	36.9	22.2	31.8	5.8	8.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 4. Percentage of Fertilizer Users Under Various Farm Categories

Crop	Small Farms (up to 12.5 acres)	Medium Farms (12.6 to 25.0 acres)	Large Farms (25.1 to 50.0 acres)
	(Percentage of Nitrogenous Fertilizer Users)		
Wheat (Mexican)	87	94	91
Basmati rice	76	68	51
Cotton	79	88	
Sugarcane	91	94	

Table 5. Fertilizer Use Per Acre on Selected Food Grain Crops

Crop	Small Farms (up to 12.5 acres)	Medium Farms (12.6 to 25.0 acres)	Large Farms (25.1 to 50.0 acres)
	(Pounds of Nitrogen)		
Mexican wheat	54	48	50
Basmati rice	67	46	60
	(Pounds of Phosphorus)		
Mexican wheat	48	39	38
Basmati rice	63	45	39

Source for Tables 4 and 5 : Abdul Salam, "Economic Analysis of Fertilizer Application in Punjab-Pakistan," Ph.D. Dissertation, University of Hawaii, May 1975.

Table 6. Fertilizer Use Per Acre on Selected Cash Crops

Crop	Small Farms (up to 12.5 acres)	Farms 12.6 to 50 acres
	(Pounds of Nitrogen)	
Cotton	56	51
Sugarcane	73	65
	(Pounds of Phosphorus)	
Cotton	46	39

Source: Abdul Salam, "Economic Analysis of Fertilizer Application in Punjab-Pakistan," Ph.D. Dissertation, University of Hawaii, May 1975.

Table 7. Percentage of Farms Using Fertilizer in Pakistan: 1972, Province-wise

Farms Size in Acres	Punjab	Sind	NWFP	Baluch-istan	Pakistan
1	2	3	4	5	6
Up to 7.5	46	40	42	3	44
7.5 - 12.5	57	62	41	7	55
12.5 - 25.0	61	65	33	13	58
25.0 - 50.0	59	66	19	8	53
50.0 - 150.0	54	67	10	6	45
Above 150.0	54	74	9	3	39
Overall	55	60	39	7	50

Source: Government of Pakistan, 1972 Pakistan Census of Agriculture, Ministry of Agriculture (Provisional data)

Table 8. Cropped Area Fertilized According to Operational Farm Size in Pakistan: 1972, Province-wise

(Cropped area in percent)

Farm Size in Acres	Punjab	Sind	NWFP	Baluch-istan	Pakistan
1	2	33	4	5	6
Up-to 7.5	43	39	43	5	40
7.5 - 12.5	43	47	41	9	43
12.5 - 25.0	43	49	32	16	43
25.0 - 50.0	42	53	19	11	41
50.0 - 150.0	43	60	11	8	41
Above 150.0	55	72	13	4	49
Overall	43	49	33	10	43

Source: Government of Pakistan, 1972 Pakistan Census of Agriculture, Ministry of Agriculture (Provisional data)

Table 9. Bags of Fertilizer Used per Acre in NWFP, Sind, and Punjab: 1974-75

Province	(Acres)	Total Bags of Fertilizer Applied / Acre (Rank according to use indicated by asterisks. 1/) Sugarcane	Wheat	Cotton	Rice	Maize
NWFP						
	0- 9	3.1**	2.9*	IU 2/	IU	2.9*
	10-19	2.7***	2.4**	IU	NS 3/	2.3**
	20-29	4.0*	2.2***	IU	1.0	1.9***
	30-39	2.6****	1.8****	IU	1.0	1.5****
SIND						
	0- 9	1.3****	1.1****	1.5***	2.2*	0.5****
	10-19	2.3**	1.5***	1.7*	2.1**	0.7***
	20-29	1.6***	1.6**	1.4****	1.3****	1.1*
	30-39	2.8*	1.7*	1.7*	1.6***	1.0**
PUNJAB						
	0- 9	1.6****	1.3****	1.4**	1.2****	0.9****
	10-19	1.8**	1.5***	1.4**	1.3***	1.0**
	20-29	1.8**	1.7**	1.4**	1.9**	1.0**
	30-39	2.3*	2.0*	1.8*	2.1*	1.2*

1/ *= farm size category using most bags per acre
= 2nd * = 3rd **** = 4th

2/IU = Information unavailable

3/NS = No sample observations in this category.

Source: Unpublished data from study in process on "The Use of Fertilizers on Major Agricultural Crops in Pakistan," by Department of Economics, University of Islamabad.

Annex C

The Role of Credit in Facilitating Farmers' Access to Fertilizer

1. Introduction

Drawing on a wide variety of sources, this paper addresses the role of credit in facilitating farmers' access to fertilizer supplies. The availability, sources, and terms of fertilizer credit are analyzed in terms of distinct farm groups. We conclude that the quantity and quality of fertilizer credit is a function of both size of farm and tenurial class.

a. Most fertilizer is purchased with farmers' own resources (86.5%). However, large farmers and owner-operators are less dependent on credit to finance their fertilizer purchases than are small and medium-sized farmers and tenants.

b. Lack of cash resources and limited access to credit are principal reasons for not using fertilizer or using less fertilizer than farmers deem desirable.

c. Numerous sources of fertilizer credit exist, both institutional and non-institutional. The terms of credit from these sources vary considerably, but generally the terms of institutional credit are much more attractive than the terms of non-institutional credit.

d. Farmers' access to institutional credit varies by size of farm and tenurial class. Small farmers and tenants are forced to rely more heavily on relatively expensive non-institutional credit, while large farmers and owner-operators capture the lion's share of "cheap" institutional credit.

e. The supply of institutional fertilizer credit has increased rapidly in the last 5 years because of the dramatic expansion of ADBP lending and the entry of commercial banks into the market on a large scale for the first time.

f. The absolute amount and relative importance of institutional fertilizer credit appears to be increasing.

g. Four years ago relatively few farmers obtained any fertilizer credit. The number of farmers and the amount of fertilizer credit they obtain from all sources today is not known, but we believe the fertilizer credit situation has improved somewhat.

2. Importance of farm credit in financing fertilizer purchases

Although credit is important in increasing farmers' access to and use of fertilizer, evidence from a 1971 survey suggests that most fertilizer purchases are financed with farmers' own resources. All sources of credit (institutional and non-institutional) accounted for only 13.5% of all fertilizer purchased by the farmers surveyed. Disaggregating the farmers surveyed shows: (a) tenants are twice as dependent on credit as other tenurial classes and (b) large farmers are least dependent on fertilizer credit, whereas farmers with 15 to 25 acres are most dependent on credit to finance fertilizer purchases. Tables 1 and 2 summarize the relative importance of fertilizer credit to various tenurial classes and different size holdings.

Table 1 - Percent of Fertilizer Purchases on Credit and Cash by Tenurial Class

Tenurial status of farmers	Fertilizer purchased on credit as % of total fertilizer purchases	Fertilizer purchased with farmers' own resources as % of total fertilizer purchases	Total
Owner-operator	10.4%	89.6%	100%
Owner-cum-tenant	12.5%	87.5%	100%
Tenant	22.7%	77.3%	100%
Owner-non-operator	8.8%	91.2%	100%
All farms (average)	13.5%	86.5%	100%

Table 2 - Percent of Fertilizer Purchased on Credit and Cash By Size of Farm

Size of Farm (Acres)			
0-5	13.2%	86.8%	100%
5-15	15.0%	85.0%	100%
15-25	17.3%	82.7%	100%
25-50	13.4%	86.6%	100%
50+	10.0%	90.0%	100%

3. Evidence of credit as a constraint

The relatively small amount of credit usedto finance fertilizer purchases should not be misinterpreted as evidence of the unimportance of credit. In a survey in three districts of the Punjab in 1970, three-fourths of the farmers not using fertilizer (13.4% of the sample farmers were using no fertilizer) cited lack of funds as the reason. In the same study, three-fourths of those farmers using fertilizer cited non-availability of funds as a primary difficulty which limited their use of fertilizer. A separate study during the same period in a different part of the Punjab corraborated these conclusions. As Table 3 shows, small farmers experienced significantly greater difficulties than large farmers in financing their fertilizer purchases.

Table 3 - Non-Availability of Funds as a Constraint in Limiting Fertilizer Use by Size of Farm

Size of holding (Acres)	% of farmers reporting non-availability of funds as reason why efertilizer was "not easily available"
2.5- 7.5	81.6%
7.5-12.5	77.6%
12.5-25.0	79.2%
25.0-50.0	47.4%
50.0 and over	40.0%
All sizes	75.0%

The most conclusive evidence that credit availability limits fertilizer use is found in farmers' responses when asked how much

fertilizer credit they wanted for the coming year. Countrywide, farmers, renters, and others declared they needed 188% more fertilizer credit for 1972 than they received in 1971. Sharp differences are evident between tenurial classes. Tenants' perceptions of their incremental fertilizer credit needs were significantly lower than other people's. (Perhaps tenants' aspirations are limited by their perception of what is possible.)

