CHAPTER IX

SUMMARY, FINDINGS, AND RECOMMENDATIONS

9.1. Summary And Findings:

In this we have presented the summary and findings of our study chapterwise in serial order. The recommendations have been presented subjectwise in section 9.3.

9.1.1. Summary And Findings of Chapter - I:

Nepalese Economy is characterised by the predominance of agriculture (which accounts for 91% of employment, 59.56% of GDP and 80% of Exports), over population (472 persons per cultivated hectare), low agricultural productivity and food deficit and food insecurity in the Hills region. Consequently for rapid economic growth it is essential to modernise and develop the agricultural sector. Fertilizer use and promotion have a major role to play in the modernisation and development of agriculture, in increasing food production in the Hills in providing food security to that region. Since success in promoting fertilizer use is crucial to this strategy of agricultural development, and since such success is dependent upon the
efficiency and effectiveness of the fertilizer marketing management, the Study of fertilizer marketing management in Nepal is of paramount significance to the Nepalese economy.

The present study covers the period from 1970-71 to 1984-85. The objectives of the study were:

(1) To study, evaluate and suggest remedial measures to improve the existing system of fertilizer marketing management in Nepal.

(2) To study, inter alia, problems and policies of marketing fertilizers at the national, regional as well as at the village level.

(3) To study further:

(i) The theoretical potential for fertilizer consumption
(ii) Trends in demand for and supply of chemical fertilizers in Nepal
(iii) The economics of fertilizer use
(iv) Fertilizer pricing and subsidisation
(v) Fertilizer Credit
(vi) Fertilizer Distribution System and Marketing costs.
(vii) Fertilizer Adoption And Promotion.

The study is based on secondary data (official reports both published and unpublished), supplemented by a field study carried out by the Author.
This study has been guided throughout by the concepts and principles of marketing management.

9.1.2. Summary And Findings of Chapter - II:

In this chapter the physical, economic, cultural and social, political and legal as well as the business environment in the fertilizer market were studies.

(A) The Physical Environment:

The physical environment was found to constitute a major bottleneck in developing an adequate and satisfactory physical infrastructure. The lack of adequate transport and communication facilities have come in the way of development of a well integrated market for fertilizers and have contributed towards high cost of transport to and storage of fertilizers in Hills where fertilizers are most urgently needed.

The topography encourages rapid soil erosion and frequent land slides. The progressive degradation of the forest and ecological deterioration resulting from over population and over-grazing has impoverished the soils.

Since Hill areas are deficit in food and transport cost are prohibitive, it is much more economical from the national point of view to transport fertilizers
than food to the Hills as one Kg of fertilizer results in 10 Kgs of grain production.

(B) Economic Environment:

Economic conditions in the country demand intensive cultivation and improvement of productivity in Hill agriculture. Heavy dosage of fertilizers is also imperative both in the light of impoverishment of the soil and need to obtain good crop response to fertilizers. The existing low level of fertilizer use (13 kgs/ha) and low proportion of cultivable area that is fertilized (11% of cultivated area) and high intensity of cropping (125% to 200%) suggest that there is tremendous potential demand for fertilizer. However, the fertilizer trade is unprofitable and fertilizer supplies are uncertain. The resource constraint (shortage of foreign exchange to import) has the effect of limiting availability of imported fertilizers and hence total availability of fertilizers on a required scale. The fertilizers received as foreign aid is not adequate to meet domestic demand. Hence unless domestic resources are mobilised on an adequate scale, it would be difficult to ensure adequate supplies of chemical fertilizer.
(C) **Cultural And Political Environment**

(i) Low per capita income, mass poverty, uneconomic holding and barter economy imply low cash income. Hence fertilizer consumption can be promoted only if cheap institutional credit is provided for purchase of fertilizers.

(ii) Subsistence nature of farming and high incidence of tenancy ensure that there is little or no marketable surplus. Hence farmers are more likely to respond to subsidisation of input prices rather than support of output prices.

(iii) The high rate of illiteracy and absence of newspapers in remote Hill areas imply that the only effective media of mass communication is Radio Nepal (Note that T.V. has not yet been introduced in every part of Nepal). It also implies that fertilizer consumption can be improved if fertilizer is packed in the right quantities needed by the farmers for their different crops.

(D) **The Political And Legal Environment**

The change in political climate, the emergence of a democratic form of government and the concept of welfare state have all contributed towards the creation of a climate favourable to public welfare and well being and has led to adoption of economic policies
leading to political and legal action to develop fertilizer market, procure fertilizer supplies from abroad and encourage fertilizer consumption through transport cost subsidisation and import price subsidisation of chemical fertilizers and to develop a cooperative system of fertilizer credit and distribution.

(E) The Existing Competitive Business Situation:

AIC - a public sector enterprise - enjoys monopoly of procurement of fertilizers through imports, and its distribution in Nepal. A three tier distribution channel is in operation with AIC at the top, DCU's in the middle (wholesaling) and Sajhas/private dealer (retailing) in the bottom tier. The marketing system is characterized by total absence of personal selling and front-line sales officers to push the sales and popularise the product.

9.1.3. Summary And Findings of Chapter III:

Marketing functions were identified and were classified into three categories as (i) merchandising functions, (ii) physical distribution function and (iii) auxiliary functions and their relevance and importance were discussed. Various approaches to the study of marketing were discussed and it was decided
to utilise the management (Decision making) approach for studying the problem of fertilizer marketing management in Nepal.

Elements of macro environment which effect the fertilizer market in Nepal were identified to be:

1. Its linkage with the market for agricultural commodities
2. The extent of monetization of the economy
3. Sub-sistence character of agriculture
4. Regional variation in stages of economic development and hence level of demand for fertilizers
5. Macro economic policies
6. Lack of physical facilities and infrastructure of marketing.
7. Fragmentation of the fertilizer market.

The influence of these factors was discussed in detail, and it was indicated that:

1. As the agricultural market is also not well developed and as the farmer does not receive a remunerative price for his products he has no incentive to increase production through use of higher dosage of fertilizer. Also the price support measures have failed to provide incentives to farmers.
(2) The prevalence of barter economy creates shortage of cash income and inhibits cash purchases of fertilizers.

(3) Because of the small and uneconomic size of holding and subsistence character of farming there is practically little or no marketable surplus.

(4) The Hill and Tarai are not as well developed as the Kathmandu Valley where fertilizer consumption is above 250 Kg/ha as against less than 20 Kgs/ha in the rest of Nepal.

(5) Price support policies for cereals have not been very successful. Measures to subsidise the price and transport cost of fertilizers have however succeeded in boosting the sales of fertilizers, in general and sales of fertilizers in the Hill in particular.

