CHAPTER II

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REVIEW OF LITERATURE

Agarwal (1954) estimated relationship between price and acreage and price and production for wheat, rice and sugarcane crops. He found positive association between them.

Agrawal (1954-55) determined marginal value products of land, bullock labour and human labour for farm business and marginal physical products for irrigated wheat by fitting Cobb-Douglas type of production function to the farm management survey data for the year 1954-55 in U.P. He observed a low value productivity of human and bullock labour and came to the conclusion that any further addition would lead to a decline in the return and production of these resources. He suggested that resources should be increased with the increase in the level of other associated inputs. A non-significant relationship was observed between bullock labour and wheat crop yields as well as total farm returns and also between output and human labour for wheat crop.

Zacharias (1957) used Cobb-Douglas production function to estimate marginal value product of different resources in selected crop enterprises of Coimbatore and Salem in Madras state at different levels of inputs to study the changes in the productivity due to change in the proportionality of the various inputs. He observed that a change in the composition of other inputs was required to get maximum returns.

Heady (1957) fitted Cobb-Douglas production function to study resource, returns and productivity coefficients for crop and livestock enterprises in selected areas of Iowa, Montana and Albana. The central objective of the investigation was to measure
the marginal value productivity of resources and their services used in different farming regions and to predict, with the limitations of the data and method, the effect of varying combinations and quantities of resources on the value of product produced. The study was designed to be of value both to industrial farm decisions and national policies.

Schnittker, J. A. (1958) suggested that there is a wide divergence of opinion concerning the nature of the response of wheat production to price. He found that the realistic area in which to discuss adjustment of wheat production is the concept of long run supply response rather than the short run response. He proposes the thesis that the major cost reducers and output increasers in wheat in the period just ahead are capital using technologies and that low prices in the 1960's would not seriously impede their adoptions. For this reason, plantings would not be reduced significantly without substantial price reductions even in the long-run.

Agrawal and Foreman (1959) measured resources productivity for farm business as a whole as well as for planted sugarcane and wheat separately in west U.P. They observed that the profitability could be increased by increasing the levels of human and bullock labour in sugarcane and seed, manure and irrigation in wheat. Implements in 1955-56 although not significant for farm business as a whole, had marginal productivity of Rs.2.46, -1.10 and Rs.4.43 per rupee investment for wheat, sugarcane and farm business as a whole respectively.
Manid Abdul (1960)\textsuperscript{25} launched a study in six selected villages in Punjab and Western U.P. and estimated the relationship between the size of cultivated holdings and the proportion of cash crops to food crops. He studied these relationship with reference to production and sales of surplus of the crops.

Gill (1961)\textsuperscript{10} in his study conducted at Punjab found out that proportion of wheat output marketed increases with the increase of farm size.

Rao (1961)\textsuperscript{34} analysed the data which were collected from 10 villages in south India and found out a positive relationship between the size of holdings and proportion of produce marketed.

Kamal and Neal (1961)\textsuperscript{22} elaborated the virtues of farm planning and dealt with opportunity costs in budgeting, specific availability of resource and importance of farm plans in community development programme. A hypothetical two products numerical example was presented in order to show how combination of enterprises and opportunity costs of resources varied with changes in resource situation.

Sinha (1962)\textsuperscript{41} examined various factors such as agricultural and industrial prices and the terms of trade influencing the farmers' attitude towards production and marketable surplus and it was interpreted that the slightly adverse terms of trade for the farmers brings farm produce to the market.

Gammen (1963)\textsuperscript{32} pointed out that in Kerala a rational allocation of cropping pattern in the country on the basis of comparative advantage, resulted in the maximization of income and output from the agricultural sector. He further observed that there
was some scope for substitutability of wheat by sugarcane in the wet land wheat area of the state. An increasing conversion of wheat land by sugarcane in recent years in the state was observed. He further reported that the question of examining the opportunity cost of alternative crops was only in those cases where the shiftability is physically possible.

