“A Study on impact of FLD on Knowledge, Adoption and Technological gap of Soybean growers through KVK in Ashoknagar District of Madhya Pradesh”

THESIS

Submitted to the

Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya, Gwalior

In partial fulfillment of the requirements for the Degree of

MASTER OF SCIENCE

In

AGRICULTURE

(AGRICULTURAL EXTENSION AND COMMUNICATION)

by

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2021

CERTIFICATE – I

This is to certify that the thesis entitled **"A Study on impact of FLD on Knowledge, Adoption and Technological gap of Soybean growers through KVK in Ashoknagar District of Madhya Pradesh"** submitted in partial fulfilment of the requirements for the Degree of **Master of Science in Agricultural Extension and Communication** of the **Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya, Gwalior** is a record of the bona-fide research work carried out by **Mr. Sourabh Baghel** 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 or has been published. All the assistance and help received during the course of the investigation have been acknowledged by her.

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ACKNOWLEDGMENT

First of all I am highly grateful to the Almighty God, who gave me the ability and capability to take the challenge to do this research work. I would like to express my gratitude towards **Dr. (Smt.) Sandhya Choudhary**, Professor and Head, Krishi Vigyan Kendra Manawar, Badhwani District of Indore. Her inspiring guidance and constant encouragement was received throughout the course of investigation and writing this manuscript.

I am deeply obliged to the members of my Advisory Committee namely **Dr. S. K. Jain**, Retd. Professor, Department of Agriculture Economics and Farm Management, **Dr. K. S. Kumar,** Head of the Section, Department of Agricultural Statistics, College of Agriculture, Indore, **Dr. B. S. Gupta**, Head, Krishi Vigyan Kendra, Ashoknagar,

for their valuable guidance, nobleadvice and timely suggestions.

I express my sincere thanks to **Dr. P. K. Malviya,** Professor, Department of Agriculture Economics and Farm Management, College of Agriculture, Indore. I gratefully acknowledge the co-operation and help extended by **Dr. D. K. Verma**, Assistant Professor, Department of Agricultural Extension And Communication, College of Agriculture, Indore, **Dr. (Smt.) Dipanita Gargava**, Assistant Professor, Department of English College of Agriculture, Indore, for their suggestions and helping attitude during the research work.

With profound respect, I wish to express my sincere gratitude to Hon'ble Vice Chancellor **Dr. S. K. Rao**, RVSKVV Gwalior, **Dr. D. H. Ranade**, Dean Faculty of Agriculture, RVSKVV Gwalior, **Dr. S. P. S. Tomar,** Director Instructions, RVSKVV, Gwalior, **Dr. S. K. Choudhary, Dean**, College of Agriculture, Indore, for providing necessary facilities during the experiment.

Next, I am highly indebted to my father **Shri Aazad Singh** and mother **Smt. Roopwati Bai** their support and encouragement. I found them the source of inspiration to boost my moral high. They have taken a lot of interest in my research work for motivational aspects. I would like to express my thanks to my sisters **Miss. Sonam Baghel** and **Miss. Sweta Bagh**el for moral support in sharing my difficulties and joy during my research study.

Special thanks to my friends **Sanjay Patel, Miss. Mitali Shukla, Miss Kajal, Miss. Rajni Mandloi** and **Miss Sunita Choudhary** others for their moral support and co-operation.

I am also thankful to those who helped me directly or indirectly during the course of my research work.

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CHAPTER - I

INTRODUCTION

Indian Agriculture is known for its multi functionalities by providing employment, food, nutritional and ecological securities. Agriculture is the main source of livelihood of more than 75.00 per cent of the population and contributes 50.00 per cent of national income. The farmers of today need innovative knowledge, skills and more modern technology than their in the past. Indeed, he has to be an innovative to make a living in this competitive world.

India is the fourth largest producer of oilseed in the world and fifth largest producer of soybean in the world. In India during the year 2007-08 total area under soybean was 8880 thousand hectare and production was 9990 thousand tonnes with the productivity of 1124 kg per hectare. Madhya Pradesh is known as “Soybean State” due to highest production and acreage under soybean crop. The area under soybean cultivation in the state is 6489.6 thousand hectares (2008-09) and the production is 6977 thousand tonnes with the productivity of 1075 kg/ha. Share of soybean in total oilseed production of the state is 53.70 %. Soybean crop has highest acreage is Kharif crop of the state but large yield gap exists between potential yield and yield under real farming situation.

Soybean [*Glycine max* (L) Marril] belongs to family Leguminoseae, sub family Papilionaideae and genus Glycine. It is mainly grown in kharif season and occupies second place in the world, following groundnut in oilseed production. Soybean has now been established as an economically important leguminous crop, known for its high valued protein, fat, food, feed and industrial application. It enriches the soil by fixing nitrogen in symbiosis with bacteria. In the international world trade markets, soybean is ranked number one among the major oil crops. In India, the consumption of oil has been increasing steadily as a result of rise in population and living standard of the people. Presently soybean is grown in many countries of the world like USA, China, India, Brazil, Australia. In India major states growing soybean are Madhya Pradesh, Maharashtra, Rajasthan, Andhra Pradesh, Karnataka, Chhattisgarh and Gujarat. Major soybean growing districts of Madhya Pradesh state are Sehore,

Ujjain, Shajapur, Dewas, Mandosre, Vidisha, Ashoknagar and Ratlam. Farmers of Ashoknagar district have changed their old cropping pattern to new cropping pattern i.e. diversified maize crop into soybean crop.

Frontline Demonstration on Soybean using new crop production technology was initiated with the objective of showing the productive potentials of the new production technologies under real farm situation over the locally cultivated varieties.

Front Line Demonstration

Front-Line Demonstration is the new concept of field demonstration evolved by the Indian Council of Agricultural Research with the inception of the Technology Mission on Oilseed Crops during mid-eighties. The field demonstrations conducted under the close supervision of scientists of the National Agriculture Research System are called front-line demonstrations because the technologies are demonstrated for the first time by the scientists themselves before being fed into the main extension system of the State Department of Agriculture.

The main objective of Front-Line Demonstrations is to demonstrate newly released crop production and protection technologies and its management practices in the farmers' field under different agro-climatic regions and farming situations. While demonstrating the technologies in the farmers' field, the scientist are required to study the factors contributing higher crop production, field constraints of production and thereby generate production data and feedback information. Front-Line Demonstrations are conducted in a block of two or four hectares land in order to have better impact of the demonstrated technologies on the farmers and field level extension functionaries.

Special features of FLDs:

The Front Line Demonstration is different from normal demonstrations conducted by the extension functionaries. The special features of front line demonstration are:

- Front Line Demonstration are conducted under the close supervision of the scientist of ICAR institutes Krishi Vigyan Kendra, National Research Centre Project Directorate, Krishi Vigyan Kendra, Agricultural Technology Management Agency and States Agriculture Universities and its regional research stations.
- Only newly released technologies those are likely to be released in near future are selected for the front line demonstrations.
- Front Line Demonstrations are organized in a block of two to four hectares involving all those farmers whose plots fall in the demonstration block.
- Only critical inputs and training are provided from the scheme budgets, remaining inputs are borne by the farmers themselves. Training of the farmers associated with the front line demonstration is a prerequisite for conducting such demonstrations.
- The target audience of Front Line Demonstration are both farmers and the extension officers.
- The purpose is to convince extension functionaries and farmers together about the potentialities of technologies for further wide scale diffusion.
- Front Line Demonstration are used as a source of generating data on factors contributing for higher crop yields and constraints of production under various farming situations.

Agricultural development means increasing the productivity as well as improving the economic condition of the farmers. This, to a certain extent, depends upon the level of knowledge and skills of farmers. The FLDs aim at achieving these three objectives by bringing about the change in knowledge, technological gap and adoption behavior of farmers.

The Front Line Demonstration is an important mandates of Krishi Vigyan Kendra and Agricultural Technology Management Agency. Its aim is to demonstrate the production potentialities of newly developed crop production technologies of pulses and oilseeds on farmer field. FLDs educate farmers through results obtained in terms of higher yields and also provide an effective learning situation as farmers see the crops and participate in the discussion for acquiring knowledge and skills of production technology. Front line demonstration FLDs was started in soybean to generated production data and feedback

information to various development agencies which are engaged in dissemination of technological advances through researchers to the farmer's field.

Significance of the study:

Front Line Demonstrations (FLDs) is a unique approach to provide a direct interface between researcher and farmers as the scientists are directly involved in planning, execution and monitoring of the demonstrations for the technologies developed by them and get direct feedback from the farmers' field about the crops like wheat, rice and pulses production in general and technology being demonstrated in particular. This enables the scientists to improvise upon the research programme accordingly. In FLDs, the subject matter scientists provide technological inputs to extension scientists to organize the demonstrations. Thus, FLDs provide an opportunity to researchers and extension personnel for understanding the farmer's resources and requirement to fine tune and/or modify the technologies for easy adaptability at farmers' fields. Therefore, a study on Technological Gap in Soybean Production Technology under FLD through KVK, Ashoknagar District of Madhya Pradesh will be undertaken with the specific objectives.

Objectives:

1. To study the socio personal, economic, communication and psychological profile of FLD beneficiaries and non beneficiaries.
2. To measure the technology gap in soybean production technology under FLD programme as adopted by soybean FLD beneficiaries.
3. To explore the relationship between profile of the soybean FLD beneficiaries and non beneficiaries and technological gap in soybean production.
4. To identify the problems encountered by the soybean growers leading to technological gap and suggestion given to overcome them.

Scope of the study

As discussed earlier in the context of assessing the impact of front line demonstration, it is mandated to assess how far these demonstrations have created adoption behavior gained with respect to soybean cultivation practices of soybean participant farmers. Further, it is also to know the association between

personal and socio-psychological characteristics of farmers and their adoption behavior. There was also need to know the radiation effect that how far these demonstrations have created impact on other farmers. The study was also aimed to identify constraints faced by farmers in adoption of soybean cultivation practices. In this study an attempt has been made to evaluate various aspects of soybean production through front line demonstration. The findings of this study could be gainfully utilized by the administrators, policy maker scientists and extension workers to know about the status of soybean growers and importance of front line demonstration to make the cultivation of soybean more profitable and economical.

Limitation of the study

Due to the limitation of the time and other resources, the present investigation has been restricted to the local area selection, small sample size. Hence, the findings have to be viewed in the specific context of the conditions prevailing in the study area and cannot be generalized for wider geographical area. However, careful and rigorous procedures have been adopted in carrying out the research as objectively as possible. In spite of the individual bias made by the respondent farmers in eliciting the necessary responses, it is believed that the findings and conclusion draw would form the basis for future research studies.

Organization of the study

The present investigation is presented in six chapters. Chapter I of the study attempts to focus the need of the study with background, objectives, scope and limitation of the study i.e. Introduction. Chapter II includes the review of literature related to the study. Chapter III elaborates the methodology, sampling and technique of data collection & its analysis and operationalization of variables with their measurement. Chapter IV deals with the presentation and description of data for the purpose of study. Chapter V deals with the main findings and discussions and the last chapter concerned to the summary, conclusions and suggestion of the study.

CHAPTER II

REVIEW OF LITERATURE

In the research work, most important aspect is the collection of the past research findings and based on those research findings also draw some conclusions. Researcher has reviewed the concern literature at every stage. Through review, researcher comes to know about the methods, procedure, and techniques as well as results of past studies. It's provide clues and guidance throughout the research process. This chapter includes all the relevant review of literature related to impact of FLD on Knowledge, Adoption and Technological gap of Soybean growers through KVK in Ashoknagar District of Madhya Pradesh. These are include following headings :-

1. The socio personal, economic, communicational and psychological profile of FLD beneficiaries and non beneficiaries.
2. The technological gap in soybean production technological under FLD programme as adopted by soybean FLD beneficiaries.
3. The relationship between profile of the soybean FLD beneficiaries and non beneficiaries and technological gap in soybean production.
4. The problems encountered by the soybean growers leading to technological gap and suggestions given to overcome them.

2.1. The socio-personal, economic, communication and psychological profile of FLD beneficiaries and non- beneficiaries.

Rajpoot (2011) concluded a study on the adoption of integrated pest management practices by soybean growers in Rehli block of Sagar district (M.P.) the higher 49.67 per cent of the soybean growers were from middle age group, maximum number of respondents 31.66 per cent were found to be educated up to high school, 33.33 per cent had medium size of land of holding, 45.00 per cent had low annual income, 60.83 per cent had small farm power, 46.66 per cent had medium extension participation and 42.50 per cent had low level of mass media exposure.

Naik (2013) revealed that 30.83 per cent of the sapota growers had 'small' land holding. While 30 per cent and 16.67 per cent of them had 'marginal' and 'semi medium' land holding', respectively. 'Medium' and 'large' land holdings were owned by 16.67 per cent and 5.83 per cent of them, respectively. The average size of land holding of the sapota growers was 3.86 ha. The 'medium' annual income, while 24.17 per cent had 'low' annual income and 10.83 per cent, growers had 'high' annual income. The average annual income of the sapota growers was Rs. 5, 13, 066/-.

Raghuwanshi (2014) revealed that majority (70%) of the potato growers had medium source of information. Whereas, 14.16 per cent had high and 15.83 per cent had low source of information.

Waghamare (2014) revealed that more than two third (68%) of the turmeric growers had 'medium' annual income, while 19 per cent had low' annual income and 13 per cent had 'high' annual income. From the above review of literature, it could be inferred that majority of the farmers had 'medium' annual income. The turmeric growers had completed 'Secondary education', followed by 'Graduation' (24%) and higher secondary education (23%). An equal number (10 per cent each) of them had 'pre-primary' and 'primary' level education. Only 2 per cent were 'Illiterate'. The majority (59%) of the turmeric growers had 'marginal' land holding, followed by 31 per cent, 7 per cent, and 3 per cent having 'small', 'semi medium' and medium' land holdings respectively. The average land holding of the turmeric growers was 1.24 ha, indicating 'small' land holding.

Maratha (2015) reported that more number of the respondents (65%) belonged to medium annual income category, followed by 18.33 per cent of them belonged to low annual income category. While, 16.66 per cent of them, belonged to high annual income category. The respondents (30%) were educated up to primary school and middle school followed by 16.66, 13.33 per cent of them were functionally literate and illiterate, respectively, whereas 10 per cent of them were belonged to high school and above. They revealed that 63.33 per cent of vegetable growers belonged to middle age group, followed by 20 and 16.66 per cent of thembelonged to young age and old age groups, respectively.

Sharma *et al.* (2015) found that more than sixty per cent Paddy growers were small size of land holding, while about 36 per cent were marginal size of land holding.

Dambazau *et al.* (2015) revealed that most of the respondents (27.5%) have medium 2.1 to 4 ha followed by (24.2%) large land above 4 ha, andothers were (18.3%) and (2.5%) of both small 1.1 to 2 ha and marginal up to 1 ha respectively. Most of the respondents (32.5%) were earning Rs. 81000- 100000, followed by (20%), (15.85) and (11.7) earning Rs. 21000-40000 and above Rs. 100000 each, Rs. 41000-60000 and Rs. 61000-80000 respectively. Most of the respondents (25.8%) attended high school followed by (22.5%), (21.6%), (17.5%), (9.2%), (2.5%) and (0.8%) of illiterate, literate, middle school, primary school, graduate and P.G. respectively. Majority of the respondents (45.5%) were middle age followed by 33.3 per cent were young and 19.2 per centold age group.

Singh *et al.* (2016) reported that the majority (66.66%) of the farmers had belonged to the middle age group followed by 18.34 per cent and 15 per cent in old age and young age group. The majority (55%) of the farmers had medium size of landholding followed by 23.33 per cent and 21.67 per cent farmers large and small land holding.

Bagheri and Shabanali (2016) stated in their study of potato growers that their average farm size was 5.6 ha. The education that (66.2 %) of potato growers had elementary/ secondary level of education, (23.3 %) had high school degree and (10.5%) were graduated from a higher education institution. The 44.15 per cent respondents were in middle age category.

Das and Jha (2017) observed that 41.54 per cent of the respondents were high school followed by higher secondary and above (27.69%), primary level (13.84%), illiterate (13.08%) and 3.85 per cent respondents were middle school.

Singh and Hansra (2018) showed that majority (49%) of the members belonged to young age category while 70 per cent of the non-members were middle aged (35-50 years).

Deshmukh and Kadam (2018) found that majority (70%) of the respondents from watershed villages and 73 per cent of respondents from non-watershed villages were middle aged. The 38 per cent of the beneficiaries were educated up to secondary school level.

Singh *et al.* (2018) reported that the maximum number of the respondents (41.67%) had high school followed by illiterate (23.33%), higher secondary (16.67%), college (13.33%) and primary (5%).

Verma *et al.* (2018) shows that maximum number 45.83 per cent of respondents were found to possess primary school level of education. Out ofthe total 120 respondents, the most of them 34.17 per cent had medium size of land holding. The most of the respondents 39.17 per cent were of middle age group.

Patel and Mazhar (2019) observed that 30.83 per cent of the respondents were illiterate followed by middle school 19.17 per cent. 19.17 per cent were educated up to Primary school, 12.50 per cent were literate (can read only), 10.83 per cent up to High School, 08.33 per cent were educated up to Intermediate and 04.17 per cent respondents were graduate and above.

Kavitha and Nallusam (2019) reported that majority of the beneficiary respondents were belonged to young age category (46.67 %). Majority of beneficiaries had medium level of education (31.11 %) and contact with extension. With respect to non-beneficiary respondents, they belong to middle age category (43.33 %), had illiterate (23.33 %) to medium level of education (23.33 %). Majority of non-beneficiary respondents had low level of contact with extension and perception towards mobile phone in farming (46.67 per cent).

2.2. The technological gap in soybean production technological under FLD programme as adopted by soybean FLD beneficiaries.

Jatav and Patel (2010) reported that impact of front line demonstration on scientific temperament of soybean growers in Indore and Dewas districts of Madhya Pradesh the majority of the respondents (beneficiaries of FLD programme and non beneficiaries) possessed medium level of the scientific

temperament. The mean value of scientific temperament of FLD beneficiaries easy higher than the mean score of scientific temperament of non beneficiaries.

Meena (2011) found that impact assessment of frontline demonstration (FLDs) of soybean growers the difference in extend of adoption level between beneficiary and non beneficiary farmers ranged from MPS 2.66 to 20.89. In adoption of weed management (MPS 20.89), followed by seed treatment (MPS 19.71), seed rate & spacing (MPS 18.85), plant protection measure (MPS 15.44) and soil treatment (MPS 14.86), respectively.

Raghuwansi *et al.* (2011) found that adoption behavior of soybean growers majority of farmers (62.67%) were included under medium category of adoption of recommended technologies followed by the farmers (20.00%) belonging to high category of adoption, whereas, only 17.33 per cent of the farmers had low level of adoption of recommended technology of soybean.

Jeenger *et al.* (2012) reported that Impact of frontline demonstration on scientific temperament of soybean growers majority of the respondents (beneficiaries and non- beneficiaries) possessed medium level of scientific temperament. The scientific temperament of beneficiary farmers of FLD gave better result than the scientific temperament of non-beneficiaries.

Kumar *et al.* (2012) found that behaviour of farmers in adoption of recommended technology of soybean majority of soybean growers were having partial knowledge and partial adoption of recommended soybean practices. Extent of knowledge, attitude and adoption of recommended practices were found to be medium.

Raj *et al.* (2013) reported that comparative profitability of soybean cultivation with adoption of improved technology and farmers practices has been presented in the adoption of improved technology under FLD's recorded higher gross returns compared to farmers practices.

Rathod *et al.* (2013) observed that impact of front line demonstration on adoption of treatment in soybean seed treatment is easy to understand and perform. Effect of technology was found visible to (100 per cent) farmers. Regarding impact on adoption, most of the respondents (68 per cent) accepted the technology but not able to adopt due to some constraints.

Tiwari *et al.* (2013) found that front line demonstrations of soybean were conducted on 20 farmers fields at Umaria district, to demonstrate production potential and economic benefit of improved technologies consisting suitable variety (JS- 97-52), integrated nutrient management (20: 60: 20: 20 kg NPKS/ha+ Rhizobium+PSB@ 5g/kg of seed), integrated pest management (deep ploughing + seed treatment with Trichoderma viridae @ 5 g/kg seed+ indoxacarb @ 500 ml/ha). The improved technologies recorded mean yield of 20.8 q/ha, which was 32.6 percent higher than that obtained with farmers practice of 15.65 q/ha.

Singh *et al.* (2014) shows that more than half of the farmers (56.34%) had favorable and most favorable attitude towards improved technology of wheat cultivation, 20.33 per cent small farmers had unfavorable and most unfavorable attitude, while 23.33 per cent farmers showed neutral attitude towards improved technology of wheat cultivation.

Dour *et al.* (2015) found that majority of the respondents (beneficiaries of FLD programme and non beneficiaries) possessed medium level of adoption 11 level. The "t" value indicated that there is a significant difference between scores mean of the group. Thus, it can be stated that, there is an impact of FLD programme on the adoption level of the soybean growers.

Virang *et al.* (2016) found that study on knowledge and adoption behavior of soybean growers under ATMA program in Dewas District of M. P. 10 areas under package of practices of soybean production technology were considered to examine the knowledge level of beneficiaries and non beneficiaries. The average mean score values of overall knowledge of all components of soybean production technology showed that it was 1.17 and 0.95 of beneficiaries and non beneficiaries. On the other hand, the calculated ‘t’ value 2.72 at 5 per cent level with 9 d. f. was founded to higher than the table value of ‘t’ 2.26. These parameters declared the significant differences in the level of knowledge among beneficiaries and non beneficiaries of soybean production technology.

Datarkar *et al.* (2016) founded the study of technology adoption gap in soybean production of Maharashtra. Results revealed that, with respect to extent of adoption by the soybean cultivators on various components of soybean production technologies. Extent of adoption of use of seed rate (about 93-99 per

cent). The major contributors in yield gap of soybean were sowing time, seed rate and irrigation. The study has revealed that, the composite indices has categorized- 93 cultivators as low adopters group and 50 as medium adopters and single cultivator found as high adopters.

Raghuwanshi (2016) showed that study on information and training needs of farm women on crop production technology in Vidisha district of Madhya Pradesh higher number of farm women (39.17%) founded to medium attitude towards improved practices group followed by high attitude towards improved practices group 30.83 per cent and low attitude towards improved practices group 30 per cent respectively.

Badaya *et al.* (2017) reported that Frontline demonstration (FLD) programme is an effective technology transfer tool for better technology adoption that bridges the yield gaps. Keeping in view of effective extension approach of FLDs for dissemination of soybean technology in the KVK, Dhar district of Madhya Pradesh. It was found that the level of knowledge of beneficiary farmers regarding different improved soybean production technologies was higher than non-beneficiary ranging from 2.00 MPS in field preparation to 30.00 MPS in seed inoculation with cultures. The adoption level of beneficiary farmers observed 58 per cent and only 28 per cent have accepted but not adopted the technology due to some situational constraints.

Hariyale *et al.* (2018) revealed that Knowledge of improved soybean production technology by beneficiaries under ATMA programme in Sehore District of Madhya Pradesh was increased after attending the training programme. There was a significant difference between knowledge level of beneficiaries and non beneficiaries. Showed that majority of the beneficiaries 52.31 percent founded to pertaining medium knowledge regarding various components of soybean production technology under ATMA programme followed by high knowledge 24.62 percent and low knowledge 23.08 percent.

