KNOWLEDGE AND ADOPTION OF FARMERS ABOUT SOIL AND WATER CONSERVATION PRACTICES

THESIS

Submitted to
Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola
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MASTER OF SCIENCE
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By
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Enrolment Number – PP/3368 **2019**

DECLARATION OF STUDENT

I hereby declare that the experimental work and its interpretation of the Thesis entitled **"KNOWLEDGE AND ADOPTION OF FARMERS ABOUT SOIL AND WATER CONSERVATION PRACTICES"**or part thereof has neither been submitted for any other degree or diploma of any University, nor the data have been derived from any thesis / publication of any University or scientific organization. The source of materials used and all assistance received during the course of investigation have been duly acknowledged.

Place : Akola. **(Waridullah)**

Date : /06/2019 Enrolment No. PP/3368

CERTIFICATE

This is to certify that the thesis entitled **"KNOWLEDGE AND ADOPTION OF FARMETRS ABOUT SOIL AND WATER CONSERVATION PRACTICES"** submitted in partial fulfilment of the requirement for the degree of "**Master of Science in Agriculture (Extension Education)"** of Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola is a record of bonafide research work carried out by **Waridullah** under my guidance and supervision.

The subject of thesis has been approved by the Student's Advisory Committee.

Place : Akola
Date : /06/2019

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THESIS APPROVED BY THE STUDENT'S ADVISORY COMMITTEE INCLUDING EXTERNAL EXAMINER (AFTER VIVA–VOCE)

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(A) List of Tables

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(F) Abbreviations

%	-	Per cent
Agri.	-	Agriculture
Agril.	-	Agricultural
Educ.	-	Education
et al.	-	Et alia (and others)
Extn.	-	Extension
Fig.	-	Figure
ha	-	Hectare
i.e.	-	That is
J.	-	Journal
Res.	-	Research
Rs. /`	-	Rupees
Std.	-	Standard
Univ.	-	University
viz.,	-	Namely

(G) Thesis Abstract

a)	**Title of the thesis**	**:**	**"KNOWLEDGE AND ADOPTION OF FARMERS ABOUT SOIL AND WATER CONSERVATION PRACTICES"**
b)	**Full name of student**	**:**	**Waridullah**
c)	**Name and address of Major Advisor**	**:**	**Dr. N. M. Kale** Professor, (CAS)/CEEO/Directorate of Extension Education) - 444104.
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ABSTRACT

The study entitled, "Knowledge and Adoption of Farmers about Soil and Water Conservation Practices" was purposively conducted in Akola district. For present study, 150 farmers were selected from 10 villages by using random sampling method with following objectives.

1. To study the personal, socio-economic, communication and psychological characteristics of farmers
2. To study the knowledge of farmers about soil and water conservation practices
3. To study the adoption of farmers about soil and water conservation practices
4. To study the relationship between personal, socioeconomic communication and psychological characteristics with the knowledge and adoption of farmers about soil and water conservation practices

5. To identity the constraints faced by the farmers in the adoption of soil and water conservation practices

This research study clearly shows that majority (44.00%) of respondents were included in the middle age (36 to 50 yrs.) category followed by 36.00 per cent respondents were observed in old age (Above 50 years) category. More than one fourth (26.67%) of the respondents were educated up to higher secondary school level, followed by 23.33 per cent of the respondents were educated up to high school level. Maximum percentage (43.33%) of the respondents belonged to category of small land holding ranging from 1.01 to 2.00 ha.Majority (28.67%) of the respondents had annual income between 1, 00,001 to 2, 00,000 followed by 23 .33 per cent respondents were found to have annual income above Rs.4, 00,000. Majority (67.34%) of the respondents had agriculture as a main occupation. More than fifty per cent (61.33%) respondents were having class 1 type of soil, followed by 36.67 per cent respondents having class 2.

Majority (68.67%) of the respondents were having plan topography of land followed by 23.33 per cent respondents having undulating topography of land. Majority (80.00%) of the respondents were having cropping pattern kharif + rabbi followed by 20.00 per cent respondent having cropping pattern only kharif.Majority of farmers (81.33%) were having irrigation on up to 1 ha.

More than (58.00%) of the selected respondents were in low social participation category, followed by 34.00 per cent respondents under medium social participation category and (8.00) per cent respondents having high social participation. Majority of (86.00%) respondent kept low extension contact with extension agencies for seeking information. More than half (56.67%) of the respondents were having medium level of risk preference followed by (43.33) per cent high level of risk preference. Dependent variable Majority (57.33) of the respondents had high level of knowledge about the recommended soil and water conservation practices, whereas (42.67) per cent respondents were having medium level of knowledge. Most of the respondents (76.00%) had low level of adoption of recommended soil and water conservation practices. The percentage of respondents having medium level of adoption was (24.00) per cent.

CHAPTER I

INTRODUCTION

1.1 Background information

Land and water are the most precious natural resources, the importance of which in human civilization needs no elaboration. The total available land area in the State sets the limits within which the competing human needs have to be met. The needs of agricultural, industrial, domestic and others often result in diversion from one use to the other. Diversion of land from agriculture to non-agriculture uses adversely affects the growth in agriculture sector. Even the available land is subjected to soil-erosion of varying degrees and degradation problems of different magnitudes. Water supports all forms of life on this mother earth. It plays a vital role in agricultural and industrial development and sustaining human life. Rainfall is the only source of water. The water is confined as i) soil moisture, ii) stored water in surface storage like reservoirs, tanks, ponds, temple tanks, and in open wells etc., iii) ground water in sub surface, iv) sea water and v) wastewater like sewage and effluent. Depending upon the rainfall, its intensities, and frequencies, an area becomes drought or flood affected.

1.2 Information about Soil and water conservation:

Definition: - Soil and water conservation are those activities at the local level, which maintain or enhance the productive capacity of the land including soil, water and vegetation in areas prone to degradation through

- Prevention or reduction of soil erosion, compaction, salinity.
- Conservation or drainage of water
- Maintenance or improvement of soil fertility.

Purpose: -

- To control runoff and thus prevent loss of by soil erosion, to reduce soil compaction;
- To maintain or improve soil fertility;
- To conserve or drain water;

To harvest (excess) water.

Soil and water conservation practices serve to conserve soil moisture as well as reduce erosion. Most farmers are aware of the seriousness of soil erosion on their land. Soil and water conservation programme can become more cost effective if they are based upon an understanding of farmer's perception about soil erosion and the conditions under which they adopt and maintain soil conservation structures. Understanding indigenous methods of soil and water conservation and adoption pattern among farmers are crucial in terms of their utility and scope for further improvement.

