PREFACE

Because of my association with the marketing function of the Fertilizer Industry for over two decades from 1969 through 1992 and by getting closely involved in the various facets of fertilizer industry, the conceptual and the practical dimensions of fertilizer marketing in India, were unfolded to me. This intimate involvement in the fertilizer marketing, prompted me to take up this research to share my experiences with the current and future executives of the Fertilizer Industry, policy makers, administrators and academicians in the central and state Governments. My friends in the industry and the academic world in India and abroad encouraged me to undertake this work for the benefit of the industry. The Pondicherry University, Pondicherry provided me the opportunity and support to pursue this research.

In developing this thesis I have gone deep into the memory lane from 1969 when I had the initial contact with the fertilizer industry at Madras Fertilizers Ltd. I have ventured to trace the problems, issues and challenges of the industry since 1950.

The thesis is developed and presented in eight chapters. The first chapter covers the introductory portion. In this chapter a overview of the fertilizer industry has been made. The salient aspects of the development of the industry during the forty year period 1951 through 1992 have been covered. The important role played by the Government of India in giving a prominent position to the fertilizer industry and the emphasis given during the Five Year Plans have been discussed. The vital role played by the fertilizer industry in the economic development more specifically in the development of the agricultural sector has been emphasized. The urgent need to revitalize the industry for arresting the declining trends in the production and consumption rates have been brought out.
This chapter covers an in depth study of literature as a part of this research. Articles, papers and books study reports on several key aspects of fertilizer marketing system have been reviewed in this elaborate overview. Publications of the Fertilizer Association of India, New Delhi, Bulletins and annual reports of the Ministry of Fertilizers and Ministry of Agriculture GOI, Publications of the state Dept. of Agriculture, Reports of the Expert committees on Fertilizer Industry constituted by GOI, Publications of the Indian Institute of Management Ahmedabad on Marketing Management, Logistics Management, Seminar/workshop reports on Fertilizer industry have been critically reviewed as part of the literature study. The methodology adopted in obtaining data and information and also the quantitative techniques employed for analysis have been elaborated. Several of my publications, papers presented at seminars/workshops have also become inputs for the research. Limitations of the study is also covered.

I was closely associated in the study "Farmers' survey to estimate the use of fertilizers by crops in the southern region undertaken by the FAI- southern region Madras financially and technically supported by the fertilizer manufacturing units in the south. Based on the review of the reports, some high lights of this study which are important for the fertilizer marketing system are brought out in this chapter. This study brings out the perceptions of different segment of farmers (marginal, small, large, those cultivating rain fed land etc) on fertilizer use and the factors that would stimulate consumption. The study has revealed the expectations of farmers from dealers, manufacturers etc.

This chapter highlights some of the findings of two surveys carried for obtaining the feedback from farmers and sales executives on the usage of fertilizers, awareness to its use, factors motivating the application of fertilizers as per the recommended dosages. This study brings out the impact on the consumption of fertilizers consequent to decontrol of phosphates and potash, problems and issues in the area of logistics.
The second chapter Conceptual issues in Management of Fertilizer marketing elaborates the several dimensions of fertilizer marketing systems. How fertilizer product could be regarded as a Public Good and the extent to which government and the public at large should support the growth and development of this key sector have been elaborated.

The problems and issues, the industry had to encounter during the period frequently alternating of acute scarcity and glut, are traced. The inflexibility situation created by governmental regulations, controls on the marketing of fertilizers have been discussed. The need to adopt Marketing Management approach and changing from product and production concept to consumer orientation under the emerging policy environment have been elaborated. The several price and non-price factors that can stimulate fertilizer consumption have been identified. The fertilizer marketing system until recently (1992) had been using pricing as a motivation to increasing the consumption. The farmers survey has revealed that consumption equally depends on other factors such as availability of products, credit, irrigation facilities in addition to prices. This chapter has discussed these issues. The important aspect of promotion, extension and utilization of soil testing services in Fertilizer industry have been elaborated with trend statistics. The vital role played by logistics management in making the right products available to the farmers at the right place and time and in improving the service to farmers more particularly the marginal and small and those cultivating under rain fed conditions have been emphasized. The important role played by the cooperatives and fertilizer dealer in fertilizer marketing and rural development, their role as a changing agents are brought out.

The important role played by Railways, Warehousing Corporations, Institutional Agencies as providers of infra-structural support have been dealt in this major chapter.
The third chapter discusses the problems and issues connected with the Fertilizer subsidy. The Government of India policy with regard to the fertilizer subsidy, its implementation norms and the impact of the Fertilizer subsidy on Production and Marketing system have been dealt in detail. The strength and weaknesses of the system are brought out with illustrative examples.