(6) Lack of physical facilities and infrastructure of marketing are a serious bottleneck in developing a well integrated market for fertilizer in Nepal and this constraint must be removed as early as possible.
(7) The lack of transport and storage facilities and a well developed business community have fragmented the fertilizer market.

A detailed description of the fertilizer market is furnished covering the following aspects:

(i) Characteristics of the product
(ii) Sources and conditions of supply
(iii) Characteristics of the fertilizer market
(iv) Marketing organizations and their policies and strategies
(v) Channels of Distribution and the Marketing Structure and Functions.
(vi) Auxiliary Services.

**Characteristics of the Product:**

Chemical fertilizers are a standardised commodity of international trade. In Nepal, it was first introduced in 1965-66. Currently 102 thousand metric tonnes of fertilizer products with a nutrient weight of 43 thousand m. tons are consumed annually. There are three peak periods of consumption:

April - May - Early Paddy
June - July - Main Paddy
November - December - Winter Crops (wheat).

Currently Urea (46:0:0) and Complex (20:20:0) fertilizers are in demand and between them account for 96% of the total sales of fertilizers.
Nepal has no domestic fertilizer industry. Imports are its only source of supply. Nepal receives fertilizer as commodity aid from foreign donors currently mainly from Japan and Federal Republic of Germany. This is inadequate to meet domestic demand. Hence additional fertilizer have to be imported on commercial terms. The prices of fertilizers received as aid is very much higher than the price of the products in the world market. Since the foreign donors decide the quantum of aid on a year to year basis, there is uncertainty regarding the type as well as quantum of fertilizers that they will donate in any year. Also shipment advice are not received in time so that there is delay in unloading and forwarding.

Characteristics of the Market:

It is a monopoly market and monopolist - AIC charges the same uniform price throughout the country. The price is usually maintained at a level higher than in India to prevent outflow of subsidised Nepalese fertilizer into India.
Marketing Organizations and their Policies and Strategies:

AIC's policy and strategies with respect to the four P's of marketing have been discussed below:

Product:

Since the foreign donors were supplying mainly Ammonium Sulphate (AS), AIC was initially pushing the sales of AS. Soon it realised the advantage of using high analysis fertilizers (which cost less transport charges per ton of nutrients) and shifted to urea as the main source of N and persuaded the donors to supply Urea and Complex fertilizer in lieu of AS.

Price:

Single uniform price throughout the country with the price level slightly higher than that in India. As between the products urea prices were maintained at a slightly higher level than that of Complex. The latest policy is to price complex slightly higher (at Rs. 4.20 /Kg.) than urea (Rs. 3.99/Kg) while the price in India is around Rs. 3.78/Kg.
Place:

The AIC acts as supplier and stockist only. Both whole-saling and retailing is done through the cooperative system on the basis of fixed rate of commission.

Channels of Distribution. The Marketing Structure and Function:

As explained earlier there is a three-tier marketing channel. The corresponding physical distribution channel is discussed in Chapter VI.

Auxiliary Services:

Credit, information, promotion and extension services come under this category. They facilitate and support merchandising function.

Marketing Institutions:

The Role of AIC, ADBN, DCU's and Sajhas/Private traders has been discussed.

9.1.4. Summary And Findings of Chapter IV:

The following four topics have been covered in this Chapter.
1. Theoretical potential fertilizer requirement
2. Trends in fertilizer use
3. Factors influencing consumption
4. Economics of fertilizer use

1. Theoretical Potential Fertilizer Requirement

The following basic assumptions have been made:

(i) Arable land will remain constant at 2.5 million ha.

(ii) Improved varieties will be planted to 20% of the paddy and maize hectarage and 80% of the wheat hectarage.

(iii) The fertilizers will be applied as per recommended dosages (vide Table 4.2).

On these assumption fertilizer requirement in terms of mt. of nutrients for three main cereal crops (which currently account for 86% of total fertilizer consumption) was estimated to be 248,000 mt. consisting of 119,000 mt. of N, 75,000 mt. of P₂O₅ and 54,000 mt. of K₂O. This works out to 577,000 mt. of fertilizer products assuming that nutrients constitute on an average 43% of gross weight of fertilizers.
2. Trends in Fertilizer Use/Consumption:

1. Fertilizer consumption increased at an average annual rate of 15.8% between 1969-70 - 1980-81 and at the rate of 19.5% thereafter.

2. The share of the five development regions in national consumption of fertilizers in 1975-76 was as follows:

- Central 71.25%,
- Eastern 10.04%,
- Western 15.31%,
- Mid-Western 2.17%,
- Far-Western 1.23.

By 1985-86 the percentages had changed to 61.63%, 14.28%, 17.71%, 4.21%, and 2.17% respectively. Though there was increase in the absolute level of consumption in all regions, the relative share of central region had shrunk and that of all other regions had improved because of their faster growth rate.

3. Currently the major cereal crops paddy and maize together accounted for 37% of total fertilizer consumption, wheat for 49% and all other crops together accounted for 14%. In 1975-76 the corresponding percentages were 71%, 24% and 5% respectively (See Table 4.12 (A)).

4. Fertilized areas as a percentage of cultivated area was 7.0% in 1975-76 and is 11.0% to day.
5. The share of NPK in total nutrient consumption is 73.5%, 22.5% and 4% respectively.

6. Per hectare consumption of nutrients has increased from 6.0 Kgs in 1975-76 to 17.8 Kgs in 1985-86, at the national level. However, barring Kathmandu Valley in all other areas of Nepal fertilizer consumption levels are so low that they are considered to be in the introductory stage of fertilizer development.

7. International comparison of levels of fertilizer consumption in Nepal and its Asian neighbours reveals that only one country Afghanistan had a lower level of consumption than Nepal, which was practically on the bottom rung of the ladder of fertilizer consumption.

3. Factors Influencing Fertilizer Use/Consumption:

Results of two important field studies - FAO-RAPA study of 1980 and Michael B. Wallace's study of 1986 about farmers attitude to fertilizer consumption are now available.

The FAO/RAPA study indicated (See 4.3) that among the farmers:

(a) 92% of those using chemical fertilizers, were convinced that fertilizer use was profitable and 31% expressed their intention to use more fertilizer.
(b) 73% of the farmers interviewed had never met an extension agent; only 42% were aware of fertilizers and only 1% had correct knowledge about the dosage recommended.

(c) The farmers' response to various measures to encourage consumption was as follows: 29% willing to respond if 5% or greater reduction in price, 24% respond to availability, 16% to availability of credit, 13% to proximity of retail outlet and the balance 18% for a variety of reasons.

