CHAPTER II
Bhardwaj et al., 1978 examined the productivity of various Agricultural resources for high yield varieties and local varieties of wheat and maize. Input output data collected from 84 farmers of same villages. The cobb doublas type of function has been fitted to data taking the value of output as the dependent variable, Value of manures and fertilizer human labour and bullock labour as independent variables. He concluded that marginal value productivity of manures and bullock labour was higher in case of HYV of wheat as compared to local explaining the importance of HYVs over local varieties of wheat.

Batra, 1979 concluded that larger investment was necessary to reap the advantages of the new methods and techniques in agriculture incomes and profit from farming was correspondingly higher. The empirical research work done by Batra has proved that the cost per hectare was higher under the new technology. The cost per quintal was generally lower under it, since

the new technology has compensated more than the increase in cost per hectare by bringing about relatively higher increases in production per hectare.

Chenna Reddy, 1967 fitted cobb-Douglas Function to study the production efficiency in South Indian agriculture. He used the data collected in 1957-58 by random sample from 10 villages of West Godawari district. He concluded that in a traditional and technologically stagnant agriculture farmers are aware of efficient use of traditional inputs. He suggested that a rapid and mass development in India can be achieved only by breaking through the traditional state of arts and introducing modern technology consisting of new inputs.

Dhondyal, 1967 conducted a study to estimate the changes in output and farm earnings as a consequence of the use of modern technology. It was observed that the cost of inputs were higher by 9.01 percent but increased the output by 76.16 percent which reduced the cost per quintal. The work was conducted on paddy variety Taichung Native-1. A significant gain was shown by the farmers adopting modern technology.

Gupta and Singh, 1966 conducted a study of the change in the nature and extent of inputs used due to the developmental activities, its effect on per acre yield and the changes in the input-output ratio in Varanasi district. They have defined technological change as a change in the parameters of production function resulting from the use of new technology. The effect of the technological change was measured by the difference in the input-output ratio and the average yield. Both the input-output ratio and the average yield per acre was found to be higher for the adopter.

Joshi, 1979 find out the effect of two important industrial inputs namely, fertilizer and tractor on the growth of agricultural output in Andhra Pradesh, Bihar, Karnataka, Madhya Pradesh, Maharashtra, Punjab, Tamil Nadu, Uttar Pradesh and West Bengal. It is observed that there is an earnest need for developing the industrial sector which produces and markets new technical inputs for accelerating the growth of the agricultural sector. In some of the States the substi-


tution of fertilizer for land and of tractor for labour were found. It emerged from the study that the two industrial inputs have a significant bearing on the agricultural sector and hence the urgency of formulating suitable industrial policies to realise the twin objectives of (i) increasing agricultural and industrial production, (ii) expanding the employment opportunities on and off the agricultural sector.

Mann, 1968 examined how far is it economically feasible to switch over to the H.Y.V. or the improved technology and how far is it likely to affect farm income and the production of major agricultural commodities? He concluded that improved technology and H.Y.V. of crop offer a great potential for increasing agricultural production. The scope of their adoption is limited by the availability of fertilizer as far as conditions in Punjab go.

Malik and Usha Nagpal, 1979 examine that


technological change in Indian Agriculture increased agricultural production manifold. The increased production has resulted in greater marketed surplus of the farmers and consequently in increasing their cash incomes. The study was carried out in Muzaffar Nagar district, Uttar Pradesh. On the consumption side, it is revealed that the increased income has enabled the farmers to buy more consumption goods and services from the other sector of the economy, thereby increasing employment in these sectors on the production side. The input structure has shifted towards inputs which are procured from the non-agricultural sector. In addition, as a feedback, the increased saving in agriculture have contributed to the capital required for the investment in the non-agricultural sectors of the economy.

Marothia, D. K., 1975 determined the effect of new technology on yield rates and farm returns and change in demand for human labour and bullock labour employment when H.Y.W. and mechanisation are adopted in different farm sizes. To fulfil the objective of this study, four blocks (Rudraput, Bilaspur, Bazpur, and Kashipur) of Nathital district in the Tarai region of Uttar Pradesh.
Pradesh were selected. Empirical findings of this study reveal that the new farm technology has not only increased the cropping intensity, but also demand for human labour and reduced the use of bullock labour. A marked increase in the farm returns, use of growth promoting inputs and proportion of human labour to the total labour employment per hectare along with the increase in percentage of the cropped area, particularly on large farms, serves as a mile-stone on the road of capitalistic development of agriculture in Tarai.

