APPENDIX - 1

AIC - A PROFILE

1.0. Introduction: This Case Study of AIC (Agriculture Inputs Corporation) was made as part of the Author's Doctoral Dissertation work to be submitted to the Department of Commerce and Management Sciences, University of Poona, Pune (India).

1.1. Field Work: The case study was made between 15th December, 1987 to 30th January, 1988. In all, 13 different ranks of managers of the AIC were interviewed to gain an insight into the working of that organization at the various levels. The managers interviewed for this study are:

(i) Manager, (Chief) planning and Evaluation Division
(ii) Manager, (Chief) Marketing Division
(iii) Zonal Manager, Biratnagar
(iv) Zonal Manager, Janakpur
(v) Zonal Manager, Pokhara
(vi) Branch Manager, Ithari
(vii) Branch Manager, Surkhet
(viii) Branch Manager, Ilam
(ix) Branch Manager, Gorkha
(x) Branch Manager, Jaleswar
(xi) Branch Manager, Sinduli
(xii) Branch Manager, Jumla
(xiii) Branch Manager, Sindupalchok.
It may be noted that the branches have been so chosen that even remotest area like Jumla has been covered. The border problem has also been covered by selecting Biratnagar zonal office and, Jaleswar Branch Office. Also all relevant records and data available with AIC was studied. This profile of AIC is based on the data so collected.

1.2. Constitution of AIC: AIC is an autonomous, wholly government owned entity, responsible for all importation and marketing of fertilizers in Nepal. It is also responsible for production and marketing of seed, procurement and marketing of pesticides, agricultural tools and equipment.

These functions were being performed earlier by ASC (Agriculture Supply Corporation), established under the corporation Act in February, 1966. ASC was later assigned the marketing of Agricultural Products, and in 1972, was renamed the Agricultural Marketing Corporation (AMC). In 1974, AMC was split into two corporations: The Nepal Food Corporation (NFC), which deals primarily with the marketing of food grains, and AIC which is solely responsible for the supply of Agricultural inputs, in conformity with the need of the agricultural sector in the country.
1.3. In this profile the working of the AIC has been considered in the five functional areas of management namely planning, organization, staffing, coordination, and Direction and Control.

2.0. PLANNING:

Problems in planning have been considered under the following three heads:

(A) Definition of organizational goals and objectives
(B) Policies and Strategies
(C) Resources.

2.1. Organizational Goals and Objectives:

The managers interviewed by the Author Stated that the organizational goals and objectives, according to priority, are:

(1) Giving logistic support to Government agricultural development plans.
(2) Improving productivity of Agriculture at the national level by making available the necessary agricultural inputs, tools and pesticides.
(3) To meet the needs of the farmers.

The managers were very clear in their mind and stated categorically and emphatically that lending
logistic support to Government in its Agricultural Development Programmes was the primary function of AIC and that the object of meeting the needs of the farmers was lowest in their order of priority. This was very forcefully brought to our notice, again and again, in answer to a variety of questions. From this it is very clear that farmer's need for fertilizer does not receive priority attention of the only organization which has sole responsibility for procurement and distribution of fertilizer, in Nepal.

Another fact which needs to be understood is the attitude of the top management of AIC. They believe that as long as the fertilizer is procured and distributed, it will automatically contribute to improving national productivity of agriculture. Consequently, little attention if any is paid to ensure that Hill farmers and small and marginal farmers are enabled to purchase fertilizer and use it efficiently. The micro aspect is not at all attended to. Another factor which re-inforces this attitude is the fact that AIC is not made responsible for retail distribution and as such does not come into direct contact with farmers. The fact that AIC has no responsibility for promotion of fertilizer has also contributed to this attitude.

This is a vicious circle and unless this situation is
changed AIC will not be able to function efficiently and effectively. Hence, there is need to revise the organizational goals and objectives and their priorities.

2.2. Policies And Strategies:

The policies and strategies of AIC in relation to fertilizer would be considered under two heads:

(A) Procurement
(B) Distribution.

(A) Procurement: Since fertilizer is not produced in Nepal, imports represent the only source of supply of fertilizer to the country. The imports fall into two categories viz., (i) Foreign Aid and (ii) Commercial imports. It is worth noting that negotiations regarding foreign aid is not carried out by AIC. The General Manager of AIC keeps the planning and Marketing (S and P division) Divisions informed regarding the supply schedule of foreign donors so that commercial imports may be planned (by planning Department) and fertilizer supplied as aid is received and distributed, by marketing (S and P) division. The G.M. himself receives this information from the Department of Agriculture on a piecemeal basis.
To determine the quantum of commercial imports it is necessary to define first the total national demand and then deduct from it the quantum expected to be received as foreign aid, and add to it the quantum needed to maintain inventory level at a predetermined level (30% of annual sales). This quantity is imported commercially subject to the resource constraint (i.e. availability of free foreign exchange to the Government). Hence, it is necessary to find out how the national demand for fertilizer is estimated by AIC. Our interview of the chiefs of planning and marketing divisions revealed the process to be as follows:

The national demand is composed of three elements each of which is separately estimated and then they are aggregated to derive the total demand. These three elements are:

1. Needs of Government's Agricultural Development Programmes
2. Needs of farmers
3. Need to maintain a buffer stock.

The needs of Government's agricultural development programmes are derived from the annual programmes included in the national annual plan, and their logistic
needs. However, in estimating the fertilizer needs of these agricultural development programmes, no allowance is made for shortfall in meeting farm targets experienced in successive Five Year Plans. Thus the official estimates of project needs are usually overestimated. As regards the annual needs of farmers, this is worked out on the basis of a linear trend in annual consumption based on past data. As regards buffer stocks, it is maintained at 30% of the expected national consumption. If the actual stock is more than this level import is reduced to that extent and if it is less than the desired level imports are increased to that extent. This is how the total quantum of demand and the quantum to be imported commercially are derived. The analysis of data shows that usually the project needs are expected to contribute 7% and farmers needs 10% to the overall growth rate of fertilizer demand, so that expected growth rate would be around 17% per year.

The planning division has the primary responsibility for preparing estimate of demand. This is done at a meeting of the zonal managers of AIC usually held in Kathmandu either in late January or early February to develop agricultural input targets for the next year. The AIC zonal managers bring to the meeting their plans
on needed inputs for each branch/district office and Panchayat. Those attending the meeting include the G.M., division chiefs, zonal managers, representatives of the Department of Agriculture, ADBN, and the cooperative, Registrar in the Ministry of Land Reforms. This ensures that departmental needs are fully taken into account, and that logistic support plans are properly coordinated. It may be noted that farmers have no representative at these meetings and there is no one to champion their cause.

(B) Distribution: The AIC is directly responsible for procurement and stocking. The distribution function is performed by the cooperative sector who distribute 96% of the fertilizer, private dealers distribute 2% and AIC distribute directly in remote Hills areas where neither Sajhas nor private dealers are in operation. None-the-less it is the responsibility of AIC to set targets of sales region wise, zone wise, district wise and panchayat wise. This is done through a meeting of zonal managers at which targets are discussed and finalized. The zonal managers bring with them projections of demand for their respective zones based on information gathered through their sub-ordinate staff supplemented by reports of officers of the Department of Agriculture operating in their region.
2.3. **Resources**:

The resources situation of AIC is discussed in relation to three major areas viz., (i) Finances, (ii) Personnel, (iii) Data processing.

**Finances:** The financial condition of AIC is currently very weak and delicate and it is progressively deteriorating. The main reason for this is that the fertilizer trade which represents more than 90% of the total business of the AIC is a losing business. The current policy of subsiding the price of fertilizer adopted by the Government of Nepal places on the AIC a burden of loss of nearly Rs. 330/- million per year on the fertilizer trade at the level of imports of 1984-85. The AIC cannot sustain a loss of this magnitude. Hence a change in the price subsidisation policy is essential or alternatively the loss has to be underwritten by the Government of Nepal. If not the AIC will not survive for long.

**Personnel:** All divisions of AIC suffer from shortage of properly qualified and experienced technical personnel. They also suffer from the problem of rapid turnover in the staff. Also many senior posts are vacant either because the incumbents have gone abroad for training or are not filled for want of suitable recruits.
Data Processing: Although it is one of the largest public sector enterprises in agriculture in Nepal, AIC does not have any electronic data processing unit to handle its massive operation and records. Use of computer is likely to improve its operational efficiency.

3.0. ORGANIZATION:

Currently AIC is headed by an eight-member Board of Directors, with the Secretary of the Ministry of Agriculture as Chairman. The Chief executive is the General Manager, assisted by a Deputy General Manager, both of whom are members of the Board of Directors.

Board of Directors:

1. Secretary, Ministry of Agriculture, (Chairman of the Board).
2. Director-General, Department of Agricultural Marketing Services.
3. Deputy Director General, Department of Agriculture, (Crop Science).
4. Under-Secretary, Ministry of Finance.
6. Chairman/General Manager, ADB/N.
7. General Manager, AIC.
8. Deputy General Manager, AIC (Secretary of the Board).

AIC has a head-quarters office at Kathmandu. The head-office is organized into seven divisions, viz.,

1. Planning and Evaluation Division
2. Audit and Inspection Division
3. Administrative Division
4. Finance Division
5. Marketing Division (Sales and Procurement Division)
6. Seed Division
7. Engineering Division.
Each division is headed by a divisional chief. The Chiefs of all the Divisions except division 2 report to the Deputy G.M. while chief of division 2 (Audit and Inspection) reports directly to the G.M.

The AIC has in all 86 field offices consisting of 11 zonal offices, 75 branch offices. All branch offices own or rent warehousing facilities (See Figure 1 for AIC management structure).

It may be noted that the 11 zonal managers report directly to the G.M.

An important feature of AIC organization is that neither the farmers nor the public have any representation on the board of AIC which is stacked with bureaucrats. This, if anything, re-emphasises the fact that AIC's primary function is to lend logistic support to agricultural development programmes incorporated into the national plans and that the needs of the farmers have to take the back-seat. This over-emphasis on logistic support to the national plans to the exclusion of the interests of the farmers needs to be corrected.

1. The chart has been supplied by AIC.
FIG.1 - AIC MANAGEMENT STRUCTURE

HIS MAJESTY GOVERNMENT OF NEPAL

Ministry of Agriculture

Board of Directors

Agriculture inputs Corporation

General Manager

Administrative Division
Finance Division
Marketing Division
Engineering Division
Seed Division
Planing Division
Audit and Inspection Division

4A Grade Zonal Office

24 Branch Offices

2B Grade Zonal Office

16 Branch Offices

5C Grade Zonal Office

35 Branch Offices
Two divisions viz., planning and marketing are mainly concerned with fertilizer trade. The planning division is responsible for maintenance of fertilizer statistics and estimation of fertilizer demand and setting targets of sale jointly with the marketing division. It organizes a special meeting of Zonal Managers every year late in January or early February to set targets of fertilizer sale for the next year. It is also responsible for estimating the total annual demand for fertilizers.

The sales and procurement division of AIC, although it performs few marketing functions, is usually referred to as the Marketing Division. This division is responsible for procuring agricultural inputs under foreign aid agreements and for processing fertilizer, tools, and pesticides which are financed with Nepal's own foreign exchange. Its functions include:

(i) Floating Global tenders for importing fertilizer

(ii) Receiving shipments of imported fertilizer and arranging their transport to Nepal from Calcutta

(iii) Preparing delivery schedules by branch warehouse destinations for each import shipment.

(iv) Giving final approval on dealer appointments.
However, it is significant to note what the marketing division does not do rather than what it does. At present the marketing division does not perform the following functions:

1. Preparation of an import supply schedule.
2. Maintenance of statistics of inputs sales and reporting on inputs sales.
3. Promotion of fertilizer and pesticides.
5. Monitoring the number and location of agricultural input dealers.

