Chapter II

REVIEW OF LITERATURE

The change in cropping pattern has become an important factor just like other factors in affecting the agricultural production in India. On account of the change in the pattern of food and non-food crops, there has been an important change in the growth rate of agricultural production. The researchers have studied the cropping pattern in many states in India after 1960. In this chapter the findings of different researchers have been brought into light so that the changes in agricultural production owing to the changes in cropping pattern can be known from the period of 1956-57 to 1998-99.

1. Agrawal, K.G. and Gaur S. S. (1968):- They studied the “Changes in Land Use Pattern in Madhya Pradesh” from the period of 1956 to 1964. During the study period though the area of cultivable useless fallow land decreased but the growth rate in Gross Area Sown was not satisfactory. There was no any particular growth in the double cropping area. In the same period the growth rate in forest area too was not satisfactory.

2. Braho Bhatt, D. M. (1974):- He studied “Impact of Irrigation” on Rajasthan village in Agro-Economic Research Centre. He found in his studies that the production of sorghum had increased from 216 kilogram per hectare in 1961-62 to 520 kilogram per hectare in 1968-69. Thus there was a growth of about 140 percent in the productivity of sorghum. The production of wheat increased from 345 kilogram per hectare in 1961-62 to 754 kilogram per hectare in 1968-69. Thus there was 119 percent growth in wheat productivity. In the same period there was 114 percent growth in pearl millet productivity. Thus the conclusion was drawn that the irrigation had a significant impact on agricultural productivity

3. Chauhan, Y. S. and Prasad, V. (1978):- They studied “Lift Irrigation Project and its Impact on Cropping Pattern Level of Investment and Incomes of Farms.” They also studied the impact of lift intensity on cropping pattern. They found in their studies that cropping intensity in sampled fields was 120.7% in 1971-72, which increased up to 153.3% in 1977-78. There was a

significant change in cropping pattern too under irrigated ‘Pariyojna’ areas. The area of maize increased from 14.7% in 1972 to 17.2% in 1978. The high yielding variety seeds of wheat production area increased from 11.3% to 25% and potato production area increased from 6.1% to 12.8%. Linseed was sown in the 10.3% of the total sown area which was sown first time in that area.

4. Department of Agricultural Economics and Farms Management JNJVV, Jabalpur (1977):- Department of Agricultural Economics and Farm Management of Jawaharlal Nehru Vishwa Vidhyalaya had studied the “Dynamics of Cropping Pattern in M. P.” from the period of 1956-57 to 1972-73. It was found in the studies that the areas of both food crops and pulses had increased 1586 thousand and 743 thousand hectares respectively in that period. On the other hand the area of commercial crops was the main reason for the increase of production of crops in that period. The main reason in the change of cropping pattern was the National Policy of the Government. Under that policy a great effort was made in the use of high yielding variety seeds and the expansion of irrigation facilities in order to increase food production.

5. Directorate of Economics and Statistics, Ministry of Agriculture, Government of India (1968):- It found in agricultural production that total 151.24 million hectares of land were cultivated under 30 Fore Cost Crops in 1967-68. Thus (under so Fore Cost Crops) about 1.6 percent of land was decreased in Gross Area Sown under so Fore Cost Crops. The main reason of decrease in crop area was unfavourable monsoon and uncertainty of rain. But the cultivation of those crops was done in 1196.85 lakh hectares of land out of gross area sown in 1968-69 in Madhya Pradesh, whereas only 188.69 lakh hectares of area were used for cultivation in 1967-68. Thus there was an extra increase of 8.16 lakh hectares of land in Gross Area Sown under 30 Fore Cost Crops in Madhya Pradesh. This was an important increase in the cropping pattern of Madhya Pradesh. The main reason of growth was due to the increase of the areas of food crops in Madhya Pradesh.

6. Dixit, S. P. and Singh, A. K. (1972):- They studied “Impact of Green Revolution on Agricultural Production Structures in Uttar Pradesh.” From the period of 1960-61 to 1970-71, the impact of ‘Green Revolution’ was more on wheat and maize production. On account of this there was a significant change in cropping pattern in Uttar Pradesh. In this period there was much increase in the areas of wheat, maize, pearl millet, paddy, groundnut and rapeseed crops in the state.

On the other hand there was a decline in the areas of sorghum, barley, gram, pea, red gram, sugarcane and other crops. This way the area of wheat had increased in place of pulses and barley crops. The change of the Indian agricultural technology was the main reason in the change of cropping pattern. The advantages of different crops were also found different.