Ramesh (1964) studied the variation in the total production of foodgrains in the country for the period 1946-47 to 1958-59. He made use of Nerlovian adjustment model but no other shifter variable was included in the regression equation and the price taken was the wholesale price index of the crop deflated by the wholesale price index of all other commodities. He concluded that the prices of previous year had significant effect on production.

Krishna Raj (1964) fitted Cobb-Douglas type of production function to estimate marginal value productivity of inputs for Punjab farms. He used 3 sets of equations by grouping some of the input variables in order to remove multicollinearity. He concluded that the marginal value product estimates of farm inputs are not so widely out of line with their acquisition costs.

Saran Ram (1964) fitted Cobb-Douglas type of production function to the input, output data obtained from the studies in the economics of farm management. He fitted production functions for the farm business as a whole as well as for important crops, using the variables - land in acre, human and bullock labour, working expenses and manure in rupees. He compared productivity of inputs particularly capital services between different regions and found that in all the three states, namely U.P., Andhra Pradesh
and Madras, expenditure on the use of manure and fertilizers, improved seed etc. could increase farm income. The only exception was paddy in Madras where lesser use of manure was needed for allocation of resources.

Rao (1965) reported that in India a rational farmer could be expected to adjust his cropping pattern over the rational period in a manner that would maximise his farm business income while making a choice between different crops.

Mahk (1965) studied the resources productivity by fitting Cobb-Douglas production function using the variables—water charges, agricultural implements, hired labour, land, manure and fertilizers and bullock labour. He worked out the marginal value productivities of only significant variables, namely, water charges, hired labour, implements and manures and fertilizers. The marginal value productivity showed that except land, manure and fertilizers, the other three classes of variables could not increase the output with its increased level.

Hopper (1965) used the production function of crops grown with traditional method of production. He studied the operation of 43 farms in village Senapur, district Jaunpur in eastern U.P., managed by resident land owner, in the peak period (September—December) and fitted Cobb-Douglas production function for each crop, namely, barley, wheat, pea and gram. By examining the price implicit in the allocation of resources among various crops during the peak periods of agricultural activity, he found that the use of the resources was efficient within the static economic meaning of the terms. The farmers, on an average, appeared to have
successfully economised their scarce resources.

Dutia (1965) revealed that the relative profitability of growing different crops was more relevant consideration than relative prices in an analysis of the farmers' responses. He pointed out that while comparing the relative profitability, care should be taken to compare the returns from all crops that could be grown during the crop year. Unless this was done, comparison of profitability of growing different crops would be misleading. In the absence of detailed data, a comparison of gross profitability per acre and price, would be the second best for comparing the relative profitability of different crops.

Kahlon et al. (1965) indicated that in Punjab, production of rice, wheat and sugarcane was relatively more price elastic. The gross elasticities of production also showed that price change in jowar affected the production of bajra, maize and those in sugarcane affected the production of maize, jowar, bajra and cotton. But production of sugarcane was not affected by the price changes in other crops.

Reddy, K.V. (1965) reported that sound price policy aimed at stabilizing agricultural prices and also assuring remunerative floor prices is essential to stimulate the farmer to speed up production. In fixing price, parity between food and non-food crops should be maintained. Further more, the fixing of higher prices does not benefit the farmer unless, there are adequate marketing facilities, advisory services, supply of capital and credit.
Sinha (1965) tried to test the following hypotheses regarding the seasonal price pattern of foodgrains—(i) cheap varieties of foodgrains show greater seasonal fluctuation than fine ones and (ii) seasonal variation in the prices of rural areas are greater than that of the central markets.

Singh, B. (1966) conducted a study on the basis of wheat on different sized holdings taken from a wider survey carried out in the Punjab in 1960/61. The sample of 155 holdings included 57 small (15 acres), 65 medium (15-30 acres) and 33 large holdings (30 acres). For each size, average cost per acre was calculated for human labour, bullock labour and net and gross prime costs as well as costs per maund of wheat (maund approx 82 lb). The correlation coefficients for size of holding were (1) human labour -0.23 (2) bullock labour -0.35 (3) costs per acre -0.24, and (4) cost per maund -0.21 all of which were significant. The correlation between size of holding and output per acre came to 0.02 which was not significant. The trend of costs with size of holding was also calculated by regression analysis which showed that the cost per maund tended to decline upto 40 acres holding.

