

CHAPTER II

REVIEW OF LITERATURE

A review of past studies pertaining to the present is enable the researcher to define precisely the concepts used in the present study, to place the problem in proper perspective, to avoid the duplication of the study and properly arrange the framework for analysis. Hence, the first section of the present chapter reviews the existing literature on past studies relating to production and marketing of foodgrains particularly paddy. The second part of the chapter classifies the concept and terms used in the analysis. The last part explains the profile of the study area.

2.1 Reviews Related to Types of Paddy Cultivators

Sen and Roy¹ (1967) stated that even the small farmers were equally aware of the immense potential of the new farm technology including the high yielding varieties and use of fertilizers.

Harrison² (1972) studied the cost and returns structure of small and large farmer groups in Thanjavur District, Tamil Nadu and found that small farmers used about 22 percent more labour per hectare than the large farmers due to intensive use of family labour.

Ashok Rudra, et, al³ (1973), Dalvir Singh (1993), Upender and Tripathi (1998) found that the small farmers spread out their sales over a long time span than the bigger ones.

¹ Sen L.K. and Roy. P. "Awareness of Community Development in villages of Hyderabad" Report of National Institute of community Development Hyderabad, (1967). PP -19-20.

² Harrison, "Agricultural Modernisation and Income Distribution", Mimeo, Ph.D., Princeton university, 1972.

³ Ashok Rudra and Madan Mohan Mukhopadhaya, "Size productivity revisited, " Economic and political weekly, vol.2(1), 1973.

Subramanian and Sri Pau⁴ (1976) concluded in their comparative study on garden land and dry land farmers as the dry land farmers were more aged, less educated, operated small farm size, possessed low social participation, were mostly in subsidiary occupation and had low cropping intensity.

Palanisamy⁵ (1978) stated that majority of farmers had medium scientific orientation and about one fifth reported a high scientific orientation. Only a little percentage expressed less scientific orientation.

Sakthivel⁶ (1979) reported that majority of the respondents (60.83 percent) had medium level of economic motivation which was followed by about one fourth of the farmers who had high level of economic motivation, only 12.50 percent had low level of economic motivation.

Mohanadasan ⁷(1979) reported that the big and small farmers differed significantly in terms of socio economic characters studied which meant that they were different in their age, education, farm size, social participation and material possession.

Chandrasekaran⁸ (1979) reported that majority (70 percent) of the registered sugarcane growers were medium level adopters, followed by high level (21.50

⁴ Subramanian, V.S and Sri Paul, K.B – “A study of factors influencing Farmers in the Adoption of Recommended farm practices for millets (Cholam and Cumbu) in irrigated and Dry land”. Research Project. TNAU. Coimbatore (1976. P.213).

⁵ Palaniswamy, A _ “Adoption behaviour of Malli and Mullai Flower Growing Farmers”, unpublished MSC (Ag) Thesis, TNAU, Coimbatore (1978). P.63.

⁶ Sakthivel. K “Influence of Farmers Characteristics and Attributes of Innovation on Adoption unpublished MSC (Ag) Thesis, TNAU. Coimbatore (1979) – pp. 77-78.

⁷ Mohanadasan T.C. – “A study on information Need perception and adoption behaviour of Big and Small farmers Growing Potato” unpublished MSC (Agri) thesis, TNAU, Coimbatore (1979), pp.87-89.

⁸ Chandrasekaran. C. “A study on the consequences of Registered sugarcane cultivation; unpublished. M.Sc., (Ag) Thesis. TNAU, Coimbatore (1979), pp. 63-67. Ravichandran, V – “A study on Attitudes and Extent of Adoption and problems Encountered by Registered Sugarcane.

percent) adopters. While only 12.50 percent were low adoption of recommended practices.

Ravichandran⁹ (1980) reported that in general majority of the respondent (63.34 percent) had medium level of adoption of package practices. He also further stated that a wide variation in extent of adoption of variety and plant protection measures. **Somasundaram (1976), Venkidusamy (1977) and Nirmal (1983)** have done also research work on the knowledge level adoption level of the farmers.

Manivanan¹⁰ (1980) stated that majority of the respondents (80.0 percent) had medium level of economic motivation. Only 10 percent had low level and another 10 percent had high level of economic motivation.

(Reddy, 1987).¹¹ The small and medium farmers often resort to distress sale of paddy because of their poor retention capacity, lack of adequate timely credit at reasonable credit, debt bondage and the consequent exploitation by middlemen.

Mohandas, and Thomas¹² (1997) their main objectives are the analysis showed that by reallocating the existing resources, the farmer may get 16.61 per cent of additional income at the aggregate level. The percentage increase in gross income per hectare from rice cultivation were highest among marginal farmers (to an extent of 18.8 per cent) followed by large farmers (17.5 per cent) and small farmers (12.8 per cent). **Selvarajan and Subramanian (1981)** have reported that a reallocation of the

⁹Ravichandran, V – “A study on Attitudes and Extent of Adoption and problems Encountered by Registered Sugarcane Growers”, unpublished M.Sc., Thesis, TNAU, Coimbatore (1980), PP.67-69.

¹⁰ Manivanan, N-“A study on the knowledge and extent of adoption of sunflower growers” unpublished MSC (AG) Thesis, TNAU, Coimbatore (1980), P.59.

¹¹ Reddy, “marketable surplus in Paddy – A Regression Analysis,” Agricultural Situation in India, Vol.12, No, 10 Jan 1987, P.826.

¹² Mohandas, K. and E.K. Thomas, “Economic Analysis of Rice Production in Kuttanad Areas of Kerala”, Agricultural situation in India, Vol. LIV, No.9, Dec-1997, P.560.

resources in the optimal direction would increase the gross income of farms by 25.97 per cent.

Nagarajan,¹³ (1998) found in his study that paddy we have long duration (163 days) medium duration (130 – 155 days) and short duration varieties. The long and medium duration varieties are generally selected for single crop wet lands of late in Tamil Nadu, the short-term varieties are being used for cultivation throughout the year in view of frequent crisis development in irrigating the crop. In the drought prone areas Kancheepuram and Tirunelveli district where rice is cultivated purely under tank-fed conditions resorting the cultivation of short-term varieties has often become the necessity.

Singh et.al., (2006)¹⁴ analyzed the vegetable farming is best suitable for intensive cultivation, for majority of farmers having small holding. The study was based on 100 vegetable seed growers. Two channels were prevalent in the study area for disposal of vegetable seeds. The practice of charging higher margin by the middlemen reflects their intention of exploration to major task group marketing concern. Poor marketing infrastructure and inadequate govt. Policies are mainly responsible for inefficient marketing mechanism of vegetable seeds. It is suggested that organized set-up of seed procurement and distribution should be done for providing maximum benefit to the producer. Government semi-Government/non-Government should take due attention regarding fixation of support price of vegetable seeds.

¹³ Nagarajan. S.S. AD.7.43. "Producing Short Term Paddy, from Tamil Nadu", Kisan world Vol.25, No.12, Sec.1998.

¹⁴ Singh G.P. K.K. Singh and J.P. Misra (2006) "Marketing of Vegetable Seeds in Eastern U.P", Indian Journal of Agricultural Marketing, (Conference Special), Vol.20 (3), P.62.