Nath Vishwa\textsuperscript{10}, 1974 conducted a study in Azamgarh district, Uttar Pradesh. He studied the comparison of cultivation of Paddy and wheat with sugarcane. The findings that introduction of high yielding varieties of wheat and paddy was more remunerative than commercial crops.

Prasad et al.,\textsuperscript{11} 1969 proved that the impact of modern technology, for this purpose he was selected 100 cultivators. In out of 100, fifty cultivators


growing high yielding varieties on some of their plots and 50 adopting traditional varieties, were selected purposively from 10 villages of the Development Block Kalyanpur, Kanpur District. He observed that per hectare average value of gross capital formation on the cultivators holding using high yielding varieties come to Rs.116.67 which is about 48 percent more than those cultivators using traditional varieties. The irrigation structure contributed the largest share of 48.49 percent to gross capital formation on the cultivator holding using high yielding varieties. While investocks 67.41% contributed the highest share to gross capital formation on the cultivators holding using traditional varieties.

Patel & Shah^12, 1977 resulted that the advantage of new technology Indian agriculture experienced a number of changes in the cropping pattern as also production pattern during the last decade. The overall increase in the production of foodgrains helped to increase the supply of calorie and protein. The

overall cereal and pulses contributed in increasing the total availability of calorie and protein. The per-capita availability of calorie and protein increased by 8 to 10 percent.

Pandey et al.\textsuperscript{13}, 1981 estimate the impact of new technology on labour absorption in Haryana Agriculture for study purpose he was selected 300 farmers from Ambala, Karnal, Kurukshetra, Sonipat, Jind, Hissar and Sirsa districts. The study revealed that per hectare requirement of labour for paddy cotton, wheat and sugar-cane was considerably higher than other crops. The study revealed that the increase in irrigation facilities are under H.Y.V. seed use of fertilizer and shift in area from less labour intensive to more labour intensive crops have resulted in a substantial increase in labour absorption in agriculture. However, with the increase in tractorisation, the labour requirement for raising crop considerably reduced. Thus to increase the labour absorption capacity in agriculture, the expansion of

irrigation H.Y.V. seed and fertilizer technology should be encouraged and increase tractorisation should be severely discouraged through appropriate public policies.

Rathore and Sohan\textsuperscript{14}, 1972 conducted a comparative study to find out the input-output behaviour of the farm as a whole resulting from the use of new technology in two villages Bharatpur District of Rajasthan. Farmer was classified into two types i.e., progressive and traditional on the basis of their technological level of farming business, the percentage area under hybrid bajra was more on the small size-group whereas the medium-size group was having proportionately more area under high yielding varieties of wheat. Gross farm income per acre was highest on the medium size-group where the high yielding varieties of crops contributed the highest, whereas it was lowest on the traditional small size group. The variable as well as fixed cost was found to be higher on the progressive medium size-group.

Raju¹⁵, 1973 made a comparative study of the performance of small farmers adopting new technology and non-adopter small farmers in West Godawari district of Andhra Pradesh. The data was taken from the Benchmark and Assessment survey of the I.A.D.P. district of West Godawari conducted in 1967-68 and 1970-71. The study enabled to conclude that (1) the small farmers who adopted the new technology were economically better off when compared to the non-adopters, (2) the resource use was more efficient in the case of small farmers who adopted the new technology than the non-adopters.

Subramaniam¹⁶, 1968 compared the economic cultivation of high yielding variety A.D.T. 27 with a local variety and find out the resources efficiency of the farmers. This study is based on data collected from 43 adopters and 10 non-adopters in the H.Y.V. programme in the Thiruvaiyaru Block of Thanjavur district. ADT 27 gave the very good yield than local variety.

Shukla\textsuperscript{17}, 1971 studied the impact of irrigation and technological changes on income level of farms in Jabalpur. For this study, a sample of 1972 farms was selected from the villages falling within the vicinity of Jabalpur town. He found that irrigation had proved to be a crucial factor in raising the farm productivity which was evident from the marginal value product of irrigation on traditional and advanced farms. The programming results had shown that the marginal returns from irrigation on the advance farms were 76 per cent higher than on the traditional farms.