While examining the supply response of wheat for the period 1950-51 to 1962-63 in Uttar Pradesh, Krishna and Rao (1967) made use of Nerlovian model in addition to the other models. They tried several alternative price expectation models to study their impact on acreage response. The authors presumed that the price or price ratio did not influence acreage allocation. They found that it is the gross income or the gross income ratio that is more relevant for explaining changes to acreage. However, the model specifications
involving gross income in place of relative price did not give satisfactory results. Three year average of pre-sowing price of wheat (July-September) deflated by the three year average pre-sowing prices of substitute crops, and rainfall were found as the most important factors which influenced farmer's decision on acreage allocation.

Shalerso and Charan (1968)\textsuperscript{6} studied the relationship of prices and arrivals in Varanasi market during 1963-64 and found a negative correlation.

Krishnaswamy (1968)\textsuperscript{18} analysed the price margins for wheat between producer and ultimate consumer including costs of assembling, processing, storage, transport, whole saling and retailing. Producer's share of consumer's prices in the three markets investigated varied from 82-93 per cent. The share of commission agents appeared unjustifiably high in certain cases. Implementation of existing regulating measures was recommended.

Sharma and Sharma (1969)\textsuperscript{42} based on a survey of 100 farmers in Rudrapur block of Sainital district concluded that (i) as the size of holding increases the marketable surplus (in absolute quantities) also increased, (ii) The increase in marketable surplus was more than proportionate increase in the size of holdings (iii) crops like Lahi, sugarcane and paddy were sown primarily for the market. Of the total production of the above mentioned crops, the percentage of marketable surplus also increased as the holding goes up, and (iv) the marketable surplus in case of small group for maize, wheat and gram was as low as 31.64, 32.64, 32.74 and 32.63 per cent of the total production.
Johl et al. (1970)\textsuperscript{17} pointed out that the transformation of traditional agriculture into a progressive and dynamic business is primarily a techno-organizational process. In the last few years, however, the literature on the subject confirms that the response of the producers to prices is positive both in developed and developing economies. Thus, the techno-organizational effort can be accelerated or retarded by the price incentives or disincentives. Purely on economic considerations, agricultural prices can be fixed on the basis of cost of production, ruling prices or parity prices. The average cost on the basis of bulk line cost can be made a basis for determining the level of administered prices.

Singh (1970)\textsuperscript{49} in his study as one of the objectives evaluated normative response of farmers to change in wheat prices in terms of changes in wheat production patterns by using parametric programming. The study pertained to the three villages in the Union Territory of Delhi. It revealed that a small upward change (10 per cent of current prices) in wheat prices were not likely to affect wheat production. Corresponding declines, however, showed adverse impact. He also observed that at lower or very high price levels, wheat production did not respond to price changes. The results further revealed that at lower prices, the fall in production was more pronounced for local as compared to the Mexican wheat varieties. At higher prices also production was unrecoverable at earlier stage.

While estimating and projecting supply of foodgrains in the Punjab region, Maji, Jha and Venkataramanan (1971)\textsuperscript{29} incorporated a price risk variable in the adjustment lag model. The main crop covered were wheat, maize and rice over the period 1948-49 to 1965-66.
The standard deviation of prices over the preceding three years, as a measure of price risk seemingly did not improve the explanatory power of the hypothesized relation.

Chauhan et al. (1971) examined the price structure of wheat in Jaipur market. It was found that the trend of both arrivals and prices declined up to 1961-62. When they started rising, the rate of growth in the case of arrivals was greater than the prices. The seasonal variation in arrivals and prices was negatively correlated. The high degree of variation in prices and relative level of prices does not allow consistent growth in acreage and production of wheat.

