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**BUYER BEHAVIOUR OF RICE FARMERS
TOWARDS SELECTED AGRICULTURAL
INPUTS IN THRISSUR DISTRICT**

**By
SREEJA P. NAIR**

THESIS

**Submitted in partial fulfilment of the
requirement for the degree of**

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**Faculty of Agriculture
Kerala Agricultural University**

**Department of Rural Marketing Management
COLLEGE OF CO-OPERATION, BANKING & MANAGEMENT
VELLANIKKARA, THRISSUR - 680656
KERALA, INDIA**

2003

DECLARATION

I hereby declare that this thesis entitled **“Buyer behaviour of rice farmers towards selected agricultural inputs in Thrissur district”** is a bonafide record of research work done by me during the course of research and that the thesis has not previously formed the basis for the award to me of any degree, diploma, fellowship or other similar title, of any other University or Society.

Vellanikkara

Date: 09/07/03



Sreeja P. Nair



Dr. A. SUKUMARAN


Chairman, Advisory Committee
Associate Professor & Head
Department of Rural Marketing Management
College of Co-operation, Banking and Management
Vellanikkara, Thrissur

Vellanikkara
09 - 07-2003

CERTIFICATE

Certified that this thesis entitled “Buyer behaviour of rice farmers towards selected agricultural inputs in Thrissur district” is a record of research work done independently by Kum. Sreeja P. Nair, under my guidance and supervision, and that it has not previously formed the basis for the award of any degree, diploma, fellowship or associateship to her.

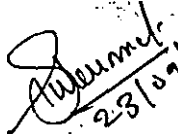



A. Sukumaran

Chairman, Advisory Committee

CERTIFICATE


We, the undersigned members of the Advisory committee of Kum. Sreeja P.Nair, a candidate for the degree of Master of Science in Co-operation & Banking, agree that the thesis entitled “Buyer behaviour of rice farmers towards selected agricultural inputs in Thrissur district” may be submitted by Kum. Sreeja P. Nair, in partial fulfillment for the degree.


23/09/03

Dr. A. Sukumaran
Associate Professor & Head
Department of Rural Marketing Management
College of Co-operation, banking & Management
Vellanikkara, Thrissur
(Chairman)


23/09/03

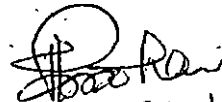
Shri. Philip Sabu
Assistant Professor
Department of Rural Marketing Management
College of Co-operation, Banking and
Management
Vellanikkara, Thrissur
(Member)


23-9-03

Dr. K. P. Mani
Associate professor
Department of Development Economics
College of Co-operation, Banking and
Management
Vellanikkara, Thrissur
(Member)



23.9.2003
Dr. P. Ahamed
Associate Professor
Department of Agricultural Extension
College of Horticulture
Vellanikkara, Thrissur
(Member)


23/9/03

Dr. P. Mohanan,
Reader, Department of Commerce and
management studies
Univesity of Calicut
Post Clicut University-673 635
(External examiner)

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CONTENTS

Chapter	Title	Page No.
1	INTRODUCTION	1 - 10
2	REVIEW OF LITERATURE	11 - 25
3	MATERIALS AND METHODS	26 - 33
4	RESULTS AND DISCUSSION	34 - 67
5	SUMMARY	68 - 76
	REFERENCES	i - vii
	ABSTRACT	
	APPENDIX	

LIST OF TABLES

Table No.		Page No.
3.1	Area under rice in Pazhayannur block	28
3.2	Proportionate samples selected for the study	29
4.1	Age-wise classification	35
4.2	Educational level of the respondents	36
4.3	Income level of the respondents	37
4.4	Accessibility to basic infrastructure facilities	38
4.5	Area of land possessed	39
4.6	Factors influencing estimation of seed requirement	41
4.7	Factors influencing the choice of seed type	42
4.8	Seed variety in use	43
4.9	Attributes influencing rice seed varietal choice	45
4.10	Rating of attributes of <i>Kunjukunju</i>	46
4.11	Length of use of varieties	48
4.12	Awareness about HYV of rice	49
4.13	Comparison between non-descript and HYVs based on selected attributes	50
4.14	Brands of agrochemicals in use	52
4.15	Length of use of agrochemicals	53
4.16	Factors influencing continuous usage of a particular brand	54
4.17	Factors influencing product / brand choice of fertilisers and agrochemicals	55
4.18	Attitude towards agrochemical usage	56
4.19	Awareness of the source of supply	57
4.20	Reasons for preferring private traders	58

4.21	Source of information about inputs and suppliers	59
4.22	Influence of technocrats	61
4.23	Reasons for preferring a particular dealer in marketing of end produce	63
4.24	Analysis of variance	65
4.25	Critical difference analysis	66

LIST OF ABBREVIATIONS

ANOVA	:	Analysis of Variance
BASF	:	Badische Ailine and Soda Fabrik
FACT	:	Fertiliser and Chemicals of Travancore Limited
ha	:	hectare(s)
HYV	:	High Yielding Variety
HYVs	:	High Yielding Varieties
KAU	:	Kerala Agricultural University
kg	:	kilogram(s)
MNC	:	Multi National Corporation
MT	:	Metric Tonnes
No.	:	number(s)
SPIC	:	Southern Petrochemical Industries Corporation Limited
TNAU	:	Tamil Nadu Agricultural University

Introduction

CHAPTER 1

INTRODUCTION

Human personalities are enigmatic, and the dealing with a diverse, obscure and complex personality may not be an easy task. The study of buyer's behaviour is a vital consideration, particularly in the modern marketing management. The buyers' decision-making process may be simple or elaborate, static or dynamic, gregarious or distinct or on the whole, a combined endeavour of multifaceted properties. Therefore an in depth study of the factors that affect the consumer's buying pattern is very relevant in the present day of modern marketing management.

Buyer behaviour includes all psychological, social and physical behaviour of potential customers. It consists of the acts of individuals directly involved in obtaining and using economic goods and services. In buyer behaviour we consider not only why, how and what people buy but also other factors like where, how often and under what conditions the buying decisions are made.

India is a country of villages. And so a marketer should consider the key differences between the behaviour of a rural and the urban buyer. The product, pricing, distribution and the promotion strategies require a close look at the buying patterns of the rural buyers. Majority of our rural buyers are farmers, as agriculture is the main occupation in rural areas.

India since time immemorial generates 40 per cent of its income from agricultural sector and hence is known as an agriculture driven economy. The country has the pride of achieving self-sufficiency in food grains particularly after the advent of new technology in agriculture popularly known as high

yielding variety seed-fertiliser-irrigation technology. Among food grains, rice is the crucial grain, which is an integral part of the human history, tied to us in countless traditions, interwoven in the oldest religious rites. We rightly say rice culture since this life-giving grain is a part of the human cultural evolution. Rice is more than simply a food, composed of carbohydrates, proteins, fat and micronutrients. It has been a companion for humankind for more than 7000 years, back beyond our knowledge, beyond our imagination. Hence the two basic inputs such as seed and agrochemicals are much important to the rice farmers in the new era of technological boom.

1.1 Marketing of agricultural inputs

Marketing of agricultural inputs has acquired added importance with increasingly liberated market for agricultural products, which are now free to be tuned to market requirements. This essentially requires tailoring the inputs markets as well to meet the growing demands of the food and fibre sector. Inputs have a very crucial role to play in this environment for productivity and quality improvement. An increasing use of new varieties of seeds and agrochemicals necessarily requires more efficient tools of marketing and extensions.

The Indian agricultural input marketing has seen several marked changes of late, in terms of products/technology, farmer practices, competition availability of mass media, price sensitivity and changes in cost build up. Each of these changes render the marketing scenario and the decision making process increasingly complex. The need is growing therefore, to use more and more importantly appropriate market research methodologies to effectively cope with each of the newly developing situations.

In the product/technology area the inputs have been undergoing drastic changes in the range of offerings, with a new generation of products rapidly replacing the existing products. In the case of insecticides, there has been a shift into systematic products, which promise fuller control. The case of insecticides use in cotton is an illustration of not only the intensity of the insect problem in that crop but also the availability of newer generation of products such as synthetic pyrethroids.

The herbicides usage, although a relatively recent phenomenon, again presents a scenario of changes. Pre emergent weed control, selective herbicides, increasing hand weeding cost and new application techniques are some of the changes that are taking root. Similarly the fertiliser, seeds and other input markets have been changing rapidly. Outlook of input industry seems laden with new milestones such as new hybrid or even transgenic seeds.

The changes that have taken place in the products as well as in the application methods and practices of agricultural inputs in the past few years and the outlook for the trend to multiply in the future indicate a need from the standpoint of successful marketer to closely monitor the changes in the market place, track the farmer practices and understand acceptance of new product concepts.

1.2 Seed marketing

Seed is a unique biological input in agriculture, which imbues in it the productivity potential of the crop. Quality seed alone is instrumental in increasing the output by 20 per cent and returns to non-seed part of investment depended significantly on the quality of the planting material used. Genetically improved hybrids/varieties offer one of the most cost effective means for increasing

productivity. Marketing of seed is the most important as well as challenging task of the seed industry because of the nature of the product.

Production and marketing of hybrid agricultural seeds (for example, tomato, egg plant, okra, etc.) have expanded considerably. Private seed companies have developed at least 152 varieties. About 70 per cent of these varieties are hybrids (Agarwal, 1991).

In recent years hybrid paddy varieties have been developed and marketed by both public and private sectors. Private sector hybrid paddy varieties reportedly have performed well in farmers' fields. Private companies have been more successful in paddy seed production.

Cooperation between public and private seed companies and governmental research stations has never been optimal because of conflicting interests in plant breeding research and seed testing procedures. With the changing environment, public sector breeding stations should pay more attention to create advanced breeding lines with value added (for example, diseases resistance) or to basic research, results from which could be utilised by private sector to support private research and development.

The Indian seed industry consists of ICAR institutes, state agricultural universities and public and private seed companies. Organised seed supply started with the establishment of National Seeds Corporation in 1963. Subsequently thirteen state seed corporations and nineteen state seed certification agencies were established under the National Seeds Programme with a loan from the World Bank.

In Kerala, the State Agricultural University is engaged in production of breeder seeds. The university has already released more than 100 varieties of

paddy including high yielding varieties. The adaptability of high yielding variety seeds is not yet satisfactory. Hence importance must be given to the buying behaviour of the farmers regarding the basic agricultural input – seed.

1.3 Agrochemical marketing

1.3.1 Fertiliser marketing

The success of the Green Revolution of the past 30 years depended on increased use of fertiliser inputs, especially nitrogen fertilisers. The rate of increase in fertiliser use, however, was much greater than the rate of increase in rice yields. The challenge of the next 30 years is to increase both yield and input use efficiency to preserve the quality of the environment and increase the profits from farming. Achieving these two goals will require more information – intensive agronomic management strategies to support the higher yields with greater output – input efficiency (Hussain, 1999).

Fertilisers continue to play a predominant role in India's agriculture economy. Due to modernisation in the agricultural techniques, fertilisers have provided an important source of plant nutrients to increase production. It is estimated that about 50 per cent increase in crop production could be attributed to fertiliser usage and further increase in the yield comes through increased and efficient use of agro-inputs including quality seed, water and in particular fertiliser. The Indian fertiliser industry has been meeting about 90 per cent of the country's present demand of nitrogenous and phosphatic fertilisers. There are 60 large size fertiliser plants in the country, manufacturing a wide range of nitrogenous fertilisers. Besides there are 113 phosphatic fertilisers plants including PAP, NP/NPK and single Super Phosphate units. India is the third largest fertiliser producer in the world. In Kerala, FACT is having the major share in the fertiliser market followed by SPIC.

The Indian fertiliser industry is caught in the controversy of pricing power vs. purchasing power. The fertiliser units do not have the pricing power and price fixation is firmly in the hands of the government. Farmers do not have the purchasing power while the government has to ensure fertiliser at affordable prices to farmers. Here comes the inevitability of the fertiliser subsidy, which is a hefty one.

Dealers play an important role in distribution, marketing and promotion of fertilisers and serve as an effective change agents of communication of modern fertiliser use technology from the agricultural scientists to the farmers. Micro level evidences on fertiliser purchase behaviour and marketing environment in the mid eighties revealed that the strategy of future growth in fertiliser consumption should simultaneously aim at exploiting the remaining untapped potential of fertiliser use through improving the response function environment, raising efficiency of fertiliser use and expanding effective demand for agricultural output. The policies must be based on a vision of cost effectiveness and continuously strive to raise the economic efficiency of fertiliser use in the present context.

1.3.2. Marketing of crop protection chemicals

Crop protection is central to the success of farm operations. Pesticides have been playing an important part in the crop protection in our country. The use of pesticides has resulted in considerable yield enhancement and has achieved additional income for the farmers. Although the industry has been registering impressive growth, still there is considerable scope for improvement, as the per capita consumption of pesticides in India is significantly lower than the global parameters. At the same time there are new challenges in the form of globalisation, biotechnological developments, environmental hazards, residual

effects on human health, which are posing a threat to the industry. The pesticides industry has been singled out by many to launch their attacks. Recently, Kerala has banned the sale of Endosulfan, one of the largest selling molecules.

