“ECONOMICS OF SOYBEAN PRODUCTION AND RESOURCE USE EFFICIENCY IN PANNA DISTRICT OF M.P.”

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by

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CERTIFICATE- I

This is to certify that the thesis entitled **"Economics of soybean production and resource use efficiency in Panna District of M.P."** *submitted in partial fulfillment of the requirement for the degree of* "**MASTER OF SCIENCE IN AGRICULTURE"** *in* **Department of Agricultural Economics** *of the* **Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya Gwalior** *is a record of the bona-fide research work carried out by* **MR. PRADEEP KUMAR PATEL** *under my guidance and supervision. The subject of the thesis has been approved by the Student's Advisory Committee and the Director of Instructions.*

No part of the thesis has been submitted for any other degree or diploma has been published. All the assistance and help received during the course of the investigations has been acknowledged by the scholar.

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ABBREVIATIONS AND ACRONYMS

Abbreviations/ Acronyms	Meaning
Fig.	Figure
&	And
et al.	And co-workers
@	At the rate of
MT	Million tones
Mha	Million hectare
Ha	Hectare
i.e.	In reference to; that is
%	Per cent
Rs.	Rupees
Qtl.	Quintal
Gov.	Government
FAO	Food and agriculture organization
MVP	Marginal value productivity

CHAPTER – I

INTRODUCTION

Soybean (*Glycine max*), is a “miracle crop”, and it is also known as “golden bean” because of its several benefits. It is a good source of protein and oil. It contains about 42% protein and 20% oil. It also contains 21% carbohydrates, 5% minerals, 8% moisture, 4% fibber and vitamins. The soybean protein has good quantity of Lysine (4 to 6%) and the extracted oil is edible which fulfill the need of vegetable oil consumer. In India most of the population is vegetarian and soybean protein is an important source to overcome the short supply of protein. (Jamaal and Sadaqath, 2017). Soybean is the best source among plant-based protein. It contains sufficient amount of vitamins, iron, phosphorus, calcium, and copper etc. which is well suited for human beings. Soybean stands on first place in the world’s vegetable oil production.

In Asia, soybean is often eaten whole, but at present processed soya products are more common in use. Different types of soya products are available, including soya sauce, yoghurt, soya protein, soya flour, tofu, soya milk etc. Soya flour’s biscuits, snacks, papad and sweets also available. Soya products contain less carbohydrates and low cholesterol which is beneficial for diabetic and heart disease patients. It contains phyto nutrients and antioxidants, which is beneficial for health. Soybean contains plant compounds that may help prevent prostate and breast cancer. It also relieves menopause symptoms and reduces the risk of osteoporosis. For sustainability of agriculture systems, soybean plays an important role because leguminous nature of soybean helps in growing oilseed crop globally.

India secures 5th position in world top soybean producer countries. India is Asia’s second largest producer of soybean, and it accounts 3.95% of global production. In India, the states of Madhya Pradesh and Maharashtra account for 89% of the country’s total soybean production. Estimated total production of soybean crop from all India for the year 2019-20 is 112.25 lakh tons from 121.92 lakh hectare area with yield of 921 (kg/ha) according to the Normal estimates 2019-20 by Directorate of Economics & Statistics. In the

Madhya Pradesh soybean is growing on 55.687 lakh hectare with production and productivity of 52.292 million tonnes and 939 Kg/ha respectively. In the Panna district soybean crop growing on 0.042 lakh hectares with production and productivity 0.025 million tonnes and 595 kg/ha based on kharif 2021 SOFA data keeping the above fact in the mind present study was taken on **"Economics of soybean production and resource use efficiency in Panna District of M.P."**

Objectives:

1. To study about cost and return structure of soybean production.
2. To analyze the profitability of soybean production.
3. To examine the resource use efficiency in soybean production.

1.1 Scope of the study:-

The present study is addressed to the farmers to inform them with the cost and profitability concept of Soybean. The results of the study could address the possibilities of increasing returns from Soybean crop. The farmers may use this study to plan their farms and resource use within the limit of input and output prices, considered in the study for accelerating the profitability from cultivation of Soybean.

1.2 Limitations of the Study:-

(i) The study belongs to Panna district of Madhya Pradesh. Therefore, the results of this study are area situation specific and also results of the study related to only specific season i.e. 2021-22 (Kharif)

(ii) The farmers do not keep any systematic and exact records of their farming practices and have provided the information based on their recall memory; hence presence of the memory bias should be ignored in this study.

(iii) The study includes only those factors which are under the control of the farmers and contribute significant role towards the returns and use of resources. There is no reference made to factors like risk and uncertainty.

(iv) Limited number of respondents i.e. 120 are selected for the study, due to the limitation of time and resources.

CHAPTER-II

REVIEW OF LITERATURE

This chapter deals with review of research work already done related to problem of study in hand to provide support to the finding of the present study. The review could also help in reflecting the concept and statement of the objectives under study. The review of literature is a guide line which method of study was considered in the earlier as well as for supporting of the present study. In this chapter, the works of several researchers are mentioned in brief which the researcher have been studied, understood and adopted as the guidance to complete his research. Some of the important and relevant studies done so far in India and abroad are presented under the following sub head.

2.1 Cost of cultivation of soybean.

2.2. Profitability of soybean production.

2.3. Resource use efficiency of soybean.

2.1 Cost of cultivation of soybean

Babu (2001) studied Cost and return of whole farm approch on tribal agriculture in Khammam District of Andhra Pradesh the economics of tribal farming, resources in tribal farming to obtain better returns, the changes brought in the cropping pattern, intensity of cropping and other different developmental programs. The total cultivation cost of all crops put together on whole farm per hectare was worked out. The total costs accounted for were Rs.5,182, Rs.5,467, Rs.4,982 and Rs.5,215 for small, medium, large and all farms respectively. The net returns were highest on large farms (Rs.2492/ha), followed by small (Rs.1,315.49) and medium (Rs.1,244.78) farms.

Morya (2003) stated that on an average total cost of cultivation of soybean production was found Rs 8476/ha. It is also observed that, on an average the contribution expenses on variable cost was of 80 per cent and rest 20 percent was of fixed cost.

Vyas *et al*. (2003) reported that demonstrations of improved production technologies of soybean performed better than local check, it improved the productivity by 53.13 per cent and net return by 54.84 per cent over local check. The integration of different components of technologies of soybean cultivation reduced the cost of production (Rs. /q) by 1.15 per cent.

Perez *et al.* (2004) reported that in Tucuman, Argentina, during 2003-04, with reference to the maize-soybean rotation. An increase of 14% of the area cultivated with soybean was observed in comparison with 2002-03. Three cultural techniques were used, with normal or certified seed: fertilizers and fungicides; fungicides only for rust control; and fertilizers only. The costs of planting, maintenance and harvesting were Rs.400-500/ha, depending on the cultural methods used. An economic study is summarized of soybean monoculture or a rotation of 1 year maize, 2 years soybean. For the rotation, the expenditure was Rs553.77/ha for soybean and Rs.624/ha for maize, the price of soybean was Rs.678/t and of maize Rs.237.52/t. The gross margins for soybean in monoculture were Rs.907/ha over 3 years, while those for the rotation were Rs.1192 and Rs.1050.

Castro, *et al* (2006) this study identifies the economic indexes of cost that influence the decisions made by soybean producers in Bahia, Brazil India. The research is based on the theory of costs. The study showed that expenses on variable resources represent the greater portion of the final cost of soybean, like cost of fertilizers, services, and chemical products. The items with fixed cost, which affected most of soybean production cost in west of Bahia were machinery, equipment and land. The economic study also indicated that not all of the fixed costs were lost, as would be the case if production were discontinued. It is suggested that soybean producers could earn only for a short time, but under the process of recapitalization, these producers could earn in the long run with best economic and alternative use of their investment.

Chandel (2007) reported in his study that, the increased oilseed production and productivity in India has not helped out our country. The study of sustainability of production and productivity of oilseeds, its technological improvement, profitability, Input growth and their efficient use. The area under

six edible oilseed crop namely, rapeseed and mustard (RSM), groundnut (GNUT), sunflower, (SUNF) soybean(SOYA) and safflower (SAFF).Per hectare production of these crops increased from 580 kg to 880 kg which is still 50-60 per cent lowers then the world averages varying from crop to crop registered a growth rate 2.2% per annum. The data from two states Madhya Pradesh and Uttar Pradesh were used to calculate IFP. These states are representative sample of soybean cultivation in India as they account for 85 per cent of the crop area in the country.