The study by Wallace (4,3,2) emphasized that of the 264 farmers interviewed 26.5% had no difficulty in securing supplies of fertilizer, while 47.5% reported difficulty in securing supplies. The balance 26% had a variety of difficulties but mainly the problem of awareness. Thus the Wallace study indicated that price incentives and economics of fertilizer use did not have much influence on fertilizer use which depended mainly on access to information (awareness of the product), and availability of supplies.

The field investigation (survey of 150 farmers) carried out by the Author clearly indicated that fertilizer consumption was price-inelastic. In fact 45% of the farmers stated that access to information
about fertilizer will improve their fertilizer consumption. Similarly availability of irrigation and credit facilities would enable another 20% of the farmers to increase their fertilizer consumption. Another 20% indicated that timely availability of fertilizer will lead to higher fertilizer consumption by them. The balance 15% farmers stated that they would buy and use more fertilizer if the retail outlet were to be in their village (See Appendix -2, Table 15).

From these and on the basis of the Author's own field study the factors influencing demand are ranked in the order of their importance, as follows:

1. Availability of fertilizer
2. Access to information
3. Availability of credit
4. Price incentive
5. Fertilizer economics.

**Availability of Fertilizers:**

The availability of fertilizer at the retail outlet (point of sale) at the time it is needed is the main factor influencing fertilizer use. The non-availability is partly due to defect in the physical distribution system but mainly due to uncertainty of supplies at the macro level due to uncertainties of
donors intention, scarcity of free foreign exchange for commercial imports and lack of timely intimation of shipping arrival schedule by foreign donors. Another factor influencing supplies is the effect of the long open border with India.

Access to Information:

This is the key factor influencing use of fertilizers. The poor awareness is a reflection on the weakness and ineffectiveness of the promotion and extension efforts of the Government.

Availability of Credit: All studies are unanimous that extension of credit will contribute to increased use of fertilizers.

Price Incentive: While the FAO/ARPA study indicated that price was a powerful incentive for increased use, it was based on the evidence of farmers who were already using fertilizers. All the other studies indicate that price was not an important factor influencing use of fertilizer.

Economics of Fertilizer Use:

In the introductory stage of fertilizer development, farmers must be informed that fertilizer use is profitable and they should be convinced through field
demonstrations. Once they start using fertilizers they will automatically realise its profitability. In Nepal it has been noticed that paddy urea price ratio is not favourable (0.47). The wheat urea price ratio is more favourable. As regards VCR it is 3.5:1 which is quite satisfactory.

Results of Author's Field Investigation:

Availability of Fertilizer:

The survey indicated that every farmer was aware that in the winter season (November-December) the complex fertilizer would not be available in the needed quantity. In fact, those who were able to buy bought complex early in the season. Those who could not arrange finance quickly had to buy less quantity than needed by them. 30 farmers (20%) from our sample had to buy less fertilizer than required and consequently suffered 15 to 20% decline in yield of wheat that season (see Appendix 2 section 3.4 for greater details). This confirms our earlier analysis and findings of other scholars that availability of supplies is a very critical factor influencing fertilizer use and consumption.

Access to Information: 45 farmers (30%) from our sample had indicated that if they had access to
information about fertilizer and its use, they would buy and use greater quantity of fertilizer than they are currently using (Appendix 2 Table 15).

Uncertainty of Demand: The Farmers from our sample stated that normally there is no changes in their use of fertilizer per crop hectare (for the crops fertilized by them). However, the actual use and consumption may change if the crop composition in any year changes as part of normal crop cycle. The only other reason accounting for change in fertilizer bought and used is either inability to buy or unavailability of fertilizer at the retail outlet.

Outflow of Fertilizer into India:

Those farmers from our sample who haild from border districts like Biratnagar Bhairahawa and Jaleswar were keenly aware of the problem and its implications for them. They have therefore, welcomed the introduction of the card system by the Government to prevent leakage of fertilizer from the distribution channel. Our sample farmers indicated that normally 15 – 20 per cent of fertilizer were smuggled into India each year.
Economics of Fertilizer Use:

Though they were not able to put it clearly in words, it was clear from the discussion with farmers that they computed profitability of fertilizer use in terms of VCR (Value Cost Ratio). From their own personal experience and the experience of friends and neighbours they have come to the firm conclusion that fertilizer use is profitable. However, they are ignorant about the profitability of high analysis fertilizers like DAP and TSP and are resolutely resisting their introduction. Hence, there is need for effective promotional work.

Accessibility to Credit:

30 sample farmers (20%) indicated that if more credit is made available they will buy a larger quantity of fertilizer than at present (see Appendix 2, Table 15).

Thus our field investigation confirmed the inferences drawn from secondary data.
Generally, two indices are employed to indicate the profitability of fertilizer use, viz., grain/fertilizer price ratio and value cost ratio (VCR). The rule of thumb employed by farmers the world over to use fertilizers is that the grain/fertilizer price ratio should be greater than 1.0 and VCR should be greater than 2.0. By VCR is meant the ratio of marginal value to marginal cost when an additional dose of fertilizer is used. It is thus a product of grain/fertilizer price ratio multiplied by the crop response to fertilizer.

An international comparison of paddy/urea price ratio shows that it is very low in Nepal and as such it does not provide any incentive to use fertilizer. The wheat/fertilizer price ratio is generally >1.0 and hence provides an incentive to use fertilizer for wheat.

The trend in grain/fertilizer ratio indicates that the ratio has deteriorated in Nepal over the years both in the case of rice and wheat. This is a cause for concern and there is need to push this ratio nearer to or above 1.0 as the case may be.
Fertilizer Subsidisation Policy:

The policy of price and transport cost subsidisation has undoubtedly enabled farmers from Hill areas to use fertilizers. It has also boosted consumption levels in Kathmandu valley. However, it has burdened AIC with mounting losses and made its operation almost non-viable. Hence the question of gradual withdrawal of price subsidy is being seriously considered. The transport cost subsidy is essential and should be continued till transport facilities are adequately developed. It may be noted that there are severe limitations on the subsidisation policy. The actual amount of subsidy cannot be larger than the transaction plus transportation cost of moving fertilizer from India to Nepal across the Tarai border.

9.1.5. Summary And Findings of Chapter V:

History of Fertilizer Policy:

The history of fertilizer pricing policy indicates that the policy has gradually changed. Initially a full cost price was charged. Hence, different prices prevailed in Tarai and the Hills. This policy discouraged the use of fertilizer by Hill farmers.
In 1972 uniform price policy was introduced for fertilizer. The price was below cost in Hills and above cost in Tarai, and the level was so fixed that losses in supplying fertilizer to Hill farmers was passed on to the shoulders of the Tarai farmers. Thus AIC was operating on a no profit no loss basis. In the final stage when international fertilizer prices sky-rocketed it was found difficult to maintain the earlier policy of passing on the burden of subsidising Hill farmers on the shoulders of the Tarai farmer. Hence a new policy of subsidising fertilizer prices throughout the country was adopted. To encourage Hill farmers AIC bears the transport cost and is compensated for it by the government through a transport cost subsidy. This policy is currently followed in Nepal.