The fourth chapter Marketing costs of Fertilizer covers the vital areas of cost control in the fertilizer marketing system. A close review of the several marketing cost elements have been made. The impact of each of the cost element, in the short and long run, on the consumer benefit has been made through a disaggregate analysis by taking actual data of a sample marketing costs of manufacturers and adopting a multiple regression analysis. How the industry can minimize costs impact of the Fertilizer subsidy on Marketing system have been dealt in detail.

How the industry can minimize costs without sacrificing the quality of service to farmers and distribution channels have been brought out. The need for fertilizer marketing system to take into consideration the cost -benefit analysis to the farmer and highlighting the economics of its use have been elaborated.

The fifth chapter Quantitative techniques for fertilizer marketing discusses the conceptual frame work of the various techniques that can be adopted for fertilizer marketing systems. A brief discussion of the mathematical theory leading to maximization / minimization has been made. The possibility of adopting a Linear Programming (L. P) model for fertilizer product allocation so that the transportation cost can be minimized has been elaborated.

Data pertaining to the seventy one districts ( centroids) in south India and production units in the south India have been obtained for developing the transportation model. The model has brought out the marketing spread for
each of the units which could minimize the aggregate transportation costs. This chapter covers the sales forecasting techniques that can be employed for short term logistics plan. Software package for the transportation model has been discussed and stepwise program has been provided in the appendix. This program can be easily adopted by Government of India and Fertilizer manufacturers for improved logistics management.

Inventory control model that fertilizer marketing units can employ for minimizing inventory holding costs has also been elaborated. Through a multiple Regression analysis of 23 year data on 5 key factors influencing consumption of phosphatic fertilizer have been identified.

The sixth chapter An innovative Marketing strategy for improved logistics discusses the product mix that would minimize the cost and maximize the benefit to farmers. The need to minimize the product range and manufacturing and marketing only high analysis products is brought out. The chapter also discusses the promotional mix that can be employed to improve the reach and impact. The need to involve the retail outlets and the cooperatives in the promotional strategy has been emphasized. Modern marketing management envisages segmentation in product, customer, in service levels. The need to consider plantations, large, medium farmers as separate segments for developing an effective marketing strategy has been brought out. Innovative approach employed by IFFCO as a case study has been elaborated in this chapter.

The seventh chapter Consumer behavior in Fertilizer usage-sample study covers the salient aspects of the field study carried out as a part of this research. The objective of the study was to obtain the perception of farmers on the use of fertilizers and their awareness level with regard to economics of the use of fertilizers, High Yielding Varieties (HYV), their behavior in respect of the decision making for purchase of fertilizers by obtaining primary data.
The field survey was carried out through personal interview of farmers at their residences/place of work, through a structured questionnaire. The study covered 210 farmers in 14 villages of Tamil Nadu/Andhra Pradesh. Statistical data on the land holdings, extent of irrigated and rain fed lands, applications fertilizers (type and quantity), the economics, utilization of soil testing service, reaction to price changes, key factors for use of fertilizers, information sources of farmers on cultivation practices, dosages of application, adequacy of dealer net work, service from cooperatives, what makes them buy from private dealer/ cooperative retail society, according to farmers what are the reach and impact of promotional / extension programs undertaken by fertilizer manufacturing units and the Dept. etc. were obtained. Services of M.B.A. students were availed for conducting the interviews.

This chapter brings out farmers decision making process with regard to fertilizer use and the impact of the marketing mix adopted by fertilizer marketing units. The chapter highlights the strengths and weakness of the current marketing system in meeting the expectations of the farmers.

The eighth chapter Summary and Conclusions brings out the suggestions and recommendations based on this research for policy considerations at micro and macro levels. The suggestion made in this research are pragmatic, conclusive and provides a good information base for strategic marketing management in fertilizer industry. The suggestion encompasses all areas of fertilizer marketing management with focus on logistics.

The bibliography provides elaborate references drawn from published books, research studies, reports, articles, discussion papers presented at seminars, workshops, Studies undertaken by fertilizer manufacturing units, FAI, NCAER from time to time.
A list of tables, maps have been made for easy reference.

The emphasis of this research is on logistics of fertilizer marketing. The optimization model developed, as an illustration, has demonstrated the utility of model in improving the efficiency of logistics and thereby minimizing the marketing costs.

It is earnestly hoped that this work provides new insights into the fertilizer marketing systems and influence the decision makers to consider the findings for implementation and thereby revitalize the marketing system in the fertilizer industry, consistent with the dynamism of the environment.

Significant contributions from the research are (a) Transportation model (b) sales forecasting model (c) inventory model which will improve the fertilizer marketing efficiency in the area of logistics at macro and micro levels.

The study has attempted to obtain the latest and elaborate statistics on several important aspects of fertilizer marketing and allied areas for the use of executives in the fertilizer industry & academicians so that further research can be attempted.