Table 4 - Perceived incremental fertilizer credit needs

Tenurial status	% increase in perceived fertilizer credit needs for 1972 compared to actual credit obtained in 1971
Owner-operator	247%
Owner-cum-tenant	139%
Tenant	73%
Owner-non-operator	604%
Average (weighted by Rs. value)	188%

4. Relative importance of sources of fertilizer credit

Considerable information is available on the existence and relative importance of sources of rural credit, but not on the relative importance of various sources of fertilizer credit. We do know that in a recent year (1971):

a. Approximately 99% of fertilizer credit from all sources was extended on a short-term basis (repayment period 13 months or less);

b. Almost 92% of all short-term was from non-institutional sources. (For details see Table 5).

c. We estimate that less than 20% of all of the available fertilizer credit was supplied by institutional sources, based on the following conclusions:

Estimated ADBP credit (CY 1971) Rs. 11 million

Estimated Cooperative Societies & Taccavi credit	Rs. 9 million
	Rs. 20 million

$$\frac{\text{Estimated Max. possible institutional fertilizer credit}}{\text{Total fertilizer credit (CY 1971)}} = \frac{\text{Rs. 20 million}}{\text{Rs.102.8 million}} = 20\%$$

Table 5 - Relative importance of sources of short-term credit

Institutional Sources		8.31%
Cooperative Societies	1.04%	
Cooperative Societies	.27	
ADBP	1.05	
Commercial Banks	5.09	
Taccavi Loans	.40	
Other	.41	
Non-institutional Sources		91.69%
Friends and Relatives	68.92%	
Professional Moneylenders	3.02	
Landowners	5.86	
Commission Agents and Merchants	9.60	
Mill Owners	.38	
Other	3.35	

d. The absolute value of ADBP credit for fertilizer appears to be rising up to 1973-74 (see Table 6 below), but the relative importance of all institutional and non-institutional sources remains unknown.

Table 6 - Value of fertilizer credit extended annually - ADBP

Fiscal Year	ADBP	Fertilizer Price Index	Credit Deflated by fertilizer Price Index
1968-69	10,000,000	1.00	10,000,000
1969-70	16,000,000	1.00	16,000,000
1970-71	9,500,000	1.01	9,406,000
1971-72	12,500,000	1.01	12,376,000
1972-73	41,000,000	1.37	29,927,000
1973-74	112,850,000	2.22	50,833,000
1974-75	69,791,000	2.63	26,537,000

The dramatic rise in the institutional supply of credit for fertilizer in 1972-73 and 1973-74 reflects two GOP decisions. In December 1972, the State Bank, at the direction of the Ministry of Finance, instructed the commercial banks to increase credit availabilities for the agricultural sector. The Agricultural Credit Advisory Commission, a subcommittee of the National Credit Consultative Council (NCCC), advises its parent body how much agricultural credit should be made available by source and function (i.e., fertilizer, seed, tractors, tubewells, etc.). The NCCC uses these recommendations in making sectoral allocations, all within a "safe ceiling" limit on overall credit expansion. (The safe ceiling is incorporated in the State Bank's IMF standby letter of intent). During 1972-73 and 1973-74, the NCCC significantly increased the agricultural sector's share of the total private sector allocation. This action was made more effective by also increasing commercial banks' participation in the financing of the agricultural sector, and by increasing the amount of credit to be made available for short-term credit purposes, especially fertilizer.

The second GOP decision was part of the response to the disastrous flood of August and September 1973. To keep food production from being drastically reduced, the GOP mounted a special agricultural credit campaign for rabi 1973-74. Between November 1, 1973 and February 28, 1974, institutional sources advanced a total of Rs 24.24 crore, of which Rs 14.60 crore (about 60%) was for fertilizer. It is important to note the reasons for this "healthy" increase in institutionally furnished fertilizer credit. Firstly, the 1973-74 rabi credit campaign was in response to a catastrophe. Secondly, the NCCC's decision to expand fertilizer credit was a policy decision which reflected

the priorities of the GOP and not a change in demand for fertilizer credit. Thus, the NCCC could well reallocate this expanded credit to other sectors of the economy as new priorities emerge.

Although institutional credit has expanded vigorously, we do not know what has happened to the overall fertilizer credit situation. (1) Farmers may have substituted more attractive institutional credit for credit formerly obtained from non-institutional sources. (2) Credit is fungible and farmers may be buying the same quantity of fertilizer with more institutional credit and diverting cash resources formerly used for fertilizer to other purchases formerly made on less attractive credit terms.

While it is true that the total amount of institutional fertilizer credit has expanded rapidly, the rising cost of fertilizer in the last 3-1/2 years (from Rs 28.50 to Rs 75 per bag of urea) has absorbed much of the fertilizer purchasing power of the incremental credit from the ADBP and other sources. (See Table 6.) Thus, in real terms, fertilizer credit supplied by ADBP and other institutional sources expanded less than 6-fold, rather than over 11-fold.

With respect to the dramatic rise in institutional credit (primarily the ADBP and commercial banks), it appears safe to conclude:

a. The ADBP and commercial banks have significantly expanded the absolute amount of fertilizer credit advance during the last few years.

b. The percentage of total fertilizer sales financed by the ADBP increased from roughly 2-1/2% in calendar 1971 to 11.3% in FY 74.

c. The relative importance of credit in financing fertilizer purchases evidently is increasing. In calendar year 1971, only 13.5% of fertilizer purchases were made on credit from all sources, whereas by FY 1974 the ADBP alone was financing 11.3% of all fertilizer sales. It is not likely that the increase in ADBP financing was all just substitution for other credit sources. It is reasonable to conclude that the relative importance of credit fertilizer sales is increasing.

5. Terms and availability of institutional sources of fertilizer credit.

Farmers of different sizes and tenurial classes rely on different sources for fertilizer, and these sources offer different terms and credit. Table 7 summarizes the terms and the most important features of ADBP credit. Commercial banks' agricultural credit practices are similar to the ADBP's. These two sources account for most of the institutional fertilizer credit in Pakistan today. Salient features of terms of credit from these banks include:

a. Fertilizer credit is available in the form of surety (co-signer), security, and hypothecation (product) loans.

b. The majority of ADBP's fertilizer credit is extended on short-term (18 months maximum), surety loans. Loans of Rs 50 to 2,500 may be taken on surety. Because of these limits, it seems safe to conclude that this is the most important source of institutional fertilizer credit for small and medium farmers. At Rs 75/bag, the average size surety loan in 1973/74 would buy about 14 bags of fertilizer, enough for between 14 and 17 acres at average utilization rates in Pakistan today (Table 8).

c. Surety loans are secured by a third party guarantor's land, either through the mechanism of the guarantor's passbook or on a surety bond. These loans provide landless tenants with their only access to bank credit. Anyone is eligible to borrow on surety, but the Rs 2,500 ceiling on the size of loans and the requirement of a third party guarantor makes such loans unattractive to large farmers.

d. Security loans taken by land owning farmers are subject only to the constraint that the value of the loan cannot exceed the value of the fixed assets against which the loan is secured. Security loans are either issued against the borrower's passbook or as an "old fashioned" mortgage loan.[1/]

1/ The value of land in the passbook formerly was determed at a flat rate of Rs 25 per Produce Index Unit (PIU). It has now been raised to Rs 40 per PIU.

Table 7 - ADBP Lending Terms and Policy

Type of Loan	Annual Rate of Interest	Limits on Size of Loan	Security Arrangement	Given to Finance the Purchase of:	Repayment Period.	Do commercial Bank give Similar Loan.	Relationship to Special Programs.
Surety	10% on loans upto Rs 5000 11% on loans over Rs 5000 Commercial banks are charging 12-13% interest	Min. Rs 50 Max Rs 2500	Must be guaranteed by third party, either: a) Against passbook b) Surety bond Both backed by land.	1. Majority of Fertilizer Credit Also 2. Seeds 3. Pesticides 4. Seasonal Inputs.	All short term, Max. 18 months, length determined by type of crop for which input was financed.	Yes	Spot loans presently made only on surety. 88% of surety loans made during spot lending campaign 1973-74.
Security	Same	No limits other than those set by security requirements	a) Against passbook b) Mortgage Loans Both against fixed assets: 1. Land 2. Buildings 3. Tractors, upto 50% of Tractor value.	1. Tractors 2. Tubewells 3. Land Improvement 4. Draught Animals. 5. Other farm equipment 6. Other development equipment 7. Fertilizer.	Medium Terms: 18 months to 5 years Long Term: 5 to 20 years.	Yes	1. None given during spot lending. 2. 57% all of secured loans secured by passbooks 1973-74.
Hypothecation	Same	Determined by security requirements	Loan secured by: a) Sugarcane mill, or b) Cotton ginning factory.	Given only to finance inputs for cotton and sugarcane.	Short term: Repayable when crop is harvested but not exceeding 18 months.	Yes	No hypothecation loans given under spot lending or passport programs.

Note: 1) Security or surety loans defaulted on are to be collected by the Department of Revenue. In case of commercial banks, the State Bank will compensate them for 50% of the losses they incur on agricultural loans, i.e., if both the banks and the Board of Revenue fail to collect the loan from the farmer. 2) Despite most secured loans being secured by land, the ADBP has never foreclosed on a mortgage and claimed the defaulter's land.

Table 8 - Lending by ADBP
By type of loan, 1973-74

Type of Loan	Total No. of Loans	Total Million Rs. Value	Average Rs./Loan
Surety loans	119,851	127.45	1,063.40
Security loans	32,296	251.71	7,793.84
Hypothecated loans	423	36.41	86,075.65
Spot lending		112.60 1/	
Passbook		144.02 4/	
Fertilizer loans all kinds	92,567	112.85 2/	1,219.07 3/

Because of poor recovery, the ADBP discontinued its spot-lending program in FY 1974-75 (Table 9). The bank branches are, however, continuing to extend short-term production loans valuing between Rs 50 and Rs 2,500 against personal sureties. The loans so sanctioned are disbursed in kind, for which a coupon, instead of a supply order, is issued. The loanee can take the coupon to the nearest supply depot and collect the fertilizer. The supply order has been replaced by the coupon because forgeries were becoming common. The use of supply orders was causing unnecessary delays.

Recent floods in Sind Province have again necessitated the re-activation of the spot-lending program. The ADBP has agreed to open

1/ All spot lending is on surety; thus 88% of surety loans were in the spot loan campaign.

2/ ADBP financed 11.3% of all fertilizer sales in FY 74.
(Rs 112,850,000)
(Rs 997,406,900)

3/ At Rs 75/bag, the average fertilizer loan would finance enough fertilizer to cover between 16 and 22 acres. (The national Pakistan average fertilizer utilization rate is between 3/4 and 1 bag per acre.)