7. Giri, R. (1969):- He studied “Changes in Land Use Pattern in Punjab” from the period of 1950-51 to 1964-65. He found in his studies that there was growth at the rate of 1.15 percent in the state annually.

8. Gupta, A. K. (1963):- He studied “Inter State Difference in Cropping Pattern and Productivity.” After having studied the cropping pattern of different states from the period of 1949-50 to 1958-59, he came to the conclusion that every main crop except paddy, was centered or produced only in two or three states. In those states where the areas of important crops were proportionally more, the per acre productivity of those crops was low or much less. In those states the per acre productivity of those crops came down due to expansion of the areas of same crops only.

9. Gupta, S. K., Shrivastava, A. and Athavale, S. C. (1999):- They studied “Diversification of Cropping Pattern in Favour of Pulses and Oilseeds in Madhya Pradesh.” The data for this study was obtained from “Agricultural statistics”, published by Directorate of Agriculture, Madhya Pradesh, Bhopal. Triennium ending 1970-71 and triennium ending 1993-94 were the reference years of this study as base year and current year respectively. Of the 12 agro-climate regions of the state a region each was selected with the highest increase (Malwa plateau) and highest decrease (Gird region) in area under pulses.

Similarly for oilseeds a region each with highest increase (Central Narmada Valley) and highest decrease (Jhabua Hills) in Madhya Pradesh, gram, urad, teora, tur, lentil and moong-moth were the important pulses. Between the two periods gram and urad showed positive increase. Urad could have replaced jowar or bajra or minor crops like kodo-kutki, and gram replaced either linseed or was grown on land which was fallow in the past and which now had irrigation facilities. Soybean was the leading oilseed of the state. Among oilseeds, soybean area was selected. For pulses, two districts, namely Mandsaur and Ratlam were selected from Malwa plateau and Morena was selected from Gird region. Similarly, in the case of oilseeds, Hoshangabad district was selected from Central Narmada Valley and Jhabua district was selected from Jhabua Hills, Rewa district showing highest decrease in oilseeds area in the state was also selected.

10. Jain, J. and Lal, S. (1980):- They studied the “Cropping Pattern of Small Farmers of Sehore District.” It was found in the study that the area of cereals and pulses was 94.07% in total sown area, and the area of cash crops such as oilseed and cotton was about 5.98%. Thus the supremacy of food crops was found in the cropping pattern in the district.

11. Jasdanwala, Z. Y. (1966):- He studied that the distance of the villages from marketing centers had an important impact on cropping pattern. This impact was more significant than the size of cultivated holdings, debts, the crops of properties and irrigation facilities.

12. Joshi, S. R. (1980):- He studied “Cropping Pattern in East Nimar District.” The agricultural crop was divided mainly between kharif crops and rabi crops in the district. Under kharif crops, cotton, sorghum and groundnut were more useful crops and they were sown in about 72% areas of kharif crops. Under pulses, red gram was the main pulses till 1973-74. But from 1975, black gram became the main pulses. The main reason was that the fertility of the soil increased through the cultivation of black gram.

13. Karanjkar, S. V. and Gupta, S. K. (1980):- They had studied “Cropping Pattern in Bastar District (Tribal) of M. P.” They studied the negative and positive changes on cropping pattern from the period of 1967-68 to 1977-78 in Bastar district. They found in their studies that-

There were no specific changes in the cropping pattern of paddy, kodon millet, maize, rapeseed, mustard and black gram. Paddy and kodon millet were the main crops in the district.

During their study period, there was growth of 14% in the area of paddy, 21% in the area of kodon millet, 24% in the area of maize, 6% in the area of linseed and 50% in the area of ramtil. On the other hand there was a decline of 27% in the area of green and 9% in the area of red gram.

14. Malhotra, S. P. (1971):- He studied “Impact of Irrigation on Land Utilization and Cropping Pattern in a Desert Region Jodhpur.” The study was done in Gharsana tehsil in Ganganagar district under “Rajasthan Irrigation Paryojna.” In this tehsil the irrigated area had increased from 0.45% to 12.2% on account of the expansion of irrigation facilities. As a result the percentage of net sown area had increased from 2.27% to 5.64% in three years.