India is third in pesticide consumption in the world, which has grown in consumption from 154 metric tonnes in 1953-54 to 54,135 MT in 1999-2000. The drop in their consumption has been essentially due to the restriction on the use of organochlorine pesticides such as BHC, DDT, Aldrin etc. These highly potent molecules involved high rate application, requiring low volume application. In India, until March 2000, 155 pesticides have been registered including 33 herbicides for use.

Fifteen top crop protection companies are catering to roughly 75 per cent of the technical pesticide market in the country, which include both multinationals (MNCs) as well as the major Indian companies. Among MNCs, Badische Aniline and Soda Fabrik (BASF) has emerged as one of the leading agrochemical company in India. In the case of Indian companies, Tata's Rallis India Ltd. is said to control a major share of domestic agrochemicals market.

The Indian industry has a high potential and has already attracted investments from strong global players. There are signals that in the post 2005 period, when product patents come into force, several more transnationals are expected to join the fray. It is then that the MNCs, active already in India, would find it prudent to employ their production facilities to address the demand of the local market as also of their subsidiaries based around the world for meeting demand in other countries.

The greatest challenge before the agricultural scientists today is increasing the yield of various crops. The Council for Scientific and Industrial Research (CSIR) estimates that 20 to 30 per cent of the total crop production is lost due to

pests and diseases. Thus the role played by crop protection chemicals in raising agricultural production cannot be ignored.

All these inputs are equally important for all the crops under cultivation. As far as Kerala is concerned, rice is the major food crop, which occupies a lion's share of our menu. Hence rice has been chosen for the study.

In this context, researches on these two major inputs – seeds and agrochemicals are very much relevant, especially in case of rice. Keeping this in view, the present study was conducted with the following three specific objectives:

1. To analyse the buyer behaviour of the rice farmers in relation to the quantitative, qualitative and market attributes of rice varieties and agrochemicals.,
2. To examine the source preference of seeds and agrochemicals., and
3. To assess the influence of technocrats and input supply agencies on the buying behaviour.

1.4 Practical/Scientific Utility of the study

A study of buyer behaviour of rice farmers has an importance in Kerala, which is predominantly an agricultural state. Our state is generating 21 to 22 per cent of its income from agricultural sector, providing livelihood to over 50 per cent of the rural manpower. Agricultural development is thus the crux of overall development of our economy which needs all support base for augmenting farm production. Rice, being the staple food of Kerala, requires more attention in the field of agricultural research. Farmer participatory researches on the adaptability of rice varieties in the Central zone have corroborated that the buyers' preference

to rice varieties was influenced not only by the yield parameters like grain and straw yield but also by other attributes like qualitative traits, marketability, perceived net return, and so on.

The present study brings into light, the preferential traits attributed to the varieties and preference of the rice farmers in relation to the quantitative, qualitative and infrastructural parameters of the rice varieties along with the brand and source preference of agrochemicals of the selected area. The results of this study would give ample feed back to the rice research and rice seed production systems for framing better research development and marketing strategies in the rice production system of the central zone of Kerala.

1.5 Limitations of the study

1. This study was restricted to 120 farmers as time was a major constraint.
2. The study was confined to only two major inputs, namely, seed and agrochemicals. Other inputs like farm equipments were excluded due to lack of time.
3. Even if the sample area is in Thrissur district the influence of Palakkad district would be more there as it is geographically located at the border of Thrissur – Palakkad districts.
4. Majority of the farmers were not using high yielding varieties and hence attribute analysis of HYVs were excluded.
5. Farmers were used to buy the agrochemicals as and when required and hence a quantitative analysis was quite difficult and could not be included.

1.6 Structure of the study

The report is divided into six chapters including the present introductory chapter. The second chapter gives a comprehensive review of the available literature. The third chapter outlines the methodology used including the study area, study period, sample size, database and statistical tools employed. This is followed by the presentation of results in the fourth chapter. The discussion of the results is given in the fifth chapter. The sixth chapter summarises the findings of the study followed by references, appendices and an abstract of the thesis report.

Review of Literature

CHAPTER 2

REVIEW OF LITERATURE

There seems to be no dearth of literature surrounding the buyer behaviour as well as agricultural input marketing. A scanning of the massive volume of literature will reveal beyond doubt that the study area is very much relevant in the present scenario, where the buyer behaviour is a changing phenomenon over time. Therefore in this chapter an attempt has been made to cover the available literature relating to the study area. The design of the chapter is such that the studies and writings are classified under the following heads:

- 2.1 Buyer behaviour
- 2.2 Buyer behaviour (towards agricultural inputs)
- 2.3 Buyer's attitudes
- 2.4 Agricultural Input Marketing

2.1 Buyer behaviour

Gardner and Levy (1955) opined that social status differentiation has a role to play in evaluation of two brands because of the desire of people to emulate the people of higher class. In order to create, develop or modify a brand image, the marketer should appreciate the brand image, as it already exists in the market. For this, media credibility, product positioning in the minds of the consumer, reasons for the selection of certain brands and ultimately, product quality should be analysed.

Levy (1959) said that marketers should go deeper into the psyche of the consumer, without limiting themselves to the peripheral reasons they express in

every purchase. A variety of logics are shown by people in explaining why they buy and what they buy with many. This logic consists of convenience, inadvertence, family pressures, social pressures, complex economic reasoning and advertising.

Kotler (1965) opined that all models so far developed by various scientists should be used in an integrated manner to understand the consumer in general. In his opinion buying pattern are being influenced by price, quality, availability, service, style, options and images. Depending on the product involved, different variables and behavioural mechanisms assume different degree of importance in influencing the purchase decision process.

Narver and Savitt (1971) indicated that the process of buying behaviour either implicit or explicit, which every buyer went through in making a decision to accept or reject offering to fulfil his needs. The process consisted of four sequential stages: problems, recognition, search choice and post decision evaluation.

Stanton (1973) pointed out that consumers went through a complex buying behaviour when they were involved in a purchase and were aware of the significant differences that existed among brands. Hence they had to undergo a cognitive learning process characterised by first developing beliefs about the product, their moving towards attitudes, towards the product and finally making a deliberate purchase choice.

According to Mehtha (1974) buyer behaviour involved search of alternatives, evaluation of alternatives, choice decisions of post purchase feelings and reactions.

Walters (1974) considered buyer behaviour as the process where individuals decide whether, what, when, where, how and from whom to purchase goods and services.

Rao and Singh (1986) suggested that buyers not only looked for what a product could do for them but also for what they meant.

Reddy and Sankaraya (1988) viewed that buyer behaviour is highly influenced by the brand loyalty, and the buyer behaviour can be explained only with the help of brand loyalty of the customer.

Elling (1989) identified four factors that determined the buying behaviour, irrespective of whether the buyer was a consumer or an industrial user; they are rational forces, emotional forces, life cycle of the customer and life cycle of the product.

According to Wolganst (1992) buying behaviour involved a complicated series of stimulus response to many factors or motives and they were expressed based on the deep-seated needs or more openly felt wants. When some one bought a specific product, he satisfied both a need and want and ensured that it provided him certain amount of mental or physical satisfaction. Modern buyers not only made themselves aware of the product features but also were concerned about the way in which a product could be of use to them.

Sherlekar (1997) defined buyer behaviour as all psychological, social and physical behaviour of potential customers as they become aware of, evaluate, purchase, consume and tell others about the product and services. According to him buyer behaviour includes the acts of individuals directly involved in

obtaining and using economic goods and services including sequence of decision processes that precede and determine these acts.

Varshney and Guptha (1999) observed that buyer behaviour explains both the social and psychological procedures that determine the consumers buying pattern. They said that it also indicates awareness, purchasing power and consumption behaviour.

According to Webster (1999) buyer behaviour is the reaction of individuals in obtaining goods and services of a particular type. In this process the buyer deliberates within himself before he finally makes a purchase decision. This deliberation relates to many variables like when, where and why to purchase and is aimed at solving consumption problems.

Sarerao (2000) in his study on 'Emerging dimensions of buyers behaviour in rural areas' revealed that most of the consumers from the rural areas developed brand familiarity with some brand names which are heavily known in urban areas. Another major finding of the study was that buying behaviour in general and buying decision in particular in rural area is influenced by factors like price, availability of the products etc. He concluded that the overall consumption pattern of the rural consumers has changed and consumption expenditure for non-durables has increased considerably during the study period.

Khairroowala and Siddiqui (2001) in their study on buying behaviour of rural consumers in haat markets, pointed out that the buyer behaviour is highly influenced by the income level. Low income people are less brand aware and high income group are highly brand aware and quality conscious.

2.2 Buyer behaviour (towards agricultural inputs)

Kohl (1972) observed that location, brand, price, service and management were the key factors considered by most of the farmers while selecting their dealers and these factors influenced their buying behaviour to a great extent.

Tambad (1973) commented that the farmer has to take decisions with respect to product, brand, quantity, quality, place, dealer, time, price and mode of payment. He opined that a farmer will not buy fertilisers unless he feels 'the need to step up his yield' and thereby improve the standard of living. The farmers' behaviour should be analysed throughout the different stages of the buying process, viz., felt need, pre-purchase activity, purchase decision, use behaviour and post purchase feeling.

According to Padmaraj (1983), any farmer who purchased a particular brand for more than one year reckoned to be brand loyal. Their buying behaviour showed stability for more than two years.

Sivakumar (1987) pointed out that buyer behaviour is of immense significance and paramount importance to both the buyer and seller, for the former in satisfying his needs and for the latter in meeting the needs of his buyer and realising profit. He found out that this is what is happening in pesticide market where the buyers are brand loyal and the sellers are profit earners.

Govindarajan (1987) identified that quality, availability of preferred brand, availability of alternative brands, advertisements, peer group influence were the factors contributing to the buyer behaviour of farmers in case of input purchasing.

Anilkumar (1990) observed that buyer behaviour towards fertiliser is very much important among farmers. They are brand conscious and most of them are showing brand loyalty. Of course, their buyer behaviour is influenced by the availability and dealer preference.

Ganapathy (1990) viewed that agro inputs, in general, show similarities to industrial products in terms of usage or need while they are more akin to consumer durables in terms of buyer behaviour, purchase process etc.

Venkataraman and Varadarajan (1992), in their study on fertiliser buying behaviour of farmers, stated that the farmers have a wide choice in selection of fertilisers and majority of them purchased fertilisers from private sellers. The factors influencing them are the size of the farm, credit and preferences of the farmers to specific type of fertilisers. He suggested that it is necessary to educate the small and marginal farmers, timely supply of credit and the supply of type of fertilisers preferred by the farmers within their easy reach to improve the level of fertiliser use.

Rakhila (1994) suggested that farmers' buying behaviour was responding positively to private dealers, but the important problem faced by them in that case was the credit sales with higher interest and high price. The major problems with department depots were non-availability of preferred brand and lack of credit sales, which negatively influence their buying behaviour.

Seetharaman and Shingi (1996) in their study on the consideration set during agricultural input purchase under Indian context, revealed that though a farmer-consumer is assumed to be lacking the knowledge to form the consideration sets, they form it similar to those under the consumer goods buying situations in the developed countries and these are influenced positively by the economic risk and negatively by the level of education.

2.3 Buyers' attitudes

Gaur and Tiwari (1982) studied the impact of factors like caste, age, education and size of the holding on the attitude formation towards the technological changes. The survey was conducted in twenty villages from Reva district of Uttar Pradesh. Five farmers from each village were randomly selected. Analysis revealed that farmers have shown favourable attitude towards specific aspects of technological change. The farmers on an average showed a favourable attitude towards chemical fertilisers.

The fertiliser marketing process was extensively dealt by Ramaswamy (1985). He opined that the rural markets, which are scattered, diverse and heterogeneous in nature, is characterised by cultural, religious and linguistic diversities. The rural consumers are tradition bound and conservative. Farmers, who are consumers of fertilisers, express varied behavioural patterns as they are generally poverty stricken, illiterate and economically and socially under developed. Similarly the media for promotion available were limited in number, reach, coverage and cost effectiveness.

Ali (1988) analysed the problems of fertiliser marketers and the attitude of the consumer regarding the usage of fertilisers. The study made use of primary and secondary data, which was conducted in the Ahmednagar of Maharashtra. The study revealed that farmers are only less aware of the fertilisers and during the peak demand period the market showed shortage in supply.

Subbu (1989) has analysed the purchase behaviour of consumers and concluded that quality, price, colour, acceptability, nature of usage, relative competence, availability of varieties of products were the important variables involved in the purchase decision process.

Biswas (1990) while explaining about qualitative research in Agricultural Marketing stated that it used to provide detailed description of soil and environmental conditions, cropping behaviour, product usage, brand perceptions, selection processes and the factors or influences governing the purchase of products. He further explained the importance of problems/ questions like how brand images can be created, the values held by the farmers, the similarity and distinction in the purchase behaviour of farmers, the media habits of the farmers and the credibility enjoyed by each medium.

According to Blois (2000), the buyers' attitude towards products or services is explained by the product characteristics and by the evaluation of these characteristics. The overall attitude to the product is then explained as an average of the evaluations of these characteristics weighed by their certainty.

2.4 Agricultural Input Marketing

Barwale (1986) said that the farmer considered the use of fertilisers and pesticides profitable, only when there is easy availability of high yielding seeds. Hence he pointed out that in the case of seed marketing the buyer behaviour of farmers are highly influenced by the availability of the input.