Navadkar et.al (2006)¹⁵ analyzed that India's more than 55 per cent of total land holdings, operated by small and marginal farmers, and is generally capital starved, unable to make major investment in land improvement and application of modern inputs. Contract farming could be plausible solution by resorting to mechanized under these situations because production from small farms can be more successfully organized and improved through this mode. India is the world's largest producer of fruits and vegetables. India's share in global agricultural produce trade is less than two per cent. As a natural corollary thereof, transparency in contracts and legal protection to contracting parties comes under serious clout, considering the poor lobbying and/or bargaining power of poor farmers.

2.2 Importance of Agricultural Production

Lal ¹⁶(1987) considers that in India rice is an important food grain crop occupying about 41 million hectares with annual production of about 60 million tonnes. It is consider climatic situations. Considering availability of diversified situations, ranging from rainfall upland where no water is available.

Dr. Varma and Dr. Singh¹⁷ (1987) noted that Hamsa variety of paddy matures about a week earlier than T. (N)-1 and has duration of about 120 days during Kharif and 130 days is second season (when temperature in early part of the season is lower than in Kharif). This is particularly recommended for cultivation during second season because of the tolerance to cool temperature. In Telangana and A.P. this variety is gaining popularity. However, in northern part of the country i.e. Bihar and

¹⁵ Navadkar D.S., D.B.Yadav and R.K. Rahane (2006), "Linking up Rural Producers with Processors through Contract Farming", Indian Journal of Agricultural Marketing (Conference Special), Vol20 (3), P.61.

¹⁶ S.Lal, "Increasing Rice Production Under Rainfed Low-land situation", March, 1987, New Delhi, 12.

¹⁷ Dr. S.C. Varma and Dr. M.P. Singh, "Agronomy of New Plant Types", 1987.p.23.

Eastern U.P. it has not been found to be early in maturity for some unknown reasons. This variety is susceptible to diseases like blast and bacterial leaf blight.

Singh¹⁸(1987) says that the share of Agriculture in National income is a crucial indicator of the role the agriculture plays in the Economic development of a country. As the country rides on the wheels of progress, the relative contribution of Agriculture in National income declines with the country becoming more and more prosperous.

The expanding non-agricultural sector diverts surplus man power from agriculture to industry and the improvement is enabling a smaller number of people to produce for a larger population, with advanced agricultural technology, agricultural produce even for exports.

To the extent, the share of agriculture in national income declines. It is considered to be a better indicator of Economic advancement. On the other hand agriculture is a larger contributor to national income.

Mohan Kumar and Singh¹⁹ (1989) pointed out that rice has become an important crop of North West India comprising the States of Punjab, Haryana, Rajasthan, Himachal Pradesh, Jammu & Kashmir and Western U.P. The high average rice production (2-3 tonnes/hac.) has been primarily due to maximum coverage under high yielding varieties, assured irrigation facilities, using high rates of fertilizers, favourable climatic conditions and absence of disease problem.

¹⁸ A.N. Singh, "Fundamentals of Agricultural Economics", Himalaya publishing, 2nd Edition, 1985, p.25, small farmers were more efficient producers of most agricultural commodities than marginal farmers.

¹⁹ B.Mohan Kumar and K.N.Singh, "Technology for Direct seeded rice in the north western zone", "Indian Farming". Vol.XXXVI.No.2. May 1989.p.9.

2.3 New Technologies adopted in Paddy Production

Chatterjee and Bare²⁰ (1976) studied the energy requirements in paddy cultivation. They examined the energy requirements per units of output for two important varieties of paddy in selected farm. The estimates energy levers operations like preparation. Sowing and transplanting inter culture irrigation and drainage, harvesting and threshing and other have works.

Pandey²¹ (1987) in his study revealed that contact and non-contact farmers were found to be mostly dependent on neighbours and friends, family members and village extension workers for the acquisition of the farm information. **Kalamegam** (1975). **Ranganathan** (1976). **Pannenselvan** (1978) and **Basavaraj** (1987) have also studied the information flow of the extension personnel and the farmers.

The Hindu, survey of Indian Agriculture²² (1990) explained a recent report of the committee Agriculture of the National Research Council of the U.S. (1989) in the role of Alternative farming methods in modern production cities.

The report also points out that there is an inadequate scientific knowledge of economic, environmental and social costs and thresholds for pest damage, soil erosion. Water contamination and other environmental consequences of agricultural practice such knowledge in needed to inform farm managers of the trade-off between farm practices and of farm consequences. Ecological agriculture will thus need a reorientation of agricultural research strategies and priorities.

²⁰ P.K. Chatterjee and S. Banerjee Energy requirements in paddy cultivation Indian Journal for Agricultural Economics, Vol XXXI, No.3, Bombay, July – September, 1976, pp.248-249.

²¹ Pandey.S.N. – “A study of communication pattern under the T & V system of Agricultural extension in the Chambal command area development project of Rajasthan, unpublished Ph.D., Thesis, IARI New Delhi (1979) p.115; as quoted by Venkataraman. K. “Information flow and Technology Gap in T&U system’ unpublished M.Sc., (Ag) Thesis, TNAU Coimbatore (1987), P.23.

²² The Hindu, survey of Indian Agriculture- 1990, P.8 Published by S. Randarajan of behalf of Ms. Kasturi&Sons Ltd., at the National Press, Kasturi Building, Madras -2.

Bhanu Pratap Sing ²³ (1990) said that the major objectives of a national agricultural policy are fuller realization of the vast potential of agriculture, which alone, in the short run, has the capacity of solve the poverty, unemployment and balance of payments crises. Reduction in inequalities as between agriculturists and the rest, incomes status facilities and opportunities, as promised in the constitution (article38 (2))”.

Har Swarup Member, ²⁴ (1990) mentioned that Agricultural research, education and training by the state Agricultural Universities and the ICAR system need to be strengthened in adequacy of the present arrangements has been felt in many areas, for location specific and local adaptive research and with regard to the extent and nature of the farmer – scientist interaction and the feedback importance of research in frontier areas such as bio-technology. Agricultural meteorology and remote sensing, and of anticipatory research will be highlighted.

Gunawardana and Quilkkey ²⁵ (1993) tried to evaluate the commercialization of paddy and rice sectors in Sri Lanka followed the establishment of the export-import economy based on tea and rubber plantations developed in the mid-nineteenth century through the early twentieth century. Until the late 1940s, domestic paddy producers did not generate a marketable surplus, and imports of rice were necessary to feed plantation labourers and workers in the service sector. During the World Wars, rice imports were disrupted and the post-war British colonial

²³ Bhanu Pratap Sing, “The Hindu Survey of Indian Agriculture 1 1990”, National Press, Madras, P.19-21.

²⁴ Har Swarup Sing Member, U.P.C., “The Hindu Survey of Indian Agriculture -1990 National Press, Madras -2, p.29-32.

²⁵ P.J. Gunawardana and J.J. Quilkkey. ‘Determinants of Paddy Sales by Farmers on the Official Market in Sri Lanka, 1953-1989’, Indian Journal of Agricultural Economics, Vol.XLVIII, No.4, Oct-Dec-1993, P.649-650.

administration attempted to increase domestic production of paddy as a precaution against similar disruptions. Following the achievement of independence in 1948, national governments accorded priority to increased domestic paddy output mainly because of the deteriorating balance of payments and occasional sharp rises in prices and shortage of rice in the world market, particularly since the mid-1950s.

Swaminathan,²⁶(1994) says the report of the “National Income Committee” and central statistical organisation, Agriculture contributes a high share of National Income, but is decreasing steadily, and for share in times of First World War was about 65 per cent.