Singh and Singh\textsuperscript{18}, 1972 conducted a study on the impact of technological changes on agricultural production and resources productivity in Tarwa block of Azamgarh district of Uttar Pradesh. They select the adopter and non-adopter who are growing paddy, maize, and wheat. The yield under the crops were considerably high on the adopter farms even for local crops than those of on the non-adopter farms. They concluded that the seed, manure-fertilizer and irrigation can increase farm


returns on the non-adopter farms.

Singh and Patel\textsuperscript{19} 1974 made an attempt to examine the productivity of resources and allocation efficiency on different sizes of farms adopting new technology in Meerut district of Western Uttar Pradesh for Mexican wheat in 1969-70. He concluded that on different categories of farms, the irrigation turned out to be the most profitable resource for further investment as it indicated maximum additional returns for every additional rupees invested. In general the resources were efficiently used except for irrigation on medium and large farms and for human on large farms.

Singh et al.,\textsuperscript{20} 1975 examined the scope of commercialisation on the small farms adopting modern technology in Central Uttar Pradesh. They studied the form structure cropping pattern level of production and extent of marketted surplus generated on the small farms. The study based on 40 small farmers, their

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holding between 0-3 hectares and adopting high yielding varieties more than 30% of the total area. The average size of holding of the sample farmers was 1.57 hectares while cropping intensity on an average came 153.98 percent. The main crop grown by small farmers were wheat, paddy, maize and jowar plus arhar amongst which wheat occupied the largest area of 43.45 percent (H.Y.V. 39.12 percent and local 4.33 percent) followed by paddy 23.20 percent (H.Y.V. 9.13 percent and local 14.04 percent).

Singh R.B. 21, 1974 examined the impact of new agricultural technology on labour earnings in district Kanpur Uttar Pradesh for this purpose 96 agricultural labourers from technology areas and 48 from sub-technology areas randomly selected were personally interviewed. From the study it could be observed that the labour earnings per annum for agricultural labour with land in the new technology area in comparison at its counterpart did not increase much despite of increasing in wage rate. This was due to less number of days spread for work on other farms and finding more work on their own piece of land as a result of easy availability of irrigation facilities in the new technology.

areas. The earnings particularly of the casual labour in the new technology are were higher due to more employment and high wage rate as compared to these sub-technology areas. The annual earnings for the casual male female and child labour for the year 1973-74 in new technology and sub-technology area were calculated as Rs.1,008 and Rs. 714.00, Rs.729.60 and Rs.585.00 and Rs. 700.80 and Rs. 512.40 respectively.

Singh et al. 1972 showed that remarkable change has taken place in the cropping pattern after the introduction of new technology. The area shift was more in the case of wheat crop which was at the cost of barley and oil seeds. A little use of fertilizers and plant protection measures has shown a remarkable increase in the yield. Therefore, efforts should be made to improve the technology particularly at a time. When input like irrigation and fertilizers are becoming more and more costly and scahres. He concluded that only Bazra crop shown considerable increase in its production after the inception of new technology. Oil seed had also shown a good yield potentiality in the region and their

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production can be promoted by introducing some fresh and pest resistant varieties with recommended package practices.

Singh, 1975 studied the impact of New Technology on the efficiency of resource use on small farmers. He selected 20 progressive and 20 less progressive farmers in a selected villages of Azamgarh district of Eastern Uttar Pradesh. It was found that the cropping intensity and inputs used per acre were considerably higher on the progressive farms than on the less progressive farms. The income estimated according to various cost concepts and returns to different important factors of production were also higher on the progressive farms than on the less progressive farms. The income estimated according to various costs concepts and returns to different important factors of production were also higher on the progressive farms than on the less progressive farms. The productivity of resource use has been calculated by using the Cobb-Douglas function which showed that there is large scope for increasing the different inputs for improving the economic position of the farmers. The productivity of each input has been compared with

their acquisition cost and it was found that the productivity of area, seed, manure and fertilizer on the progressive farms was significantly higher than its acquisition cost while on the less progressive.

Soham and Tathorae\(^ {24} \), 1975 examined the impact of improved technology on the small sized farms by adopting various income and cost measures. The study was conducted in 4 district viz., Alwar, Bharatpur, Jaipur, and Sawai Madhpur of Eastern region of Rajasthan in 1971. The main findings of the study was as follows:

The total farm receipts on the adopter farm were Rs.3716.7 and on the non-adopter farm Rs.1698.80. The crop output on the adopter farms was more than double as compared to non-adopter ones. Net profit on the adopter farm was Rs.1179.8 per farm and Rs.337.7 per acre and it was Rs.191.7 and Rs.61.8 only per farm and per acre on the non-adopter farms. The input-output 1:1.47 for adopter is higher than 1:1.13 for non-adopter.