15. Majid, A. (1963):- He studied “Crop Pattern and Size of Cultivated Holdings.” He found in his studies that the size of cultivated holdings was the important and effective factor for the distribution of sowing areas between cash crops and food crops for livelihood (subsistence). Big farmers were cultivating cash crops in bigger size of cultivated holdings compared to small farmers and marginal farmers.

16. Malya, M. M. (1963):- He tried to know in his article, “Urbanization and Cropping Pattern” that how urbanization had affected the cropping pattern. After analyzing the data received from 382 farmers, he came to this conclusion that there was a great impact of urbanization on the cropping pattern. Those villages which were affected by towns and cities had greater share of cash value crops.
17. Mann, H. S. and Kanwar, J. S. (1968):- They studied "Cropping Pattern in Different States." They found in their studies that Cropping Intensity increased from 111 in 1960 to 130 in 1967. The main reason of this was that the farmers started taking the paddy (rice) and sorghum crops of short period in place of the paddy and sorghum crops of long period. Thus 'Intensive Agriculture District Programme' and 'Intensive Agriculture Area Programme' had an impact on agricultural crop area.

18. Mishra, B. L. (1973):- He studied "Possibilities of Raising Productivity through Crop Substitution in Low Rainfall Area of M. P.". He found in his studies that in low rainfall areas of the state, the percentage of land left for non-agricultural use such as fallow land, pasture, uselessly lying cultivable land and new fallow land was more than the average percentage of the state. On the other hand the percentage of old fallow land and double cropping land was much less than the state percentage in those low rainfall areas.

19. Mishra, R. S. (1980):- He studied "Dynamics of Cropping Pattern in Madhya Pradesh." In his research, he studied the real and positive changes in cropping pattern of Madhya Pradesh from the period of 1956-57 to 1972-73. He found in his studies that there was only 1.31 percent growth in Cropping Intensity from the period of 1956-57 to 1972-73. He found in his studies that there was only 1.31 percent growth in Cropping Intensity from the period of 1956-57 to 1972-73. There was 14.6 percent growth in cereal productive area. It was found that there was an increasing tendency in all cereals productive area except barley. There was a significant growth in cereals productive areas under kharif crop also. There was a decline of about 7 thousand hectares in rabi crop areas.

20. Mrs Murti, S. (1980):- She studied the cropping pattern of wheat crop in irrigated and non-irrigated area. She found that wheat yield was different in irrigated and non-irrigated areas, the per hectare wheat yield in irrigated areas was 13.6 quintals whereas it was only 5.66 quintals in non-irrigated areas.

20 Mrs Murti, S., (1980), The Economics of Irrigated and Non-irrigated Cropping Pattern of Wheat in M. P.".
21. National Council of Applied Economics Research New Delhi, (1967):- It studied “Cropping Pattern in Madhya Pradesh” in 1967. The National Council found in Techno-Economic survey of 1958 that the agricultural productivity of Madhya Pradesh was less than even half of the Indian average productivity. Therefore, more stress was given to change the cropping pattern of the state in order to increase the per hectare productivity and the result of the state. The possibility of taking the crops of highest prices instead of the crops of lower prices was found more in Durg, Bilaspur, Bastar, Muraina and Shajapur. The National Council stressed the increase of the irrigation facilities, supply of tractors and more use of fertilizers for the improvement of cropping pattern.

22. Pandey, V. P. and Sharma, A. B. (1980):- They had studied “Cropping Pattern in Sagar Division for the years 1975-76, 1976-77 and 1977-78. The total sown area in Sagar division was 1706 thousand hectares in 1975-76, which came down to 1681 thousand hectares in 1976-77. They found in their studies that the necessity of families was the main factor to fix the cropping pattern. It was found that there was a negative relation between the size of cultivated land and cropping intensity. With the growth of the size of cultivated land, cropping intensity decreased.

23. Patel, M. L. (1980):- He studied “Factors Influencing Change in Cropping Pattern of Tribal Areas of Madhya Pradesh.” The period of his study was from the years 1970-71 to 1977-1978. He tried to know the impact of high yielding variety seeds and irrigation on cropping pattern in Mandala, Bastar, Surguja and Jhabua, as completely tribal districts and Dhar, Betul and Muraina as proportionally tribal districts.

Thus there was a positive impact of high yielding variety seeds on the areas of paddy, wheat, sorghum and pearl millet. But on the other hand there was a negative impact on the areas of maize. There was no impact at all on the areas of kodon millet.