From the foregoing, it is clear that AIC cannot function efficiently and effectively if the marketing division is not entrusted with the above mentioned functions which it is not performing currently. This division does not have on its staff any technical person, technically trained in terms of product specification and product use (fertilizer products).

The major problem of both planning and marketing divisions is the lack of adequately trained personnel.
In 1984-85 AIC employed 1022 persons including 140 officers (Grade level 6 or higher), and 882 other employees (Assistants, clerks, warehousemen etc.), of Grade Level 5 or lower. In 1980-81 fertilizer sales averaged 25 mt/employee/year and gross sales of all agricultural inputs averaged Rs.1,53,000/- per employee per year.

The employees are provided with life insurance, health care benefits and a pension plan. In addition, they are given a food allowance, and post differential allowance depending upon where they are stationed in Nepal.

Grade levels and pay scales follow Nepal's civil service pay scale. Vacation leave and employee benefits, and holidays are similar to those provided to employees of other government corporations.

In the interviews with divisional chiefs information was sought on the personnel problems. Questions were asked recruitment, training, evaluation of performance, remuneration and motivation. Our findings in this respect are as follows:
Recruitment was done as per government procedure for recruiting staff. There was difficulty in selecting technical personnel as technically qualified persons were not available. Hence the policy is to recruit persons and then send them abroad for training. The managers reported that while there was shortage of highly technical staff, there was overstaffing in non-technical cadres. The performance of personnel was judged with reference to whether they were able to achieve the targets of sale fixed for their respective areas of operation. The personnel received regular monthly remuneration and no special financial incentives were provided.

Motivation: In conformity with the overall goals and priorities of AIC, and in view of the losses associated with fertilizer sales and the monopoly position of AIC, it has no incentive to improve its sales. Consequently, it is futile to expect AIC to motivate its staff to improve fertilizer sales. On the contrary AIC's approach is basically one of selling whatever quantity has been procured through imports. Normally selling fertilizer does not present any problem as the demand is in excess of supply. The problem of selling arises when a fertilizer not in demand is received as foreign aid or when a new fertilizer product is being introduced in the market. At such times pressure tactics are employed
to clear the stocks. For example, since Hill farmers are keen to secure improved varieties of wheat seeds, they will be told that the wheat seeds would be provided if a certain quantity of a particular type of fertilizer is purchased along with it. Also since urea and complex are in demand, the retailer will insist on supplying a package of fertilizers containing some unwanted fertilizer products along with urea and complex.

**Fertilizer Promotion**: Another remarkable feature about AIC personnel is that even amongst the highest echelons of officers there is no awareness that AIC must accept responsibility for fertilizer promotion if it is to function efficiently and effectively.

**Cost Reduction Strategy**: Also serious efforts are not at all being made to launch a cost reduction programme. The managers claim that strategic planning would help achieve cost reduction. But officers at zonal and branch level were totally unaware of the existence of strategic planning, if any, to reduce cost and most of them expressed the view that there was little scope for cost reduction.

**Salesmanship**: Another fact to be noted in that AIC has no direct responsibility for retailing. Further no salesman of frontline sales officers are employed to
propogate and sell fertilizers. The farmers have to go to the shop of the Sajha/ private dealer and buy whatever fertilizer is available on terms dictated by them.

AIC has a team of 86 field offices. However, it appears that they are responsible primarily to ensure logistic support to agricultural development programmes rather than carry out promotion and extension work amongst the farmers.

5.0. Co-ordination And Direction of Fertilizer Distribution:

We have already presented in Chapter III (Para 3.6, Fig. 3.2) a chart of the three tier distribution channel and the commission paid at the various levels. In this the problems of physical distribution and marketing are considered in all its aspects to see how AIC manages its responsibility for distribution of fertilizer. The following aspects were covered in the interviews:

1. Policy regarding distribution channel and commission.
2. Storage.
3. Transportation and Damage in transit.
4. Packaging.
5. Managing Shortage Situation.
6. Preventing Outflow of subsidised fertilizer to India.
1. Policy Regarding Distribution Channel:

The official policy is to encourage cooperatives (Sajhas) to undertake retail distribution of fertilizers. However, from the data presented below it may be seen that in practice the number of private traders is increasing by leaps and bounds.

<table>
<thead>
<tr>
<th>Year</th>
<th>Sajhas</th>
<th>Pvt.dealers</th>
<th>Total No. of retail outlets</th>
</tr>
</thead>
<tbody>
<tr>
<td>1977-78</td>
<td>1400</td>
<td>70</td>
<td>1470</td>
</tr>
<tr>
<td>1979-80</td>
<td>537</td>
<td>66</td>
<td>603</td>
</tr>
<tr>
<td>1980-81</td>
<td>567</td>
<td>89</td>
<td>656</td>
</tr>
<tr>
<td>1985-86</td>
<td>680</td>
<td>800</td>
<td>1480</td>
</tr>
</tbody>
</table>

We have already indicated in Chapter VI (Table 6.13) that mean fertilizer sales per dealer were too low for the fertilizer retailing to be profitable. It was less than Rs. 23,000/- per dealer in 1972-73 and rose to approximately Rs. 57,000/- in 1977-78. Still the fertilizer trade continued to be uneconomic and many Sajha's had to be wound up. A re-organization programme was put into operation and the number of Sajhas was brought down to 537 by 1979-80. Since then because of increase in the sales of fertilizer, there was need to increase the number of Sajhas on a selective basis. Private dealership were awarded for areas where Sajha's
would not be economically viable. At present average fertilizer sales per dealer is 69 mt. valued at Rs. 2,76,000/-.

The procedure for awarding dealership is as follows:

1. A formal application for dealership is submitted by the private dealer.
2. The application must have the recommendation of the Panchayat committee in whose area of jurisdiction the dealer wants to operate.
3. The application along with the letter of recommendation is placed before the Agricultural Development Coordination Committee (District Level), headed by the Chairman of the District Panchayat.
4. On the recommendation of the District Level Committee the marketing division (S & P division) of AIC awards the dealership.

It is well known that political patronage influences the decision on awards of dealership and the fact that in many areas the volume of fertilizer sales is large enough to make the trade profitable to private dealer but non-economic to Sajhas (who have relatively higher overheads) explains the rapid growth in the number of private retail outlets. However, retail trade in remote
Hill areas is too insignificant to attract either private trade or Sajhas and thus will have to be carried on by the AIC itself. It is suggested that special Hill cooperatives should be organized to shoulder the responsibility of marketing agricultural inputs so that Hill agriculture may develop on sound lines.

It may be noted that the private traders are concentrated in areas of heavy fertilizer consumption and they are undercutting the sales of Sajha's by offering cash discount to larger customers. Complaints to this effect have been launched with AIC. Asked to comment on this aspect of cut-throat competition offered by private traders, which is injurious to the long term interests of the Sajhas but at the same time makes fertilizer available to farmers at a price below the official rate, the managers refused to be drawn into the controversy or to comment on it. They continued to insist that official policy is to encourage Sajhas and private traders will be permitted only if the need arises.

Finally, it may be noted that the marketing division of AIC which has the ultimate responsibility for awarding dealerships does not monitor either the number of the location or the performance of the retail dealers. This is rather strange. The
marketing division must establish a special cell to monitor all retail outlets and review periodically their performance and viability.

The Commission: Compared to the commission offered to fertilizer dealers in other Asian and Pacific countries, the level of commission in Nepal is low. This is all the more undesirable in view of the low volume of business per dealer. All foreign experts who have studied the situation have recommended upward revision of commission. An 8% commission is recommended in lieu of the present level of 6% commission. Some have also suggested the elimination of the middle tier (i.e., District cooperative unions) in the three-tier distribution channel as this will strengthen the Sajhas and the functions of the middle tier can be discharged by AIC through its branch offices. The officers interviewed refused to comment on this suggestion when questioned by the Author. We feel that the middle tier can be safely done-away with and that AIC should increase the rate of commission offered to retail dealers. To encourage growth of retail outlet the AIC should carry out a survey and identify ideal locations. Then retail outlets preferably Sajhas may be organized. The state should subsidise these retail outlets till they attain some minimum level of sales to make them self-supporting.
Availability of Fertilizer: A major complaint of the farmers has been the inadequacy and unavailability of fertilizer supply when and where needed. In this context the top officers claimed that uncertainties regarding donor intentions, imports, and delay in communication about shipments are the major factors leading to uncertainties of supply. They claimed that as far as physical distribution within the country there was no serious problem of unavailability. However, the branch managers stated that they had problems in receiving supplies in adequate quantities and when needed. In particular they emphasized that they could not meet the farmer's demand for complex in the winter season to fertilize the wheat crop. This was also corroborated by the farmers. The officers' statement—discussed later—regarding how they manage a situation of scarcity also lends support to the view that farmers do suffer from non-availability and irregularity in supply of fertilizer.

(2) Storage: According to the top officials of AIC at present AIC owns 142 go-downs varying in size from 50 to 5,000 mt. and having an aggregate storage capacity of 69,000 mt. which is more than adequate. We have already indicated in our discussion earlier in Chapter VI that because the warehouses are not suitably
located there is excess capacity in some places and shortage at some others. The shortage of capacity is made up by renting space. Of the 8 branch officers interviewed 6 reported that they had to rent warehouses and that they were paying by way of rental amounts ranging from Rs. 24,000/- to Rs. 72,000/- per year. This requires a review of the locations so that excess capacities may by removed and shortages may be made up.

Another important fact to be noted about storage capacity is the regional imbalance in the provision of storage facilities. This may be seen from the data presented below:

Storage Facilities in Nepal, 1980

(Metric tonnes)

<table>
<thead>
<tr>
<th>Region</th>
<th>Existing storage capacity</th>
<th>Qty. of fertilizer (gross) sold in the region</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Tarai</td>
<td>42,850</td>
<td>24,190</td>
</tr>
<tr>
<td>2. Hills excluding Kathmandu Valley</td>
<td>7,050</td>
<td>9,600</td>
</tr>
<tr>
<td>3. Kathmandu Valley</td>
<td>5,200</td>
<td>16,500</td>
</tr>
<tr>
<td>4. Total (Nepal)</td>
<td>55,100</td>
<td>50,290</td>
</tr>
</tbody>
</table>
In relation to sales, the storage capacities in the Kathmandu Valley and the Hills are inadequate. Also in the case of the Hills the locations of existing warehouses are not quite suitable. All this needs to be corrected after an intensive review of the location policy.

In this context it was noted that cost of godown rent worked out to Rs. 2.46 mt. for the districts which are accessible to transport and Rs. 4.44 mt. for districts which were not accessible. From this it appears that it may be more economical - particularly in the inaccessible districts, to rent storage space rather than build it.

(3) Transportation And Damage in Transit:

The chief of marketing and planning divisions held the view that there is some scope in reducing the primary cost of transport but very little scope for reducing the secondary transport costs. On the contrary branch managers opined that 3 to 5 percent savings was possible in inter-branch transport which could be avoided if supplies are properly scheduled.

A problem which is of some importance is that of damage in transit. It came out from the interview that damaged packages were re-weighted and re-packed
for onward transport and damages recovered from the insurance company. Loss from damage in transit was less than 0.5 % of the quantity transported.

(4) Packaging:

The fertilizers are imported in 50 Kg. bags. The bags are polypropylene woven type weighting 200 gms. with a polythene inner bag of 200 gauge. The size of the bag is 102 x 56 cms with fibre construction of no less than 6 x 6 per sq. cm. However, for Hill transport by mule and porter, the fertilizer has to be packed in 20 Kgs. polythene bags for convenience of transport. For purpose of sale it is again re-packed into 50 Kg. bags at the final destination. At the retail outlets fertilizer is sold both by the bag as well as loose if smaller quantity than a bag is purchased.