Dr. Singh²⁷(1996) observed that a great deal of strategic planning has been done at IRRI since its establishment. The first decade was devoted to raising the yield potential of irrigated rice to its present level, predominantly by changing the characteristics of the rice plant. During the 1970s, IRRI’s work was extended to include rainfed lowland, deepwater, and upland rice and expanded in there as of economics and problem soil research. Interdisciplinary work on evaluation and utilisation of rice germ plasm and its systematic collection and storage were established during this period. IR8, the semi dwarf rice that pioneered the revolutionary changes in rice world, was followed by varieties with multiple stress resistances, such as IR20, IR24, and IR36, IR 36 became the world’s most widely grown crop variety.; several countries in Asia approached self-sufficiency in rice.

²⁶ M.S. Swaminathan, “New vistas in Bio-Technology, survey of Indian Agriculture” publication of the Hindu, 1994. pp.222-226.

²⁷ Dr. R.K.Singh: International Collaboration in Rice Research: India a Key Actor”, Agricultural Situation in India, Vol. LIII No.4, July-1996.

Dr. Tripathy²⁸ (1996) estimated that the results of T district-wise analysis showed that in most of the agriculturally developed districts (coastal and central zones), the growth rates of production of rice were low due to diversion of the area under rice to other crops (groundnut, pulses). It is perplexing to note that the per hectare yield of rice had tended to stagnate in three districts namely, Kalahandi, Keonjar and Sundargarh. These districts are drought-prone areas with low percentage of irrigated area. The percentage of area under high yielding rice and per hectare fertilizer consumption was very low as compared to the other districts. Some parts of these districts come under heavy moisture deficit zone. In the coastal districts, the productivity, of rice is constrained by water logging conditions, saline soils and drainage problems.

Singh, Mani Ram Verma and Misra²⁹ (1997) explained that the state of Uttar Pradesh being endowed with an agro climatic conditions suitable for rice cultivation in Kharif season. The farmers of the state specialize in rice cultivation depending upon socio-economic factors take up suitable crops after rice. Hence, rice crop yielding dominates the cropping sequence of farmers in the State. Keeping in view, an attempt has been made to study the economics of rice based cropping system in Lucknow district of Uttar Pradesh.

Singh³⁰ (1997) mentioned that transplanting of paddy is often delayed due to non availability of labour, Random transplanting by manual labour which requires

²⁸ Dr. S. Tripathy, "Growth and Trends in area, yield and production of Rice in Orissa", Agricultural Situation in India. Vol. LII No.10, Jan, 1996, p.662.

²⁹ S.K. Singh, Mani Ram Verma and J.P. Misra, "Rice Based cropping system in Central Uttar Pradesh: An Economic Analysis", Agricultural Situation in India, vol. LIV, No.1, Apr-1997.

³⁰ Singh, C.P. and Garg, - k. Paddy barns planter", Indian Farming Vol. XXVII. No.2. May 1997. P.19.

200-250 men hours per hectare does not give correct plant population. Transplanting in rows, which ensures correct plant population is resented by the labourers even on being offered higher wages.

The work of design and development of machines for Paddy transplanting is in progress of several places and with concerted efforts a suitable machine may come out very soon.

Reddy, Anand and Kannan³¹ (1999) in their study revealed that As per WTO, Japan has opened up its rice market and would import 4 percent of its domestic consumption of rice gradually raising it to 8 percent which would approximately amount to 3,79,000 tonnes by 1995 t 7,85,000 tonnes by 2000 AD. As India does not grow Japonica rice, presently it is not in a position to gain access to this market. However, in future, it can export Japonica rice to Japan by cultivation Japonicas in those areas which are agro-climatically compatible for growing them. As Japanese conscious, the Indian grown Japonicas have to be carefully evaluated for their cooking and eating quality preferences before cultivating them in large areas for export. Research programmes on priority basis have already been initiated by the ICAR to develop suitable Japonica rice in India.

Srinivasa Brahmanand and Rajeeb Mohant³² (1999) mentioned that the Principal of demand and supply plays a key role in every phase of our life. In Indian context, population explosion which is the main factor for increasing demand for various resources including food grains will certainly be the main challenge in the 21st century. Indian agriculture on supply side has been subjected to tremendous pressure

³¹ G.P. Reddy, P.S.B. Anand and K.Kanan, "Rice Exports: Opportunities and Challenges", Yojana, Vol. 43 NO.9 Sep-1999. p.9.

³² P. Srinivasa Brahmanand and Rajeeb K. Mohanty, "Rice-Fish Integration: Prospects ", Yojana, Vol 43 No.9 September 1999.

to meet this challenge. It is mainly because of stagnation in net cultivated area for several years at 143 m ha. Hence intensification in both space and time must be encouraged as early as possible which underlines the need for emergence of farming system approach.

2.4 Usage of Best Seeds, Fertilisers and Technology in Paddy Production

Kashion (1970)³³ Agricultural economy of India presents a dual picture of prosperity and plenty on one side; and poverty and misery on the other. The new agricultural technology introduced as the Intensive Agricultural District Programme (IADP) in 1960-61 and developed as New Strategy of Agricultural Development in 1966-67 have made a revolution known as Green revolution in the country. Since then the emphasis on the agricultural policy has been to provide packages of technology, services and public policies to increase production and there by improve the income of the farmers. A major change occurred with the introduction of high yielding varieties. The high yielding varieties programme has been regarded as “one of the greatest feats of biological engineering”.

Danda³⁴ (1972) observed that the progressive farmers having high communication behaviour used extension agencies, mass media, market committee and the demonstration plots as their most important sources of information on improved agricultural practices.

³³ A.S. Kashion, New Farm Technology – its implications in Agricultural Economics, Indian Journal of Agricultural Economics December 1970, p.181.

³⁴ Danda A.K. – “A study of Communication Behaviour of Programme Farmers in India”. Society and culture (1972). 3 (1) p.15.

Kulhari³⁵ (1981) reported that knowledge of farmers about Paddy and wheat technologies was about 60 percent. The contact farmers had significantly higher knowledge than other farmers.

Lal,³⁶ (1987) is the view that, “Technology is now available, as a result of sustained research, for pushing up the yield of rained low-land rice. It has been estimated that the new technology can push the yield from 860 – 1,20kg per hectare to as much as 1,900 to 2,300 kg per hectare in Bihar, Uttarpradesh, Assam, West Bangal and Orissa. Similarly, big push can be given to other similar areas in the Southern States.

Singh,³⁷(1987) have highlighted the importance of economic factors in the adoption of new technology stated that when a farmer is confronted with a stimulus (like high yielding varieties) the profitability of its adoption among other things is influenced by a credit system that is the actual and perceived availability of credit, the source of credit types and forms of loans and the consequences of defaulting the loan.

Jhingam (1997)³⁸ pointed out that “The jump in fertilizer usage in India in recent years has been one of the biggest and fastest known anywhere in the world”. The use of high yielding varieties of seeds accompanied by increased use of fertilizers has made it imperative to employ improved varieties of implements and machinery

³⁵ Kulhari. V.S. – “A study of Re-organised Agricultural Extension – Training and Visit System and its impact in Chambal command Area Development Project in Rajasthan” unpublished. Ph.D. Thesis. IARI New Delhi (1981). Pp-102-104. As quoted by Karthikeyan. K. “Factors responsible for the decline in the productivity of ground nut; unpublished M.Sc. Thesis, TNAU. Coimbatore 91987) P.41.

³⁶ S.Lal, “Indian Farming”, March – 1987, Vol.xxxvi, No.12, p.3.