Goals of Price Policy:

The policy goals have been:

(i) To encourage crop output by lowering the price of an important agricultural input namely, fertilizer which represents 22% of production cost in Tarai and 34% of production cost in the Hills (4.4.1).
(ii) To encourage Hill farmers by providing transport cost subsidy.

(iii) To discourage outflow of subsidised fertilizer into India.

(iv) To maintain stable price level.

Impact of Price Policy:

The fertilizer policy has had very limited success. It has encouraged Hill farmers to consume fertilizers. However, Michael B. Wallace who studied this problem in 1986 found that while there is a dramatic rise in aggregate consumption of fertilizers, the price and transport cost subsidisation policy was not an important cause of this. According to him, availability of fertilizer, product awareness (access to information) and provision of credit explain rise in consumption of fertilizers. He has clearly established that the demand for fertilizer in Nepal is relatively price inelastic. He also found that farmer in Kathmandu Valley, Tarai and the Hills respond differently to a rise in price, the farmers in Kathmandu Valley being marginally more responsive to price.

Effect of Price Policy on Fertilizer Consumption:

The survey of 150 farmers carried out by the Author provides important insight into the effect of
price policy. The survey results presented in Appendix 2 Tables 11 and 12 bring out two important facts viz.,

1. The increase in demand for fertilizers is due to increase in the number of farmers consuming fertilizer and not through increase in per capita consumption of fertilizer from farmers (Appendix 2, Table 11).

2. There was no significant change in per capita consumption of fertilizer from year to year (Appendix 2, Table 12).

These two facts together indicate that change in demand is not along the original demand curve but due to shift in demand curve. This fact establishes conclusively that the demand for fertilizer is price inelastic. This is very important conclusion and has serious implication for fertilizer price policy. Our own findings re-inforce Mr. Wallace's conclusion that fertilizer demand is relatively price inelastic.

**Fertilizer Policy as A Strategy of Agricultural Development**

A study of fertilizer consumption pattern revealed that:

(i) Per hectare consumption level is low (17.8 Kg. of nutrients).
(ii) Only 11% of cultivated area is fertilized.

(iii) Fertilizer is used mainly on wheat (49%), paddy (28%) and maize (9%).

(iv) Consumption levels are about 50% of the recommended dosage.

(v) Fertilizers are applied to HY varieties and on irrigated land.

This revealed a tremendous potential to improve fertilizer use and the relative failure of fertilizer policy to boost fertilizer consumption level and the level of agricultural productivity dramatically. The reasons for failure are:

(a) Lack of coordination with other development activities and particularly provision of fertilizer credit, supply of HYV of seeds, development of irrigation facilities, and supply of other modern agricultural inputs.

(b) Uncertainty of fertilizer supply both at the micro and macro level.

(c) Lack of product awareness due to ineffective promotion and extension work.

Implication of Long Open Border With India:

The size and strength of the Indian fertilizer market is such that it dominates the fertilizer market of Tarai and makes it impossible for Nepal to pursue an independent fertilizer policy and limits the effective amount of subsidy that can be offered to the
farmers to the cost of transaction and transport for Nepal to India or Vice Versa. If the amount of subsidy is larger than this cost then fertilizer will flow out of Nepal and into India. To prevent such outflow Nepal has to maintain its fertilizer price above the level of the Indian price.

Implications of the Policy of Subsidising Fertilizer:

The real cost of fertilizer to AIC is Rs. 5130/-mt. in the case of urea and Rs. 6830/mt. in the case of complex. The selling price of both urea and complex is fixed at Rs. 3990/mt. This implies that urea and complex are being currently subsidised at the rate of Rs.1.14/Kg. and Rs. 2.84 /Kg. respectively. Since the prices of urea and complex in India are Rs. 3.78/Kg and Rs. 4.20/Kg, it means in effect, that there is no subsidy on urea and the subsidy on complex is only Rs. 0.21/Kg. for those who can buy from across India.

In May 1986, it was estimated that AIC incurs a loss of Rs. 330 million per annum on account of fertilizer price subsidy at the current level of import. The losses would amount to Rs. 1200 million if fertilisers are imported on the scale planned in the Seventh Five Year Plan (1985-1990). Consequently, the state will no longer be able to absorb losses at this rate and a policy of eliminating subsidy is indicated.
In this context it may be noted that since VCR is 3.5 in the case of Nepal there is no real need to subsidise the price of fertilizer.

However, to encourage Hill agriculture the transport cost subsidy needs to be continued till adequate transport facilities are made available. The Government should fully compensate the transport cost to AIC.

Further, till the price subsidy is completely done away with, the burden of price subsidy should be borne by the Government and not the AIC.

**Measures for Fertilizer Adoption and Promotion:**

At present the market information system in Nepal is week and totally ineffective. The extension services while good are too thinly spread and not sufficiently backed by research. Hence they are unable to solve farmers problems regarding fertilizer use and have failed even to create proper awareness of fertilizer among the farmers. Bulk of the farmers have no contact with extension service. The farmer's surveys indicate that they need to know:

1. The correct crop management practices
2. Correct fertilizer doses and methods of application.
(iii) How to vary fertilizer dose to suit the soils
(iv) Fertilizer characteristics and uses
(v) Economics of fertilizer use.

The extension service must not only keep the farmers well informed about these matters but also provide them technical services such as soil testing and ensure availability of suitable HYV seeds and other agricultural inputs, through AIC by coordinating with them.

Finally, it may be noted that fertilizer use efficiency is normally linked with several factors like soil, seed, season, time of planting and harvesting, water management, pest control, fertilizer sources and time and method of application as also the quantity of fertilizers applied. Hence such information needs to be disseminated.

Also since seeing is believing and believing is using, it is necessary to demonstrate fertilizer use to the farmers through field trials on farmer's fields.

Further, under Nepalese conditions fertilizer use can be effectively promoted only through a concerted package approach wherein all the needed inputs are made available in required quantities and proportion particularly in the Hills. This implies an integrated
approach covering agricultural research, extension, irrigation, credit and other farm inputs. However, such a clear cut integrated approach is absent today.

Need for Regional Differentiation:

Experience indicates that adopting a single uniform fertilizer price policy for the entire country is not desirable as it ignores important regional variations in respect of:

(i) Level of fertilizer use
(ii) Crop response ratio
(iii) Experience of fertilizer use
(iv) Access to information
(v) Availability of an alternative source of supply
(vi) Farmers elasticity of demand for fertilizers.