(5) Managing a Situation of Scarcity/Shortage:

Managers of AIC at all levels admitted that occasionally a situation of scarcity arises. This usually happens in year of good monsoon when the demand for fertilizer goes up. Also the demand for complex goes up every year in the winter season as wheat acreage is moving up and more and more wheat growers are using fertilizers. In fact
almost all the branch managers admitted that they are unable to meet the demand for complex fertilizer in the winter season when wheat is fertilized. This was also corroborated by the farmers who were interviewed for they complained that they were not able to secure adequate supplies of complex.

The AIC official explained the strategy that they adopt to manage a situation of scarcity in the following manner:

1. If they anticipate scarcity before planning the imports, then they would import high analysis fertilizers so that with the same gross quantity of fertilizer they are able to secure more nutrient.

2. They will deliberately slow down the deliveries so that the available quantity will be distributed over the whole season.

3. Balancing demand and supply through inter-branch transfer of fertilizer from surplus to deficit areas.

4. Draw down on the buffer stock.

5. Distribute the available quantity equally among all the consumers of fertilizers.

In this context, it may be noted that distributing fertilizer equally among all consumers is not an equitable solution. It would be more just
and fair if it were distributed in proportion to their consumption in the preceding year. Such a criterion will also automatically allow the AIC to determine district and zonal quotas as well as panchayat quotas, on a rational basis.

(6) Preventing Out-flow of Subsidised Fertilizers to India:

The AIC has adopted a two pronged strategy to prevent out-flow of subsidised fertilizer to India. The main strategy is to maintain fertilizer price in Nepal higher than the Indian price so that there is no economic incentive to move fertilizer out of Nepal and into India. Recently an administrative measure has also been initiated for the same purpose. This is the introduction of a card system whereby all farmers using fertilizers are given a card and fertilizer sales are recorded in the card and issued against the production of the card. This has greatly minimised the risk of outflow of subsidized fertilizer to India. It also curbs leakages of fertilizer in the distribution channel.
6.0. Control:

Since AIC is a public sector enterprise, the operations of the AIC are controlled through the bureaucratic machinery. That is hierarchical administrative control is exercised as per civil service rules and procedures.
A Case Study of AIC

Questionnaire For Top Management

I. Identification Block :

1. Designation :
2. Name of incumbent :
3. Date of Interview :
4. Name of Investigator :

II. History And Constitution of AIC :

1. Name : Agriculture Inputs Corporation
2. Date of Incorporation :
3. Under What Act ?
4. Evolution of the Corporation :

III. Planning :

(A) Goals and Objectives :

1. Define the goals and objectives of AIC in the order of their priority

2. What is the orientation of AIC ?
   \( \text{Service} \quad \text{Market} \)

3. What is the attitude of top management towards meeting the needs of the farmers ?

4. What are the tasks set for AIC ?
5. Why are retail trade and fertilizer promotion not made part of AIC's responsibility?

6. Are you happy about their exclusion?

7. Can you function efficiently and effectively without any interest or control in fertilizer promotion and no direct contact with farmers?

III. Planning:

(B) Policies and Strategies of AIC:

1. Procurement of Fertilizer:

(i) What is the procurement policy and strategy of AIC?

(ii) Who prepares the import schedule and how?

(iii) How do you assess the national demand to arrive at the import needs of the country?

(iv) How do you estimate:

(a) Needs of Government agricultural Development Programme

(b) Needs of farmers

(c) Inventory needs

(v) What is procedure for finalising imports under international aid programmes?
(vi) Why does uncertainty shroud imports? What do you propose to do to reduce such uncertainty?

(vii) Are the branch and district managers consulted in the process of estimating national demand for fertilizer? What is the mechanism for such consultation?

(viii) Which other agencies are consulted and how?

2. Distribution of Fertilizer:

(ii) Are you responsible for stocking and maintaining buffer stocks? If so, what is the level of buffer stock to be maintained?

(ii) How do you plan distribution of imported fertilizer?

(iii) Do you set targets of sale? If so, who fixes the targets and how are these targets arrived at and fixed?

III. Planning:

(C) Resources of AIC:

1. Is fertilizer trade economically viable? If not, why?

2. Are you in favour of continuation or gradual elimination of fertilizer price subsidy?
(3) What is the amount of annual loss suffered by AIC on A/c of price subsidy of the current level of imports? ______ million Rs./year.

(4) What action do you suggest to reduce losses and secure compensation from Government to meet the losses?

(5) What are your main problems in the area of personnel management?

(6) Do you have EDP facilities? If not, are you planning to install EDP facilities?

(7) What system of data processing do you wish to adopt?

IV. Organisation:

1. What is the organisational structure of AIC? Please furnish a copy of the latest organisational chart of AIC.

2. What is the constitution of the Board of Director? What interests have been given representation on the Board and why?

3. How is the Head office of AIC organized?

4. Describe the functions of the various divisions of AIC. In particular, explain the role of planning and Evaluation Division and the sales and procurement (Marketing) division in marketing fertilizers in Nepal.
5. What are the main problems facing the planning and marketing divisions?

6. Why is retail trade, fertilizer promotion and personal salesmanship not part of AIC work? Does their exclusion from the purview of AIC come in the way of AIC functioning smoothly, efficiently and effectively?

[Yes/ No]. Give reasons.

V. Staffing:

1. Indicate the number of employees grade-wise?

2. What are the terms and conditions of service?
   Give grade-wise.

3. What are the salaries, allowances and perquisites enjoyed by employees in different grades?

4. How is the performances of employees assessed?

5. How do you enforce discipline?

6. How do you motivate your staff?

7. Do you provide any special financial incentive to employees to motivate them or stimulate them into action?

8. Do you feel that AIC should take up fertilizer promotion work?

9. Do you have a tactical plan for cost reduction? If so, how do you motivate staff to take interest in this plan and make serious effort at cost reduction?
10. What is the role of the field officers of AIC?

11. Why are field officers not used to act as front line sales officers and promote fertilizer sales?

VI. Fertilizer Distribution: Co-ordination, Direction and Control

(A) Channels of Distribution:

1. What is AIC's policy regarding fertilizer distribution channel?

2. Describe the channels of distribution and the marketing institutions and their functions.

3. How much commission does AIC offer to its dealers?

4. Do you consider the rate of commission adequate? If not, are you thinking of upward revision of the commission rates?

5. What is AIC's policy regarding Appointment of Private Traders as retail outlets? Is there any change in that policy recently?

6. What is procedure for awarding dealership?

7. What measures are you initiating to strengthen dealer network?
VI. Fertilizer Distribution: Coordination,

Direction and Control:

(b) Storage Facilities:

1. How much storage capacity do you need?
   and at what location?

2. (i) How much storage capacity do you have
   at present?

   Owned \underline{m.tons} \underline{m.tons rented}.

   (ii) What is its distribution:

   (a) region wise and at

   (b) various levels of distribution.

   (iii) What is the storage cost per mt. of
   fertilizer in accessible and inaccessible district of Nepal?

(c) Transportation:

1. Why is transport cost high (50% of
   marketing cost) in Nepal?

2. Is there scope for reducing transport
   costs? How do you plan to reduce
   transport costs?

3. What is the extent of wasteful inter-
   branch transport? and is anything being
   done to reduce such unnecessary transport?

4. How do you handle the problem of goods
   damaged in transit?
VI. Fertilizer Distribution: Coordination.

Direction and Control:

(D) Packging:

1. Are you aware of the views of farmers regarding the size of fertilizer packaging?

2. Would you initiate the necessary changes in packaging to meet the demands of farmers?
   - Yes
   - No
   - Not in my power

(E) Managing a Situation of Scarcity:

1. Are there any contingency plans to handle scarcity or are ad-hoc steps taken to handle the situation as and when it arises?

2. How do you handle scarcity?

(F) Preventing Out-flow of Fertilizer into India:

1. Are you aware that fertilizer is being smuggled into India from Nepal?
   - Yes
   - No

2. How serious is the problem?
   - Very
   - Serious
   - Not so serious

3. What steps have been taken to prevent such smuggling?
4. What is your assessment of the card system introduced for this purpose?

5. Do you think that the price policy is by itself sufficient to take care of this problem?

---

(G) Control:

1. How are you able to control the marketing costs?

2. Is there any tactical planning to control costs?

3. How do you control supplies and stocks?

4. How do you enforce discipline amongst the staff?

5. How do you control and regulate employment?

6. How do you control the finances?

7. How do you control flow of information?

---

VII. Investigators' notes and Remarks:

Date: Signature
A Case Study of AIC

Questionnaire For Middle Management

I. Identification Block :

1. Designation: [Zonal] [District] [Branch] Manager
   (a) Zone: (b) District: (c) Branch:

2. Name of incumbent:

3. Name of investigator:

Date of interview:

II. Awareness of Organizational Goals Policies and Programmes:

1. What are the goals of AIC?

2. What is the orientation of AIC? [Service] [Market] [Do not know]

3. What are the priorities of AIC?
   [Logistic support] [Farmers Needs]
   Any other: Specify.

4. Are you aware that retail trade and fertilizer promotion are NOT part of AIC's Responsibility?

5. Are you happy about their exclusion?

6. Can you function efficiently without control over promotional work and retail trading and without direct communication with farmers? [Yes] [No] Give reasons.
III. Organizational Aspect:

1. Location of office:

2. Distance from the villages:

3. Jurisdiction:
   - No. of Panchayats
   - No. of Branches
   - Sales Deposits
   - No. of Sajhas
   - No. of Pvt. traders

4. What is the strength of your staff? Give breakdown?

5. What storage facilities do you have?
   - Owned
   - Owned

6. What is rent per mt.? Rs. Rental

7. Who sets the sales targets?

8. What is the target for the current year? Mt.
   - Mt.
   - Mt.

9. Did you participate in the annual conference in which demand is estimated and sales targets set?

IV. Fertilizer Distribution:

(A) Channels of Distribution:

1. Is the present 3-tier channel working satisfactorily? or would you like the system to be modified? If so, what modification do you suggest?

2. Some experts have suggested the elimination of the middle tier (DCU's) to improve the efficiency of the distribution system. What are your views on this?
3. What is the procedure for appointing a dealer? Give details.

4. Has the no. of retail outlets in your jurisdiction increased in recent years? Furnish details.

5. Do you think that more and private traders be awarded AIC dealership? Why?

6. As between Sajhas and private traders, who are relatively more efficient and effective?

7. Are the Sajhas in your area operating profitably? If not why?

8. Are the private traders in your area working profitably? If not why do they want to acquire dealership?

9. Is the existing sales network adequate to handle the distribution work or does it need strengthening? And if so, in what respects?

10. Do you have well trained and experienced staff? If not, are there any arrangements for imparting them training?

11. How does the Head Office fix targets for your area?

12. How do you fix targets for the districts, branches and sub-branches under your jurisdiction?

13. How do you monitor and evaluate the work of the managers of districts, branches, sub-branches working under you?
IV. Fertilizer Distribution (Contd.)

(B) Supply And Storage:

1. Normally, how do you arrange supplies?

2. Do you indent or are you allotted a quota which you lift?

3. Are the supplies adequate to meet the demand?

4. Have you ever experienced either shortage or surpluses?

5. How do you deal with a situation of:
   (i) Plenty and
   (ii) Scarcity?

6. What is the volume of inter-branch transfer to correct disequilibrium in supply? Can it be reduced and how?

7. Normally how much stock do you carry? What % of annual sales is this?

8. What is the maximum and minimum stock carried by you last year. In which month is stock level generally highest?

9. What is the storage capacity needed by you? 7 mt.

10. Do you have that much capacity available to you? Yes/No.

11. Does AIC supply the type of fertilizer you need in the quantity that you need and at the time when it is needed?
12. If supplies arrive late or if unwanted fertilizer products are delivered to you how do you arrange to dispose them off?