According to Kumar and Desai (1986), farmers consider the relative profitability of fertiliser application while making their fertiliser buying decisions. They observed that small farmers who use fertilisers apply higher rates per hectare than the large landowners even though a greater percentage of large farmers were using fertilisers.

Bhargava (1988) gives a detailed impression of the accessibility to certified seeds in Madhya Pradesh, although it does not target small-scale farmers

specifically. The main suppliers of certified seed were the agricultural department, neighbouring farmers and private dealers. The farmers were aware of certified seeds due to extension effect. The study listed out the obstacles that must be overcome for the effective use of certified seeds, i.e., inadequate irrigation, high prices, low availability of certified seed, inadequate credit and uncertainty of seed delivery.

Biswas (1989) opined that the behaviour pattern of the farmers are quite unfamiliar territory. She says that as in the opening up of any new market, effective marketing effort has to begin by mapping the various aspects of agricultural input market – farmers' knowledge levels and behaviour patterns, product and brand maps, distribution channels and the factors controlling supply and demand. She suggests market research for valuable insights into some of these areas.

Chauhan (1989) observed that within the operational cost, the share of human and bullock labour is declining while the share of purchased inputs such as fertiliser, electricity, diesel, irrigation and machine labour is increasing in various crops. He pointed out that the increasing reliance of farmers on purchased inputs makes him vulnerable to breakdown in delivery of such inputs and their supply restrictions of fluctuations in their cost. One of the strong reasons for increased instability in agricultural production in India in recent years is attributed to uncertainty of supply of purchased inputs. He suggested that in this context management of agricultural inputs delivery system assumes special significance to maintain uninterrupted supplies of these critical inputs to achieve national agricultural production and productivity goals.

Prakash (1989) in his study on the sequential analysis of constraints in increasing production of rice and coconut in Kerala observed that negative attitude towards high yielding varieties, less adoption of high yielding varieties,

low productivity and lack of irrigation were the problems of rice yield in central zone.

Bhargava (1990) opined that effective distribution channel management is a most essential requisite for successful operations in the agricultural inputs industry. He says that the agricultural input market is facing a significant shift. The sellers' market is transforming into a buyers' market. The buyers are becoming brand conscious and corresponding to this shift, the marketing management also requires a positive change.

Paparao (1990) says that pesticide industry along with other agro input industries have certainly progressed into the new age of professionalism. The evolution of the product strategies from the primitive selling orientation to sophisticated marketing orientation is only one indicator of the progress. The progress is slow, but impactful.

According to Sharma and Naik (1990) the need for market research to generate information necessary to devise both short term and long term marketing strategies are increasingly being felt by agro-input industries due to the changing competitive environment of the industry. These changes compel the industries to look for answers to a variety of questions asked such as, who is their customer, how big is the user segment, how much demand are they likely to have and from where etc. Answers to these questions are considered as an important input in devising marketing strategies in agricultural input markets.

Singh (1990) pointed out that financial problems are very much interfering with the supply of agro inputs. He says that finance for investment in infrastructure of agro-custom hiring/service cum repair workshops, seed processing units, insecticide and pesticide formulations, farm machinery

manufacturers and other allied input manufacturing, rural godowns in the co-operative sector and private sector may be enhanced.

Kumar (1992) suggested that the growth in agricultural production depends to a large extent on timely and cost effective supply of agricultural inputs. For agriculture it is crucial that there should be easy and adequate access to these inputs at the farm gate together with adequate technical advisory support. In his opinion to promote further use of modern inputs, it is important that there should be accurate and timely assessment of the demand for inputs and easy access to these inputs supported by adequate technical and advisory services.

Kunnal and Murthy (1992) in a study on seed marketing in Karnataka, found out that the adoption rate of new technologies including high yielding variety seeds, fertilisers and irrigation is very high and as a result the demand for seed is on the increase. They observed that to meet this increasing demand for seeds in Karnataka, all the three sectors, viz., public, co-operative and private are involved in seed marketing.

Malik (1992) identified that the requirement of distribution of certified seeds are being increasing; but the price of that of important crops are showing a corresponding increase. They say that the important components of this price increase are procurement price, processing cost, transportation rebates and overhead charges. They suggested that private agencies have to play a crucial role in production and distribution of certified seed in future.

Naidu and Sukanya (1992) pointed out that a considerable number of farmers in Andhra Pradesh are purchasing fertilisers and pesticides from private dealers due to the availability of this input on credit basis without much procedural formalities and also due to their proximity for financial needs to the dealer community. But their conclusion was that even if a notable number of

farmers are depending on their private dealers, the efficient marketing channels of these inputs is the co-operative sector, as they meet the demand of the ultimate farmer buyers.

Natarajan (1992) emphasised on appropriate market research methodologies to effectively cope with the drastic changes in the agro input marketing. He classifies that the changes that have taken place in the products as well as in the application methods and practices of agricultural inputs in the past few years and the outlook for the trend to multiply in the future indicate a need from the standpoint of a successful marketer to closely monitor the changes in the market place, track the farmer practices and understand acceptance of new product concepts.

Singh (1992) put forward some policy implications for the improvement of fertiliser marketing. They are:

- (i) the number of sales points should be increased to ensure timely supply and easy availability of fertilisers and
- (ii) sales points should be developed into agro-service centres, which should provide advice on different aspects of fertiliser application and services.

Besides, he concluded that the marketing system has to carry out the function of storage, transportation and selling to the farmers spread throughout the country.

Singh and Ashokan (1994) in a study observed that in Gujarat, for hybrid crops of bajra and castor, most farmers patronised co-operatives. If the stock of these seeds were exhausted, the farmers generally visited the neighbouring towns. The most frequently cited reason for going to the co-operatives was the quality of the seed. For self-pollinated crops of wheat and paddy, most of the sample farmers used their own seed. Availability and surety of seed quality were the reasons given.

Ahemed (1995) suggested that a gradual process based on a well-designed sequencing of various steps of market reform, particularly in case of fertiliser, is a crucial factor for success of increased production of rice in Bangladesh.

Gomez and Sanchez (1995) in a study concerned with marketing techniques and strategy in agricultural input supply firms, developed a typology of fungible farm inputs involved, seeds, fertiliser and pesticides of farmers as a market and strategies adopted by firms for whom farmer is the main target customer.

Shrestha and Shrestha (1995) opined that more than 95 per cent of the national seed requirement is fulfilled by seeds saved by farmers and the Agricultural Input Corporation supplies.

Harris and Pike (1996) pointed out that while sales people in the agriculture input supply sector are basically happy with the benefits of sales force automation, they are discovering that increased selling time may be a myth.

Singh and Singh (1996) discussed various strategies for agricultural input marketing. Agribusiness firms have not been proactive in this area, until recently, as markets were regulated, and input usage levels were relatively low. However, the intensification of farm production is expected to increase due to new technologies, investment and market opportunities. This will create additional opportunities and problems for input firms, as they will have to deal with the problems of sustainability of production system. He opined that this will require both better business management as well as ethical and sincere partnerships with the farmers.

Sudhakar and Mittal (1996) observed that marketing of fertilisers is influenced by logistics and distribution support, market competition, cropping and fertiliser use pattern. In a deregulated competitive market scenario, making this essential input available to farmers at the right time, place, quantity and price, assumes strategic significance. According to them this requires a sound, quick and accurate decision making information support system.

Seghal (1996) commented that the farmers are now conscious of the need to buy seeds that are reliable and from reputed companies. The multinationals and the Indian seed companies have been active in the last decade. According to him the private seed companies are now playing one of the key requirements in the emerging second green revolution.

Tripp and Gisselquist (1996) examined the regulatory role of government in agricultural input supply and suggested policy reforms to improve the effectiveness of agricultural regulation in developing countries.

Choudhary (1999) revealed that seed policy and institutional reforms have encouraged growth in private seed sector. Such reforms allowed seed prices to rise, permitted new firms to enter the seed industry and reduced restrictions on imports of varieties and seed. Large-scale private firms entered the most profitable hybrid seed sector, while less profitable sectors were left to small seed companies, farmers and the public sector.

Praveen (1999) said that farmers prefer private dealers in case of seed marketing. The reasons pointed out by him are the quality seeds and timely service by the private dealers. He opined that private dealers understand the farmers' requirements and give them the right product at the right time as the competition is increasing in the agricultural input marketing.

Singh (1999) clarified that purchasing of seed is a rational activity as it is a perishable and costly product. And its use depends on so many other factors like climate, availability of other inputs and so on. Given this kind of market environment, what is required is better marketing in terms of product quality maintenance, distribution and promotion. He suggested that raising farmer awareness will lead to better and specific product demand, which should be the dream for any marketer.

Mythili and Shanmugam (2000) in their study revealed that the existing gap between realised and potential yield, highlights the need for improving farmers' practices through better awareness programmes. The farmers should be more brand aware and brand loyal. Efforts should be taken in agricultural input marketing sector also.

Singh (2000) pointed out that the marketing bodies and units in seed business still do not carry out their functions in a manner as to create time, place and form utility in the product (seed) by the way of its marketability. This has been the problem in input sector for many decades. The only solution is better marketing efforts. In his opinion, the farmers need to be made aware, trained and consulted in designing locally relevant systems of seed distribution management.

Materials and Methods

CHAPTER 3

MATERIALS AND METHODS

The present study analyses the buyer behaviour of rice farmers towards seeds and agrochemicals in Thrissur district. The factors influencing buying behaviour towards seeds and agrochemicals and influence of technocrats on buying behaviour were examined by using various analytical tools. The methodology of the study is outlined in this chapter.

3.1 Conceptual framework

The various concepts and terms used in the study to analyse the objectives are given below:

- | | | |
|-----------------|---|--|
| Agrochemicals | - | Agrochemicals refer to fertilisers and all other plant protection chemicals including pesticides, insecticides, rodenticides, fungicides etc. |
| Attitude | - | A person's consistently favourable or unfavourable evaluations, feelings and tendencies towards an object or an idea |
| Buyer | - | One who has the willingness and capacity to possess a good or service.

For the present study, buyer is the farmer. |
| Buyer behaviour | - | Buyer behaviour is the practice that buyers display in searching for, purchasing, using, evaluating and disposing of products and services that they expect would satisfy their immediate and intermediate needs. It is also referred as buying behaviour. |

- HYV - For the purpose of the study HYV are operationally defined as the high yielding rice varieties evolved and released from research stations presently under KAU or from any other research stations from India or abroad.
- Large farmer - For the present study large farmer is one having an unirrigated land holding of more than 2 hectares.
- Medium farmer - For the present study medium farmer is one having an unirrigated land holding of 1 to 2 hectares.
- Mundakan* - It is the second crop or winter crop cultivated during September – October to December – January
- Non-descript strains - They are operationally defined as the rice varieties whose pedigree is unknown with the available varietal descriptors, which comprise of both high and low yielding strains cultivated by the farmers.
- Padasekharam* - It is a group of paddy farmers organised to strengthen the cultivation, consolidating a minimum land of 10 hectares.
- Punja* - It is the third crop or summer crop cultivated during December – January to March – April. Third crop is not practiced in the study area.
- Small farmer - For the present study small farmer is considered as one having less than 1 hectare of unirrigated land holding.
- Technocrats - Refers to the Agricultural Officers and the Agricultural Assistants in the study area.
- Virippu* - *Virippu* is the first crop or autumn crop cultivated during April – may to September – October.

3.2 Sampling procedure

A three stage sampling procedure was adapted for sample selection.

3.2.1 Study area

Among the five agroclimatic zones in Kerala, the Central Agroclimatic Zone has the major portion of rice production in Kerala. The zone includes Ernakulam, Thrissur and Palakkad districts. Ernakulam district is highly industrialised and among Palakkad and Thrissur districts, Thrissur was selected for the study.

From Thrissur district, Pazhayannur block was selected, as it is having the highest area of rice cultivation (8729 ha). The panchayat wise area (gross cropped area) under rice in Pazhayannur block is given in Table 1.

Table 3.1 Area under rice in Pazhayannur block

Sl. No.	Panchayat	Actual cropped (net) area (ha)	Gross cropped area (ha)
1.	Chelakkara	1991	3982
2.	Kondazhy	1200	2400
3.	Panjal	929	1858
4.	Pazhayannur	2354	4708
5.	Thiruvilwamala	1705	3410
6.	Vallathole Nagar	550	1100
	Total	8729	

Source: Agriculture Statistics 2000-2001, Department of Agriculture, Kerala

Gross cropped area is the highest for Pazhayannur panchayat (4708 ha) followed by Chelakkara (3982 ha), Thiruvilwamala (3410 ha) and Kondazhy panchayats (2400 ha). Hence these four panchayats were selected. From each panchayat each padasekharam with highest net cropped area was selected including Pazhayannur, Chelakkara, Thiruvilwamala and Kondazhy padasekharams.

3.2.2 Study period

The field level investigation for the study was carried out during the months of August and September 2002.

3.2.3 Selection of respondents

The sample size of the farmers was fixed at 120 due to limitations of time and other resources. A sample group of 30 farmers comprising of small, medium and large farmers proportionately from each *padasekharam* constituted the 120 respondents. The details of sample selection are given in Table 2.