³⁷ Singh, A.N. – “A study of farmers’ Response to High yielding varieties” – Unpul. MSC IAg) Thesis Sahour, Bihar, Agricultural College 91968) p.73; as quoted by Karthikeyan. K – “Factors responsible for the decline in the productivity of ground ant; unpublished M.Sc., Thesis, TNAU, Coimbatore (1987), P.45.

³⁸ As quoted by M.L. Jhingam, The Economics of Development and Planning, Vrinda Publications Ltd., Delhi, 1997, p.684.

such as threshers, pump sets and tractors by which farm mechanization happened, research and distribution of high yielding seeds has also resulted in Green revolution. The Indian Council for Agricultural Research provides breeder seeds and the National Seeds Corporation and the state Seeds Corporations supply foundation and certified seeds to farmers.

2.5 Socio Economic Conditions of Paddy Cultivators

Mao, Virmani, and Ish kumar ³⁹(1998) studied the past three years, India, Vietnam, and the Philippines have started commercializing hybrid rice technology with the help of public, private, and nongovernmental seed production agencies. Their experience is being watching closely is the economic viability of hybrid rice seed production.

Increase of over 25 per cent compared to the conventional method of irrigation.

Selvaraj and Krishnamurthy (2000) ⁴⁰ examined a field experiment, conducted with four levels of irrigation viz. Surface irrigation at 0.90 IW/CPE ratio, drip irrigation daily at 80 per cent, 60 per cent and 40 per cent of surface irrigation and three levels of nitrogen viz. 125,93.75 and 62.5kg N/ha during 1995-96 at Agricultural Research Station, Bhavanisagar. The results revealed that drip irrigation daily at 40 per cent and surface irrigation with 75 per cent of recommended level of N through fustigation is found to be the most economical treatment wherein 60 per cent of irrigation water and 25 per cent of nitrogen could be saved besides a yield.

³⁹ C.X.Mao, S.S. Virmani, and Ish Kumar, “Technological innovations to lower the costs of hybrid rice seed production” published by Proceedings of the 3rd International symposium on Hybrid Rice, Hyderabad, India – 1998.

⁴⁰ Selvaraj P.K. V.V.Krishnamurthi and P.Manickasundaram (2000), “Drip Irrigation is a Boon for Turmeric Crop”, Spice India, June, PP.2-5.

Ravishankar and Archak (2000)⁴¹ reported that the plant varieties protection and farmers rights bill being referred to a select parliamentary committee, the advent of an IPR regime in the agriculture sector is imminent. The study has attempted to sketch heuristically, the research domain and its portfolio in the agricultural sector. It is argued that inter area, the legal and policy framework will determine the shape of things to come. Based on the nature of protection for different technologies, the role of probable stock holders and their plausible impacts are examined.

Utpalkumar (2000)⁴² reported the cropping pattern in West Bengal. It has been skewed towards bore paddy, oilseeds and potato, the three important emerging cash crops during the last two decades. Average distribution moved against pulse, coarse cereals and sugarcane. Through area under wheat, the second important food-crop and the erstwhile most profitable cash crop of jute had increased during pre-eighties, their importance continued to decline in post-eighties. From the statistical measures it is found that variation in growth was greater for rapid growing crops.

Srinivasulu and Ravinder Naik⁴³ (2006) evaluate the adoption of SRI (System of Rice Intensification) may involve some technical difficulties viz. requirement of more labour during transplanting, soil compaction during continuous SRI cultivation, SRI fields will be seen with more gaps for a month or so after transplanting (but tillering starts slowly after some days and the process becomes hastened further) etc. which hinders its propagation, but “success doesn’t mean that absence of failure”. The SRI practice is not yet a standardized one rather it is a refined

⁴¹ Ravishankar A. Sunil Archak (2000), “Intellectual Property Rights and Agricultural Technology Interplay and Implications for India”, Economic and Political Weekly.

⁴² Utpalkumar D.E.(2000), “cropping Pattern and Agricultural development in West Bengal during 1970-71 to 1994-95”, The Indian Economic Journal, Vol.48, No.4.

⁴³ B. Srinivasulu and V. Ravinder Naik “System of Rice Intensification – A Synergy of Six Practices”, Kurukshetra A Journal of Rural Development, Vol. 54 No.9, July-2006, p.40.

methodology, still the opportunities are there to come out with further refinements and make the practice much worthwhile to make it better adoptable in the Indian context and particularly to the local situations. Finally it should be acknowledged that it is not a technology involving cost or an input to purchase but it is an improved practice, which needs a meticulous skill and care to disseminate it amongst the Indian farmers, as the practice has already been success in many of the neighbouring countries with positive results. And for countries like India where majority of its farmers are small and marginal, with water resources are becoming scarcer day by day, the practice is a boon.

Dr. Varma and Dr. Singh⁴⁴ (2006) explained the majority of varieties released during seventies were input oriented and suitable for advanced agronomic area with adequate facilities for irrigation and fertilizers. The quantum jump in yield in such areas was mainly due to well managed inputs and intensive cropping pattern. However, under stress oriented condition, the varieties are subjected to one stress or another.

Purushothaman, and Palaniappan (2006)⁴⁵ they are analysed the number of productive tillers of rice (Vaigai) was more in C₃ and C₅ system than in other systems in both the years. The residual effect of the preceding crops of finger millet and green-gram in C₃ system and cotton + Black-gram in C₅ system was responsible for increased production of tillers in rice (Vaigai) in systems involving cereal crops as preceding crops to rice (Vaigai). The number of productive tillers was less mainly due to the depletion of nutrients, particularly N, by the cereal crops and comparatively

⁴⁴ Ibid. p.33.

⁴⁵ S. Purushothaman, and S.P. Palaniappan, “ Rice-Based Multiple cropping system” Tamilnadu Agriculture University, Coimbatore.2006

poor growth of legumes as intercrops. The influence of cropping systems was not felt on rice (IR20) since the preceding crop was rice in all the system.

Umashankar and Gribabu (2006)⁴⁶ estimated the impact of technology on labour absorption for two different crops in the regions of Andhra Pradesh and Tamil Nadu. An extensive farm level data used in this study show that marginal and small farmers absorbed more labour than medium and large farmers, as far as technological impact was concerned it was higher in paddy than cashew nut. The study has estimated the technical efficiency level of each crop and region by employing maximum likelihood estimate of Tran slog stochastic frontier production. The results of the study show that capital technology is highly significant in paddy than cashew nut/ similarly, the labour utilization was more significant in cashew nut than paddy. On labour absorption, the study found that in cashew nut it was 225.5 per cent higher than paddy crop in Andhrapradesh where as in Tamil Nadu it was 93.3 per cent. Finally, the study also reveals interesting wage differential scenarios in terms of gender and crops in Tamil Nadu and Andhrapradesh. In cashew nut, Tamil Nadu labourers received better wage than their counter parts in Andhrapradesh, while in paddy crop it is vice versa.

Atibudhi (2006)⁴⁷ study based on the key input used in agriculture purpose i.e., fertilizer and seed, the impact of globalization is investigated by estimating the percentage change in different time periods viz., 1990-91 and 1995-96 onwards, former representing domestic reforms before WTO. The globalization has impacted

⁴⁶ Umashankar Patnaik K. and M. Giribabu (2006), "Demand for Labour and Technical Efficiency in Agriculture: Some Evidences," Indian Journal of Agricultural Marketing, (Conference Special), Vol.20 (3), P.59.