24. Pingle, V. (1982):- He studied “Growth Rates of Selected crops in Haryana Pradesh.” He analyzed the areas of selected crops, the production and the productivity. He found in his studies that the change in the prices of production at state levels was partially on account of the change in price and also the change in productivity partially. There was very little impact of the change of the areas.

25. Ram, S. (1999):- He studied “Cropping Pattern Diversification in Orissa.” He found in his studies that during kharif, the gross cropped area registered an increase of more than 17 lakh hectares between 1980-81 and 1993-94. The area under cereals decreased more than 10 percent mainly due to fall on area under ‘other cereals’ comprising jowar, bajra, ragi and small millets by more than 7 percent. However, area under autumn rice, winter rice and maize also registered marginal fall. During rabi the gross cropped area in Orissa increased by about 2.5 lakh hectares between 1980-81 and 1993-94.

26. Ramalingam, C. (1963):- He found in his studies “Some Economic Aspect of Cropping Pattern” that the impact of irrigation on cropping pattern was different in different regions. The availability of water usually promoted the regions of cash value crops (commercial crops). In other words the availability of water had positive impact on the regions of cash value crops.

27. Ramchandran, T. S. (1980):- He had studied “Cropping Pattern for Tawa Command Areas” in Hoshangabad district in Madhya Pradesh. Considering the irrigation facility as an input, the cropping pattern of Command area and possible cropping pattern were analysed. Under the present cropping pattern of Command area, it was found that the area of wheat was highest in the district, followed by the areas of gram and cotton. The area of kharif crops was much less than rabi crops.

28. **Reddy, D. P. (1982):** He had a “Comparative Study of Land Use Pattern of Two Blocks of Andhra Pradesh.” Amal Puram block was a developed block where there were good irrigation facilities through the canals. On the contrary, Mungolu block was a backward block. In Amal Puram block, 76.32% area out of total area was under cultivation, whereas it was only 50.69% in Mungolu block. About 11.73% area was under non-agricultural area in Amal Puram block whereas it was only 7.70% in Mungolu block.

29. **Sablok, P. L. and Mrs Sablok, A. (1980):** They came to this conclusion by the study on “Cropping Pattern in Madhya Pradesh” that cropping pattern was chiefly on the production of food crops. There was a cultivation of food crops in about 81 percent area out of total sown area of the state. The rest in 29 percent of area there was cultivation of vegetables, fruits, oilseeds, cotton and other crops. The production of paddy was centred chiefly in the south-east region of Madhya Pradesh called as Chhattisgarh region now. The production of wheat was centred chiefly in northern and western regions of Madhya Pradesh. The area and the production of wheat was very high in Bhopal division. After Bhopal division, Jabalpur and Indore divisions came respectively for the production of wheat.

30. **Shah, C. H. (1956):** He had studied “Crop Variation, 1943-1954: A Study in Crop Pattern Change for Farmers in Different Size Groups of Holdings.” He found in his studies that the change in the farm size (holdings) had an impact on the cropping pattern.

31. **Shrivastava, K. K. (1980):** He studied “Cropping Pattern in Mhow Tehsil of Indore District” from the period of 1966-67 to 1974-75. He found in his studies that food crops were important crops in the cropping pattern in Mhow district. It was suggested that by expanding the irrigation facilities, the supply of fertilizers and the expansion of credit facilities, the areas of non-food crops could be increased.

32. Singh, L. (1963):- He studied the “Rationale of Cropping Pattern in Madhya Pradesh.” He calculated the crop area of different agricultural crops in the form of percentage on the basis of three years’ mean for years 1952-53 and 1958-59. He compared the percentage area of different agricultural crops in two periods. He found in his studies that there was 8 percent growth in net area sown in 1958-59 compared to 1952-53. The main reason was that more barren land was used for agriculture in this period. In this period there was 9 percent growth in gross area sown. Double cropping area was the main reason for one percent difference in gross area sown and net area sown. The conclusion was drawn that the farmers adopted intensive method of cultivation to get more production.

33. Singh, V. N. and Sharma, S. K. (1970):- They studied “Cropping Pattern in Narmada Basin.” For their studies they divided the whole Narmada Basin Region into four zones based on the percentage of irrigated region. The important feature of Narmada Basin Region was that the percentage of ‘Net Irrigated Area’ and ‘Cropping Intensity’ was very low. Most of the region was unirrigated, therefore double cropping system was not possible. Hence a tendency of cultivating commercial crops was found in place of food crops in the whole of Narmada Basin Region. As a result of this more importance was given chiefly for the production of oilseeds and cotton. The production of cash crops was encouraged more in Narmada Basin Region.