4/ All passbook loans are security loans; thus 57% of secured loans were made against passbooks.

up 52 centers in the interior of the Sind Province, and a total sum of Rs 34 million will be disbursed through the spot-loaning method. A major component of this loan would be for fertilizer. However, there is a conspicuous change even in the spot-loaning program. All the spot loans will now be secured loans and a charge will be created in the passbooks of the loanee farmers. Only in Kachi 1/ areas will the guarantee of responsible government officials be accepted as sanctioning the surety loans.

Table 9 - Lending by ADBP by Type of Loan, Recent Years

	1973/74	1974/75	% Change
	---Million of Rupees ---		
Surety	127.45	73.91	-42.0%
Security	251.71	297.13	+18.1%
Hypothecated	36.41	10.01	-72.5%
Total	415.57	381.10	-8.3%
Spot 1/	112.60	0.00	-
Passbook	144.02	231.35	+60.6%
Fertilizer Loans, All Kinds	112.85	69.79	-38.2%

1/ All spot lending is on a surety basis.
Source: 1973-74 Annual Report of ADBP.
Unpublished working paper of ADBP for 1974-75 data.

1/ Riverine beds -- known as "sailaba" lands in Punjab Province and as "Kachi" lands in Sind Province.

In FY 1974, a passbook system was introduced which was intended to simplify lending procedures by minimizing the amount of documentation required. The passbook, which is issued by the Tehsildar, certifies the title and value of the passbook holder's lands. Once issued, the passbook may be presented to either the ADBP or commercial banks, who will issue a secured loan against the certified value of the farmer's land; the transaction is much the same as making a deposit with a savings passbook. Although the passbook was intended to guarantee all landed farmers access to bank credit while reducing the cost and red tape of obtaining a secured loan, the impact of the program in its first year was limited to a relatively small number of farmers. By the end of May 1974 only about 20,000 passbooks had been issued in the Punjab. Despite the small number of passbook holders, the ADBP issued Rs 144 million (35 percent of its total credit in FY 74) of credit on the passbooks. Evidently, the average size of passbook loans was relatively large. Also, there are widespread reports of irregular fees being charged to farmers who apply for passbooks and loans on passbooks. Taken together, the evidence suggests that the passbook system has not been reaching small farmers and it has not effectively reduced the real cost of secured loans for large farmers. Some efforts have been made to improve the situation, and it is reported that by June 1975, there were more than 100,000 passbooks with farmers in Punjab Province. The Agricultural Enquiry Committee recommended that issuance of passbooks be accelerated such that all farmers will have passbooks in 4 years' time.

6. Terms and availability of non-institutional sources of credit

Little can be said about the terms of non-institutional credit. In the only known study done on the subject (1971) the average rates of interest charged by non-institutional sources were found to be 20% from family and friends, 32% from money lenders and 46% from merchants. From these figures we cannot proceed to conclude what rate of interest farmers pay for non-institutional fertilizer credit because:

a. These are average rates of interest for all types of farmers; interest rates may vary for farmers of different size holdings and tenurial classes.

b. These findings may not be representative of areas outside the sample area.

c. Inflationary pressures are much stronger today than they were at the time of the study; non-institutional lenders may well have raised their interest rates to maintain their real earnings at 1971 levels.

d. The terms of non-institutional interest may vary by function of loan as well as source. Thus, the terms of fertilizer credit may be significantly different from the averages for all types of loans.

Even less is known about the other terms of non-institutional credit -- security requirements and payment periods. Conventional wisdom holds that commission agents, who may or may not be licensed fertilizer dealers, are a major non-institutional source of fertilizer credit. Typically, they sell fertilizer on credit and secure the loan against the crop for which the fertilizer was procured. The farmer is required to repay the loan at harvest time, usually in the form of a specific quantity of produce. Thus, interest on this kind of loan becomes hidden in the lump sum value of the produce surrendered. Often the crop is valued at the time the loan is made at a rate well below what will prevail in the market at harvest time, thus inflating the real rate of interest considerably. Commission agents who are able to store these loans repaid in kind, and sell the produce when commodity prices rise, earn an attractive bonus on their interest.

7. Differential class access to fertilizer credit

Sections "5" and "6" focused on the terms and availability of institutional and non-institutional credit. The available evidence suggests that the bulk of institutional fertilizer credit (ADBP) does not reach the very small farmers: (a) The average size fertilizer loan will finance enough fertilizer to cover 16 to 22 acres at current rates of application. (b) Surety loans which provide small farmers with virtually their only access to institutional fertilizer credit average Rs 1,063.40, enough to cover 14 to 17 acres. (c) Most secured loans issued against either "old fashioned" land mortgages or the newly introduced passbooks channel credit to the larger farmers.

From the evidence we have examined, we conclude that it is with respect to the terms of credit and not the availability that very small farmers face serious disadvantages vis-a-vis larger farmers. The Small Farmers Credit program launched by the NBP is therefore a welcome development. Its coverage is presently limited to 24,000 small sized farmers. However, the terms of these loans and the operational ingredients of this program have genuinely been tailored to affect the small farmers.

8. Class access to fertilizer credit

Throughout this paper we have discussed the relative credit position of various classes of farmers in terms of dependence on credit and access to credit. By "dependence" we have meant the degree to which farmers' cash resources are not sufficient to finance their fertilizer purchases. The index of dependence we have used is the percent of a farmer's total fertilizer purchases which he buys on credit. Recall that larger farmers were found to be the least dependent on credit, buying only 10% of their total fertilizer supplies on credit. With the terms "access to credit" we have meant the total amount of fertilizer credit a farmer is capable of obtaining relative to his needs. The index of "access to credit" that we have used is the amount of rupees obtained per irrigated cultivated acre. A farmer's overall fertilizer requirements are certainly dictated by the amount of acreage he cultivates and as virtually all fertilizer is applied to irrigated acreage we have narrowed the definition to exclude cultivatable barani lands. Applying this index, we found that smaller farmers (less than 5 acres) enjoy the greatest access to credit. The concepts behind these terms are quite distinct; the former is a measure of financial self sufficiency and the latter is a measure of credit availability.

Table 10 - Summarizes the amount of fertilizer credit available to farmers by size of farm and tenurial class.

Table 10 - Access to fertilizer credit by size of farm and tenurial class

(Mean value of total money lent
(Rs./acre* and Rs./household)

Size of Holding (Acres)	All Farms		Owners Operators		Owner-cum-Tenant		Tenant	
	Rs/acre	Rs/HH	Rs/acre	Rs/HH	Rs/acre	Rs/HH	Rs/acre	Rs/HH
0-5	4.17	7.40	2.81	3.48	5.42	14.03	5.86	14.39
5-15	2.74	19.06	2.39	13.32	2.45	17.34	3.13	25.65
15-25	2.98	37.94	3.62	38.67	2.46	31.17	2.90	43.02
25-50	2.76	49.38	3.04	50.52	3.00	53.34	2.08	42.42
50-	3.06	139.16	3.05	143.40	3.19	145.40	2.75	101.22
Ave.	2.93	26.38	2.93	22.83	2.81	30.57	3.03	28.55

*Calculated as an average across the entire class, and thus includes all farmers who did not use any fertilizer credit:

$$\frac{\text{Total Fertilizer Credit}_{\text{ith class of farmers}}}{\text{Total Cultivated Irrigated Acreage}_{\text{ith class of farmers}}}$$

Note: Only irrigated acreage is used in this calculation; the assumption is justified by evidence that suggests that negligible amounts of fertilizer were used in the barani areas at the time of the survey.

Examining the table, one is struck by the very low values of the means, both per acre and per household for all categories of farmers. At Rs 28.50/bag, which prevailed at the time of the survey, the average size loan taken by farmers with less than 15 acres would not have been enough to finance even one bag of fertilizer! Clearly, many and perhaps most farmers in each category were not using any fertilizer credit, although the data does not permit us to exclude non-credit users and determine the average size fertilizer loan per acre and per household among actual borrowers for each class. Consequently, the average values of rupees per acre borrowed tend to cluster over a fairly narrow range, obscuring differences among the various classes of farmers that might otherwise emerge. A much different pattern might emerge if the averages were calculated only for those farmers using some credit.

The pattern that does emerge from the data is rather remarkable. Tenants and owner-cum-tenants easily enjoy the greatest access to fertilizer credit. We hypothesize that landlords are the main source of this credit, and they are more liberal in extending credit to their tenants than are other credit sources to their respective clients. This is logical because under the terms of traditional "batai" tenancy (share-cropping), landlords share a fixed portion of the crop (usually 50 percent). By extending credit to his tenants, the landlord is able to earn more "rent" from his land by capturing a fixed portion of the incremental income arising from the use of fertilizer.

Among owner-operators, the pattern of access to credit approximates more closely our apriori expectations. Small owner-operators (0 to 15 acres) average less credit per acre than do medium and large farmers. Institutional credit almost certainly is readily available to only medium or larger farmers, while landlord credit is simply excluded by definition. Consequently, small owner-operators do not fare as well.

There is one other interesting feature of the data. Tenants' access to fertilizer credit is an inverse function of size of farm -- except for large tenants (over 50 acres). The traditional landlord - tenant relationship provides a ready explanation for this paradox. It is highly unlikely that tenants who hold 50 or more acres of irrigated land are really "batai" tenants. They almost certainly are large commercial farmers who have taken the land on lease. This hypothesis is corroborated by supportive evidence from the dependence index; large tenants are only half as dependent on credit to finance their

fertilizer purchases as are the other size tenants and their dependency is of the same magnitude as farmers in the other tenurial categories.

9. Conclusions

The observations that we have been able to make have been fairly limited. Our most important data source is a field investigation concluded in 1972. This serves as a benchmark of the fertilizer credit situation then, rather than as a description of things as they are today. This should not be discouraging; with the wealth of benchmark data now at our disposal, follow-on surveys will permit a much needed analysis of the fertilizer credit market as it performs today. Data with commercial banks and the ADBP can serve as important sources of information about institutional credit. Given both the importance of the issues and the availability of the information, the topic of fertilizer credit is certainly deserving of further research. The study which AID and the National Fertilizer Corporation plans to carry out on fertilizer distribution should provide valuable evidence on the role of credit in determining fertilizer use.