1.3 Soil and water conservation practices to be selected for study:

1. Sowing direction- a) Across the slope b) On the contour
2. Cropping system- a) Intercropping b) Crop sequence
3. Mulching
4. Green manuring
5. Dense growing crop
6. Wind strip cropping
7. Broad bed furrow method
8. Ridges and furrow method
9. Surface drains
10. Contour bunding
11. Compartment bunding
12. Vegetative bunds
13. Farm pond

14. Nala opening
15. Check dam
16. Earthen embankment
17. Gabion embankment
18. Grass wood dam
19. Grass water ways
20. Diversion of rain water into well
21. Type of irrigation: a) Sprinkler irrigation b) Drip irrigation

1.4 Objectives

5. To study the personal, socio-economic, communication and psychological characteristics of farmers.
6. To study the knowledge of farmers about soil and water conservation practices.
7. To study the adoption of farmers about soil and water conservation practices.
8. To study the relationship between personal, socio economic, communication and psychological characteristics with the knowledge and adoption of farmers about soil and water conservation practices.
9. To identity the constraints faced by the farmers in the adoption of soil and water conservation practices.

1.5 Need and Importance

Land and rain water are the two primary resources associated with the agricultural production. But the fertile land is eroded due to various reasons. In such a situation there is need of popularly efficient soil and water conservation practices. Research indicated that knowledge of contour sowing was, however, found to be low and adoption were nil in a watershed development practices.

The present study was conducted in two tahsils of Akola district which are included in rainfed area of district. There is need to study the knowledge of farmers about soil and water conservation practices in

this region and motivate them for adoption of various soil and water conservation practices.

1.6 Scope of the study

The findings of the present study will be helpful to ascertain the farmers' extent of knowledge and extent of adoption with regard to soil and water conservation practices. The study will provide useful guidelines for deciding ways and means to promote the use of soil and water conservation practices and the possibilities of increasing production and income.

1.7 Limitations of study

It is a student's research project the study was carried out with following limitations.

1. The findings of the present study were based on the responses expressed by the selected farmers. Hence, the objectivity of the data was limited to the correctness of responses given by farmers.
2. The study was confined to only two tahsils of Akola district. The findings of this study may therefore be applicable to the study area or other areas having similar social and agro climatic condition.

1.8 Formulation of research hypothesis for the study

Keeping the objectives of the study in the view the following research hypothesis was formed on the different aspects of the study. While formulating the hypothesis the nature of relationship between the variables was determined on the basis of review of literature. The hypothesis are set up and presented in null form (Ho).

The independent variable such as personal, socio-economic, situational, communication and psychological characteristics of respondent farmers are not significantly related with knowledge and adoption of farmers about soil and water conservation practices.

1.9 Organization of the thesis

The report of the present research on knowledge and adoption of farmers about soil and water conservation practices in Akola district has been presented in seven chapters.

In the first chapter information about soil and water conservation, important and need of the study, objectives and limitation of the study has been presented.

The second chapter namely Review of Literature, comprises review of relevant literature and findings of various past research studies conducted in different locations on the similar topics.

The research methods, techniques and tools used for measuring variables their categorization have been presented in methodology chapter.

The fourth chapter contains socio-economic status of Akola District.

The fifth chapter is devoted to the findings of the present study and relevant discussion there on.

The sixth chapter contains summary and conclusion of the investigation.

The seventh chapter contains implications on the basis of the findings of present investigation.

The eighth chapter contain literature cited.

CHAPTER II

REVIEW OF LITERATURE

A. Independent variables

1) Age

Shankar *et al.* (2007) observed in the study of 'Farmers perceptions and adoption patterns of soil and water conservation measures' that majority of the respondents (60.00%) were old.

Kale *et al.* (2012) observed that (42.50) per cent respondent were found of middle age between 36 to 50 years, it was followed by (31.67) per cent respondent were in old age i.e. 50 year and over one fourth (25.83%) are of young age.

Yadav *et al.* (2013) found that majority of respondent (44.17%) were in the middle age group followed by young (36.67%) and old (19.16%).

Mankar *et al.* (2014-2015) observed that (40.83%) of the respondents belonged to middle age category followed by 33.34 and 25.83 per cent of the respondents who were found in old (above 50 years) and Young (up to 35 years) categories, respectively.

2) Education

Shankar *et al.* (2007) observed that (40.00%) of the respondents with no education, (30.00 %) studied up to middle school, (20.00%) up to high school and remaining (10.00%) respondents were primary education.

Kale *et al.* (2012) observed that out of total respondents nearly half (49.17%) having high school level education, 15.83 per cent had higher secondary school level and (10.00%) each were educated up to primary, middle school and college level education while (5.00%) were illiterate.

Yadav *et al* (2013) Thirty five per cent of respondents were educated up to primary level, whereas 25.83 per cent respondents were educated up to middle school level followed by educated up to high school

level 25.83 per cent , Illiterate (9.17 %) and above high school level (8.33%) respectively.

Mankar et *al.* (2014-2015) observed that 32.84 per cent of the farmers were found educated 8 to 10th standard of education, followed by nearly one fifth (19.17%) of them were found educated up to primary school, 18.34 per cent found educated up to higher secondary school, 15.17 and 11.18 per cent who have passed middle school and above 12th std. Education respectively.

3) Land holding

Shankar *et al.* (2007) found that majority of the respondents (60.00%) having land holding up to 5 acres means small.

Kale *et al.* (2012) shows that near about one third (32.50%) of the respondents were having land holding between 1.01 to 2.00 hectars followed by over one fourth (27.50%) farmers were semi medium i.e. 2.01 to 4.00 hectares whereas 20.00 per cent selected farmers were medium (2.01 to 4.00 ha.) land holders, followed by 11.67 per cent of the respondents had marginal (1.00ha) and 8.33 comes under large (above 10.00 ha) land holding group.

Yadav *et al.* (2013) reported that about 44.17 per cent respondents had small land holding whereas 38.33 per cent had medium size of land holding only 17.50 per cent of respondents had large size of land holding.

4) Annual income

Thakare (2010) observed that relationship between annual gross income and adoption level of soil and water conservation practices was positive and significant.

Kale *et al.* (2012) reported that, over one third of the farmers each having annual income up to Rs. 50,000 (35.00%) and between Rs.50,001 to Rs.1,00,000 (34.17%) This wasfollowed by 11.67 per cent respondents belonging to income group with annual income between Rs.1,00,001 to Rs.2,00,000. Whereas 10.00 per cent farmers have annual income between Rs.4,00,001 to Rs.8,00,000 and 9.16 per cent farmers

have annual income between Rs.2,00,01 to Rs.4,00,000. The average annual income of selected farmers comes to Rs.1,40,158 in Purna Valley.