Yet another study in the line of incorporating price risk in the supply response model was that of Kaul and Sidhu (1971) for wheat, paddy, maize, cotton and groundnut in Punjab over the period 1960-61 to 1969-70. They used farm harvest prices instead of wholesale prices on the assumption that majority of the farmers dispose off the product immediately after harvest. The price variable was included in the form of relative profitability instead of absolute price. The second major postulation was that the decision of acreage allocations did not only depend upon the past price but also upon extent of variation in the prices. In addition, the price risk variable in the form of coefficient of variation of relative profitability for the preceding three years was included.

Kahlon (1972) used the bulk line cost of production approach to get better representation of the population and showed that in case of Mexican wheat, the bulk line cost of 85 per cent of production, holdings and area were $0.78, $0.92, and $0.82, respectively, and
correspondingly in case of desi wheat these were Rs. 83.09, Rs. 98.55 and Rs. 92.14 per quintal excluding managerial cost and premium for risk and uncertainty inherent in the agricultural sector for the purpose of fixing the price. It was advocated that 20 per cent of the bulk line cost of production for managerial cost and other 20 per cent for risk and uncertainty should be added in the cost of production for fixing the prices of the commodity.

Chauhan and Singh (1973) reported that the percentage of the total quantity sold in the market increases and in the village decreases with increase in the size of holdings i.e. 60, 67.5, 83.1 and 40, 32.5, 16.9 on the small, medium and large size group of farms, respectively. The producer share in consumer’s price came to 86.6 per cent. The cost accounted for 7.5 per cent producer, 3 per cent wholesaler, 3.4 per cent for retailer, 4.1 per cent.

The marketing margins amounted to 5.9 per cent of the consumer’s price, of which 3.6 per cent was the retailer’s margin and 2.3 per cent the wholesaler’s margin.

International wheat Council (1973) review covered the production, trade and prices of wheat during the crop year 1971-72 and the output for 1972-73. The world wheat production was over 319 million tonnes during 1971-72 (excluding the people’s republic of China). This was 5 per cent above the former record in 1968-69 and 11 per cent more than in 1970-71. The review also suggested a special survey on the impact of high-response varieties of wheat in developing countries. Finally, it describes the situation regarding coarse grains and rice.
Krishan and Tyagi (1973)\textsuperscript{19} reported that the linear growth rates of area, production and productivity for wheat are estimated at 2.77 per cent, 6.72 per cent and 2.51 per cent per annum respectively. A comparative study of growth rates in Punjab, Haryana and all India shows that the growth rates in Uttar Pradesh were very small. The main recommendations are that the irrigated area under wheat, short-term cooperative credit and the fertilizer use per hectare should be increased.

Tyagi (1974)\textsuperscript{53} in his study critically examined the basic assumption regarding expectation of prices by farmers in the Nerlovian Model which assumes that all farmers in any producing area at all times irrespective of the type of variations in prices, expect the future prices in the same way. He carried out a case study of selected farmers from three villages of Meerut district in Uttar Pradesh. On the basis of cross-section data on price expectations of farmers (1968-69) he developed ten equations for different groups of farmers which after being tested for their validity were used for estimating the expected prices for the past fifteen years (1955-56 to 1969-70). The expected prices so generated were then used for estimating the supply response of wheat and sugarcane. The study showed that future price expectations were formed by the farmers themselves independently, and in the same producing area different farmers may have different price expectations for the same crops. The expectations about future prices were mostly based on the observed behaviour of price movements during the preceding two years, though other non-price variables like governmental
action, political change and crop prospects also influenced price expectations to some extent.

Gangwar and Chhikara (1974)\textsuperscript{11} reveals that the cost of cultivation of wheat was the highest on medium sized farms and the lowest on the smaller farms under investigation. The yield per hectare had a positive correlation with the size of holding. Human and bullock labour accounted for the highest proportion of costs. The costs of production could perhaps be reduced by use of labour saving devices.