Khedkar *et al.* (2018) reported that impact of front line demonstration on the yield and economics of soybean crop in Shajapur District. In comparison to farmer's practice, an increase of 20.58 to 39.00 per cent (average 26.97 %) in seed yield was recorded during the study period due to improved package of

practices. On an average the extension gap was observed 333 kg per ha, which emphasized the need to educate the farmers through various extension activities for adoption of improved agricultural production to narrow it. The technology index varied from 9.00, 32.00 and 13.35 per cent with an average of 18.11 per cent during the three years of FLD program, which showed the efficacy of technical interventions.

Singh et al. (2019) conducted that Front Line Demonstration is an appropriate tool to demonstrate recommended technologies among the farmers. Krishi Vigyan Kendra, Burhanpur (M.P.). The training program of different aspects of crop production technologies were organized among beneficiaries and other participating farmers. The average of five years data indicated that an average yield of demonstration plot exhibited 20.49qt./ha as against local check 15.69qt./ha with an additional yield of 4.80qt./ha and increased average soybean productivity by 31.03%. The average technological gap and technological index were found to be 4.51qt./ha and 18.03%, respectively.

2.3. The relationship between profile of the soybean FLD beneficiaries and non beneficiaries and technological gap in soybean production.

Singh et al. (2010) show that the adoption of commercial vegetable cultivation technology was found to be positively and significantly correlated with their education, knowledge about improved vegetable cultivation practices, income from vegetables and attitude towards vegetable growing in District Ghaziabad (Uttar Pradesh). Age of vegetable growers was however, having negative and significant correlation with adoption at one percent level of significance. Some of the variables like caste, family size, occupation, social participation, land holding, risk orientation, extension contact and mass media exposure were having positive correlation but were found to be non-significant.

Prabhakar (2011) concluded that majority beneficiary farmers (67.00 per cent) were found to be under medium adoption level in Dewash M. P. While 15.00 per cent farmers were low and 18.00 per cent farmers were high adoption level. Whereas non beneficiary farmers (70.00 per cent) were found to be under medium adoption level, while 13.00 per cent and 17.00 per cent of the farmers were under high adoption level.

Bunkar *et al.* (2013) reported that age, education, economic motivation and annual income, whereas socio - economic status and size of land holding, were found to be non significantly associated with knowledge level of drip irrigation technology by the beneficiary farmers.

Badhala and Jat (2014) observed that there was significant association between different variables *viz*. education level, social participation, extension participation, source of information utilized, extension contact and irrigation potentiality with knowledge level, level of yield as well as extent of adoption of beneficiary and non- beneficiary farmers. He further observed that there was no significant association between different variables viz. Age, Size, land holding and Risk orientation with knowledge level, level of yield as well as extent of adoption of beneficiary and non- beneficiary farmers recommended groundnut production technology.

Kumawat (2015) observed that the majority o' eleven independent variables *viz*. age, family income, occupation, education level, social participation, size of land holding, mechanical power, farm implements, material possession, irrigation potentiality and sources of information utilization, were positively and significantly related with knowledge level of farmers about recommended production technology of rapeseed and mustard crop, whereas the three independent variables, caste, type of house, size of family were non-significantly related with knowledge level of farmers.

Kumar and De (2016) found that the respondents possessed knowledge about different components of practice of improved wheat cultivation technologies with their mean score. The majority of the trained farmers possessed knowledge about practices like pesticides and weedicides (0.89) followed by field preparation (0.82) sowing technique (0.81), harvesting and storage (0.79), irrigation and fertilization (0.77), respectively. Likewise, majority of the untrained farmers were possessed knowledge about practices like pesticides and weedicides (0.77) followed by sowing technique (0.73), irrigation and fertilization (0.71) field preparation (0.70) and harvesting and storage (0.55), respectively.

Rajput *et al.* (2016) found that variable *viz*., education, annual income, socio-economic status, social participation, scientific orientation, cosmopolitans,

extension contact and knowledge had positive and signification influence or their level of knowledge.

Ranjan *et al.* (2017) conducted in the state of Uttarakhand, Finding of the study revealed that, majority of the beneficiaries had middle age group, educated up to higher secondary, marginal land holding, extension contact, information seeking behavior and social participation. The 'F' statistic 5.07 and 3.76 were significant. The remaining unexplained variation could be due to other variable/ factors not included in the sample. The value of 'F' statistic 6.98 (overall effectiveness of KVKs) was significant. Overall effectiveness of KVKs and the value of (R^2) was 0.37 and 0.40 which means that characteristics included in the study collectively contributed to the extent of 37.14 and 40.29 only.

Ghadge and Fattepurkar (2018) reported that education, size of land holding, area under pomegranate, annual gross income, sources of information, pruning and variety had highly significant relationship with adoption of recommended practices for control of oily spot disease by pomegranate growers in Solapur District.

Kumar and Kumar (2018) observed that innovativeness (0.441") and education (0.258") were significantly associated of adoption of eco-friendly farm technologies by the respondents.

2.4. The problems encountered by the soybean growers leading to technological gap and suggestions given to overcome them.

Khare *et al.* (2011) found that less availability of high yielding varieties, lack of conviction in the new technology and weak extension support at the village level were the major constraints faced by the farmers. Therefore, strategies should be made for enhancing the production and productivity of Soybean crop for the farmers to make more aware about the recommended technologies for its adoption.

Tawale and Pawar (2011) revealed that, constraints like attack of insect pests and diseases was expressed by 74.45 per cent of soybean growers. In next order, shortage of labour at time of harvesting (62.78 per cent), and low price of

soybean at the time of harvesting (61.11 per cent) were major constraints by the soybean growers. In regard to suggestions, provision of training in regard to pest and disease controls was suggested by 61.11 per cent, followed by provision of high rate for soybean was suggested by 53.89 per cent farmers.

Piparde (2012) reported that the most important suggestions given by majority (95.83%) of growers for training needs were that the training institute should provide transport facilities for the trainees, technical potato production training should be given (92.5%), cost of seeds, fertilizers and insecticides etc. should be less (79.16%), demonstration should be taken at the farmers field by agriculture department (69.16%), visit of RAEOs/RHEO's should be regular (60.83%), minimum support price should be attractive (55.83%), technical information should be given by RAEO's/RHEO s (53.33%), co-operative societies should be in every villages (45.83%) and crop loan and subsidy should be provided in time (35.83%).

Fatima (2013) suggested that tomato growers must be educated to apply the appropriate pesticides at the prescribed level and at the right climatic condition. The power supply should not be interrupted during the time of irrigation. Public and Private sectors should collaborate to establish the Research institutes for the research in organic farming. Government should conduct the awareness programme about the benefits of organic farming, the subsidies available for agriculture and the loan facilities meant for farmers. The farmers can be trained to prepare value added products of tomato like sauce, pickle, and jam etc. to increase their profit.

Kumar (2013) revealed that among the four categories of constraints, input, technical, marketing and miscellaneous constraints input constraints showed highest intensity followed by marketing constraints, miscellaneous constraints and technical constraints.

Suryawanshi (2014) major constraints as reported by the potato growers in adoption of improved production technology were electricity problem, irregular visits of RAEOs and lack of availability of technical information from gram panchayat, less rate of potato in the market, lack of training of improved potato production technology, lack of knowledge about insects and diseases, high cost

of seed, fertilizer, insecticides and implements, lack of knowledge about source of seed treatment and its doses, lack of demonstration on farmers' field, technical information are not available in local language, lack of information about improved varieties of potato, market is far away from 100 villages, lack of loan facilities, lack of soil testing facilities, high labour charges, lack of money to purchase input agriculture material and lack of transport facilities.

Kumawat (2015) reported that majority of the farmers (85) were found to have medium constraint level (65.38 per cent) in adoption of recommended production technology of rapeseed and mustard crop whereas 15.38 per cent and 19.24 per cent farmers were having high and low constraint level, respectively.

Deepika and Asokhan (2019) worked on the present study were conducted to analyses the constraints faced by the farmers in the adoption and marketing of ELS cotton production technology. The study was taken up in two blocks of Vellore district namely, Tirupattur and Kandhili blocks of Tamil Nadu. The sample size of 132 cotton growers was drawn on proportionate random sample method. The data were collected using a well-structured interview schedule and data were analyzed using appropriate statistical analysis. The study revealed that less than two-third (62.87 per cent) of the respondents faced the problem of labour crisis followed by a transportation problem (57.57 per cent).

CHAPTER - III

RESEARCH METHODOLOGY

This chapter deals major technical programme of work with locale of the study, research design, sampling plan, variables and their measurement, instrument of data collection and statistical tests used for analysis of data are given under the following headings:

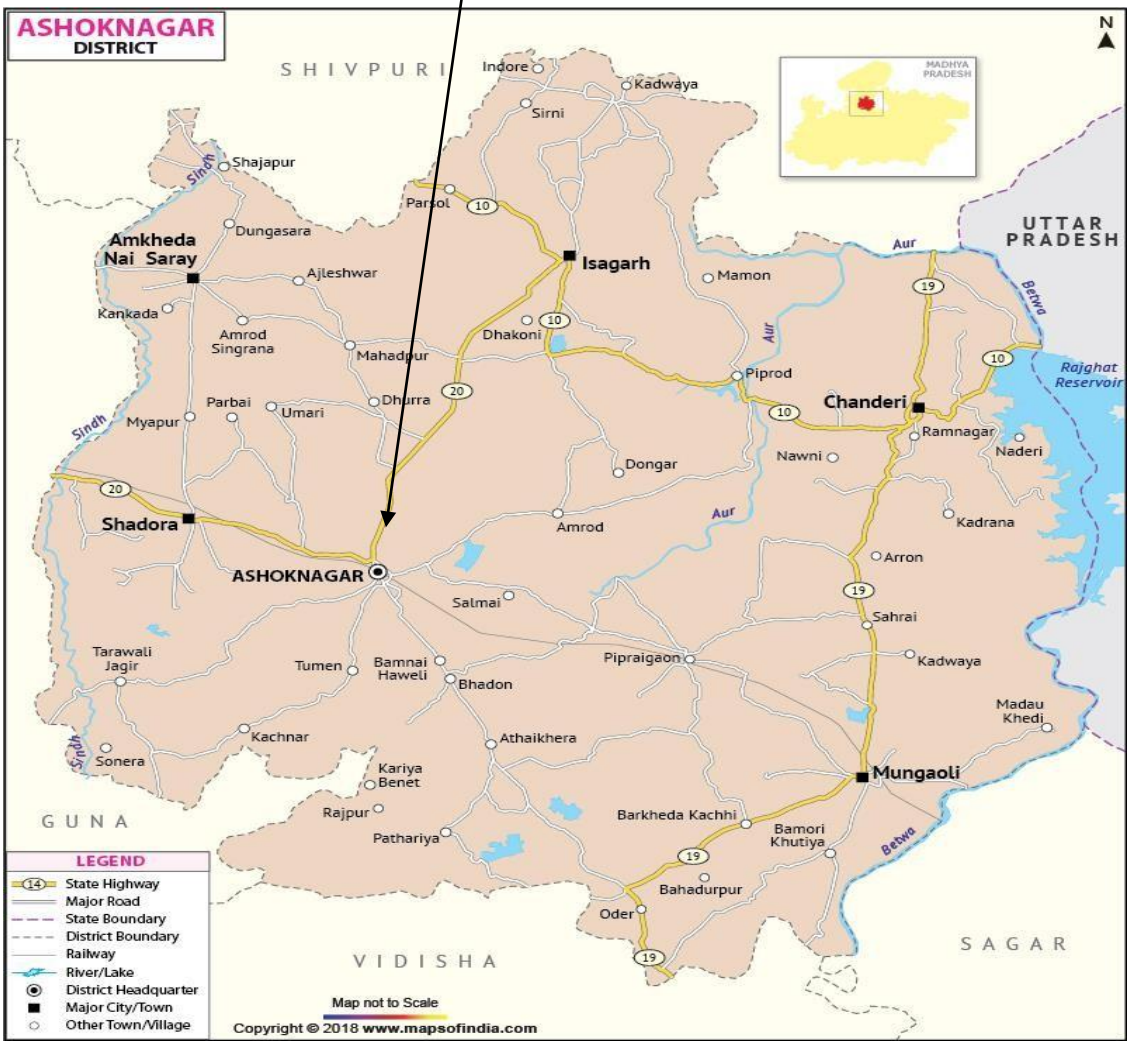
3.1. Locale of the study:

The Ashoknagar district has an area of 4673.94 km². It is bounded on the east by the Betwa River, which separates it from Lalitpur District of Uttar Pradesh and Sagar District of Madhya Pradesh. Vidisha District lies to the south. The Sindh River forms the western border of the district, which separates it from Guna District. Shivpuri District lies to the north. It is divided into six tehsils: Ashoknagar, Chanderi, Issagarh, Mungaoli, Shadora and Bahadurpur. The district was created on August 15, 2003 when it was split from Guna District.

It is in the plateau region. It has an agricultural topography. The plateau is an extension of the Deccan Traps, formed between 60 and 68 million years ago at the end of the Cretaceous period. In this region, the main classes of soil are black, brown and bhatori (stony) soil. The volcanic, clay-like soil of the region owes its black colour to the high iron content of the basalt from which it is formed.

The latitude and longitude of Ashoknagar district headquarters are 24°34.6509' (North) and 77°43.911' (East) respectively. This city is about 507 meters above sea level.

ASHOKNAGAR IN MADHYA PRADESH



3.1 Map of Ashoknagar district in Madhya Pradesh

3.2. Technical programme of work:

Research design: Ex-Post facto design was used for this study.

3.3. Sampling procedure:

Multistage sampling technique was adopted for the selection of block, village and growers under KVK as per procedure given below:

3.3.1. Selection of KVK:

The proposed study was confined to Ashoknagar KVK district of Madhya Pradesh which comprises of 4 blocks namely Ashoknagar, Chanderi, Isagarh and Mungaoli.

3.3.2. Selection of Block:

There are four blocks in Ashoknagar district. One block from the district *i.e.* Out of this only one block Isagarh were selected purposively for the present study because more FLD trials have been conducted by KVK in this block.

3.3.3. Selection of village:

In Isagarh block 3 villages were taken by KVK for soybean FLDs. These 3 villages namely Okherikhera, Semarkhedi, and Sirni were selected for the study.

3.3.4. Selection of the growers:

List of FLD beneficiaries of the 3 villages were obtained from KVK. Out of this list 48 beneficiaries (Okherikhera -12, Sirni -13, Semarkhedi - 23) were taken purposively and 48 non beneficiaries of the same villages were selected randomly. In this way total 96 soybean growers were taken for this study.

3.4. Variables and their measurement:

The relevant independent and dependent variables were taken under the study.

S.NO.	Independent Variables:	Measurement
Socio-personal variable		
1.	Age	As per chronological ages
2.	Education.	No. of classes passed

Economic variable		
3.	Size of land holding	Structured schedule
4.	Land under soybean	Structured schedule
5.	Annual income	Structured schedule
6.	Income from soybean	Structured schedule
Communication variable		
7.	Source of information	Structured schedule
Psychological variable		
8.	Perception towards FLD	Structured schedule
9.	Knowledge about soybean production technology	Structured schedule
Dependent Variable:		
Measurement of Technological Gap in Soybean Production Technology		An Index was developed which consist of recommended package of practices of soybean production technology under FLD through KVK

Independent Variables:

1. Age:

It is referred to the chronological age of the growers in completed years at the time of investigation. Age was operationalized as number of full years completed by the growers at the time of interview. Based on the chronological age the growers were classified into three groups as follows:

S. No.	Category	Years
1.	Young age	21 – 35
2.	Middle age	36-49
3.	Old age	Above 49

2. Education:

It refers to obtain education through as per the Govt. rules source such as primary school, high school or university/college. The education levels of the farmers were categorized into seven levels. The score of different educational levels were given as indicated below:

S. No.	Educational level	Score
1.	Illiterate	0
2.	Primary	1
3.	Middle	2
4.	High School	3
5	Higher Secondary School	4
6.	Graduation and above	5

3. Size of land holding

It is the area of land possessed by an individual of own at the time of investigation is adopted as per Govt. rules. The growers selected for the study were divided into four categories on the basis of their size of land holding. The categorization and score pattern are as follows:

S. No.	Category of farmer	Range	Scores
1.	Marginal	< 1 ha.	1
2.	Small	1.1 – 2.00 ha.	2
3.	Semi-medium	2.1 – 4.00 ha.	3
4.	Medium	4 – 10 ha.	4
5.	Large	> 10 ha.	5

Source: (Ministry of Agriculture and farmers Welfare)

4. Area under Soybean

It is the area of land possessed by an individual of own at the time of investigation. The growers selected for the study were divided into four categories on the basis of their area under Soybean. The categorization and score patterns are as follows:

S. No.	Category of farmer	Range	Scores
1.	Marginal	Up to 0.5 ha.	1
2.	Small	0.50 - 1 ha.	2
3.	Medium	Above 1.1 ha.	3

5. Annual Income

It referrers to the total amount an individual earned through crop production without considering the cost of cultivation. This was calculated by converting the total crop production in the year of survey with existing prices of different grains and sum up to set the total annual income in to rupees and on the basis of range of scores, categories were formed as follows:

S. No.	Category	Range	Scores
1.	Low	Below to 50,000 Rs.	1
2.	Medium	50,001 to 1, 00, 000	2
3.	High	More than 1,00, 000	3

6. Income from Soybean:

It refers to the earning from Soybean crop by the growers as per view. The growers were categorized into three groups on their income from Soybean. The categorization and score patterns are as follows:

S. No.	Category	Range	Scores
1.	Low	Below to 25,000 Rs.	1
2.	Medium	25,001 to 50, 000	2
3.	High	More than 50, 000	3

7. Source of information:

It was the degree of frequency contact by an individual with various information sources. This was the pattern by which beneficiary get information either on his own seeking behavior or as a consequence on his being a part of the network. A list of all the possible sources were prepared and each grower was asked to rate each source on the three point continuum *viz*. frequently used, sometime used and never used with a score 3, 2, 1, respectively. The possible score of the growers range between 11-33.

S. No.	Category	Range	Scores
1	Low	11-18	1
2	Medium	18-25	2
3	High	25-33	3

8. Perception toward FLD:

The perception towards FLD was measured with the help of structured schedule method. This attribute has seven statements. The responses of Soybean growers were obtained on 3 point continuum i.e. strongly agree, agree and disagree. The scoring was done in the order of 3, 2 and 1 respectively for positive statements. It was categorized into three categories as below:

S. No.	Categories	Range	Scores
1.	Low	6-18	1
2.	Medium	18-30	2
3.	High	31-42	3

9. Knowledge about soybean production technology:

Economic motivation is the degree to which an individual intends to earn to the maximum extent. Economic motivation was conceptualized as one's orientation towards profit maximization in farming. Responses were recorded on three-point continuum as strongly agree, agree, and partial agree and were given 3, 2 and 1 scores, respectively. The scale range was from 6 to 18. The total score explains the degree of scientific orientation of an individual. The growers were grouped into three categories viz., low, medium and high as given below-

S. No.	Categories	Range	Scores
1.	Low	6-10	1
2.	Medium	10-14	2
3.	High	14-18	3

Dependent variables:

- **Level of knowledge:**

Knowledge is a important variable to understand information processed by an individual or by a culture. They further explained that knowledge is the part of a person's information, which in an accordance with established fact. It is one of the important components of human behavior. It plays a major role in convert and overt behavior of human being. To measure the level of knowledge, index of knowledge was developed which consisted of 14 practices followed for utilization of recommended Soybean production technology under FLDs. The level of knowledge was considered full, partial and least knowledge. The scoring was done in the order of 3, 2 and 1 respectively. The growers were classified into full Knowledge, partial Knowledge and least Knowledge on the basis of mean ± S.D

Extent of adoption:

The adoption of remanded and Soybean production technologies refer to the extent of adoption of remanded and improved Soybean production technologies and practices by Soybean growers on their farm. To measure the level of adoption, index of adoption was developed which consisted of 14 practices of recommended Soybean production technology under FLDs. The scoring was done in the order of 3, 2 and 1 respectively.

$$\textbf{Adoption index} = \frac{\textbf{Sum of the adoption scores obtained by growers}}{\textbf{Sum of obtainable adoption score}} \textbf{X100}$$

Technological gap:

A device was developed to measure the level of technological gap of growers regarding selected practices of recommended Soybean cultivation technology. Technological gap calculated by following formula:

$$\text{Technological gap} = \frac{\text{Recommended package and practices}-\text{applied package and practices}}{\text{Recommended package and practices}} \text{ X 100}$$

3.5. Sources, instrument and methods of data collection:-

Primary data:

The primary data was collected with the help of interview schedule, which was prepared on the basis of objectives of the study. For the convenience of data collection, the interview schedule was prepared in Hindi. The interview schedule was presented to sample of 48 farmers in non- sampled area before the actual collection of the data.

Secondary data:

The secondary data was obtained from the various government offices like District Agriculture Office, Teshil Office, Land record office, Krishi Vigyan Kendra in Ashoknagar (M.P.), Block Development Office, different magazines, annual reports and publications etc.

3.6. Processing and statistical analysis data:-

Data collected was qualitative as well as quantitative. The quantitative data were interpreted in terms of percentage and qualitative data were tabulated on the basis of approved categorization method. The percentage, mean, standard deviation and correlation coefficient were worked out in the study for analysis of data.

Percentage-

The term 'percentage' means a fraction whose denomination is 100 and the numeration of the fraction is called Percentage. For calculating percentage, frequency was multiplied by 100 and divided by total growers.

$$P = \frac{X}{N} \times 100$$

Where,

P = Percentage

X = Frequency of growers

N = Total number of growers

Mean-

Mean is obtained by dividing the sum of the scores by the total number of cases involves. The formula for determining mean is:

$$\overline{X} = \frac{(\sum x_i)}{n}$$

Where,

$\overline{X}$ = Mean

$\sum X$ = Sum of all the pairs in a distribution

n = Total number of items involved.

Standard deviation

The standard deviation is the square root of the arithmetic average of the squared deviation of various values from their arithmetic mean.

$$SD = \sqrt{\frac{\sum (X_i - \overline{X})^2}{n-1}}$$

Where,

SD = Standard deviation of sample

Xi = Each of the score in turn

$\overline{X}$ = Mean of sample

N = Total number of scores in the distribution

The Chi-square test has these values

The suggestion of would unlike traits of the persons per as their espousal levels whose the confirmed via the chosen that of test chi-square (χ^2).

$$\chi^2 = \sum \frac{(Oi - Ei)^2}{Ei}$$

Where,

Oi = Considered as observed frequency in quiz

Ei = Considered as Expected frequency in class

d. f. =considered as Mark of self-determination in class

CHAPTER - IV

RESULTS

This chapter deals with the analysis and interpretation of the collected data. The data were collected from a sample of 48 beneficiaries through a well-structured interview schedule. Appropriate calculation was made in terms of percentage, mean, rank and Chi-square test. The data were processed and analyzed in line with the objectives of the study and presented as under.

4.1. Socio personal, economic, communication and psychological profile of FLD beneficiaries and non beneficiaries.

4.2. Technological gap in soybean production technologies under FLD programme as adopted by soybean FLD beneficiaries.

4.3. Relationship between profile of the soybean FLD beneficiaries and non beneficiaries and technological gap in soybean production.