Mankar *et al.* (2014-2015) observed that, 34.33 per cent of the respondents were having annual income up to Rs. 50,000/- above Rs. 50,001 to Rs.1, 00,000/- annual income, it was followed by 27.16 per cent having above Rs. 50,001 to Rs.1, 00,000/- annual income whereas 15.34 per cent of them annual income in the range of above Rs.2,00,000/-. It was followed by 12.83 per cent having annual income in the range of Rs.1, 00,001 to Rs. 1, 50,000/-. and only 10.34 per cent having their annual income in the range of Rs.1,50,001 to Rs.2,00,000/-.

5) Occupation

Pandey *et al.* (2010) observed that, occupation had positive correlation with knowledge level of the agricultural officers regarding sustainable agricultural practices.

Mankar *et al.* (2014-2015) observed that agriculture was the main occupation of 77.33 per cent of the respondents, it was followed by about 13.50 per cent of respondents who had agriculture + labour occupation and very less number of respondents were engaged in agriculture + service as their occupation (4.34%) and less per cent respondents had agriculture + other business subsidiary occupation (2.83%) and agriculture + subsidiary occupation (2.00%).

6) Type of soil

Thakare *et al.* (2000) reported that majority of respondents (77.77%) possessed class IV soil while (17.77%) and (4.44%) respondents having class III and class II soil while no respondents was found to possess class I soil.

Koshti *et al.* (2007) shows that, out of 415 ha agricultural land possessed by the respondents 42.41per cent soil of land they possess medium, 39.28 per cent perceived their soils are heavy and remaining area of 18.31 per cent ha waslight and shallow.

Mankar *et al.* (2014-2015) revealed that above fifty per cent (51.66%) selected farmers possessed moderate type of soil, followed by

23.00 per cent farmers have very deep soil type, 12.84 per cent of them possessed deep type of soil whereas 10.16 per cent of them had shallow type of soil and only 2.34 per cent of farmers have very shallow type of soil.

7) Topography of land

Koshti *et al* (2007) observed that as per perception of respondents 79.03 per cent area of land was plain whereas 20.97 per cent was undulating.

Todmal (2012) observed that maximum number (61.67%) of respondents were having plain topography of land followed by 38.33 per cent respondents having undulating topography of land.

8) Cropping pattern

Bite (2009) reported that majority of farmers (71.67%) farmers belongs to medium cropping pattern and 15 per cent in high cropping pattern and 13.33 per cent respondent had low category of cropping pattern.

Dhere (2012) revealed that majority (90.00%) of the respondents cultivated kharif crop followed by the rabbi crop 65.00 per cent perennial (20.00%) annual (15.00%) and summer (9.00%).

9) Irrigation status

Timbadia *et al.* (2008) observed that in general, farmers opinioned that they could save water above 25.00 per cent, weed control expenses by 51 to 75 per cent and labour charges to the extent of 26 to 50 per cent along with increase in the crop yield. The farmers were of the opinion that through higher fruit yield of banana with drip method was obtained in comparison to surface method; there is further scope to increase the fruit yield of banana.

Bite (2009) reported that majority of farmers having irrigation source as well (62.50%) followed by tube well (40.83%) and one fourth (25.00%) respondent with no irrigation source.

10) Social participation

Jadav *et al.* (2010) observed that there is positive and significant association of social participation with the knowledge and adoption of salinity management practices.

Yadav *et al.* (2013) found that medium social participation was observed in 41.67 per cent respondent followed by low 31.67 per cent and high 26.66 per cent social participation.

11) Extension contact

Kale*, et al. (*2012) reported that the cent per cent (100%) of the selected farmers of Purna Valley in Vidarbha region of Maharashtra having low extension contact.

Anonymous (2013) concluded that majority of the respondents (69.16%) were having medium level of source of information followed by 16.67 per cent of them who were under low level and only 14.44 per cent were observed in high level of source of information.

Yadav *et al* (2013) found that majority of respondent (41.67%) had medium extension contact followed by low (35.83%) and high (22.50%) extension contact.

12) Risk Preference

Patel (2002) reported that risk preference had positive and significant association with their extent of adoption of the watershed management technology.

Anonymous (2013) noticed that relatively higher proportion of farm ponds holders (74.44%) were having medium level of risk preference followed by 13.33 per cent of them had low level of risk preference.

B) Dependent Variables

1) Knowledge

Pandey Kumar (2010) concluded that majority of agriculture officers had good knowledge of soil and water conservation practices.

Ghosh *et al.* (2012) revealed that the overall knowledge gain on different scientific techniques were 62.% which showed that the

trainings had helped farmers in increasing their level of knowledge regarding new scientific technologies for improved. Agriculture which in turn helped them towards adoption of these technologies gaining more production and farm income

Kale *et al.* (2011) studied the knowledge and adoption of 11 land care techniques for saline-sodic soils of Purna Valley among the farmers. The result revealed that majority (70.00%) of the farmers has medium level of knowledge regarding all selected land care techniques for Purna Valley.

Kulshrestha *et al* (2015) observed that out of 300 beneficiary farmers, 41.00 per cent had medium knowledge in respect of deep summer ploughing, followed by 33.67 per cent and 25.33 per cent beneficiaries who had high and low knowledge respectively.

2) Adoption

Shankar *et al.* (2007) concluded that there was high adoption of soil and water conservation measures among farmers.

Jadav *et al.* (2010) observed that majority of respondents (55.00%) in non-saline tract and 58.00 to 78.18 per cent farmers in saline tract having medium level of adoption of salinity management practices.

Kale *et al* (2011) study the knowledge and adoption of 11 land care techniques for saline-sodic soils of Purna Valley among the farmers. The result revealed that majority (79.07%) of the farmers has low level of adoption regarding all selected land care techniques for Purna Valley.

2.3. Conceptual model for research study

During the course of investigation the researcher has to assume relations amongst study variables, develop a conceptual model and use the same during research. A model help in critical and logical thinking about research problem. Theoretical model presents the concepts and variable used in research. Based on forgoing review of the past research studies a conceptual model has developed for the present study and same has been depicted in Fig. 1.