Ahirwar *et al.* (2007) found total cost of cultivation was maximum on large (Rs8574.80/ha) as compared to medium (Rs.8538.19/ha) and small (Rs.7680.73/ha) size of farms revealing that soybean production involves high expenditure on purchased inputs viz., seed, fertilizers, insecticides and hired mechanical power. The maximum gross income was found on medium (Rs.13400/ha) followed by large (Rs.12969.50/ha) and small (Rs.11813.00/ha) size of farms. As far as the cost benefit ratio is concerned, it was found to be maximum on medium (1: 1.57), followed by small (1: 1.54) and large (1: 1.51) size of farms. The use of human labour showed positive and significant contributions towards yield of soybean on all sizes except large size of farms. The use of fertilizer and plant protection chemicals showed positive and significant impact on yield on all sizes of farms except large. The other factors of production did not show any positive response towards yield revealing that these factors were not used efficiently by the soybean growers or the quality of the inputs was not up to the mark. The sum of the regression coefficients indicated constant return to scale in all the category of farms. This implies that the further increase in soybean production is possible only through up-gradation of existing production technology either through seed (varietals) replacement coupled with superior inputs, balanced use of fertilizers and judicious farm management practices. This was not only enhance the input use efficiency but was also help to reduce the cost per unitof production of soybean.

Khandwe *et al.* (2007) conducted on the farmer's fields of Chindwara district under Satpura Plateau of Madhya Pradesh during to 2004 revealed that varieties PK 1024, JS 335 and JS 80-21 yields and 78.67, 64.29 and

43.82 per cent higher seed yield as compare to local variety with traditional practices. The productivity of soybean ranged from 10.80 to 22.80 q/ha with the highest average yield to 20.55 q/ha under recommended practices. There was an increase of 55.42 to 91.16% in seed yield over local check. The demonstrations gave an additional income of Rs.8100 to 16735/ha and 3.02 to 6.25 incremental benefit cost ratio.

Jing (2011) examined Soybean production in China is affected by low yield per hectare caused by technical inefficiency in production inputs. This paper measures impact of excessive fertilizer input on soybean production utilizing a stochastic frontier production function model and a data envelopment analysis method to estimate technical efficiency and scale factors in farmer-level soybean production. The paper also examines problems related to excessive fertilizer input. Results indicate the presence of certain technical and scale efficiency losses in soybean production, severe technical efficiency loss in fertilizer input and output per unit, and excessive fertilizer input per hectare. Results also reveal that farmers should decrease their fertilizer input by 33% per hectare to optimize the proportion of inputs. The study provides important information that the technical misunderstanding of the application of fertilizers that "the more fertilizer, the more yield" during the fertilizing process can be avoided and the farmers' soybean production efficiency can be effectively improved if they can obtain training on fertilizer use and technical supports from public extension system. Furthermore, expanding the area of cultivation of soybean farmers can also effectively reduce the scale efficiency loss.

Bhavsar (2012) reported that on an average per hectare cost of cultivation of soybean crop under cost A_1, cost B_1, and cost B_2 was observed Rs.12302.77, Rs.15319.77, Rs.21664.10, respectively. In present study there is no cost A_2 because farmers used their own land for cultivation of soybean. The study revealed that Rs.19720.77/ha incurred as Cost C_1 followed by Rs.26065.10/ha Cost C_2 and Rs.28672.01/ha cost C_3. The average yield of soybean in the study area was found to 15.03 quintal per hectare which shows very satisfactory in respect to average yield of Madhya Pradesh i.e. about 11.35 quintal per hectare. The overall gross

income (main product + by product) per hectare of this crop was found to Rs.38066/ha. The other measurement of farm profit like net income found to on an average Rs.18345.23/ha on cost-C_1, Rs.12000.90/ha on cost-C_2 and Rs.9393.99/ha on cost-C_3.The average B-C ratio was observed over cost cost-C_1, cost C_2 and cost C_3 1:1.93, 1:1.46 and 1: 1.33 respectively.

Solanki *et al*. (2013) examine the district wise compound growth rate in APY of soybean in Madhya Pradesh. Study found that among out of 39 districts only twenty two districts having the positive growth and two districts namely Tikamgarh and Sheopur found negative growth in area, production and yield. Four districts namely Jabalpur, Narsinghpur, Shahdol and Hosangabad observed that negative CGR area and production but positive growth in yield. The negative growth in area and production was observed in Jabalpur district which was -16.29 and -15.04 per cent respectively. The maximum positive growth in area and production was observed in Anuppur district but it was examined for six years only therefore maximum positive was noted in district Shivpuri which was 9.00 and 10.14 per cent respectively. The substantial improvement in production has been noticed due to concerted efforts on soybean development in the state of Madhya Pradesh as well as in the country, resulting in a positive growth rate in area and production of soybean.

Aggarwal and Singh (2016) studied on the cost and return structure and resource use efficiency of soybean cultivation in Madhya Pradesh. The average cost of cultivation was observed `25454.66 on overall farms and it was highest on small farm followed by medium and large farms, respectively. On average per hectare gross return from soybean was highest on large farm as compared to small and medium farms. The cost of production of soybean was 1397.28 per quintal at overall level. The benefit-cost ratio was lowest in the case of small and highest in the case of large farmers.

Sharma (2016) studied Soybean has emerged as a leading oilseed crop in India which accounts for 55.6 per cent of area under kharif oilseeds and 38 per cent of area under total oilseeds during TE 2012-13, 42.5 per cent of total oilseeds production, and contributing to 28.6 percent of the total vegetable oils production in the country. Input use, cost, returns and

profitability of soybean cultivation for major soybean growing states was analyzed by using CACP data. The inverse relationship in cost of production and productivity of soybean was observed in major growing states. As the productivity of crop is the major factor in reducing the relative cost of production government should focus on the non-price incentives to increase the productivity and also to reduce the cost of cultivation, apart from price incentives.

S.K.Jamanal and Syed Sadaqath (2017) conducted the study was undertaken in Dharwad district of Karnataka State during the year 2013-14. The study covered 15 villages from 3 talukas of Dharwad district to form a sample of 150 respondents. A pre-tested structured interview schedule was used to collect the data from the respondents by personal interview method. The findings of the study reported that, for the country as a whole, the resulting growth rate of soybean area under cultivation was 0.41 per cent per annum for the period 2003-04 to2012-13.

Tiwari and Ramchandra (2022) investigated that total cost of cultivation for marginal small and medium soybean grower was Rs 23071.85 per ha, 25919.21per ha, Rs 26602.55/ha respectively on an average cost of cultivation 26394.69 on one hectare of land for soybean the yield of soybean procured by the producer in the study period was found to be 11.44 qt/ha on the overall basis and higher yield in medium farms. Gross income from per hectare of soybean cultivation was noted Rs 39598.08/ha and net return was Rs 13203.39 per hectare cost of production of soybean was calculated 26394.69 qt/ha benefit cost ratio was found out to be 1:1.50.

2.2. Profitability of soybean production

Pawar *et al.* (2000) studied an overall productivity level of soybean by 114 soybean growers from 6 villages in Satara district. The highest productivity was obtained on large sized farms (26.82 q/ha) and the lowest on small farms (22.55 q/ha). The cost of cultivation was Rs.10958 per hectare at the overall level. The gross and net returns were Rs.22200 and Rs.11242, respectively, input-output ratio for soybean cultivation worked out to 1:1.97, which indicates that soybean production is economically profitable proportion.

Mandal, *et al.* (2002) reported that Bioenergy and economic analysis of soybean-based crop production systems in central India. examined the energy requirement and energy input-output relationship of soybean-based crop production systems viz., soybean (*Glycine max* (L.) Merr.) Wheat (*Triticum aestivum* L.), soybean-mustard (*Brassica juncea* (L.)Czern & Coss.)and soybean-chickpea (*Cicer arietinum* L.) in central India. Using a pre-tested questionnaire, 135 farmers were selected through a multi-stage stratified random sampling technique. Though the net return from soybean-wheat was marginally higher than other systems, the soybean-chickpea system is more suitable in the central ecological niche of India due to its low requirement for non-renewable resources, higher EUE and benefit-cost ratio.