4.4. Problems encountered by the soybean growers leading to technological gap and suggestion given to overcome them.

4. 1. Socio personal, economic, communicational and psychological profile of FLD beneficiaries and non beneficiaries

1. Age

Table 4.1: Distribution of the beneficiaries and non beneficiaries according to their age (n=96)

S. No.	Age group	Beneficiaries	Non beneficiaries
1	Young	24	6
		50.00%	12.50%
2	Middle	11	15
		22.92%	31.25%
3	Old	13	27
		27.08%	56.25%
Total		48	48

The data in Table 4.1 exhibit that out of 48 beneficiaries, 50.00 per cent belonged to young age group, whereas 27.08 per cent were from old age group, and 22.92 per cent were from old age group. As regards non - beneficiaries farmers, 56.25 percent belonged to old age category.

2. Education

Table 4.2: Distribution of the beneficiaries and non beneficiaries according to their education (n=96)

S. No.	Education	Beneficiaries	Non beneficiaries
1.	Illiterate	3	14
		6.25%	29.17%
2.	Primary	5	10
		10.42%	20.83%
3.	Middle	6	9
		12.50%	18.75%
4.	High School	9	5
		18.75%	10.42%
5.	Higher Secondary School	14	7
		29.17%	14.58%
6.	Graduation and above	11	3
		22.92%	6.25%
Total		48	48

Table 4.2 indicates that out of 48 beneficiaries 29.17 per cent was found to be in Higher Secondary School education level category, 22.92 per cent had Graduation and above education level, 18.75 percent were educated High School level category, 12.50 percent were middle education level,10.42 percent were educated Primary education level and remaining 6.25 per cent were educated Illiterate. The data also revealed that out of 48 non beneficiaries farmers, higher percentage of the beneficiaries i.e., 29.17 percent belonged to Illiterate education category.

3. Land Holding

Table 4.3: Distribution of the beneficiaries and non beneficiaries according to their size of land holding. (n=96)

S. No.	Area	Beneficiaries	Non beneficiaries
1	Marginal	4	14
		8.33%	29.17%
2	Small	7	8
		14.58%	16.67%
3	Semi-medium	12	10
		25.00%	20.83%
4	Medium	10	7
		20.83%	14.58%
5	Large	15	9
		31.25%	18.75%
Total		48	48

Table 4.3 reveals that out of 48 beneficiaries 31.25 per cent of the beneficiaries were large size of land holding only, 25.00, 20.83 and 14.58 per cent had semi-medium, medium and small size of land holding category respectively and remaining 8.33 per cent had marginal size of land holding category.

The Table also depicts that out of 48 non-beneficiaries farmers, higher percentage of the non beneficiaries i.e. 29.17 per cent belonged to marginal size of land holding category.

4. Area under Soybean

Table 4.4: Distribution of the beneficiaries and non beneficiaries according to their land under soybean (n=96)

S. No.	Area	Beneficiaries	Non beneficiaries
1	Marginal	11	24
		22.92%	50.00%
2	Small	23	15
		47.92%	31.25%
3	Large	14	9
		29.17%	18.75%
Total		48	48

Table 4.4 depict that out of the 48 beneficiaries 47.92 per cent had small area under soybean, 29.17 per cent had large, while remaining 22.92 per cent were having marginal area under soybean. The data also revealed that out of the 48 non-beneficiaries farmers, higher percentage of the non beneficiaries i.e., 50.00 per cent belonged to marginal area under soybean.

5. Annual income

Table 4.5: Distribution of beneficiaries and non beneficiaries according to their annual income (n=96)

S. No.	Annual Income	Beneficiaries	Non beneficiaries
1	Low	9	24
		18.75%	50.00%
2	Medium	22	13
		45.83%	27.08%
3	High	17	11
		35.42%	22.92%
Total		48	48

Table 4.5 shows that out of total beneficiaries, 45.83 per cent had medium annual income, followed by 35.42 per cent high annual income and 18.75 per cent beneficiaries had low annual income.

The data also revealed that out of total non-beneficiaries farmers, higher percentage of the beneficiaries i.e., 50.00 per cent belonged to low annual income.

6. Income from soybean

Table 4.6: Distribution of beneficiaries and non beneficiaries according to their income from soybean (n=96)

S. No.	Income	Beneficiaries	Non beneficiaries
1	Low	9	24
		18.75%	50.00%
2	Medium	25	14
		52.08%	29.17%
3	High	14	10
		29.17%	20.83%
Total		48	48

Table 4.6 shows that out of total beneficiaries, 52.08 per cent had medium income from soybean, followed by 29.17 per cent high income from soybean and 18.75 per cent beneficiaries had low income from soybean.

The data also revealed that out of total non-beneficiaries farmers, higher percentage of the beneficiaries i.e., 50.00 per cent belonged to low income from soybean group.

7. Source of information

Table 4:7 Distributions of beneficiaries and non beneficiaries according to their source of information (n=96)

S. No.	Source of information	Beneficiaries	Non beneficiaries
1	Low	10	22
		20.83%	45.83%
2	Medium	17	14
		35.42%	29.17%
3	High	21	12
		43.75%	25.00%
Total		48	48

Table 4.7 shows that, 43.75 per cent beneficiaries had high source of information, followed by 35.42 per cent had medium and 20.83 per cent had low source of information. The table also revealed that out of 48 non-beneficiaries farmers, higher percentage of the non-beneficiaries i.e., 45.83 per cent belonged to low source of information.

8. Perception towards FLD

Table 4.8: Distribution of beneficiaries and non beneficiaries according to their perception towards FLD (n=96)

S. No.	Perception	Beneficiaries	Non beneficiaries
1	Low	7	13
		14.58%	27.08%
2	Medium	24	26
		50.00%	54.17%
3	High	17	9
		35.42%	18.75%
Total		48	48

Table 4.8 shows that out of total 48 beneficiaries, 50.00 per cent were had medium perception towards FLD, followed by 35.42 per cent had high perception towards FLD and 14.58 per cent beneficiaries had low perception towards FLD.

The table also revealed that out of 48 non beneficiaries farmers, higher percentage of the non beneficiaries i.e., 54.17 per cent belonged to medium perception group

9. Knowledge about soybean production technology

Table 4.9: Distribution of beneficiaries and non beneficiaries according to their knowledge about soybean production technology

(n=96)

S. No.	Categories	Beneficiaries	Non beneficiaries
1	Low	9	28
		18.75%	58.33%
2	Medium	23	14
		47.92%	29.17%
3	High	16	6
		33.33%	12.50%
Total		48	48

Table 4.9 reveals that out of 48 beneficiaries 47.92 per cent of the beneficiaries had medium Knowledge about soybean production technology, 33.33 per cent had high and remaining 18.75 per cent had low Knowledge about soybean production technology.

The table also revealed that out of 48 non beneficiaries farmers, higher percentage of the non beneficiaries i.e., 58.33 per cent belonged to low Knowledge about soybean production technology group.

4. 2. Technological gap in soybean production technological under FLD programme as adopted by soybean FLD beneficiaries.

Adoption level of Beneficiaries:

As regards, selection of land most of the respondents (52.08%) had partial level of adoption, whereas 25.00 per cent had full level of adoption and only 22.92 per cent of the respondents had least level of adoption, adoption index 33.68 about selection of land.

Regarding pragmatic method of land preparation majority of the respondents (45.83%) had high adoption, whereas 33.33 per cent had full level of adoption and 20.83 per cent of the respondents had least adoption. Adoption index 35.42 about method of land preparation.

In case of selection of variety 47.92 per cent of the respondents had partial level of adoption, while 35.42 per cent respondents had full level of adoption and 16.67 per cent had least adoption. Adoption index 36.46 for selection of variety.

In case of sowing period, 45.83 per cent of the respondents had partial level of adoption while, 35.42 per cent respondents had full level of adoption and 18.75 per cent had least level of adoption, adoption index 36.11 about sowing period.

As regards seed rate, most of the respondents (41.67%) had partial level of adoption, whereas 33.33 per cent had least level of adoption and only 25.00 per cent of the respondents had full level of adoption, adoption index 31.94 about seed rate.

Regarding pragmatic seed treatment majority of the respondents (43.75%) had partial level of adoption, whereas 33.33 per cent had full level of adoption and 22.92 per cent of the respondents had least level of adoption, adoption index 35.07 about seed treatment.

Table 4.10: Distribution of beneficiaries and non- beneficiaries according to their level of adoption in Soybean production technologies.

S. No.	Practices	Beneficiaries level of adoption							Non Beneficiaries level of adoption						
		Full		Partial		Least		Adoption index (%)	Full		Partial		Least		Adoption index (%)
		F	%	F	%	F	%		F	%	F	%	F	%	
1	Selection of land	12	25.00	25	52.08	11	22.92	33.68	8	16.67	15	31.25	25	52.08	27.43
2	Method of land preparation	16	33.33	22	45.83	10	20.83	35.42	9	18.75	12	25.00	27	56.25	27.08
3	Selection of Variety	17	35.42	23	47.92	8	16.67	36.46	7	14.58	13	27.08	28	58.33	26.04
4	Sowing period	17	35.42	22	45.83	9	18.75	36.11	9	18.75	17	35.42	22	45.83	28.82
5	Seed rate	12	25.00	20	41.67	16	33.33	31.94	16	33.33	14	29.17	18	37.50	32.64
6	Seed treatment	16	33.33	21	43.75	11	22.92	35.07	22	45.83	12	25.00	14	29.17	36.11
7	Use of bio fertilizer and FYM	17	35.42	15	31.25	16	33.33	33.68	18	37.50	11	22.92	19	39.58	32.99
8	Applications of chemical fertilizer	12	25.00	22	45.83	14	29.17	32.64	9	18.75	25	52.08	14	29.17	31.60
9	Method of Sowing	19	39.58	13	27.08	16	33.33	34.38	7	14.58	11	22.92	30	62.50	25.35
10	Space of Sowing	13	27.08	23	47.92	14	29.17	34.03	15	31.25	22	45.83	11	22.92	34.72
11	Weed management	13	27.08	27	56.25	9	18.75	35.42	26	54.17	10	20.83	12	25.00	38.19
12	Disease management	22	45.83	19	39.58	7	14.58	38.54	11	22.92	17	35.42	20	41.67	30.21
13	Insect & pest management	22	45.83	18	37.50	8	16.67	38.19	16	33.33	13	27.08	19	39.58	32.29
14	Method of Harvesting	18	37.50	23	47.92	7	14.58	37.15	15	31.25	16	33.33	17	35.42	32.64

As regards use of bio fertilizer and FYM, most of the respondents (35.42%) had full level of adoption, whereas 33.33 per cent had least level of adoption and only 31.25 per cent of the respondents had partial level of adoption, adoption index 33.68 about use of bio fertilizer and FYM.

Regarding pragmatic applications of chemical fertilizer, majority of the respondents (45.83%) had partial level of adoption, whereas 29.17 per cent had least level of adoption and 25.00 per cent of the respondents had full level of adoption, adoption index 32.64 about applications of chemical fertilizer.

As regards method of sowing, most of the respondents (39.58%) had full level of adoption, whereas 33.33 per cent had least level of adoption and only 27.08 per cent of the respondents had partial level of adoption, adoption index 34.38 about method of sowing.

In relation to spacing, majority of the respondents (47.92%) had partial level of adoption whereas, 29.17 per cent of the respondents had least level of adoption and 27.08 per cent of the respondent had full level of adoption, adoption index 34.38 about spacing.

In case of weed management, majority of the respondents (56.25%) had partial level of adoption, while 27.08 per cent respondents had full and 18.75 per cent least level of adoption, adoption index 35.42 about weed management.

In case of disease management, 45.83 per cent of the respondents had full level of adoption, while 39.58 per cent respondents had partial level of adoption and 14.58 per cent had least level of adoption, adoption index 38.54 about disease management.

Regarding insect and pest management, majority of the respondents (45.83%) had full level of adoption followed by partial level of adoption (37.50 %) and least level of adoption (16.67%) respectively, adoption index 38.19 about insect and pest management.

As regards method of harvesting, most of the respondents (47.92%) had partial level of adoption, whereas 37.50 per cent had full level of adoption and only 14.58 per cent of the respondents had least level of adoption, adoption index 37.15 about Method of Harvesting.

Adoption level of Non beneficiaries:

As regards, selection of land most of the respondents (52.08%) had least level of adoption, whereas 31.25 per cent had partial level of adoption and only 16.67 per cent of the respondents had least level of adoption, adoption index 27.43 about selection of land.

Regarding pragmatic method of land preparation majority of the respondents (56.25 %) had least level of adoption, whereas 25.00 per cent had partial level of adoption and 18.75 per cent of the respondents had full level of adoption, adoption index 27.08 about method of land preparation.

In case of selection of variety 58.33 per cent of the respondents had least level of adoption, while 27.08 per cent respondents had partial level of adoption and 14.58 per cent had least adoption, adoption index 26.04 about selection of variety.

In case of sowing period, 45.83 per cent of the respondents had least level of adoption while, 35.42 per cent respondents had partial level of adoption and 18.75 per cent had least level of adoption, adoption index 28.82 about sowing period.

As regards seed rate, most of the respondents (37.50 %) had least level of adoption, whereas 33.33 per cent had full level of adoption and only 29.17 per cent of the respondents had partial level of adoption, adoption index 32.64 about seed rate.

Regarding pragmatic seed treatment majority of the respondents (45.83 %) had full level of adoption, whereas 29.17 per cent had least level of adoption and

25.00 per cent of the respondents had partial level of adoption, adoption index 36.11 about seed treatment.

As regards use of bio fertilizer and FYM, most of the respondents (39.58 %) had least level of adoption, whereas 37.50 per cent had full level of adoption and only 22.92 per cent of the respondents had partial level of adoption, adoption index 32.99 about use of bio fertilizer and FYM.

Regarding pragmatic applications of chemical fertilizer, majority of the respondents (52.08 %) had partial level of adoption, whereas 29.17 per cent had least level of adoption and 18.75 per cent of the respondents had full level of adoption, adoption index 31.60 about applications of chemical fertilizer.

As regards method of sowing, most of the respondents (62.50 %) had least level of adoption, whereas 22.92 per cent had partial level of adoption and only 14.58 per cent of the respondents had least level of adoption, adoption index 25.35 about method of sowing.

In relation to spacing, majority of the respondents (45.83 %) had partial level of adoption whereas, 31.25 per cent of the respondents had full level of adoption and 22.92 per cent of the respondent had least level of adoption, adoption index 34.72 about spacing.

In case of weed management, majority of the respondents (54.17 %) had full level of adoption, while 25.00 per cent respondents had least and 20.83 per cent partial level of adoption, adoption index 38.19 about weed management.

In case of disease management, 41.67 per cent of the respondents had least level of adoption, while 35.42 per cent respondents had partial level of adoption and 22.92 per cent had full level of adoption, adoption index 30.21 about disease management.

Regarding insect and pest management, majority of the respondents (39.58%) had least level of adoption followed by full level of adoption (33.33 %)

and partial level of adoption (27.08 %) respectively, adoption index 32.29 about insect and pest management.

As regards method of harvesting, most of the respondents (35.42 %) had least level of adoption, whereas 33.33 per cent had partial level of adoption and only 31.25 per cent of the respondents had least level of adoption, adoption index 32.64 about Method of Harvesting.

Extent of adoption:

The data indicated in Table 4.1 show about percentage distribution of the beneficiaries and non beneficiaries which reveals that out of total respondents, majority of the respondents (37.19%) had partial level of adoption of soybean production technology, while 32.07 per cent had least level of adoption and only 30.14 per cent had full adoption of soybean production technology.

Table 4.11: Distribution of the soybean growers according to their extent of adoption of improved soybean production technology

Category	Beneficiaries	Non Beneficiaries	Total (n=96)	Difference
Full	16 (33.48)	13 (27.98)	29 (30.14)	(+) 3 (5.5)
Partial	21 (43.41)	15 (30.95)	36 (37.19)	(+) 6 (12.46)
Least	11 (23.11)	20 (41.07)	31 (32.07)	(-) 9 (17.96)

(Figures in parenthesis indicate percentage)

The data presented in Table 4.11 stated that majority of the beneficiary farmers (43.41 %) had partial adoption of soybean production technology. Contrary to this, 30.95 per cent non-beneficiary farmers had partial adoption of soybean production technology. On the other hand, only 33.48 per cent beneficiary farmers had full level of adoption against 27.98 per cent in case of non beneficiary farmers. Least adoption was observed among 41.07 per cent non beneficiary and 23.11 per cent of non-beneficiary farmers.

Table 4.12: Measure the technological gap in Soybean production technological under FLD through KVK programme as adopted by Soybean FLD beneficiaries and Non beneficiaries

S. No.	Package of practice	Beneficiaries		Non-Beneficiaries	
		Average score	Technological gap (%)	Average score	Technological gap (%)
1	Selection of land	97	32.64	79	45.14
2	Method of land preparation	102	29.17	78	45.83
3	Selection of Variety	105	27.08	75	47.92
4	Sowing period	104	27.78	83	42.36
5	Seed rate	92	36.11	94	34.72
6	Seed treatment	101	29.86	104	27.78
7	Use of bio fertilizer and FYM	97	32.64	95	34.03
8	Applications of chemical fertilizer	94	34.72	91	36.81
9	Method of Sowing	99	31.25	73	49.31
10	Space of Sowing	98	31.94	100	30.56
11	Weed management	102	29.17	110	23.61
12	Disease management	111	22.92	87	39.58
13	Insect & pest management	110	23.61	93	35.42
14	Method of Harvesting	107	25.69	94	34.72

The data further analyzed to know the adoption and technological gap index of the different aspects as shown in table 4.12:

Technological gap of beneficiaries:

It is seen from the table that the highest technological gap in seed rate (36.11 %) followed by applications of chemical fertilizer (34.72 %), selection of land (32.64 %), use of bio fertilizer and FYM (32.64 %), space of sowing (31.94 %),

method of sowing (31.25 %), seed treatment (29.86 %), method of land preparation (29.17 %), weed management (29.17 %), sowing period (27.78 %), selection of variety (27.08 %), method of harvesting (25.69 %), insect & pest management (23.61 %) and disease management (22.92 %) in technological gap of beneficiaries about soybean production technology.

Technological gap of Non beneficiaries:

It is seen from the table that the highest technological gap in method of sowing (49.31 %), selection of variety (47.92 %), method of land preparation (45.83 %), selection of land (45.14 %), sowing period (42.36 %), disease management (39.58 %), applications of chemical fertilizer (36.81 %), insect & pest management (35.42 %), seed rate (score 34.72 %), method of harvesting (34.72 %), use of bio fertilizer and FYM (34.03 %), space of sowing (30.56 %), seed treatment (27.78 %), weed management (23.61 %) in technological gap of non beneficiaries about soybean production technology.

4.3. Relationship between profile of the soybean FLD beneficiaries and non beneficiaries and technological gap in soybean production.

1. Age:

Table 4.13: Relationship between age of the beneficiaries and technological gap in soybean production

Age group	Technological Gap			
	Low	Medium	High	Total
Young	2 (8.33%)	13 (54.17%)	9 (37.50%)	24 (50.00%)
Middle	6 (54.55%)	3 (27.27%)	2 (18.18%)	11(22.92%)
Old	3 (23.08%)	5 (38.46%)	5 (38.46%)	13 (27.08%)
Total	11	21	16	48
				χ^2 = 9.38^{ns}

ns - non significant *: significant ** = highly significant

χ^2 = 9.38 non significant at 5% level with 4 d. f.; Table value is 9.488

Table 4.13 shows that out of 24 beneficiaries who were from younger age group, 54.17 per cent had medium technological gap, 8.33 per cent exhibited low technological gap, 37.50 percent showed high technological gap of soybean production technology.

Out of 11 beneficiaries belonging to middle age group, 54.55 per cent had low technological gap, 27.27 per cent had medium technological gap, whereas only 18.18 per cent indicated high technological gap of soybean production technology.

In case of 13 beneficiaries belonging to the old age group, 38.46 per cent showed medium technological gap, 38.46 percent had high technological gap, whereas only 23.08 per cent indicated low technological gap of soybean production technology.

When the X^2 test was applied to data calculated value χ^2 9.38 was found to be non significant at 4 d. f. and 5 % level of non-significance about soybean production technology.

Hence the null hypothesis may be accepted and it could be concluded that there was no significant relationship between age and technological gap of soybean production technology.

2. Education:

Table 4.14 reveals that out of 14 beneficiaries who were illiterate, primary and middle, 64.29 and 21.43 percent each showed medium and high technological gap respectively and 14.29 per cent showed low technological gap of soybean production technology.

Out of 23 beneficiaries belonging to up to high school and higher secondary school education category, 43.48 per cent had medium technological gap, 43.48 per cent high technological gap and 13.04 per cent low technological gap of soybean production technology.

As regards 11 beneficiaries who were educated Graduation and above, majority i.e. 54.55 per cent indicated low technological gap, 27.27 per cent showed high and 18.18 per cent showed medium technological gap of soybean production technology.

Table 4.14: Relationship between education of the beneficiaries and technological gap in soybean production

Education	Technological Gap			
	Low	Medium	High	Total
Illiterate, Primary and Middle	2 (14.29%)	9 (64.29%)	3 (21.43%)	14 (29.17%)
High School & Higher Secondary School	3 (13.04%)	10 (43.48%)	10 (43.48%)	23 (47.92%)
Graduat and above	6 (54.55%)	2 (18.18%)	3 (27.27%)	11 (22.92%)
Total	11	21	16	48
				χ^2 = 10.66*

ns- non significant *: significant ** = highly significant

χ^2 = 10.66 significant at 5% level with 4 d. f.; Table value is 9.48

When the χ^2 test was applied to the data the calculated χ^2 value 10.66 was found to be significant at 4 d. f. and 5% level of significance.

Hence, the null hypothesis may be rejected, a fair relationship between education and technological gap of soybean production technology.

3. Land holding:

Table 4.15 shows that out of 11 beneficiaries who had marginal and small land holding 54.55 per cent showed high technological gap, 27.27 per cent possessed medium technological gap and 18.18 per cent showed low technological gap of soybean production technology.

Out of 22 beneficiaries who had semi-medium and medium land holding, 68.18 per cent showed medium technological gap, 22.73 per cent possessed high technological gap and 9.09 percent showed low technological gap of soybean production technology.

Table 4.15: Relationship between land holding of beneficiaries and technological gap in soybean production

Area	Technological Gap			
	Low	Medium	High	Total
Marginal and Small	2 (18.18%)	3 (27.27%)	6 (54.55%)	11 (22.92%)
Semi-medium and Medium	2 (9.09%)	15 (68.18%)	5 (22.73%)	22 (45.83%)
Large	7 (46.67%)	3 (20.00%)	5 (33.33%)	15 (31.25%)
Total	11	21	16	48
				χ^2 =13.48*

ns- non significant *: significant ** = highly significant

χ^2 =13.48 significant at 5 % level with 4 d. f.; Table value is 9.488

Out of 15 beneficiaries who had large land holding, 46.67 per cent possessed low technological gap, 33.33 per cent showed high technological gap and 20.00 per cent showed medium technological gap of soybean production technology.

When the χ^2 test was applied to the data the calculated χ^2 value 13.48 was found to be significant at 4 d. f. and 5% level.

Hence, the null hypothesis may be rejected, a fair relationship between land holding and technological gap of soybean production technology.

4. Area under soybean:

Table 4.16 shows that out of 11 beneficiaries who had marginal area under soybean 54.55 per cent showed high technological gap, 27.27 per cent possessed

medium technological gap and 18.18 per cent showed low technological gap of soybean production technology.