⁴⁷ Atibudhi H.N. (2006), "A study on Impact of Globalization on the Marketing of Key Farm Inputs in India", Indian Journal of Agricultural Marketing, (Conference Special), Vol.20 (3), PP.11.

procurement of raw materials and increased production of nitrogenous and popcorns fertilizer indigenously during domestic reform period and first five years after globalization i.e. 1990-to 2000-01. The imports have also declined sharply after globalization.

2.6 Cost Components of Paddy Cultivation

Ram and Swaroop ⁴⁸ (1974) found out that the marketing costs; margins and transportation costs were high because of the bulkiness of agricultural products studied by them. A comparison between regulated and unregulated markets showed no marked improvement in marketing efficiency between the two.

Milton Snodgrass and Wallace⁴⁹ (1977) fixed costs are those costs that do not change as output (TPP) changes. The notion of being fixed is a static concept, meant for a relatively short period of time. In the long run, all costs become variable, because more opportunity exists to change all the factors of production, including plant and equipment. Taxes on property, for example, are a fixed cost of production. Farmers must have land on which to produce agricultural commodities, and consequently they are obligated to pay property taxes on the land they own. The amount of this tax does not vary with production; a farmer pays the same property tax if he raises 150 bushels of corn per acre or if he lets his land lie idle. However, over the years, the amount of property taxes paid by the farmer may rise as more schools, roads, and other public facilities need to be built. The costs that are fixed include unpaid family labour, taxes, depreciation, insurance, interest, and some maintenance repairs.

⁴⁸ Ram and Swaroop, "Marketing cost, Margins and Efficiency in Regulated Folder Market-A case study,": Agricultural Marketing, Vol.17(2) 1974, p.12.

⁴⁹ Milton M.Snodgrass and L.T.Wallace, "Agriculture, Economics, and Resource management" published by Prentice-Hall of India Private Limited – New Delhi -1977

Gupta et.al.⁵⁰(1979) in their study on marketing of paddy in Haryana, said that the marketing cost was higher in the channel where the government agency was involved between the rice miller and fair price shops.

Srivanesan⁵¹ (1979) concluded that more than three fourths (79.17 percent) of the respondents had medium credit orientation. Whereas 15.83 percent had low credit orientation. It was also observed that only five percent had low credit orientation. It was also observed that only five percent had high credit orientation.

Sakthivel⁵² (1979) reported that majority of the farmers sold their produce locally and to the commission agents in the nearby towns on credit sale and cash down payments and as such it indicated non-utilization of regulated markets by farmers.

Sirajudeen (1980)⁵³ opined that majority of the borrowers of Primary Agricultural Co-operative Societies (PACS) market their produce through brokers. He had also stated that bank borrowers (13.13 percent) sold the produce by themselves. It was further observed by him that market facilities were in sufficient. Nair (1969) Ramachandran (1974) have also studied the credit and market orientation of the farmers.

⁵⁰ Gupta, S.K., Marketing of Paddy in Haryana, "Indian Journal of Marketing " Vol.9 (10), 1979, pp.11-18.

⁵¹ Sivanesan, N – "A study on information need perception creditability and source utilization of Dry land farmers" unpublished M.Sc., (Ag) Thesis, TNAU, Coimbatore (1979), p. 65.

⁵² Sakthivel. K – "Influence of Farmers" Characteristics and Attributes of Innovation on Adoption', unpublished M.Sc., (Ag), Thesis TNAU – Coimbatore (1979). P.84.

⁵³ Sirajudeen.C.H. – "Credit and Marketing Behaviour of Sugarcane Growers" – unpublished M.Sc., (Ag), Thesis TNAU, Coimbatore (1980) p.68.

Venkatesh and Srinivason (1988)⁵⁴ a study conducted in Tamil Nadu found that the procurement price fixed by the government of India was Rs. 141/ quintal as against the cost of production of Rs.166.68/quintal. With the incentives given, the small farmers were able to realize a net return of Rs.7.41/ qtl and large farmers Rs.12.71/qtl.

Rajendran⁵⁵ (1992) Study on the functioning of rural godowns in Tamil Nadu for the period of 1988-89 to 1991-92. It was showed that higher publicity and scattering the rural godowns at revenue village levels would boost up the benefits received from the godown.

Samal et.al⁵⁶ (1993) found that the seasonal price rise for paddy was significantly higher than its storage cost. A study conducted by **Savitha and Ranganatha Sasthri**⁵⁷ (1995) in Karnataka shows that as the size of holding increasing cost of storage for speculative period and speculative quantity stored also increased.

Parvathi Menon (2001)⁵⁸ the average cost of cultivation of paddy per acre in Raichur, Karnataka is Rs. 11500. With an average yield of 30 bags (22.5 quintals) an acre and a cost of Rs.380 a bag, the average return of an acre of paddy is Rs. 11400, which is breakeven cost.

⁵⁴ Venkatesh and Srinivasan, "Government Intervention in the paddy marketing system: An Economic Investigation," *Agricultural situation in India*, Vol.42, No.12, March 1988, p.1077-1080.

⁵⁵ Rajendran. "Storage of Agricultural produces and small Godowns: performance in Tamil Nadu," *Indian Journal of Agricultural marketing (conf.serial)*, 1992, p.47.

⁵⁶ Samal, Nayak, and Malik, S.C., "Storage Economy of Rice in Sakhi Gopal Blacki, Puri District (Orissa)," *Indian Journal of Agricultural marketing (conf.spl)*, 1993, p.42.

⁵⁷ Savitha, S. and Ranganatha Sastry, K.N. "Economics of Farm Level Storage for Paddy in Soraba Taluk of Karnataka", *Indian Journal of agricultural Marketing*, vol.9 (1), 1995, pp.27-29.

⁵⁸ Parvathi Menon, "A Round-up from states", *Frontline*, Feb 2001, p.13

Naik et al., (2006)⁵⁹ revealed that the operating cost in cultivating groundnut constitutes a larger share to the extent of 61.12 per cent and 55.65 per cent of total cost during kharif & Rabi season respectively. The operating cost of groundnut during kharif is found to be higher than the Rabi among marginal, small and large farmers. Among marginal farmers, it lies at the minimum, while it gradually increases among small farmers and reaches the highest amount among big farmers during both Kharif & Rabi seasons.

2.7 Production and Productivity of Paddy

A Sankaran (1986)⁶⁰ expressed that rice production manual theory and practice he discussed the importance of temperature and water requirements for paddy. Temperature is one of the limiting factors in the cultivation in temperate climate, reflecting on both duration and pattern of growth of rice plant optimum temperature, range (O'c) for the different growth phase of the crop in well documented water is known to be an important single factor in rice production, and water control, both irrigation and drainage, requires continued attention and care.

Loganathan and Vardharajan⁶¹ (1986) in their study conducted in Thanjavur District of Tamil Nadu observed that 60 percent of production of paddy in Kuruvai was marketed while it was 50 percent in Samba and Thaladi. The larger percentage in Kuruvai was due to the problem of drying grain and also the need to meet immediate cash requirements for the cultivation of following Thaladi crop. The

⁵⁹ Naik,D.N.Singh, B.C. Mohanty (200^), "Cost and Return of Groundnut Crop in HInjilicut Block of Orissa", Indian Journal of Agricultural Marketing, (Conference Special), Vol.20 (3). P.54.

⁶⁰ Dr. Sankaran. A. Rice Production manual theory and practice 1986, August 1, P.30.