9.1.6. Summary And Findings of Chapter VI:

Supply Analysis: In Nepal fertilizer demand is outstripping fertilizer supply. The growth of supply is inhibited by:

(i) The uncertainties about donor's intentions and wide fluctuations in the quantum of aid from year to year,
(ii) uncertainty regarding availability of adequate free foreign exchange for commercial imports. The net result has been the shortfall in meeting planned targets of fertilizer supply.

Trend in both national and regional supply of fertilizers follow closely the same pattern as the trend in national and regional consumption of fertilizers.

Sources of Supply and Procurement Costs:

Japan and West Germany have emerged as the most important donor countries and the prices of fertilizer charged by donor countries are substantially higher than the prices prevailing in the world market. This is particularly true of Japanese supplies. Consequently, commercial imports are considerably less expensive than fertilizer received as aid.

In the past because the donor countries were not properly guided regarding Nepalese fertilizer needs, some times types of fertilizers not in demand locally were supplied. The situation has now greatly improved.

Matching fertilizer supply to the demand has become difficult not only due to uncertainties of supplies but also due to errors in projecting demand.
correctly. The procedure for estimating annual demand needs to be improved considerably.

Nepalese fertilizer prices do not reflect the real cost of fertilizers. Even if the prices are subsidized the relative prices of different types of fertilizers should reflect their relative costs. This does not appear to be the case in Nepal.

**Constraints on Fertilizer Supplies:**

There are many constraints on fertilizer supply both at the micro and macro levels. The macro level constraints have already been elaborated earlier. At the micro level, the constraints are (i) the uncertainties of supplies at the macro level, (ii) the inadequacy of the physical distribution system, (iii) lack of motivation on the part of AIC and finally (iv) inadequacies of the commercial marketing channel.

**Fertilizer Marketing System:**

In this chapter a detailed description of the marketing system and particularly the physical distribution system is furnished. The inadequacy and ineffectiveness of the auxiliary services such as promotion, advertising and extension service and
fertilizer credit have been fully brought out. Also the dissatisfaction of farmers on the Hills with the current size of packaging has been brought out. The results of Author's field survey elucidating the functioning of the marketing system particularly at the village level and the farmer's dissatisfaction with packaging have also been presented. The findings are in line with the conclusions of the earlier studies of this kind carried out by FAO/RAPA and Michael B. Wallace.

**Fertilizer Marketing Costs**

Comparison of marketing costs of selected Asian and Pacific Countries revealed that Nepal was one of three countries where marketing costs are highest (exceeding 40% of the cost of fertilizer). The high cost of marketing in Nepal is traced to the high cost of transportation (both primary and secondary), which together with handling costs accounts for 50% of the total marketing cost. The composition of the marketing cost was, transportation 50%, interest charges 18%, dealers commission 14% administrative charges 13.4% and other miscellaneous costs 4.6%. Because of the rising prices of fertilizer and the consequent need to subsidise fertilizer prices, there is a growing pressure to prune the marketing costs and this is being done.
The study indicated that there was considerable scope for reducing marketing costs. The following cost components were found to offer scope for reduction:

(1) Transportation cost
(2) Interest cost
(3) Overhead and contingency
(4) Loss and pilferate
(5) L.C. Charge.

Some steps have already been taken to reduce these costs and others are in the offing.

9.1.7. Summary And Findings of Chapter VII:

The government of Nepal plays a vital role in formulating and in ensuring the success of its fertilizer policy. It is necessary to note here that fertilizer policy is part and parcel of a policy-mix for agricultural development and its success or failure depends to a large extent upon the success of the government in following and coordinating such organizational, institutional, legal and economic policies as create a climate conducive to the success of the fertilizer policy.
Organizational Policy:

In order to be able to help the large number of small farmers spread all over the country a policy of organising small farmers into viable groups of 5-25 families is being vigorously pursued under SFD programme. Similarly, on the supply side, the make up for the absence of a well developed business community and dealer network for marketing fertilizers, other agricultural inputs and items of essential consumption, a system of community cooperatives (Sajhas) was organized on the same democratic pattern as the panchayat system. They constitute the principal channel for distributing fertilizers, other agricultural inputs and essential commodities.

Institutional Policy:

Institutions such as AIC, ADBN, DCU's and various agencies for promotion and extension work were created and a development administration has been set to execute development policies and programmes.

Legislative Policy:

Being a welfare state, Nepal has put on statute book various acts to ensure social justice and for
regulating the marketing of agricultural produce and agricultural inputs.

**Economic Policy:**

To promote rapid economic development necessary infrastructure is being created and the physical distribution system for fertilizer is being improved.

**Fertilizer Strategy of Nepal:**

The long term objective of fertilizer policy is "to use fertilizers in conjunction with other inputs, to increase agricultural productivity to provide employment and food to an expanding population and supply raw materials to the agroindustries" and the fertilizer strategy is oriented to this objective.

AIC has been organized primarily for procuring and distribution of agricultural inputs on a nationwide monopoly basis. However, since the fertilizer trade has become unprofitable with the policy of uniform price and price subsidisation, the AIC, is burdened with mounting losses and as these losses will increase further with increase in imports and sales AIC has no monetary incentive to promote fertilizer sales. The absence of competition aggravates this
situation further. Hence it is necessary to reduce the losses resulting from subsidisation policy and to compensate the AIC for these losses.

Strategy for improving procurement and Supplies:

Better liaison with donor countries and keeping them advised regarding the genuine fertilizer needs of Nepal are the strategies currently followed. They should continue these strategies. Procedural improvements should be effected so that shipment advice is received in time.

Marketing Strategies:

These strategies cover decision in the following areas:

(a) Marketing Channel
(b) Physical Distribution System
(c) Fertilizer Pricing and VCR
(d) Sales Promotion and Advertising.

(a) Marketing Channel: The strategy is to encourage Sajha system so that it emerges as the sole distributor of fertilizers and other agricultural inputs. Recently there is some change in this strategy and private dealers have been allowed to operate as retail outlets. As a result the number of private retail
outlet has increased enormously, particularly in
the high consumption areas of Kathmandu Valley and
Tarai. Thus an element of competition has been
injected into fertilizer retailing.

(b) Physical Distribution System:

Storage Facilities: Existing storage facilities are excessive and badly located. Consequently
there is shortage of storage capacity in some areas
and excessive capacity at some other places. A
review of the existing location and location policies
is warranted. Also the policy of creating storage
facilities under AIC ownership should be modified
and creation of storage facility at the wholesale
and retail level should be encouraged.