Kakade, *et al.* (2009) conducted a study during 2006-07 in Nagpur District of Maharashtra state. Under soybean seed production, average per hectare total cost *i.e.*, cost C was worked to Rs.16172.72. The input-output ratio for soybean seed production at cost 'C' was 1:1.20 which indicated that soybean seed production was profitable preposition.

Tomar and Sawarkar (2010) seventy two front line demonstrations on farmer's field on soybean crop wise conducted under NATP project by Zonal Agricultural Research Station Chhindwara (M.P.) during 2001-2003. The specific objective of these FLD'S was to demonstrate improved technology (HYV JS – 335, 20:80:20 NPK kg/ha plant protection measure) to moderate farming community for obtaining highest yield. Results revealed that 17.18 q/ha yield and profit of Rs. 11208/ha was obtained through improve technology, which were highest 35.62 per cent in yield and Rs. 3924/ha more in net profit than 13.12 q/ha yield obtained by the use of untreated old seed of variety JS-335 and 7.20 NP Kg/ha (farmers practices)

Xiu Qing (2011) investigated factor productivity for China's soybean production increased by 1.5% annually, with productivity growth, mainly, from technological progress. However, both technical efficiency and technical progress showed a decreasing trend through time. Clearly, market liberalization has produced negative impact on China's soybean productivity.

Hazari and Khobarkar (2015) conducted research on production of soybean in the Akola district of Maharashtra is based on the data collected from 90 soybean producers in the Tehsil of balapur, barshitakli and akola of akolla district during 2013-14. The results of study revealed that soybean cultivation in Maharashtra is profitable enterprise as the returns per rupee invested have been found to be Rs 1.08 on overall basis, varying from Rs 1.13 on small farms to Rs 1.14 on large farms. The cost on machine labour (15.52 %) and hired labour (11.50 %) has emerged as the major components in the total operational costs.

Srivastava *et al.* (2015) studied that the total cost increased with the increase in the farm size. All costs increased with increase in farm size. The net income, family labour income, farm business income and farm investment income is increases with increase in farm size. Output input ratio indicates that the return to every rupee of investment in soybean cultivation increased with increase in farm size. Manure, chemical fertilizer and machine works have significantly influenced the production of soybean in the study area.

Gautam *et al.* (2018) reported net return per ha of soybean production over cost C_3 was highest on large farmers (Rs. 21318.30/ha) followed by medium and small farmers with Rs. 16599.11 per ha and Rs. 14257.97 per ha, respectively. On overall basis, net returns over cost C_3 was estimated at Rs. 17321.06 per ha. The net return over direct cost i.e., cost A_1 on overall basis was found to be Rs. 51315.83 per ha and it was highest for large farmers (Rs. 54794.81 per ha) and lowest for the small farmers (Rs. 51150.89 per ha.

2.3. Resource use efficiency of soybean

Gaddi et al. (2002) observed that Yield gap constraints and potential in cotton production in North Karnataka an Economics analysis. with the help of capital, input did not exert any significant influence on cotton production, while the plant nutrients (-0.2452) was excessively used in the cause of sample farms also, the Cobb-Douglas. Type of production function turned to be good fit since R2 and F-values were significant at one per cent probability level. About 90 per cent of the variation in cotton production on the farmers' fields

was explained by the variables included in the model. The production elasticity of all inputs on all the farmer's fields were variably in lower than unity implying diminishing marginal productivity with respect to each of these inputs human labour and capital. Coefficient was significant at one per cent on all. The farms Seed coefficient exerted significant influence on cotton production on all sample farms, barring large farms were in the coefficient was negative (0.1042), but not significant. The geometric mean value of inputs showed that human labour and bullock labour worked used in higher quantity on demonstration plots, whereas use of all the inputs was more on the farmers filed.

Pant and Nagar (2005) conducted a study to measure the resource use efficiency of soybean to indicate the productivity of individual inputs. Jhalwar district was selected on the basis of highest soybean area and production among all the soybean growing districts of Rajasthan state. One tehsil in the selected district and three villages in selected tehsil were randomly selected. The soybean growers of each village were divided in to three farm size group, viz. small (upto2ah),medium (2-4ha) and large (above4ha). Twenty farmers from each village were randomly selected in proportion to their size of holding to make a total of 60 farms in all the data were collected for the agricultural year 1999-2000. Resource use efficiency was estimated by fitting the Cobb-Douglas type of production function of to farm level data. The study revealed that among the four input variables i.e. seed, FYM, human labour and fertilizer tried in production function analysis.

Nale (2005) study conducted that resource use efficiency of manures and fertilizer was positive and significant in case of JS-33S, while in case of MAUS 81 regression coefficient of bullock labour and machine labour were positive and significant indicating that to increase the level of these inputs so as to step of the production of soybean.

Pawar, *et al.* (2011) found in his study that, partial regression coefficients of phosphorus (0.081) and plant protection (0.055) were positive and significant at 1 per cent level of significance. Similarly partial regression coefficients of machine labour (0.427) and nitrogen (0.028) were positive and significant at 5 per cent level of significance. It could be inferred that, if one per

cent increased in use of phosphorus, plant protection, machine labour and nitrogen, it would lead to increase the soybean production by 0.081, 0.055, 0.427 and 0.028 per cent, respectively. Thus, it implied that, there was scope to increase these resources in soybean production.

Mugabo *et al* (2014) investigated that elasticities of production with respect to soybean plot size, fertilizers and pesticides were positive and less than one, indicating decreasing returns to each of these factors. The sum of input elasticities (0.98) is however closer to unity, indicating overall constant returns to scale. Results showed also that the marginal productivity of land was higher than that of the other factors used in the production of soybean in the study area. This led to higher marginal value product for land. This would not however imply that farmers are more technically efficient in land use than in other factors, since units of factors of production are different. The ratios of MVP to MFC for soybean plot size (1.73), fertilizers (1.36) and pesticides (1.92) were greater than one. These ratios indicate that too little of these inputs are being used in relation to the prevailing market conditions. Hence the farmers are allocative inefficient in the use of the available land and capital inputs. This implies that there were ample opportunities for the farmers to increase production by using more of these inputs.

Kumar *et al*. (2018) examined in his study that the R^2 value for average production was observed to be 0.73 which indicate that function was good fit and able to explain the independent variable to an extent of 73 percent. The elasticity coefficient was found to be 0.804, which shows that return to scale, was decreasing state. The value of coefficient of fertilizer (0.664) and plant protection (0.804) was observed positive and highly significant. The value of coefficient of seed (-0.147) labour (0.211) and irrigation (-0.001) was found negative but significant, revealed that the above resources were not used at their optimum level. Marginal value productivity of resources and their ratio to their respective paddy was observed and found that the factor X_1, X_3 and X_4 was over utilized in the study area, whereas factor X_2 and X_5 was found underutilization and leaving scope for their increase use.

Naik *et al.* (2018) studied that seed, FYM, human labour, bullock labour and fertilizer were over utilized and machine labour and plant protection chemicals

were under utilized by the farmers. The MVP to MFC ratio for seed (-0.59), FYM (0.27), human labour (0.13), bullock labour (-0.23), fertilizer (-0.05) were less than 1 hence the resources in study area was over utilized and machine labour (3.60) and PP chemicals (2.21) were showing more than one. Hence these resources are underutilized hence there is scope for increasing these resources.

Patel (2021) observed the value of the sum of the elasticity of production was 1.06, which meant that the increase in return to scale was seen in the soybean production. The value of coefficient of fertilizer (0.1129), seed (0.3802), machinery (0.7155), and weedicide (0.0307) were observed positive and highly significant. Whereas the value of coefficient of PPC (-0.0666), and labour (-0.1132) were noted negative but significant except for plant protection chemical, which revealed that the above resources were not used at their optimum level.

CHAPTER-III

RESEARCH METHODOLOGY

This chapter describes the characteristics of the study area, the sources and nature of data used for the study, the sampling methods adopted for the collection of required data, statistical tools and techniques employed for analyzing the data and concepts used in the study. Present study was constricted to Panna district of Madhya Pradesh.

3.1 Sampling procedure: -

The multistage sampling was used to select the ultimate unit.

3.1.1 Selection of district: -

In the first stage of sampling Panna district was selected purposively for the research.