Table 3.2 proportionate samples selected for the study

<i>Padasekharam</i>	Large farmers	Medium farmers	Small farmers	Total
1	40 (20)	14 (7)	6 (3)	60 (30)
2	60 (23)	12 (5)	6 (2)	78 (30)
3	32 (22)	12 (8)	---	44 (30)
4	44 (24)	8 (4)	4 (2)	56 (30)

Note: Figures in brackets show proportionate sample selected.

3.3 Methodology

3.3.1 Database

The study was mainly based on primary data collected through field level investigation. The data required for the study were collected from the respondents through personal interview method by administering a pre-tested structured schedule.

3.3.2 Statistical tools used for the study

Bivariate tables and percentages formed the basis of analysis. The other tools and techniques used for the analysis are described below.

3.3.2.1 Kendall's Coefficient of Concordance

Kendall's Coefficient of Concordance was used to rank the parameters that influenced the estimation of input requirements and type of inputs to be used. The same was used to rank the attributes that influenced the rice seed varietal choice and the source preference of agrochemicals and output marketing agency.

The procedure for finding out the Kendall's Coefficient of Concordance is given below.

- a. Let 'N' be the number of objects to be ranked and let 'K' be the number of judges assigning ranks.
- b. Cast the observed ranks in $K \times N$ tables.

For each object,

- c. Determine the sum of ranks (R_j) assigned to the character by all the K judges.
- d. Determine the mean of the ranks (R_j) and square the deviations and sum the square to obtain 'D'.
- e. Compute the value of 'W'. If $N > 7$, the sample is treated as large sample. In that case,

$$W = \frac{\sum D}{\frac{1}{12} K^2 (N^3 - N)}$$

- f. Compute χ^2 in the case of large sample; χ^2 is defined as $\chi^2 = K(N - 1)W$.
- g. Test the significance of χ^2 .

The sum of ranks assigned to each character is found out by implementing the first three steps. Each parameter will give the same weight equal to the corresponding rank. The parameters are then ranked on the basis of the sum of weights obtained by each parameter. The parameter for which the sum of ranks is minimum is identified as the most influencing factor and ranked first. The parameter that obtained maximum sum of ranks is ranked last among the various parameters.

Kendall's Coefficient of Concordance is calculated to find out whether there is perfect agreement among the judges.

If the calculated χ^2 value is greater than the table value it shows perfect agreement among K judgements.

3.3.2.2 Weighted Method

In order to analyse the attributes of the preferred variety, the respondents were asked to assign weights out of ten to each attribute. Total weights obtained for each attribute were calculated and the one, which obtained maximum weightage, was considered as the most important and most favourable attribute of the variety in use. For example, suppose the attribute a_1 has given weightage one by all the 120 respondents, the total weight obtained for that attribute will be 120.

The same method was used to find out the reason for continuous usage of a particular fertiliser brand and to analyse the factors influencing product / brand choice in case of agrochemicals.

3.3.2.3 Likert Scale of Summated Rating

Likert Scale was used to analyse the attitude towards usage of agrochemicals and to find out the influence of technocrats on the buying behaviour of respondents.

In the Likert Scale, the respondents were given a few statements. They were asked to respond to each of the statements in terms of several degrees of agreement or disagreement; for example (I) Strongly disagree, (II) Disagree, (III) No opinion, (IV) Agree, (V) Strongly agree. These five points constituted a scale.

Each point on the scale carries a score or a value. Response indicative of the least favourable attitude (strongly disagree) is given the lowest score -2, while the one conveying most favourable attitude (strongly agree) is given the least score +2, as shown below.

I	II	III	IV	V
Strongly disagree	Disagree	No opinion	Agree	Strongly agree
-2	-1	0	+1	+2

The next step is to compute the total score (index value) by using the following formula for each statement:

$$\text{Index value of a statement} = \frac{(f_1 \times 2) + (f_2 \times 1) + (f_3 \times 0) + (f_4 \times -1) + (f_5 \times -2)}{N \times 2} \times 100$$

Where,

f_1, f_2, \dots = number respondents for each point on scale

N = total number of respondents

The maximum value obtained will be 100.

Then classify the opinion on the basis of the following scale:

Index value	< 33.33	-	least favourable
	33.33 to 66.66	-	moderately favourable
	> 66.66	-	most favourable.

Besides these tools, analysis of variance (ANOVA) was also used to test the inter and intra variations among *padasekharams*.

Results and Discussion

CHAPTER 4

RESULTS AND DISCUSSION

The data collected through the survey were subjected to statistical analysis and the results are presented in this chapter. Keeping the objectives of the study in view, the results are given under the following major headings:

- 4.1 Socio-economic profile of the respondents
- 4.2 Area of land
- 4.3 Buyer behaviour towards seeds
- 4.4 Buyer behaviour towards agrochemicals
- 4.5 Attitude of the respondents towards agrochemical usage
- 4.6 Awareness about the source of suppliers
- 4.7 Source of information
- 4.8 Influence of technocrats on buying behaviour
- 4.9 Marketing of output
- 4.10 Inter and intra variations among *padasekharams*.

4.1 Socio-economic profile of the respondents

The socio-economic profile of the selected respondents is given in this part.

4.1.1 Age of the respondents

Age-wise classification is given in Table 4.1.

Table 4.1 Age-wise classification

<i>Padasekharam</i>	< 40	40-60	> 60
S ₁	6	16	8
S ₂	3	22	5
S ₃	4	18	8
S ₄	2	21	7
Total	15 (12.5)	77 (64.17)	28 (23.33)

Note:1. S₁...S₄ represent *padasekharam*

2. Figures in parentheses represent percentage

It is clear from Table 4.1 that majority of the respondents belonged to the age group of 40 – 60 years (64.17%) closely followed by the age group of more than 60 years (23.33%), when 12.5 per cent of the total respondents belonged to the age group of below 40 years.

It may be inferred that the youngsters were not much involved in agriculture as the lifestyles have changed and rapid industrialisation is taking place.

4.1.2 Educational status of the respondents

The classification of the respondents on the basis of their educational

Table 4.2 Educational level of the respondents

<i>Padasekharam</i>	< SSLC	SSLC – Plus2	Degree	PG
S ₁	21	4	3	2
S ₂	18	6	6	-
S ₃	22	5	2	1
S ₄	21	5	4	-
Total	82(68.33)	20(16.67)	15(12.5)	3(2.5)

Note: i. S₁...S₄ represent *padasekharam*

2. Figures in parentheses represent percentage

Table 4.2 shows that majority of the respondents (68.33 %) were having qualification below SSLC; 16.67 per cent of the respondents belonged to SSLC – Plus 2 class. Graduates constituted 12.5 per cent of the total respondents. Only 2.5 per cent of the respondents were having post graduation. It is clear that the educational level of the farmers was generally low.

4.1.3 Income level of respondents

The respondents were classified on the basis of annual per-capita income and the results are shown in Table 4.3.

Table 4.3 Income level of the respondents

<i>Padasekharam</i>	Annual per capita income (Rs.)			
	< 1000	1000– 5000	5000-10000	> 10000
S ₁	-	20	7	3
S ₂	2	19	7	2
S ₃	-	20	9	1
S ₄	3	21	4	2
Total	5 (4.17)	80(66.67)	27(22.5)	8(6.67)

Note:1. S₁...S₄ represent *padasekharam*

2. Figures in parentheses represent percentage

Table 4.3 indicates that 66.67 per cent of the respondents belonged to the income group of Rs. 1000 – 5000 and 22.5 per cent belonged to the income class of Rs. 5000 – 10000. There were eight respondents (8.67%) in the income group of above Rs. 10000. Around 4.17 per cent of the respondents had an income below Rs. 1000. It may be noted that the annual income disclosed by the respondents was the income from paddy only.

4.1.4 Accessibility

The respondents were classified on the basis of accessibility to various infrastructure facilities and shown in Table 4.4.

Table 4.4 Accessibility to basic infrastructure facilities

Infrastructure	< 2 km	2 - 4 km	> 4 km
Motorable road	120	-	-
Fertiliser depot/ pesticide depot	47	59	14
<i>Krishi Bhavan</i>	34	56	30
PACS	34	63	23
Commercial Banks	18	72	30
Panchayat office	27	93	-
Health centre	12	58	50
Post office	44	38	38
Primary school	42	78	-
High school	8	46	66
Average	39 (32.5)	56 (46.67)	25 (20.83)

Note: Figures in parentheses represent percentage

From Table 4.4 it is clear that 46.67 per cent of the total respondents were having accessibility to basic infrastructure facilities within two to four kilometres. About 32.5 per cent were having accessibility within two kilometres. Only 20.83 per cent of the total respondents had accessibility to some facilities above four kilometres. It is obvious from the analysis that all of the respondents were having motorable road within one kilometre.

The study area was well equipped with motorable roads. A further analysis of Table 4.4 shows that accessibility to *Krishi Bhavan* for 59 respondents was within two to four kilometres and that to fertiliser / pesticide depots for 56 respondents was also within two to four kilometres. Only 14 respondents were having difficulty in accessibility to fertiliser / pesticide depots as it was away for more than four kilometres.

Even if some facilities were quite distant to some respondents (20.83 %), the accessibility to motorable roads within two kilometres made it easy to all the respondents.

4.2 Area of land

The classification of respondents on the basis of the area of paddy fields is given in Table 4.5.

Table 4.5 Area of land possessed

<i>Padasekharam</i>	Less than 1 ha	1 – 2 ha	More than 2 ha
S ₁	20	7	3
S ₂	23	5	2
S ₃	22	8	-
S ₄	24	4	2
Total	89(74.17)	24(20)	7(5.83)

Note: 1. S₁...S₄ represent *padasekharam*

2. Figures in parentheses represent percentage

Table 4.5 shows that 74.17 per cent of the total respondents were small farmers, 20 per cent were medium farmers and only 5.83 per cent were large farmers. The presence of large number of small farmers compared to the large farmers might be due to the consequences of the Land Reforms Act and fragmentation of land holdings.

All of the respondents were practicing individual farming and they were undertaking both *Virippu* and *Mundakan*. The summer crop *Punja* was not practiced due to the absence of irrigation facilities.

4.3 Buyer behaviour towards seed

4.3.1 Factors influencing estimation of seed requirement

Four factors were identified for estimation of seed requirement such as area under cultivation (P_1), price of input (P_2), recommendation of technical person (P_3) and usual practices (P_4). From the total score obtained for each parameter in each *padasekharam* (Appendix I), it is easy to calculate the total score obtained for each factor influencing the estimation of input requirement. It is shown in Table 4.6.

Table 4.6 Factors influencing estimation of seed requirement

<i>Padasekharam</i> Parameter	Scores obtained in each <i>padasekharam</i>				Sum of scores	Aggregate rank
	S ₁	S ₂	S ₃	S ₄		
P ₁	55	50	45	40	190	I
P ₂	120	115	97	100	432	IV
P ₃	90	91	92	102	375	III
P ₄	43	44	65	58	210	II
$\chi^2=216$						
W = 1.60						

Note: 1. P₁ ...P₄ represent parameter

2. S₁...S₄ represents *padasekharam*

It is evident from Table 4.6 that area under cultivation (P₁) was ranked as the major factor influencing the estimation of seed requirement of rice farmers followed by their usual practices (P₄). The price of the input (P₂) was having the least influence on the input requirement estimation. The recommendation of technical person (P₃) was ranked third. This shows that according to the size of land under cultivation the farmers decide the quantity of input to be used. Besides, they were thorough about the quantity to be used from their past experience.

In this case the table value of χ^2 at five per cent level is 9.488 and at one per cent level is 13.277. The calculated value of χ^2 is considerably higher than the

table value i.e., 216, both at five per cent and one per cent level. So it may be inferred that there is **difference** among the judges.

4.3.2 Decision about the type of seed to be used

The factors influencing the choice of the seed to be used are listed as recommendation of technical persons (P_1), usual practices (P_2), soil condition (P_3) and water availability (P_4).

From the total score obtained for each parameter for each *Padasekharam* (Appendix II) the total score obtained by each parameter for the entire sample was calculated. This is given in Table 4.7.

Table 4.7 Factors influencing the choice of seed type

<i>Padasekharam</i> Parameter	Scores obtained by each <i>padasekharam</i>				Sum of scores	Aggregate rank
	S_1	S_2	S_3	S_4		
P_1	100	104	88	98	390	III
P_2	30	36	30	30	126	I
P_3	70	65	76	71	282	II
P_4	100	95	106	101	402	IV
$W = 0.68$						
$\chi^2 = 244.8$						

Note: 1. $P_1 \dots P_4$ represent parameter

2. $S_1 \dots S_4$ represents *padasekharam*

Table 4.7 depicts that parameter two i.e., usual practice was ranked as the major factor influencing the decision about the type of seed to be used, followed by the soil condition (P_3) and recommendation of Agricultural Officers. (P_4). This may be because the farmers had strong faith in their past experiences.

Table value of χ^2 at five per cent level is 9.488 and at one per cent level is 13.227. The calculated value of χ^2 is significantly higher than the table value i.e., 244.8, both at five per cent and one per cent level. Therefore, there is perfect agreement among the judges.

4.3.3 Seed variety in use

The respondents were using the same varieties for both *Virippu* and *Mundakan* seasons. Table 4.8 shows the major varieties of seed used by the respondents for both seasons.