Transport Facilities: Since transport costs
represent 50% of total marketing cost of fertilizers
and since transportation consumes enormous time,
there is urgent need to improve the transport system.
Some steps have already been taken in this direction.
E.g.:

(i) Primary transport costs from Calcutta port to
Nepalese border are being reduced by shifting
from rail to truck transport and by calling
annual tenders for transport contract.
(ii) shifting from low analysis fertilizer Ammonium Sulphate \((20:0:0)\) to high analysis fertilizer Urea \((46:0:0)\) has reduced substantially the quantum of fertilizer needed and saved transport costs. It is estimated that if complex fertilizer \((20:20:0)\) is replaced by a Urea - DAP compound fertilizer the transport costs can be reduced to the extent of 70 to 100 million rupees at the 1984-85 level of complex fertilizer consumption.

(iii) It is suggested that shipping costs may be brought down either by bulk shipping or by using containers for transport or by importing through suitable agency in India with the consent of Government of India.

(iv) A transport cell need be created in AIC to plan and coordinate all transport activities so as to safeguard AIC interests.

(c) **Fertilizer Pricing And VCR** : The fertilizer pricing policy has failed. Hence the following strategies are suggested:

(i) Machinery for making price decisions must be made to respond quickly to fertilizer price changes in India and the world.
(ii) Domestic fertilizer prices should be approximately 6% higher than Indian prices.

(iii) Fertilizer price subsidy should be gradually eliminated. The process may be initially started in Kathmandu Valley.

(iv) Transport subsidy may be continued only for developing Hill agriculture until transport facilities are fully developed.

(v) Fertilizers received as aid should be valued at CIF price of commercial imports, for the purpose of computing price subsidy. This will ease the burden of subsidy to some extent.

(vi) System of uniform prices should be replaced by the full cost pricing policy.

(vii) **Incentive for Fertilizer Use**: To act as incentive grain/fertilizer price ratio should be $\geq 1.0$ and Value Cost Ratio (VCR) should be $\geq 2.0$. This implies that fertilizer price changes are important only in so far as they influence grain/fertilizer price ratio and VCR. They are not important in themselves as factors influencing fertilizer use.
(viii) Motivating the farmers: The price elasticity of demand for fertilizers is found to be very low. Only product awareness, access to information and availability of supplies appear to influence consumption level directly.

Cost of Current Fertilizer Policy:

The cost of the prevailing fertilizer policy is prohibitive. In 1986 May it was estimated that loss on account of fertilizer subsidy would amount of Rs. 330 million a year at the prevailing level of imports.

9.1.8. Summary And Finding of Chapter VIII:

The fertilizer marketing management system may be evaluated with reference to two criteria:

1. Criterion of efficiency
2. Criterion of cost effectiveness.

The criterion of efficiency assesses the extent to which the system has succeeded in attaining its goals, and the criterion of effectiveness assesses whether resources are being optimally used. The same criteria are applicable irrespective of whether the system is viewed from micro or macro level.
Evaluation of Fertilizer Marketing Management System
In Nepal From The Macro Point of View

The system had two principal goals:

(i) To provide food security to Hill people
(ii) To enable Hill farmers to buy fertilizers.

The available evidence suggests that it has totally failed in attaining goal (i) and has been only partially successful in attaining goal (ii). This may be seen from the fact that cereal production of Hill area expressed in terms of per capita availability of cereals has deteriorated from a level of 177 Kgs. in 1967-68 to 161 Kgs in 1978-79 and (reportedly) to 154 Kgs. in 1985-86. As regards fertilizer use, the Hill farmers are enabled to buy fertilizer and the rate of growth of consumption in high. Yet, the absolute level of fertilizer use is too low to make any visible impact on agricultural production due to (i) the progressive erosion and impoverishment of the soil (ii) low proportion of cultivable area fertilized (less than 11%).

As regards the cost effectiveness, it was found that benefit cost ratio for fertilizer was 1.90 for Nepal as a whole. This level is not considered to be adequate to provide incentive to greater fertilizer use.
The ratio was greater than 2.50 in the case of both wheat and maize and 1.53 in the case of paddy. This probably explains greater use of fertilizers on the wheat crop.

Evaluation of Fertilizer Marketing Management System in Nepal From The Micro Point of View:

At the micro level the fertilizer marketing system has two principal goals:

(i) Customer Satisfaction
(ii) Profitability for the distributing agencies.

Here again it may be noted that the system has been unable to fully satisfy the customer and also till recently, it was not able to ensure profitability of trade to the distributors. Let us examine the available evidence in these respects.

Customer Satisfaction:

The system has failed to satisfy the customers because of its failure to match the demand in time, in quantity or by type of product. Non-availability of fertilizer when needed has been noted by all previous studies. This is attributed to uncertainties of supply at the macro level and a defective
physical distribution system and weak commercial marketing channel. The mismatch between the type of fertilizer demanded and supplied is explained partly by the failure of AIC to liaison effectively with foreign donors and partly by the failure of the agencies responsible for promotion and extension work to convince the farmers that DAP-Urea compound is superior to complex fertilizer and that they should shift from consumption of low analysis fertilizers to high analysis fertilizers.

**Profitability of Fertilizer Trade:**

In the past, fertilizer trade was unprofitable. With an annual sales of around Rs. 50,000/- and a sales commission of 5% a Sajha could earn Rs. 2500/- a pittance which made fertilizer trade economically non-viable. Many Sajhas got into indebtedness became defaulter and ultimately had to be wound up. As a result their number shrunk from 1470 in 1978-79 to 567 in 1981-82. Since then the position has slightly improved. Annual sales are around Rs. 200,000/- and at 5% commission yields an income of Rs. 10,000/- per year. For a Sajha even this income is inadequate to meet its overheads. Whereas for a private dealer who has some
other main business, fertilizer trade (as a subsidiary source of income) becomes profitable. This explains the enormous increase in the number of private traders entering fertilizer retail trade particularly in the Kathmandu Valley and Tarai. This has also introduced an element of competition in fertilizer retail trade.

**Evaluation of the Fertilizer Marketing Management System From the Point of View of Organization Theory:**

From the preceding discussion, it is clear that the fertilizer marketing management system has:

(i) Well defined goals and strategies and
(ii) An organization viz: AIC to operate the system
(iii) An organization which is well staffed and has built in mechanism for coordination and direction of its activities and for financing its operations.
(iv) A system that is in place and in operation.

Thus the system is complete and viable from the point of view of organization theory. But whether it succeeds in attaining the goals of the system will depend mainly on the quantum of resources made available to it, the degree of autonomy that it is allowed,
the correctness of the policies that it has to implement, the reality of the assumption and the extent to which the policy-mix of which fertilizer policy is a part, is implemented vigorously and effectively.

9.2. Results of Field Survey Carried out By the Author:

A field investigation had been carried out by the Author primarily to fill up gaps secondary data and also to ascertain the attitudes of Nepalese farmers to fertilizer distribution and consumption. The study comprised of:

(i) A case study of AIC

(ii) A survey of attitude of farmers.