3.1.2 Selection of block: -

Panna district has 5 blocks namely Panna, Gunnor, Pawai, Ajaygarh, Shahnagar, in the second stage of sampling out of them two blocks Panna and Gunnor were selected for the study.

3.1.3 Selection of Village

In the third stage of sampling, a list of soybean growing villages was prepared from Panna and Gunnor block. Then four villages were selected (two from each block) from the selected blocks.

Selection of farmer

In the fourth stage of sampling, a list of soybean growing farmers from selected villages was prepared than randomly 120 farmers were selected for the study (60 from each block)

3.2 NATURE OF DATA:-

3.2.1 Primary data:-

The study required primary data which was collected from selected block through soybean grower farmers by using interview schedule.

3.2.2 Period of the study:-

All the collected primary data was related for the agricultural year 2021-2022 kharif seasons.

3.3 ANALYSIS OF DATA:-

The collected data was analyzed, tabulated in the view of the cited objectives and interpreted by using suitable statistical and economic measures. Followings statistical measures were used in present study.

3.3.1. Cost concepts:

Cost A_1: It includes: -

Value of hired human labour,

Value of hired and owned bullock labour,

Value of hired and owned machinery labour,

Value of owned and purchased seed,

Value of fertilizers, manures and chemicals,

Value of insecticide and pesticides,

Expenditure on irrigation,

Land revenue and taxes,

Interest paid on crop loan if taken,

Depreciation on farm assets excluding land,

Interest on working capital,

Miscellaneous expenses.

Cost A_2: Cost A_1 + rent paid for leased in land

Cost B_1 : Cost A_2 + interest on value of owned fixed capital assets. (Excluding land)

Cost B_2: Cost B_1 + rental value of owned land

Cost C_1: Cost B_1+ imputed value of family labour

Cost C_2: Cost B_2 +imputed value of family labour

Cost C_3: Cost C_2 + 10 per cent of cost C_2 to account for managerial input of the farmer.

3.3.2 Profitability concepts:

Profitability of soybean production was analyzed with the help of following concepts .

Gross income: It is defined as: total value of main product +total value of by product.

Net farm income (NFI) = Gross income – Cost C_3 (total cost)

Family labour income (FLI) = Gross income – Cost B_2

Farm business income (FBI) = Gross income –Cost A_1

B:C ratio (Benefit cost ratio) = Gross income/ Gross expenses

Cost of production per quintal:

$$\text{Cost of production per quintal} = \frac{\text{total cost} - \text{value of by product}}{\text{Output/hactare (quintal)}}$$

3.4.1 Resource use efficiency was worked out with the help of Cobb Douglas production function.

$$Y = ax_1^{b1} x_2^{b2} X_3^{b3} X_4^{b4} X_5^{b5}$$

(Where y is dependent variable and $x_1 ... x_5$ are independent variable)

A is constant $b_1 ... b_5$ coefficient

Y = gross income (Rs/ha)

X_1 = cost of fertilizer (Rs/ha)

X_2 = cost of seed (Rs/ha)

X_3 = cost of plant protection chemicals (Rs/ha)

X_4 = cost of labour (human + bullock) (Rs/ha)

X_5 = cost of machine labour(Rs/ha

CHAPTER - IV

RESULTS AND DISCUSSION

This chapter deals with analysis, interpretation of primary data collected from respondent for the investigation of facts and findings. The processed data is tabulated in this chapter in the light of the objectives of the study. With the help of tabulated data it is easier to draw the inferences. As per objectives the results have been presented under following subheads –

4.1. Cost and return of soybean cultivation

4.2. Profitability of soybean production

4.3. Resource use efficiency

4.1 COST AND RETURNS OF SOYBEAN PRODUCTION

The cost of cultivation of soybean production was calculated after analysis of primary data collected through interview schedule from respondent in the study area and the results are presented in table. 4.1.1.

Per hectare average cost of cultivation of soybean crop was observed Rs. 37802.94. Between the two block the maximum cost were observed at Panna block (Rs.38164.36 /ha**)** followed by Gunnor block (Rs.37441.52/ha). On an average, cost A_1 share Rs 20854.76 /ha of the total cost which was highest observed at Panna block (Rs 21185.88/ha) followed by Gunnor (Rs 20523.65/ha) which indicates that expenditure of Panna block farmers is more on variable inputs as compared to Gunnor block. On an average, in the cost A_1 highest cost share by seed Rs.7015.24 /ha (18.56 per cent) followed by plant protection Rs 3164.37 /ha (weedicide Rs 1103.72/ha and insecticide Rs 2060.66/ha), harvesting and threshing (Rs 2853.98 /ha), ploughing (Rs 2197.73/ha), fertilizer (Rs 1487.93/ha), manure (Rs 1251.74), human labour (Rs 1068.74/ha), interest on working capital (Rs1142.38/ha) depreciation (Rs 630.67/ha) and land revenue Rs 42 /ha.

In the average total cost (Cost C_3), cost A_1 share Rs 20854.76 /ha, rental value of land share Rs.12000 per hectare, imputed value of family labour share Rs 1016.25 /ha, managerial cost Rs 3436.63 /ha and interest on fixed capital was share Rs 495.30 per ha.

Table 4.1.1: Block wise cost of cultivation of soybean production (Rs/ha)

SN	Particulars	Physical Unit	Gunnor Block		Panna Block		Average
			Qty.	Value (Rs)	Qty.	Value	
1.	Ploughing	Number	2	2150.21 (5.74)	2.00	2245.25 (5.88)	2197.73 (5.81)
2.	Human labour	Days	4	1187.25 (3.17)	4.00	950.22 (2.49)	1068.74 (2.83)
3.	Harvesting and Threshing	Hr.	2.2	2750.74 (7.35)	2.70	2957.22 (7.75)	2853.98 (7.55)
4.	Seeds	Kg	98.58	6878.22 (18.37)	101.52	7152.25 (18.74)	7015.24 (18.56)
5.	Fertilizer	Kg	45.58	1523.21 (4.07)	43.58	1452.65 (3.81)	1487.93 (3.94)
6.	Manure	Tonnes	3.78	1253.22 (3.35)	3.25	1250.25 (3.28)	1251.74 (3.31)
7.	Plant protection (a+b)	Rs.		3026.10 (8.08)		3302.64 (8.65)	3164.37 (8.37)
a.	Weedicide	Rs.	-	1050.77 (2.81)	-	1156.66 (3.03)	1103.72 (2.92)
b.	Insecticide	Rs.	-	1975.33 (5.28)	-	2145.98 (5.62)	2060.66 (5.45)
8	Interest on working capital		-	1126.137 (3.01)	-	1158.62 (3.04)	1142.38 (3.02)
9	Depreciation	Rs.	-	586.56 (1.57)	-	674.77 (1.77)	630.67 (1.67)
10	Revenue tax	Rs.	-	42 (0.11)	-	42 (0.11)	42.00 (0.11)
11	**Cost A_1/A_2**	**Rs.**	**-**	**20523.65**	**-**	**21185.88**	**20854.76**
12	Interest on fixed capital	Rs.	-	451.60 (1.21)	-	538.99 (1.41)	495.30 (1.31)
	Cost B_1			20975.25		21724.87	21350.06
13	Rental value owned Land	Rs.	-	12000 (32.05)	-	12000 (31.44)	12000.00 (31.74)
14	Cost B_2			32975.25		33724.87	33350.06
15	Imputed value of family Labour	Rs.	-	1062.5 (2.84)	-	970 (2.54)	1016.25 (2.69)
16	Cost C_1			22037.75		22694.87	22366.31
17	Cost C_2			34037.75	-	34694.87	34366.31
18	Managerial cost			3403.775 (9.09)		3469.48 (9.09)	3436.63 (9.09)
18	**Total cost($CostC_3$)**			**37441.52** (100.)		**38164.36** (100)	**37802.94** (100)

Source: Field survey (Primary data) 2020-21

Note*- The figure in brackets shows the percentage of total cost in the concerned block.