Singh et al\(^ {25} \), 1977 observed that adoption of


improved seed, fertilizer, irrigation, technology and multiple cropping has resulted in increased agricultural production and income of the farm families. To examine the impact of new technology on the quantity and quality of intake of foods by a sample of 100 farmers in Sikrara Block of Jaunpur district of Eastern Uttar Pradesh. He was examined that the farm structure, cropping pattern productivity of crops total availability of food grains and vegetables was more to progressive farmers than less progressives farmers. The observed the progressive farmers grown superior crops like paddy, wheat, maize, potato and other vegetables while the less progressive farmers put more area under jowar and arhar and pea etc. due to poor resource availability. The productivity of crops and total production were higher on the progressive farms due to adoption of modern technology. The less progressive farm families could hardly meet their food grain requirement due to the low productivity of different crops grown on their farms because of poor farm resources. They could not grow vegetables and maintain good milch cattle.

Myeliffe et al. 1972 observed that the introduction of new technology has not only affected the cropping pattern but it has also affected the variety-wise distribution of area of certain crops. The launching of high yielding varieties area has increased 37 per cent, previously it was only 27 per cent. He again observed that the small farmers could not benefit proportionally from the new technology, since the additional increase in the area of high yielding varieties on the small farms was less than the increase area on the large farms. He concluded that the new technology has affected the production pattern of all crop enterprises in general and that of wheat crop in particular. But the benefit of the changes in production pattern was not equally distributed among different section of the rural population. The small farmers being the least gainer among them.

Chaudhary et al. 1975 studied that the performance of adopter and non-adopter of new agricultural


technology in Farrukhabad district in Uttar Pradesh. It was observed that the production performance of small farms under modern technology for each crop per hectar was higher than that of the non-adopter small farms because of assured irrigation, use of quality seeds, fertilizers, insecticides, pesticides, and improved farm implements.

Bekha Lal Maharajan, 1980 increasing agricultural production on small farms has been of substantial concern in traditional agricultural systems in Nepal. Development efforts have no alternative but to improve the low income position of the economically week and numerically large segment of small farmers. The conclusion of this article on the basis of available evidence is that a substantial increase in agricultural production can be gained through better allocation of available resources on these farms. These necessitates the application of development strategies based on intermediate technology for small farm agriculture.

Y.S. Chauhan et al. 29, 1981 studied that the impact of farm mechanization at block Kalyanpur in district Kanpur. For study purpose he was selected 30 mechanized and 30 non-mechanized cultivators from five villages. The study revealed that the cropping intensity was 198.24 per cent on the mechanized farm and 137 per cent on the non-mechanized farm. The capital investment per hectare was Rs. 4,418.25 and Rs. 2,417 in the two categories of farm respectively. The input output ratio was 1:1.75 on the mechanized farm and 1:1.45 on the non-mechanized farm.

Som P. Pudasaini 30, 1984, A Survey of traditional and mechanized farms in Bara district, Nepal, was conducted to assess the impact of mechanization on cropping intensity, limeliness, yield, income, employment and efficiency, cropping intensity, yields, income and employment were higher on mechanized than on traditional farms. However, the much greater use of cash inputs and higher education level associated with mechanized farms made it difficult to attribute yields and income effects solely to machinery. Tractors could not be


clearly linked with on-farm labour displacement and pumpsets were found to raise farm employment. Tractor ownership allowed large farms to achieve higher cropping intensities through speedy and timely operations. Increased cropping intensity appeared to put a premium on time liners for large farms, but did not seem important for small units. Tractorization permitted farmers to almost eliminate bullocks. The highest levels of efficiency were achieved by pumpset-owning and tractor-hiring farms rather than large tractor-owning farms.

Hari K. Upadhyaya, Keijiro Otsuka and Cristina C. David31, 1988 concluded a study in Nepal which consists of ecologically distinct favourable and unfavourable regions. Modern rice technology has been widely adopted in favourable pests of the country. It is generally believed that modern rice technology has accentuated the existing regional income disparity in this study, however, which is based on village surveys, we found that despite the significantly positive effect of new technology on demand for hired labour, wage rates are

largely equalized across different environments due to permanent as well as reasonable migration farm unfavourable to favourable areas.