Out of 23 beneficiaries who had small area under soybean, 65.22 per cent showed medium technological gap, 26.09 per cent possessed high technological gap and 8.70 percent showed low technological gap of soybean production technology.

Table 4.16: Relationship between area under soybean of beneficiaries and technological gap in soybean production

Area	Technological Gap			
	Low	Medium	High	Total
Marginal	2 (18.18%)	3 (27.27%)	6 (54.55%)	11 (22.92%)
Small	2 (8.70%)	15 (65.22%)	6 (26.09%)	23 (47.92%)
Large	7 (50.00%)	3 (21.43%)	4 (28.57%)	14 (29.17%)
Total	11	21	16	48
				χ^2 = 13.26*

ns- non significant *: significant ** = highly significant

χ^2 = 13.26 significant at 5 % level with 4 d. f.; Table value is 9.488

Out of 14 beneficiaries who had large area under soybean, 50.00 per cent possessed low technological gap, 28.57 per cent showed high technological gap and 21.43 per cent showed medium technological gap of soybean production technology.

When the χ^2 test was applied to the data the calculated χ^2 value 13.26 was found to be significant at 4 d. f. and 5 % level.

Hence, the null hypothesis may be rejected, a fair relationship between area under soybean and technological gap of soybean production technology.

5. Annual Income:

Table 4.17 shows that out of 9 beneficiaries who had low annual income 55.56 and 22.22 per cent each showed high and medium technological gap and 22.22 per cent showed low technological gap of soybean production technology.

Out of 22 beneficiaries who had medium annual income, 72.73 per cent showed medium technological gap, 18.18 per cent possessed high technological gap and 9.09 percent showed low technological gap of soybean production technology.

Table 4.17: Relationship between annual income of beneficiaries and technological gap in soybean production

Annual income	Technological Gap			
	Low	Medium	High	Total
Low	2 (22.22%)	2 (22.22%)	5 (55.56%)	9 (18.75%)
Medium	2 (9.09%)	16 (72.73%)	4 (18.18%)	22 (45.83%)
High	7 (41.18%)	3 (17.65%)	7 (41.18%)	17 (35.42%)
Total	11	21	16	48
				χ^2 = 15.30**

ns- non significant *: significant ** = highly significant

χ^2 = 15.30 highly significant at 5 % level with 4 d. f.; Table value is 9.48

Out of 17 beneficiaries who had high annual income, 41.18 per cent possessed high technological gap, 41.18 per cent showed low technological gap and 17.65 per cent showed medium technological gap of soybean production technology.

When the χ^2 test was applied to the data the calculated χ^2 value 15.30 was found to be highly significant at 4 d. f. and 5% level.

Hence, the null hypothesis may be rejected, a fair relationship between annual income and technological gap of soybean production technology.

6. Income from soybean:

Table 4.18 shows that out of 9 beneficiaries who had low income from soybean 55.56 and 22.22 per cent each showed low and medium technological gap respectively and 22.22 per cent showed low technological gap of soybean production technology.

Out of 25 beneficiaries who had medium income from soybean, 68.00 per cent showed medium technological gap, 16.00 per cent possessed high technological gap and 16.00 percent showed low technological gap of soybean production technology.

Table 4.18: Relationship between income from soybean of beneficiaries and technological gap in soybean production

Income	Technological Gap			
	Low	Medium	High	Total
Low	2 (22.22%)	2 (22.22%)	5 (55.56%)	9 (18.75%)
Medium	4 (16.00%)	17 (68.00%)	4 (16.00%)	25 (52.08%)
High	5 (35.71%)	2 (14.29%)	7 (50.00%)	14 (29.17%)
Total	11	21	16	48
				χ^2 = 13.37*

ns- non significant *: significant ** = highly significant

χ^2 = 13.37 significant at 5 % level with 4 d. f.; Table value is 9.488

Out of 14 beneficiaries who had high income from soybean, 50.00 per cent possessed high technological gap, 35.71 per cent showed low technological gap and 14.29 per cent showed medium technological gap of soybean production technology.

When the χ^2 test was applied to the data the calculated χ^2 value 13.37 was found to be significant at 4 d. f. and 5 % level.

Hence, the null hypothesis may be rejected, a fair relationship between income from soybean and technological gap of soybean production technology.

7. Source of information:

Table 4.19 shows that out of 10 beneficiaries who had low source of information, 60.00 per cent possessed high technological gap, 20.00 per cent show medium technological gap and 20.00 per cent showed low technological gap of soybean production technology.

Out of 17 beneficiaries who had medium source of information, 41.18 per cent possessed low technological gap, 29.41 per cent showed medium technological gap and 29.41 per cent showed high technological gap of soybean production technology.

Table 4.19: Relationship between source of information of beneficiaries and technological gap in soybean production

Source of information	Technological Gap			
	Low	Medium	High	Total
Low	2 (20.00%)	2 (20.00%)	6 (60.00%)	10 (20.83%)
Medium	7 (41.18%)	5 (29.41%)	5 (29.41%)	17 (35.42%)
High	2 (9.52%)	14 (66.67%)	5 (23.81%)	21 (43.75%)
Total	11	21	16	48
				χ^2 = 11.55*

ns- non significant *: significant ** = highly significant

χ^2 = 11.55 significant at 5 % level with 4 d. f.; Table value is 9.488

Out of 21 beneficiaries who had high source of information 66.67 per cent showed medium technological gap, 23.81 per cent possessed high technological gap and 9.52 per cent low technological gap of soybean production technology.

When the χ^2 tests were applied to the data the calculated χ^2 value 11.55 was found to be significant at 4 d. f. and 5 percent level.

Hence the null hypothesis may be reject, significant relationship between source of information and technological gap of soybean production technology.

8. Perception towards FLD:

Table 4.20 shows that out of 7 beneficiaries who had low perception, 42.86 and 28.57 per cent each possessed high and medium technological gap respectively and 28.57 per cent showed low technological gap of soybean production technology.

Out 24 beneficiaries who had medium perception, 62.50 per cent possessed medium technological gap, 25.00 per cent show low technological gap and 12.50 per cent showed high technological gap of soybean production technology.

Table 4.20: Relationship between perception towards FLD of beneficiaries and technological gap in soybean production.

Perception	Technological Gap			
	Low	Medium	High	Total
Low	2 (28.57%)	2 (28.57%)	3 (42.86%)	7 (14.58%)
Medium	6 (25.00%)	15 (62.50%)	3 (12.50%)	24 (50.00%)
High	3 (17.65%)	4 (23.53%)	10 (58.82%)	17 (35.42%)
Total	11	21	16	48
				χ^2 = 10.86*

ns- non significant *: significant ** = highly significant

χ^2 = 10.86 significant at 5 % level with 4 d. f.; Table value is 9.488

Out of 17 beneficiaries who had high perception the majority i.e. 58.82 per cent possessed high technological gap, 23.53 per cent showed medium technological gap and 17.65 percent showed low technological gap of soybean production technology.

When the χ^2 tests were applied to the data the calculated χ^2 value 10.86 was found to be significant at 4 d. f. and 5 percent level.

Hence the null hypothesis may be rejected, significant relationship between perception towards FLD and technological gap of soybean production technology.

9. Knowledge about soybean production technology

Table 4.21 exhibits that out of 9 beneficiaries who had low knowledge about soybean production, 44.44 per cent showed medium technological gap, 33.33 per cent high technological gap and 22.22 per cent low technological gap of soybean production technology.

Out of 23 beneficiaries who had medium knowledge about soybean production, the 65.22 per cent showed medium technological gap, 26.09 per cent possessed low technological gap and 8.70 per cent showed high technological gap of soybean production technology.

Table 4.21: Relationship between knowledge about soybean production technology of beneficiaries and technological gap in soybean production

Categories	Technological Gap			
	Low	Medium	High	Total
Low	2 (22.22%)	4 (44.44%)	3 (33.33%)	9 (18.75%)
Medium	6 (26.09%)	15 (65.22%)	2 (8.70%)	23 (47.92%)
High	3 (18.75%)	2 (12.50%)	11 (68.75%)	16 (33.33%)
Total	11	21	16	48
				χ^2 = 16.43**

ns- non significant *: significant ** = highly significant

χ^2 = 16.43 highly significant at 5 % level with 4 d. f.: Table value is 9.488

Out of 16 beneficiaries who had high knowledge about soybean production, 68.75 per cent showed high technological gap, 18.75 per cent possessed low technological gap and 12.50 medium technological gap of soybean production technology.

When the χ^2 test was applied to the data the calculated χ^2 value 16.43 was found to be highly significant at 4 d. f. and 5 per cent level.

Hence, the null hypothesis may be rejected, a fair relationship between size of knowledge about soybean production and technological gap of soybean production technology.

Non beneficiaries:-

1. Age:

Table 4.22 shows that out of 6 non beneficiaries who were from younger age group, 33.33 per cent had low technological gap, 33.33 per cent exhibited medium technological gap, 33.33 percent showed high technological gap of soybean production technology.

Out of 15 non beneficiaries belonging to middle age group, 53.33 per cent had low technological gap, 26.67 per cent had high technological gap, whereas only 20.00 percent indicated medium technological gap of soybean production technology.

Table 4.22: Relationship between age of the non beneficiaries and technological gap in soybean production

Age group	Technological Gap			
	Low	Medium	High	Total
Young	2 (33.33 %)	2 (33.33 %)	2 (33.33 %)	6 (12.50 %)
Middle	8 (53.33 %)	3 (20.00 %)	4 (26.67 %)	15 (31.25 %)
Old	3 (11.11 %)	10 (37.04 %)	14 (51.85 %)	27 (56.25 %)
Total	13	15	20	48
				$\chi^2 = 8.93^{ns}$

ns - non significant *: significant ** = highly significant

χ^2 = 8.93 non significant at 5% level with 4 d. f.; Table value is 9.488

In case of 27 non beneficiaries belonging to the old age group, 51.85 per cent showed high technological gap, 37.04 percent had medium technological gap, whereas only 11.11 per cent indicated low technological gap of soybean production technology.

When the χ^2 test was applied to the data the calculated χ^2 value 8.93 was found to be non significant at 4 d. f. and 5% level of non-significance about soybean production technology.

Hence the null hypothesis may be accepted and it could be concluded that there was non significant relationship between age and technological gap of soybean production technology.

2. Education:

Table 4.23 reveals that out of 24 non beneficiaries who were illiterate, primary and middle, 62.50 and 25.00 per cent each showed high and medium technological gap respectively and 12.50 per cent showed low technological gap of soybean production technology.

Table 4.23: Relationship between education of the non beneficiaries and technological gap in soybean production

Education	Technological Gap			
	Low	Medium	High	Total
Illiterate, Primary and Middle	3 (12.50 %)	6 (25.00 %)	15 (62.50 %)	24 (50.00 %)
High School &Higher Secondary School	7 (50.00 %)	4 (28.57 %)	3 (21.43 %)	14 (29.17 %)
Graduation and above	3 (30.00 %)	5 (50.00 %)	2 (20.00 %)	10 (20.83 %)
Total	13	15	20	48
				χ^2 = 11.09*

ns- non significant *: significant ** = highly significant

χ^2 = 11.09 significant at 5% level with 4 d. f.: Table value is 9.48

Out of 14 beneficiaries belonging to high school and higher secondary school education category, 50.00 per cent had low technological gap, 28.57 per cent medium technological gap and 21.43 per cent high technological gap of soybean production technology.

In case of 10 non beneficiaries who belonged to graduation and above education level category, the majority i.e. 50.00 per cent showed medium technological gap, 30.00 per cent low technological gap and 20.00 per cent high technological gap of soybean production technology.

When the χ^2 test was applied to the data the calculated χ^2 value 11.09 was found to be significant at 4 d. f. and 5% level of significance.

Hence, the null hypothesis may be rejected, a fair relationship between education and technological gap of soybean production technology.

3. Land holding:

Table 4.24 shows that out of 22 non beneficiaries who had marginal and small land holding 68.18 per cent showed high technological gap, 18.18 per cent possessed low technological gap and 13.64 per cent showed medium technological gap of soybean production technology.

Table 4.24: Relationship between land holding of non beneficiaries and technological gap in soybean production

Land holding	Technological Gap			
	Low	Medium	High	Total
Marginal and Small	4 (18.18 %)	3 (13.64 %)	15 (68.18 %)	22 (45.83 %)
Semi-medium and Medium	6 (35.29 %)	8 (47.06 %)	3 (17.65 %)	17 (35.42 %)
Large	3 (33.33 %)	4 (44.44 %)	2 (22.22 %)	9 (18.75 %)
Total	13	15	20	48
				χ^2 =12.12*

ns- non significant *: significant ** = highly significant

χ^2 =12.12 significant at 5 % level with 4 d. f.; Table value is 9.488

Out of 17 non beneficiaries who had semi-medium and medium land holding, 47.06 per cent showed medium technological gap, 35.29 per cent possessed low technological gap and 17.65 per cent showed high technological gap of soybean production technology.

Out of 9 non beneficiaries who had large land holding, 44.44 per cent possessed medium technological gap, 33.33 per cent showed low technological gap and 22.22 per cent showed high technological gap of soybean production technology.

When the χ^2 test was applied to the data the calculated χ^2 value 12.12 was found to be significant at 4 d. f. and 5% level.

Hence, the null hypothesis may be rejected, a fair relationship between land holding and technological gap of soybean production technology.

4. Area under soybean:

Table 4.25 shows that out of 24 non beneficiaries who had marginal area under soybean 62.50 per cent showed high technological gap, 25.00 per cent possessed low technological gap and 12.50 per cent showed medium technological gap of soybean production technology.

Table 4.25: Relationship between area under soybean of non beneficiaries and technological gap in soybean production

Area	Technological Gap			
	Low	Medium	High	Total
Marginal	6 (25.00 %)	3 (12.50 %)	15 (62.50 %)	24 (50.00 %)
Small	3 (20.00 %)	9 (60.00 %)	3 (20.00 %)	15 (31.25 %)
Large	4 (44.44 %)	3 (33.33 %)	2 (22.22 %)	9 (18.75 %)
Total	13	15	20	48
				χ^2 = 13.01*

ns- non significant *: significant ** = highly significant

χ^2 = 13.01 significant at 5 % level with 4 d. f.: Table value is 9.488

Out of 15 non beneficiaries who had small area under soybean, 60.00 per cent showed medium technological gap, 20.00 per cent possessed high technological gap and 20.00 percent showed low technological gap of soybean production technology.

Out of 9 non beneficiaries who had large area under soybean, 44.44 per cent possessed low technological gap, 33.33 per cent showed medium technological gap and 22.22 per cent showed high technological gap of soybean production technology.

When the χ^2 test was applied to the data the calculated χ^2 value 13.01 was found to be significant at 4 d. f. and 5% level.

Hence, the null hypothesis may be rejected, a fair relationship between area under soybean and technological gap of soybean production technology.

5. Annual Income:

Table 4.26 shows that out of 24 non beneficiaries who had low annual income 45.83 and 33.33 per cent each showed medium and high technological gap and 20.83 per cent showed low technological gap of soybean production technology.

Table 4.26: Relationship between annual income of non beneficiaries and technological gap in soybean production

Annual income	Technological Gap			
	Low	Medium	High	Total
Low	5 (20.83 %)	11(45.83 %)	8 (33.33 %)	24 (50.00 %)
Medium	6 (46.15 %)	2 (15.38 %)	5 (38.46 %)	13 (27.08 %)
High	2 (18.18 %)	2 (18.18 %)	7 (63.64 %)	11 (22.92 %)
Total	13	15	20	48
				$\chi^2 = 7.40^{ns}$

ns- non significant *: significant ** = highly significant

χ^2 = 7.40 non significant at 5 % level with 4 d. f.; Table value is 9.48

Out of 13 non beneficiaries who had medium annual income, 45.16 per cent showed low technological gap, 38.46 per cent possessed high technological gap and 15.38 per cent showed medium technological gap of soybean production technology.

Out of 11 non beneficiaries who had high annual income, 63.64 per cent possessed high technological gap, 18.18 per cent showed medium technological gap and 18.18 per cent showed low technological gap of soybean production technology.

When the χ^2 test was applied to the data the calculated χ^2 value 7.40 was found to be non significant at 4 d. f. and 5% level of non-significance about soybean production technology.

Hence the null hypothesis may be accepted and it could be concluded that there was non significant relationship between annual income and technological gap of soybean production technology.

6. Income from soybean:

Table 4.27 shows that out of 24 non beneficiaries who had low income from soybean 54.17 and 33.33 per cent each showed high and low technological gap respectively and 12.50 per cent showed medium technological gap of soybean production technology.

Table 4.27: Relationship between income from soybean of non beneficiaries and technological gap in soybean production

Income	Technological Gap			
	Low	Medium	High	Total
Low	8 (33.33 %)	3 (12.50 %)	13 (54.17 %)	24 (50.00 %)
Medium	3 (21.43 %)	6 (42.86 %)	5 (35.71 %)	14 (29.17 %)
High	2 (20.00 %)	6 (60.00 %)	2 (20.00 %)	10 (20.83 %)
Total	13	15	20	48
				$\chi^2 = 8.79^{ns}$

ns- non significant *: significant ** = highly significant

χ^2 = 8.79 non significant at 5 % level with 4 d. f.; Table value is 9.488

Out of 14 non beneficiaries who had medium income from soybean, 42.86 per cent showed medium technological gap, 35.71 per cent possessed high technological gap and 21.43 percent showed low technological gap of soybean production technology.

Out of 10 non beneficiaries who had high income from soybean, 60.00 per cent possessed medium technological gap, 20.00 per cent showed high technological gap and 20.00 per cent showed low technological gap of soybean production technology.

When the χ^2 test was applied to the data the calculated χ^2 value 8.79 was found to be non significant at 4 d. f. and 5% level of non-significance about soybean production technology.

Hence the null hypothesis may be accepted and it could be concluded that there was non significant relationship between income from soybean and technological gap of soybean production technology.

7. Source of information:

Table 4.28: Relationship between source of information of non beneficiaries and technological gap in soybean production

Source of information	Technological Gap			
	Low	Medium	High	Total
Low	8 (36.36 %)	2 (9.09 %)	12 (54.55 %)	22 (45.83 %)
Medium	3 (21.43 %)	9 (64.29 %)	2 (14.29 %)	14 (29.17 %)
High	2 (16.67 %)	4 (33.33 %)	6 (50.00 %)	12 (25.00 %)
Total	13	15	20	48
				χ^2 = 13.30*

ns- non significant *: significant ** = highly significant

χ^2 = 13.30 significant at 5 % level with 4 d. f.; Table value is 9.488

Table 4.28 shows that out of 22 non beneficiaries who had low source of information, 54.55 per cent possessed high technological gap, 36.36 per cent show low technological gap and 9.09 per cent showed medium technological gap of soybean production technology.

Out of 14 non beneficiaries who had medium source of information, 64.29 per cent possessed medium technological gap, 21.43 per cent showed low technological gap and 14.29 per cent showed high technological gap of soybean production technology.

Out of 12 non beneficiaries who had high source of information, 50.00 per cent showed high technological gap, 33.33 per cent possessed medium technological gap and 16.67 per cent low technological gap of soybean production technology.

When the χ^2 tests were applied to the data the calculated χ^2 value 13.30 was found to be significant at 4 d. f. and 5 percent level.

Hence the null hypothesis may be reject, significant relationship between source of information and technological gap of soybean production technology.

8. Perception towards FLD:

Table 4.29: Relationship between perception towards FLD of non beneficiaries and technological gap in soybean production.

Perception	Technological Gap			
	Low	Medium	High	Total
Low	2 (15.38 %)	2 (15.38 %)	9 (69.23 %)	13 (27.08 %)
Medium	9 (34.62 %)	11 (42.31 %)	6 (23.08 %)	26 (54.17 %)
High	2 (22.22 %)	2 (22.22 %)	5 (55.56 %)	9 (18.75 %)
Total	13	15	20	48
				$\chi^2 = 8.52^{ns}$

ns- non significant *: significant ** = highly significant

χ^2 = 8.52 non significant at 5 % level with 4 d. f.; Table value is 9.488

Table 4.29 shows that out of 13 non beneficiaries who had low perception, 69.23 and 15.38 per cent each possessed high and low technological gap and 15.38 per cent showed medium technological gap of soybean production technology.

Out 26 non beneficiaries who had medium perception, 42.31 per cent possessed medium technological gap, 34.62 per cent show low technological gap and 23.08 per cent showed high technological gap of soybean production technology.

Out of 9 non beneficiaries who had high perception the majority i.e. 55.55 per cent possessed high technological gap, 22.22 per cent showed medium technological gap and 22.22 percent showed low technological gap of soybean production technology.

When the χ^2 test was applied to the data the calculated χ^2 value 8.52 was found to be non significant at 4 d. f. and 5% level of non-significance about soybean production technology.

Hence the null hypothesis may be accepted and it could be concluded that there was no significant relationship between perception towards FLD and technological gap of soybean production technology.

9. Knowledge about soybean production technology

Table 4.30: Relationship between knowledge about soybean production of non beneficiaries and technological gap in soybean production

Categories	Technological Gap			
	Low	Medium	High	Total
Low	4 (15.38 %)	6 (23.08 %)	16 (61.54 %)	26 (54.17 %)
Medium	7 (50.00 %)	5 (35.71 %)	2 (14.29 %)	14 (29.17 %)
High	2 (25.00 %)	4 (50.00 %)	2 (25.00 %)	8 (16.67 %)
Total	13	15	20	48
				χ^2 = 11.10*

ns- non significant *: significant ** = highly significant

χ^2 = 11.10 significant at 5 % level with 4 d. f.; Table value is 9.488

Table 4.30 exhibits that out of 26 non beneficiaries who had knowledge about soybean production technology, 61.54 per cent showed high technological gap, 23.08 per cent medium technological gap and 15.38 per cent low technological gap of soybean production technology.

Out of 14 non beneficiaries who had medium knowledge about soybean production technology, the 50.00 per cent showed low technological gap, 35.71 per cent possessed medium technological gap and 14.29 per cent showed high technological gap of soybean production technology.

Out of 8 non beneficiaries who had high knowledge about soybean production technology 50.00 per cent showed medium technological gap, 25.00 per cent possessed high technological gap and 25.00 low technological gap of soybean production technology.

When the χ^2 test was applied to the data the calculated χ^2 value 11.10 was found to be significant at 4 d. f. and 5 per cent level.

Hence, the null hypothesis may be rejected, a fair relationship between knowledge about soybean production technology and technological gap of soybean production technology.

Table 4.31 Relationship between profile of the beneficiaries and technological gap in soybean production.

S. No.	Characteristics	χ^2 Value	d. f.	Degree association
1.	Age	9.38^{ns}	4	Negligible
2.	Education	10.66*	4	Fair
3.	Size of land holding	13.48*	4	Fair
4.	Land under soybean	13.26*	4	Fair
5.	Annual income	15.30**	4	Fair
6.	Income from soybean	13.37*	4	Fair
7.	Source of information	11.55*	4	Fair
8.	Perception towards FLD	10.86*	4	Fair
9.	Knowledge about soybean production technology	16.43**	4	Fair

ns- non significant at 5% level *: significant at 5 %level ** = highly significant at 5 % level

Table 4.31 depicts the χ^2 value indicating the relationship between profile of the beneficiaries with technological gap in soybean production. The characteristics namely, education, size of land holding, land under soybean, annual income, income from soybean, source of information, perception towards FLD and knowledge about soybean production technology had significant relationship with their technological gap at 5% level of significance. The result also depict that age of beneficiaries farmers did not establish significant relationship with technological gap in soybean production.