Singh and Patel (1974)\textsuperscript{46} made an attempt to examine the productivity of resources and allocation efficiency on different size of farmers (120) adopting new technology in the Meerut district of Uttar Pradesh in 1969-70. Cobb-Douglas type of production functions were fitted for small, medium and large farms with factors of production - bullock power, fertilizers, irrigation and labour used per standard hectare and the marginal value products were computed. Comparisons were made between MVP and factor costs and between computed optimum levels and existing levels of use of different input and returns on different size groups of farms. Irrigation was found to be the most profitable resource for further investment. Maximum allocation efficiency was found on small farms. The highest potential for increasing output was on large farms followed by medium farms.

Randhawa \textit{et al}. (1974)\textsuperscript{35} concluded that the marketing charges paid in the marketing of wheat alongwith middleman's margin as a whole increases with the increase in the length of marketing channel, thereby increasing the total marketing cost and reducing the
producer's share in price paid by the consumers.

Murlidharan and Shatia (1975) reported that the price of wheat showed significant difference in the prices due to grade and varietal difference. Better grade quality of wheat fetches higher price as compared to lower grade quality.

Shah and Pandey (1976) reported that the per capita per year consumption of wheat was 127.11, 164.47 and 191.74 Kgs. on small, medium and large size groups of farms in western region of U.P., respectively.

Grewal and Rangi (1976) used time series data and related the production of paddy and wheat with fertilizer price and the use of fertilizer. They concluded that the production of these crops was not dependent upon the input prices only but was governed by a variety of other factors. Thus, the hypothesis that the increase in input prices had affected the production of wheat and paddy was not substantiated.

Agricultural Price Commission (1978) conducted a study for price policy for 1978-79 wheat and gram to be marketed in 1979-80. It recommended that the minimum prices for wheat and gram be granted at Rs.115 and 140 per quintal respectively.

Zwart and Meilke (1979) concluded that the domestic pricing policies are a major cause of instability in international commodity markets. After modification of such policies there could be a viable alternative to buffer stocks in providing stability. A stochastic econometric model was used to show, first that most countries in the world wheat market have policies which stabilize the wheat market and second that the modification of such policies
would prove as effective as a buffer stock in stabilizing the wheat market.

Sidhu (1979)\(^47\) examined the impact of production and price of wheat on its marketable surplus. The analysis of farm-level data showed that many wheat farmers in the Punjab still used low levels of inputs. Marketable surplus increased with an increase in production and size of holding. The production elasticity of marketable surplus was estimated as 1.6 on the basis of macro level data. The elasticity of marketed surplus with respect to its wheat price was estimated at about 0.45. The farmer's income elasticity of demand for wheat was estimated at about 0.48 per cent. Provision of agricultural inputs to farmers at rates which would provide them with incentives to produce more, plus prices at levels which are remunerative enough to stimulate rapid adoption of new technology and capital formation in agriculture, would enhance the growth rate and help consumers.

Mandawalla (1979)\(^27\) indicated that the difference between the highest and the lowest levels of normal seasonally adjusted price index numbers was 9.6 per cent for rice and wheat and 7.7 per cent for all foodgrains, while the cost of storage was 5.6 per cent of the economic cost of purchase by the Food Corporation of India.

Singh, Prasad et al. (1979)\(^48\) studied the correlation between monthly prices and supply and seasonal variability of wheat and of paddy for Uttar Pradesh. Off seasonal rises in prices due to storage costs were also considered. The regression coefficient of price and supply of wheat indicated that a one unit rise in
supply resulted in a 0.364 unit fall in price. That was found to be insignificant. The corresponding coefficient for paddy, 1.027 was significant. A storage period of 8 months was assumed and calculations suggested that the off seasonal price rise in wheat was enough to cover storage costs from 1972-73 to 1974-75 and traders earned high profits. In 1970-71 and 1975-76 losses were incurred. The off seasonal rise in price of paddy was insufficient to cover the cost of storage except in 1975-76.