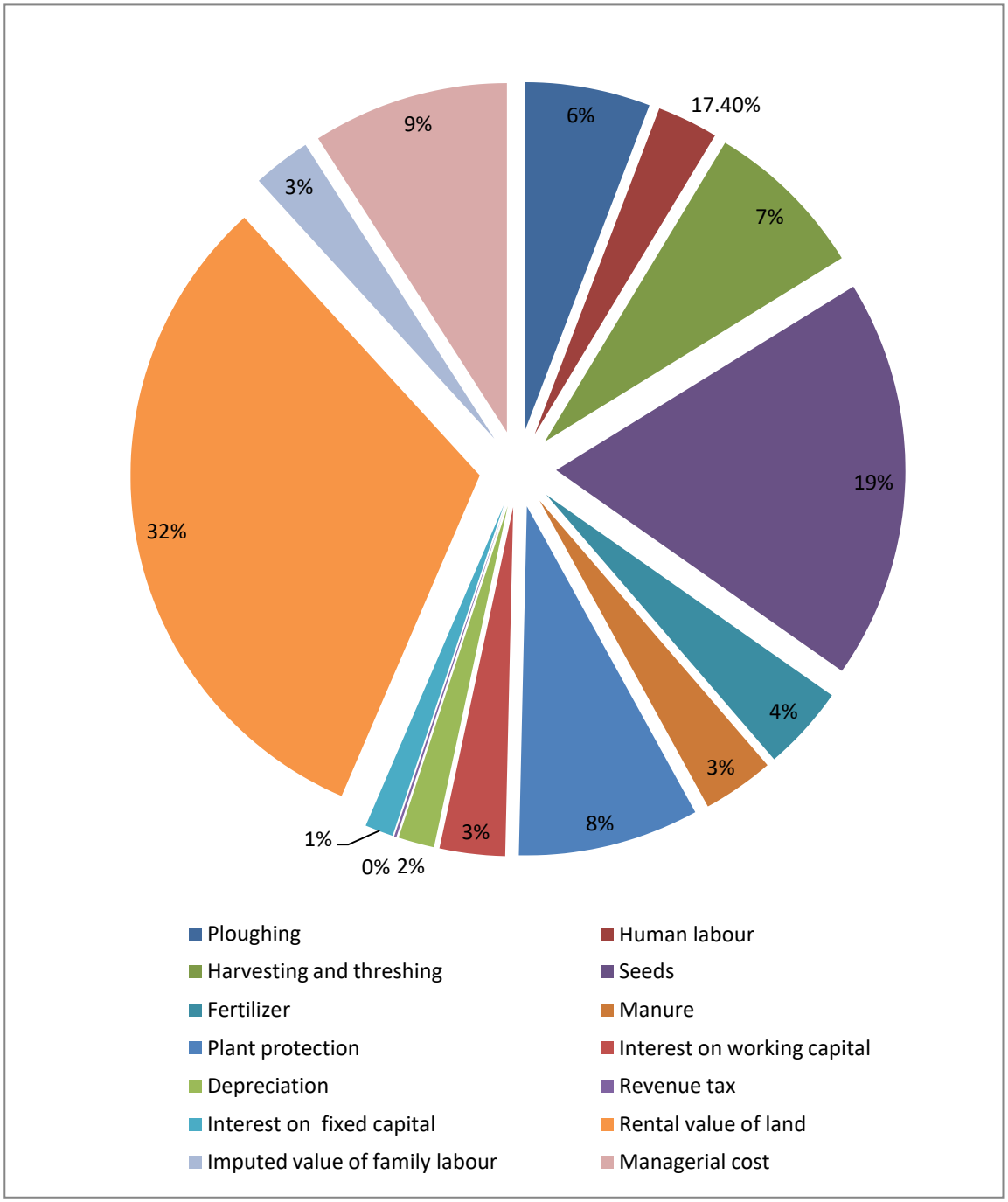

Fig 4.1.1: Average percent share of different cost in the total cost C_3

4.1.1 Concept wise cost of cultivation

Cost of cultivation is an important tool for measuring farm economic activities. The different type of cost are specified under cost concept which are cost A_1, cost A_2, cost B1, cost B_2, cost C_1, cost C_2 and cost C_3. These cost concepts have already discussed in research methodology chapter. The results are presented in table 4.1.2.

The table shows that average cost A_1 was found to be Rs. 20854.76/ha which was highest at Panna block (Rs 21185.88) as compared to Gunner block (Rs 20523.65). Cost A_2 and A_1 were equal which indicated that leasing pattern was not adopted by respondent in the study area. The cost B_1 and B_2 were observed Rs 21350.06/ha and Rs. 33350.06/ha. The cost C_1 and C_2 and C_3 were observed Rs. 22366.31/ha, Rs. 34366.31/ha and Rs 37802.94 per ha respectively. All cost namely cost A_1, A_2, B_1, B_2, C_1, C_2 and C_3 were found highest at Panna block as compared to Gunnor block, this revealed that expenditure of soybean growers of Panna block was more on cultivation of soybean crop due to variable inputs or working expenses as compared to farmers of Gunnor block.

Table 4.1.2: Concept wise cost of cultivation in soybean production (Rs/ha)

Cost concept	Gunnor	Panna	Average
Cost A_1	20523.65	21185.88	20854.76
Cost A_2	20523.65	21185.88	20854.76
Cost B_1	20975.25	21724.87	21350.06
Cost B_2	32975.25	33724.87	33350.06
Cost C_1	22037.75	22694.87	22366.31
Cost C_2	34037.75	34694.87	34366.31
Cost C_3	37441.52	38164.36	37802.94

Source: Authors computation based on primary data**,** 2020-21

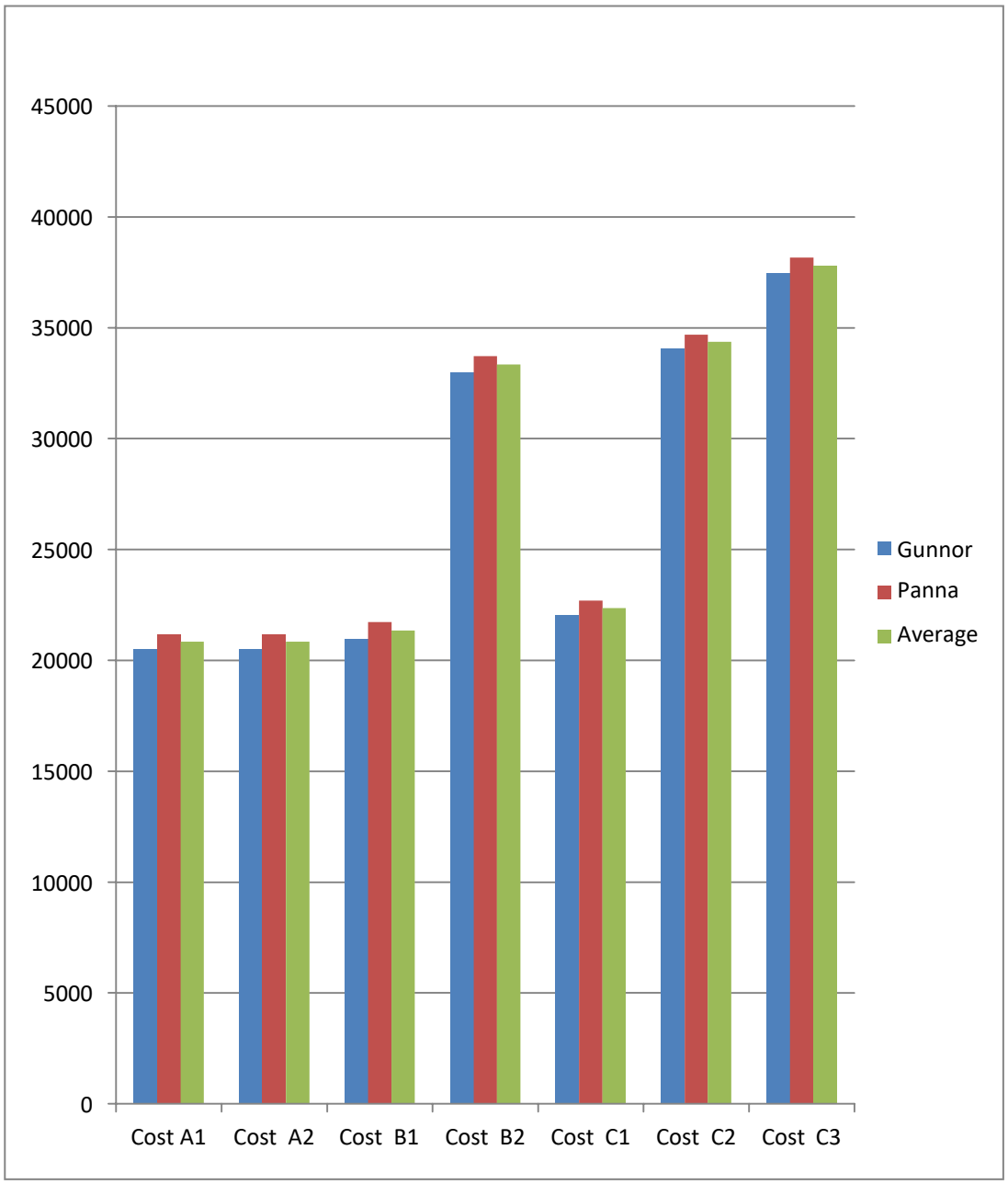

Fig. 4.1.2: Cost component wise average cost of cultivation of soybean production (Rs/ha)

4.2. PROFITABILITY OF SOYBEAN PRODUCTION

Profitability of soybean cultivation is depending upon productivity of crop and price received from market based on the quality and quantity of crop and time of selling. The results of profitability analysis are presented in the table 4.2.1.