Table 4.32 Relationship between profile of the non- beneficiaries and technological gap in soybean production.

S. No.	Characteristics	χ^2 Value	d. f.	Degree association
1.	Age	8.93 ns	4	Negligible
2.	Education	11.09*	4	Fair
3.	Size of land holding	12.12*	4	Fair
4.	Land under soybean	13.01*	4	Fair
5.	Annual income	7.40 ns	4	Negligible
6.	Income from soybean	8.79 ns	4	Negligible
7.	Source of information	13.30*	4	Fair
8.	Perception towards FLD	8.52 ns	4	Negligible
9.	Knowledge about soybean production technology	11.10*	4	Fair

ns- non significant at 5% level *: significant at 5 % level

Table 4.32 depicts the χ^2 value indicating the relationship between profile of the non beneficiaries with technological gap in soybean production. The characteristics namely, education, size of land holding, land under soybean, source of information and knowledge about soybean production technology had significant relationship with their technological gap at 5% level of significance. The result also depict that age, annual income, income from soybean and perception

towards FLD of the non beneficiaries farmers did not establish significant relationship with technological gap in soybean production.

4.4. Problems encountered by the soybean growers leading to technological gap and suggestion given to overcome them.

With a view to locate the reasons for technological of recommended package of practices of soybean, the beneficiaries were asked to express the major constraints faced by growers of soybean leading to production technologies through FLD programme. Out of many problems faced by them the major constraints on the basis of rank order have been presented in the table 4.33 and 4.34.

Table 4.33 Problems encountered by the beneficiaries of soybean leading to technological gap through FLD programme. N=48

S.N.	Problems	No. of Beneficiaries	%	Rank
1	Shortage of labour at the time of harvesting.	23	47.92	VII
2	Lack of close contact of the trainees with the trainers scientists after completion of the training.	25	52.08	VI
3	Non availability of appropriate hybrid varieties.	29	60.42	II
4.	Lack of infrastructural facilities for using the technological skill on occupational basis at the village level.	18	37.50	IX
5.	The required technological inputs were not available at local level.	30	62.50	I
6.	Information about resource availability, marketing and credit orientation were not given for future.	21	43.75	VIII
7.	Low market price of agricultural product	27	56.25	IV
8.	Improved higher cost of seed varieties	28	58.33	III
9.	Lack of incentives and recognition to the scientists and farmers.	26	54.17	V

The major problems experienced by beneficiaries growers of soybean leading to technological gap through FLD programme were arranged in

descending order on the basis of rank order as the required technological inputs were not available at local level (62.50 %) followed by non availability of appropriate hybrid varieties (60.42 %), improved higher cost of seed varieties (58.33 %), low market price of agricultural product (56.25 %), lack of incentives and recognition to the scientists and farmers (54.17 %), lack of close contact of the trainees with the trainers scientists after completion of the training (52.08 %), Shortage of labour at the time of harvesting (47.92 %), information about resource availability, marketing and credit orientation were not given for future (43.75 %) and lack of infrastructural facilities for using the technological skill of occupational basis at the village level (37.50 %).

Table 4.34 Problems encountered by the non beneficiaries of soybean leading to technological gap through FLD programme. N=48

S.N.	Problems	No. of Non Beneficiaries	%	Rank
1	Shortage of labour at the time of Harvesting	29	60.42	VI
2	Higher cost of seed varieties	34	70.83	V
3	Training not good at the village level.	36	75.00	IV
4	Non availability of hybrid varieties at local level.	39	81.25	II
5	Uncertainly of monsoon	24	50.00	VIII
6	Lower price of produce at the time of Harvesting	43	89.58	I
7	High cost of fertilizers	27	56.25	VII
8	Credit to not available easily and timely at low interest rate	23	47.92	IX
9	Lack of good quality product	16	33.33	X
10	No proper planning of the outside exposure visit	37	77.08	III

The major problems experienced by the Non beneficiaries growers of soybean leading to technological gap through FLD programme were arranged in descending order on the basis of rank order as lower price of produce at the time of harvesting (89.58 %) followed by non availability of hybrid varieties at local level

(81.25 %), no proper planning of the outside exposure visit (77.08 %), training not good at the village level (75.00 %), higher cost of seed varieties (70.83 %), shortage of labour at the time of harvesting (60.42 %), high cost of fertilizers (56.25 %), uncertainly of monsoon (50.00 %), credit to not available easily and timely at low interest rate (47.92 %) and lack of good quality product (33.33 %).

Table 4.35: Suggestions given by FLD beneficiaries for soybean production technologies N=48

S.N.	Suggestions	No. of Beneficiaries	%	Rank
1.	Machinery of harvesting should be used	44	91.67	I
2.	Trainees should be timely visited to Krishi Vigyan Kendra	41	85.42	III
3.	Conducting research on seed trial at village level	35	72.92	VI
4.	Infrastructural should be available for using the technological skill at the village level by government.	28	58.33	VIII
5.	Improved farm machineries should be available at reasonable rate.	43	89.58	II
6.	Technical skill programme should be available at village level	30	62.50	VII
7.	Agricultural scientist should visit once in week at village level	36	75.00	V
8.	Minimum supporting price should be Available	37	77.08	IV
9.	Improved varieties should be available in govt. agency at reasonable rate.	27	56.25	IX
10.	Incentives should be given to the farmer for recognition and appreciation.	23	47.92	X

The results in Table 4.35 indicated that the majority of the beneficiaries suggested as creating the people towards soybean production technology machinery of harvesting should be used (91.67 %), improved farm machineries should be available at reasonable rate. (89.58 %), trainees should timely visited to krishi vigyan Kendra (85.42 %), minimum supporting price should be available (77.08 %), agricultural scientist should visit once in week at village level (75.00 %), conducting research on seed trial at village level (72.92 %),

Technical skill programme should be available at village level (62.50 %), infrastructure should be available for using the technological skill at the village level by government (58.33 %), improved varieties should be available in govt. agency at reasonable rate (56.25 %) and incentives should be given to the farmer for recognition and appreciation (47.92 %) respectively.

Table 4.36: Suggestions given by non-beneficiaries for soybean production technologies N=48

S.N.	Suggestions	No. of Non Beneficiaries	%	Rank
1	Machinery of harvesting should be available	41	85.42	**IV**
2	Improved varieties should be available in govt. agency at reasonable rate.	43	89.58	**III**
3	Training should be available by Krishi Vigyan Kendra and agriculture department at village level.	31	64.58	**VII**
4	Produce should be sold at reasonable price	44	91.67	**II**
5	Weather forecasting should be available at proper time	25	52.08	**VIII**
6	Minimum supporting price should Be available	36	75.00	**VI**
7	Organic manures with bio fertilizers Should be available at village level	18	37.50	**X**
8	Credit should be available at low interest	39	81.25	**V**
9	Good quality product should be available at village level	24	50.00	**IX**
10	Out-side exposure visit should be available	46	95.83	**I**

The results in Table 4.36 indicated that the majority of the non beneficiaries suggested to attracting the people towards soybean production technology Out-side exposure visit should be available (95.83 %), Produce should be sold at reasonable price (91.67 %), improved varieties should be available in govt. agency at reasonable rate (89.58 %), machinery of harvesting should be available (85.42 %), Credit should be available at low interest (81.25 %), Minimum supporting price should be available (75.00 %), Training should be available by Krishi Vigyan Kendra and agriculture department at village level. (64.58 %), Weather forecasting should be available at proper time (52.08 %), Good quality product should available at village level (50.00 %) and Organic manures with bio fertilizers Should be available at village level (37.50 %).

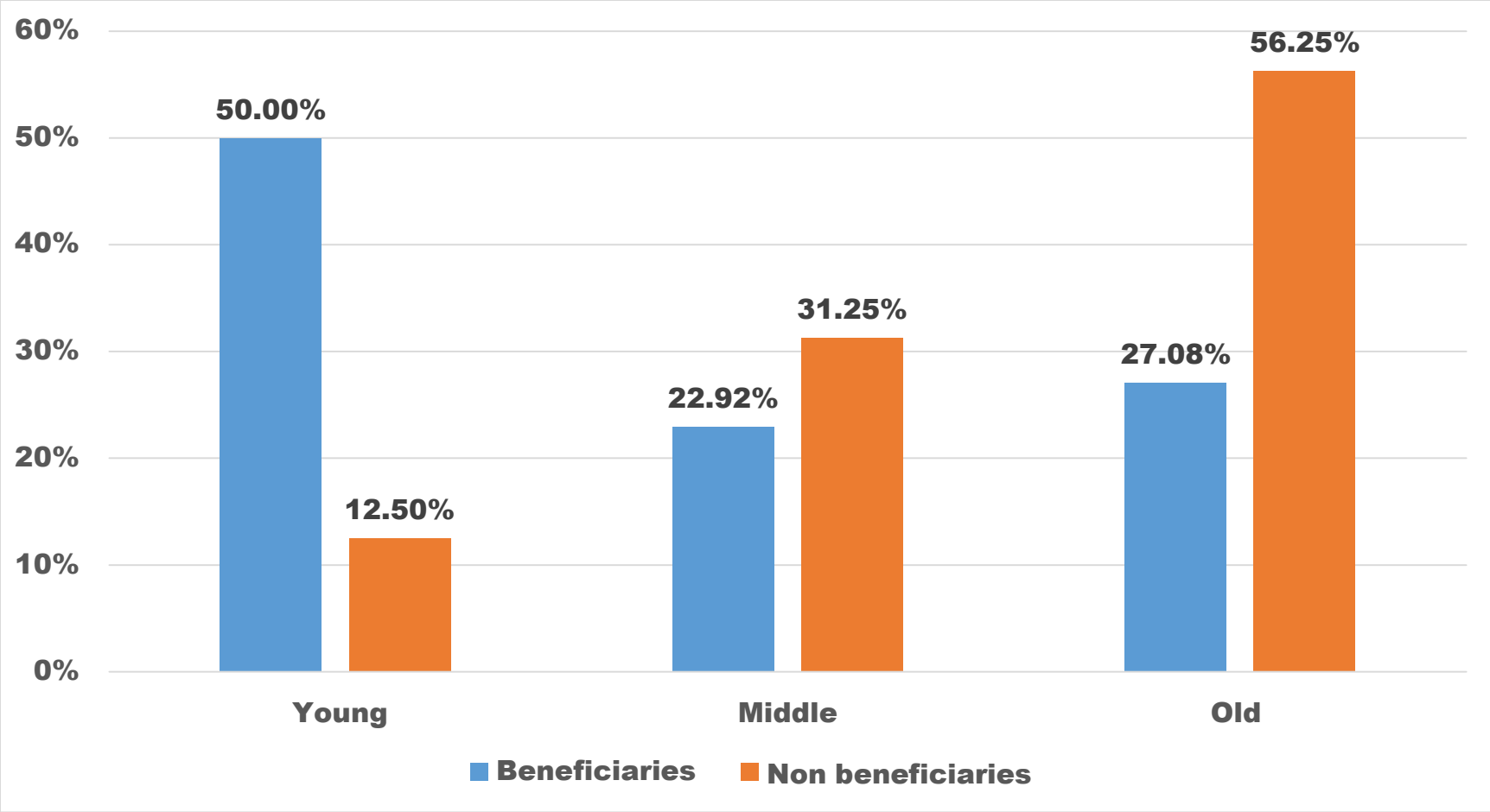


Fig. 4.1: Distribution of the beneficiaries and non beneficiaries according to their age

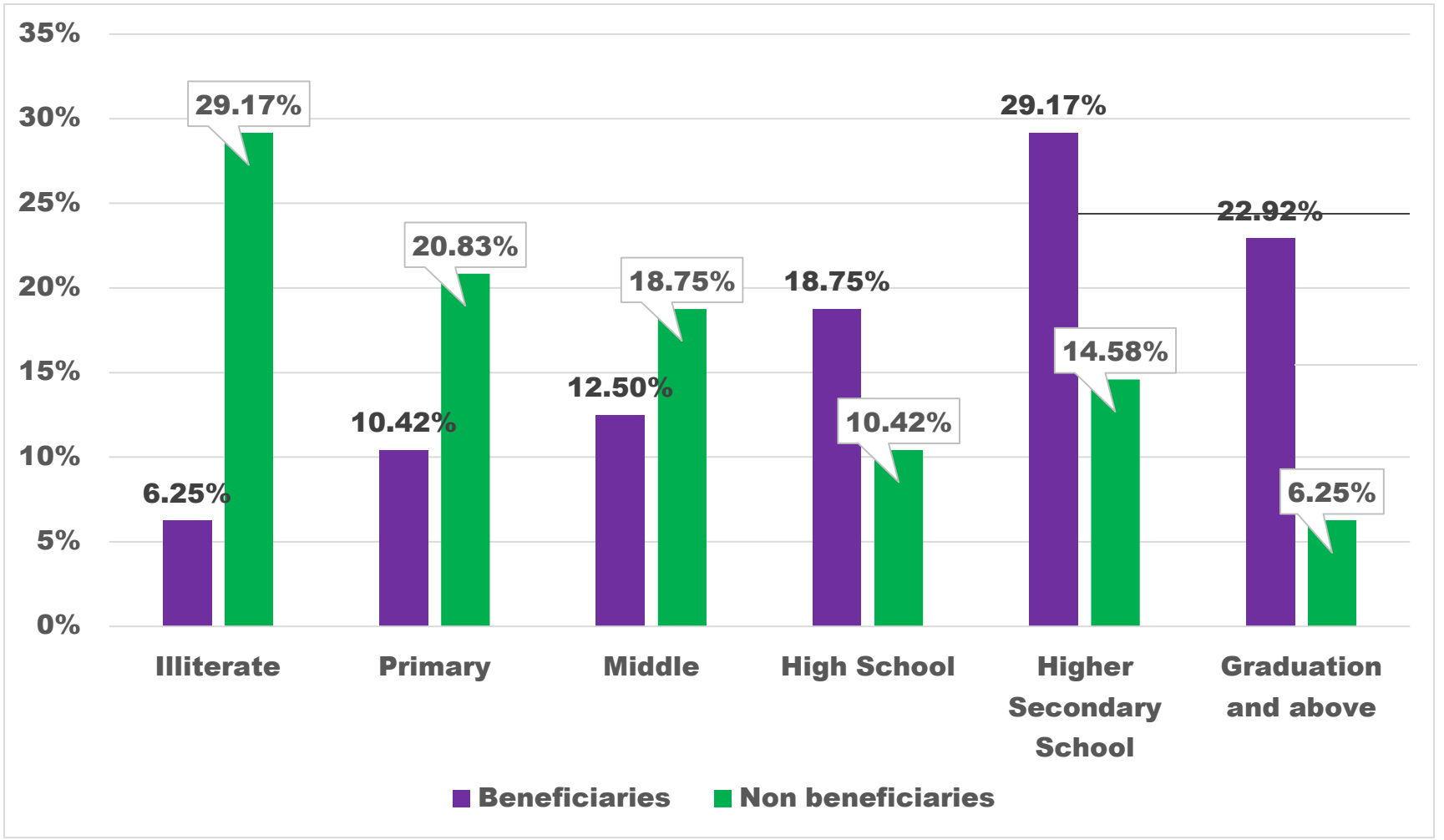


Fig. 4.2: Distribution of the beneficiaries and non beneficiaries according to their education

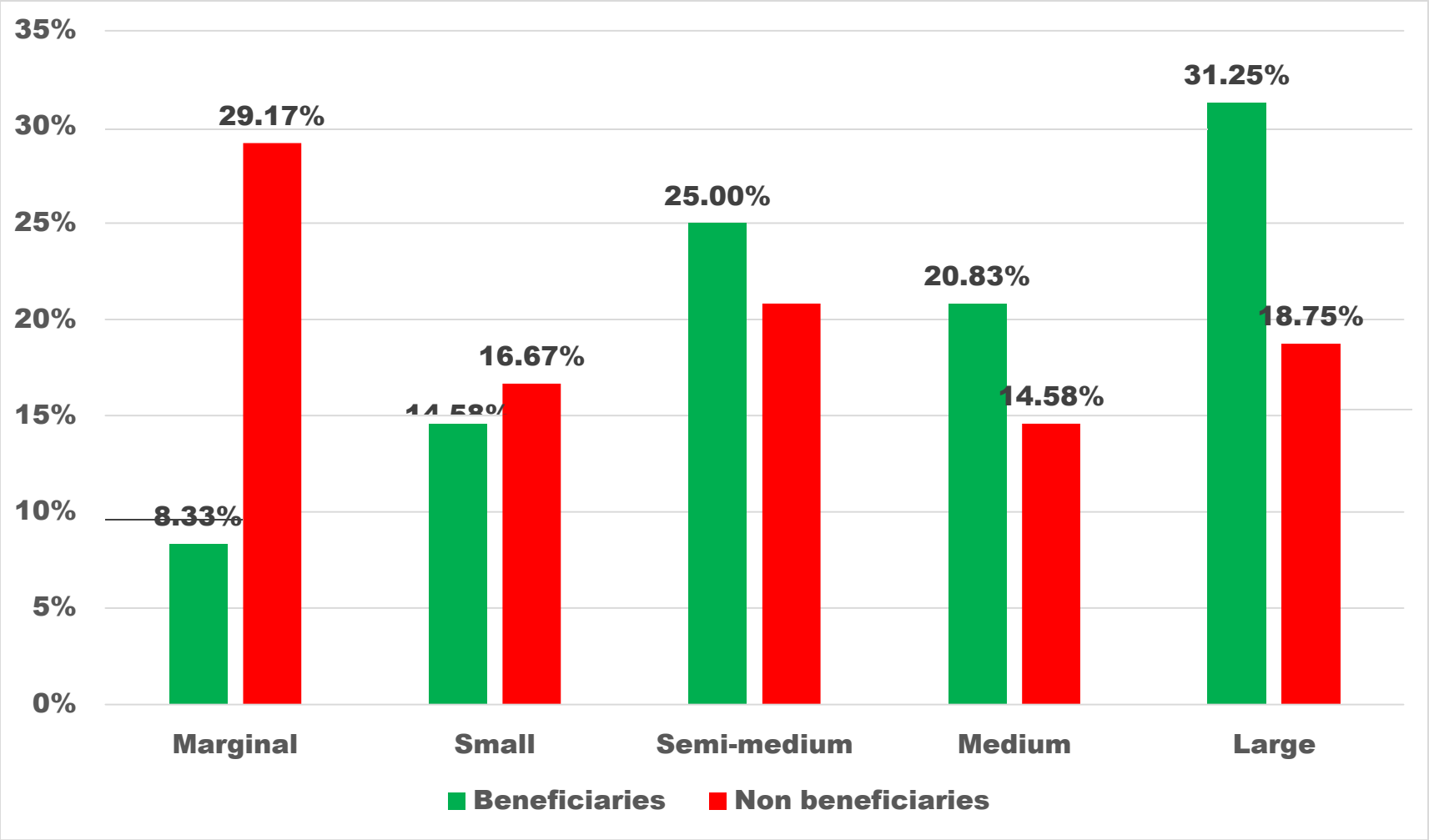


Fig. 4.3: Distribution of the beneficiaries and non- beneficiaries according to their size of land holding

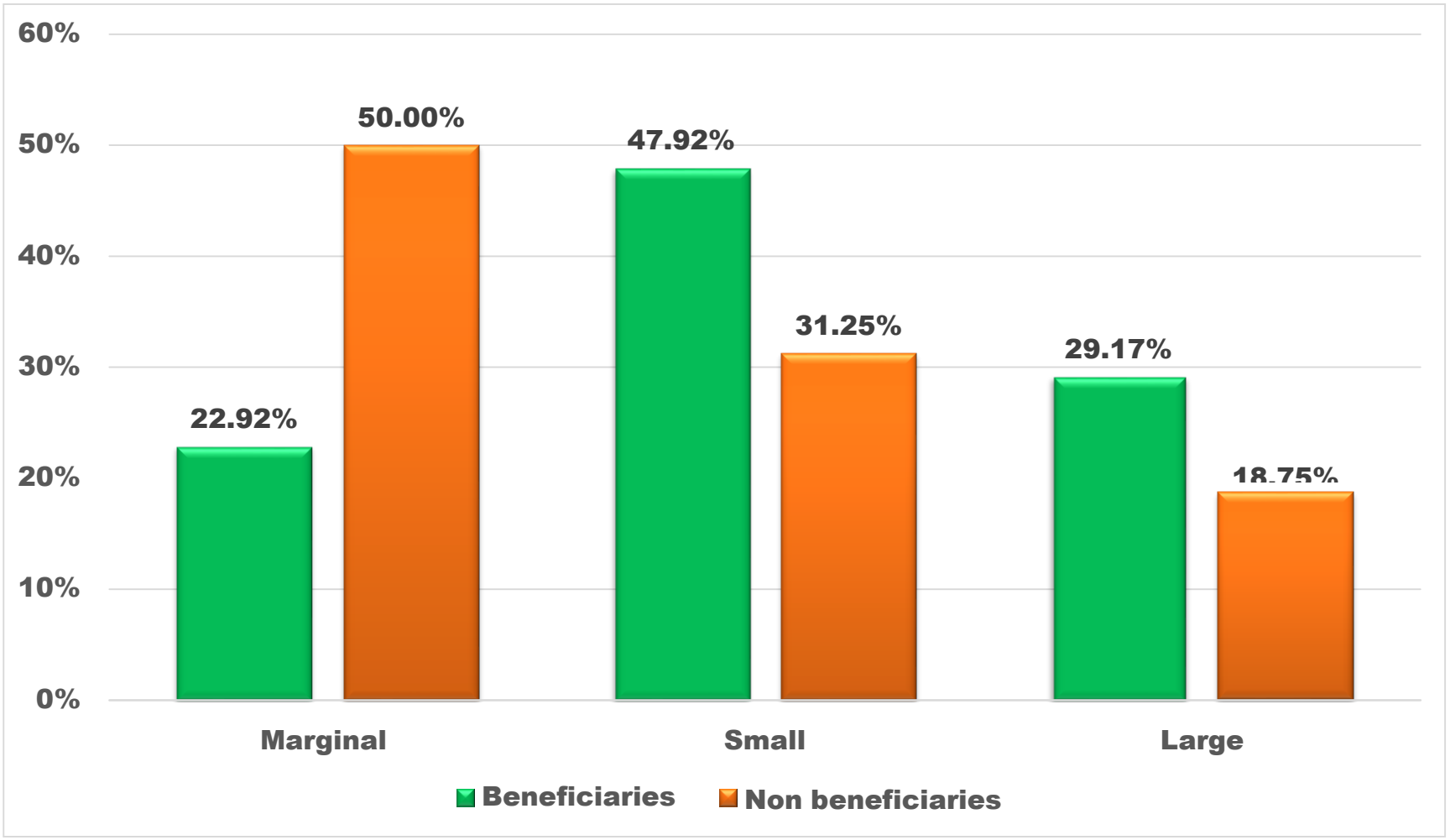


Fig. 4.4: Distribution of the beneficiaries and non- beneficiaries according to their land under soybean