⁶¹ Loganathan and Varadharajan, "Monopoly procurement of paddy: A case study of Tamil Nadu", Agricultural situation in India, Vol.13, No.11, Feb 1986, pp.965-967.

percentage of marketed surplus of a relatively superior variety is lower when compared to a relatively inferior one.

Directorate of Agricultural Marketing and Inspection of India (1990) estimated the marketed surplus of Paddy, wheat, jowar and gram at 42.71 per cent, 52.44 percent, 32.85 percent and 40.30 percent of their total production respectively.⁶²

Ratna Reddy⁶³ (1993) who drew data from the comprehensive scheme for studying the cost of cultivation of principal crop's found that in Andhra Pradesh improved seeds (High yielding variety) along with assured water supply increased the productivity of land in the case of small farmers.

Balwinder Singh and Growl⁶⁴ (1996) explained in their article that the production increased from 37.61 million tonnes in 1967-68 to 74.59 million tonnes in 1990-91, which meant an increase of about 50 per cent over the base year. This increase in production was accounted for by increase in area under this crop and enhanced productivity.

Paroda⁶⁵ (1998) explained that rice production has remained stable in the irrigated ecosystem. To increase production and productivity in this ecosystem, new efforts are needed. Some genetic options involve (1) a new plant type based on physiological and genetic manipulation, (2) new biotechnological tools to increase potential yields, and (3) yield heterosis in hybrid rice. Or these options, hybrid rice technology are the most practical to raise production in the irrigated ecosystem.

⁶² Directorate of agricultural Marketing and Inspection of India, 1990.

⁶³ Ratna Reddy, "New Technology in Agriculture and changing size productivity Relationship; A study of Andhra Pradesh", Indian Journal of Agricultural Economics, Vol.48, No.4, cot-Dec, 1993, pp.634-637.

⁶⁴ Balwinder singh and S.S. Growl, "Economic Profile of Rice Production in India", Agricultural situation in India, Vol. LII, No.10, Jan-1996. P.11.

⁶⁵ R.S. Paroda, "Hybrid rice technology in India: problems and prospects", Advanced in Hybrid Rice Technology, published by Proceedings of the 3rd International symposium on Hybrid Rice, Hyderabad, India – 1998.

Mathew (1999) ⁶⁶ reported that the commencement of the South West monsoon was timely and widespread rains received throughout the spice growing tracts. The favourable weather condition helped in proper growth and establishment of plants. Factors like humidity, excess moisture and low temperature prevailed during the rainy season are congenial for the spread of fungal diseases. Therefore adequate plant protection measures should be adopted to ward off incidence of pests and diseases.

Radha and Eswara Prasad,⁶⁷(1999) based on the analysis, results for both rice and maize were discussed under different heads in accordance with the objectives of the present study.

Rice: It is observed that there was not much variation in area, production and yield of rice in both the periods under study. The per cent change in all the three variables was low but positive and production recorded the highest change (34.45 percent). The higher fluctuations in production were followed by changes in area and yield, respectively. This revealed that increased production is mainly due to increase in area under rice during post NARP period with the completion of Sriramsagar project in the study area.

Dhawan,⁶⁸ (2001) Paddy is a water-loving plant, for each hectare of paddy yield of 4 to 6 tons in the semi-arid region of North Western India, as much as 16,000 tons (916 million liters) of irrigation water gets applied at the farm gate level alone. In high rainfall States paddy grown in rabbi/summer season too gives rise to 10- 15,000

⁶⁶ Mathew P.G. (1999), "Field Operations for August", Spice India, July, PP.22-23.

⁶⁷ Y. Radha and Y. Eswara Prasad, " Variability and Instability Analysis of Area, Production and Productivity of Rice and Maize in Northern Telangana zone of Andhra Pradesh", Agricultural Situation in India, Vol. LV, No.10, Jan-1999.

⁶⁸ B.D. Dhawan, "Economics of Water Saving Methods for Paddy Crop", Monthly Commentary on Indian Economic Conditions, Vol. XLII No.12. 504, July, 2001.

tons of irrigation application, though requirements are in the range of 5 to 7,000 tons for kharif paddy. As a result, paddy alone consumes over two-fifths of the irrigation water so far made available through both public and private investments. Hence, methods which boost paddy productivity per unit volume of water in water-short regions of southern, western, central and northern India attract attention of paddy growers as well as policy makers.

Swami Nathan⁶⁹ (2001), a visionary farm scientist and food policy expert says that the farmers have shown that they can produce more if they are enabled to do. So through proper services and public policies, particularly in terms of opportunities for assured and remunerative marketing through the minimum support price mechanism. He supports his views by quoting West Bengal and Assam as examples. West Bengal has made substantial progress and Assam has made a great leap forward in terms of rice production as a result of developments in minor irrigation. Capitalization of large aquifer due to abundant southwest monsoon resulted in rice yields going up by four tons per hectare leading to a rice surplus in Assam.

Siji and Kombairaju (2001)⁷⁰ studied the trend in area, production and productivity of rice and the contribution of area and productivity towards the accelerating production of rice in Tamil Nadu. The compound growth rates of area, production and productivity of rice were computed based on the exponential function for the entire period. The whole study period was divided into three sub-periods viz, pre-green revolution, post-green revolution and overall period. To measure the magnitude of variability of area, production and interaction effect the decomposition

⁶⁹ Swaminathan, M.S, "Livelihood security must be the Bottom live". Frontline, Feb 16, 2001, p.113.

⁷⁰ Siju, T. and S. Kombairaju (2001), "Rice Production in Tamil Nadu: A Trend and Decomposition Analysis", Agricultural Situation in India, Vol.57 No.4 PP.143-146.

analysis was estimated. According to the estimated result the production and productivity of rice were increasing in the state. The study also shows that the increasing production during the pre-green revolution period was due to increase in area under rice cultivation in the state. But during the post-green revolution the increase in production was due to the increase in productivity. The contribution of rice area towards the growth of rice production decreased considerably during post-green revolution period. Decreasing growth rate of area during post-reform period was compensated by the increasing rice productivity in the state.

Johny et.al (2002)⁷¹ reported that the harvest depends upon the variety and usually extends from January, March. Early varieties are harvested at seven, eight months medium varieties at eight-nine months and long duration varieties at 9-10 months after planting. Average yield of fresh rhizomes under good management is 25-30 t/ha.

Samal and Kumar (2002) have studied the factors behind the yield increase of rice production in Orissa and suggested policy measures to host rice productivity. In their study normalized quadratic form of profit function was used.⁷²

Thimmappa and Mahesh (2002)⁷³ examined the resource use efficiency in rice production an application of Cobb-Douglas production function, and have found that, India occupies the first place in area and second place in the production of rice after China, contributing 28.47 per cent of world's area and 22.37 per cent of world's production with 42.41 million hectares and 93 million tonnes respectively during

⁷¹ Johny A Kallupurackal and P.N. Ravindran (2002), "Turmeric Hints for Cultivation," Spice India, Vol.15, No. 8 PP. 6-11.

⁷² Samal and Kuamr, "What Drives Rice Production in Orissa: Technology or Price?" Agricultural Economics Research Review, 2002, 15 (1) : pl -12.

⁷³ Thimmappa.K. and N. Mahesh (2002), "Resource Use Efficiency in Rice Production: An Application of Cobb-Douglas Type Production Function, Agricultural Economics PJN, College of Agricultural Research, Institute, Karaikal, Pandu.

2002-2003 (FAO, 2003). Rice is an important cereal food crop of the people of Karnataka, occupying about 1269 thousand tonnes or 17.65 per cent of area under cereals in Karnataka during 2002-03. Rice is grown in upland fields in few districts of Karnataka.