9.2.1. A Case Study of AIC: This case study has been presented in Appendix - 1 under the title - 'AIC - A PROFILE'.

Constitution: AIC is an autonomous public sector undertaking wholly owned by HMG of Nepal. It's role is to give logistic support to agricultural development projects of the Government and procurement and supply of agricultural inputs to farmers of Nepal. The current over emphasis on logistic support to Government programmes should be corrected and more emphasis should be laid on meeting the needs of farmers with regard to agricultural inputs.
Resources: Because of mounting losses on fertilizer trade which is its principal activity the AIC's position has become venerable. This must be corrected by gradually doing away price subsidy and compensating the AIC for the losses till the fertilizer trade becomes profitable.

9.2.2. Organization: AIC is a highly bureaucratic organization dominated by nominated officials. There is need to give representation to the farmers and elected representatives of the people on the AIC board so that interests of the farmers and the public are duly protected from bureaucratic practices.

9.2.3. Staffing: There is a dearth of highly technical staff and some of the top positions are vacant as the incumbents have been sent abroad for training or are not filled. Also there is heavy turn over in the staff. Also neither AIC nor its staff have the necessary motivation to increase fertilizer sales and consumption. This situation needs to be corrected. Also AIC does not at present have any responsibility for fertilizer promotion or for promoting fertilizer sales through front level sales officers. This situation also needs correction.
9.2.4. Fertilizer Distribution: The distribution channel and commission, transportation and storage, packaging and management of supplies and related aspects were studied. It was found that contrary to the stated policy of encouraging Sajhas, the private traders have been encouraged to take up retail trade. The storage capacity has not been properly located with the result even though there is excess capacity in the aggregate shortage of space is experienced at some locations. Remedial action must be initiated. Transportation facilities are inadequate and costs are prohibitive and need to be subsidized. Shortages of fertilizer is experienced because of uncertainties of quantum of foreign aid, constraints in availability of foreign exchange resources for commercial import and delay in communicating shipping schedules and the consequent delay in receiving imported supplies in time to maintain regular supplies at the final retail outlets. There is also the problem of preventing outflow of subsidised fertilizer from Nepal into India. Appropriate price policy and administrative measures should be initiated for this purpose.

The present method of distribution adopted during periods of scarcity is not equitable and should be revised.
The current size of packaging (50 Kgs bag) is not convenient for Hill transportation by mule and porter. Also the farmers want, 5, 10, and 15 Kgs packets of fertilizer. The farmers' needs should be met.

On the whole there is urgent need to radically modify AIC's structure of management, goals and strategies and style of management and assign to it some additional responsibility such as retail marketing and fertilizer promotion.

9.2.5. A Survey of Attitudes of Farmers:

The results of this survey are presented in Appendix 2. A sample of 150 farmers had been selected for this study. The selection was by ecological regions and weightage was in proportion to the consumption of fertilizer in the respective ecological region.

Characteristics of Sample Farmers:

The sample had more larger sized farms than in the universe and also the intensity of cultivation was higher. The proportion of irrigated area and khet in the total area of operated holding is also higher in the case of sample farmers. The average size of family is also bigger in the case of sample farmers.
Demographic Characteristics:

Of the 150 farmers selected 141 were males and 9 were females. The rate of literacy amongst sample farmers was 90 per cent as against 24 percent in the universe. All farmers except 2 depend entirely on farm income for subsistences.

Fertilizer Use by Sample Farmers:

The number of farmers using fertilizers is continuously increasing, however, there is no change in the level of fertilizer consumption per consuming farmer. Also fertilizer consumption level in the sample was substantially higher than in the universe. Also contrary to the fact that fertilizer consumption is highest in Kathmandu Valley, amongst the sample farmers it is highest in Tarai. This is explained to the fact that large farmers with assured irrigation facilities and consequently high rate of fertilizer consumption have come to be included in the sample from Tarai.

Fertilizer Awareness:

Fertilizer awareness is quite low in Nepal (about 11 percent) but is rapidly spreading (See Table 13, Appendix - 2). However, the official agencies have not been very effective in spreading awareness of fertilizer.
However, there is considerable scope for creating awareness and motivating farmers to purchase and use fertilizers. The extension agency must be strengthened for this purpose and programmes like farmer's Day should be undertaken more frequently and at widely scattered location to ensure greater participation by farmers.

**Fertilizer Use And Consumption**

The survey revealed that almost 90 per cent of the farmers were unaware of:

(a) Recommended fertilizer dosages for different crops
(b) Nutrient content of different fertilizer products
(c) Method of application of fertilizer.

Also the per crop hectare consumption of fertilizer was in the range of 40 to 60 Kgs. and thus was substantially below the recommended dosage.

**Determinants of Fertilizer Demand**

The demand for fertilizer was dependent upon:

(i) Theoretical potential demand
(ii) Willingness of farmers to buy and use fertilizer
(iii) Ability of the farmers to buy fertilizer and
(iv) The availability of fertilizer at the retail outlet.
**Price Response of Farmers:**

Farmers stated emphatically that they were not influenced by (marginal) changes in price of either grain or the fertilizer. In fact, the demand for fertilizer was found to be highly inelastic.

**Farmers' Attitude to Extension Agencies:**

They are useful and must be strengthened so that they may serve the farmers more effectively.

**Farmers' Attitude to Promotional Work:**

The farmers want promotional measures to be intensified. They feel that greater emphasis should be put on farmer's Day rallies, field trials on farmers' plots, etc. They also want printed literature about urea and complex not on TSP and DAP.

**Farmers' Attitude to Outflow of Nepalese Fertilizer into India:**

The farmers want this outflow halted. They have welcomed the card system introduced by the government to prevent such outflow.

**Incentives to Farmers:**

The farmers would increase consumption of fertilizer if they had greater access to information (45%), if more credit or irrigation facilities made available.
(20 %) or if the fertilizer is made available in adequate quality (20 %) or if the retail outlet is moved into the village (15 %).

9.3. **Recommendations**

9.3.1. **Fertilizer Marketing Management System**

1. AIC management structure should be changed so as to give effective representation to farmers and the public on its Board of Management.

2. AIC’s goals and objectives should emphasize the necessity of meeting farmers needs and correct the over-emphasis on providing logistic support to national agricultural development programmes.

3. AIC’s should be entrusted the responsibility for fertilizer promotion and retail fertilizer sales through appointment of front-line sales officers.

4. AIC should create a special Transport Cell to co-ordinate and streamline all transport activities to the advantage of AIC.