The overall per hectare gross income of average soybean production was observed Rs 44607.94./ha. Between the two blocks highest gross return was found to be under Panna block Rs 45980.61/ha as compared to Gunnor block Rs 43235.27/ha. The overall costs C_3 were found to be Rs. 37802.94/ha, cost of production Rs.3597.23/qtl. The Cost of production was found highest at Gunnor block (Rs 3973.83/qtl) as compared to Panna block (Rs 3220.62 /qtl). On an average net farm income was observed Rs.6805.00/ha which was maximum found at Panna block because at this block per quintal cost of production noted less as compared to Gunnor block this indicated that cost of production inversely related with net return. An average farm business income and family labour income were found to be Rs 23753.18/ha and Rs 11257.88/ha. The B: C ratio indicates the return per rupee investment an average B:C ratio was observed 1.18 which varies 1.15 to 1.20 between Gunnor and Panna block respectively.

Farmers have done their crop harvesting by harvest combiner so that the want not received by-product.

Table 4.2.1 Block wise profitability of soybean production (Rs/ha)

Particular	Gunnor	Panna	Average
Main product(qtl/ha)	10.88	11.85	11.37
By product (qtl/ha)	0.00	0.00	0.00
Price of main product (Rs/qtl)	3973.83	3880.22	3927.03
Price of by Product (Rs/qtl)	0.00	0.00	0.00
Gross Return (Rs/ha)	43235.27	45980.61	44607.94
Total cost (Cost C_3) Rs/ha	37441.52	38164.36	37802.94
Net income Rs/ha	5793.75	7816.25	6805.00
Cost of production (Rs/ qtl)	3973.83	3220.62	3597.23
Farm business income (Rs/ha)	22711.62	24794.73	23753.18
Family labour income (Rs/ha)	10260.02	12255.74	11257.88
B:C ratio	**1.15**	**1.20**	**1.18**

4.2.1 Benefit cost ratio over different cost in soybean production

B:C over different cost was analyzed for measuring return from the investment of one rupee in the production of soybean. The benefit cost ratio was worked out over different costs and finding is presented in table 4.2.2.

The data on input-output (B: C) ratio indicates that the return from the investment of rupee one in the production of soybean gives more than one rupee return. On an average input-output ratio (B:C Ratio) over cost, A_1, A_2, B_1, B_2, C_1, C_2, C_3 were observed 2.14, 2.14, 2.09, 1.34, 1.99, 1.30, and 1.18. The input-output ratio over total costs was found to maximum (1.20) in the Panna block followed by Gunnor block (1.15).The estimated input-output ratio indicated that soybean production is profitable in the study area because B: C ratio was observed greater than one.

Table 4.2.2 Benefit cost ratio over different cost in soybean production

Particular	Gunnor	Panna	Average
Cost A_1	2.11	2.17	2.14
Cost A_2	2.11	2.17	2.14
Cost B_1	2.06	2.12	2.09
Cost B_2	1.31	1.36	1.34
Cost C_1	1.96	2.03	1.99
Cost C_2	1.27	1.33	1.30
Cost C_3	1.15	1.20	1.18

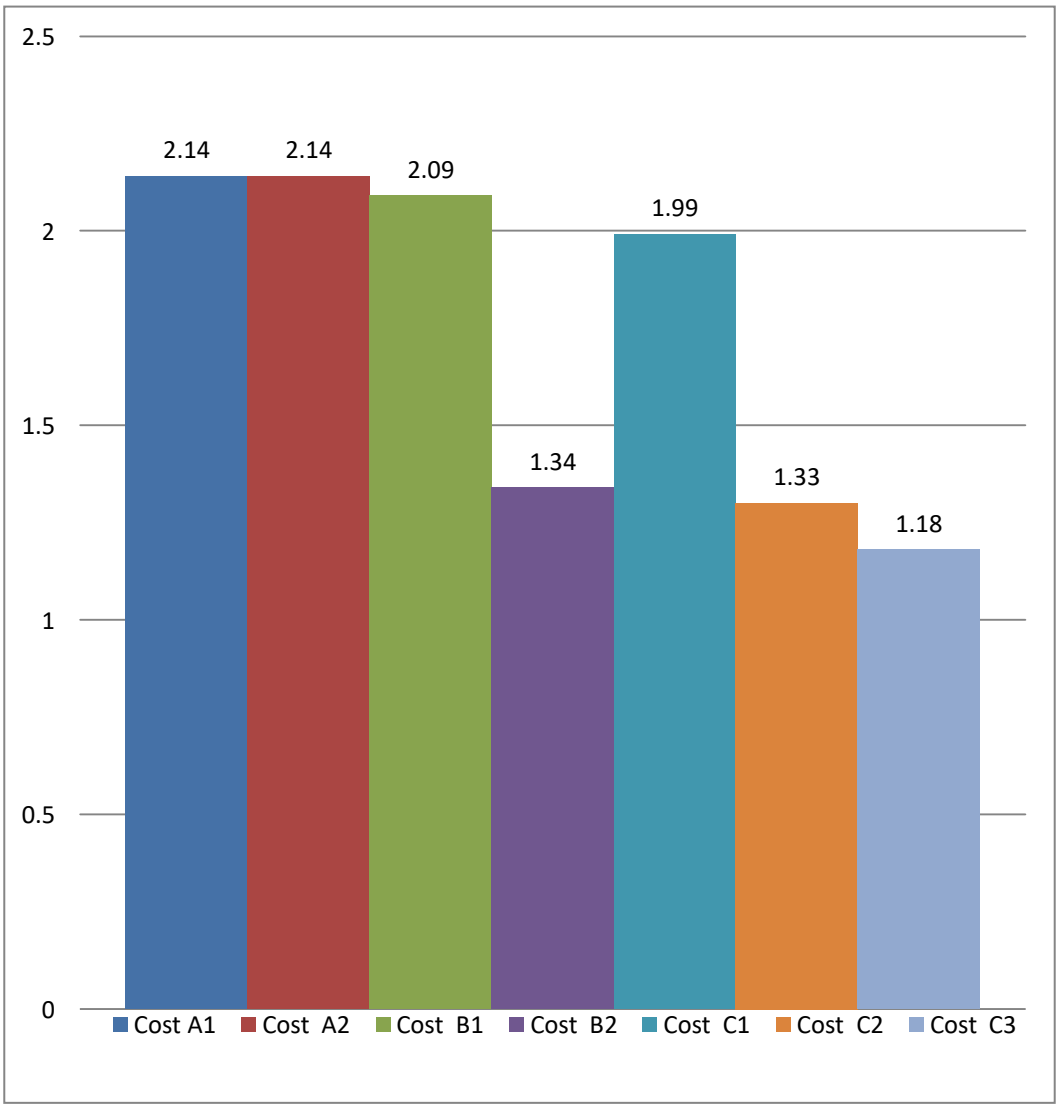

Fig. 4.2.1: Average B: C Ratio over different cost in the soybean production

4.2.2 Net income over different cost in soybean production

Block wise and overall basis net income under different costs were calculated and results are presented in the table 4.2.3.

Average net income under cost A_1, A_2, B_1, B_2, C_1, C_2 and C_3 were observed to be Rs 23753.18/ha, Rs 23753.18/ha, Rs 23257.88 /ha, Rs 11257.88/ha, Rs 22241.63/ha, Rs 10241.63/ha and Rs 6805.00/ha respectively. Net income over cost C_3 between two block was observed Rs 7816.25/ha and Rs 5793.75/ha at Gunnor and Panna block respectively.

