Chapter -II

REVIEW OF LITERATURE
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In this chapter, an attempt has been made to review pertinent literature keeping in view the 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.” A brief account of the work reported by the past researcher has been discussed under the following heads:

1. Cropping pattern
2. Cost and returns
3. Annual compound growth rate in pulse production
4. Constraints in pulse production

(1) Cropping Pattern:

Sridharam, B. and Radhakrishnan, S. A. (1978) concluded that through there is no shift in the cropping pattern between 1966-67 and 1976-77 in the Nilgiris district the acreage allocation between the crops is influenced by physical economic biological and sociological factors.

Chopra, Kusum (1982) revealed that in the states of increasing pulses, an increase in the cropping intensity leads to an increase in some of the Rabi pulses in Rajasthan and Madhya Pradesh.
Acharya, S. S. (1985) revealed that the pulse growing farms are characterized by larger size, low irrigated area and monocropping. Mixed cropping of pulses is predominant in the kharif season. The use of yield increasing inputs, especially fertilizers and plant protection measures, is negligible. It appears that there is a considerable technological lag in pulse production which calls for the manipulation of input – output prices in favour of pulse crops.

Quazi, A. K. (1986) resulted in a study that the cultivation has to be intensified and diversified to ensure an improved supply of food to the population. In this respect the emphasis is placed on the necessity not only to consider the various yield components but to concentrate on how far cropping system as a whole can be improved by the integration of higher potential legumes.

Singh et al. (1988) found that acreage under pulses has been decreasing in Himachal Pradesh. The declining trend in acreage was found in according with the in techno-economic conditions.

Prasad, S.; Singh, V. P. N. and Singh, D. (1987) reported that there is a need to modify the cropping pattern to increase to productivity per hectare.

Singh, J. P.; Singh, O. N. and Singh, T. K. (1990) suggested in their study that for the proper development of pulses production new crop sequences/intercropping systems are needed.
Tuteja (1999) resulted that the area under pulses got shifted to a large extent to wheat improved variety of pulses did not cover more than 33% of the area and inspire of lower adoption of improved seed and lower profits in production of pulses vis-à-vis competing crop; resulted in high variability yield.

(2) Cost and Returns:

Natarajan (1960) found that fertilization of pulses with phosphate at the rate of 30 and 60 lbs/acre increases the yield as well as gives beneficial residue to the succeeding crop.

Mann (1968) reported that phosphate application to pulses not only benefits the particular crop but increase its yield and favour the effects on soil nitrogen content for the succeeding non-leguminous crops.

Chandrawat et al. (1976) reported that application of 15 kg N. + 30 Kg P$_2$O$_5$ per hectare along with bacterial inoculation appreciably increased the yield of gram with substantial profit.

Singh, D. (1977) found 52 percent of the pulse growers sowed pulses on the recommended time and 47.8 percent sowed pulses either late or early there by reducing the yield of crop.

Hegde, D. M. and Saraf, C. S. (1979) indicated that the optimum dose of P$_2$O$_5$ and expected response increased with the increasing price of output at constant input cost and decreased with increasing cost of input at constant output value. The P$_2$O$_5$ utilization
efficiency was more sensitive to changes in input prices than the changes in output prices.

Sharma, P. V. and Rao, T. K. (1979) resulted that despite of high rise in the prices of pulses, the area under pulses has not risen, indicating no price response from 3 percent in each size unlike for chilies, groundnut and cotton.

Raghuwanshi, C.S.; and Kumar, Rajendra and Ahmed, Tauseef (1982) revealed that larger the volume milled, lower the cost and vice-versa. The B/C ratio was more than 3 percent in each size in the milling plants (i.e. large and small plants).

Singh, Ved (1984) explained that among the cultivation of maize, black gram (vigna mungo) cowpeas, red gram (Cajanus cajan) and groundnut under rain fed semi-arid conditions 1978-80, vigna mungo gave the highest net returns followed by Cajanus cajan.

Sikdar, F. S. and Elias, S. M. (1985) observed the study and investigates costs and returns of lentil cultivation in Bangladesh and explores the possibilities of expanding the area under crop.

Singh, C. and Vashisth, A. K. (1985) revealed that the producer’s share in the consumer’s rupee varied significantly from state to state. It was noted due to the different marketing systems.

Catha and Singh (1985) were of the opinion that while India had already reached near self-sufficiency in cereals there was
urgent need to improve the production of pulses to attain an immediate increase in the area under pulses crops with strong price incentives.

However, to establish production in the long run, a technological break-through is essential. The extension services also needed to be geared up and disseminate the favorable points of these crops.