13. Have you received any complaints against the AIC's policy of forcing the farmers to buy fertilizer products unwanted by them?

(C) Packaging:

1. Are you aware of farmers' demand that fertilizer be supplied to them in bags of 5, 10, and 15 Kgs?

2. Are you in sympathy with this demand?

3. Do you feel that the farmers' demands should be met? If so who should take initiative in this matter?

(D) Distribution of Fertilizer:

1. How do you supply fertilizers to branches under your jurisdiction? Do you allot them a quota or supply fertilizer as per their indent?

2. Are you able to supply in time the type of fertilizer needed and in the quantity needed?

3. How do you manage a situation of:
   (a) Plenty
   (b) Scarcity.
4. Do you feel that the retail outlets in your area of jurisdiction are working profitably?
   (a) Sajhas (b) Private Traders

5. If not is it because:
   (i) The scale of operation is too small or
   (ii) The sale’s commission is too low or
   (iii) Both.

6. Are you in favour of upward revision of sales commission?

7. Do you favour regulation of the number of retail outlets to ensure adequate business to each?

8. Do you feel that retail outlets should be subsidised in the initial years?

9. Do you maintain direct contact? If not don’t you feel that lack of direct contact is a serious handicap in your work?

10. Do you organize any publicity or promotional campaign to promote fertilizer sales?

11. How do you maintain liaison with extension agents of DOA and other so that you may get proper feed back from farmers?

12. Can you increase fertilizer sales? What is the anticipated annual growth rate?

V. Investigator’s Remarks:

Date: 
Signature: 
APPENDIX -2

ATTITUDES OF NEPALESE FARMERS TO FERTILIZER DISTRIBUTION AND CONSUMPTION IN NEPAL - Report of A Field Investigation.

1.0. Introduction:

As part of his doctoral dissertation work to be submitted to the Department of Commerce and Management Sciences, of the University of Poona, (India), the Author had to carry out a field investigation to study the problems of retail trade in fertilizer in Nepal and to focus on the attitude of farmers towards fertilizer consumption and their experience and comments about the existing fertilizer distribution system and the channels.

1.1. Duration of Field Work:

The field work was carried out between December 1987 and February 1988.

1.2. Field Coverage:

All the three ecological regions were covered. However, in view of similarity of conditions the mountainous and the Hill regions were aggregated and treated as a homogeneous Hills region. Thus the
analysis was carried out separately for Tarai and the Hill region. However, the Hill region was subdivided into two parts as (i) Kathmandu Valley, (ii) Other than Kathmandu Valley, as the pattern of fertilizer consumption in these two sections of Hills region were found to be poles apart, the Kathmandu valley being an area of high fertilizer consumption while the rest of the Hill area represent low fertilizer consumption area.

1.3. Selection of Sample of Farmers:

In order to give proper weightage to the quantity of fertilizer consumed, it was decided to select farmers in proportion to the quantity of fertilizer consumed by that ecological region. The data for the year 1979-80 was used for this purpose and that data have been presented in Table 1.

<table>
<thead>
<tr>
<th>Region</th>
<th>Total quantity of fertilizer consumed ('000m. tons.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Hills</td>
<td></td>
</tr>
<tr>
<td>(a) Kathmandu Valley</td>
<td>9.60</td>
</tr>
<tr>
<td>(b) Other than Kathmandu Valley</td>
<td>16.50</td>
</tr>
<tr>
<td>2. Tarai</td>
<td>24.19</td>
</tr>
<tr>
<td>3. Total</td>
<td>50.29</td>
</tr>
</tbody>
</table>
For convenience of selection the Tarai region was given the weightage of 1/2, Kathmandu Valley a weightage of 1/3 and Hill area other than Kathmandu Valley a weightage of 1/6. Hence out of a sample of 150 farmers, 25 were selected from Hill area other than Kathmandu Valley, 50 were selected from Kathmandu Valley and 75 were selected from the Tarai region. To get a good dispersion of the sample an equal number of farmers were selected from each one of the five development regions both in the case of Tarai and Hill area other than Kathmandu Valley. Thus the distribution of farmers by ecological and development regions was as shown in Table 2.

### Table 2

Cross classification of sample farmers by Ecological and development regions of Nepal.

<table>
<thead>
<tr>
<th>Ecological Region</th>
<th>Hill Region</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development Region</td>
<td>Kathmandu Rest valley</td>
<td>of the Hill region</td>
</tr>
<tr>
<td>1. Eastern</td>
<td>-</td>
<td>5</td>
</tr>
<tr>
<td>2. Central</td>
<td>50</td>
<td>5</td>
</tr>
<tr>
<td>3. Western</td>
<td>-</td>
<td>5</td>
</tr>
<tr>
<td>4. Mid-western</td>
<td>-</td>
<td>5</td>
</tr>
<tr>
<td>5. Far-Western</td>
<td>-</td>
<td>5</td>
</tr>
<tr>
<td>All Nepal</td>
<td>50</td>
<td>25</td>
</tr>
</tbody>
</table>
Selection Procedure: In the Kathmandu Valley three successful Sajhas and two successful private traders were first selected. Then a list of all farmers who had purchased fertilizers from each of these five retail outlets was compiled. The farmers in each one of these lists were arranged in the descending order of the size of their fertilizer purchase in the preceding year and were then divided into ten decile groups and from each such decile group the median farmer was selected. In the case of Hill region (Other than Kathmandu Valley), 4 Sajhas and the AIC (where it was engaged in direct distribution) were selected. The farmers serviced by each one of these five retail outlets, were then arranged in the descending order of the size of their fertilizer purchases in the preceding year, divided into five equal groups and a median farmer was selected from each of the 5 groups. In the case of Tarai 3 successful Sajhas and 2 successful private Traders had been selected. The number of farmers serviced by each one of these five retail outlets was prepared and arranged in the descending order of the size of their fertilizer purchase in the preceding year. The farmers were then divided into 15 equal groups and a median farmers was selected from each of these fifteen groups of farmers.
The distribution of the 15 retail outlets, selected for this study, by ecological regions was as shown in Table - 3.

Table - 3
Distribution of Retail Outlets by Ecological Regions

<table>
<thead>
<tr>
<th>Ecological Region</th>
<th>Hills Region</th>
<th>Tarai</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of retail outlets</td>
<td>Kathmandu-Rest of Valley</td>
<td>the Hills Region</td>
<td></td>
</tr>
<tr>
<td>--------------------</td>
<td>----------------</td>
<td>--------</td>
<td></td>
</tr>
<tr>
<td>AIC</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Sajhas</td>
<td>3</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Pvt. Traders</td>
<td>2</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

2.0. Characteristics of Sample Farmers:

The data regarding the size of farms of the sample farmers have been presented in Table - 4. In this context it is necessary to note that though the nomenclature of class of holding as Large, medium, small and marginal are used both in the Hills and in Tarai they do not represent the same size of land holding. This fact is important and has been brought out in Table - 5.
### Table - 4

**Distribution of Sample Farmers by Size of Holding**

<table>
<thead>
<tr>
<th>Region</th>
<th>Large</th>
<th>Medium</th>
<th>Small</th>
<th>Marginal</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hills</td>
<td>50.67</td>
<td>26.67</td>
<td>14.66</td>
<td>8.0</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>(40.16)</td>
<td>(24.90)</td>
<td>(20.60)</td>
<td>(14.34)</td>
<td>(100)</td>
</tr>
<tr>
<td>Tarai</td>
<td>8.00</td>
<td>17.33</td>
<td>40.00</td>
<td>34.67</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>(8.58)</td>
<td>(15.52)</td>
<td>(38.77)</td>
<td>(37.13)</td>
<td>(100)</td>
</tr>
<tr>
<td>Total</td>
<td>29.33</td>
<td>22.00</td>
<td>27.34</td>
<td>21.33</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>(17.70)</td>
<td>(18.23)</td>
<td>(33.52)</td>
<td>(30.55)</td>
<td>(100)</td>
</tr>
</tbody>
</table>

*Figures in the bracket are corresponding national percentages.*

### Table - 5

**Classification of Operational Holding in Nepal**

<table>
<thead>
<tr>
<th>Region</th>
<th>Class of Operational Holding</th>
<th>Upto</th>
<th>Upto</th>
<th>Upto</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Large</td>
<td>1.02</td>
<td>0.51</td>
<td>0.20</td>
</tr>
<tr>
<td></td>
<td>Medium</td>
<td>0.51 - 1.02</td>
<td>0.20 - 0.51</td>
<td>up to 0.20</td>
</tr>
<tr>
<td></td>
<td>Small</td>
<td>0.20 - 0.51</td>
<td>1.02 - 2.71</td>
<td>up to 1.02</td>
</tr>
<tr>
<td></td>
<td>Marginal</td>
<td>1.02 - 2.71</td>
<td>up to 1.02</td>
<td></td>
</tr>
</tbody>
</table>
None-the-less we will pool the data on the basis of nomenclature and also combine large and medium size farms into one class to be designated as large; Further the small and marginal size farms are also aggregated and the combined size class will be designated as small. As a result of such pooling of the data, the distribution of sample farmers by size of holding will appear as shown in Table 6.

**Table - 6**

**Distribution of Sample Farms by Size of Operational Holding**

(Number of percentages)

<table>
<thead>
<tr>
<th>Region</th>
<th>Class of Operational Holding</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Large</td>
<td>Small</td>
<td>Total</td>
</tr>
<tr>
<td><del>1. Hills</del></td>
<td></td>
<td>58</td>
<td>17</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(77.34)</td>
<td>(22.66)</td>
<td>(100)</td>
</tr>
<tr>
<td><del>2. Tarai</del></td>
<td></td>
<td>19</td>
<td>56</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(25.33)</td>
<td>(74.67)</td>
<td>(100)</td>
</tr>
<tr>
<td>3. Total(1+2)</td>
<td></td>
<td>77</td>
<td>73</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(51.33)</td>
<td>(48.67)</td>
<td>(100)</td>
</tr>
<tr>
<td>4. Nepal</td>
<td></td>
<td>(35.93)</td>
<td>(64.07)</td>
<td>(100)</td>
</tr>
</tbody>
</table>

* Figures in brackets are percentages of regional total.
It may be observed that within the sample the proportion of large farmers is much higher than the corresponding proportion for Nepal as a whole. This indicates that among the large farmer group the proportion of those consuming fertilizer is significantly larger.

2.1. Average Size of Family:

In Nepal there is positive correlation between the size of operational holdings and the average size of the family, the larger farms being operated by larger sized families.

In Table 7 we have presented data regarding average of the family among sample farmers along with similar data for the country as a whole.
Table 7

Average Size of Family Among Sample of Farmers

(In number)

<table>
<thead>
<tr>
<th>Region</th>
<th>All families</th>
<th>Large</th>
<th>Medium</th>
<th>Small</th>
<th>Marginal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hills</td>
<td>6.89</td>
<td>9.55</td>
<td>7.33</td>
<td>6.00</td>
<td>4.67</td>
</tr>
<tr>
<td></td>
<td>(6.57)</td>
<td>(8.02)</td>
<td>(6.08)</td>
<td>(5.41)</td>
<td>(5.07)</td>
</tr>
<tr>
<td>Tarai</td>
<td>7.94</td>
<td>13.00</td>
<td>7.67</td>
<td>6.22</td>
<td>4.89</td>
</tr>
<tr>
<td></td>
<td>(7.33)</td>
<td>(15.49)</td>
<td>(8.86)</td>
<td>(6.72)</td>
<td>(5.45)</td>
</tr>
<tr>
<td>Overall</td>
<td>7.42</td>
<td>11.33</td>
<td>7.45</td>
<td>6.11</td>
<td>4.78</td>
</tr>
<tr>
<td></td>
<td>(7.11)</td>
<td>(10.60)</td>
<td>(7.76)</td>
<td>(6.49)</td>
<td>(5.40)</td>
</tr>
</tbody>
</table>

*Figures in the bracket are corresponding percentage for the universe.