34. Sinha, A. K. (1978):- He had studied “Impact of Irrigation on Cropping Pattern and Crop Yields” in Haryana. He studied the impact of lift irrigation on cropping pattern and the productivity of the crop in Haryana in a special way. He found in his studies that there was a high level of positive correlation between irrigation facilities and ‘Cropping Intensity’ in Bhawani district. There was a favourable impact of the expansion of irrigation on cropping.

35. Singhatwariya, J. S. and Kawadia, G. (1980):- They had “A Study of Temporal Variation in Crop-pattern in M. P.” from the period of 1960-61 to 1976-77. Their study was based on secondary data. The data regarding the areas of paddy, wheat, sorghum, gram, cotton, linseed, maize and groundnut was collected from Agricultural Statistical Directorate of Madhya Pradesh.
Within the period of sixteen years there was a growth in the areas of pulses and oilseeds 1.6% and 1.3% respectively. On the other hand there was a growth in the areas of food crops only 0.39%. Under commercial crops there was a decline of 0.6% annually in the areas of cotton. There were two main reasons for the growth in the areas of different crops. Firstly, there was a growth in irrigation facilities from 5.6% in 1960-61 to 10.7% in 1976-77. Secondly, there was a significant decline in the areas of cultivable barren land from 32.14 lakh hectares in 1960-61 to 19.12 lakh hectares in 1976-77.

36. Smt. Shrivastava, S. (1980): In the research paper, “Multiple Regression Analysis of Cropping Pattern in M. P.” she had tried to measure the role of area and yield in the growth rate of paddy, wheat, sorghum, cotton and sugarcane production from the period of 1960-61 to 1976-77 by using Y-A+BX+Cx2 Multiple Regression Model.

37. Sisodia, J. S. (1970): He studied “Agricultural Production Trend in Madhya Pradesh” from the period of 1950-51 to 1964-65. He found in his studies that during his study period sorghum, maize, peanuts and paddy sown areas had increased. Besides this due to the use of high yielding variety seeds and developed technology in the agricultural field, there was an increase in the production of important crops.

38. Sisodia, J. S. (1973): He studied “Agricultural Production Trend in Madhya Pradesh” from the period of 1964-65 to 1971-72. He found in his studies that the area of sorghum, maize, groundnut and paddy crops had increased in Madhya Pradesh. At the same time the production of all main crops had increased on account of the use of high yielding variety seeds and developed technology.

39. Venkataramanappa, R. P., Shetty, R. A. and Basavaraja, H. (1999): They had an experiment at Agricultural Research Station, Siraguppa under the jurisdiction of the University of agricultural Sciences, Dharwad and falling in the Tungabhadra command area of Northern dry Zone of Karnataka to study “The Performance of Cropping Sequences.” The physical data relevant to

economic evaluation was obtained from the Chief Agronomist, ARS, Siraguppa.

The net returns and their mean values from different crop sequences for a period of five years from 1990-91 to 1994-95 were worked out to study the economics of crop sequences. It was found in studies that from among the seven crop sequences studies, the highest net returns were found in paddy-paddy sequences.

However, the profitability or otherwise of any crop sequence has to be considered in the light of the sustainability and availability indices of yields of the crop sequences. The economics of these sequences was worked out in terms of benefit-cost ratio (BCR), sustainability value index (SVI), and the index of variability (IV).

40. Yadav, H. (1980):- He used double Log Linear function to know the “Impact of Socio-Economic Factors on Cropping Pattern.” Dr. Yadav’s study was based on the survey of the samples. He drew the conclusion after having wider survey of 60 farmers of six villages of two districts of Chhattisgarh region. He found in the Multiple Regression Analysis in the change of double crop areas under influencing factors that the value of R2 was 0.4765, which indicated that all the factors, included in equation such as the size of cultivated land, irrigated area, non agricultural income, education, distance from city market, all these were 47% responsible for the change of the double crop area. In Regression Equation in both the sizes of cultivated land (X1) and irrigated area (X2), 5% was found remarkable at positive level. The impact of non-agricultural income and education was very little and insignificant statistically. There was a negative impact of the distance on city market and city centers. Though its magnitude was very little yet it was significant statistically.