Uhlmann, P. (1986) reported that the cost per hectare of subsidizing grain legumes [peas, E (1) 642.8, beans, E (1) 577.2] has been well above that of export restitutions on cereals (soft wheat E (1) 406.3, Barley E (1) 411.8).

Muraleedharan, P. K. (1987) revealed that the resource use efficiency in kore cultivation has been judged by comparing the estimated MVPs of various inputs with their respective factor costs. It appears that the cultivators have not been able to allocate their input efficiently and there seems to be considerable scope for augmenting profit from kore cultivation by optimum use of inputs.

Chandra (1991) reported that pulses have invariably been a weak commodity in the food grains production of the country. He stated that in the “bumper” harvest year 1988-89 pulses covered an area of 10.1 percent of all food grains and contributed 41.5 percent. Even the coarse cereals had higher productivity by about 38.5 percent than pulses.
(3) Annual Compound Growth Rate in Pulse Production:

Despande, R. S. and Chandrasekhar, H. (1982) revealed that there are more cases where growth rates have declined with a higher magnitude in the case of area. The slow growth in production can be mainly attributed to stagnancy and decline with a higher magnitude in the case of area. The slow growth in production can be mainly attributed to stagnancy and declined in area. The supply response analysis indicates a positive response to real price of the crop and the yield.

Grewal, P. S. and Bhullar, B. S. (1982) explained that the production of pulses declined both in the pre-green revolution due to declining (rabi)/low (kharif) productivity and shrinkage in area whereas production showed little improvement in the past green revolution period due to increased area and productivity of gram. To identify the forces responsible for shrinkage in the area under pulses, a micro-level study was conducted. Highly significant growth rates in production and productivity were observed in the district of Thane, Ratnagiri, Ahmednagar and Pune in western Maharashtra.

Singh, D. V. and Swarup, R. (1982) concluded that the relative acreage under pulses has increased at the compound growth of 0.6 percent per annum while absolute area under all pulses grew at the compound rate of 0.8 percent per annum. However, the production and productivity declined at the rate of 0.6 and 1.6 percent.

Kumar, A. (1986) reported that there is wide gap between potential and average yields throughout India. While most states have
not been achieved the national average figure, a few have shown good productivity for a particular crop although the area under pluses in these state is quite low.

**Bagpat (1987)** revealed that the compound growth rates of area and production for gram were higher during 1975/76 – 1984/85 than in the pre IPDP period. The compound growth rates of area, production and productivity of Tur were negligible pre IPDP, but showed a significant increase during the negligible pre IPRD, but showed a significant increase during the post IPDP period about 25-35 percent of the respondents in this tribal district had used recommended seeds, seeding rate and rhizobium culture.

**Food and Agricultural Organization (1987)** reported that in the year 1970, production of pulses declined by almost 0.04 percent per annum, but in the year 1980 has increased by 4.0 percent per annum.

**Department of Agricultural Economics & Statistics (1987)** examined the trend of area, production and productivity of pulses along with competing crops in U.P. The dept. concluded that since the introduction of high yielding varieties of cereals after 1966-77 particularly wheat and paddy, there has been a shift in area of pulses to cereal crops.
(4) Constraints in Pulse Production:

Evaluation report (1959) revealed that in all the areas and groups' lack of supply was the major reason for not using improved seeds.

Singh, Y. P. (1973) portrayed that only 12.0 percent of respondents were using irrigation in pulses. He further stated that lack of money, poor input – output ratio, lack of time; late maturity and small size of holding were the important reasons for non-adoption of pulses. Similar observations were found by Khan (1975) and Ram (1975). He also reported that the least emphasis was given by farmers for improved varieties followed by use of fertilizer. 53.0 percent of the farmers were not using adequate quantity of seed for sowing the pulses and 50.0 percent of the crop was sown either late or early and never at an appropriate time.

Mathur, Y. K. (1977) reported that about a dozen insects, including pod borers, stem borers, leaf miners, foliage cutter pieces, jusside, aphid and white files are the most important that affect the kharif pulses.

Mehrotra (1977) revealed that estimates of losses due to weeds in pulses is about 15-20 percent depending upon the intensity of the weeds.

Singh (1977) also stated that availability of pesticides; fungicides and plant protection equipments were barrier in the control of diseases and pests. He also suggested that there should be a phased
Programme to replace local strains by improved varieties. Use of nitrogenous, phosphoric and bacterial fertilizers is necessary for increasing pulse production. Plant protection measures should be applied by the farmers to protect the crop from insect pests and diseases. Better pulse production technology should be provided to the pulse growers.