Chillar (2003)⁷⁴ has noticed that the major breakthrough in the production was noticed in the case of rice and what and the highest increase was in case of wheat followed by rice. He concluded that there was a significant growth of production in the state of Haryana during the study period.

Sekhar,⁷⁵ (2003) in his study noticed that Rice in India, as of 2000-01 occupies about 37 per cent of the area under food grains and contributes more than 40 per cent of food grains production in the country (Government of India, 2001). West Bengal, Uttar Pradesh and Andhra Pradesh are the major rice producing states, together contributing more than 40 percent of rice production. Bihar, Punjab and Tamil Nadu are the other major rice producing states. According to the statistics available, India produces about 0.6 million tonnes of basmati rice (milled basis), which is about 1 per cent of the total rice production.

Raisuddin Ahmed,⁷⁶ (2004) states that the aggregate production of rice has grown at 3.0 per cent per annum during the 21-year period from 1980-81 through 2001-02. This growth rate accelerated peaking to about 4.2 per cent during 1996 through 2002. The overall food grain production growth is largely a reflection of the success in rice production. Rice crops are produced in three seasons in a year – sus,

⁷⁴ ⁷⁴ A.S. Chillar, "Agricultural Development in Harayan: - An Analysis "Southern Economist", September 15, 2003 p.5

⁷⁵ C.S.C.Sekhar, "Agricultural Trade Liberalisation –likely Implications for Rice Sector in India", Indian Journal of Agricultural Economics Vol.58. No.1, Jan-Mar-2003.P.43

⁷⁶ Raisuddin Ahmed, "Rice Economy of Bangladesh Progress and Prospects", Economic and political weekly , Vol.xxxvi No.36, Sep 4-10, 2004, P-4043

aman, and boro. Changes in the seasonal distribution of production have turned production into a continuous flow of food grains, reducing the need for elaborate commercial storage.

Vrishhali Deosthali, Chandrashekhar Nikam,⁷⁷ (2004) said that the Growth in rice yield over the years could be achieved by bringing more and more cultivated area under rice either by transferring from other crops or from other non-agricultural land uses, which is referred to here as horizontal growth. In Maharashtra, rice area increased from 1.3 mn hectares (ha) in 1960-61 to 1.48 mn ha in 1996-97 and production increased from 1.37 mn tonnes to 2.61 mn tonnes. The increase in area was only 12 per cent while increase in production was 47.5 percent. The growth in production was 47.5 per cent. The growth in production is attributed to the application of technology and/or good weather conditions, clearly indicated by the yield figures as 1,054 kg/ha and 1,769 kg/ha respectively.

Sawant (1999) studied growth performance of rice area, production and yields based on 24-year data (1967-68 to 1990-91) in Maharashtra, both unadjusted as well as adjusted to rainfall by fitting the semi-log function.

Reddy and Sen,⁷⁸ (2004) the study reveals the existence of technical inefficiency in the production of rice in the study area. Yield of rice can be considerably improved without increasing the level of inputs in the study area if the inefficiency is reduced. Technical inefficiency in the production of rice is negatively related with farm size, education of the farmers, experience, extension contacts and

⁷⁷ Vrishhali Deosthali, Chandrashekhar M Nikam, "Rice: Region wise growth trends in Maharashtra", Economic and political weekly, Vol. XXXIX No.3, Jan-2004., P.240.

⁷⁸ A.R. Reddy and C. Sen, "Technical inefficiency in Rice Production and its Relationship with Farm-specific socio-economic characteristics", Indian Journal of agricultural economics, Vol.59. No.2. Apr-June-2004, p.267.

percentage of good land and positively related with age and fragmentation of the land. Caste of the farmer and location of the farm in the canal command do not have any influence on inefficiency. Similarly the number of farm workers in the family does not show any pattern with inefficiency.

Raveendaran and Selvam (2006)⁷⁹ observed that onion is one of the important commercial vegetable crops grown in India and the price fluctuations are also more, India ranks second in the world both in area and production of onion. The present study is taken to know the seasonality and volatility of prices of onion in different markets in India.

Candel (2007)⁸⁰ reported that the increased oilseed production and productivity in India has not helped out our country, in any way, to mitigate its substantial dependence on imports of edible oils. The edible oils are the most dominant item of agricultural imports in the recent years. It increased from mere 26 per cent in 1990-91 as per data from Ministry of Agriculture and co-operation, Government of India,

Loganathan and Varadharajan, (1988).⁸¹ A micro level study conducted in Tamil Nadu found that there are seasonal differences in the level of procurement. About 25 percent, eight percent and 16 percent of marketable surplus in Kuruvai, Thaladi and Samba crops of Paddy respectively are procured by Tamil Nadu civil supplies corporation and the rest are procured by private traders. The private traders also had collusion with the staff of the procurement agency for their business.

⁷⁹ Raveendaran N.S. Selvam (2006), "Volatility of Bellary Onion Prices in India", Indian Journal of Agricultural Marketing (Conference Special), Vol.20 (3). P.54.

⁸⁰ Candel B.S. (2007), "How Sustainable is the Total Productivity of Oilseeds in India", Indian Journal of Agricultural Economics, Vol.62, No.2.

⁸¹ Loganathan and Varadharajan, "Monopoly Procurement of paddy: A case study of Tamil Nadu", Agricultural Situation in India, Vol, 13, No, 11, Feb 1986, p.965-967.

2.8 Reviews Related to Marketing of Paddy

Dharam Narain⁸² (1961) estimated the marketed surplus of all crops at the national level on the basis of the data extracted from national sample survey, Agricultural Labour Enquiry Committee report, Farm Management surveys and national Income committee report at various individual studies, following are the two major findings of his study.

Marketable surplus as a proportion of value of produce declines upto 10-15 acres of size category and after that it increases steadily and ‘The holdings up to 15 acres in size contribute more than half (i.e 54.4 percent) in the total marketable surplus and holdings above this level contribute the rest of the surplus.

Shasri⁸³ (1961) in his study revealed that the amount of marketable surplus differs from region or even in the same region from crop to crop. It also differs from holding to holding under identical conditions for raising crops. Population per acre of net area sown, cropping intensity, and nature of crops grown are the factors determining the level of marketable surplus in India.

Moore et.al (1973)⁸⁴ In the process of moving food grains from widely scattered producers to the ultimate consumers; the products undergo a change in time, place, farm and ownership, which add to their value. The chain of intermediaries through which the various food grains pass between the producers and the consumers constitute their marketing channels.

⁸² Dharam Narain, Distribution of other marketed surplus of Agricultural produce By size level of Holdings in India 1950-51, Asia Publication, New Delhi.

⁸³ Shasri, “The problems of marketable surplus in Indian Agriculture”, Indian Journal of Agricultural Economics, Vol.16 (1), Jan – Mar, 1961.

⁸⁴ Moore, R., Johl, S.S., and Khusro, A.M., Indian Food Grain Marketing , Prentice Hall of India Pvt.Ltd., New Delhi, 1973., P.1.

Rao and Rao (1976)⁸⁵ pointed out in Andhra Pradesh, oligopolistic practices by the money lender traders, lack of holding capacity, lack of competition among the buyers, heavy post harvest sales forced small farmers to incur losses.

Gadgil⁸⁶ (1976) assessed the performance of the marketing system and found that the extent or degree of concentration in the commission agency business and in buying was not so high as to suggest the existence of oligopolistic practices.