Table 4.8 Seed variety in use

<i>Padasekharam</i>	Varieties			
	<i>Kunjukunju</i>	<i>Kanchana</i>	<i>Pavithra</i>	<i>Remanika</i>
S ₁	30	3	2	4
S ₂	30	8	1	4
S ₃	30	9	3	7
S ₄	30	11	2	9
Total	120 (100)	31(25.83)	8(6.67)	24(20)

Note: Figures in parentheses show percentage

Table 4.8 shows that cent per cent of the respondents were using a non-descript strain, namely *Kunjukunju*. About 25.83 per cent of the respondents used *Kanchana* (PTB-50), a high yielding variety, followed by a non-descript strain, *Remanika*. It should be noted that the only high yielding variety used was *Kanchana*, which shows that the released high yielding varieties were less popular among the respondents.

In Kerala there are more than 100 varieties have been released from KAU. Besides these, some varieties like *Ponni*, *White Ponni*, and *Ponmani*, released from Tamil Nadu Agricultural University, are popular in Palakkad district. But in the study area less than ten HYVs were available which may be showing the lack of proper extension activities.

4.3.4 Attributes influencing variety choice

Table 4.9 shows the attributes, which influenced the varietal choice of the respondents. There were ten attributes such as grain yield (a_1), growing habit (a_2), tolerance to pest and diseases (a_3), tolerance to drought (a_4), boldness of grains (a_5), grain weight (a_6), optimum duration for season (a_7), taste (a_8), cooking quality (a_9) and straw yield (a_{10}). The table helped to rank each attribute according to the order of preference of the respondents.

Table 4.9. Attributes influencing rice seed varietal choice

Rank Attribute	1	2	3	4	5	6	7	8	9	10	Total score	Aggregate Ranks
a ₁	120	-	-	-	-	-	-	-	-	-	120	I
a ₂	-	30	-	-	-	-	80	10	-	-	600	V
a ₃	-	90	18	12	-	-	-	-	-	-	282	II
a ₄	-	-	-	-	-	-	-	18	102	-	1062	X
a ₅	-	-	62	58	-	-	-	-	-	-	418	III
a ₆	-	-	40	50	-	-	10	-	-	20	590	IV
a ₇	-	-	-	-	-	40	-	72	18	-	958	VIII
a ₈	-	-	-	-	102	-	-	-	-	18	690	VI
a ₉	-	-	-	-	-	110	-	-	-	10	760	VII
a ₁₀	-	-	-	-	18	-	30	-	-	72	1020	IX
W=0.54												
$\chi^2 = 583.2$												

Note: a₁..a₁₀ represent attribute

From Table 4.9 it is clear that the respondents gave most importance to grain yield (a₁) while selecting the variety to be used. Tolerance to pests and diseases (a₃) was the second important attribute followed by boldness of grains (a₅) and grain weight (a₆). Growing habits (a₂) and taste (a₈) came next. Attributes like optimum duration for season (a₇), straw yield (a₁₀) and tolerance to drought (a₄) were least important attributes according to the respondents. Tolerance to drought was least important to the farmers; as they were not cultivating the summer crop due to lack of irrigation facilities.

The table value of χ^2 at five per cent level is 18.307 and 23.209 at one per cent level. Here the calculated value of χ^2 is significantly higher than the table value i.e., 583.2. Thus **difference** among judges can be observed.

4.3.5 Attributes of preferred variety (*Kunjukunju*)

The rating of attributes of *Kunjukunju*, which was extensively used by the respondents, would disclose the quality of that strain. Table 4.10 shows the weightage given to each attribute of *Kunjukunju* by the respondents. For the purpose of ranking ten attributes as listed in Table 4.9 were taken.

Table 4.10 Rating of attributes of *Kunjukunju*

Attribute	Weights										Overall weights obtained
	1	2	3	4	5	6	7	8	9	10	
a ₁	-	-	-	-	-	-	-	8	74	38	1110 (1)
a ₂	-	-	-	-	-	2	106	12	-	-	850 (5)
a ₃	-	-	-	-	-	-	63	48	9	-	906 (4)
a ₄	-	-	49	24	46	1	-	-	-	-	478 (9)
a ₅	-	-	-	-	-	56	36	28	-	-	812 (6)
a ₆	-	-	-	-	-	63	40	17	-	-	794 (7)
a ₇	-	-	-	-	-	45	60	13	2	-	812 (6)
a ₈	-	-	-	-	-	-	9	60	48	3	1005 (2)
a ₉	-	-	-	-	-	-	37	42	41	-	964 (3)
a ₁₀	-	-	-	-	18	64	7	31	-	-	781 (8)

Note: Figures in parentheses represent ranks

Table 4.10 shows that the respondents assigned maximum weightage to grain yield (a_1) followed by taste (a_8) and cooking quality (a_9). *Kunjukunju* had obtained least score for its tolerance to drought (a_4). The table also indicates that tolerance to pests and diseases (a_3) and growing habit (a_2) of *Kunjukunju* were highly rated by the respondents. Even if *Kunjukunju* was not a drought tolerable variety, it was highly suited for *virippu* and *mundakan* seasons. Grain yield of *Kunjukunju* was the most attractive property as the respondents gave maximum weightage to that attribute.

The origin of *Kunjukunju* is still unrevealed and the assumptions of the technocrats was that it was developed from the seed given to the farmers by KAU for trial cultivation. But the farmers perceived it as a traditional variety. Recently KAU has developed two high yielding versions of *Kunjukunju*, namely, *Kunjukunju-Priya* and *Kunjukunju-Varna* through a participatory plant breeding programme.

This pointed out the fact that the respondents were least interested to use the released high yielding variety seeds, as they feared that the high yielding properties of such seeds would decline over generations.

4.3.6 Length of use

Table 4.11 shows how long the current rice varieties were in use in the study area.

Table 4.11 Length of use of varieties

Variety	Year			
	< 1	1 – 5	5 – 10	> 10
<i>Kunjukunju</i>	-	-	58(48.33)	62(51.67)
<i>Kanchana</i>	2 (1.7)	29 (24.17)	-	-
<i>Pavithra</i>	-	8 (6.7)	-	-
<i>Remanika</i>	2 (1.7)	20 (16.7)	2 (1.7)	-

Note: Figures in parentheses show percentages

Table 4.11 shows that 51.67 per cent of the respondents have been using *Kunjukunju*, a non-descript strain for more than ten years and 48.33 per cent of the respondents have been using the same strain for five to ten years. In the case of the other varieties, the respondents were using them along with *Kunjukunju* for one to five years or less than one year on an experiment basis. Nobody was found to have shifted the variety (*Kunjukunju*) during the last two years. Some of them have experimented some other varieties along with *Kunjukunju*. Therefore, brand (variety) loyalty was high among the respondents and it was higher in the case of *Kunjukunju*.

4.3.7 Awareness about high yielding variety

Results of Table 4.11 revealed that all the respondents were aware of the high yielding variety available in the study area. The list of HYV's given by the respondents is given in Table 4.12.

Table 4.12 Awareness about high yielding varieties of rice

<i>Padasekharam</i>	Variety			
	<i>Kanchana</i>	<i>Aiswarya</i>	<i>Annapurna</i>	<i>Pavizham</i>
S ₁	30	30	28	20
S ₂	30	26	25	18
S ₃	30	29	26	7
S ₄	30	28	19	11
Total	120(100)	113(94.17)	98(81.67)	56(46.67)

Note: 1. S₁...S₄ represent *padasekharam*

2. Figures in parentheses represent percentage

It is observed from Table 4.12 that all the respondents were aware of the HYV *Kanchana*. The next best known HYVs were *Aiswarya* (94.17 %) followed by *Annapurna* (81.67 %). *Pavizham* was listed by only 46.67 per cent of the total respondents.

The respondents were reluctant to use the released HYVs, as they were less confident in the high yielding properties including tolerance to pests and diseases. Some of them were using a HYV, namely *Kanchana* on an experiment basis. Another fact observed was that all the varieties listed by the respondents, namely, *Kanchana*, *Aiswarya*, *Annapurna* and *Pavizham* were released by the KAU, when the western parts of Thrissur district was highly influenced by the TNAU varieties of rice. The result indicate that farmers perceptions regarding the properties of modern varieties are important in developing more HYVs.

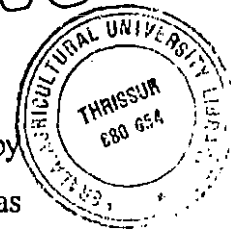
4.3.8 Perception of the respondents about non-descript and HYV seeds

The respondents were asked to compare the quantitative and qualitative aspects of non-descript and HYV seeds based on the listed attributes. The attributes were cost of cultivation (a_1), grain yield (a_2), income (a_3), growing habit (a_4), tolerance to pests and diseases (a_5), boldness of grains (a_6), grain weight (a_7), taste (a_8), cooking quality (a_9) and straw yield (a_{10}). The comparison is given in Table 4.13.

Table 4.13 Comparison between non-descript and HYV based on selected attributes

Attribute	Non-descript strain			HYV		
	High	Average	Low	High	Average	Low
a_1	-	28 (28.33)	92 (76.67)	120 (100)	-	-
a_2	21 (175)	99 (82.5)	-	120 (100)	-	-
a_3	-	43 (35.83)	77 (64.17)	-	43 (35.83)	77 (64.17)
a_4	-	120 (100)	-	10 (8.33)	110 (91.67)	-
a_5	88 (73.3)	32 (26.67)	-	-	93 (77.5)	27 (22.5)
a_6	99 (82.5)	21 (17.5)	-	-	120 (100)	-
a_7	120 (100)	-	-	48 (40)	72 (60)	-
a_8	118 (98.33)	2 (1.67)	-	48 (40)	72 (60)	-
a_9	120 (100)	-	-	-	120 (100)	-
a_{10}	-	110 (91.67)	10 (8.33)	-	111 (92.5)	9 (7.5)

Note: Figures in parentheses represent percentage



The cost of cultivation (a_1) of non-descript strain was ranked 'low' by 76.67 per cent of the respondents whereas all the respondents rated the same as 'high' for HYV. Grain yields (a_2) was ranked 'average' by 82.5 per cent of the respondents for non-descript strains when it was ranked 'high' for HYV by all respondents. Income (a_3) was ranked identically for both non-descript and HYV and majority of them (64.17%) ranked it as 'low'. Other attributes like taste (a_8), cooking quality (a_9) and grain weight (a_7) etc., were ranked 'high' for non-descript strain by majority of the respondents and 'average' for the HYV.

According to the farmers, even if some attributes like grain yield, growing habits etc., were high for HYV seeds they would decline gradually. Similarly they believed that the cost of cultivation was high for HYVs compared to non-descript strains. These were observed as the reasons for poor acceptance of released HYVs in the study area. The income in both cases was low due to some marketing problems prevailed in the study area. The farmers were selling the end produce to the private traders and they were getting a lower price than the prevalent market price.

4.4 Buyer behaviour towards agrochemicals

It was observed from the study that all the respondents used both organic and chemical control measures in their fields. Besides, they had used mixture fertilisers and had listed the brands of agrochemicals in use. It is given in Table 4.14.

Table 4.14 Brands of agrochemicals in use

Sl. No.	Fertiliser (Manufacturer/brands)	No. of farmers	Plant protection chemicals (Manufacturer/brands)	No. of farmers
1.	Fertilisers and Chemicals of Travancore Ltd. (FACT)	57 (47.50)	BASF	42 (35.00)
2.	Southern Petrochemical Industries Corporation Ltd. (SPIC)	30 (25.00)	Syngenta	37 (30.83)
3.	Madras Fertilisers Ltd. (Vijay)	12 (10.00)	Rallies India Ltd.	32 (26.67)
4.	Shriram Industries	21 (17.50)	Cheminova	9 (7.50)

Note: Figures in parentheses show percentage

Table 4.14 depicts that majority of the farmers (47.5%) were using FACT fertilisers. SPIC occupied the second position with a patronage of 25 per cent of the respondents. The least used brand was Vijay of Madras Fertilisers Ltd. (10%). In case of plant protection chemicals, majority of the respondents (35%) used the brands of BASF brand followed by Syngenta (30.83%) and Rallies India Ltd. (32%).

4.4.1 Length of use

Table 4.15 shows how long the above mentioned brands have been in use.

Table 4.15 Length of use of agrochemicals

Agrochemicals	Year			
	< 1	1 - 3	3 - 5	> 5
Fertilisers				
FACT [57]	-	16 (28.07)	13 (22.81)	28 (49.12)
SPIC [30]	2 (6.67)	28 (93.33)	-	-
Vijay [10]	-	3 (30)	7 (70)	-
Shriram [12]	2 (16.67)	9 (75)	1 (8.33)	-
Plant Protection Chemicals				
BASF [42]	1 (2.38)	10 (28.80)	31 (73.81)	-
Syngenta [37]	3 (8.11)	28 (75.68)	6 (16.21)	-
Rallies India Ltd [32]	5 (15.63)	23 (71.88)	4 (12.5)	-
Cheminova [9]	9 (100)	-	-	-

Note: Figures in parentheses show percentages and those in square brackets show number of users.