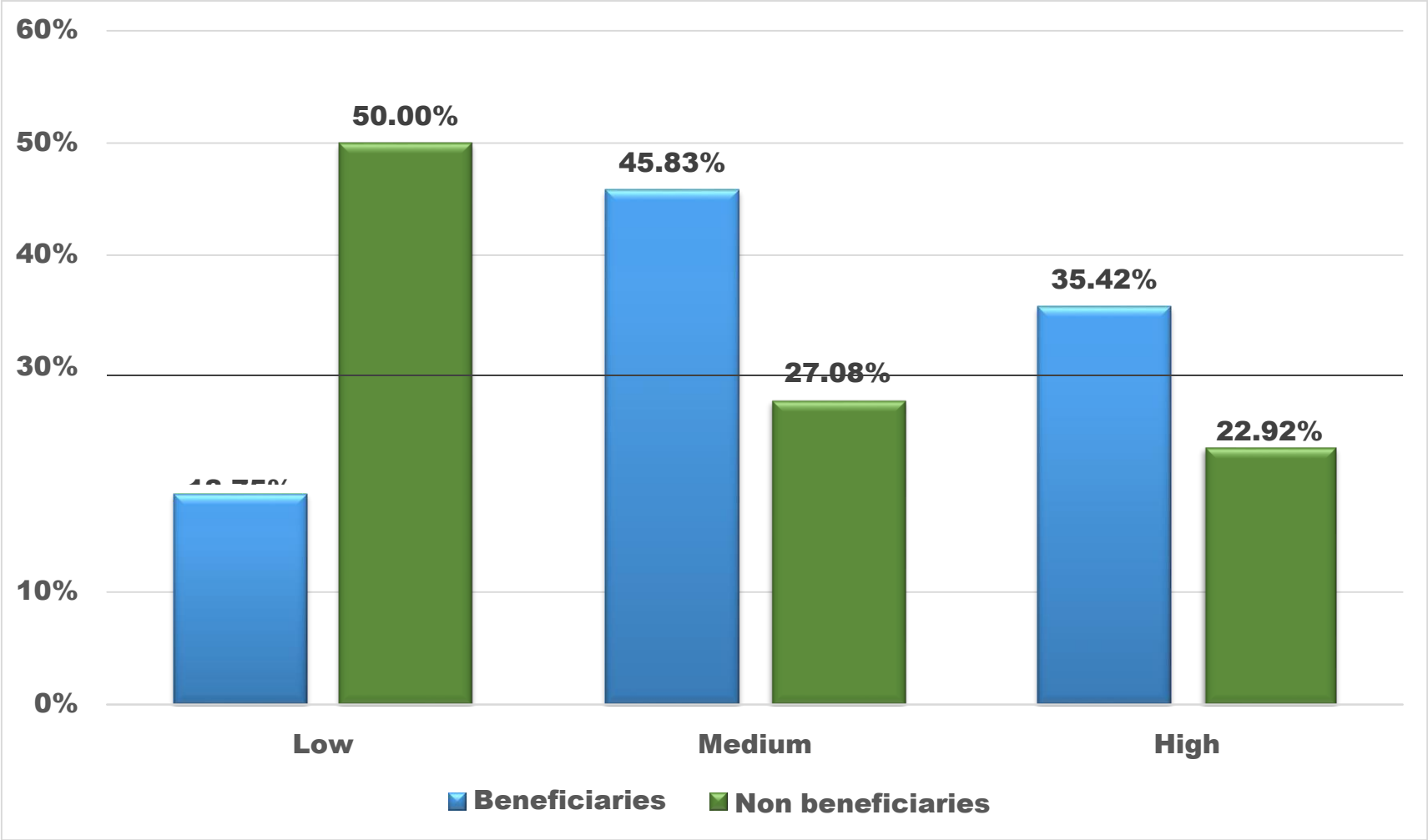


Fig. 4.5: Distribution of beneficiaries and non- beneficiaries according to their annual income

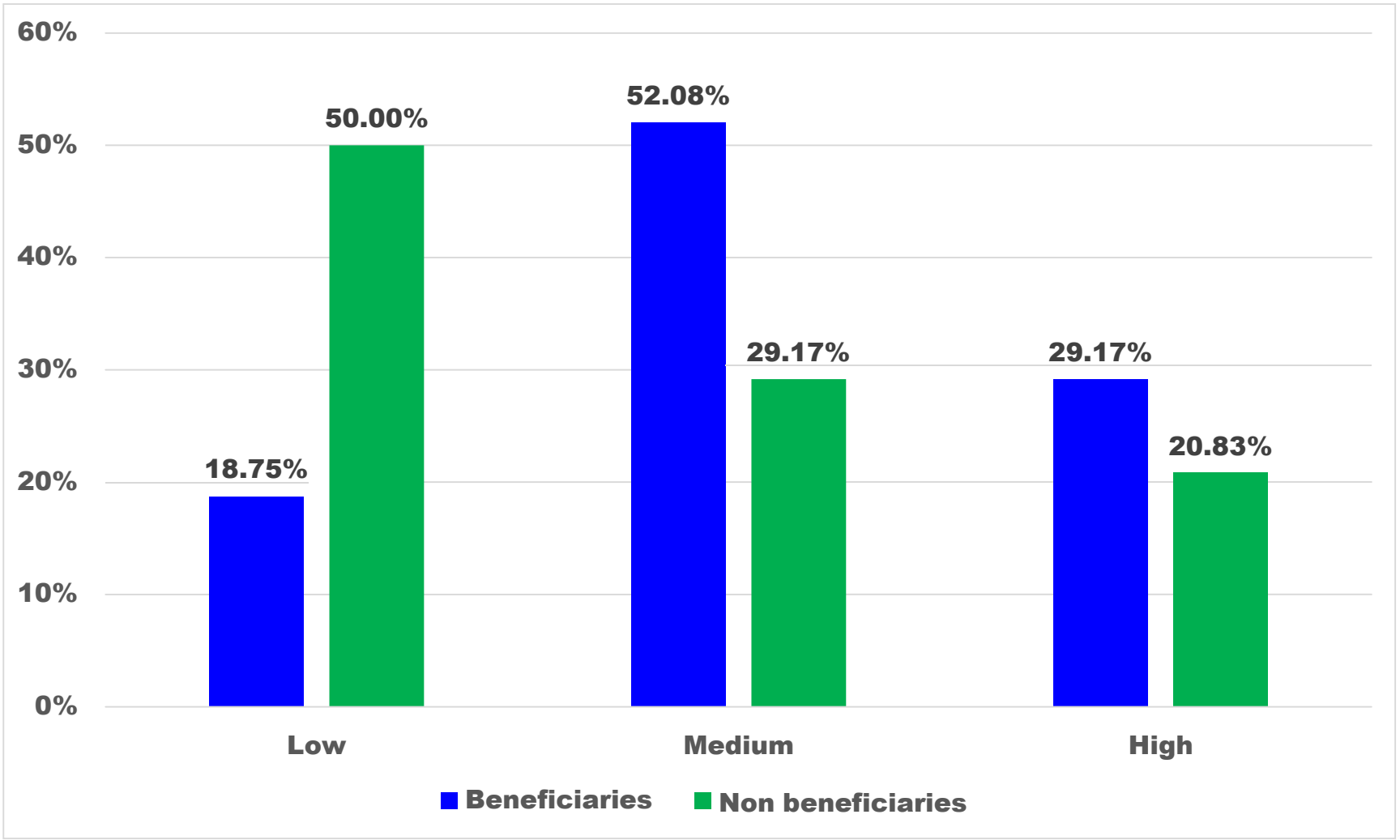


Fig. 4.6: Distribution of beneficiaries and non-beneficiaries according to their income from soybean

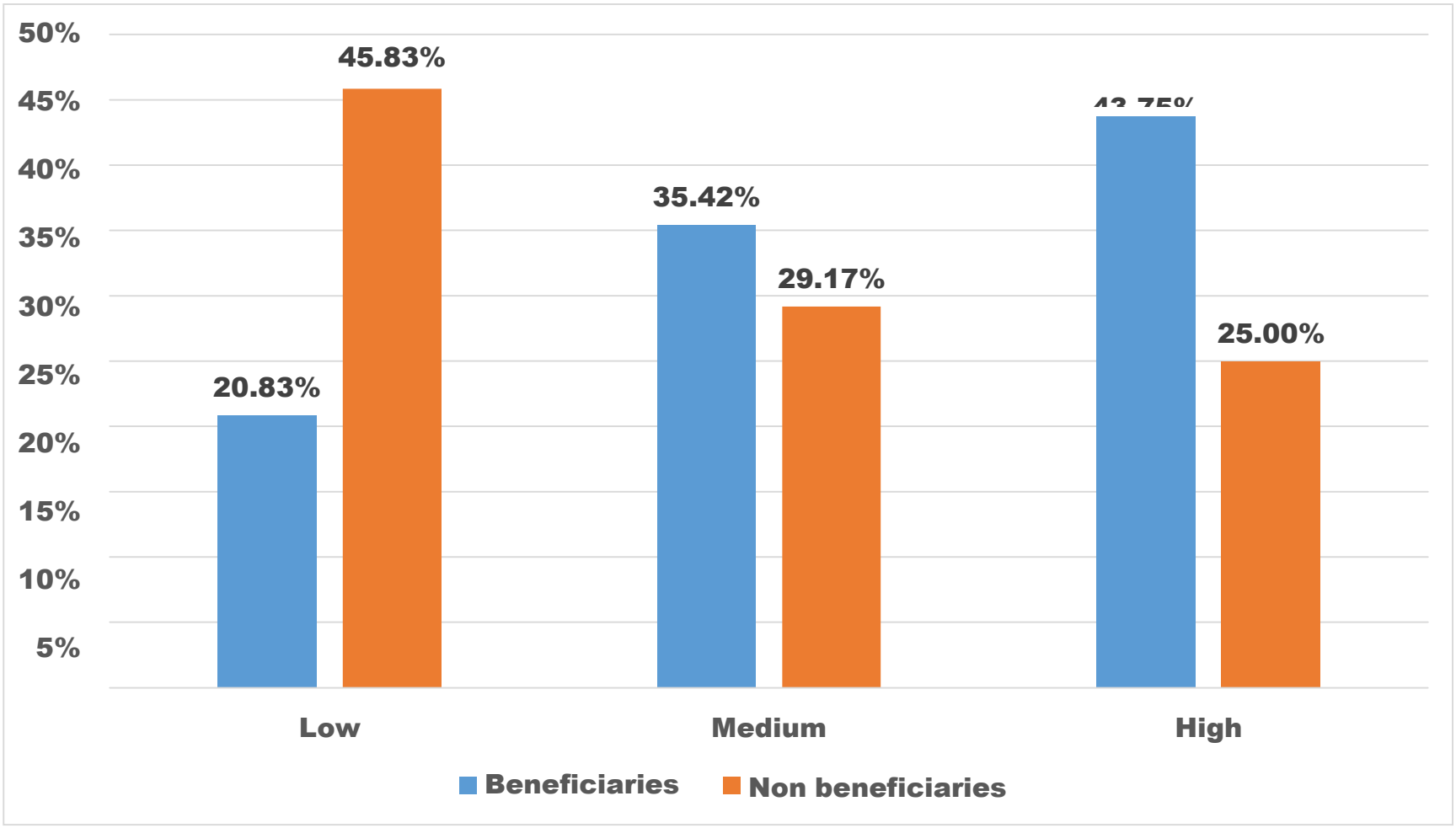


Fig. 4:7 Distributions of beneficiaries according to their information seeking behavior

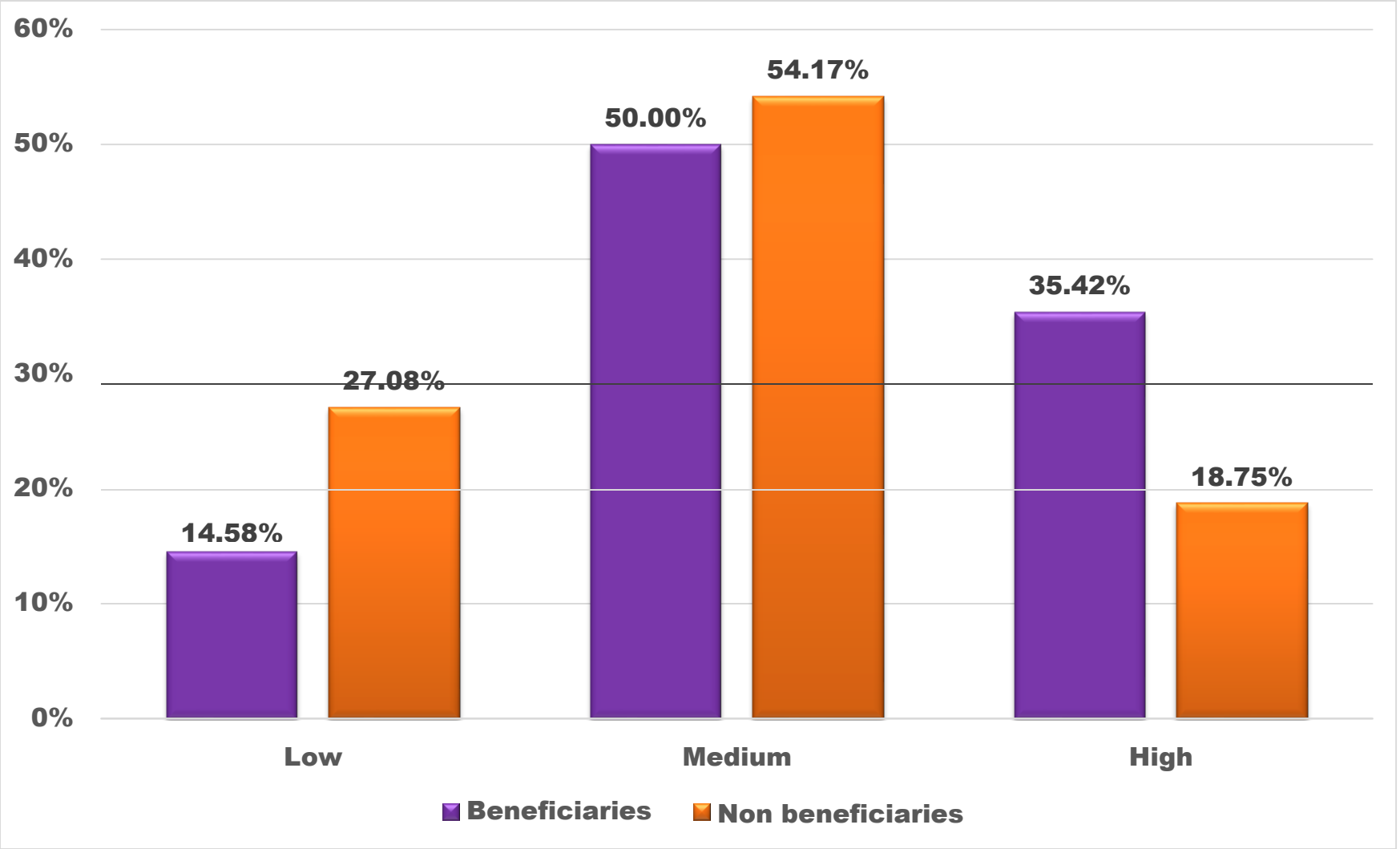


Fig. 4.8: Distribution of beneficiaries according to their perception towards FLD

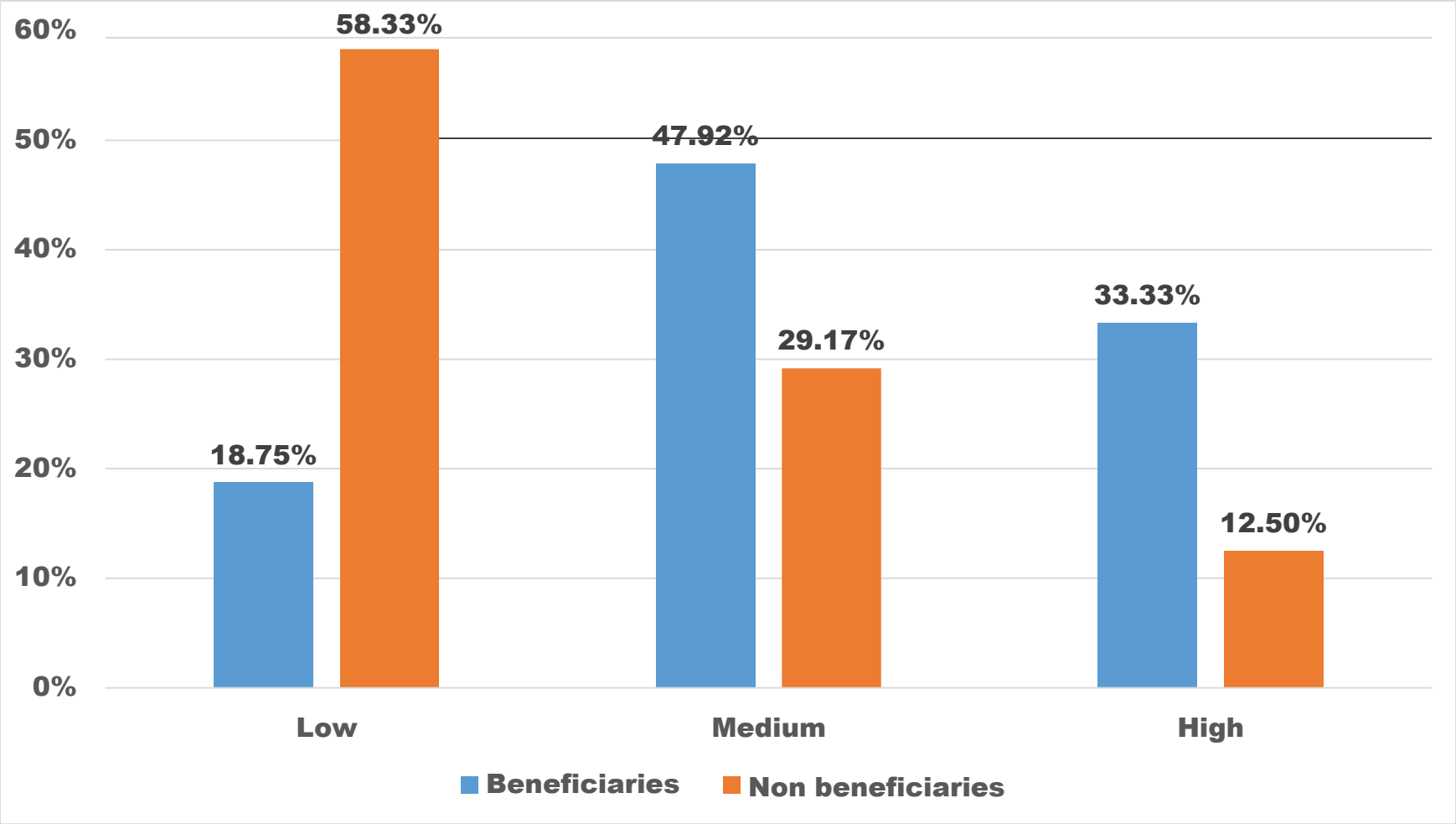


Fig. 4.9: Distribution of beneficiaries and non beneficiaries according to their knowledge about soybean production technology

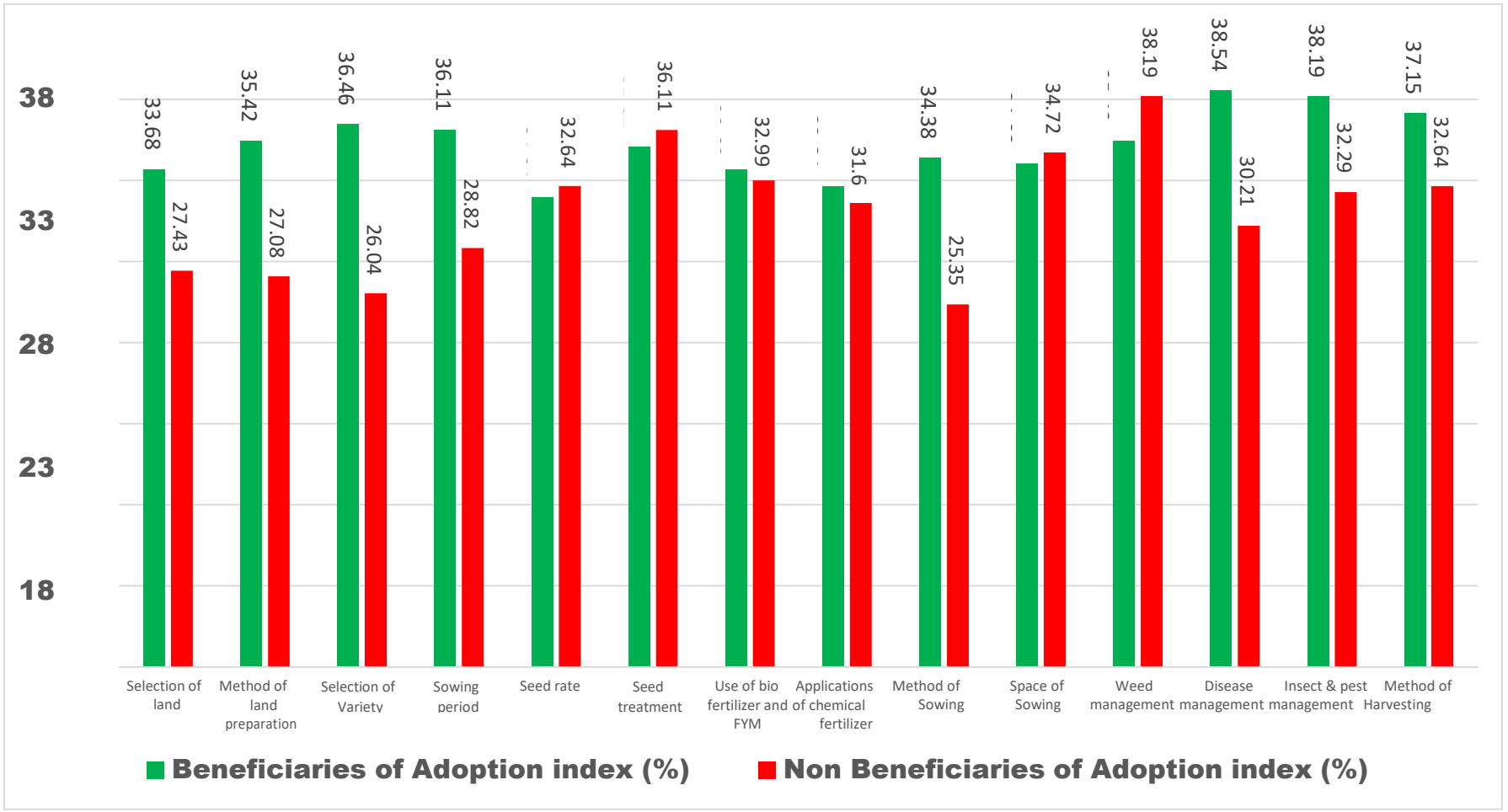


Fig. 4.10: Distribution of beneficiaries and non- beneficiaries according to their adoption index (%) in Soybean production technologies.