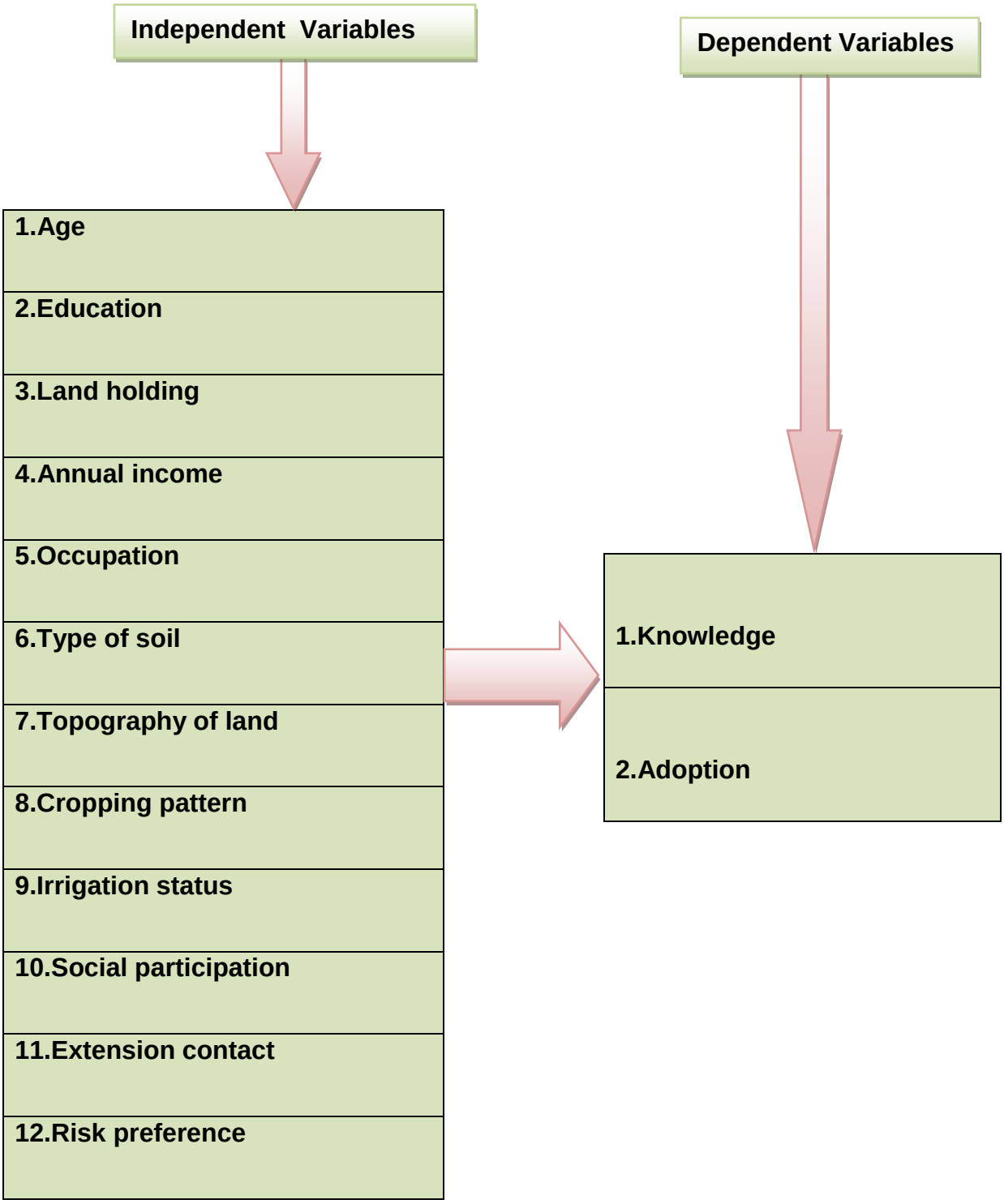

Fig.1.Conceptual Model of Research

CHAPTER III

METHODOLOGY

This chapter deals with methods and procedures used in the present study. It also includes introduction of the study area and information regarding different techniques used while conducting this research study. The chapter has presented under the following subheads.

3.1 Locale of study

3.2 Research design

3.3 Sampling plan

3.3.1 Selection of villages

3.3.2 Selection of respondents

3.4 Preparation of interview schedule

3.5 Pre-testing of interview schedule

3.6 Collection of data

3.7 Operationalization, scoring and categorization of the variables

3.8 Tabulation and analysis of data

3.9 Statistical techniques used

3.1 Locale of the study

This study was conducted in two Tahsils of Akola district in Vidarbha Region of Maharashtra state.

3.2 Research design

An exploratory and analytical research design of social research was used for the present investigation.

3.3 Sampling plan

The sampling plan adopted for this research has been described under sub head.

3.3.1 Selection of village

The object of the present study was mainly to study the knowledge and adoption of farmers about soil and water conservation practices in the study area. From Akola district Patur and Barshitakli tahsils was selected and from these selected Tahsils 10 villages were selected randomly.

3.3.2 Selection of Respondents

From each village 15 respondents were selected randomly thus, total 150 respondents were selected for the present study from Akola district; it covers 2 tahsils and 10 villages of Akola district.

Table1: List of village wise respondents selected for the study.

Sl.No.	Villages	Respondents
1.	Patur	15
2.	Shirla	15
3.	Bodkha	15
4.	Khanapur	15
5.	Bhandaray-BK	15
6.	Barshitakli	15
7.	Boruav	15
8.	Aland	15
9.	Kanneri	15
10.	Shivapur	15
	Total	150

3.4 Preparation of interview schedule

In line with the objectives of the study, a structured interview Schedule was prepared. It included questions pertaining to the different personal, social, economic, situational and psychological independent variables. Another part of the schedule consists of the questions regarding the dependent variables i.e. knowledge and adoption of farmers about soil and water conservation practices.

The schedule was finalized after reviewing the relevant literature and discussion with the members of the advisory committee.

3.5 Pre- testing of interview schedule

The pre-testing of interview schedule is necessary on the part of researcher. It helps in ascertaining the appropriateness of questions and their language. It indicates the mistake and short falls. It helps in achieving of clarity, reliability and validity of schedule. The pre-testing of interview schedule was done on 15 farmers non selected villages of Akola district.

These farmers were not included in the sample of respondents. The data collected from such non-sampled respondents were thoroughly studied to detect the unfamiliar words and complexity of questions included in the schedule. Before finalization of interview schedule, subject matter specialist of soil and water conservation, Department of Agricultural Engineering, Dr.Panjabrao Deshmukh Krishi Vidyapeeth, Akola has also checked the schedule.