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Project Title & Number: Pakistan Agricultural Inputs Loan 391 - 4041

Life of Project:
From FY 1976 to FY 1978
Total U. S. Funding $100 million
Date Prepared: October 15, 1975

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Program or Sector Goal: The broader objective to which this project contributes: Increased agricultural production and increased farm incomes	**Measures of Goal Achievement:** Production of major crops reaches the following levels by 1979-80 : Wheat- 11-12 million tons Rice 3.9 million tons Sugarcane 3.4 million tons Maize 1.0 million tons Cotton (lint) 6.0 million bales	Indices of agricultural production available from Pakistan central and provincial governments.	**Assumptions for achieving goal targets:** 1. Number of low-income farmers and land available to them are significant proportions of total farmers and total cultivatable land. 2. Increased and better balanced use of provided inputs by low-income farmers will increase their productivity. 3. Increased productivity will lead to increased total production, i.e., farmers will not decrease area cultivated as productivity increases. Cont.
Project Purpose: Increased and better balanced use of fertilizer and other agricultural production inputs by all farmers, especially low-income farmers.	**Conditions that will indicate purpose has been achieved:** End of project status. 1. Time series data of fertilizer, improved seed, and other agricultural inputs sales. Crop Years: 1975/76 1976/77 Fertilizer sales (100,000 product tons): 13.6 16.7 Cont.	1. Combined reports from producers, wholesale distributors, and GOP agencies. 2. a) Sample surveys b) Reports from extension services, IRD cadres, and institutional lenders.	**Assumptions for achieving purpose:** 1. Farmers will realize the potential increases in productivity per acre and know how to use the inputs. 2. Farmers will be motivated to use available inputs by a reasonable ratio between prices of their product and price of inputs. 3. Agricultural inputs provided after leaving the distribution system will be applied. Cont.
Outputs: 1. Network of retail sales points for agricultural production inputs through-out country. Cont.	**Magnitude of Outputs:** 1. At least one fertilizer sales point to serve every sizeable geographic grouping of farmers: a) One sales point for every 2500 farmers by 1977/78. b) One sales point for every 2000 farmers by 1979/80 Cont.	1. a) Government registration data b) Information from wholesale distributors SASO, PADSC, DCL, ESSO, etc. c) Sample surveys of distribution system d) Information from extension agents and IRD cadres.	**Assumptions for achieving outputs:** 1. Given adequate wholesale supplies and adequate sales margins, retailers will come forward in sufficient numbers. Cont.
Inputs: USAID 1. Funding of phosphate imports Cont.	**Implementation Target (Type and Quantity)** 1. Up to 270,000 nutrient tons over 2-year period, within limits of overall loan funding. Cont.		**Assumptions for providing inputs:** 1. (1, 3) Certain purchases made by GOP before loan signature will be eligible for reimbursement under the loan when certain GOP inputs, specified in the loan agreement, are verified as having taken place. Cont.

AID 1020-28 (1-72)

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY 1976 to FY 1978
Total U. S. Funding $100 million
Date Prepared: Oct. 15, 1975

Project Title & Number: Pakistan Agricultural Inputs Loan 391-4041

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Program or Sector Goal: The broader objective to which this project contributes:	**Measures of Goal Achievement:**		**Assumptions for achieving goal targets:** 4. Satisfactory weather, including adequate rainfall. 5. Irrigation supplies are adequate.
Project Purpose:	**Conditions that will indicate purpose has been achieved: End of project status.** Crop Years: 1975/76, 1976/77 Urea sales (100,000 nutrient tons): 4.45, 5.4 Phosphate sales (100,000 nutrient tons): 1.0, 1.3 Cont.		**Assumptions for achieving purpose:** 4. Institutional or other credit facilities will exist in adequate number to provide credit needed by farmers for agricultural inputs. 5. Credit provided farmers for inputs will be used for that purpose.
Outputs: 2. Supplies of phosphatic and nitrogen fertilizer and HYV seeds available at each respective retail-sales point adequate to meet all effective demand at that sales point (i.e., no excess demand at reasonable prices).	**Magnitude of Outputs:** 2. Quantities adequate to keep retail price prices within 10% of national average at each sales point.	2. a) Sampling from published price data. b) Information from wholesale distributors. c) Sample survey of distribution system. d) Information from extension agents and IRD cadres. e) Sample surveys of farmers to determine if supplies available, and at what prices.	**Assumptions for achieving outputs:** 2. Transportation, warehousing, and handling system in the country is adequate to handle large quantities of inputs and move them to retail points.
Inputs: USAID 2. Funding of nitrogen imports 3. Funding of HYV seed imports Cont.	**Implementation Target (Type and Quantity)** 2. Up to 500,000 nutrient tons over 2-year period, subject to Pakistan's needs and to overall limits within available loan funding. 3. 17,000 tons of wheat seed. Amounts and kinds of other seeds to be jointly determined, within limits of overall loan funding. Cont.		**Assumptions for providing inputs:** 2. (1, 2, 3) U.S.G. regulations in force at time of procurement will permit timely purchases of inputs when needed. 3. (3) H.Y.V. seeds will be eligible for financing, or waivers of U.S.G. regulations, if required, will be available.

AID 1020-28 (1-72)

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY 1976 to FY 1978
Total U. S. Funding $100 million
Date Prepared: Oct. 15, 1975

Project Title & Number: Pakistan Agricultural Inputs Loan 391-4041

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Program or Sector Goal: The broader objective to which this project contributes:	**Measures of Goal Achievement:**		**Assumptions for achieving goal targets:**
Project Purpose:	**Conditions that will indicate purpose has been achieved: End of project status.** 2. Increased use by low-income farmers. (Targets to be set after availability of baseline data. Baseline surveys now being designed to be implemented in winter of 1975-76.)		**Assumptions for achieving purpose:**
Outputs: 3. Adequate farmgate prices for farm products.	**Magnitude of Outputs:** 3. Not more than x pounds of output are needed to buy one pound of N at prevailing market prices. Wheat : 2.8 Rice (Basmati) : 1.5 (IRRI) : 3.0 Maize : 3.0	3. a) Examination of market price data b) Government purchase records c) Sample survey of farmers d) Information from extension agents, IRD cadres, and institutional lenders.	**Assumptions for achieving outputs:** 3. a) Sustained demand for farm outputs exists. b) Collusion between dealers to fix prices (either for agricultural inputs or agricultural outputs) is prevented. c) At least one commission agent and/or governmental purchase agent is accessible to each village.
Inputs: USAID 4. Funding of other agricultural imports. 5. Technical staff for 6 below	**Implementation Target (Type and Quantity)** 4. Not more than $500,000 of small scale equipment, specifications and amounts to be jointly determined within the limits of loan. 5. Up to 12 man months		**Assumptions for providing inputs:** 4.(4) Desired quantities of other inputs will be available from eligible sources. 5.(5) U.S. technical staff inputs will be provided from grant or administrative funds, including project preparation funds.
Cont.	Cont.		Cont.

AID 1020-28 (1-72)

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY 1976 to FY 1978
Total U. S. Funding 3.90 million
Date Prepared: Oct. 16, 1975

Project Title & Number: Pakistan Agricultural Inputs Loan 391-4041

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Inputs:	**Implementation Target (Type and Quantity)**		**Assumptions for providing inputs**
Joint USAID-GOP 6. Field Sample Survey of barriers to fertilizer use by farmers a) Farmer Survey b) Credit Survey c) Dealer Survey	6. Surveys now being designed. These will also serve as baseline surveys for "Purpose" OVIs and output verifications. Implementation of initial surveys in winter of 1975-76.		6. (6) GOP will provide cooperation for studies through mechanism of cooperating agency (WFC), Planning Commission, or other institution) utilizing USG [illegible] funding through PL 480 section [illegible] mechanism.
GOP 7. Changes in administrative practice governing marketing of fertilizers: a) Phosphates being made available to all wholesale marketing elements. b) Margins legally allowed dealers were increased to provide incentive for aggressive marketing of fertilizer. c) Automatic licensing of retailers advertised. d) Territorial restrictions on fertilizer marketing removed.	7. a) Phosphates available at all points. b) Margins adjusted in October 1975. c) Freedom for private dealers wishing to sell fertilizer at retail to obtain licenses (subject only to public order regulations). Widespread announcement of new practices was made in September 1975. d) Announcements made in October 1975.		7. (7) GOP will find [illegible] ways to implement its [illegible] as declared in May 15, 1975 [illegible] application for this loan, April [illegible] de Memoire about food aid, and [illegible] announcements of [illegible] October 1975.
8. Support prices for agricultural production at a level that maintains a ratio between prices of agricultural inputs and farm outputs sufficient to prompt farmers to use package of improved technology and inputs. a) Determination of adequate support price b) Timely and wide announcement of support prices. c) Avoidance of practices that convert support price into a ceiling price for farmers.	a) Regular, semi-annual reviews of market prices for outputs and price of fertilizer, and their ratios as specified in output targets, are held. b) Announcements will be made at least a month before modal planting time and publicized repeatedly on radio and through press statements at ministrial levels (central and provincial) to press. c) No forced procurement, and restrictions on interdistrict movements at harvest season or otherwise will be held to a minimum.		8. GOP can set adequate and politically acceptable farm support prices, given inflation, urban population pressures, and the implied urban-rural income transfers. a) Incentive price structures for outputs in Pakistan remain economically efficient given the costs of inputs. b) Timely decisions can be reached and existing media are adequate to make them widely known in rural areas. c) Adequate stocks at fertilizer shops and other GOP distribution centers can be purchased at a politically and [illegible] acceptable price or can be [illegible] at an acceptable real cost.