From the analysis of data presented in Table 7 it is clear that the average size of the family of the sample of farmers was higher than the national average size. This was also the case both in the Hills and the Tarai. However, if the two regions are considered vis-a-vis each other it is seen that average size of family is consistently large than national average in the Hills and consistently smaller than the national average in the Tarai in every class of operational holding. This implies that the proportion of larger families in the sample
was higher in Hills and lower in the Tarai than the corresponding proportion in the universe from which the sample in drawn.

2.2. Composition of Operational Holdings :

In Table 8 we have presented data on the percentage of Khet (low land) in the operational holdings. Similarly in Table 9, we have presented data on the percentage area of the operational holding which is irrigated.

Table 8
Classification of Operated Area Under Khet
(low land) and Pakho (up land)
(*)

<table>
<thead>
<tr>
<th>Region</th>
<th>All Families</th>
<th>Large</th>
<th>Medium</th>
<th>Small</th>
<th>Marginal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Khet</td>
<td>Khet</td>
<td>Khet</td>
<td>Khet</td>
<td>Khet</td>
</tr>
<tr>
<td>1. Hills</td>
<td>30.44</td>
<td>31.33</td>
<td>32.67</td>
<td>33.33</td>
<td>27.00</td>
</tr>
<tr>
<td></td>
<td>(34.14)</td>
<td>(33.33)</td>
<td>(38.43)</td>
<td>(36.27)</td>
<td>(31.77)</td>
</tr>
<tr>
<td>2. Tarai</td>
<td>87.00</td>
<td>86.67</td>
<td>90.33</td>
<td>87.00</td>
<td>80.33</td>
</tr>
<tr>
<td></td>
<td>(86.71)</td>
<td>(86.18)</td>
<td>(89.61)</td>
<td>(86.64)</td>
<td>(77.40)</td>
</tr>
<tr>
<td>3. Over-all</td>
<td>79.33</td>
<td>70.00</td>
<td>85.33</td>
<td>84.67</td>
<td>78.00</td>
</tr>
<tr>
<td></td>
<td>(78.09)</td>
<td>(69.72)</td>
<td>(63.74)</td>
<td>(84.54)</td>
<td>(75.70)</td>
</tr>
</tbody>
</table>

* Figures in the brackets represent the corresponding percentage in the universe.
### Table 9

**Percentage of Irrigated Land in Various Classes of Operational Holdings**

(Percent)

<table>
<thead>
<tr>
<th>Region</th>
<th>All families</th>
<th>Large irrigated</th>
<th>Medium irrigated</th>
<th>Small irrigated</th>
<th>Marginal irrigated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hills</td>
<td>8.00</td>
<td>8.50</td>
<td>8.00</td>
<td>4.50</td>
<td>7.50</td>
</tr>
<tr>
<td></td>
<td>(7.38)</td>
<td>(7.73)</td>
<td>(7.30)</td>
<td>(3.90)</td>
<td>(7.04)</td>
</tr>
<tr>
<td>Tarai</td>
<td>(15.95)</td>
<td>20.00</td>
<td>18.00</td>
<td>12.50</td>
<td>11.60</td>
</tr>
<tr>
<td></td>
<td>(14.84)</td>
<td>(18.05)</td>
<td>(16.75)</td>
<td>(10.86)</td>
<td>(10.58)</td>
</tr>
<tr>
<td>Overall</td>
<td>14.00</td>
<td>16.25</td>
<td>16.85</td>
<td>12.10</td>
<td>10.75</td>
</tr>
<tr>
<td></td>
<td>(13.62)</td>
<td>(14.99)</td>
<td>(15.66)</td>
<td>(10.57)</td>
<td>(10.45)</td>
</tr>
</tbody>
</table>

*Figures in the brackets represent the corresponding percentage in the universe.*

For purpose of comparison corresponding percentage of irrigated area and Khet (low land) in the universe have also been presented in Table 8 and Table 9 respectively in the bracket. From the data presented in Table 8 and 9 it is seen that the percentage area irrigated and percentage of Khet (low land) to total area of operated holding are both consistently higher in the sample than in the universe in all the four classes of operational holdings.
2.3. **Intensity of Cultivation**:

In Table 10 we have presented data on the intensity of cropping on both unirrigated and irrigated land in farms of sample farmers by class of operational holding; the corresponding index for the universe is indicated in the bracket. The data indicate that even unirrigated land is intensively cropped and that the intensity of cultivation is greater on smaller farms than on the larger farms. This suggests that the farmers have realised that since the operational holding cannot be enlarged significantly the only way to improve agricultural income is to cultivate intensively and use more fertilizers. There is a clear trend, both in the Hills and Tarai, that the intensity of cropping is negatively correlated to the size of operational holding. Also the intensity of cropping was found to be higher in the sample than in the universe. It is also higher in the Hills than in the Tarai partly because the size of the holding is smaller in the Hills and also the percentage of Khet (low land) is substantially lower in the Hills than in the Tarai.
<table>
<thead>
<tr>
<th>Region</th>
<th>All Families</th>
<th>Large</th>
<th>Medium</th>
<th>Small</th>
<th>Marginal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IR</td>
<td>UNIR</td>
<td>IR</td>
<td>UNIR</td>
<td>IR</td>
</tr>
<tr>
<td>1. Hills</td>
<td>162.15</td>
<td>131.35</td>
<td>158.00</td>
<td>128.50</td>
<td>164.60</td>
</tr>
<tr>
<td></td>
<td>(157.98)</td>
<td>(129.81)</td>
<td>(155.00)</td>
<td>(125.62)</td>
<td>(160.09)</td>
</tr>
<tr>
<td>2. Tarai</td>
<td>146.75</td>
<td>126.20</td>
<td>139.50</td>
<td>131.00</td>
<td>139.60</td>
</tr>
<tr>
<td></td>
<td>(146.26)</td>
<td>(124.71)</td>
<td>(151.55)</td>
<td>(128.95)</td>
<td>(135.89)</td>
</tr>
<tr>
<td>3. Overall</td>
<td>147.60</td>
<td>130.80</td>
<td>144.10</td>
<td>130.95</td>
<td>141.90</td>
</tr>
<tr>
<td></td>
<td>(147.24)</td>
<td>(133.84)</td>
<td>(152.02)</td>
<td>(127.87)</td>
<td>(137.15)</td>
</tr>
</tbody>
</table>

* Figures in the bracket represent the corresponding percentages in the universe.
2.4. Demographic Characteristics of Sample Farmers:

Out of 150 farmers selected 141 were male and 9 were female. The males were in the age range 25-40 and the females were in the age range 36-50. The rate of literacy was more than 90% (136 out of 150) as against 24% for the country as a whole. This implies that education was a crucial factor in adopting fertilizer use. Two of the farmers were graduates (one M.Com. and B.Sc. (Agri.)) and both were in service in a nearby city and were also looking after their family farm situated in the adjoining village. Thus, barring these two farmers, all others depend solely on their farm income for subsistence.

3.0. Fertilizer Use by Sample Farmers:

As was indicated by us earlier, the fertilizer practices differ from one geographic region to another. Hence the sample of farmers was selected by geographic regions giving weightage to the quantum of fertilizer (gross product) consumed in each region (See para 1.3 of this Appendix). Of the 150 farmers selected 75 were from Tarai, 50 from Kathmandu Valley and 25 from the Hills (excluding Kathmandu Valley). Of these 25 farmers from the Hills 10 were from High Hills and 15 from low Hills. (See Table 11).
### Table 11

**Distribution of Sample Farmers by Year of Commencement of Fertilizer Use.**

(Numbers)

<table>
<thead>
<tr>
<th>Year</th>
<th>High Hills</th>
<th>Low Hills</th>
<th>Kathmandu Valley</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>up to</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1975-76</td>
<td>-</td>
<td>3</td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td>1975-76 to</td>
<td>-</td>
<td>2</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>1976-80</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>10</td>
</tr>
<tr>
<td>1980</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>5</td>
</tr>
<tr>
<td>1981</td>
<td>3</td>
<td>3</td>
<td>-</td>
<td>5</td>
</tr>
<tr>
<td>1982</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>5</td>
</tr>
<tr>
<td>1983</td>
<td>7</td>
<td>1</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>1984</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>5</td>
</tr>
<tr>
<td>1985</td>
<td>-</td>
<td>1</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>All years</td>
<td>10</td>
<td>15</td>
<td>50</td>
<td>75</td>
</tr>
</tbody>
</table>

All the farmers in the sample were using fertilizers regularly and had purchased fertilizer and used it in the preceding year. They had been asked as to when they had commenced using fertilizer. The relevant data has been presented in Table 11. From the data it is seen that fertilizer has been long in
use in Kathmandu Valley and Tarai. In the high Hills it has come to be used only since 1982 and in low Hills 2/3 farmers have started using fertilizer only from 1980 or later. A significant fact to note is that more than 52% of the farmers (80 out of 150) have come to use fertilizers since 1980. From the data it is clear that the number of farmers using fertilizers is increasing and the rate of growth is high. In fact, the number of users has more than doubled in seven years from 1980 to 1986. Another thing to notice is that the growth rate is not uniform but moves up and down in alternative years.

3.1 Quantum of Fertilizer Purchase:

We had asked the sample farmers about the quantity of fertilizer purchased and consumed by them in the current as well as in the previous year. The data so gathered is presented in Table 12.
Table - 12

Fertilizer Consumption by Sample Farmers

<table>
<thead>
<tr>
<th>No. Of Farmers</th>
<th>Total annual consumption (Kgs.)</th>
<th>Annual consumption of fertilizer (Kgs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>preceding year</td>
<td>current year</td>
</tr>
<tr>
<td>High Hills</td>
<td>10</td>
<td>270</td>
</tr>
<tr>
<td>Low Hills</td>
<td>15</td>
<td>2,545</td>
</tr>
<tr>
<td>Kathmandu Valley</td>
<td>50</td>
<td>15,280</td>
</tr>
<tr>
<td>Tarai</td>
<td>75</td>
<td>28,120</td>
</tr>
<tr>
<td>Over all</td>
<td>150</td>
<td>32,463</td>
</tr>
</tbody>
</table>

Note: The figures in the last two columns have been rounded to the nearest integer.

The first thing to note is that the consumption of fertilizer among sample farmers is substantially higher than the consumption level in the universe, both regionally and nationally. Also the consumption level in Tarai is higher even than the level of Kathmandu Valley whereas in the universe level of consumption in Kathmandu Valley is the highest and is many times that of Tarai. However, the data is significant in that it clearly demonstrates that there is no
significant change in the consumption of individual farmers from year to year. This implies high inelasticity of demand. Studied in conjunction with data presented in Table 11 it suggests that growth in demand for fertilizer comes not by increase in the level of consumption of present consumers but by the demand for fertilizers from farmers who newly join the rank of fertilizer consumers each year. Since this process of growth cannot be sustained permanently, intensive efforts must be made to increase the level of consumption of fertilizer per consuming farmer through intensive extension and promotional work.