3.6 Collection of data

The Data were collected in face to face situations by personally contacting the selected farmers. The farmers were contacted at their farm to observe actual situation in field. The help of Sarpanch and Gramsevak was taken while collection of data.

Before actually seeking the information, researcher has introduced himself with farmer and narrated the objectives of present study. The pre–tested interview schedule was then used for data collection.

3.7 Variables, operational definition and their measurements

Based on the review of literature and opinion of the experts in the field of Extension Education, the independent variable studied were age, education, land holding, annual income, occupation, type of soil, topography of land, cropping pattern, irrigation status, social participation, extension contact, risk preference. Knowledge and adoption was studied as dependent variable.

The variables selected for the study, and their measurement as given below.

Table: 2 List of variables and their measurements

Sr. No.	Variables	Measurement
1	Age	Chronological age of the respondent in completed years from the birth is considered as the age of individual farmers.
2	Education	Number of years of formal schooling undergone by respondent.
3	Land holding	Number of hectares land possessed by an individual.
4	Annual income	Gross income in a year by an individual and his family members from all sources.
5	Occupation	Supporting occupation undertaken by the respondent and his household in addition to agriculture for getting additional source of income, which was indicative of employment structure of respondent.
6	Type of soil	Quality of soil possessed by respondent or the soil status of the farmers.
7	Topography of land	Configuration/ geographical feature of land possessed by the farmers.
8	Cropping pattern	Crop sown by an individual respondent in kharif, rabbi, summer, annual and perennial season.
9	Irrigation status	The land irrigated in hectars owned by the farmers.
10	Social participation	Participation of farmer in formal and informal organization in the village and elsewhere.
11	Extension contact	Extension contact refers to contact made by respondents with extension workers and other agencies for seeking information regarding soil and water conservation practices.
12	Risk preference	The degree to which the respondents are oriented towards risk and have courage to face the new problems.

13	Knowledge	The body of understood information possessed by respondents about soil and water conservation practices. A teacher made knowledge test was developed to measure the knowledge of the respondents. It measured on two point continuum i.e. yes and no with a score one and zero respectively.
14	Adoption	The degree of acceptance and use of the soil and water conservation practices. The response of the respondents was elicited on three point continuum full adoption, partial adoption, and non adoption with a score 2,1 and 0 respectively.

3.8 Operationalization, scoring and categorization of variables

For any study to be undertaken in social science it is customary to explain precisely the variables selected with their connection. The variables selected for this study along with its operational definitions and procedures employed to measure them are delineated as under.

3.8.1 Independent variables

3.8.1.1 Age

Age is operationally defined as chronological age of the respondent in completed years.

A numerical score of one was assigned for each year of age. The categorization has done as young, middle and old on the basis of actual age of the farmers at the time of data collection.

Sl. No.	Age	Years
1	Young	Up to 35
2	Middle	36-50
3	Old	Above 50

3.8.1.2. Education

Education is the process of developing capabilities of the individuals so that they can adequately respond to their situation.

Education is defined as level of formal schooling passed by the individual. One score was given for each standard passed and it was considered as the score of education and following categories was made.

Sl. No.	Education	Standard
1	Illiterate	No schooling
2	Can read only	--
3	Can read and write	--
4	Primary school	1^{st} - 4^{th}
5	Middle school	5^{th} – 7^{th}
6	High school	8^{th} – 10^{th}
7	Collage	Above -12^{th}
8	Higher secondary school	11^{th} 12^{th}
9	College	Above -12^{th}

3.8.1.3 Land holding

Land holding refers the actual hectares of land possessed by an individual respondent.

Actual area possessed by the respondent was considered as such for scoring. The categorization of respondents were done as follows.

Sl. No.	Land holding	Ha
1	Marginal	Up to 1.00
2	Small	1.01 – 2.00
3	Semi-medium	2.01 – 4.00
4	Medium	4.01 – 10.00
5	Large	Above 10.00

3.8.1.4 Annual income

The annual income has been operationally defined as the income of family head and members of the family in terms of rupees received from the entire source in the year. The categorization has done by equal external method.

3.8.1.5 Occupation

It refers the supporting occupation undertaken by the respondent and his household in addition to agriculture for getting additional source of income, which is indicative of employment structure of respondent. The categorization and scoring was given as follows.

Sl. No.	Subsidiary Occupation	Score
1	Agriculture	2
2	Agriculture +Labour	1
3	Agriculture + Allied Occupation	3
4	Agriculture + Business	4
5	Agriculture + Service	5

3.8.1.6 Type of Soil

In the present investigation soil type means the category or class of the soil possessed by an individual respondent.

A numerical score of ‘4’is given for class 1, ‘3’ for class 2, ‘2’ for the class 3 and ‘1’ for soil class 4 was given.

3.8.1.7 Topography of Land

It is operationally defined as configuration/ geographical feature of land possessed by the farmers. Configuration/ slope possessed by land was considered and categorization according to hectares of plane and undulating land was carried as follows with a score 1, 2, and 3 for plane, undulating and both respectively.

Sl. No.	Topography of land	Score
1.	Plane	1
2.	Undulating	2
3.	Both	3

3.8.1.8 Cropping Pattern

It refers to numbers of crop sown by an individual respondent following mixed cropping and crop rotation in kharif, rabi, summer, annual and perennial season. It was measure by assigning a score of one for each crop cultivated by the respondent in kharif, rabi and summer season, four score were assigned for annual and five for perennial cropping.

Sl. No.	Cropping Pattern	Score
1.	Only Kharif	1
2.	Kharif + Rabi	2
3.	Kharif + Rabi + Summer	3
4.	Annual	4
5.	Perennial	5

3.8.1.9 Irrigation status

It is operationally defined as the land irrigated in hectares owned by the farmer. The irrigation status of the farmers was categorized on the basis of equal interval method.

Sl. No.	Irrigation status (ha)	Score
1.	No irrigation	0
2.	Up to 1.00	1
3.	1.01 to 2.00	2
5.	Above 2.00	3

3.8.1.10 Social participation

Social participation has been operationally defined as participation of farmer in formal and informal organization in the village and elsewhere.

For qualification a list of formal and informal organizations was prepared and the participation of respondent as office bearer or member were obtained. The score of 4 and 2 for office bearer and score of 3 and 1 for members was assigned for formal and informal organization respectively. The respondent was categorised on the basis of maximum and minimum score as follows.