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AID 1020-28 (1-72)

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY 1976 to FY 1978
Total U. S. Funding $100 million
Date Prepared: Oct. 15, 1975

Project Title & Number: Pakistan Agricultural Inputs Loan 391 - 4041

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
9. A system to implement support prices so that these become real prices offered to farmers for their output	9. Commission agent, Food Dept., or other agent of government available or accessible to each village for output purchase at support price.	9. Dealer surveys, and records of dealers (wholesale and retail).	9. a) Commission agents and others will not discount support price. b) Government purchasing points are or can be sufficiently ubiquitous. c) Budget or credit (money creation) ceilings will permit government purchases for price support when and if needed.
10. Aggressive and increased marketing, particularly wholesale marketing of inputs, by government agencies. Opening of additional distribution and wholesale points by PADSC, NFC, etc., as needed.	10. Every village should have either a private or public wholesaler within 30 miles.		a) Administrative capacity and funding for expansion of both private and public input marketing exist.
11. Import funding of additional inputs as needed to maintain in-country pipeline and meet effective demand.	11. (Projections from body of P.P.)		11. a) GOP can find the required foreign exchange, either from its own earnings or from other donors. b) World fertilizer situation will not restrict shipments in timing or quantity.
12. Allocations of credit for agricultural purposes.			12. Monetary policies of GOP permit liquidity needed for farm credit.

Annex E

Study of Fertilizer Distribution and Credit

AID and the National Fertilizer Corporation (NFC) are now laying the ground work for a study of fertilizer distribution and credit. The objective of this study is to develop policy recommendations for further strengthening of rural fertilizer distribution and credit systems in Pakistan. Field survey research in Punjab, Sind, and NWFP provinces will include interviews with farmers, fertilizer dealers, and suppliers of agricultural credit. This survey work is planned for 1975-76. A schedule for farmer interviews has, in fact, already undergone substantial pretesting. A market "structure-conduct-performance" approach will be used to assess the efficacy of the separate but related systems of fertilizer distribution and credit in rural Pakistan. Sample components of this analytic framework or model as applied to fertilizer distribution and credit are shown below:

Sample Components of Market Structure - Conduct - Performance Model for Study of Fertilizer Distribution

Structure	Conduct	Performance
No. of distribution points	Pricing policies of distributors	Level of fertilizer use by:
Location of distribution points	Delivery policies of distributors	Size of farm
Storage facilities of distributors	Promotion of fertilizer use (and advice on fertilizer use)	Barani, irrigated
Type and number of credit sources	Terms of credit	Tenurial class
Size of distributors (volume of sales)	Requirements for making credit available	Geographic location (in relation to mandi towns, etc) of farmers
	Hours of operation of distributors	
	Types of fertilizer available from different types of distributors	
	Other services provided by fertilizer distributors	
	Quantity and timing of supplies offered (available) for sale	

Annex F, Part 1

Loan Application Letter

From:
AFTAB AHMAD KHAN,
SECRETARY

GOVERNMENT OF PAKISTAN
MINISTRY OF FINANCE, PLANNING
AND DEVELOPMENT
(ECONOMIC AFFAIRS DIVISION)

Islamabad the Ist April, 1975

SUBJECT: LOAN APPLICATION - AGRICULTURAL INPUTS LOAN

Dear Mr. Wheeler,

The Government of Pakistan has determined to embark upon a programme that will increase its agricultural output substantially over the next few years. For the next crop year, it has set a target for the wheat crop to be harvested in the spring of 1976 of 9 million tons of foodgrain. It is the Government's intention to increase this target by another million tons the following year. Similar increased production targets are being set for other foodgrains and agricultural products.

2. To make the fulfilment of these targets possible, the Government will or has already taken a number of steps. Crop and production input price relationships are being reviewed regularly and adjustments made as necessary to insure that use of production increasing inputs such as fertilizer, improved seed, and pesticides is increased at sufficient rates to meet crop targets. Measures are being taken to expand the amount and efficiency in use of irrigation water. Already the Government has taken steps to assure that excess fertilizer stocks that existed at the end of 1974 at private sector are being cleared at an adequate rate. The Government will make phosphate and potash fertilizer available along with nitrogenous fertilizer at all points. To enable new organizations, constructing new fertilizer plants to develop marketing experience in advance of their plants coming into production, the Government intends to make imported fertilizer available to them on at least the same basis as to other distributors. The Government is reviewing its procedures for allocating fertilizer among the provinces so as to avoid simultaneous shortages or surpluses among the different geographic regions of the country. It is expanding the credit availability for purchase of fertilizer and other production increasing inputs.

3. In support of these policies the Government requests that USAID provide assistance for a period of two years in meeting the foreign exchange costs of agricultural inputs required, in the form of a loan in the amount of $100 million. We request the loan terms provide the loan be repaid over a period of forty years, including 10 years grace period on repayment of principal with interest at the rate of 2% during the grace period, and 3% thereafter.

4. In accord with past policies the Federal Government will arrange for procurement and shipping of fertilizer under this loan. Procurement of pesticides under the loan will be restricted to:-

a) procurement for private distributors for their private distribution in Pakistan;

b) procurement by the Centre of pesticides required for aerial spraying of rice and sugarcane. An evaluation of the efficacy of the aerial spraying programmes for these crops is planned for this season;

c) public procurement of pesticides for experimental purposes in association with defined research programmes.

Seed financed under the loan will be procured on the basis of equal access of both public and private importers. Procurement of other agricultural inputs eligible for procurement with the proceeds of the loan will be on the basis of such Government of Pakistan policies and regulations as are applicable thereto.

5. To insure that the inputs financed by the loan will make the fullest possible contribution to the Government's production targets, the Government plans to continue the policies and programmes outlined above during the period of utilization of commodities financed by this loan.

The Government as a policy engage upon a periodical review of (1) the adequacy of public and private sector distribution of fertilizer and other essential agricultural inputs, and particularly the adequacy of access of farmers in all parts of the country; (2) the adequacy of farmer's access to credit for fertilizer; (3) the relationships between the prices for the farmer's crops and those of agricultural inputs, particularly fertilizer, and incentives to use fertilizer and other inputs in sufficient quantities to meet the national production targets; (4) the adequacy of incidentals allowed to private sector distributors of agricultural inputs for transportation, storage and marketing of fertilizer; (5) other plans to assure that excess stocks of domestically produced fertilizers are not accumulated in future years. The Government will

share the results of these reviews with USAID.

6. We will hold periodical meetings with USAID officials to review domestic production, stocks, scheduled arrivals and demand in order to develop schedule of procurement for the inputs financed under loan.

Yours sincerely,

Sd/-

(AFTAB AHMAD KHAN)

Mr. Joseph C. Wheeler
Director, USAID Mission in Pakistan
Islamabad.

Annex F, Part 2

M. I. K. Khalil
Joint Secretary

1(15)US-V/75
GOVERNMENT OF PAKISTAN
MINISTRY OF FINANCE, PLANNING
AND DEVELOPMENT
(ECONOMIC AFFAIRS DIVISION)

Islamabad, the 14th May, 1975.

SUBJECT: LOAN APPLICATION - AGRICULTURAL INPUTS LOAN

Dear Dr. Wolffer,

The Government of Pakistan sent to you on April 1, 1975 a request for USAID assistance for a period of two years in meeting the foreign exchange costs of agricultural inputs. The Government requested a loan in the amount of $100 million, to be repaid over a period of 40 years, including 10 years grace period on repayment of principal, with interest at the rate of 2% during the grace period and 3% thereafter.

In order that some of the required agricultural inputs may be purchased in time for use on crops to be planted in 1975 and that procurement of other inputs may be carried out in a timely fashion, we request that items eligible under the loan and purchased subsequent to the date of this letter be reimbursable. The Government understands, of course, that procurement of those items would have to conform to USAID regulations pertaining thereto, if they are to be eligible for reimbursement. We will wish to confer with USAID officials before scheduling such imports.

Yours sincerely,

Sd/-
(M. I. K. Khalil)

Dr. William A. Wolffer
Acting Director
USAID Mission to Pakistan,
Islamabad.

Annex G.

D R A F T

A. I. D. Loan No.

CAPITAL ASSISTANCE LOAN AUTHORIZATION

Provided from: Development Loan Funds

Pakistan: Agricultural Inputs Project

Pursuant to the authority vested in me as Administrator of the Agency for International Development ("A. I. D.") by the Foreign Assistance Act of 1961, as amended, ("the Act") and delegations of authority issued thereunder, I hereby authorize a Loan to the Islamic Republic of Pakistan ("Borrower") in an amount of Forty Million United States Dollars ($ 40, 000, 000) pursuant to Part I, Chapter I, Section 103 - Food and Nutrition and Part 1, Chapter II, Title I (Development Loan Fund) of the Act, to assist in financing the foreign exchange costs of agricultural inputs such as fertilizer, seeds, and small-scale farm equipment.

This Loan shall be subject to the following conditions:

1. Interest Rate and Terms of Repayment

The Loan shall be repaid by the Borrower within Forty (40) years after the date of the first disbursement under the Loan, including a grace period of not to exceed ten (10) years from such date. Interest on the outstanding balance of the disbursements under the loan and on any due and unpaid interest shall be at the rate of two percent (2%) per annum during the grace period and at the rate of three percent (3%) per annum thereafter.

2. Currency of Repayment

Repayment of funds due under the Loan and payment of interest thereon shall be in United States Dollars.