Table: 4.2.3 Net income over different cost in soybean production (Rs/ha)

Particular	Panna	Gunnor	Average
Cost A_1	22711.62	24794.73	23753.18
Cost A_2	22711.62	24794.73	23753.18
Cost B_1	22260.02	24255.74	23257.88
Cost B_2	10260.02	12255.74	11257.88
Cost C_1	21197.52	23285.74	22241.63
Cost C_2	9197.52	11285.74	10241.63
Cost C_3	5793.75	7816.25	6805.00

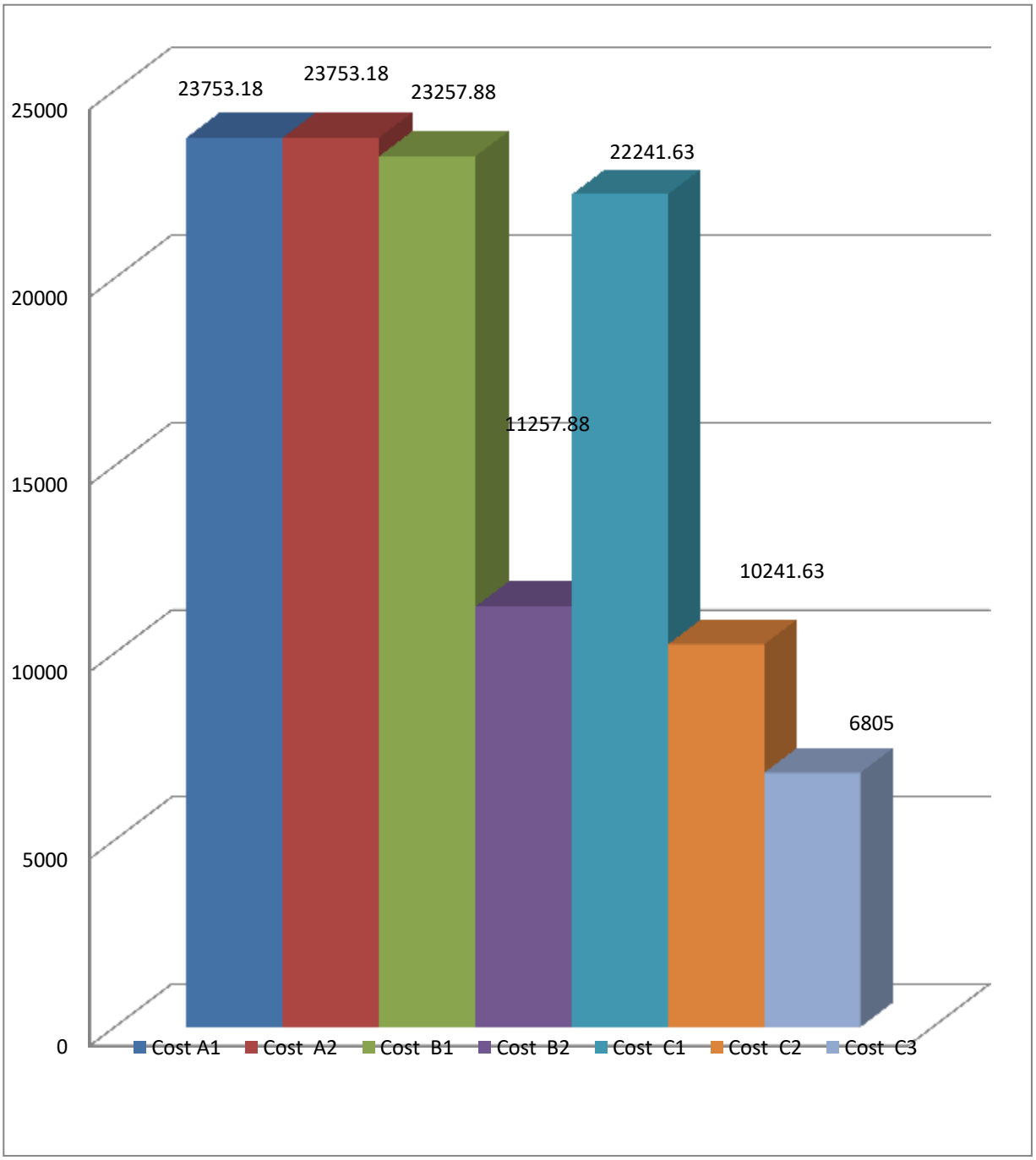

Fig. 4.2.2: Average Net income over different cost (Rs/ha)

4.3.1 Resource efficiency of soybean production in the study area

The Cobb Douglas production function was used to find out resource use efficiency of soybean production in the study area. Five resources were considered to analyse resource use efficiency i.e. fertilizer (x_1), seed (x_2), plant protection (x_3), labour (x_4) and machinery(x_5). Determination of coefficient (R^2) was found 0.85 which indicates that the function was a good fit and gives signal that 85 percent variation in output due to all these five factors. All the coefficient of production namely x_1 (fertilizer), x_2 (seed), x_3 (plant protection), x_4 (labour) and x_5 (machinery) were observed to be positive. Which indicates that over expense is not done by the farmers on these inputs in the production of soybean. Among the entire five variables, plant protection and machinery were observed highly significant which indicates that expense on plant protection chemical and machinery labour increase in the soybean production more profit can be achieved by farmers.

The MVP of all the resources (except seeds) were observed to be greater than one which indicates that seed is over utilize by the farmers while fertilizer, plant protection chemical, labour and machinery were observe underutilized. Hence it is concluded that income of farmers can be increase by rational use of underutilized resources and less of over utilized resources in the production of soybean crop in the study area.

Table 4.3.1: input wise resource efficiency of soybean production

Variable	Coefficient	SE	T value	MVP
Intercept	-0.1448	0.5189	-0.2791	
X_1 (Fertilizer)*	0.0400	0.0504	0.7952	1.0928
X_2 (Seed)*	0.1220	0.1038	1.1751	0.7063
X_3(Plant protection Chemical)**	0.3945	0.1287	3.0661	5.0621
X_4 (Labour)*	0.1580	0.1416	1.1163	6.0046
X_5 (Machinery)**	0.6011	0.1379	4.3580	8.5530
∑Bi	1.32			
R^2	0.85			

Note * indicated significant at 5 percent level probability
** indicated significant at 1 percent level probability

CHAPTER- V

SUMMARY, CONCLUSION AND SUGGESTION

Soybean is an important oil seed legume crop in the India and world. It contains about 20 per cent oil and 42 per cent high quality protein. It is termed as *"GOLDEN BEAN"* of the 20th Century because of its unique qualities. This crop covered 54 per cent of the area under kharif oilseed crops and 37 per cent of the area of total oilseeds crops in India. Soybean sharing 14 per cent in the country's gross cropped area and about 3 percent of the gross domestic product and about 6 per cent of the value of all types of agricultural products (ICAR-IIOR,2015) India secures 5th position in world top soybean producing countries. In India only Madhya Pradesh state produce 50 per cent (42.001 MT) soybean of India's total production (83.504 MT) and its covered 50 per cent (50.100 lakh ha.) area of total soybean crop area (101.61 lakh ha.) of the country, Based on kharif 2017 SOPA data. Thus Madhya Pradesh is known as **'soya-state'**. In the Madhya Pradesh soybean is growing on 5786300 hectare with production and productivity of 6497100 tonnes and 1124 Kg/ha respectively. In the Panna district soybean crop growing on 0.042 lakh hectares with production and productivity 0.025 million tonnes and 595 kg/ha based on kharif 2021 SOFA.

Objective –

1. To study about cost and return structure of soybean production.
2. To analyse the profitability of soybean production.
3. To examine the resource use efficiency in soybean production**.**

The multistage sampling was used to select the ultimate unit. In the first stage of sampling Panna district was selected purposively for the research purpose. Panna district has 5 blocks namely Panna, Gunnor, Pawai, Ajaygarh, Shahnagar, in the second stage of sampling out of them two blocks Panna and Gunnor was selected for the study. In the third stage of sampling, a list of soybean growing villages were prepared from Panna and Gunnor block then four villages were selected from the

Gunnor and Panna blocks. In the fourth stage of sampling, a list of soybean growing farmers from selected villages was prepared then randomly 120 farmers were selected for the study (60 from each block). The study required primary data which was collected from selected soybean grower by using interview schedule.

