Chapter - IX

SUMMARY AND CONCLUSION
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The present problem entitled "Production and productivity performance of pulses and their contribution in income and employment on farms in Chitrakoot Dham region of U.P. state." was undertaken during the agricultural year 2001-02. The study aimed at studying the production, and productivity performance of pulses in the study area. It also analyzed the main constraints to production of pulses.

The study is based on an intensive enquiry of 100 pulse growers selected randomly from 10 villages of two blocks falling under the area jurisdiction of district Chitrakoot Dham. A multistage stratified random sampling technique was used to select the blocks, the villages and the respondents i.e. pulse growers. For the purpose of the study of price spread 50 cultivators who had brought their produce (pulse grains) for the disposal in the Chitrakoot Dham Regulated Mandi (selected purposively) were interviewed. Out of the 10 pulse processing units in Banda city, 3 units were selected randomly for the purpose of present study. The enquiry was conducted randomly for the purpose of present study. The enquiry was conducted by survey method. The primary data were collected by direct personal interview with the respondents. The secondary data were obtained from the block headquarters, district headquarters, village records, reports and journals.
The total geographical area of district Chitrakoot Dham was 790026 hectares out of which 64.20 percent area was under cultivation. Out of the total cultivated area, 18.18 percent area was under irrigation. The main crops of the district were pulses which occupied as much as 29.56 percent of the total cropped area of the district. The intensity of cropping of the district was only 123.40 percent because of large area under pulse crops.

Out of the total reported area of 59170 hectares and 70639 hectares of blocks Kamasin and Jaspura; 80.82 percent and 81.30 percent area was under cultivation. The intensity of cropping of block Kamasin was 103.26 percent and that of block Jaspura 104.60 percent. The pattern of land utilization of the selected blocks suggested that there is no scope of bringing more area under cultivation and production may be increased only by adopting more intensive agriculture.

The percentage irrigated area of the two blocks was 11.67 and 10.15, respectively. Pulse crops in block Kamasin and Jaspura had the highest percentage area being 49.55 and 48.36, respectively to total cropped area. The average yield of wheat crop in district Chitrakoot Dham during the year 2002-003 was 17.87 quintals per hectare that of paddy 10.49 quintals, maize 10.54 quintals, Urd 2.75 quintals, Moong 3.87 quintals, Gram 9.36 quintals, Pea 12.57 quintals, arhar 10.87 quintals, Sugarcane 397.98 quintals, Potato 193.73 quintals and Soybean 5.66 quintals.
Regarding the area, production and productivity of pulses in Uttar Pradesh, a declining trend was observed during the period 1990-91 to 2000-01. The area under pulses in Uttar Pradesh declined from 3724829 hectares to 2986047 hectares during the aforesaid period alongwith a compound growth rate of (-) 1.01 percent per annum. So far as the production is concerned, it’s ratio was worked out to 1:0.79 and its growth rate remained at (-) 0.11 percent per annum during the period 1990-91 to 2000-01. Likewise the average yield varied from 8.24q/ha to 8.08q/ha alongwith a positive growth rate of (+) 1.47 percent per annum during the period mentioned above. The area, production and productivity for different pulse crops in Chitrakoot Dham division and the district varied considerably from year to year.

Thus, the study clearly reveals that increased production of pulses during the aforesaid period was due to the expansion of area under the crops on one hand and marginal increase in productivity on the other. The marginal increase in productivity shows that technology has not helped much to increase the production in the country as well as in the study area. This is to be viewed seriously in the context of various efforts being made to increase productivity through yield increasing technology.

Coming to the economic structure of the sample holdings, it was observed that the average size of holding came to 1.89 hectares. The percentage number of holdings was the highest in the lowest size group while the cultivated area contributed the highest percentage on
the largest size group of farms. This indicated the uneven distribution of cultivated land among the farmers of different sizes.

The average percentage irrigated area came to 15.99 percent on the sample farms. The higher percentage irrigated area was observed on larger size group of farms because most of them had their own sources of irrigation which in turn increased the percentage area under irrigation on these farms.

The per farm average investment in fixed capital came to Rs. 585477.91 including the value of land whereas it was Rs. 168195.37 excluding the value of land. The average investment in fixed capital per farm on land came to Rs. 207683.22. The total investment excluding land per farm showed an increasing capacity of big farmers.