Majority of the FACT users (49.12 per cent) were using it for more than five years. About 22.81 per cent of the respondents were using FACT for the last three to five years. The second major fertiliser brand, SPIC was in use for one to three years among 93.33 per cent of its users. Similarly in the case of plant protection chemicals, the leading brand, BASF, was in use for three to five years among 73.81 per cent of its total users. But Cheminova was a recent one among its entire users.

In case of the usage of plant protection chemicals, the brands were not constant for a considerably long period. The major reason pointed out by the respondents was the non-availability of certain brands.

As FACT is the single brand that is in use for more than five years, an attempt has been made to analyse the reasons behind its continuous usage. For this purpose four parameters were identified such as quality assured (P_1), availability (P_2), recommendation by technical person (P_3) and recommendation by sales person (P_4). The results are given in Table 4.16.

Table 4.16 Factors influencing continuous usage of a particular brand

Parameter	Weights										Total weights obtained
	1	2	3	4	5	6	7	8	9	10	
P_1	8	12	12	48	12	22	6	-	-	-	494
P_2	-	-	-	-	-	-	-	-	-	120	120
P_3	-	-	-	5	40	27	48	-	-	-	670
P_4	-	36	22	18	44	-	-	-	-	-	430

Note: $P_1..P_4$ are parameter

Table 4.16 shows that maximum weightage was obtained by availability (P_2) followed by recommendation by technical person (P_3) and assured quality (P_1). Recommendation by sales person (P_4) has got least weightage. It may be inferred that the respondents were giving importance to availability and hence it was the major reason for the continuous usage of FACT.

4.4.2 Factors influencing product / brand choice

An attempt was made to find out the factors influencing the product / brand choice of the respondents in case of fertilisers and agrochemicals. Respondents were asked to assign weights out of ten to listed parameters. There were seven parameters, namely, manufacturer (P_1), ingredient (P_2), price (P_3), assured quality (P_4), stage of application (P_5), availability (P_6) and agency service (P_7). The details are given in Table 4.17.

Table 4.17 Factors influencing product/brand choice of fertilisers and agrochemicals

Parameter	Weights										Total weights obtained
	1	2	3	4	5	6	7	8	9	10	
P_1	-	-	-	-	36	38	42	4	-	-	734 (3)
P_2	-	12	28	74	6	-	-	-	-	-	434 (6)
P_3	-	-	-	56	28	36	-	-	-	-	580 (5)
P_4	-	-	-	-	18	72	26	-	-	-	704 (4)
P_5	-	-	-	-	-	-	28	68	24	-	956 (2)
P_6	-	-	-	-	-	-	-	-	-	120	1200 (1)
P_7	72	37	11	-	-	-	-	-	-	-	179 (7)

Note: 1. $P_1..P_7$ are parameter

2. Figures in parentheses represent rank.

It is obvious from the table that the most important factor which influences the product / brand choice of the respondents is the availability (P_6). Next major factor influencing the product / brand choice is stage of application

(P₅) followed by manufacturer (P₁) and assured quality (P₄). Factors like agency service (P₇) and ingredient (P₂) are having least influence on the product / brand choice of the respondents.

It is clear that the respondents were forced to buy the brands available in the store as they ranked availability as the most influencing factor on their product/brand choice. Even though they gave importance to manufacturer according to the stage of application, availability was their major problem because they were depending upon private outlets.

4.5 Attitude of the respondents towards agrochemical usage

In order to analyse the attitude of the respondents towards agrochemical usage, the respondents were given three statements such as “brand multiplicity encourages agrochemical consumption” (S₁), “the improvement in productivity varies according to the type of agrochemicals used” (S₂) and “some brands are suitable to certain stages of cultivation only” (S₃). They were asked to rate them on a five-point scale. The details are given in Table 4.18

Table 4.18 Attitude towards agrochemical usage

Statement	Opinion					Index
	SD	D	NO	A	SA	
S ₁	13	92	15	-	-	-49.17
S ₂	-	-	2	82	36	64.17
S ₃	-	-	-	38	82	84.17

Note: SA – Strongly agree, A – Agree
 NO – No opinion
 D – Disagree, SD – Strongly disagree

From Table 4.18 it is clear that statement S_1 was least favourable to the respondents, as it obtained a high negative index, which says that “brand multiplicity encourages agrochemical consumption”. But statement S_2 was moderately favourable which says that “the improvement in productivity varies according to the type of agrochemicals used” and S_3 , “some brands are suitable to certain stages of cultivation only” was highly favourable to the respondents.

The analysis revealed that the respondents were giving importance to the stage of application and there was no influence of brand multiplicity.

4.6 Awareness of the source of supply

There are a number of sources for seeds and agrochemicals. The source awareness of the respondents is given in Table 4.19

Table 4.19 Awareness of the source of supply

Input	Source				
	Fellow farmers	Private	<i>Krishi Bhavan</i>	Co-operatives	Commodity Boards
Seed	120 (100)	75 (62.5)	120 (100)	-	-
Agrochemicals	-	120 (100)	120 (100)	120 100)	-

Note: Figures in parentheses show percentages

It is evident from Table 4.19 that all of the respondents know fellow farmers and *Krishi Bhavans* as source of supply of seeds. Only 62.5 per cent of the respondents know about private seed farms. In case of agrochemicals, all of the respondents know about private traders, *Krishi Bhavan* and Co-operatives as suppliers of agrochemicals.

Majority of the respondents were meeting their seed requirements from their own farm and only an insignificant portion of the respondents were approaching *Krishi Bhavan* for seeds, that too a small part of their total requirement.

In case of agrochemicals, all of the respondents were depending upon Private traders. The reasons for preferring private traders have been analysed in Table 24. Five parameters were identified for this purpose, namely, quality (P_1), accessibility (P_2), timely availability (P_3), credit facility (P_4) and price offered (P_5). Total scores obtained for each parameter in each *padasekharam* is given in Table 4.20

Table 4.20 Reasons for preferring private traders

Parameter	<i>Padasekharam</i>				Total score	Rank
	S ₁	S ₂	S ₃	S ₄		
P ₁	150	123	132	130	535	V
P ₂	30	32	30	33	125	I
P ₃	60	58	60	57	235	II
P ₄	95	108	99	115	417	III
P ₅	115	129	129	115	488	IV
W = 0.84					$\chi^2 = 403.2$	

Note: P₁..P₅ are parameter

The respondents ranked accessibility (P_2) as the major reason for preferring private traders for agrochemicals. Timely availability (P_3) was ranked second followed by credit facility (P_4). Quality (P_1) was ranked fifth by the respondents. So it is clear that accessibility and timely availability constituted the major reasons for preferring private traders in case of agrochemicals.

Here calculated value of χ^2 is 403.2 which is significantly higher than the table value of 11.070 at five per cent level and 15.086 at one per cent level. So it is clear that W is significant both at five per cent and one per cent levels and there is **difference** among the judges.

4.7 Source of information about inputs and suppliers

Table 4.21 gives the data regarding the source of information about inputs and their suppliers. The respondents were given seven sources.

Table 4.21 Source of information about inputs and suppliers

Sl. No.	Source	Inputs		Suppliers
		Seed	Agrochemicals	
1.	Print media	-	20 (16.67)	-
2.	Neighbours/ farmers	120 (100)	118 (98.33)	120 (100)
3.	<i>Krishi Bhavan</i>	120 (100)	120 (100)	120 (100)
4.	Co-operatives	-	87 (72.5)	20(16.67)
5.	Companies	-	-	-
6.	Radio	-	120 (100)	-
7.	Television	-	-	-

Note: Figures in parentheses represent percentage

The table shows that in the case of seeds the major sources of information were neighbours/farmers and *Krishi Bhavans*. But in the case of agrochemicals, the major source of information was *Krishi Bhavan* as all of the respondents were knowing it. Besides radio, another important source was neighbours/farmers. Print media was the least important source of information regarding agrochemicals. Similarly *Krishi Bhavan* and neighbours/ farmers were the major source of information in case of input suppliers.

4.8 Influence of technocrats on buying behaviour

In order to analyse the influence of technocrats on the buying behaviour, the respondents were given ten statements such as "I have constant contact with *Krishi Bhavan* (S₁), "Technical persons regularly visit the field" (S₂), "Technical persons are ready to give advices whenever I approach" (S₃), "The technical persons recommend about the farming practices" (S₄), "Technical persons recommend a particular variety of seed" (S₅), "Technical persons recommend agrochemicals than organic manures" (S₆), "Technical persons recommend a particular brand of agrochemical" (S₇), "Technical persons encourage the use of organic manures" (S₈), "Those recommendations are strictly followed" (S₉), and "The sales persons recommend the brands of agrochemicals" (S₁₀). They were asked to give their opinion on a five-point scale. The data regarding their opinion is given in Table 4.22

Table 4.22 Influence of technocrats

Statement	Opinion					Index
	SD	D	NO	A	SA	
S ₁	-	-	8	101	11	51.25
S ₂	-	45	68	7	-	15.83
S ₃	-	-	2	106	12	54.17
S ₄	-	-	-	104	16	56.67
S ₅	-	42	6	72	-	12.50
S ₆	84	22	14	-	-	-79.17
S ₇	22	86	7	5	-	-52.08
S ₈	-	-	20	86	14	47.5
S ₉	-	-	25	84	11	44.17
S ₁₀	-	-	14	20	86	80.00

Note: SA – Strongly agree, A – Agree

NO – No opinion

D – Disagree, SD – Strongly disagree

Technical person refers to the agricultural /extension officers

Table 4.22 shows that statements S₁, S₃, S₄, S₈ and S₉ have obtained an index between 33.33 and 66.66 and hence fall in the 'moderately favourable' zone. But S₂, S₅, S₆ and S₇ have obtained an index below 33.33 and fall in the zone of 'least favourable'. The only statement having index greater than 66.66 is S₁₀ and hence it is in the 'highly favourable' zone.

It is obvious from Table 4.22 that the influence of technocrats on buying behaviour of the respondents was negligible in nature, because statements showing intervention of technocrats in input decisions like 'technical person recommend a particular variety of seed' (S₅), 'technical persons recommend agrochemicals other than organic manures' (S₆) and 'technical person recommends a particular brand of agrochemical' (S₇) have obtained highly negative scores and proves that their influence was less. But influence of sales person was more as the statement 'the sales persons recommend the brands of agrochemicals' (S₁₀) was scored highly positive. So it may be concluded that in general, influence of technocrats on buying behaviour was comparatively less.

4.9 Marketing of output

It was observed from the study that all of the respondents were marketing their produce through private traders. The reasons for this preference is given in Table 4.23. There were five parameters identified to rank as easy accessibility (P₁), prompt payment (P₂), price given (p₃), transportation (p₄) and agency services (p₅). The ranks obtained by each parameter in each *padasekharam* are given in Table 4.23

Table 4.23 depicts that transportation (P₄) was the major reason for preferring private traders followed by agency service (P₅) and prompt payment (P₂). Easy accessibility (P₁) and price given were ranked fourth and fifth respectively.

Table 4.23 Reasons for preferring a particular dealer in marketing the end produce

Parameter	<i>Padasekharam</i>				Total score	Rank
	S ₁	S ₂	S ₃	S ₄		
P ₁	107	90	78	150	425	IV
P ₂	88	120	108	90	406	III
P ₃	91	150	138	120	499	V
P ₄	37	38	66	44	185	I
P ₅	127	52	60	46	285	II
W = 0.43					$\chi^2 = 206.4$	

Note: 1. P₁...P₅ represent parameter

2. S₁...S₄ represent *padasekharam*

All the respondents were selling the end produce to private traders. The reason for preference was the transportation facilities and agency services offered by the private traders followed by the prompt payment of price (Table 4.23).

The major marketing problem faced by the respondents were the low prices given to them by the private traders. But they had no other option as the private traders themselves bear the transportation cost and collect the produce from the farm itself.

In this case the table value of χ^2 is 15.086 at one per cent level and 11.070 at five per cent level while the calculated value is considerably higher (206.4). Hence **difference** is there among the judges.

4.10 *Inter and intra variations among *padasekharams*

In the above sections we have examined the responses and attitudes of the respondents in different *padasekharams*. The objective behind choosing four *padasekharams* was to assess whether there is any significant differences in the attitude of each *padasekharams* and the earlier analysis broadly inferred that all these *padasekharams* formed a homogenous group with very marginal variations. To reassure this claim, ANOVA - RBD type (Appendix III) and critical difference test were conducted.

The significance at one per cent and five per cent level for each chosen variable is given in Table 4.24.