3. Other Terms and Conditions

a. Unless AID otherwise approves in writing, and except for fertilizer procurement which shall be limited to the United States, procurement of goods and services financed under the Loan shall be from Code 941 countries.

b. Unless AID otherwise approves in writing, the Loan Agreement will include appropriate covenants requiring the borrower to undertake the following: The borrower shall carry out appropriate policies and programs--in such areas as distribution and marketing of fertilizer and other essential inputs, agricultural credit, crop-to-inputs price relationships, availability and management of irrigation water, and guidance (i.e., extension) services--designed to assure achievement of the purpose of this project, which is the increased availability and better balanced use of agricultural inputs throughout Pakistan by all farmers, particularly low-income farmers.

c. Unless AID otherwise approves in writing, the Loan Agreement shall provide that, prior to first disbursement, documentation shall be submitted to AID covering the following requirements: (1) To inform AID as to how the policies and programs referred to in the covenants noted above are being carried out, and (2) to assure AID that borrower is undertaking appropriate reviews with respect to certain policy areas on a periodic basis and is sharing results of such reviews with AID in a timely manner.

d. Such other terms and conditions as AID may deem advisable.

_____
Administrator

_____
Date

Annex H.

PAKISTAN - AGRICULTURAL INPUTS PROJECT CERTIFICATION PURSUANT TO SECTION 611(e) OF THE FOREIGN ASSISTANCE ACT OF 1961, AS AMENDED

I, Joseph C. Wheeler, principal officer of the Agency for International Development in Pakistan, having taken into account among other things the maintenance and utilization of projects in Pakistan previously financed or assisted by the United States and the commitment of the Government of Pakistan to carry out effectively the Agricultural Inputs Project, do hereby certify that in my judgment Pakistan has the financial and human resources capability to implement, maintain and utilize effectively the subject project.

Joseph C. Wheeler

Joseph C. Wheeler, Director
USAID/Pakistan

OCT 9 - 1975

Date

Annex I

PROPOSED FY 76 & 77 AGRICULTURAL
INPUT LOAN FOR PAKISTAN:
$ 100 Million

CHECKLIST OF STATUTORY CRITERIA

The following abbreviations are used:

FAA - Foreign Assistance Act of 1961, as amended

FAA, 1973 - Foreign Assistance Act of 1973.

App. - Foreign Assistance and Related Programs Appropriation Act, 1974.

MMA - Merchant Marine Act of 1936, as amended.

BASIC AUTHORITY

1. FAA § 103; § 104; § 105; § 106; § 107. Is loan being made

a. for agriculture, rural development or nutrition;	Yes, for agriculture.
b. for population planning or health;	No.
c. for education, public administration, or human resources development;	No
d. to solve economic and social development problems in fields such as transportation, power, industry, urban development, and export development;	No.
e. in support of the general economy of the recipient country or for development programs conducted by private or international organizations.	Yes.

COUNTRY PERFORMANCE

Progress Towards Country Goals

2. FAA §201 (b) (5), (7) & (8); § 208

A. Describe extent to which country is:

(1) Making appropriate efforts to increase food production and improve means for food storage and distribution.	Pakistan has long recognized the need to increase food production. On April 30, 1974, Pakistan entered into a major loan for an Agricultural Research Project. Additionally, Pakistan is, at present, increasing its domestic fertilizer production as evidenced by the Multan expansion project, the Fauji plant,and two or three others. Domestic nutrient ton production is forecast to increase from 304, 000 to 1, 400, 000 by 1980. Use of fertilizer increased by 16% in FY 1973. Pakistan is also making significant efforts to increase its production of seeds, pesticides and farm equipment.
(2) Creating a favorable climate for foreign and domestic private enterprise and investment.	The nationalization of domestically owned banks and a number of local industries, in fulfillment of certain election pledges of the current government has created uncertainties, and retarded new investment in large scale industry. However, investment in small and medium industry continues, and the government continues to provide new positive inducements and concessions to private investment. While there may be some further nationalization, Pakistan's leaders have recognized and publicly affirmed that a substantial degree of domestic and foreign private investment is essential to Pakistan's economic development.

(3) Increasing the public's role in the developmental process.	The present government describes itself as a "People's Government". During the summer of 1973 a new constitution establishing a parliamentary form of government was put into effect in Pakistan. At the lower level, the fledgling Peoples Works and Integrated Rural Development Programs contemplate more active participation in development at the village level.
(4) (a) Allocating available budgetary resources to development.	Development expenditures are budgeted to increase from Rs.10,773 million in FY 75 to Rs.13,697 million in FY 76, a significant 27% increase. Respective GNP in these years are 100,158 and a forecasted 125,197 million rupees each, so that government expenditures for development purposes will be over 11% of GNP.
(b) Diverting such resources for unnecessary military expenditure (See also Item No.20) and intervention in affairs of other free and independent nations.) (See also Item No.11).	The budget for defense expenditure in FY 76 has increased by only 12%, less than half the increase in development expenditures, and about half the increase in the wholesale price index. In FY 75 Rs.6,294 million was spent on defense and the budget now calls for Rs.7,027 million in FY 76. The recognition of Bangladesh, and the Delhi agreement between Pakistan, Bangladesh and India, will have a moderating influence on defense spending. At this point in time, it is difficult to judge the effect of (a) India's detonation of a nuclear device, (b) continued strains in Afghan-Pakistan relations, or (c) the recent lifting of the U.S. embargo on sales of lethal defense items to Pakistan, on Pakistan's future defense budgets.

(5) Making economic, social, and political reforms such as tax collection improvements and changes in land tenure arrangements, and making progress toward respect for the rule of law, freedom of expression and of the press, and recognizing the importance of individual freedom, initiative, and private enterprise.	The Bhutto Government has promulgated a quick succession of land, labor, banking, education, health and law reforms which, if implemented may enable it to achieve development objectives. The rule of law is publicly endorsed. Notwithstanding occasional actions against certain elements freedoms are greater than under the previous regime.
(6) Willing to contribute funds to the project or program.	Agricultural imports are financed by cash, grant, barter, and various types of credit arrangements. The GOP, therefore, does contribute to the agricultural import program.
(7) Otherwise responding to the vital economic, political, and social concerns of its people, and demonstrating a clear determination to take effective self-help measures.	As the responses above suggest, the recipient government has committed itself to meeting the vital economic political and social concerns of its people. Since coming to power, the self-help measures the government has taken include the rupee devaluation of May 1972 and import liberalization program, increases in tax revenues and other stabilization measures, steps to increase subsidies on farm inputs, and substantial flood relief recovery and rehabilitation efforts. It has lifted or relaxed internal restrictions on the transport and sale of wheat, and increased the government procurement price substantially, measures that will give significant increased incentive to agricultural production.
B. Are above factors taken into account in the furnishing of the subject assistance?	Yes.

Treatment of U.S. Citizens and Firms.

3. FAA § 620 (c). If assistance is to government, is the government liable as debtor or unconditional guarantor on any debt to a U.S. citizen for goods or services furnished or ordered where (a) such citizen has exhausted available legal remedies and (b) debt is not denied or contested by such government?	No.
4. FAA § 620 (e) (1). If assistance is to a government, has it (including government agencies or sub-divisions) taken any action which has the effect of nationalizing, expropriating, or otherwise seizing ownership or control of property of U.S. citizens or entities beneficially owned by them without taking steps to discharge its obligations toward such citizens or entities?	The March 1972 Life Insurance Nationalization affected an American Company, which negotiated a satisfactory settlement, and received compensation in 1973. In addition, the nationalization of schools potentially affects one American church organization which owns substantial property in Pakistan. At the present time neither party is pressing the issue.
5. FAA § 620 (o); Fishermen's Protective Act. § 5. If country has seized, or imposed any penalty or sanction against any U.S. fishing vessel on account of its fishing activities in international water,	Not Applicable.
a. has any deduction required by Fishermen's Protective Act been made?	Not Applicable.
b. has complete denial of assistance been considered by A.I.D. Administrator?	Not Applicable.

Relations with U.S. Government and Other Nations

6.	FAA § 620 (a). Does recipient country furnish assistance to Cuba or fail to take appropriate steps to prevent ships or aircraft under its flag from carrying cargoes to or from Cuba?	Pakistan does not furnish assistance to Cuba. However, during October 1973, 4,000 tons of barley were shipped to Cuba by a private exporter. There had never been any previous barley exports from Pakistan Pakistan to Cuba. The GOP was unaware of the transaction because there was no procedure for licensing or controlling shipments of barley. Controls have now been instituted and the GOP has assured the U.S. that no further exports will be made.
7.	FAA § 620 (b). If assistance is to a government, has the Secretary of State determined that it is not controlled by the International Communist Movement?	The Secretary of State has determined that Pakistan is not controlled by the International Communist Movement.
8.	FAA § 620 (d). If assistance is for any productive enterprise which will compete in the United States with United State enterprise, is there an agreement by the recipient country to prevent export to the United States of more than 20% of the enterprise's annual production during the life of the loan.	Not Applicable.
9.	FAA § 620 (f). Is recipient country a Communist country?	No.
10.	FAA § 620 (i). Is recipient country in any way involved in (a) subversion of, or military aggression against, the United States or any country receiving U.S. assistance, or (b) the planning of such subversion or aggression?	No.
11.	FAA § 620 (j). Has the country permitted, or failed to take adequate measures to prevent, the damage or destruction, by mob action, of U.S. property?	No.