Sl.No.	**Social participation level**	**Score range**
1.	Low	Below 1
2.	Medium	1 to 2
3.	High	Above 2

3.8.1.11 Extension contact

Extension contact in present study refers to contact made by the respondents with extension workers and other transfer of technology agencies for seeking information about soil and water conservation practices. The scoring of contact with various extension agencies was done on three point continuum i.e. always, sometime and never with score 2, 1 and 0 respectively. The respondents were categorized on the basis of equal interval method. as follow.

Sl. No.	**Extension Contact**	**Index range**
1	Low	Up to 33.33
2	Medium	33.34 to 66.66
3	High	Above 66.66

3.8.1..12 Risk preference

It has been defined as the degree to which the respondents are oriented towards risk and have courage to face the new problems. The scale developed by the Supe (1969) was used for the present study. The risk preference level was determined into the following categories.

Sl. No.	Risk preference level	Score range
1	Low	Up to 16
2	Medium	17 to 22
3	High	Above 22

B) Dependent Variables

3.8.2.1 Knowledge

English and English (1958) defined knowledge as a body of understood information by an individual.

A teacher made knowledge test was developed to measure the knowledge of an individual respondent about soil and water conservation practices. Response of respondents was taken on two point continuum that is yes or no and numerical score of 1 and 0 was assigned respectively. Knowledge index was worked out. Obtained knowledge raw score was converted into knowledge index by using following formula.

$$\text{Knowledge index} = \frac{\text{Actual knowledge score obtained}}{\text{Maximum obtainable knowledge score}} \times 100$$

On the basis of knowledge index score respondents was categorized with the help of equal interval method as follows.

Sl. No.	Knowledge	Index range
1	Low	Up to 33.33
2	Medium	33.34 to 66.66
3	High	Above 66.66

3.8.2.2 Adoption

Rogers (1995) defined adoption as the decision to make full use of innovation in the best course of action available.

Adoption has been operationally defined in the present study as the degree of acceptance and use of soil and water conservation practices by the respondents. The objectives type questions were advocated on soil and water conservation practices. The responses of the respondents were elicited on three point continuum full adoption, partial adoption, and non-adoption. A score of 2, 1 and 0 was assigned respectively.

The raw adoption score obtained by an individual respondent was converted into adoption index as below.

$$\text{Adoption index} = \frac{\text{Sum of adoption score obtained by respondent}}{\text{Sum of obtainable adoption score}} \times 100$$

On the basis of obtained adoption index score, respondent's was categorized in low, medium and high categories with the help of equal interval method, as follows.

Sl. No.	Adoption level	Index range
1.	Low	Up to 33.33
2.	Medium	33.34 to 66.66
3.	High	Above 66.66

3.9 Tabulation and analysis of data

The collected data were carefully examined for completeness and correctness before tabulation. Both quantitative and qualitative classes were formed. In case of some variables, the classes were formed arbitrarily while in case of some variables, accepted standard classification was adopted. The data were then tabulated and the frequencies and percentage of the respondents in each category were worked out.

3.10 Statistical methods used

Following statistical techniques was used in the present study for analysis of data.

1) Arithmetic mean ($\bar{X}$)

It was calculated by summing all the score and dividing it by number of respondents.

$$\bar{X} = \frac{\Sigma X}{N}$$

Where,

$\bar{X}$ = Arithmetic mean

ΣX = Sum of respondent score

N = Number of respondents

2) Standard deviation

It is measure of variability calculated around mean. The usual symbol of the S.D.

$$\sigma = \sqrt{\frac{N \Sigma X^2 - (\Sigma X)^2}{N}}$$

Where,

σ - Standard deviation

ΣX^2 - Sum of square of X series

$(\Sigma X)^2$ - Square of sum of X series

N - No. of respondents

3) Coefficient of correlation

The relationship between independent and dependent was calculated with the help with the help of following given formula.

$$r = \frac{\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{[N\Sigma X^2 - (\Sigma X)^2][N\Sigma Y^2 - (\Sigma Y)^2]}}$$

Where,

r	-	Coefficient of correlation
ΣX	-	Sum of the score of variable X
ΣY	-	Sum of the score of variable Y
ΣXY	-	Sum of products of 'X' and 'Y' variables
ΣX^2	-	Sum of the square of 'X' variable
ΣY^2	-	Sum of the square of 'Y' variable
N	-	Total number of respondents

4. Multiple regression analysis:

The multiple regression analysis was undertaken to find out the relative contribution of the selected independent variables in influencing the dependent variables the multiple regression equation fitted was,

$$Y = a + b_1X_1 + b_2X_2 + \ldots\ldots\ldots\ldots + bnXn$$

Where,

Y = dependent variable

Xi = independent variable

bi = partial régression coefficient

a = constant

n = total number variables

The significance of regression coefficient (b) was tested by using 't' test. The calculated value of 't' was tested against the table value of 't' at n-k-1 degrees of freedom. It was considered 't' to be significant, if the calculated 't' value was greater than the table 't' value at either 0.01 or 0.05 level of probability at n-k-1 degrees of freedom.