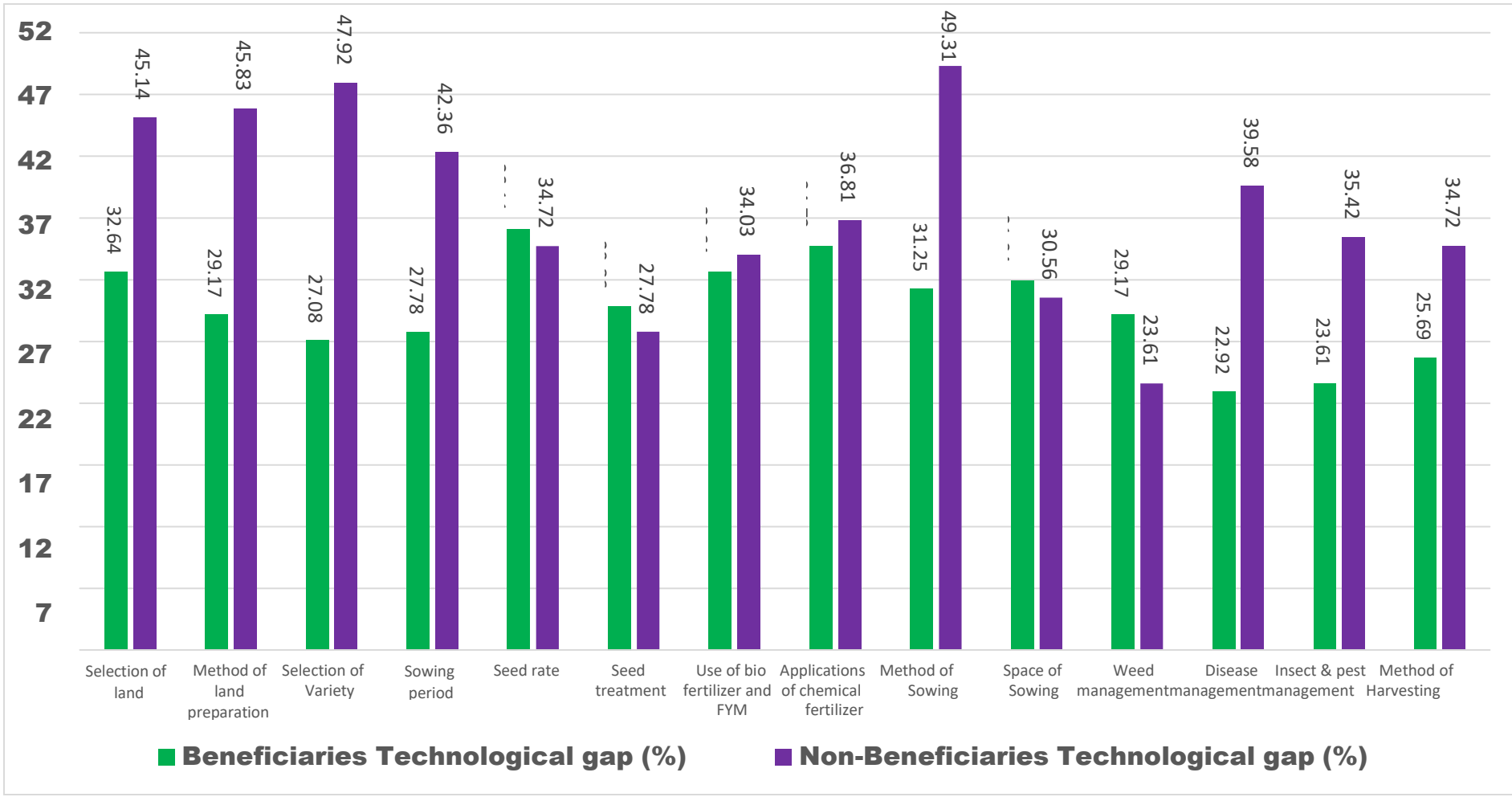


Fig. 4.11: Measure the technological gap in Soybean production technological under FLD through KVK programme as adopted by Soybean FLD beneficiaries and Non beneficiaries

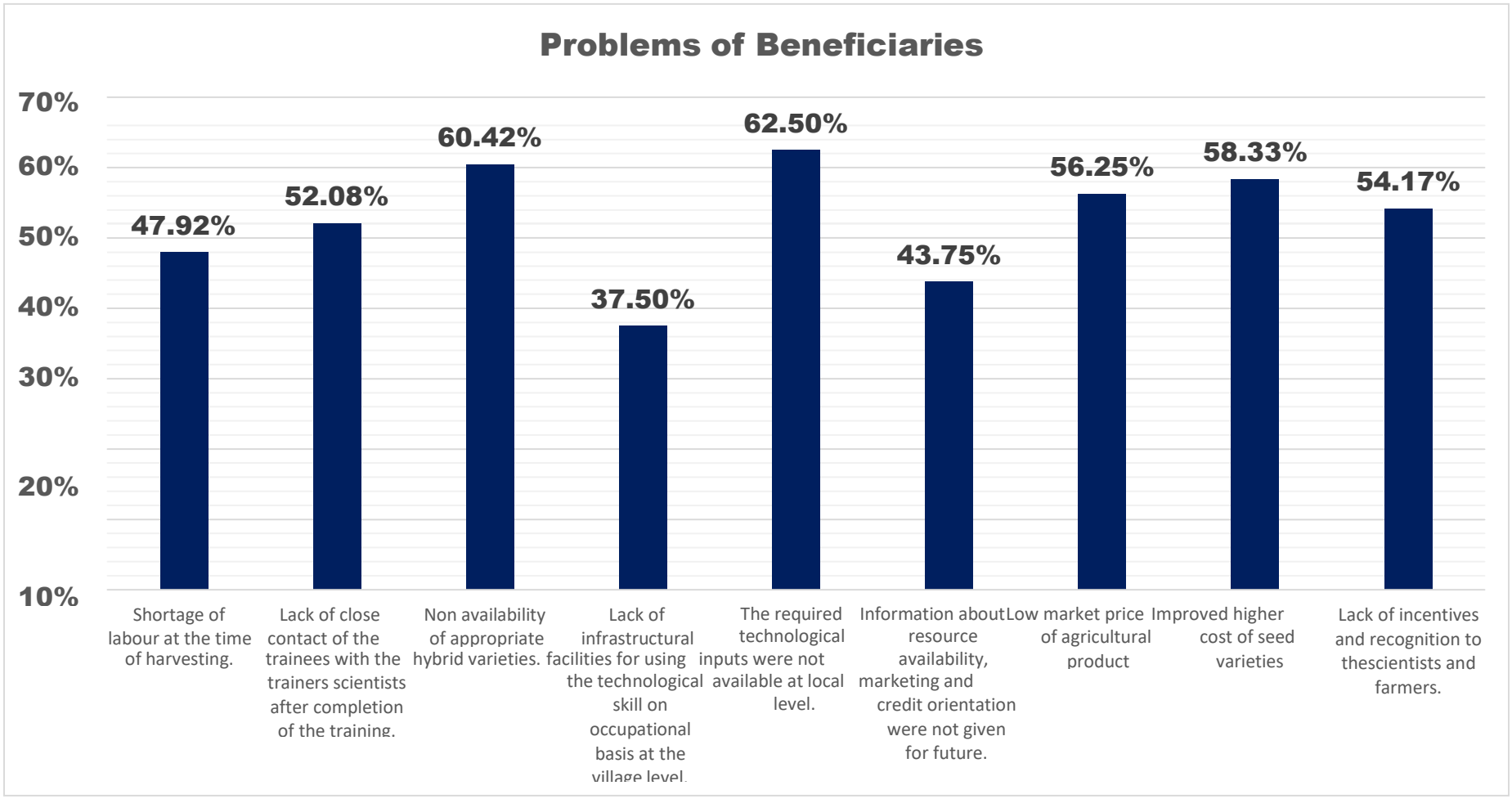


Fig. 4.12 Problems encountered by the beneficiaries of soybean leading to technological gap through FLD programme.

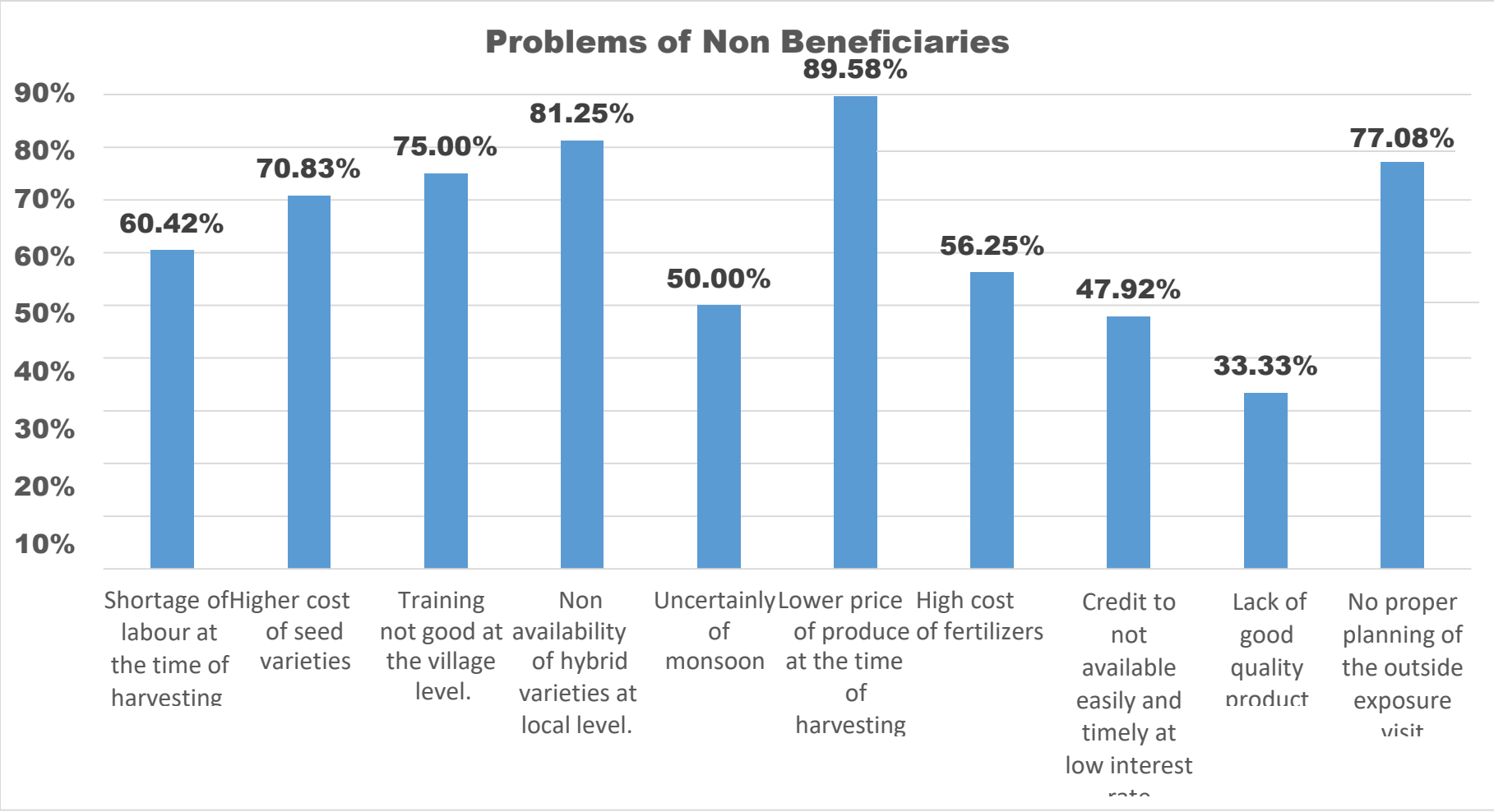


Fig. 4.13 Problems encountered by the non beneficiaries of soybean leading to technological gap through FLD programme.

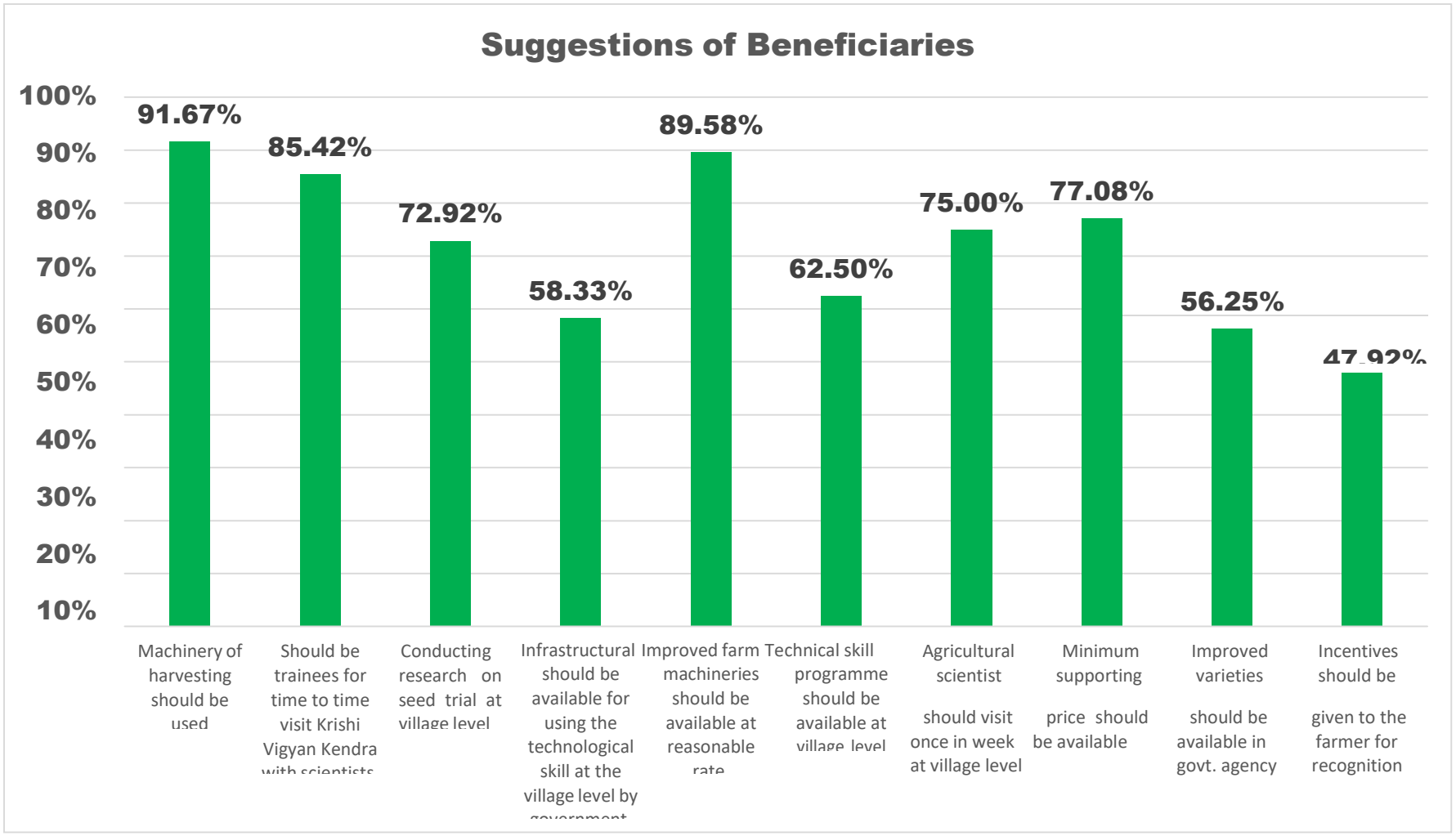


Fig. 4.14: Suggestions given by FLD beneficiaries for soybean production technologies

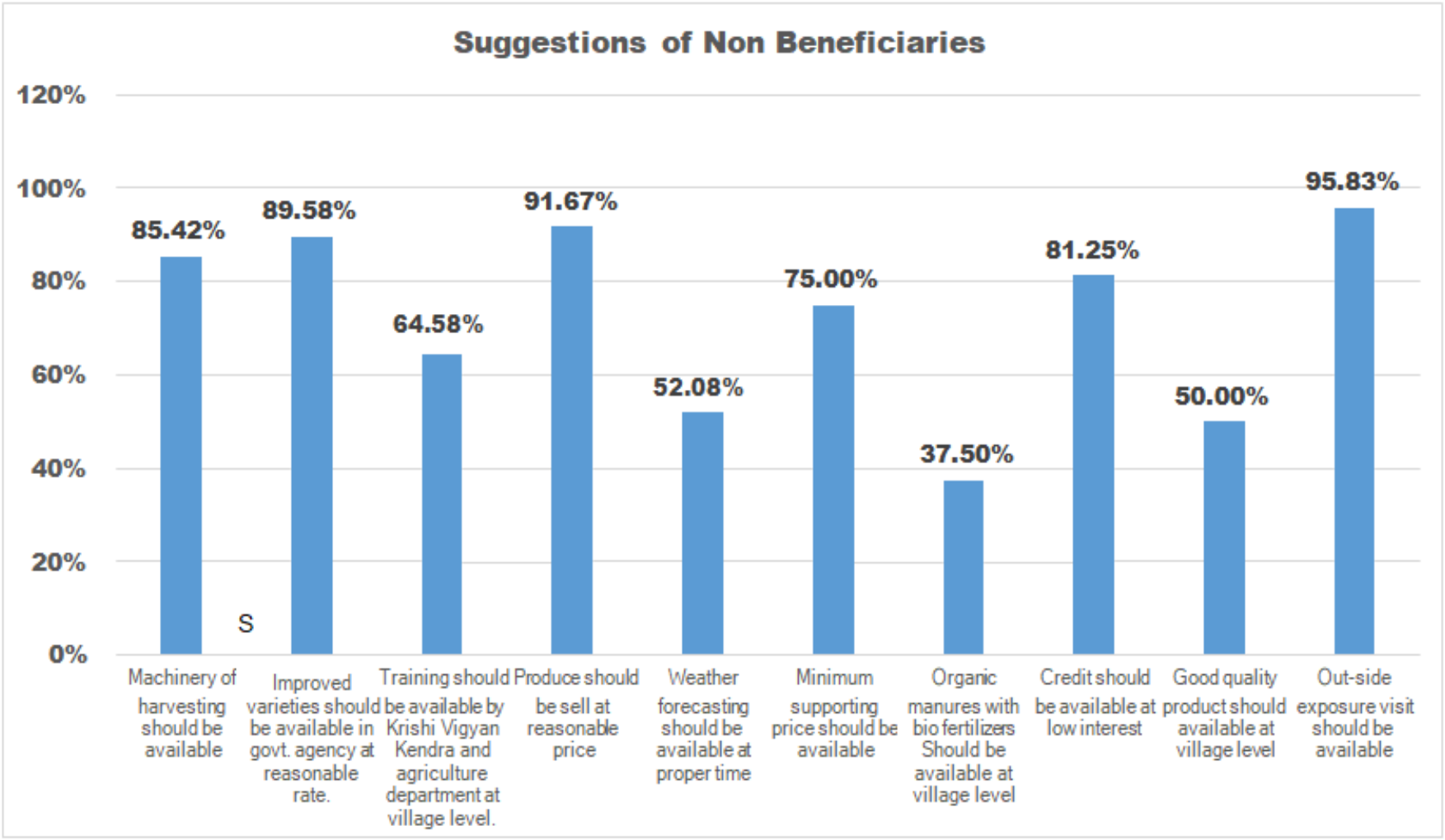


Fig. 4.15: Suggestions given by non-beneficiaries for soybean production technologies

CHAPTER - V

DISCUSSION

The results presented in the previous chapter in relation to the present study on Technological Gap in Soybean Production Technology under FLD through KVK, Ashoknagar District of Madhya Pradesh. In this chapter the results with possible reasons and explanation have been given to interpret the observed phenomena with the help of findings of the research studies conducted earlier in this field.

For the sake of convenience and easy interpretation of the results of the study, the discussion is made under the following suitable sub-headings:

- Socio personal, economic, communication and psychological profile of FLD beneficiaries and non beneficiaries
- Technological gap in soybean production technologies under FLD programme as adopted by soybean FLD beneficiaries.
- Relationship between profile of the soybean FLD beneficiaries and non beneficiaries and technological gap in soybean production.
- Problems encountered by the soybean growers leading to technological gap and suggestion given to overcome them.

5.1 Socio personal, economic, communicational and psychological profile of FLD beneficiaries and non beneficiaries.

Age is the interval of time between the day, month and year of birth and the day and year of occurrence of the event expressed in the largest completed unit of solar time such as years for adults and children and months, weeks, days, hours or minutes of life, as appropriate, for infants under one year of age. Similar results were also revealed by Rajpoot (2011) and Singh *et al.* (2016). The data reported that out of total respondents, the 50.00 % of beneficiaries and 12.50 % of non-beneficiaries the farmers are of young age group. The 22.92 % of beneficiaries and 31.25 % of non-beneficiaries the farmers are of middle age group and 27.08%

of beneficiaries and 56.25 % of non-beneficiaries of the respondents belonged to old age group.

The finding regarding level of education shows that higher percentage of respondents had education higher secondary school and above followed by Graduation and above, high school, middle school, primary level and illiterate. This could be attributed to the medium level of education of the beneficiaries which helped them to acquire knowledge about the programme out of 48 non beneficiaries farmers, higher percentage of the beneficiaries i.e. 29.17 per cent belonged to higher secondary school category.

Large size of land holding was dominated followed by semi-medium, medium, small size of land holding and marginal size of land holding of benefiters. Due to fragmentation and division of land holding, the farmers are mostly keeping semi-medium size of land holding. Similar results were also revealed by Naik (2013) and Singh *et al.* (2016). Out of 48 non beneficiaries farmers, higher percentage of the non beneficiaries i.e. 20.83 per cent belonged to semi-medium followed by large size of land holding and small size of land holding category.

The distribution of respondents according to their area under soybean shows that out of total beneficiaries respondents had small size (47.92 % area under soybean followed by large size (29.17 %) area under soybean and marginal size (22.92 %) area under soybean. The data also revealed that out of total non-beneficiaries farmers, higher percentage of the non beneficiaries i.e., 50.00 per cent belonged to marginal area under soybean followed by 31.25 per cent belonged to marginal area and 18.75 per cent belonged to large area under soybean.

The percent distribution of respondents according to their annual income shows that out of total beneficiaries 45.83 per cent had medium annual income followed by high income (35.42 %) from soybean and low income (18.75 %) from soybean. The probable reasons for majority of beneficiaries earning higher annual income was the adoption of improved technologies. Similar results were also

revealed by Maratha (2015). The data also revealed that out of total non-beneficiaries farmers, higher percentage of the beneficiaries i.e., 50.00 per cent belonged to low annual income group.

The percent distribution of respondents according to their income from soybean shows that out of 48 beneficiaries 48.33 per cent had medium income (52.08 %) from soybean followed by high income from soybean and low income from soybean. The probable reasons for majority of beneficiaries earning higher income from soybean FLD was the adoption of improved technologies which significantly increased the yield as well as yield attributing traits of crop and also the net returns to the farmers. Similar results were also revealed by Waghamare (2014). The data also revealed that out of total non-beneficiaries farmers, higher percentage of the beneficiaries i.e., 50.00 per cent belonged to low income from soybean group.

The distribution of respondents according to their source of information shows that out of 48 beneficiaries respondents have high source of information (43.75%) followed by middle source of information and low source of information. The reason attributed for high information because farmers observed by their information that new innovation which is demonstrated may have higher impact on productivity and income. Similar results were also revealed by Raghuwanshi (2014). Also depicts that out of 48 non beneficiaries farmers, higher percentage of the non beneficiaries i.e. 45.83 per cent belonged to high source of information category.