* Correction factor = $(GT)^2/r$, where $GT = \sum_i \sum_j T_{ij}$

Total Sum of Squares = $\sum_i \sum_j T_{ij}^2 - CF$

Sum of Squares due to Treatment = $\frac{\sum T_i^2}{r} - CF$

Sum of Squares due to Block = $\frac{\sum R_j^2}{t} - CF$

Sum of Squares due to Error = Total SS - (Treatment SS - Block SS)

Table 4.24 Analysis of Variance

Sl. No.	Parameter	Block	Treatment
1.	Education (P ₁)	1.175	27.90**
2.	Income (P ₂)	3.159*	18.70**
3.	Accessibility (P ₃)	3.292*	5.823**
4.	Area of land (P ₄)	5.226**	9.219**
5.	Factors influencing quantity of input to be used (P ₅)	3.423**	23.508**
6.	Factors influencing input type (P ₆)	5.570**	46.131**
7.	Seed variety used (P ₇)	11.706**	47.758**
8.	Length of use (P ₈)	14.980**	53.558**
9.	Awareness about HYV (P ₉)	14.270**	63.517**
10.	Source of information (P ₁₀)	8.917**	117.843**
11.	Marketing of output (P ₁₁)	3.803**	119.678**

* Significant at 1%

** Significant at 5%

Table 4.24 shows that for all *padasekharams* all chosen variables had a statistically significant value. From this we may infer that variables like income, education, accessibility to infrastructures etc. had very much influenced the buyer habits of the respondents. At the same time, significant differences were not noticed between *padasekharams*. This is further illustrated in the homogenous grouping made based on critical difference test values given in Table 4.25.

Table 4.25 Critical difference analysis

Sl. No.	Parameters	Homogenous groups
1.	Education (P ₁)	S ₁ , S ₃
2.	Income (P ₂)	S ₃ , S ₄
3.	Accessibility (P ₃)	S ₁ , S ₂ , S ₃ , S ₄
4.	Area of land (P ₄)	S ₁
5.	Factors influencing quantity of input to be used (P ₅)	S ₁ , S ₃ , S ₄
6.	Factors influencing input type (P ₆)	S ₁ , S ₂ , S ₃ , S ₄
7.	Seed variety used (P ₇)	S ₁ , S ₂
8.	Length of use (P ₈)	S ₁ , S ₂ , S ₃ , S ₄
9.	Awareness about HYV (P ₉)	S ₁ , S ₂
10	Source of information (P ₁₀)	S ₁ , S ₂ , S ₃
11	Marketing of output (P ₁₁)	S ₁ , S ₃

Note: S₁..S₄ represent *padasekharam*

From Table 4.25 it is clear that, for parameters P₃, P₆ and P₈, all the *padasekharams* commonly formed a pool. Many other parameters also had at least two *padasekharams* in the pool. The only parameter, where a significant pooling was difficult, was in the case of parameter four, area of land. A significant heterogeneity was noticed in this case, which may be due to the peculiarities of the location.

$$T_{ij} = \text{value of the variate for the } i^{\text{th}} \text{ Treatment in the } j^{\text{th}} \text{ Block}$$

$$T_i^2 = Y_{ij}^2 = R_j^2$$

These inferences broadly suggest that irrespective of padasekharains, the buyer behaviour follows the same pattern. This validates the earlier observation that responses were almost similar. This is a broad indication that, irrespective of area the input marketing strategies for rice can be similar.

Summary

CHAPTER 5

SUMMARY

Buyer behaviour is the practice that buyers display in searching for, purchasing, using, evaluating and disposing of products and services that they expect would satisfy their immediate and intermediate needs. The study of buyer behaviour is a process of knowing how individuals make decisions to spend their available resources (money, time and effort) on intermediate/input consumption. It includes the study of what they buy, why, how, when, where and how often they buy it. It helps in understanding the internal and external influences that impel individuals to act in certain consumption related ways.

Buyer behaviour of farmers towards agricultural inputs is a matter of research in the present economy of global competition. Potential of crop production apart from natural factors is linked with the level of inputs, namely, irrigation, fertiliser, pesticides, seeds and agricultural practices. While the natural factors, namely, rainfall, temperature, wind and the like are beyond human control, to some extent aberrations in them can be countered by making timely use of other inputs in requisite measure. It is obvious that the level of crop production is affected more by the kind of inputs, especially in modern agriculture. The place of the two inputs, namely, seeds and agrochemicals require special mention from the research point of view.

The marketing of agricultural inputs presents a set of unique challenges in the present scenario. Unlike conventional marketing of consumer goods, agri-marketing appears similar to social marketing in that it often involves a large component of education aimed at changing centuries old beliefs, attitudes and farming practices. The task is further complicated by the fact that the total information available of the rural market is limited. While today's market is well

acquainted with the psyche of the urban consumer, the thinking modes and behaviour patterns of the farmer are more or less an unfamiliar territory.

It was in this context that the present study was undertaken with the following specific objectives:

1. To analyse the buyer behaviour of the rice farmers in relation to the qualitative, quantitative and market attributes of rice varieties and agrochemicals.,
2. To examine the source preference of seeds and agrochemicals., and
3. To assess the influence of technocrats and input supply agencies on the buying behaviour.

The study was conducted in Thrissur district. Pazhayannur block with the highest area of rice cultivation was selected for the study. Four panchayaths, namely, Pazhayannur, Thiruvilwamala, Chelakkara and Kondazhy were identified to locate four *padasekharams* with highest net cropped area. A sample of 30 farmers comprising of small, medium and large farmers from each *padasekharam* together constituted the total 120 respondents. The study was mainly based on primary data collected from the sample respondents through personal interview method by administering a pre-tested structured schedule. The data thus obtained were analysed using relevant statistical tools and techniques. Bivariate tables and simple percentages formed the basis of analysis. Kendall's Coefficient of Concordance was used to rank the parameters that influenced the buyer behaviour of the respondents. The influence of technocrats was measured on Likert's scale of summated ratings.

5.1 Summary of findings

5.1.1 Socio-economic profile of the respondents

1. Age-wise classification of the respondents revealed that the majority of them belonged to the age group between 40 and 60 years.
2. Classification of the respondents based on their educational qualifications disclosed that majority of them were below SSLC level.
3. Greater part of the respondents had an annual per capita income between Rs. 1000 and 5000 and belonged to the lower income category.
4. Infrastructure facilities like motorable road, health centre, post office, Krishi Bhavan, agrochemical depots, commercial banks, etc., were accessible to majority of the respondents within two to four kilometres.
5. A significant portion of the respondents were small farmers having cultivating area below two acres.
6. All of the respondents were practicing individual farming and doing only the first two crops such as *Virippu* and *Mundakan*. Summer crop *Punja* was not practiced.

5.1.2 Buyer behaviour towards seeds

1. Majority of the respondents estimated their input requirements based on their total area of cultivation.
2. The type of seed to be used was decided by the respondents based on their experience and cultivation practices.
3. A non-descript strain known as *Kunjukunju* was popular among the respondents. Released HYVs were not popular in the study area.

4. *Kanchana*, a high yielding variety released by the Kerala Agricultural University was in use among a negligible portion of the respondents.
5. Grain yield and tolerance to pest and diseases were the two most important factors influencing the variety choice of the respondents.
6. The grain yield and tolerance to pest and diseases of *Kunjukunju* were satisfactory to the respondents.
7. A considerable percentage of the respondents were using the non-descript variety *Kunjukunju* for more than ten years. No respondent was found to have shifted the variety during the last two years. Brand (variety) loyalty was higher in the case of *Kunjukunju*.
8. Majority of the respondents were aware about the high yielding varieties available in the study area.
9. Most of the respondents believed that the high yielding property of such seeds will decline over time and cost of cultivation is high for high yielding varieties.
10. In the case of seeds the respondents were aware about fellow farmers and *Krishi Bhavan* as the source of supply.

5.1.3 Buying behaviour towards agrochemicals

1. FACT was the leading fertiliser brand in the study area and BASF obtained high usage among the respondents in case of plant protection chemicals.
2. FACT was used by majority of the farmers for more than five years. The plant protection chemical BASF was in use for three to five years among majority of its users.
3. In the case of plant protection chemicals, there was a wide spread shift during the last two years. Non-availability was the single major reason for the shift.

4. Timely availability was observed as the reason for continuous usage of a particular brand of fertiliser, FACT.
5. Availability was identified as the major factor influencing the product/brand choice of the respondents. They were forced to buy the product/brand available in the store.
6. Brand multiplicity was not encouraging the agrochemical consumption as the statement got a negative scoring. But the respondents were having a moderately favourable opinion towards the statement saying 'the improvement in productivity varies according to the type of agrochemicals used'. The consumption of agrochemicals was highly influenced by the stages of application.
7. All of the respondents preferred private traders for purchase of agrochemicals. Accessibility and timely availability were two major reasons for preferring private traders.
8. Major sources of information about inputs and suppliers were neighbours/farmers and *Krishi Bhavan*. Radio played an important role in the case of agrochemicals.

5.1.4 Influence of technocrats on buying behaviour

1. The technocrats had a negative influence on the buying behaviour of the respondents.
2. Influence of sales person on their buying behaviour was high as they recommend a particular brand of agrochemicals.

5.1.5 Marketing of output

1. All of the respondents depended upon private traders to market their end produce.

2. Important reason for preferring private traders was transportation facilities and agency services offered by them.
3. Low price given by the private traders was observed as the major marketing problem faced by the respondents.
4. Buyer behaviour of the respondents for all the four *padasekharams* was homogenous.

To conclude, the present study made an explorative search into the behaviour of rice farmers towards two important inputs, namely, seeds and agrochemicals. The varietal preferences of the rice farmers have been brought into light by the study. Hence the results are expected to give the much-warranted feedback to the extension personnel, policy makers and rice researchers of the district.

The study revealed that the youngsters were least interested in agriculture as an occupation in the era of fast urbanisation. The study area was well equipped with all the infrastructure facilities even though the area was a rural area. The small farmers constituted the major group in Kerala having land holdings less than one hectare. The study area was a hilly area where irrigation was a major problem and hence only the first two crops, namely, *Virippu* and *Mundakan* were practiced.

It was clear from the study that the quantity of input required for each cultivation was estimated based on the area of cultivation. Normally 30 to 35 kg of seeds were used in one acre. Similarly the type of seeds, say HYV or non-descript strains were decided on the basis of the usual practice of the farmers.

Kunjukunju, a non-descript strain, was very much popular in the study area. The farmers were reluctant to use the released HYV as they believed that the high yielding property of the seeds including tolerance to pests and diseases would decline after two to three generations. According to them the non-descript strains were tolerant to pests and diseases for several generations. The farmers were using this strain for more than ten years and a few of them were using it for the last twenty years. They were not ready to shift. Some of the respondents have tested some other varieties and the only high yielding variety among them was *Kanchana*, released by the KAU.

In case of fertilisers and plant protection chemicals the respondents were forced to buy the product/brand available in the store as they depend upon the private traders for such inputs. Hence FACT was the main fertiliser brand in the study area followed by SPIC. BASF was the main plant protection chemical followed by Rallis India Ltd. A shift was observed in the case of plant protection chemicals as non-availability of certain brands occurred. Hence availability was the single important factor influencing the buyer behaviour towards agrochemicals.

The farmers were depending upon the neighbours/fellow farmers for the seed requirements, but to a limited extent. The lion's share of seed requirement was met by themselves from their own harvested output. The neighbours/fellow farmers constituted the major source of information also.

Influence of technocrats on buyer behaviour was comparatively less. Even though majority of respondents have constant contacts with the Krishi Bhavan, the farmers were not ready to change their usual practices. But in the case of agrochemicals, the salesperson had an important role as they highly influenced the buying behaviour. More often the salesman recommended the brand on which he earned a high margin especially in case of agrochemicals. Nowadays, MNCs

are competing at par with domestic firms and they offer high commission for the dealers than that by the domestic firms.

Coming to the marketing of the end produce, the farmers were facing the problem of low price. They were depending upon private traders for marketing. The private traders collect the produce from the farm itself and the farmers need not bear the transportation costs. But the price offered by these traders was much below the actual market rate. The farmers were getting hardly Rs. 500.00 per quintal when the ruling market price was Rs. 800.00 per quintal.

A comparison among the four *padasekharams* revealed that there was no regional disparity in case of practices in various *padasekharams*. There was homogeneity in buying behaviour of respondents in all the *padasekharams* selected.

In this context it should be noted that the need for market research to generate information necessary to devise both short term and long term marketing strategies are increasingly being felt by agro input marketing sector due to the changing competitive environment. Technology is the key word for success in all the developed countries. Our farmers must be made aware about the technological developments and that will be the single step to increase production and productivity in a nation of one billion people.

The technical aspect of the sustainable agriculture is as important as the economic aspect to survive and compete successfully with the emerging non-farming sectors. The high yielding variety seed-fertiliser-irrigation technology should be completely utilised to fully meet our food grain requirement, for which the farmers should be relieved from the centuries old beliefs and practices.

Indian agriculture after eleven years of economic liberalisation policies in place, presents a picture of confidence and strength and at the same time offers new challenges and opportunities. Confidences and strength come from the fact that India alone, it seems in the developing world, possesses huge food stock and a record grain production. The challenges are how to open up farm sector to draw more investments and at the same time how to protect the farmers from an unbridled exploitation by the MNCs and the domestic corporate sector.

In the present scenario, we have to concentrate on issues relating to farmers and to keep up the competitiveness of the Indian agriculture against other sectors, including foreign agriculture. On this occasion importance must be given to research and development and based on this study it is also recommended that a comprehensive study of similar nature be conducted for the whole state of Kerala.