5.1 SUMMARY:–

- Per hectare average cost of cultivation of soybean crop was observed Rs. 37802.94 which was maximum at Panna block (Rs.38164.36 /ha**)** followed by Gunnor block (Rs.37441.52/ha).
- On an average, cost A_1 share 55.70 per cent in the total (Rs 37802.94/ha) which was observed highest at Panna block (Rs 21185.88/ha) followed by Gunnor (Rs 20523.65/ha).
- On an average, in the cost A_1 highest cost share by seed Rs.7015.24 /ha (18.56 per cent) followed by plant protection Rs 3164.38 /ha (weedicide Rs 1103.72/ha and insecticide Rs 2060.66/ha), harvesting and threshing (Rs 2853.98 /ha), ploughing (Rs 2197.73/ha), fertilizer (Rs 1487.93/ha), manure (Rs 1251.74), human labour (Rs 1068.74/ha), interest on working capital (Rs1142.38/ha) depreciation (Rs 630.67/ha) and land revenue Rs 42 /ha.
- Average cost A_1 was found to be Rs. 20854.76/ha which was highest at Panna block (Rs 21185.88) as compared to Gunner block (Rs 20523.65). Cost A_2 and A_1 were equal which indicated that leasing pattern was not adopted by respondent in the study area.
- The cost B_1 and B_2 were observed Rs 21350.06/ha and Rs. 33350.06/ha. The cost C_1 and C_2 and C_3 were observed Rs. 22366.31/ha, Rs. 34366.31/ha and Rs 37802.94 per ha respectively.
- Per hectare gross income of soybean production was observed Rs 44607.94./ha. Between the two blocks highest gross return was found to be under Panna block Rs 45980.61/ha as compared to Gunnor block Rs 43235.27/ha.

- The overall costs C_3 were found to be Rs. 37802.94/ha, cost of production Rs.3597.23/qtl. The Cost of production was found highest at Gunnor block (Rs 3973.83/qtl) as compared to Panna block (Rs 3220.62 /qtl).
- On an average net farm income was observed Rs.6805.00/ha which was maximum found at Panna block because at this block per quintal cost of production noted less as compared to Gunnor block this indicated that cost of production inversely related with net return. An average farm business income and family labour income were found to be Rs 23753.18/ha and Rs 11257.88/ha. The B: C ratio indicates the return per rupee investment an average B:C ratio was observed 1.18 which varies 1.15 to 1.20 between Gunnor and Panna block respectively.
- The value of determination of coefficient (R^2) was found 0.85 which indicates that 85 percent variation in output due to all these five factors. All the coefficient of production namely x_1 (fertilizer), x_2 (seed), x_3 (plant protection), x_4 (labour) and x_5 (machinery) were observed to be positive which indicates that over expense is not done by the farmers on these inputs in the production of soybean.
- Among the entire five variables, plant protection and machinery were observed highly significant which indicates that expense on plant protection chemical and machinery labour in the soybean production was profitable to the farmer.

5.2 CONCLUSION

It is concluded after analysis and interpretation of result of soybean production in the Panna district that average cost of cultivation of soybean production was observes Rs.37802.94. Among cost A_1, seed, fertilizer and plant protection share maximum cost in the total cost of cultivation. The benefit cost ratio at overall basis and across two blocks was observed greater than one which indicates that production of soybean is profitable in both the block and also overall basis. The coefficient of determent (R^2) was observed 0.85 which implied that 85 percent variation in output due to independent variable.

5.3 SUGGESTION:-

- In the variable cost, seed, fertilizer and plant protection have maximum share, so it is need to provide input subsidy by the government on these inputs to reduce variable cost.
- Expenditure on plant protection chemical can be reduce by adopting early sowing of crop, this technique helps to farmer protecting their crop by insect and pest and cost also can be reduced by use of organic insecticide
- It is need to increase the production of soybean in the study area, this is possible by providing improved seed to the farmer along with crop management practices.
- It is also observed in the study area that most of the farmer is adopting traditional farming system this lead to low productivity. Agriculture officers, scientist and government agencies should make to close interaction with farmers and aware them about new technology and practices.
- Use of Balanced dose of fertilizer is very important in soybean cultivation hence government should establish more soil testing lab and aware farmers regarding soil testing.
- It is also observed after analysis of resource use efficiency that use of machinery power is more profitable in the soybean cultivation hence more use of machinery power in the production of soybean in place of human labour.

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APPENDIX

INTERVIEW SCHEDULE

RAJMATA VIJYARAJE SCINDIA KRISHI VISHWA VIDHYALAYA, GWALIOR (M.P.)

Title: Economics of soybean production and Resource use efficiency in Panna District of M.P.

Advisor

Dr. P.S. Raghuvanshi

Dept. of Agri. Economics

RVSKVV, GWALIOR

Investigator

Pradeep Kumar Patel

M.Sc. (Ag.) final year

Roll no. 20110904

I. General information

Name of farmer : Shri…….

Father's name : Shri…….

Caste :……

Village ..……..

Block ..... District - Panna

II. Family information

S. No.	Name of family member	M/F	Age	Education	Occupation

III. Land Use Pattern (in ha.)

S. No.	Particulars	Area (ha.)
1.	Size of holding	
2.	Net cultivation area	
3.	Permanent fellow land	
4.	Old fellow land	
5.	Current follow land	
6.	Leased in land	
7.	Leased out land	
8.	Irrigated area	
Source of irrigation		
9.	Well	
10.	Tube well	
11.	Pond	
12.	River	
13.	Canal	

IV Cropping pattern (in ha.)

Season	Name of crops	Variety	Area (ha.)
Kharif			
Rabi			
Others			

IV. Agricultural Assets

S. No.	Assets	Total No.	Present Values (Rs.)
1.	Land (ha.)		
2.	Farm house (No.)		
3.	Well (No.)		
4.	Tube well		
5.	Electric pump and pipe		
6.	Plough		
7.	Duffan/Trifan		
8.	Pata		
9.	Bullock cart		
10.	Tractor		
11.	Cultivator		
12.	Seed drill		
13.	Trolley		
14.	Spade		
15.	Khurpi		
16.	Power implements		
17.	Chaff cutter		
18.	Any other specify		

Cost of cultivation of crop

Name of variety (1) …… (2)…… (3) ……

Area under crop …….

V. Operational cost

Operations	Human labourHrs/Days		Bullock pair/Days		Machine Hrs	
	Family	Hired	Family	Hired	Family	Hired
Land preparation						
Sowing						
Weeding time/intercultural						
Manuring						
Fertilize Plant Protection application						
Harvesting						
Threshing						
Others						

VI. Material cost

S. No.	Particulars	Name	Quantity	Rate
1.	Seed			
2.	Fungicides			
3.	Manure			
4.	Fertilizer			
a.	UREA			
b.	SSP			
c.	DAP			
d.	Grow more			
e.	MOP			
f.	Others			
5.	Bio-fertilizers			
6.	Plant Protection Chemicals			
A	Insecticide			
B	Pesticides			
7.	Weedicide			
8.	Others			

S.NO.	Particulars	Present value	Residual value	Life of the asset
1.	Implements			
2.	Machinery			
3.	Tractor			
4.	Livestock			
5.	Others			

VIII Fixed Assets

IX Total production:

Quantity Price

a. Main Product

b. By Product

CURRICULUM VITAE

Name of the Author	**:**	**Pradeep Kumar Patel**
Father's name	**:**	**Shri - Sukbind Kishor patel**
Date of birth	**:**	**10/07/1998**
Address	**:**	**Village- Khapatha, Tahsil- Devendranagar, Dist.- Panna (M.P.), Pincode- 488333**

Educational Qualification:-

Name of Degree	Subject(s) Major	Name of Institution	Year of passing	Percentage of marks
High School	All Subjects	M.P. Board, Bhopal	2013	84.30
Higher Secondary	PCMB	M.P. Board, Bhopal	2015	82.20
B.Sc. (Agriculture)	Agriculture	R.V.S.K.V.V, Gwalior (M.P.)	2020	77.49
M.Sc. (Agriculture)	Agricultural Economics	R.V.S.K.V.V, Gwalior (M.P.)	2022	77.40

Pradeep Kumar Patel