Dwivedi⁸⁷ (1976) studied agricultural marketing practices with special reference to Mirzapur District, Uttar Pradesh, wherein he examined different aspects of the problem of marketing practice in agriculture with paddy, wheat, sugarcane and oil seeds. He concluded that distress sale was a common feature among cultivators of all the size groups. Prices were governed by the time factor i.e., lower price immediate after harvest and relatively higher price if produce was sold sometime after it was harvested. But the produce was invariably sold to money lenders immediately after harvesting, because, most of the credit needs of the farmers were met by the private agencies that advanced loans on personal security on a higher rate of interest.

Kombairaju⁸⁸ (1980) found that total paddy receipts, paddy used for family consumption and weighted average sale price of paddy were the main determinate of marketed surplus.

Jagdish Prasad⁸⁹ (1980) found in an analysis of the spatial allocation of marketed surplus of food grains that the proportions of the village sales of all food

⁸⁵ Hanumantha Rao, and Subharao, "Marketing of rice in India: An analysis of the Impact of produces prices on small farmer," Indian Journal of Agricultural Economics, vol. 31(2), 1976, pp.1-15.

⁸⁶ Gadgil, "marketing of Turmeric in Sangli District", Indian Dissertation Abstract, V (3, 4), 1976, pp, 174-176.

⁸⁷ Detonate Dwivedi, "Agricultural Marketing practices with special Reference to Mirzapur district, Uttar Pradesh, Indian Dissertation Abstract, V (3, 4)" 1976, pp.174-176.

⁸⁸ Kombairaju, 'A study on Marketable surplus of paddy in Thanjavur District', CAARDS, Tamil Nadu Agricultural University, Coimbatore – 1980.

grains are very high, indicating thereby the preference of the farmers to sell their produce at their door itself due to poor transportation and communication facilities. However, the big farmers sold 52 percent of their total surplus in the main market centers.

Aulakh and Harbans Singh⁹⁰(1983) concluded in their comparative study the level of marketed surplus is governed by factors like production, loans borrowed during the preceding year, size of operational holding and price differential in the lean period over the post-harvest period during the preceding year.

George Bohle, (1984).⁹¹Bulk of the sales are marketed in village itself than in the bigger primary markets where the prices could be higher if there is better competition among the buyers Raju an Open (1980).

Balwinder singh et.al., (1986).⁹² A study conducted in Bazapur of Nainital Distict of Uttar Pradesh shows that most of the paddy was sold by the farmers to rice mills just after the harvest. The remaining paddy was stored in godowns provided by merchants and sold gradually over a period of time.

Basavaraja⁹³ (1989) describes the factors affecting the level of marketable surplus as level of production, nature of crops grown, consumption habit, and cash requirement, prices of feed products, farm size and volume of high yielding varieties.

⁸⁹ Jagdish Prasad, "Agricultural Marketing in Bihar", Yojana Vol. 24, No.13, July 16, 1980, pp.24

⁹⁰ Aulakh and Harbans Singh, change in Food Grain Market Structure in India, B.R. Publishing House, New Delhi, 1983, p.89.

⁹¹ Raju, and Open, "Marketing channels for selected crops in Semi-Arid Tropical India," Progress Report, NO.16, ICRISAT, Patna cheru, India, 1980.

⁹² Balwinder Singh and Arora, "An Analytical study on Spatial price differential in Ground in Punjab Markets", Agricultural marketing, Vol 18 (3), 1975, pp.5.12.

⁹³ Basavaraja, "Commercialism of Agriculture and Economic Development", Yojana, Vol.33, No.7, April. 16-30, 1989, pp, 19-21.

Gulati⁹⁴ (1990) while assessing the impact of government interventions in Paddy marketing system found that the sales to the government agencies have a linear relationship with area, production and marketed surplus, the small farmers selling more than the large farmers to government agencies.

Ahmed, 1991⁹⁵ A micro level studies in Assam to study the price spread, margins and costs in marketing showed that the overall net share of growers and retail price spread were 72.72 percent and 27.28 percent respectively indicating in efficient marketing efficiency.

Sarena⁹⁶ (1992) in his book, “Regulated Agricultural Markets” provides a geographical analysis of regulated agricultural marketing system. In particular, it traces the process, pattern performance and planning aspects of agricultural marketing. After the Green Revolution, importance of regulated agricultural Marketing has been enhanced not to help marketing agencies but also for systematic development of market infrastructures.

Malik et.al⁹⁷ (1993) found out that about 83 and 92 percent of total marketed surplus of wheat and paddy was disposed off in the market through the commission agents. Advances and loans received from them were cited as reasons for this.

Dalvir Singh, (1993).⁹⁸ A study made in Misar and Kurukshetra district of Haryana to find out the marketing pattern of Paddy and wheat show that the whole of the Marketable surplus of Paddy on all size of farms was disposed off at the harvest

⁹⁴ Gulati, “Prices procurement and production: An analysis of wheat and Rice”, Economic and political weekly, vol.25, No.13, March 1990, pp. A-36-A47.

⁹⁵ Ahmed, A.U., “Marketing Pattern and price spread of Paddy in Assam”, Indian Journal of Agricultural marketing, Vol.5 (2), 1991, pp.149-157.

⁹⁶ Sarena, H.M. Regulated Agricultural Markets, Rawat Publications, Jaipur, 1992. P.62.

⁹⁷ Malik et.al. “Market and Marketable surplus of Wheat and Paddy Crops in Kurukshetra District of Haryana, “ Indian Journal of Agricultural Economic, Vol. (7), 1993, p.64.

⁹⁸ Dalvir Singh, “Storage of Cereals at farm in Haryana” Indian Journal of Agricultural Marketing (Conf.serial), 1993, p.43.

time whereas 40 percent of wheat production was retained by the farmers to take advantage of seasonal variations in wheat prices.

Sunil Kumar⁹⁹ (1994) made an attempt to study the economically efficient channel of marketing of rice in Bihar. It was found out that the marginal, medium and semi medium farmers' share in the consumer's rupee was very low and they were deprived of the benefits of market regulation due to their poor resource base.

Sunil Kumar, (1995)¹⁰⁰ A study made to work out the coverage price-spread of rice in six agricultural markets of Bihar and to compare the price-spreads over size indicates that the marginal and small farmers get the lowest price due to their poor resource base.

Parmod Kumar and R.K. Sharma¹⁰¹(1996) in their study explained that in the new global world efficient marketing has become the key of success for regional as well as international trade. India has long been trying to improve upon its marketing system through regulation of markets under various state acts.

Rajasekaran¹⁰² (1997) A study made by in Tamil Nadu to study the marketed surplus of paddy showed that on an average, less than 50 percent of the produce is marketed by an aggregate of all categories of farmers. Capitalist farmers market two-thirds and tenant cultivators only one third of the produce.

⁹⁹ Sunil Kuamr, "Marketing channels, cost and margins of Rice: a case study", Indian journal of Agricultural in Marketing (conf.serial), 1994. Pp.150-153.

¹⁰⁰ Sunil Kumar, "Marketing Channels, Cost and Margins of Rice: A case study", Indian Journal Agricultural in Marketing (conf.serial) 1994, pp.150-153.

¹⁰¹ Parmod Kumar and R.K. Sharma, "Spatial Price Integration and Pricing Efficiency at the Farm Level: A study of Paddy in Haryana, 1996.

¹⁰² Rajasekaran N. "Marketable and Marketed Surplus of Food Grain: an Institutional Approach", Man and Development, March, 1997, pp.105-115.