5. AIC’s finances should be put on a sound footing by eliminating losses on its fertilizer trade.

6. For this purpose fertilizer pricing policy should be revised so that:

   (a) price subsidy is gradually eliminated
   (b) uniform price policy is replaced by a full cost pricing policy
(c) prices in Tarai should be so fixed so as to discourage outflow of fertilizers into India.
(d) the price setting procedure should be made flexible so that it can react quickly to changing fertilizer price situation in India across the Nepalese border.
(e) transport cost subsidy should be continued till such time as transport facilities are fully developed and the fertilizer market is fully integrated.
(f) as long as price subsidy is continued and AIC continues to suffer losses on this account, the Government must fully recompense the AIC for its losses on fertilizer trade.

9.3.2. National, Regional And Village Level Problems:

(A) National Level Problems:

(1) Fertilizer procurement policy and procedure must be revised. The donor countries must be apprised of the needs of Nepal and be persuaded to make commitments for 2-3 years so that commercial imports can be properly planned and timely shipment and availability are ensured.
(2) More resources should be made available by eliminating heavy subsidisation of fertilizer price.
(3) Fertilizer may be imported through Mineral and Metal's trading corporation of India (MMTC). This would enable bulk importation and reduce the cost of fertilizer.
(4) Agreement may be reached with India or Bangladesh to undertake a joint-venture to manufacture fertilizer in either of those countries so that fertilizer may be available regularly and at a reasonable price.

(5) Special relations with India may be developed to take advantage of the vast Indian market for fertilizer to meet the fertilizer needs of Nepal.

(B) **Regional Level Problems**

(6) In view of regional differences in the level of fertilizer consumption, stage of fertilizer development, experience with fertilizer use, elasticity of demand for fertilizer, crop response, availability of market surplus and the risk of farming, it is desirable to pursue separate policies for Tarai, Kathmandu Valley and the Hills.

(7) Hill agriculture should be encouraged by providing transport cost subsidy to Hill farmers.

(8) A barter system of supplying fertilizer against payment in grain at harvest time may be introduced in the Hills to encourage greater use of fertilizers and eliminate the problem of default by Sajhas who are unable to recover money from farmers not having any marketable surplus.

(C) **Retail Level Problems**

(9) Introduce system of personal salesmanship to promote fertilizer sales at the village level.

(10) Regulate and monitor the number of retail outlets to ensure their economic viability by guaranteeing a minimum volume of sales.
(11) Revise the rate of commission from 6% to 8% so that retail trading may become more profitable.

(12) Encourage private traders to open retail outlets in the interior parts of Hill areas or alternatively organized Hill cooperatives to serve the Hill farmers.

(13) Create storage capacity at village level to ensure timely availability of fertilizer.

(14) Training may be given to the staff working at the retail outlets, to enable them to guide the farmers regarding fertilizer use.

9.3.3. Needs of Farmers:

(1) Fertilizer consumption may be stimulated by creating greater awareness among farmers who are currently unaware of fertilizer products.

(2) Farmers already using fertilizers should be persuaded to increase their level of fertilizer consumption through effective communication by way of field trials, farmer's Day rallies and Farmers Training programmes etc.

(3) Development of irrigation facilities should be accelerated to increase demand potential.

(4) Extension of credit facilities may be planned to enable small farmers to improve their farm incomes through greater use of fertilizers.

(5) Regular and timely supply of fertilizers should be made through every retail outlets.

(6) Retail outlets should be located as near the consuming centre as possible.
(7) Price of fertilizer may be fixed in terms of grain so that stability of VCR may be maintained, on a long term basis.

(8) The card system should be continued and enforced rigorously to prevent outflow of fertilizer into India.

(9) Extension agencies should be strengthened and expanded to provide better service to the farmers.

(10) Promotional efforts should be intensified.

9.3.4. Theoretical Potential Demand:

(1) The prevailing system of estimating Theoretical potential demand for fertilizer is crude and inadequate. A new system should be developed.

(2) The new system should take into account the fertilizer needs of cash crops, horticultural crops as well as forestry plantations, which are neglected in the prevailing system.

9.3.5. Fertilizer Demand:

Since fertilizer demand is known to be price inelastic attempt to influence demand through price subsidy be abandoned.

9.3.6. Fertilizer Supply:

(1) In equilibrium between demand and supply at the branch level be eliminated by developing more accurate system of projecting demand and proper positioning of supply based on realistic estimate of demand. This would eliminate inter-branch transfer of fertilizer to balance supply and demand.
(2) Supply position may be improved by proper liaison with donor countries and securing forward commitment about grants and aid from them.

(3) High analysis fertilizers should be imported in lieu of low analysis fertilizers and to enable this a suitable promotional campaign be launched to popularise high analysis fertilizers.

9.3.7. Economics of Fertilizer Use:

(1) The current price policies are not conducive to promotion of fertilizers and therefore must be abandoned.

(2) Attempt should be made to ensure that grain/fertilizer price ratio is greater than unity and VCR > 2.

9.3.8. Fertilizer Pricing and Subsidization:

(1) Fertilizer price subsidy should be gradually eliminated. The process should first be initiated in Kathmandu Valley and subsequently in Tarai.

(2) The Government must officially take cognisance of the fact that the price of grain and fertilizer are by themselves not very significant. It is the grain/fertilizer price ratio that really matters.

9.3.9. Fertilizer Credit:

(1) An integrated credit system should be introduced and fertilizer credit and crop loan systems should be integrated with each other.
9.3.10. The Fertilizer Distribution System:

(1) The middle tier in the three tier distribution system, namely, the DCU's should be done away with as its functions can be discharged more efficiently by the AIC.

(2) Personal salesmanship system should be introduced.

(3) Adequate storage facilities should be created at the branch as well as at the village level to ensure regular and timely distribution of fertilizer.

(4) Economic viability of distribution units must be assured and the commission policy should be reviewed in that context.

9.3.11. Fertilizer Marketing Costs:

(1) A determined and systematic plan for cutting down transport costs (which account for 50% of total marketing cost of fertilizer in Nepal) must be drawn up and implemented.

(2) The shipping costs as well as primary and secondary transport costs offer considerable scope for cost reduction. The scope should be exploited.

(3) Interest costs should be brought down further.

9.3.12. Fertilizer Adoption and Promotion:

(1) The responsibility for fertilizer adoption and promotion should be squarely placed with AIC which should also be held responsible for retail sales.
(2) A special cell headed by a communication export should be created in AIC to coordinate the work of all agencies engaged in promotional and extension work.

(3) Radio programmes should be made more effective.

(4) Mobile audio visual units should be organized for fertilizer promotion work.

(5) Crop competition should be organized to encourage use of higher doses of fertilizer.

(6) Awards may be instituted crop-wise and region-wise for promoting efficient use of fertilizer.