Bhatnagar (1979) noted that Government of Karnataka and Assam banned cultivation or sale of khesari or its products. The arrangements for credit for the purchase of inputs like seed, fertilizers and pesticides may be made through the co-operatives specially in areas where gram is grown exclusively i.e. in Bundelkhand region.

Chatha, I. S. and Singh, J. (1986) analyzed that the economic constraints which hinder the growth of pulses and oil seeds in Punjab. The growth of pulses in the state over the period 1961-62 to 1970-71 and 1971-72 to 1980-81 was significantly negative and that of oil seeds positive but insignificant. Among the variables considered for regression analysis the productivity and price ratios were not significant. They suggested that strong price incentives are necessary for an immediate increase in the area under such crops.

Marothia, D. K. (1986) showed a positive association between adoption rates of improved inputs and profitability of the new wheat and gram technology. The results indicated the positive
correlation between irrigation facilities and use of growth promoting inputs and quality seeds.

Nadkarni (1986) reported that the growth of yield of coarse cereals has kept pace with that of food grains overall, but have lost relatively in area. Yields of pulses have been stagnant, but their fall in area is not so great. The major constraints affecting their growth is technological viz. their low yields and lower responsiveness to irrigation and fertilizers.

Deptt. Of Agril. Eco. & Stats. (1987) revealed that the growing traditional varieties of pulses on marginal and sub-marginal land, without irrigation and fertilization are supposed to be the major constraint in pulse production.

Singh et. al. (1988) found that acreage under pulses has been decreasing in Himachal Pradesh. Productivity of all pulses was observed to be far below the expected yield. The declining trend in acreage was found in accordance with the shifts in techno-economic conditions.

Bhata (1991) reported that the economic constraints of pulse production are the higher risks attached to the cultivation of the crop in rainfed areas and the rate of innovation adoption. The relationship between the prices of pulses and those for other staples is also a significant determination of the farmers supply. Hence, there must be a break-through in cultivation techniques and farm management in rainfed areas before the supply of pulses.
Patel (1999) reported that the constraints identified in the cultivation of pulses were the most of farmers lacked modern farm inputs with marginal variations in land owned and operated. Poor irrigation and the cultivation of a long duration cotton crop led to low cropping intensity and a change in cropping intensity and a change in cropping pattern in favour of crops. The productivity of pulses was low and its cost of cultivation was high as compared to other crops.

Dwivedi, Akanchha, et al. (2002). In Bundelkhand region it was noted that the lowest acreage fluctuation was found in case of gram (5.99%) as against the highest in case of urd (22.37%) followed by tur (12.22%). It is further inferred that wide fluctuation existed in production and yield of all the selected pulses. The production variability ranging from 18.89 percent in tur to 33.37 percent in case of yield the variability was almost similar in gram, tur and urd i.e. 16.32, 14.16 and 16.14 percent, respectively.

Gangwal, L.S. (2002). Observed that the prospects of pulses oilseeds and other coarse crops on tun irrigated farms depends on government price policy. The methodology followed for fixing of minimum support prices to the crop need to be modified. The pulses and oilseeds growers should get incentives so that they should be motivated for adoption of HYV seed, increase land allocation to these crops. For better transfer of technology and extension work it is necessary to give information about new innovations, through the farmer awareness camps, frontline demonstration, village meeting with members gram sabha, youth self help group.

(16a)
Gupta and Mishra (2002). Reported that most of the dal mills relied on private traders and commission agents for the supply of pulse grains. It was generally observed that the gap between the prices received by the producers and paid by the consumers was significantly high. The benefit of price rise was not passed on either to producers or to consumers. Only private traders and dal mill owners enjoyed the benefits. The only way to benefit the pulse growers was to set up dal mills in the cooperative sector by the farmers cooperatives.

Singh C.B. (2002). It is implicative from the result that cost of processing of dal per quintal would be decreased it dal processing increase over a fixed period of item. In fact cost of the processing would be decreased so long as the increase in variable cost is perfectly offset by decrease in fixed cost, their by the efficiency of processing unit might be increased upto the level of existing installed capacity. In this regard, regular and long duration supply electricity the biggest existing constraints, could prove. Since the basic cause behind such a high processing cost is multiplicity of taxes, state government should review its purchase and sales tax policy to bring down this single unreasonably high cost component.

Tuteja (2002). Reported that production of pulses in Haryana between 1964-65 and 1995-96 has declined continuously. During the first two decades, production of total pulses has declined from 874 thousand tonnes in 1964-65 to 686 thousand tonnes in 1985-86. It further reduced to 451 thousand tonnes in 1995-96. Among pulses, the highest decline was observed in the case of gram.
Recently, other pulses occupied an important place in the production scenario of pulses by contributing 58 thousand tonnes to the total production of the state.