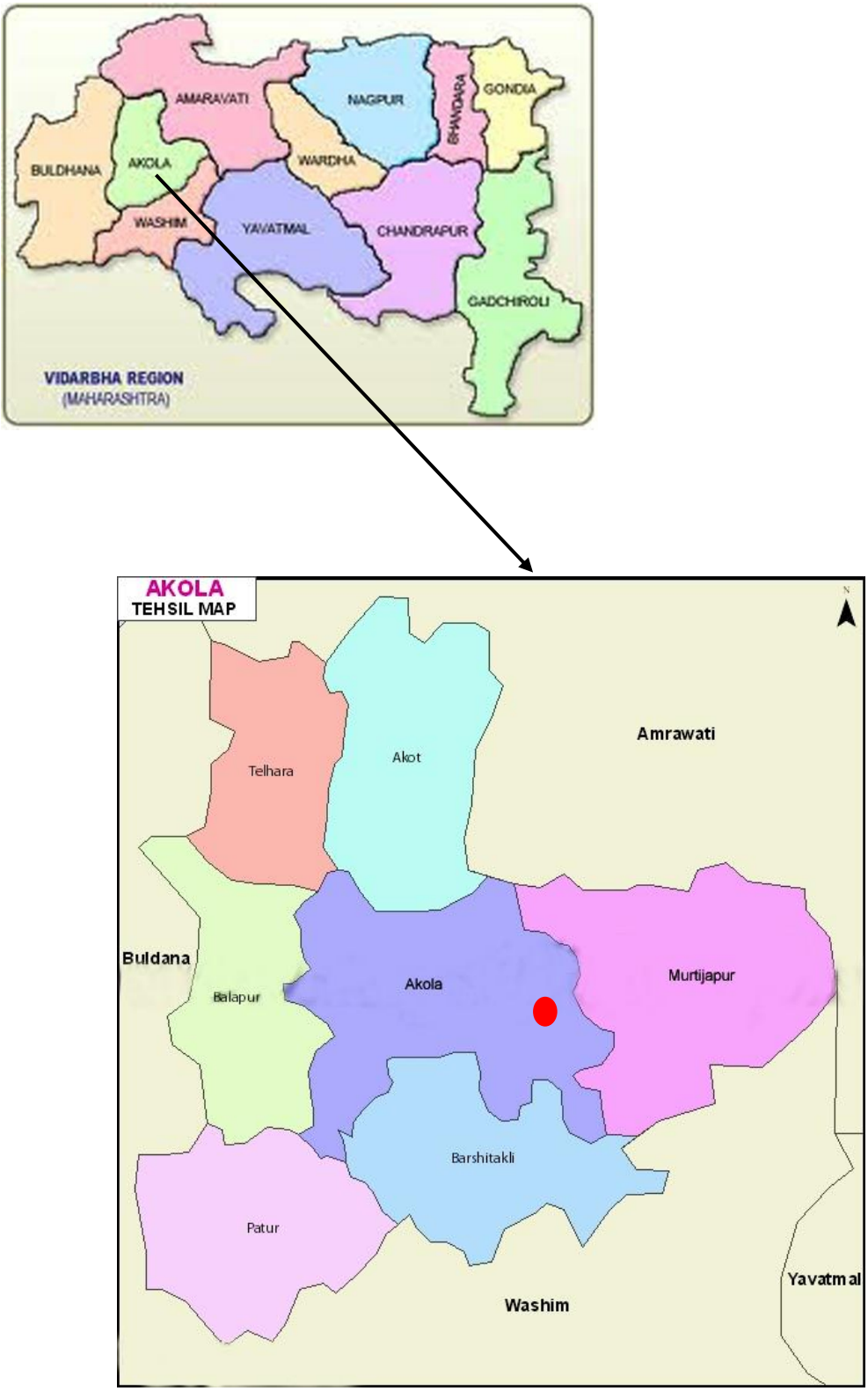

Fig. 2 Map of Akola District showing study area

CHAPTER IV

SOCIO-ECONOMIC FEATURES OF AKOLA DISTRICT

Maharashtra state has six revenue divisions viz., Mumbai, Pune, Nasik, Aurangabad, Amravati and Nagpur. Vidarbha area includes Amravati and Nagpur revenue division comprising eleven districts viz., Buldhana, Akola, Washim, Yavatmal, Wardha, Nagpur, Bhandara, Gondia, Chandrapur and Gadchiroli. Washim and Gondia are newly formed districts bifurcating Akola and Bhandara districts respectively. Nagpur division includes Bhandara, Gondia, Chandrapur, Gadchiroli and Wardha is the Western districts of Vidarbha. The Western districts are Buldana, Akola, Amravati, Yavatmal and Washim. The Western districts are known for its cotton crop and the eastern region is for good quality of rice. Vidarbha as a whole contributes cotton, rice, jowar, millets, oilseeds, soybean, citrus, forest timber, flowers crops, vegetables etc.

The present study is confined to Akola district western of Vidarbha. The agro-climatic conditions differ from place and even in close vicinity also.

Socio-economic Features of Akola district

Location of Akola district

Akola district is falls in vidharbha region of Maharashtra .it comprises of 7 tehsils .it lies between 20.17and 21.18 north latitudes and 76.17and 77.14 east latitudes .it covers area of 5417 sq.km accounting for 1.76 % of total area of Maharashtra. Akola district is surrounded by Amravati district in north. Part of Amravati district and Yavatmal district in the East. Washim and Yavatmal district to the south and Buldhana district toward West.

Topography and soil

The northern part of the Akola district lies in Puma valley which itself is a part of Tapi river basin. River Puma has formed fertile basin in Akola, Balapur and Murtizapur tehsils of Akola .Akola district divided into seven tehsils for smooth administration .The district ranks fourth in respect

of size and fifth in respect of population among the 11 district of vidarbha region of Maharashtra .The soil of the district is basically derived from volcanic trap rock and it is quite fertile. It is classified into categories as coarse soil found in south. Medium black soil found in the plain and deep black soil found in river valley.

Climate and rainfall

Akola has a tropical savanna climate(Köppen climate classification *Aw*) bordering humid subtropical climate (Köppen climate classification *Cwa*), and people predominately wear cotton clothes. Akola has a National Weather Station which serves as the local weather centre. Annual temperatures range from a high of 54.6 °C (117.68 °F) to a low of 2.2 °C (35.96 °F). Akola lies near the Tropic of Cancer and becomes very hot during the summer, especially in May. Although it can be very hot in the day, it is cooler at night. The annual rainfall averages 800 mm. Most of the rainfall occurs in the monsoon season between June and September, but some rain does fall during January and February.

On the north, Akola is bordered by the Melghat Hills and forest region. The highest point in Akola District at about 950–970 m is present there in the northern Satpuda region. The Morna River flows through Akola. Purna River forms a part of the north border of the district, and the top north portion of the district lies within its watershed along with Aas River and Shahnur River. Vaan River forms a part of the northwest boundary of the district after entering from the Amravati district. Maan River drains the southwestern portion of the district. Morna River drains the mid-south portion of the district, while the southeast is drained by the Katepurna and Uma rivers.

Area and population

Akola district has a total area of 5,431 sq. km., which is 1,76 per cent of total area in Maharashtra state. As of 2011 India census, Akola district had a population of 18,18,617. Males constitute 52.00 per cent of the population and females 48.00 per cent. Akola has as average literacy rate of 87.55 per cent, higher than the national average of 59.00 per cent,

male literacy is 92.89 per cent and female literacy is 81.51 per cent. In Akola 11.64 per cent of the population is under 6 years of age.

Land use pattern.

The details of land use pattern of Akola district are presented in Table 3.

Table 3. Land use pattern of Akola district

Sl. No.	Content	Area (ha)	Percentage
1	Total geographical area	540481	100,00
2	Area under forest	36414	6.73
3	Area for land utilization	5429	100.00
4	Barren and uncultivable land	18280	3.38
5	Land put to non-agriculture uses	5801	1.07
6	Permanent pasture and other grazing land	5292	0.97
7	Land under miscellaneous tree crops and groves not included in net area sown.	8098	8.49
8	Current fallows	7911	1.46
9	Other fallows	5262	0.97
10	Net area sown	447332	82.76
11	Area sown more than once	37086	6.86
12	Gross cropped area	484417	89.62
1`3	Area under irrigation	14303	1.55
14	Cultivable waste land	5988	1.10

(Source: District agricultural statistical information Maharashtra state, March 2012).