An analysis of the data presented in Table 12 indicated that there was no change in the level of consumption in High Hills. In the low Hills out of 15 farmers only 4 reported changes in annual consumption. Two farmers reported increase in consumption one from 5 to 8 Kgs and another 20 to 25 Kgs. The change was explained by change in the cropped area as part of the normal crop cycle, the level of consumption per crop per hectare remaining unchanged. Similarly there was report by one farmer of decline in annual consumption from 40 to 21 Kgs. Only in the fourth case there was increase in consumption from
200 to 250 Kgs and this was due to increase in consumption per crop hectare.

In Kathmandu area none of the larger farmers reported any change whatever in their annual consumption. However, 10 small farmers had reported an increase of 5 Kgs. in annual consumption of fertilizer and this again was explained by changes in cropped area as part of normal crop cycle and showed no change whatever in fertilizer consumption per crop hectare.

In Tarai region, five large farmers had each reported increase in consumption from 1200 to 1250 Kgs explained entirely by change in crop acreage as part of normal crop rotation. However, five very small farmers had each reported decline in consumption from 40 Kgs. to 2 Kgs because of their inability to buy fertilizer due to shortage of cash resources and non-availability of credit.

The preceding discussion clearly drives home the fact that there is no significant increase in the level of fertilizer consumption among farmers using fertilizer. The annual changes if any reflect changes in crop acreage as part of normal
crop cycle. The additional demand comes from farmers who have newly started using fertilizer.

3.2. Impact of Extension Work And Promotional Work:

The sample farmers had been asked as to how they became aware of fertilizer and who had persuaded them to use fertilizers and why they agreed to use fertilizer. The relevant data have been presented in Tables 13 and 14. The data about fertilizer awareness are presented in Table 13 and data about sources persuading farmer to buy fertilizer are presented in Table 14.

Table 13
Creation of Fertilizer Awareness

<table>
<thead>
<tr>
<th>Source</th>
<th>No. of farmers</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>High</td>
<td>Low</td>
<td>Kathmandu</td>
<td>Tarai</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hills</td>
<td>Hills</td>
<td>Valley</td>
<td></td>
</tr>
<tr>
<td>1. Self Family members</td>
<td>3</td>
<td>9</td>
<td>30</td>
<td>40</td>
<td>82</td>
</tr>
<tr>
<td>2. Friends or neighbours</td>
<td>3</td>
<td>-</td>
<td>10</td>
<td>10</td>
<td>23</td>
</tr>
<tr>
<td>3. Official Agencies:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(i) JTA</td>
<td>-</td>
<td>3</td>
<td>10</td>
<td>10</td>
<td>23</td>
</tr>
<tr>
<td>(ii) Cooperatives</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>(iii) Farmer's Day</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>(iv) Radio</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>All</td>
<td>10</td>
<td>15</td>
<td>50</td>
<td>75</td>
<td>150</td>
</tr>
</tbody>
</table>
### Table - 14

**Source of Persuasion for Fertilizer Use by Farmers**

<table>
<thead>
<tr>
<th>Source</th>
<th>High Hills</th>
<th>Law Hills</th>
<th>Kathmandu Valley</th>
<th>Tarai</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Self, Neighbours</td>
<td>3</td>
<td>2</td>
<td>10</td>
<td>20</td>
<td>35</td>
</tr>
<tr>
<td>2. Friends and family members</td>
<td>3</td>
<td>6</td>
<td>20</td>
<td>20</td>
<td>49</td>
</tr>
</tbody>
</table>
| 3. Official agencies:
  (i) JTA                 | -          | 3         | -                | 10    | 13    |
  (ii) Cooperative        | 4          | -         | -                | 5     | 9     |
  (iii) Farmer's Day      | -          | 2         | 20               | 20    | 42    |
  (iv) Radio              | -          | 2         | -                | -     | 2     |
| All                     | 10         | 15        | 50               | 75    | 150   |

From the data presented in Table - 13 that official agencies were able to create awareness of fertilizer in only 45 (30%) of the farmers. Of the official agencies JTA's appear to be relatively more effective in creating awareness and Farmer's Day rallies also appear to make an impact. Otherwise most of the farmers (82 in number or 54.67%) became aware of fertilizer through their own effort and another 23 (15.33%) became aware through family members of friends.
From the data presented in Table 14 it is seen that 84 farmers (56%) decided to buy fertilizer either on their own or on the persuasion by family members, friends or neighbour. The official agencies or programmes influenced the remaining 66 farmers (44%) to purchase and use fertilizers. It is seen in this context that Farmer's Day rallies seen to be very effective in persuading the farmers to purchases and use fertilizers. The JTA also appears to be a significant agency. Dealers (Sajhas) do play a role. The radio seems to be a totally ineffective media for influencing or even in creating awareness of fertilizer.

From the preceding it is seen that there is considerable scope for promotion and extension work and that programmes like Farmer's Day should be carried out more often and at numerous well scattered location to ensure greater attendance by farmers as these programmes seem to be effective in persuading farmers to purchase and use fertilizer.

3.3. Fertilizer Consumption and Use by Farmers:

It is seen that the major hurdle in persuading farmers to use fertilizers is in the farmer's lack of awareness of fertilizers. It was further seen that as soon as farmers become aware of fertilizer, they
acquire more information on their own and commence using fertilizers. In fact, the increase in fertilizer demand emanates from farmers who become aware of fertilizer and commence buying them.

The sample farmers had been asked to indicate when they buy the fertilizer, how often they buy the fertilizer and for which crops they apply fertilizers.

The answers indicated that the farmers buy fertilizer seasonally in May - June or November - December. Fertilizer was applied primarily to wheat, paddy and potato crop in the Hills; For maize, paddy, wheat and vegetable crops in Kathmandu Valley and for paddy, wheat, maize, sugarcane, jute and vegetables in Tarai region. Wheat appears to account for bulk of the fertilizer consumed in the Hills while paddy wheat and maize appears to be the principal crops fertilized in Tarai. Paddy, wheat and vegetables are important crops in Kathmandu Valley from the point of view of fertilization.

The sample farmers were asked whether they were applying fertilizer as per recommended dosages. The answer revealed that almost 90% (134 out of 150) of the farmers were unaware of (a) the recommended fertilizer dosage for different crops (b) the nutrient content of different fertilizer products and (c) the method of
application of fertilizers. They also believed—though erroneously—that if the fertilizer dose is not increased in successive year yields will decline.

( In this context it is necessary to note that in the last 20 years yields are progressively declining in the Hills due to surface run off, soil erosion, and extension of cultivation to sub-marginal and marginal lands ). Hence the farmers start the use of fertilizer with low dosage and often this may prove of no avail due to the poor nutritional status of land in the Hills. Nearly 60% of the farmers reported that their lands are improverished. Any way, the survey revealed that the farmers applied 40 to 60 Kgs. of fertilizer (gross) per hectare a level substantially below the recommended dosage. In this context it may be noted that data presented in Table 12 are figures of consumption per farm family and not per hectare of crop. The high per family use is explained by the preponderence of larger farms in the sample and higher intensity of cultivation among sample farmers than in the universe.

3.4. Determinants of Demand for Fertilizer:

The sample farmers were specifically asked to indicate factors which influence their demand for fertilizer, and their willingness and ability to buy and use fertilizers.
Almost all the farmers depended on their farm income for subsistence. Since land was limited, the only way to improve farm income was through intensive cropping which necessitated use of chemical fertilizers to restore soil fertility. Hence all the farmers were ready and willing to buy and use fertilizers. The farmers were fully convinced about the profitability of fertilizers and were willing to use fertilizer even if the price subsidy was withdrawn.

**Scope for fertilizer use:**

How much fertilizer a farmer could use (potential demand) depended on (i) size of the farm (ii) intensity of cropping (iii) crops raised (iv) availability of irrigation facilities and (v) the proportion of khet and pakho land in the holding.

**Ability to buy fertilizer:**

The potential demand becomes actual demand only if the farmer has the resources to acquire fertilizer. It is well known that in the Hills average size of holding in about 0.50 hectares and this size is too small to generate a marketable surplus even if fertilizer is applied as per recommended dosages. Further barter economy prevails. Hence farmers do not have adequate
cash resources to buy needed quantity of fertilizer. Only if credit is extended they might be able to buy fertilizers. However, in our sample (see para 3.1) five farmers had cut-down their fertilizer consumption due to inability to secure fertilizer credit. In the Hills, we had specifically asked the farmers whether they would favour the scheme whereby they can pay for fertilizer in exchange of grain after harvest. All the 25 farmers responded positively and indicated that they would welcome such a scheme and that if such a scheme is introduced they would definitely consume more fertilizer than at present. It is therefore necessary to explore the feasibility of introducing such a scheme as it would fit well in the barter economy prevalent in the Hills.

The field investigation also revealed that 45 farmers (30%) bought fertilizer on credit. Of these only 10 farmers had seemed institutional credit and the remaining 35 had borrowed from private sources. The private source charged 20 - 25 percent interest and extended credit for one crop season only. Also the private sources did not pay cash to buy fertilizer. Instead, they supplied the type and quantity of fertilizer needed by the farmer and the value of the fertilizer was recovered at the time of harvest by accepting
Availability of Fertilizer

The farmers were all unanimous that there should be a retail outlet within the village. And that the type of fertilizer needed by the farmers should be made available in time and in the required quantity. This would ensure higher consumption. 30 farmers (20%) indicated that because of scarcity and non-availability of complex in required quantity they suffered an income loss of 15 to 20% in their annual farm income. The shortage of fertilizer was experienced in the winter season (November - December) and in respect of complex only.

The farmers indicated that normally 5 or 6 different fertilizer products were available at the retail outlet and as such they had a choice. However, they preferred to use mostly urea and complex and would not care to buy any other type of fertilizer. They have a strong dislike for DAP and TSP and are refusing to buy them inspite of heavy pressure from AIC to buy them.

A number of farmers particularly in the Hills complained that the retail outlet was too far from the village and the additional cost of transport was substantial enough to act as a disincentive to purchase fertilizer.
Price Response:

The farmers indicated very emphatically that price was not a factor influencing their demand. There was clear evidence that fertilizer demand was price inelastic. The only expectation of farmers with regard to price was that it should be pegged and stabilised. Price fluctuations are considered undesirable.

4.0. Farmers Attitude Towards Retail Outlets:

The farmer in the High Hills (Jumla and Mugu) who were receiving fertilizer supplies from AIC and cooperative were not very happy with the sales service. They complained that only 2 or 3 fertilizer product were available and that AIC and cooperative gave priority to government farms and research project in the matter of fertilizer supplies and that farmers interests were not given priority.

In Kathmandu Valley and Tarai farmers had experience with both Sajhas and private traders. However, the reaction of farmers to these outlets was not the same in both these regions. In Kathmandu Valley farmers preferred the private traders. The bigger farmers claimed that the private traders were allowing them a cash discount of up to 2% on the value of fertilizer purchased at the official price. The farmers were
very happy about this and hence preferred to buy from private traders. Another important factor is that these private traders also extended credit and after sales service to the farmers and guided them about fertilizer use.

In the Tarai, the farmers preferred Sajhas as the fertilizer was always available in ready stock with them. The farmers felt that private traders were unscrupulous and were smuggling subsidised fertilizer across the Nepalese border into India. Farmers from Jaleshwar and Biratnagar reported that there was leakage in the distribution system and that about 15 - 20 percent of the fertilizer was regularly diverted to India. They alleged that Indian farmers preferred Nepalese fertilizer and paid a premium to buy it as they felt that it was pure and unadulterated.