Ali and Kumar (2004). Find out that the major production constraints were non-availability of quality seeds of improved varieties in adequate quantity. Poor crop management and biotic and abiotic stresses besides socio-economic factors. Fusarium wilt is the most wides pred disease followed by sterility mosaic and phytophthora stem blight. Among key insect pests, helicoverpa pod borer and podfly cause severe damage to the crop among abiotic stress, water logging during vegetative stage, cold sensitivity during flowering stage, terminal drought during grain filling stage and salinity/alkalinity throughout the crop period inflict major yield losses and instability in production.

Chahal S.S. et al. (2004). The study reflects economic rationality in the part of pea growers as they were selling the produce to different buyers, seemingly depending upon the price elasticity of demand. Due to lack of necessary infrastructure, the farmers are forced to sell the entire produce during the post harvest season itself in spite of well anticipated decline in prices consequent upon increased market arrivals. The resource poor farmers, having small.

Sankar et al. (2004) reported that erratic rainfall and its distribution, damage due to inset pest and disease and non availability of improved seeds are the three constraints for low productivity of chickpea and pigeon pea. There is a great scope of increasing the yield of these two major pulses by adopting

(16 c)
appropriate soil and water conservation measures for efficient utilization of rain water, timely adoption of IPM and use of improved seeds.

Sirohi P.S. et al. (2004). In case of lentil crop the area declined by 25.70, 11.30, 6.43, 5.37 and 4.60 thousand hectares in Kymore plateau of Satpura hills, central narmada valley, Northern Hill region of Chhattisgarh, Chhatigarh, plains and Satpura plateau but area increase in vidhyan plateau, grid region, malwa plateau, Bundelkhand region and Nimar valley by 35.43, 23.20, 3.33, 1.01 and 0.14 thousand hectares respectively. In term of relative changes the highest area increased was found in Grid region 108.86 percent followed by Vidhyan Plateau, Bundelkhand region, Malva Plateau and Nimar valley by 32.49, 30.00, 21.57 and 9.80 percent during the corresponding period. It is observed from the study that the area declined by 49.28, 41.48, 36.28, 36.02 and 31.32 percent in central Narmada Valley, Satpura plateau Chhatisgarh plains, Kymore plateau of Satpura Hills and Northern Hills region of Chhatigarh respectively.

Dwivedi S.C. and M. L. Dwivedi (2006). In Bundelkhand region the area, production and productivity of Urad registered an increase by 16.66 thousand ha with 94.82 percent, 6.83 thousand tones with 237.98 percent and 114.50 kg/ha with 68.53 percent. Area, production and productivity of Tur crop recorded increased by 4.73 thousand ha with 46.23 percent, 5.80 thousand tonnes with 138.10 percent and 287.13 kg/ha with 75.55 percent respectively.

(16d)
Singla, Rohit et. al. (2006). Reported that cultivation of green pea was most profitable in Punjab. The yield of green pea was higher on small farms than medium and large farms. The costs incurred on seeds, FYM, zinc, hired labour & machinery percent, was higher on large farms but expenditure per hect. on fertilizer, animal labour, electricity/diesel and family labour was higher on small farms. The gross and net income per hect. was higher an large farmers. Fertilizer, irrigation and machinery influencing productivity of gram pea positively. The return over variable costs was found 129% higher than wheat crop.

Tuteja Usha (2006). Reported that the pre-economic reform period with 1.9 percent per annum growth in pulse production in India was far better than the post-reforms period with negative growth of 0.3 percent per annum. The tendency of slow growth in the production visible for total pulses at the all India level was also observed for individual pulses crops except massar. It emerged as the fastest growing crop in production due to area as well as yield growth. The empirical results on the extent of responsiveness of price and non-price factors to acreage of gram, arhar, moong, urad, massar and total pulses in India and major growing states varied widely in different milieu. The results revealed that acreage allocation in rabi pulses, i.e., gram and massar got influenced by lagged acreage followed by relative price in most of the analysed cases. This judgement however, does not apply to kharif pulses. In allocating land to arhar, moong and urad, farmers considered lagged acreage and magnitude of pre-sowing rainfall as the most important factors.
Hypothesis:

On the basis of objectives given under chapter one and the review of literature presented in this chapter. The following hypotheses were developed.

(1) There has been no growth or negative growth in area, production and productivity of pulses in the State.

(2) In district Chitrakoot division the growth in area, production and productivity has been positive.

(3) The cost and returns from pulses vary under different size groups.

(4) The production of pulses suffers from many constraints.