On the average, gram occupied the highest area being 27.06 percent to the total cropped area followed by Jowar + Arhar 25.49 percent, Wheat 21.87 percent, Lentil 9.50 percent, Paddy 7.12 percent, Mustard 6.05 percent and others 2.91 percent. As regards different size groups, the area under cash and remunerative crops showed an increasing trend with the increase in the size of farms because of the fact that big farmers were putting more area under the cash crops. The average intensity of cropping was worked out to 115.07 percent. It varied from 109.03 percent on “0-2” hectares size group to 123.67 percent on “4 hectares and above” size group. Dry farming practices were generally adopted in the study area which resulted into the low intensity of cropping.
Gram is the main crop of district Chitrakoot Dham. On the average, it occupied 27.06 percent of the total cropped area on the sample farms. The average cost of cultivation of Gram came to Rs. 12646.37 per hectare. It showed a rising trend with the rise in the size of farms. The average yield per hectare of Gram came to 14.92 quintals of main product and 16.30 quintals of an average, was worked out to Rs. 807.51 for main product and Rs. 36.70 for by-product. It decreased with the increase in the size of farm due to higher yields in relation to cost of cultivation on the big farms. The average value of output per hectare came to Rs. 17227.00. The higher value of output on big farms was associated with the higher expenditure incurred on modern farm inputs.

As regards with average values of net income, family labour income and farm business income per hectare, they came to Rs. 4580.68, Rs. 5344.92 and Rs. 6629.68, respectively on the sample farms of different sizes. The average input – output ratio in gram was worked out to 1:2.25. so far as the average values of cost A, cost B and cost C are concerned, they came to Rs. .7840.03, Rs. 11804.03 and Rs. 12646.37 respectively on the sample farms. The income over the respectively costs were calculated at Rs. 6042.77, Rs. 4975.95 and Rs. 4336.32, respectively.

As regards with average input cost, output value, net income, family labour income, farm business income and input – output ratio their values were worked out to Rs. 8386.59, Rs. 5434.02, Rs. 4580.68, Rs. 5757.04, Rs. 9073.04 and 1:1.47 per hectare in Jowar + Arhar on the sample farms of different sizes, respectively. In the mixed cropping of Jowar + arhar, average values of cost A, cost B and cost C
came to Rs. 7007.70, Rs. 10950.11 and Rs. 4903.47 per hectare, respectively. The average income over cost A, cost B and cost C were also calculated at Rs. 9704.45, Rs. 5757.04 and Rs. 4903.47 per hectare, respectively on the sample farms. All these values increased with the increase in the size of farms as result of higher output in relation to total input cost.

On an average, the values of cost A, cost B and cost C came to Rs. 3930.06, Rs. 7655.55 and Rs. 8553.27 per hectare, respectively on the sample farms in the production of Lentil crop. These costs increased with the increase in the size of farms. The average income per hectare over cost A, cost B and cost C were calculated at Rs. 16115.89, Rs. 12390.40 and Rs. 11492.68, respectively. The income over different costs also increased with the increase in the size of farms because of higher output in relation to total input cost.

Coming to the average value of input cost in Wheat + Gram, it came to Rs. 10811.32 per hectare. The per hectare yield was worked out to 9.86 quintals of main product and 15.49 quintals of by-product from wheat and 7.12 quintals of main product and 8.55 quintals of by-product from gram. The average values of output, net income, family labour income and farm business income were calculated at Rs. 17172.15, Rs. 6360.83, Rs. 7327.96 and Rs. 10573.94, respectively on the sample farms of different sizes from Wheat + Gram. Regarding the input – output ratio in Wheat + Gram, it was worked out to 1:2.21. On an average, cost A, cost B and cost C in Wheat + Gram came to Rs.
6106.16, Rs. 9844.02 and Rs. 6360.83 per hectare, respectively on the sample farms. The income over different costs was also calculated at Rs. 11065.89, Rs. 7327.96 and Rs. 6360.83 per hectare, respectively. The income over different costs was low in the smallest size groups as compared to the largest size group of farms due to low level of output in relation to total input cost.