The small farmers who purchase small quantities of fertilizers are not happy with the size of package currently used, namely, 50 Kgs. bag. The farmers expressed the view that fertilizer should be sold in 5, 10 and 15 Kg. packages for the convenience of the small farmers whose needs are small.
5.0. Farmers Attitude Towards Extension Agencies:

Farmers reported that they were very happy with the work of the Extension service and the JTA's. However, their number should be increased and the service strengthened so that it may serve the farmers more effectively.

The farmers find the Farmer's Day celebration highly informative and useful. They also like to visit demonstration farms and field trials. They would greatly welcome the expansion of such programmes.

They also would like adequate soil testing facilities and dissemination of information on nutrient content of various fertilizer products, correct fertilizer doses for different crops under different soil conditions, and the correct method and timing of application of fertilizer.

They feel that extension agencies are good but they need to be strengthened to become more effective.

6.0. Farmers Attitude Towards Promotional Measures:

The farmers are unaware of the promotional measures if any undertaken by the Government or AIC. When asked specifically about Radio, they said that they rarely listened to it and also that they did not find them interesting or useful once or twice when they heard the programmes on the air.
They also do not find the printed literature supplied by AIC useful. They complained that AIC is supplying literature about DAP and TSP which the farmers dislike and AIC is not supplying any literature on urea and complex which the farmers need and want.

The farmers feel that more and more training camps should be held to educate farmers about fertilizer use. They feel that farmers who had opportunity to receive training are able to get higher yields than others. The farmers are also in favour of Farmer’s Day celebration.

They feel that more and more field trials should be carried out on farmer’s plots as this will help convince the farmers about the correct fertilizer dose, crop response and method of application of fertilizer.

7.0. Farmers Attitude Towards the Problem of Outflow of Fertilizer from Nepal into India:

The farmers are against the outflow of fertilizer from Nepal into India as they know that this will affect the availability of fertilizer to them. They feel that private traders and a few unscrupulous bureaucrats have joined hands and make fertilizer available for illegal outflow. Consequently, the farmers welcome the card system introduced by the Government of Nepal to prevent such outflow of fertilizer into India.
system, according to them, will effectively stop leakages in the fertilizer distribution system and will thus safeguard the interest of Nepalese farmers.

8.0. Incentives to Farmers:

The sample farmers were asked to indicate factors which would persuade them to increase their consumption of fertilizer. The answers are presented in Table 15. Side by side we have presented findings of FAO/RAPA study for the purpose of comparison.

Table 15
Farmers Opinion

<table>
<thead>
<tr>
<th>Opinion</th>
<th>% of farmers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FAO/RAPA</td>
</tr>
<tr>
<td>Access to Information about fertilizer</td>
<td>6</td>
</tr>
<tr>
<td>Availability of fertilizer</td>
<td>24</td>
</tr>
<tr>
<td>Nearer Fertilizer Store</td>
<td>13</td>
</tr>
<tr>
<td>Availability of Credit/Irrigation</td>
<td>16</td>
</tr>
<tr>
<td>High Price for grain/lower price for fertilizer</td>
<td>33</td>
</tr>
<tr>
<td>Any other reason</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>
It is most significant to know that contrary to the FAO/RAPA study which showed that 33% of the farmers respond to price (whether paddy or fertilizer), our study clearly indicated that price had no influence whatever on farmers' decision to use fertilizer or increase fertilizer consumption (This is of course true of marginal price changes only). However, with respect to such factors as availability of fertilizer, proximity of retail store and availability of credit/irrigation facilities the farmer's responses are similar in both the studies.

There is also another study—made by Michael B. Wallace. However, this study was confined to wheat growers only and not all farmers. Hence it is not methodologically sound to compare our results with those of Wallace. None-the-less one thing stands out. The Wallace study which was carried at in 1986 also indicated overwhelmingly that fertilizer demand was not price elastic and that access to information is the main factor influencing fertilizer consumption decision.
A Survey of Attitudes of Nepalese Farmers Regarding Distribution and Consumption of Fertilizers in Nepal General Questionnaire for Farmers

I. Identification Block:

1. Zone  
2. Dist:  
3. Village/Panchayat:  

4. Name of Farmer:  
   Sur name  First Name  Middle Name  

5. Sex  
   M/F  
6. Age  
   Yrs.  

7. Married/Unmarried/Widowed:  

8. Occupation: Main:  
   Sub:  
   Total Income:  
   Annual income (Rs.)  
   Annual income (Rs.):  

9. Education:  

10. Size of family:  
    persons.  
    Residence: Village/Outsidevillage  

II. Area of Operated Holding:  
   Ha.  
   (Bigha/Ropani/Ha.)  

   Land under cultivation:  
   Khet (low land)  Pakho (up land)  Total  
   Irrigated Dry  Irrigated Dry  Irrigated Dry  
   (A) Owned  
   (B) Rented  
   (C) Taken on Contract  
   Total (A+B+C)  

   Total cropped area:
III. Fertilizer Consumption:

1. When did you start using fertilizer?

2. How much fertilizer did you use?
   (a) In current year \underline{} Kgs.
   (b) Past year \underline{} Kgs.

3. Explain the change in annual consumption if any.

4. Do you apply the same quantum of fertilizer per hectare year after year? [Yes] [No]

IV. Product Awareness And Use:

1. How did you first become aware of fertilizer? And who persuaded you to buy and use fertilizer initially?

   (i) Self
   (ii) Friends, relatives and family members
   (iii) Media of Mass Communication
   (iv) Official Agencies/Programmes:

   1. JTA
   2. Cooperative
   3. Farmers Day.
2. When do you buy fertilizer?
   (A) May - June ( ) (B) Nov - Dec. ( )
   (C) April - May ( )
   (D) Any other (Specify).

3. How much (quantity) do you buy at a time?
   ( ) Kgs.

4. Which crops do you fertilize?
   Paddy ( ) Wheat ( ) Maize ( )
   Potato ( ) Vegetable ( ) Jute ( )
   Sugarcane ( ) Tea ( )
   Any other (Specify).

5. Do you know:
   (i) Fertilizer dose recommended for various crops? (Yes) (No)
   (ii) Nutrient contents (NPK) of different fertilizers? (Yes) (No)
   (iii) Method of Applying fertilizer? (Yes) (No)
   if yes for which crops? (Specify) ;
6. How much fertilizer do you apply per hectare for various crops?

<table>
<thead>
<tr>
<th>Crop</th>
<th>Paddy</th>
<th>Wheat</th>
<th>Maize</th>
<th>Potato</th>
<th>Vegetable</th>
<th>Tea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fertilizer Dosage (Kgs.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7. Why do you use fertilizer?
   (a) To replenish soil fertility
   (b) To increase yield
   (c) Because of intensity of cultivation

8. How do you determine your need for fertilizer?
   (i) Crops to be fertilized
   (ii) Their hectrage
   (iii) Fertilizer dose per Hectare

V. Constraints on Fertilizer Use:
   (A) Availability of Fertilizer:
   (i) How far is the nearest fertilizer retail outlet? Kms.
   (ii) Where is it located?
   (iii) Who operates it? AIC Sajha Private Traders
(iv) Is there more than one outlet near by?

- Yes
- No

If yes, how many? Furnish details:
Which one do you prefer?

(v) How many fertilizer products do they keep?

- Urea
- Complex
- Muriate of potash
- AS
- DAP
- TSP

(vi) Which fertilizer do you prefer to buy?
Specify:

(vii) Which fertilizer do you dislike? Specify?

(viii) Is the retail outlet located conveniently?

- Yes
- No

(ix) (a) If not conveniently located, would you buy more fertilizer if a retail outlet is conveniently located?

- Yes
- No

(b) What is cost of transporting fertilizer from retail outlet to home?

- Normal
- Prohibitive

(x) Have you ever experienced difficulty in:

(a) Securing the type of fertilizer needed?

- Yes
- No

If so which fertilizer? Specify.
(b) Securing as much as you needed? /Yes/ /No/
When? Which fertilizer?

(c) Have you ever been obliged to buy fertilizer unwanted by you? /Yes/ /No/
If so which fertilizer? Why?

(d) Did you suffer any income loss on A/c of non-availability?

[ ] Yes [ ] No
Specify loss □ % of income.

(v) Constraints on Fertilizer Use:

(B) Ability to buy fertilizer:

1. Do you have a marketable surplus?

[ ] Yes [ ] No □ Rs.

2. Do you have cash resources to buy fertilizer?

[ ] Yes [ ] No

3. Are they adequate to buy your fertilizer needs?

[ ] Yes [ ] No

4. Do you have to borrow to buy fertilizer?

[ ] Yes [ ] No

5. Have you borrowed to buy fertilizer?

[ ] Yes [ ] No
(a) From when?
(b) How much?
(c) Duration:
(d) Security:
(e) Rate of interest:

(6) Are you obliged to buy less fertilizer than you need due to non-availability of credit?

[ ] Yes [ ] No

7. Would you buy more fertilizer if credit is made available to you?

[ ] Yes [ ] No

8. Would development of irrigation facilities increase your demand for fertilizer?

[ ] Yes [ ] No

9. How will withdrawal of fertilizer subsidy affect your demand for fertilizer?

[ ] Increase [ ] Decrease [ ] No Effect

10. How will price rise affect your demand?

[ ] Increase [ ] Decrease [ ] No Effect

11. Are you in favour of a scheme of payment for fertilizer in kind (grain)?

[ ] Yes [ ] No

Reasons for your answer:
12. What type of price policy do you favour?

/ Stable price / Regulated price / Free price /

(C) Willingness to buy fertilizer

1. Is it profitable for you to use fertilizers?

/ Yes / No /

2. Rank crops according to their profitability.

3. How do you judge the profitability of a fertilizer?

(i) Personal experience

(ii) Experience of friends

(iii) Advice of JTA

(iv) Field demonstrations

(v) From fertilizer literature

(vi) Radio Programme

VI. Farmers' Attitude And Opinions:

(A) Packaging:

1. Are you satisfied with the way fertilizer is packed?

/ Yes / No /

2. If not what are your suggestions regarding packaging?
(B) Extension Agencies:

1. Have you ever come in contact with a JTA?
   - Yes
   - No

2. How often does he meet you?

3. Do you find a JTA helpful?
   - Yes
   - No
   Knowledge?
   - Yes
   - No

4. What do you feel about the extension service?

5. What do you expect them to do for you?
   (i) Arrange Farmers Day Programme
       - Yes
       - No
   (ii) Field Demonstration
       - Yes
       - No
   (iii) Training Programmes for farmers
       - Yes
       - No
   (iv) Provide Technical Services like soil testing
       - Yes
       - No
   (v) Give information and advice about fertilizer use.
       - Yes
       - No
   (vi) Any other Service? Specify.
(C) **Promotional Work**:

1. Are you aware of any efforts at fertilizer promotion?
   - Yes
   - No

2. Do you listen to fertilizer programmes/advs in Radio?
   - Yes
   - No

3. Do you read any papers/periodicals?
   - Yes
   - No

4. Have you seen fertilizer posters and literature?
   - Yes
   - No

5. What do you think of them?
   - Useful
   - Useless

6. Do retail outlets advice you on fertilizer use?
   - Yes
   - No

(D) **Out-flow of fertilizer into India**:

(a) What in your opinion is the size of this traffic?
   - %

(b) Will the card system help to curb the outflow?
   - Yes
   - No

(c) What do you think of the card system?
   - Very good
   - Good
   - Ineffective
VII. Incentives of Farmers:

1. Price incentive: Will price encourage you to buy more fertilizer?
   - Yes  - No

2. Will subsidy influence you to buy more fertilizer?
   - Yes  - No

3. Will access to information persuade you to buy more fertilizer?
   - Yes  - No

4. Availability of fertilizer:
   Does this encourage you to buy more?
   - Yes  - No
   Does non-availability affect you?
   - Yes  - No  - Not so far

5. Proximity of Retail outlet:
   Will convenient location persuade you to buy more fertilizer?
   - Yes  - No

6. Will availability of credit influence you to buy more?
   - Yes  - No

7. Will availability of irrigation facilities influence you to buy more fertilizer?
   - Yes  - No
8. Does grain / fertilizer price mean anything to you? What?