12.	FAA § 620 (l). If the country has failed to institute the investment guaranty program for the specific risks of expropriation, in convertibility or confiscation, has the A.I.D. administration within the past year considered denying assistance to such government for this reason?	Pakistan has instituted the investment guaranty program for the specific risks of expropriation, inconvertibility and war risk.
13.	FAA § 620 (n). Does recipient country furnish goods to North Viet-Nam or permit ships or aircraft under its flag to carry cargoes to or from North Viet-Nam?	No
14.	FAA § 620 (q). Is the government of the recipient country in default on interest or principal of any A.I.D. loan to the country?	No. Pakistan's default under a debt moratorium in May 1971 was relieved by a Debt Rescheduling Agreement dated September 20, 1972. A longer term rescheduling has been negotiated by members of the Aid to Pakistan consortium in Paris, and bilateral discussions of its implementation are now going on.
15.	FAA § 620 (t). Has the country severed diplomatic relations with the United States. If so, have they been resumed and have new bilateral assistance agreements been negotiated and entered into since such resumption?	Diplomatic relations with the United States have never been severed.
16.	FAA § 620 (u). What is the payment status of the country's U.N. obligations? If the country is in arrears, were such arrearages taken into account by the A.I.D. Administrator in determining the current A.I.D. Operational Year Budget?	Pakistan is not delinquent in any obligations to the United Nations.
17.	FAA § 481. Has the government of recipient country failed to take adequate steps to prevent narcotics drugs and other controlled substances (as defined	No.

by the Comprehensive Drug Abuse Prevention and Control Act of 1970) produced or processed, in whole or in part, in such country, or transported through such country, from being sold illegally within the jurisdiction of such country to U.S. Government personnel or their dependents, or from entering the U.S. unlawfully?

18. FAA 659. If (a) military base is located in recipient country, and was constructed or is being maintained or operated with funds furnished by U.S., and (b) U.S. personnel carry out military operations from such base, has the President determined that the government of recipient country has authorized regular access to U.S. correspondents to such base?

Not Applicable.

Military Expenditures

19. FAA § 620 (s). What percentage of country budget is for military expenditures? How much of foreign exchange resources spent on military equipment? How much spent for the purchase of sophisticated weapons systems? (Consideration of these points is to be coordinated with the Bureau for Program and Policy Coordination, Regional Coordinators and Military Assistance Staff (PPC/RC).)

During fiscal year 1975, Pakistan's known defense expenditures were about Rs. 6,294 million, or about 21% of the GOP federal budget. This fiscal year Rs. 7,027 million, about the same percentage is for defense. Both years expenditure was or will be about 6% of GNP. We have no precise estimate of foreign exchange resources utilized to acquire military hardware and other equipment, but believe these are over $100 million annually, largely to replace obsolescent equipment supplied by the U.S. as military aid during the 1950's and early 1960's. Pakistan has purchased sophisticated weapon systems from abroad including Mirage jet fighters from France, armored personnel carriers from the U.S. and tanks and jet fighters from China.

Conditions of The Loan

General Soundness

20. FAA § 201 (d). Information and conclusion on reasonableness and legality (under laws of country and the United States) of lending and relending terms of the loan.

The funds will be lent in compliance with the laws of the United States and of Pakistan. The lending terms, 40 years including a 10 years grace period, 2% interest during the grace period and 3% thereafter, are considered reasonable. The rate of interest is less than Pakistan's discount rate.

21. FAA § 201 (b) (2); § 201 (e). Information and conclusion on activity's economic and technical soundness. If loan is not made pursuant to a multilateral plan, and the amount of the loan exceeds $100,000, has country submitted to A.I.D. an application for such funds together with assurances to indicate that funds will be used in an economically and technically sound manner?

A thorough analysis of agricultural input requirement is included in the PP. The program as proposed is considered economically sound.

A joint USAID/GOP committee has developed the loan paper. A loan application has been received from the GOP.

The loan agreement will include requirements for judicious use of the funds.

22. FAA § 201 (b) (2). Information and conclusion on capacity of the country to repay the loan, including reasonableness of repayment prospects.

(See Section X of the loan paper) Pakistan's foreign exchange income is continuing to grow and its overall repayment capacity is also growing. This loan will directly contribute to this capacity by increasing the country's productive capacity. The repayment prospects for this loan are reasonable.

23. FAA § 201 (b) (1). Information and conclusion on availability of financing from other free-world sources, including private sources within the United States.

In addition to importing agricultural inputs from U.S. sources using A.I.D. funds, Pakistan has also been importing fertilizer using its own foreign exchange and barter or other financial arrangements to the extent such arrangements could be effected. Lately, OPEC has been a source of substantial financial assistance to Pakistan in agriculture related as well as other areas. The proposed U.S. loan will provide a significant amount in narrowing GOP's resource

24. FAA § 611 (a) (1). Prior to signing of loan will there be (a) engineering, financial, and other plans necessary to carry out the assistance and (b) a reasonably firm estimate of the cost to the United States of the assistnace?

(a) Financial and other plans necessary to carry out the assistance are completed.

(b) The cost of the assistance to the United States is limited to the amount of the loan.

25. FAA § 611 (a) (2). If further legislative action is required within recipient country, what is the basis for reasonable expectation that such action will be completed in time to permit orderly accomplishment of purpose of loan?

No legislative action is required.

26 FAA § 611 (e). If the loan is for Capital Assistance, and all U.S. assistance to project now exceeds $1 million, has Mission Director certified the country's capability effectively to maintain and utilize the project?

Yes. See Annex of Project Paper.

Loan's Relationship to Achievement of Country and Regional Goals

27. FAA § 207; § 113
Extent to which assistance reflects appropriate emphasis on: (a) encouraging development of democratic, economic, political, social institutions; (b) self-help in meeting the country's food needs; (c) improving availability of trained manpower in the country; (d) program designed to meet the country's health needs; (e) other important areas of economic, political, and social development, including industry, free labor unions, cooperatives, and Voluntary Agencies;

(b) The GOP is making continuous efforts to raise food production with maximum self-help measures. However, external assistance to allow importation of agricultural input is presently imperative to sustain agricultural production until the domestic production capability is improved.
(Note: (a), (c), (d), (e) and (f) not applicable.)

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transportation and communications; planning and public administration; urban development, and modernization of existing laws; or (f) integrating women into the recipient country's national economy.

28.	FAA § 209. Is project susceptible of execution as part of regional project? If so why is project not so executed?	No.
29.	FAA § 201-(b) (4). Information and conclusion on activity's relationship to, and consistency with, other development activities, and its contribution to realizable long-range objectives.	The import of agricultural inputs is a comparatively short term yet significant activity supportive of the Government's long-range objective of increasing the agricultural growth rate to attain self-sufficiency at the earliest possible time. (Refer to Chapter II of the Project Paper.)
30.	FAA § 201 (b) (9). Information and conclusion on whether or not the activity to be financed will contribute to the achievement of self-sustaining growth.	Please see Item 29 above.
31.	FAA § 209. Information and conclusion whether assistance will encourage regional development programs.	Not Applicable.
32.	FAA § 111. Discuss the extent to which the loan will strengthen the participation of urban and rural poor in their country's development, and will assist in the development of cooperatives which will enable and encourage greater numbers of poor people to help themselves toword a better life.	The use of fertilizer and other agricultural inputs to be financed under this loans will result in an increase of agricultural productivity, which will have a direct impact on the qualitative improvement of the lives of people, and their chances for participation in development.

33.	FAA § 201 (f). If this is a project loan, describe how such project will promote the country's economic development taking into account the country's human and material resources requirements and relationship between ultimate objectives of the project and overall economic development.	Increased agricultural production is essential to Pakistan's economic development. In order to increase production and grain-yield per acre, increased quantities and timely availabilities of agricultural inputs such as fertilizer are required.
34.	FAA § 281 (a). Describe extent to which the loan will contribute to the objective of assuring maximum participation in the task of economic development on the part of the people of the country, through the encouragement of democratic, private and local governmental institutions.	The loan will contribute to an agricultural development program which reaches all segments of the population.
35.	FAA § 281 (b). Describe extent to which program recognizes the particular needs, desires, and capacities of the people of the country; utilizes the country's intellectual resources to encourage institutional development; and supports civic education and training in skills required for effective participation in governmental and political processes essential to self-government.	The loan recognizes the needs of the rural population and the desire for increased food production and incomes for producers, and their capacity to effectively utilize these inputs to achieve production and income goals. There is no direct effect on the use of the country's intellectual resources or on civic education and training in skills needed for increased civic participation.
36.	FAA § 281 (b) (3). In what ways does the activity give reasonable promise of contributing to the development of economic resources, or to the increase of productive capacities?	The activity has a direct effect on agricultural production which increases proportionately with the inputs of fertilizer, and other needed inputs proposed for financing under the loan.
37.	FAA § 601 (a). Information and conclusions whether loan will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; (c) encourage development	(a) The loan will have little lasting effect on international trade other than to finance needed imports for the period of the program. (b) No effect on private initiative and competition.

and use of cooperatives, credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture and commerce; and (f) strengthen free labor unions.	(c) Have effect on cooperatives, credit unions and savings and loan associations. (d) No effect on monopolistic practices. (e) Will increase agricultural output. (f) No effect on labor unions.
38. FAA § 619. If assistance is for newly independent country, is it furnished through multilateral organizations or plans to the maximum extent appropriate?	Not Applicable.

Loan's Effect on U.S. and A.I.D. Program

39. FAA § 201 (b) (6). Information and conclusion on possible effect of loan on U.S. economy, with special reference to areas of substantial labor surplus, extent to which U.S. commodities and assistance are furnished in a manner consistent with improving the U.S. balance of payment position.	The loan will be administered in line with existing U.S. G. regulations. All fertilizer will be purchased from U.S.; Therefore, the majority of the loan funds will benefit the US economy. No direct effect in areas of labor surplus is expected.
40. FAA § 202 (a). Total amount of money under loan with is going directly to private enterprise, is going to intermediate credit institutions or other borrowers for use by private enterprise, is being used to finance imports from private sources, or is otherwise being used to finance procurements from private sources.	Importation under the loan will be done by public sector. Purchases will be made from private sector suppliers for distribution.
41. FAA § 601 (b). Information and conclusion on how the loan will encourage U.S. private trade and investment abroad and how it will encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).	This loan is not expected to directly foster U.S. investment abroad. However, purchase of the agricultural inputs from the U.S. will provide adequate opportunities for participation by private U.S. enterprise.