In the farm business as a whole, on the average, per hectare total input cost on the sample farms came to Rs. 11516.23. It was higher on the largest size group of farms because they could incur higher expenditure because of their better economic status as compared to the small size group of farms. Likewise the average value of input cost on per farm basis in crop production as a whole on the sample farms was worked out to Rs. 21046.92. Out of which rental value of land contributed the highest being 28.22 percent followed by human labour 27.15 percent. The values of human labour were noted higher on larger sized farms in comparison to smaller one. It was because of their higher investment capacity.

The average values of net income, family labour income and farm business income on per farm basis came to Rs. 28243.26, Rs. 33394.99 and Rs. 46095.22, respectively. All these values were higher on large farms. The large sizes farms could invest more on modern inputs like – quality seed, manures and fertilizers, irrigation etc. which in turn resulted into higher yield and income on these farms. The values of cost A, cost B and cost C, on an average, came to Rs. 13193.83, Rs. 15894.19
and Rs. 20146.92 as a whole on per farm basis on the sample farms. A size group-wise examination indicated that all these costs showed an increasing trend with the increase in size of farms. It was due to higher investment capacity on the big farms. As regards average income over different costs, they gave also an increasing trend with the increase in size group of holdings. It was due to higher yield and income on the big farms on per hectare basis as well as on per farm. The per farm average income over cost A, cost B and cost C were calculated at Rs. 46095.20, Rs. 33394.99 and Rs. 28243.26, respectively on the sample farms of different size groups.

Regarding the production function analysis in Gram, Jowar + Arhar, Lentil the marginal value productivities of fertilizers varied from Rs. 5.5778 on Jowar + Arhar to Rs. 8.9319 on Lentil crops while those of irrigation varied from Rs. 5.2183 on Jowar + Arhar to Rs. 6.9426 on Gram crop under different situations. Likewise one rupee investment in plant protection resulted into an additional income varying from Rs. 5.0819 on Jowar + arhar to Rs. 6.6158 on Lentil crops under different situations. As regards returns to scale, increasing returns to scale was noticed for all the crops on the sample pulse grower's farms.

From the above finding it may be concluded that their existed still much scope for increasing the yields and income of the pulse growers. The dependence of pulses cultivation on rains and rain fed canal, use of local seeds and lack of technical know – how under existing
condition, major share of mill owner and other agencies in the marketing of pulses etc. were the main constraints in having returns from pulse production. There is need to overcome these problems so that the farmers may get their due share in pulses production. The adoption of new dry farming technology and basal application of fertilizers would go a long way in increasing the production and productivity of pulses in the study area. The efficient marketing and processing of pulses through farming co-operative would provide better return to the pulse producer.

Policy Implications:

In the recent years the gap between production and demand of pulses have widened pulses largely due to stagnation on production of pulses on one hand and increasing population on the other hand. The Central and State Govt. have taken several measures to minimize this gap but the situation has not yet improved. Urgent measures are needed to reverse this trend of widening gap between demand and supply of pulse in the country. The following policy measures may be suggested for its productivity.

(I) Provision be made for the following:

1- Quality varieties capable of resisting diseases need to be evolved. Pulse Zonal Research Stations for different agro climatic sub regions may co-operate in this regard.

2- (i) Irrigation is no less important a factor. At present irrigation is given. In the event of rains one more irrigation can be given.
(ii) Effort should be made to reduce the cost of irrigation.

3- More irrigation automatically attracts more fertilizers; hence suitable doses of fertilizers are also necessary. Manures and fertilizers both should be applied.

4- Since the crops stand in the field for a longer period, they have more chances of attack of insect-pest and diseases. All pulses zones need adequate efficient and timely treatment of these diseases and pests. State help in this regards would be important.

5- Credit is an important aspect for pulse production. More and more of an institutional credit be made available to pulse growers to meet the heavy expenses involved in pulse production.

(II) Institutional and operational factors:

1. Credit distribution, input supply and pulses development are all not well linked. This necessitates a proper liaison between all these agencies concerned with pulse economy.

2. Suitable extension services regarding new technology of production, disposal and utilization of pulses should be extended to the pulse growers without any delay by extension workers and other agencies involved in the extension, communication in their respective zones.
3. One objective of the policy implications to increase the pulse production should be to ensure the crops through Insurance Agency (ies) in the country as well as in the study area.

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