VIII. Investigator's Remarks:

Date:

Signature
Appendix 3

The Agricultural Development Bank of Nepal (ADB) established in 1968 is the principal agricultural credit institution in the country. Following its establishment, The Cooperative Bank, which had been lending to the co-operatives till then, was amalgamated with ADBN. Later in July 1973, The Land Reforms Savings Corporation was also merged into ADBN.

2.0. Origin And Growth:

2.1. Background: Till 1968, The cooperative Bank which was supposed to finance cooperatives, concentrated its loan activities to cooperative societies in areas where land reforms programmes had been implemented. Since the bulk of the agriculturists were outside the cooperative fold, it was decided during the Third Five Year Plan period to set up an Agricultural Bank to finance such agriculturists.
2.2. **Goals**: ADBN was set up (i) to provide agricultural credit to agriculturists outside the cooperative fold, (ii) to operate as commercial bank in the rural area and mobilise rural savings; (iii) to manage small farmer development Project (SFDP) and provide agricultural credit to small farmer groups.

Later the ADBN was entrusted with two additional tasks, namely, (a) To Manage Inter-Village cooperatives assigned to it by the cooperative Development for a fixed term and (b) To manage all agricultural projects financed by foreign, national and multi-national agencies and world agencies.

2.3. **Resources And Organisation**: The total resources of the ADBN stood at Rs.619 million at the end of the F/Y 1980-81. Equity (22.9%), borrowings for NRB (32.1%), Projects under aid (18.2%) are the three largest components of its resources (See Table.1).

## Table - 1

**STATEMENT OF RESOURCES OF AGRICULTURAL DEVELOPMENT BANK**

(1975/76 - 1980/81)

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>Paid-Up Share Capital</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) HNCG</td>
<td>64,448</td>
<td>74,505</td>
<td>79,531</td>
<td>84,532</td>
<td>94,532</td>
<td>104,534</td>
</tr>
<tr>
<td>(b) Nepal Rastra Bank</td>
<td>30,000</td>
<td>30,000</td>
<td>30,000</td>
<td>30,000</td>
<td>30,000</td>
<td>30,000</td>
</tr>
<tr>
<td>(c) Cooperatives</td>
<td>391</td>
<td>440</td>
<td>455</td>
<td>472</td>
<td>5,914</td>
<td>5,78</td>
</tr>
<tr>
<td>(d) Individuals</td>
<td>1,754</td>
<td>2,542</td>
<td>3,780</td>
<td>4,995</td>
<td>477</td>
<td>6,524</td>
</tr>
<tr>
<td>(e) Corporate Bodies</td>
<td>199</td>
<td>201</td>
<td>237</td>
<td>247</td>
<td>259</td>
<td>260</td>
</tr>
<tr>
<td><strong>Borrowings</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) Refinance from Nepal Rastra Bank</td>
<td>50,476</td>
<td>89,434</td>
<td>127,370</td>
<td>180,296</td>
<td>187,827</td>
<td>198,786</td>
</tr>
<tr>
<td>(b) Loan from HMG (ADB Agricultural Credit Projects)</td>
<td>36,867</td>
<td>42,325</td>
<td>47,404</td>
<td>59,510</td>
<td>65,557</td>
<td>72,873</td>
</tr>
<tr>
<td>(c) Borrowings against Government Bonds &amp; Debentures Issued</td>
<td>200</td>
<td>-</td>
<td>-</td>
<td>40,000</td>
<td>40,000</td>
<td>40,000</td>
</tr>
<tr>
<td>(d) Others (Commercial Banks)</td>
<td>580</td>
<td>910</td>
<td>45,727</td>
<td>41,590</td>
<td>46,206</td>
<td>34,715</td>
</tr>
<tr>
<td><strong>Customers' Deposits</strong></td>
<td>9,274</td>
<td>51,417</td>
<td>49,079</td>
<td>40,695</td>
<td>40,171</td>
<td>38,348</td>
</tr>
<tr>
<td><strong>Compulsory Savings</strong></td>
<td>88,847</td>
<td>74,171</td>
<td>58,114</td>
<td>45,547</td>
<td>37,008</td>
<td>51,655</td>
</tr>
<tr>
<td><strong>Accumulated Reserves</strong></td>
<td>20,643</td>
<td>23,317</td>
<td>23,850</td>
<td>24,049</td>
<td>20,231</td>
<td>20,231</td>
</tr>
<tr>
<td>Rasuwa-Nuwakot Integrated Development Project Resettlement Program</td>
<td>3,207</td>
<td>4,280</td>
<td>292</td>
<td>310</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>GRAND TOTAL</strong></td>
<td>303,679</td>
<td>389,262</td>
<td>465,547</td>
<td>531,933</td>
<td>571,681</td>
<td>602,794</td>
</tr>
</tbody>
</table>

a/ Provisional.  
Source: Nepal Agriculture Sector Strategy Study,  
Vol. II, Appendix 4.32.
The ADBN is governed by a seven-man Board; the General Manager is its Chief executive officer. ADBN's head office is organised into six divisions and its field net work comprises four regional offices, 23 branch offices, 63 subbranch offices, 56 depots, and 36 SFD Projects. Total staff which 728 in 1974-75 had increased to 1,922 by 1980-81².

3.0. **Lending Operations And Loan Recovery**

ADBN finances almost 85% of the total agricultural loans extended by institutions. The balance 15% is provided by the commercial banks and the Sajhas. ADBN provides credit to the farmers either directly or through Sajhas which are multi-purpose cooperative societies formed by the Government, or, through small farmer groups formed under the SFDP.

3.1. **ADBN Lending**

Lending by the ADBN increased almost eight-fold during the Five Year period between 1972-73 (Rs. 36 million) and 1977-78 (Rs. 283 million). Agricultural lending during 1979-80 fell below the level of 1974-75 and the decline continued in 1980-81.

². Ibid, P. 141.
Even in 1981-82 the total lending was Rs. 140 million. However, since then, due to a radical change in NRB refinance policy and improvement in recovery, the lendings have again moved up and have crossed the level of Rs. 283 million reached in 1977-78.

3.2. Decline in ADBN Lending (1979-80 to 1982-83):

The decline in lending operations was closely linked to repayment performance which had been deteriorating sharply in recent years. The percentage of ADBN overdues jumped up to 47.05% or Rs. 217 million in 1979-80 which exceeded the ADBN equity which then stood at Rs. 131 million. The percentage of overdues from Sajhas reached 55% in 1979-80 while extent of delinquency in the repayment of loans given by Sajhas to their members was estimated to be even higher, averaging more than 60%. As a result of improved recovery, the percentage of overdue loans has declined to 35.4% in 1980-81.

3.3. Constraints on Refinance and ADBN's Profitability:

The situation on loans overdue had caused a chain effect constricting the entire flow of credit into the agricultural sector. The inability of the Sajhas to
pay back their loans to ADBN had affected the ability of ADBN to make repayments of the refinance it had received from NRB. The failure of ADBN to repay its loans to NRB, in turn, led NRB to curtail drastically its disbursement of refinance to ADBN from Rs. 128 million in 1978-79 to Rs. 27 million in 1978-79, and to Rs. 18 million in 1980-81. What compounded the situation further is that even those borrowers who were capable of repayment of their loans, were not doing so out of fear that once they paid back their loans, they might not be able to get credit again when they needed it. ADBN, at the same time, had a policy of not lending to deliquent borrowers. This eventually led to a sever restriction on the flow of credit.

Delinquency in the repayment of loans, though it has existed for a long time, has worsened perceptibly since 1979-80. One of the main reasons may have been the general environment of political uncertainty during 1979-81. Another contributing factor was the decision in November, 1978 to discontinue the financial control by ADBN over Sajhas. Once the financial discipline imposed by ADBN was removed, the Sajhas found themselves under no pressure to recover the loans extended by them.
ADBN for the first time in several years suffered financial losses during 1978-70 and 1979-80, because of a sharp decline in the volume of its leading and the mounting interest payments on its huge outstanding debt to NRB.

The situation has since been remedied as a result of greater efforts by ADBN at loan recovery, improved fund management and willingness of NRB to once again increase refinancing, including an agreement to provide pre-project financing to ease ADBN's requirements. The percentage of overdue loans has declined and ADBN has turned the corner and become profitable again.

4.0. Sources of ADBN Funds:

ADBN's source of funds for lending comes from the repayment of its loans, refinancing by NRB and external assistance (for sponsored projects). For 1982-83 the shares of these sources have been as follows (See Table 2).
### Table 2

**Sources of ADBN Finances 1982-83.**

(Million Rs.)

<table>
<thead>
<tr>
<th>Source</th>
<th>Amount</th>
<th>% to total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Refinancing</td>
<td>100.0</td>
<td>18.5</td>
</tr>
<tr>
<td>2. Loan Repayment</td>
<td>255.5</td>
<td>47.3</td>
</tr>
<tr>
<td>3. External Assistance</td>
<td>80.5</td>
<td>15.0</td>
</tr>
<tr>
<td>4. Sub-total (1+2+3)</td>
<td>436.0</td>
<td>80.8</td>
</tr>
<tr>
<td>5. From Other Sources</td>
<td>103.6</td>
<td>19.2</td>
</tr>
<tr>
<td>6. Total (4+5)</td>
<td>539.6</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Funds from external assistance, while only 15% are important because these can provide flexibility, better repayment terms, and thus increase the percentage of development oriented medium and long term credit.

5.0. **Lending Policies And Procedures**:

In order to facilitate provision of a larger proportion of credit to smaller farmers, the ADBN classified farmers owing land upto 2.71 hectares (4 bighas) in case of Tarai and upto 1.02 hectares (20 Ropanis) in case of Hills as those under the category of small farmers.
This classification has also been adopted by all institutions at the grassroots level. However, ADBN itself has adopted a different classification for SFDP. For the purpose of SFDP, farmers with 1.02 hectares (1.5 bighas) of irrigated land or 2.04 hectares (3 bighas) of unirrigated land were considered as small in Tarai. In the Hills farmers with 0.51 hectares (10 Ropanis) of irrigated land or 1.02 hectares (20 Ropanis) of unirrigated land were considered as small. The small farmers so defined were given priority in lending. However, the Bank (ADBN) has not yet made any formal classification of medium and large farmers.

The ADBN generally grants loans to individual borrowers for medium and long term purpose upto 80% of total project cost. The grass root level organizations, however, advance loans mostly for short and medium-term purposes. Credit limits of these organisations are the same as followed by the ADBN.

4. This classification differs from that adopted by the Agricultural Credit Survey (ACS) in one respect. In the Hills ACS classified farms in the size range 0.51 to 1.02 hectares (10 to 20 Ropanis) as medium; while these are considered small by ADBN.
In order to meet the added supervision cost, ADBN gets 4% margin in the interest rates on the advances that it makes to Sajhas and individuals. The Bank receives 2% commission on advances made to central level organisations like AIC.

The ADBN has not so far created any separate fund out of its profits to meet the increased cost of supervision as recommended by the ACS. Nor has ADBN introduced a system of incentives for timely repayment and penalty for delayed payment to avoid overdues. This is necessary if ADBN is to function efficiently.

The ADBN provides approximately 85% of the total institutional credit for agriculture. The ADBN credit has played a significant role in creating storage facilities for the use of grassroots level organizations and also in promoting fertilizer sales.