42.	FAA § 601 (d). If a capital project, are engineering and professional services of U.S. firms and their affiliates used to the maximum extent consistent with the national interest?	Engineering and Professional services will not be required under this loan.
43.	FAA § 602. Information and conclusion whether U.S. small business will participate equitably in the furnishing of goods and services financed by the loan.	Yes, U.S. small business will have opportunity of equitable participation to supply the agricultural inputs to be financed under this loan.
44.	FAA § 620 (h). Will the loan promote or assist the foreign aid projects or activities of the Communist-Bloc countries?	No.
45.	FAA § 621. If Technical Assistance is financed by the loan, information and conclusion whether such assistance will be furnished to the fullest extent practicable as goods and professional and other services from private enterprise on a contract basis. If the facilities of other Federal Agencies will be utilized, information and conclusion on whether they are particularly suitable, are not competitive with private enterprise, and can be made available without undue interference with domestic programs.	Not Applicable.

Loan's Compliance with Specific Requirements

46.	FAA § 110 (a); § 208 (e). In what manner has or will the recipient country provide assurances that it will provide at least 25% of the cost of the program, project, or activity with respect to which the Loan is to be made?	The loan agreement shall provide that the Government of Pakistan will provide at least 25% of the cost of the entire activity.
47.	FAA § 660. Will loan be used to finance police training or related program in recipient country?	No.

48.	FAA § 114. Will loan be used to pay for performance of abortions or to motivate or coerce persons to practice abortions?	No.
49.	FAA § 201 (b). Is the country among the 20 countries in which development loan funds may be used to make loans in this fiscal year?	Yes.
50.	FAA § 201 (d). Is interest rate of loan at least 2% per annum during grace period and at least 3% per annum thereafter?	Yes.
51.	FAA § 201 (f). If this is a project loan, what provisions have been made for appropriate participation by the recipient country's private enterprise?	Pakistan's private enterprise retailers will be eligible to purchase and distribute the fertilizer.
52.	FAA § 604 (a). Will all commodity procurement financed under the loan be from the United States except as otherwise determined by the President?	Procurement source for fertilizer which constitutes the main item of import will be U.S. Code 941 sources will be eligible for other commodities.
53.	FAA § 604 (b). What provision is made to prevent financing commodity procurement in bulk at prices higher than adjusted U.S. market price?	All bids will undergo review by AID/W before an award is made for ascertaining comparable prices. Imp. Letters will specify the procedures.
54.	FAA § 604 (d). If the cooperating country discriminates against U.S. marine insurance companies, will loan agreement require that marine insurance be placed in the United States on commodities financed by the loan?	An appropriate provision will be included in the loan agreement.
55.	FAA § 604 (e). If offshore procurement of agricultural commodity or product is to be financed, is there provision against such procurement when the domestic price of such commodity is less than parity?	All prices for agricultural inputs will be reviewed by the AID Commodity Management Division prior to bid award.

56.	FAA § 604 (f). If loan finances a commodity import program, will arrangements be made for supplier certification to A.I.D. and A.I.D. approval of commodity as eligible and suitable?	Yes.
57.	FAA § 608 (a). Information on measures to be taken to utilize U.S. Government excess personal property in lieu of the procurement of new items.	Not Applicable.
58.	FAA § 611 (b); App § 101. If loan finances water or water-related land resource construction project or program, is there a benefit-cost computation made, insofar as practicable, in accordance with the procedures set forth in the Memorandum of the President dated May 15, 1962?	Not Applicable.
59.	FAA § 611 (c). If contracts for construction are to be financed what provision will be made that they be let on a competitive basis to maximum extent practicable?	Not Applicable.
60.	FAA § 612 (b); § 636 (h). Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the United States are utilized to meet the cost of contractual and other services.	The Government of Pakistan will pay for all local currency expenses of the project. All of the loan proceeds will be expended on foreign exchange procurement.
61.	Section 30 and 31 of PL 93-189 (FAA of 1973). Will any part of the loan be used to finance directly or indirectly military or paramilitary operations by the U.S. or by foreign forces in or over Laos, Combodia, North Vietnam, South Vietnam, or Thailand?	No.

62.	Section 37 of PL 93-189 (FAA of 1973); App. § 111. Will any part of this loan be used to aid or assist generally or in the reconstruction of North Vietnam?	No.
63.	FAA § 612 (d). Does the United States own excess foreign currency and, if so, what arrangements have been made for its release?	The U.S. owns excess Pakistani rupees. This loan will meet only foreign exchange costs. U.S. owned rupees are programmed for use in several other projects but not this one.
64.	FAA § 620 (g). What provision is there against use of subject assistance to compensate owners for expropriated or nationalized property?	Loan proceeds disbursement procedures as will be included in the loan agreement will prevent use of the funds for purposes other than intended.
65.	FAA § 620 (k). If loan is for construction of productive enterprise, will aggregate value of assistance to be furnished by the United States exceed $100 million?	Not Applicable.
66.	FAA § 636 (i). Will any loan funds be used to finance purchase, long-term lease, or exchange of motor vehicle manufactured outside the United States or any guaranty of such transaction?	No.
67.	App. § 103. Will any loan funds be used to pay pe[illegible] etc., for military personnel?	No.
68.	App. § 105. If loan is for capital project, is there provision for A.I.D. approval of all contractors and contract terms?	There will be a provision in the loan agreement providing that procurement contract terms and conditions are subject to AID approval.
69.	App. § 107. Will any loan funds be used to pay UN assessments?	No.

70.	App. § 108. Compliance with regulations on employment of U.S. and local personnel. (A.I.D. Regulation No.7)	Not Applicable.
71.	App. § 110. Will any of loan funds be used to carry out provisions of FAA § 209 (d)?	No.
72.	App. § 112. Will any of the funds appropriated or local currencies generated as a result of AID assistance be used for support of police or prison construction and administration in South Vietnam or for support of police training of South Vietnam?	No.
73.	App. § 113. Describe how the Committee on Appropriations of the Senate and House have been or will be notified concerning the activity, program, project, country, or other operation to be financed by the Loan.	The loan proposal has been included in the Congressional Presentation for FY 1976.
74.	App. § 601. Will any loan funds be used for publicity or propaganda purposes within the United States not authorized by Congress?	No.
75.	App. § 604. Will any of the funds appropriated for this project be used to furnish petroleum fuels produced in the continental United States to Southeast Asia for use by non-U.S. nationals?	No.
76.	MMA § 901. b; FAA § 640 C. (a) Compliance with requirement that at least 50 per centum of the gross tonnage of commodities (computed separately for dry bulk carriers, dry cargo liners, and tankers) financed with funds made available under this loan shall be transported on privately owned U.S. flag commercial vessels to the extent that such vessels are available at fair and reasonable rates.	(a) Provisions will be included in the loan agreement for complying with this Section.

(b) will grant be made to loan recipient to pay all or any portion of such differential as may exist between U.S. and foreign-flag vessel rates?	No.

391-419 2129

DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C. 20523

195 p

A.I.D. Loan No. 391-T-166

LOAN AUTHORIZATION

Provided from: Food and Nutrition
(Pakistan: Agricultural Inputs)

Pursuant to the authority vested in the Administrator, Agency for International Development ("A.I.D."), by the Foreign Assistance Act of 1961, as amended, (the "Act") and the delegations of authority issued thereunder, I hereby authorize the establishment of a loan ("The Loan") pursuant to Part I, Chapter 1, Section 103 and Chapter 2, Title I, the Development Loan Fund, of said Act, to the Government of Pakistan ("Borrower") of not to exceed Forty Million United States Dollars ($40,000,000) to assist in financing the foreign exchange costs of agricultural inputs such as fertilizer, seeds, and small-scale farm equipment. The Loan is subject to the following terms and conditions:

1. Interest Rate and Terms of Repayment

The Borrower shall repay the loan to A.I.D. in United States dollars within forty (40) years after the date of first disbursement under the loan, including a grace period of not to exceed ten (10) years. The Borrower shall pay to A.I.D. in United States dollars interest from the date of first disbursement at the rate of (a) two percent (2%) per annum during the grace period, and (b) three percent (3%) per annum thereafter, on the outstanding disbursed balance of the loan and on any due and unpaid interest accrued thereon.

2. Other Terms and Conditions

A. Unless A.I.D. otherwise agrees in writing:

(a) With the exception of the procurement of fertilizer, goods and services financed under the loan shall have their source and origin in countries included in A.I.D. Geographic Code 941. Fertilizer procurement shall be restricted to United States source and origin.

(b) The loan agreement shall provide that, prior to the first disbursement, documentation shall be submitted to A.I.D. covering the following requirements:

(1) To inform A.I.D. as to how the policies and programs referred to in the covenants contained under (c) below are being carried out.

(2) To assure A.I.D. that the Borrower is undertaking appropriate reviews with respect to certain policy areas referred to under (c) below on a periodic basis and is sharing results of such reviews with A.I.D. in a timely manner.

(c) The loan agreement shall include appropriate covenants requiring the Borrower to undertake the following:

(1) The Borrower shall carry out appropriate policies and programs- in such areas as distribution and marketing of fertilizer and other essential inputs, agricultural credit, crop to inputs price relationships, availability and management of irrigation water, and extension services - designed to assure achievement of the purpose of this project, which is the increased availability and better balanced use of agricultural inputs throughout Pakistan by all farmers, particularly low-income farmers.

B. The loan agreement shall include such other terms and conditions as A.I.D. may deem advisable.

Acting Administrator

12/30/75
Date

Clearances:

AA/Asia:Arthur Z. Gardiner, Jr. AZG Date 12/30/75
SER/FM:Thomas R. Blacka Date
PPC/DPRE:Arthur Handly Date 12/30/75
GC:Charles L. Gladson Date
GC/Asia:Herbert E. Morris Date
Asia/SA:George McCloskey Date
Asia/DP:Willian Lefes Date 12/19/75
SER/COM:Robert W. Wiley Date 12/19/75
Asia/CCD:Frank Collins, Jr. Date
Asia/CCD:Richard B. Perry Date 12/19/75

GC/Asia:PBloom:hp:12/18/75