172106

Appendices

APPENDIX I

Estimation of seed requirement

Ranks Parameter	S_1					S_2					S_3					S_4				
	1	2	3	4	Total score	1	2	3	4	Total score	1	2	3	4	Total score	1	2	3	4	Total score
P_1	10	30	15	-	55	10	40	-	-	50	16	26	3	-	45	20	20	-	-	40
P_2	-	-	-	120	120	-	-	15	100	115	-	2	63	32	97	-	-	60	40	100
P_3	-	20	36	-	90	2	-	69	20	91	1	16	24	52	92	-	8	30	64	102
P_4	18	10	15	-	43	18	20	6	-	44	13	16	-	36	65	10	32	-	16	58

S_1, S_2, S_3, S_4 - Padasekharam

APPENDIX II

Factors influencing decision upon seed type to be used

		S ₁					S ₂					S ₃					S ₄				
Parameter	Ranks	1	2	3	4	Total	1	2	3	4	Total	1	2	3	4	Total	1	2	3	4	Total
	P ₁	-	20	-	80	100	2	10	-	92	104	-	32	-	56	88	-	22	-	76	98
P ₂	30	-	-	-	30	28	-	-	8	36	30	-	-	-	30	30	-	-	-	-	30
P ₃	-	40	30	-	70	-	50	15	-	65	-	28	48	-	76	-	38	33	-	-	71
P ₄	-	-	60	40	100	-	-	75	20	95	-	-	42	64	106	-	-	57	44	-	101

S₁, S₂, S₃, S₄ - Padasekharan

APPENDIX III

ANOVA

Source	DF	S.S	M.S	F
Replication blocks	of $(r-1)$	$\frac{\sum R_j^2}{t} - CF$	S_r^2	$\frac{S_r^2}{S_e^2}$
Treatments	$(t-1)$	$\frac{\sum T_i^2}{r} - CF$	S_t^2	$\frac{S_t^2}{S_e^2}$
Errors	$(r-1)(t-1)$	By subtraction	S_e^2	
Total	$rt-1$	$\sum_i \sum_j Y_{ij}^2 - CF$		

where S_i are replications

APPENDIX IV

SCHEDULE

Title: BUYER BEHAVIOUR OF RICE FARMERS TOWARDS SELECTED AGRICULTURAL INPUTS

1. Name : _____
2. Address : _____ Panchayat: _____
- Ward: _____ Block: _____
3. Age : _____
4. Sex : _____
5. Educational Status : _____
6. Occupation : _____
7. Annual Income (per head) : _____
8. Family Details: _____

Sl. No	Name of the members	Sex	Age	Relation with head of the family	Educational status	Occupation	Annual income Rs.

9. Accessibility (Distance in km. from residence)

Particulars	<1 km	1-2 km	2-3 km	3-5 km	>5 km (specify)
Motorable road					
Fertilizer depot / Pesticide depot					
<i>Krishi Bhavan</i>					
PACS					
FSS					
Commercial Banks					
Seed Farm					
Panchayat Office					
Health centre					
Post Office					
School (primary)					
High School					

10. Area of land (cents/acre)

Particulars	Paddy field	Others	Total
a) Your own			
b) Family holding			
c) Leased land			

11. Gross Cropped Area:

Season	Area (acre)	Yield (kg)
a) <i>Virippu</i>		
b) <i>Mundakan</i>		
c) <i>Puncha</i>		

12. Pattern of cultivation (for last 5 years)

Area under cultivation (Net Cropped Area)	Seasonal distribution of land			Non cultivating area	Total Average yield per year
	<i>Virippu</i>	<i>Mundakan</i>	<i>Puncha</i>		
1.					
2.					
3.					
4.					
5.					

13. Type of farming practising: Individual/Group Farming

14. How do you estimate that requirement? (assign ranks from 1 to 5 in the order of preference).

- Based on the area under cultivation
- Based on the price of the input
- Based on the recommendation of Agricultural Officer
- Based on the usual practises
- Others (specify)

15. How do you decide upon the type of inputs to be used?

- Based on the recommendation of extension worker
- Based on usual practices
- Based on soil condition
- Based on water availability
- Others (specify)

16. Details of the seed variety in use:

17. Attributes about your preferred variety (assign weights out of 10 to each aspect)

Attributes	<i>Virippu Varieties (specify)</i>				
	1	2	3	4	5
a) Grain Yield					
b) Growing habit					
c) Tolerance to pest & diseases					
d) Tolerance to draught					
e) Boldness of grains					
f) Grain weight					
g) Optimum duration for season.					
h) Taste					
i) Cooking quality					
j) Straw yield					
k) Others (specify)					

b)

Attributes	<i>Mundakan Varieties (specify)</i>				
	1	2	3	4	5
a) Grain Yield					
b) Growing habit					
c) Tolerance to pest & diseases					
d) Tolerance to draught					
e) Boldness of grains					
f) Grain weight					
g) Optimum duration for season.					
h) Taste					
i) Cooking quality					
j) Hay yield					
k) Others (specify)					

c)

Attributes	Punja Varieties (specify)				
	1	2	3	4	5
a) Grain Yield					
b) Growing habit					
c) Tolerance to pest & diseases					
d) Tolerance to draught					
e) Boldness of grains					
f) Grain weight					
g) Optimum duration for season.					
h) Taste					
i) Cooking quality					
j) Hay yield					
k) Others (specify)					

19. Duration for which the present variety has been in use:

Particulars	<1 Year	1-5 years	5-10 years	>10 years
<i>Virippu</i>				
<i>Mundakan</i>				
<i>Puncha</i>				

20. Have you shifted the variety in past two years? YES/NO

If YES, from which to which?

21. Reasons for shifting: Low grain yield/Bad taste and cooking quality/low tolerance to pest, disease and draught/Others (specify)

23. Are you aware of the available High yielding varieties? YES/NO

If YES, List them:

- i.
- ii.
- iii.
- iv.
- v.

24. Compare the following aspects between Local and High Yielding varieties:

Particulars	Local variety			High yielding variety		
	High	Average	Low	High	Average	Low
a) Cost of cultivation						
b) Grain Yield						
c) Income						
d) Growing habit						
e) Tolerance to pest and diseases						
f) Boldness of grains						
g) Grain weight						
h) Taste						
i) Cooking quality						
j) Straw yield						
k) Shelf life						
l) Others (Specify)						

26. What are the control measures you are practicing? Organic / Chemical/both

27. Type of fertiliser used: Straight/Mixture/Complex

28. List out the brands of fertilisers in use:

29. Duration for which the particular product/brands have been in use:

29. Do you have shifted the brand in last two years?

30. Reasons for the continuous usage of these product/brands (Assign weights out of 10)

Attributes	Fertilisers	Pesticides
a) Quality assured		
b) Availability		
c) Recommendation by technical person		
d) Recommendation by the sales person		
e) Others (specify)		

31. Which factor is influencing your product/brand choice;(Assign weights out of 10)

Particulars	Weight assigned
a) Manufacturer	
b) Ingredient	
c) Price	
d) Quality assured	
e) Stage of application	
f) Availability	
g) Agency service	
h) Others (specify)	

32. List out the various brands known under the different types of agro chemicals:

Fertilisers	Pesticides

33. Express your opinion with respect to the following statements:

a) Brand multiplicity encourages agro chemical consumption:

Strongly agree/Agree/No Opinion/Strongly Disagree/Disagree

b) The improvement in productivity varies according to the type of agro chemicals used:

Strongly agree/Agree/No Opinion/ Strongly disagree/Disagree

c) Some brands are suitable for certain stages of cultivation only:

Strongly agree/Agree/No Opinion/ Strongly disagree/Disagree

34. Tick the sources of suppliers known to you:

Particulars	Fellow farmers	Private	Krishi Bhavan	Co-operatives	Commodity Boards	Others Specify
Seed						
Fertilisers						
Pesticides						

35. Where do you meet your input requirements?

Input	Suppliers	Percentage to the total requirement
Seed:		
Fertilisers:		
Pesticides:		

36. Reasons for preference the above source: (Rank in the order of preference)

- a) Quality
- b) Accessibility
- c) Timely availability
- d) Credit facility
- e) Price offered
- f) Others (specify)

37. Do you want to shift the source of suppliers? YES/NO

If YES, give reason: Poor quality/non-availability/lack of credit facility/Cheap price offered/Others (specify)

38. First source of information about:

Particulars	Seed	Agrochemicals	Suppliers
a) Print media			
b) Neighbours/farmers			
c) <i>Krishi Bhavan</i>			
d) Co-operatives			
e) Companies			
f) Radio			
g) Television			
h) Others (specify)			

39. Tick the appropriate option:

Sl. No.	Statements	Strongly Agree	Agree	No opinion	Strongly Disagree	Disagree
1.	I have constant contact with <i>Krishi Bhavan</i> .					
2.	Technical persons regularly visit the field.					
3.	Technical persons are ready to give advices whenever I approach.					
4.	The technical person recommend about the farming practices.					
5.	Technical persons recommend a particular variety of seed.					
6.	Technical persons recommend agrochemicals than <i>organic manures</i> .					
7.	Technical persons recommend a particular brand of agrochemical.					
8.	Technical person encourages the use of organic manures.					
9.	Those recommendations are strictly followed.					
10.	The sales persons recommend the brands of agrochemicals.					

Note: Technical person refers to the agricultural Officer/Extension Officer

40. Does the storekeeper allows credit facilities to you? YES/NO

If yes, give details:

41. Utilisation of end produce (kg):

- a) For seed:
- b) For consumption:
- c) As wage:
- d) Marketable surplus:

42. Where do you market the end produce?

- a) Unorganised sector
- b) Private traders
- c) Co-operatives
- d) Others (specify)

43. Reason for preferring the said agency?(Rank in the order of preferences)

- a) Easy accessibility
- b) Prompt payment
- c) Price given
- d) Transportation
- e) Agency Services
- f) Others (Specify)

44. Do you have any storage facility? YES/NO

If Yes, give details:

45. Do you face any marketing problems? YES/NO

If Yes, give details

46. What are the specific marketing problems with respect to:

- a) Price:
- b) Product:
- c) Packaging:
- d) Transportation:

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**BUYER BEHAVIOUR OF RICE FARMERS
TOWARDS SELECTED AGRICULTURAL
INPUTS IN THRISSUR DISTRICT**

By
SREEJA P. NAIR

ABSTRACT OF THE THESIS

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Faculty of Agriculture
Kerala Agricultural University

Department of Rural Marketing Management
COLLEGE OF CO-OPERATION, BANKING & MANAGEMENT
VELLANIKKARA, THRISSUR - 680 656
KERALA, INDIA

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ABSTRACT

The study on 'Buyer behaviour of rice farmers towards selected agricultural inputs in Thrissur district' was undertaken with the following objectives:

1. to analyse the buyer behaviour of the rice farmers in relation to the quantitative, qualitative and market attributes of rice varieties and agrochemicals,
2. to examine the source preference of seeds and agrochemicals, and
3. to assess the influence of technocrats and input supply agencies on the buying behaviour.

The study was conducted in Pazhayannur block in Thrissur district. Pazhayannur block was having the highest area of rice cultivation and four panchayaths namely Pazhayannur, Chelakkara, Thiruvilwamala and Kondazhy were selected based on highest area of cultivation. From each panchayath each *padasekharam* was identified with highest net cropped area. A sample group of 30 farmers, comprising of small, medium and large farmer proportionately from each *padasekharam* constituted the total 120 respondents.

The study made an explorative search in to the buyer behaviour of the respondents towards seeds and agrochemicals. The respondents were practicing two seasonal cultivations namely, *virippu* and *mundakan*. The summer crop *pinja* was not practicing due to lack of irrigation facilities. The main seed variety popular among the respondents was *Kunjukunju*, a non-descript variety. Some of them were using a HYV namely, *Kanchana*, on experiment basis and it was released by Kerala Agricultural University. The reason for preferring non-descript variety to HYV was that respondents had no faith in the high yielding properties of HYV seeds and they feared that such properties would decline within 2 to 4 generations. Variety loyalty was high among the respondents in case of *Kunjukunju* as they were using it for last 20 years. The respondents were aware about 3 or 4 varieties where, more than 100 varieties are available in the state.

They were using their own output for seeds and an insignificant portion were approaching *Krishhi Bhavan*.

In case of agrochemicals, the study revealed that majority of the respondents were using FACT fertilizers followed by SPIC and BASF's brands were the leading plant protection chemicals in the study area. The respondents identified availability as the major factor influenced the continuous usage of FACT fertilizers and BASF's brands. They were depending upon private outlets for purchasing agrochemicals and were forced to buy the available brands, as the traders were interested in some specific manufacturers based on the commission they earned. The respondents were using the agrochemicals according to the stages of application and brand multiplicity done nothing in the usage of agrochemicals.

The influence of technocrats including the agriculture officers and extension officers on the buying behaviour of the respondents was less and that of sales persons was high, especially in case of agrochemicals. The farmers were depending upon private trader for selling of output, as the private traders themselves will arrange the transportation of the end produce. But a major problem faced by the respondents was the low price offered by the private traders, comparing to the actual price prevailed in the market.

The study emphasise that steps should be taken to increase the awareness of the farmers about HYV seeds and agrochemicals. The state agriculture department and agricultural university should expand their extension activities, and importance should be given in the field of researches on the buying behaviour of farmers, especially that of rice farmers as rice being the staple food of Kerala. Besides, the results point out vividly to the prime need for a systematic and effective marketing facilities for the farm output and a thorough price support system to improve the agricultural production, and ultimately the income of the farmer.