The percentage distribution of respondents according to their perception toward FLD shows that out of 48 beneficiaries 50.00 per cent respondents had medium perception toward FLD followed by high perception toward FLD and low perception toward FLD. KVK gave the clear perception towards soybean FLD to the beneficiaries. High level of perception had been developed in the beneficiaries because of KVK contributed in building a positive attitude towards FLD. The table also revealed that out of 48 non beneficiaries farmers, higher percentage of the non beneficiaries i.e., 54.17 per cent belonged to medium perception group.

The percentage distribution of respondents according to their knowledge about soybean production technology shows that out of 48 beneficiaries 47.92 per cent respondents had medium knowledge about soybean production technology followed by high knowledge about soybean production technology and low knowledge about soybean production technology. Economically motivated farmers are generally oriented towards maximization of the profits and have better contact with extension agencies to seek knowledge of new innovations resulting in adoption. The table also revealed that out of 48 non beneficiaries farmers, higher percentage of the non beneficiaries i.e., 58.33 percent belonged to medium knowledge about soybean production technology group.

5.2 Measurement of adoption level in soybean production technologies under FLD programmes

Adoption level of beneficiaries:-

As observed disease management, 38.54 per cent were having high adoption index categories by soybean FLD beneficiaries followed by insect & pest management 38.19 per cent, method of harvesting 37.15 per cent, selection of variety 36.46 per cent, sowing period 36.11 per cent, method of land preparation 35.42 per cent, weed management 35.42 per cent, seed treatment 35.07 per cent, method of sowing 34.38 per cent, space of sowing 34.03 per cent, selection of land 33.68 per cent, use of bio fertilizer and FYM 33.68 per cent, applications of chemical fertilizer 32.64 per cent, seed rate 31.94 per cent had low adopted categories by soybean FLD beneficiaries. Medium and high level adoption of soybean cultivation was there under FLD. This reason might have helped in popularity of soybean again and farmers showed their interest due to increase in new technologies *like*, conservation tillage, land configuration, bio-pesticides, bio-fertilizers and high yield varieties of soybean and getting high income. This finding finds support with the work of Meena (2011), Jeenger *et al.* (2012), Rathod *et al.* (2013), Singh *et al.* (2014), Virang *et al.* (2016) and Datarkar *et al.* (2016).

Adoption level of Non beneficiaries:

As regards, weed management 38.19 per cent were having high adopted index categories by FLD beneficiaries followed by seed treatment 36.11 per cent, space of sowing 34.72 per cent, use of bio fertilizer and FYM 32.99 per cent, seed rate 32.64 per cent, method of harvesting 32.64 per cent, insect & pest management 32.29 per cent, applications of chemical fertilizer 31.60 per cent, disease management 30.21 per cent, sowing period 28.82 per cent, selection of land 27.43 per cent, method of land preparation 27.08 per cent, selection of variety 26.04 per cent, method of sowing 25.35 per cent had low adopted categories by FLD beneficiaries.

5.3 Measure the technological gap in Soybean production technologies under FLD through KVK programme

Technological gap of beneficiaries:

As observed the highest technological gap index in highest seed rate (36.11 %) followed by applications of chemical fertilizer (34.72 %), selection of land (32.64 %), use of bio fertilizer and FYM (32.64 %), space of sowing (31.94 %), method of sowing (31.25 %), seed treatment (29.86 %), method of land preparation (29.17 %), weed management (29.17 %), sowing period (27.78 %), selection of variety (27.08 %), method of harvesting (25.69 %), insect & pest management (23.61 %) and disease management (22.92 %) in technological gap of beneficiaries about soybean production technology. This finding finds support with the work of Raghuwanshi (2016), Badaya *et al.* (2017), Hariyale *et al.* (2018) and Singh *et al.* (2019).

Technological gap of Non beneficiaries:

As observed the highest technological gap index in method of sowing (49.31 %), selection of variety (47.92 %), method of land preparation (45.83 %), selection of land (45.14 %), sowing period (42.36 %), disease management (39.58 %), applications of chemical fertilizer (36.81 %), insect & pest management (35.42 %),

seed rate (score 34.72 %), method of harvesting (34.72 %), use of bio fertilizer and FYM (34.03 %), space of sowing (30.56 %), seed treatment (27.78 %), weed management (23.61 %) in technological gap of non beneficiaries about soybean production technology.

5.4 Relationship between profile of the soybean FLD beneficiaries and non beneficiaries and technological gap in soybean production.

Beneficiaries:-

The association between age and extent of dependent variables (technological gap in soybean production) of respondents found non-significant. Age is responsible variable for technological gap in soybean production. Similar results were also revealed by Singh *et al.* (2010), Bunkar *et al.* (2013) and Ranjan *et al.* (2017).

The association between education extents of dependent variables (technological gap in soybean production) of respondents was found significant .it shows that education must important variable to improve Socio economic status. Similar results were also revealed by Prabhakar (2011), Bunkar *et al.* (2013) and Ranjan *et al.* (2017).

The association between land holding and extent of dependent variables (technological gap in soybean production) of respondents was found significant. Land holding size is found increasing of farmers interest in cultivation of soybean practices. Similar results were also revealed by Singh *et al.* (2010), Bunkar *et al.* (2013) and Kumawat (2015).

The association between area under soybean and extent of dependent variables (technological gap in soybean production) of respondents was found significant. Farmers growing soybean other than soybean FLD area are aware increasing profit.

The association between annual income and extent of dependent variables (technological gap in soybean production) of respondents was found significant.

Annual income plays a significant role in old cultivation practices of agriculture allied to annual income and adoption of new ideas in economic activities of an individual. Similar results were also revealed by Ghadge and Fattepurkar (2018).

The association between income from soybean and extent of dependent variables (technological gap in soybean production) of respondents was found significant. Income plays a significant role in old cultivation practices of soybean and adoption of new ideas in economic activities of an individual. Similar results were also revealed by Ghadge and Fattepurkar (2018).

The association between source of information and extent of dependent variables (technological gap in soybean production) of respondents was found significant. It has important variable of adoption soybean production technology. Similar results were revealed by Ranjan *et al.* (2017).

The association between perception towards FLD and extent of dependent variables (technological gap in soybean production) of respondents was found significant. Due to the continuous inspection of scientists and extension workers on farmer's field under FLD programme, farmers discussed their queries with scientists and have good perception towards FLD created by the monitoring team respondence have found clear & specific knowledge about soybean cultivation practices. Similar results were also revealed by Kumar and De (2016).

The association between knowledge about soybean production technology and extent of dependent variables (technological gap in soybean production) of respondents was revealed significant. Economically motivated farmers are generally oriented towards maximization of the profits and have better contact with extension agencies to seek knowledge of new innovations resulting in adoption. Similar results were also revealed by Badhala and Jat (2014), Kumawat (2015), Kumar and De (2016).

Non beneficiaries:-

The association between age and extent of dependent variables (technological gap in soybean production) of respondents found non-significant .Similar results were also revealed by by Singh *et al.* (2010), Bunkar *et al.* (2013) and Ranjan *et al.* (2017).

The association between education and extent of dependent variables (technological gap in soybean production) of respondents was found significant. Similar results were also revealed by Prabhakar (2011), Bunkar *et al.* (2013) and Ranjan *et al.* (2017).

The association between land holding and extent of dependent variables (technological gap in soybean production) of respondents was found significant. Similar results were also revealed by Singh *et al.* (2010), Bunkar *et al.* (2013) and Kumawat (2015).

The association between area under soybean and extent of dependent variables (technological gap in soybean production) of respondents was found significant.

The association between annual income and extent of dependent variables (technological gap in soybean production) of respondents was found non-significant. The association between income from soybean and extent of dependent variables (technological gap in soybean production) of respondents was found non-significant. Similar results were also revealed by Ghadge and Fattepurkar (2018).

The association between source of information and extent of dependent variables (technological gap in soybean production) of respondents was found significant. Similar results were revealed by Ranjan *et al.* (2017).

The association between perception towards FLD and extent of dependent variables (technological gap in soybean production) of respondents was found non-significant. Similar results were also revealed by Kumar and De (2016).

The association between knowledge about soybean production technology and extent of dependent variables (technological gap in soybean production) of respondents was revealed significant. Similar results were also revealed by Badhala and Jat (2014), Kumawat (2015), Kumar and De (2016).

5.5. Problems encountered by the soybean growers leading to technological gap and suggestion given to overcome them.

Beneficiaries

The major problems experienced by the trained farmers in knowledge and skill acquisition were arranged in descending order on the basis of rank order as the required technological inputs were not available at local level (62.50 %) followed by non availability of appropriate hybrid varieties (60.42 %), improved higher cost of seed varieties (58.33 %), low market price of agricultural product (56.25 %), lack of incentives and recognition to the scientists and farmers (54.17 %), lack of close contact of the trainees with the trainers scientists after completion of the training (52.08 %), Shortage of labour at the time of harvesting (47.92 %), information about resource availability, marketing and credit orientation were not given for future (43.75 %) and lack of infrastructural facilities for using the technological skill of occupational basis at the village level (37.50 %) by Piparde (2012), Deepika and Asokhan (2019).

Non beneficiaries

The major problems experienced by the farmers in knowledge and skill acquisition were arranged in descending order on the basis of rank order as the ower price of produce at the time of harvesting (89.58 %) followed by non availability of hybrid varieties at local level (81.25 %), no proper planning of the outside exposure visit (77.08 %), training not good at the village level (75.00 %), higher cost of seed varieties (70.83 %), shortage of labour at the time of harvesting (60.42 %), high cost of fertilizers (56.25 %), uncertainly of monsoon (50.00 %), credit to not available easily and timely at low interest rate (47.92 %) and lack of good quality product (33.33 %) by Piparde (2012), Deepika and Asokhan (2019).

Suggestions for the growers of soybean leading to technological gap through FLD programme.

Beneficiaries

Majority of the beneficiaries suggested to creating the people towards soybean production technology machinery of harvesting should be used (91.67 %), improved farm machineries should be available at reasonable rate. (89.58 %), trainees should be timely visited to krishi vigyan kendra (85.42%), minimum supporting price should be available (77.08 %), agricultural scientist should visit once in week at village level (75.00 %), conducting research on seed trial at village level (72.92 %), technical skill programme should be available at village level (62.50 %), infrastructural should be available for using the technological skill at the village level by government (58.33 %), improved varieties should be available in govt. agency at reasonable rate (56.25 %) and incentives should be given to the farmer for recognition and appreciation (47.92 %) respectively by Fatima (2013).

Non-beneficiaries:

The majority of the non beneficiaries suggested as creating the people towards soybean production technology Out-side exposure visit should be available (95.83 %), Produce should be sold at reasonable price (91.67 %), improved varieties should be available in govt. agency at reasonable rate (89.58 %), machinery of harvesting should be available (85.42 %), Credit should be available at low interest (81.25 %), Minimum supporting price should be available (75.00 %), Training should be available by Krishi Vigyan Kendra and agriculture department at village level. (64.58 %), Weather forecasting should be available at proper time (52.08 %), Good quality product should be available at village level (50.00%).and Organic manures with bio fertilizers should be available at village level (37.50 %) by Fatima (2013).

CHAPTER-VI

SUMMARY, CONCLUSION AND SUGGESTIONS FOR FURTHER WORK

SUMMARY:-

Soybean [*Glycine max* (L) Marril] belongs to family Leguminoseae, sub family Papilionaideae and genus Glycine. It is mainly grown in kharif season and occupies second place in the world, following groundnut in oilseed production. Presently soybean is grown in many countries of the world like USA, China, India, Brazil, Australia. In India major states growing soybean are Madhya Pradesh, Maharashtra, Rajasthan, Andhra Pradesh, Karnataka, Chhattisgarh and Gujarat. Major soybean growing districts of Madhya Pradesh state are Sehore, Ujjain, Shajapur, Dewas, Mandosre, Vidisha, Ashoknagar and Ratlam. Farmers of Ashoknagar district have changed their old cropping pattern to new cropping pattern i.e. diversified maize crop into soybean crop.

Front line demonstrations (FLDs) have been proved the best means for creating awareness of new development in technology generation and to assess the various socio-economic variables for affecting the adoption level of farmers as the regular feedback is a necessary component of these demonstrations. KVK in Ashoknagar district has been organizing FLDs on soybean, therefore keeping in view the researchers keen interest to know adoption behaviour of beneficiaries and non Beneficiaries in cultivation of soybean, the study was conducted with the following objectives:

Objectives:-

1. To study the socio personal, economic, communication and psychological profile of FLD beneficiaries and non beneficiaries.
2. To measure the technological gap in soybean production technological under FLD programme as adopted by soybean FLD beneficiaries.

3. To explore the relationship between profile of the soybean FLD beneficiaries and non beneficiaries and technological gap in soybean production.
4. To identify the problems encountered by the soybean growers leading to technological gap and suggestion given to overcome them.

Methodology:-

The present study was conducted in Ashoknagar district M.P. For this study purposive sampling technique was adopted, where FLD was conducted by Krishi Vigyan Kendra Ashoknagar (M.P.) during 2020-21. Ashoknagar District constitutes of four blocks namely Ashoknagar, Chanderi, Isagarh and Mungaoli. Out of these blocks, one block Isagarh had been taken by the KVK for soybean FLD. Therefore this block was selected purposively for the study. Isagarh block comprises of three villages were taken by the KVK for soybean FLDs in one block. All the three villages were selected purposively for the study. Finally at last stage a comprehensive list of all the beneficiary farmers from each selected village was prepared with help of records of Krishi Vigyan Kendra. From sample village, 48 beneficiaries (Okherikhera-12, Sirni-13, Semarkhedi- 23) farmers will be selected through randomly sampling method as respondents for the study purpose. Apart from this, in order to assess the impact of Krishi Vigyan Kendra in terms of adoption of improved agriculture production practices with technological gap, a sample of 48 non-beneficiary farmers was selected from control villages. Thus, a total of 96 farmers will be selected as respondent for the study purpose.

Conclusion:-

6.1 Socio personal, economic, communicational and psychological profile of FLD beneficiaries and non beneficiaries.

Out of 48 beneficiaries, 50.00 per cent belonged to young age group, where as 27.08 percent were from old age group, and 22.92 per cent were from middle age group. As regards non beneficiaries farmers, 56.25 per cent belonged to old age category.

Founded that 29.17 per cent was found to be in higher secondary school education level category, 22.92 per cent had Graduation and above education level, 18.75 percent were educated High School level category, 12.50 percent were middle education level,10.42 percent were educated Primary education level and remaining 6.25 per cent were educated Illiterate. The data also revealed that out of 48 non beneficiaries farmers, higher percentage of the beneficiaries i.e., 29.17 per cent belonged to up to illiterate category.

Out of 48 beneficiaries 31.25 per cent of the beneficiaries were large size of land holding only, 25.00, 20.83 and 14.58 per cent had semi-medium, medium and small size of land holding category respectively and remaining 8.33 per cent had marginal size of land holding category. The Table also depicts that out of 48 non beneficiaries farmers, higher percentage of the non beneficiaries i.e. 29.17 per cent belonged to marginal size of land holding category.

47.92 per cent had small area under soybean, 29.17 per cent had large, while remaining 22.92 per cent were having marginal area under soybean. The data also revealed that out of the 48 non-beneficiaries farmers, higher percentage of the non beneficiaries i.e., 50.00 per cent belonged to marginal area under soybean.

As regarding the 45.83 per cent had medium annual income, followed by 35.42 per cent high annual income and 18.75 per cent beneficiaries had low annual income. The data also revealed that out of total non-beneficiaries farmers, higher percentage of the beneficiaries i.e., 50.00 per cent belonged to low annual income.

Out of 48 beneficiaries, 52.08 per cent had medium income from soybean, followed by 29.17 per cent high income from soybean and 18.75 per cent beneficiaries had low income from soybean. The data also revealed that out of total non-beneficiaries farmers, higher percentage of the beneficiaries i.e., 50.00 per cent belonged to low income from soybean group.

43.75 per cent beneficiaries had high source of information, followed by 35.42 per cent had medium and 20.83 per cent had low source of information. The table also revealed that out of 48 non-beneficiaries farmers, higher percentage of the non-beneficiaries i.e., 45.83 per cent belonged to low source of information.

Out of total 48 beneficiaries, 50.00 per cent were had medium perception towards FLD, followed by 35.42 per cent had high perception towards FLD and 14.58 per cent beneficiaries had low perception towards FLD. The table also revealed that out of 48 non beneficiaries farmers, higher percentage of the non beneficiaries i.e., 54.17 per cent belonged to medium perception group

48 beneficiaries 47.92 per cent of the beneficiaries had medium Knowledge about soybean production technology, 33.33 per cent had high and remaining 18.75 per cent had low Knowledge about soybean production technology. The table also revealed that out of 48 non beneficiaries farmers, higher percentage of the non beneficiaries i.e., 58.33 per cent belonged to low Knowledge about soybean production technology group.

6.2. Technological gap in soybean production technological under FLD programme as adopted by soybean FLD beneficiaries.

Adoption level of beneficiaries of observed disease management, 38.54 per cent were having high adoption index categories by soybean FLD beneficiaries followed by insect & pest management 38.19 per cent, method of harvesting 37.15 per cent, selection of variety 36.46 per cent, sowing period 36.11 per cent, method of land preparation 35.42 per cent. This reason might have helped in popularity of soybean again and farmers showed their interest due to increase in productivity of soybean and getting high income. Adoption level of Non beneficiaries of regards, weed management 38.19 per cent were having high adopted index categories by FLD beneficiaries followed by seed treatment 36.11 per cent, space of sowing 34.72 per cent, use of bio fertilizer and FYM 32.99 per cent, seed rate 32.64 per cent.

6.3 Measure the technological gap in Soybean production technological under FLD through KVK programme as adopted by Soybean FLD.

Technological gap of beneficiaries was observed the highest technological gap index in highest seed rate (36.11 %) followed by applications of chemical fertilizer (34.72 %), selection of land (32.64 %), use of bio fertilizer and FYM (32.64 %), space of sowing (31.94 %), method of sowing (31.25 %), seed treatment (29.86 %), method of land preparation (29.17 %), weed management (29.17 %), sowing period (27.78 %), selection of variety (27.08 %), method of harvesting (25.69 %), insect & pest management (23.61 %) and disease management (22.92 %) in technological gap of beneficiaries about soybean production technology. Technological gap of non beneficiaries of observed the highest technological gap index in method of sowing (49.31 %), selection of variety (47.92 %), method of land preparation (45.83 %), selection of land (45.14 %), sowing period (42.36 %), disease management (39.58 %), applications of chemical fertilizer (36.81 %), insect & pest management (35.42 %), seed rate (score 34.72 %), method of harvesting (34.72 %), use of bio fertilizer and FYM (34.03 %), space of sowing (30.56 %), seed treatment (27.78 %), weed management (23.61 %) in technological gap of non beneficiaries about soybean production technology.

6.4. Relationship between profile of the soybean FLD beneficiaries and non beneficiaries and technological gap in soybean production.

Beneficiaries

Relationship between profiles of the beneficiaries with their dependent variables (technological gap in soybean production). The characteristics namely, education, size of land holding, land under soybean, annual income, income from soybean, source of information, perception towards FLD and knowledge about soybean production technology had significant relationship with their technological gap at 5% level of significance. The result also depict that age of beneficiaries farmers did not establish significant relationship with technological gap in soybean production.

Non-beneficiaries

Relationship between profiles of the non beneficiaries with their dependent variables (technological gap in soybean production). The characteristics namely, education, size of land holding, land under soybean, source of information and knowledge about soybean production technology had significant relationship with their technological gap at 5% level of significance. The result also depict that age, annual income, income from soybean and perception towards FLD of the non beneficiaries farmers did not establish significant relationship with technological gap in soybean production.

6.5 Problems encountered by the soybean growers leading to technological gap and suggestion given to overcome them.

Beneficiaries

The major problems experienced by beneficiaries growers of soybean leading to technological gap through FLD programme were arranged in descending order on the basis of rank order as the required technological inputs were not available at local level (62.50 %) followed by non availability of appropriate hybrid varieties (60.42 %), improved higher cost of seed varieties (58.33 %), low market price of agricultural product (56.25 %), lack of incentives and recognition to the scientists and farmers (54.17 %), lack of close contact of the trainees with the trainers scientists after completion of the training (52.08 %), Shortage of labour at the time of harvesting (47.92 %), information about resource availability, marketing and credit orientation were not given for future (43.75 %) and lack of infrastructural facilities for using the technological skill of occupational basis at the village level (37.50 %).

Non beneficiaries

The major problems experienced by the Non beneficiaries growers of soybean leading to technological gap through FLD programme were arranged in descending order on the basis of rank order as lower price of produce at the time of harvesting (89.58 %) followed by non availability of hybrid varieties at local level (81.25 %), no proper planning of the outside exposure visit (77.08 %), training not good at the village level (75.00 %), higher cost of seed varieties (70.83 %), shortage of labour at the time of harvesting (60.42 %), high cost of fertilizers (56.25 %), uncertainly of monsoon (50.00 %), credit to not available easily and timely at low interest rate (47.92 %) and lack of good quality product (33.33 %).

6.6 Suggestions for further work:-

Beneficiaries

The majority of the beneficiaries suggested as creating the people towards soybean production technology machinery of harvesting should be used (91.67 %), improved farm machineries should be available at reasonable rate. (89.58 %), should be trainees for time to time visit krishi vigyan kendra with scientists (85.42 %), minimum supporting price should be available (77.08 %), agricultural scientist should visit once in week at village level (75.00 %), conducting research on seed trial at village level (72.92 %), technical skill programme should be available at village level (62.50 %), infrastructure should be available for using the technological skill at the village level by government (58.33 %), improved varieties should be available in govt. agency at reasonable rate (56.25 %) and incentives should be given to the farmer for recognition and appreciation (47.92 %) respectively.

Non-beneficiaries:

The majority of the non beneficiaries suggested as creating the people towards soybean production technology out-side exposure visit should be available (95.83 %), produce should be sold at reasonable price (91.67 %), improved varieties should be available in govt. agency at reasonable rate (89.58 %), machinery of harvesting should be available (85.42 %), credit should be available at low interest (81.25 %), minimum supporting price should be available (75.00 %), training should be available by krishi vigyan kendra and agriculture department at village level. (64.58 %), weather forecasting should be available at proper time (52.08 %), good quality product should available at village level (50.00 %) and organic manures with bio fertilizers should be available at village level (37.50 %).

VITA

The author of this thesis is **Mr**. **Sourabh Baghel S/o Aazad Singh** was born on 10th December 1995 in Vidisha district of Madhya Pradesh. He completed his High School from Smt Gangabai Jugmohan Das Agrawal Higher Secondary School, Sironj, Vidisha in the year of 2012 with 88.50 percent and Higher school from Smt Gangabai Jugmohan Das Agrawal Higher Secondary School, Sironj, Vidisha in the year 2014 with 80.80 percent.

He was selected through entrance examination (P.A.T.) and joined the College of Agriculture, Tikamagarh (M.P.) and obtained B.Sc. (Ag.) degree in 2019 with 7.30 OGPA out of 10.00 point scale.

The author continued his post graduation from **College of Agriculture, Indore** (M.P.) to specialize in **Department of Agricultural Extension and Communication** and for partial fulfillment of the requirements for the award of the same. He was allotted with interesting problem as **"A Study on impact of FLD on Knowledge, Adoption and Technological gap of Soybean growers through KVK in Ashoknagar District of Madhya Pradesh"** for thesis work which has been duly completed by his and presented in this thesis.

He actively participated in all the cultural activities of the college. Now, he is submitting the thesis after completing the course with 7.63 OGPA out of 10.00 scale.

Sourabh Baghel