Table 3 shows that, the Akola district has total geographical area of 5.43square of which only 320871.00 (51.02 %) haywire under cultivation.

Cropping pattern

Cropping pattern of an area indicates the distribution of total cropped area under various crops grown by cultivators and the share of each crop. The usual cropping is determined by large number of factors. The most important factors are climate, soil, topography, customs and distance to market (Table 5).

Table 4. Distribution of net area shown of Akola district

Sl.No.	Crop	Area (ha)
1	Wheat	18871
2	Kharif jowar	84922
3	Bajra	1210
4	Maize	2451
5	**Other cereals.**	**21**
6	Total cereals (A)	107475
7	Garm	20087
8	Tur	5634
9	**Other Pulse**	**1038**
.	**Total Pulses**	**104175**
	Total Food grains	**130935**
10	Sugarcane	335
11	Cotton	192994
	Total Fibber Crops	193329
12	Soybean	40613
13	Sunflower	3550
14	Groundnut	1332
	Total oilseeds	432153
	Gross cropped area	481493

(Source: Agricultural statistical information Maharashtra state, March 2018

Market

For the marketing of agricultural produce, agricultural produce market committees are functioning in the district .All seven tehsils having facilities of regulated markets functioning in the district .These Sub-markets are connected with roads and having faculties of banking electricity etc.

CHAPTER V

RESULT AND DISCUSSION

The empirical results obtained after the analysis of the collected data from the respondents through personal interview, observation with appropriate discussion there on efforts have been made to investigate realities. The results have been presented in this chapter. The collected data were analyzed in accordance with the study objective, results emerged out of this study have been presented under the following sub heads.

5.1 Distribution analysis

5.1.1 Distribution of respondents according to their personal, socio-economic, communication and situational characteristics.

5.1.2 Distribution of respondents according to their knowledge about recommended soil and water conservation practices.

5.1.3 Distribution of respondents according to the adoption of recommended soil and water conservation practices.

5.2 Relational analysis of independent and dependent variables

5.3 Analysis of constraints in use of soil and water conservation practices.

5.4 Empirical research model

5.1 Distribution analysis

5.1.1Distribution of respondents according to personal, socio-economic, situational and communication characteristics

Personal, socio-economic, situational and communications profile of the respondents has been studied by considering their age, education, land holding, occupation, annual income, social participation, type of soil, topography of land, cropping pattern, irrigation status, extension contact, risk preference.

The results pertaining to distribution of respondents on these variables have been presented under this section.

5.1.1.1 Age

Age is important factor, which determines the role of farmers in adoption of improved practices. The distribution of the respondents according to age was ascertained and has been presented in Table 5.

Table 5: Distribution of the respondents according to their age

Sl. No.	Age category	Respondents (n=150)	
		Frequency	Percentage
1.	Young (Up to 35)	30	20
2.	Middle (36 to 50)	66	44
3.	Old (Above 50)	54	36
	Total	150	100.00

The age wise distribution of the respondents in Table 5 shows that more (44.00%) number of respondents were included in the middle age category followed by 36.00 per cent respondents were observed in old age (Above 50 years) category and only 20.00 per cent respondents were up to 35 years i.e. young age category.

Kale et al. observed the similar observations and had stated that majority of the respondents were in middle age group of 36 to 50 years.

5.1.1.2 Education

Education has been considered as one of the most important variable with the help of which social change can be achieved. The education of the respondents was studied and the result has been presented in Table 6.

It could be seen from Table 6 that over one fourth (26.67%) of the respondents were educated up to higher secondary school level, followed by 23.34 per cent of the respondents were educated up to high school level, 21.33 per cent respondents were educated up to college level, and 13.33 per cent were educated up to middle school level. The 12.00

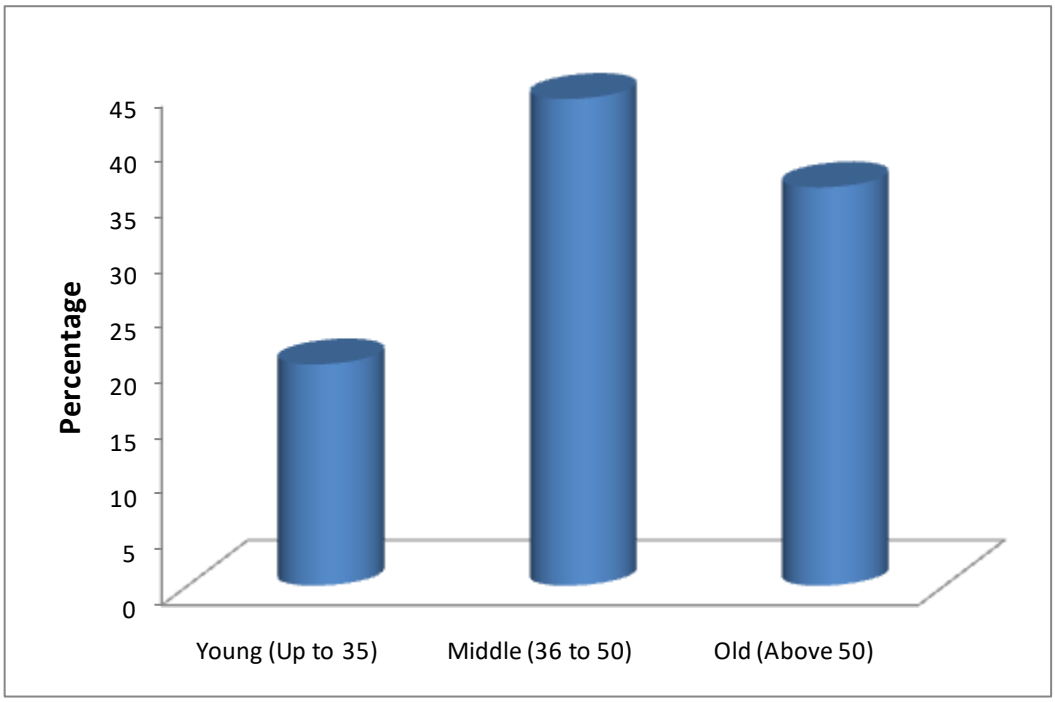

Fig .3 Distribution of the respondents according to their age

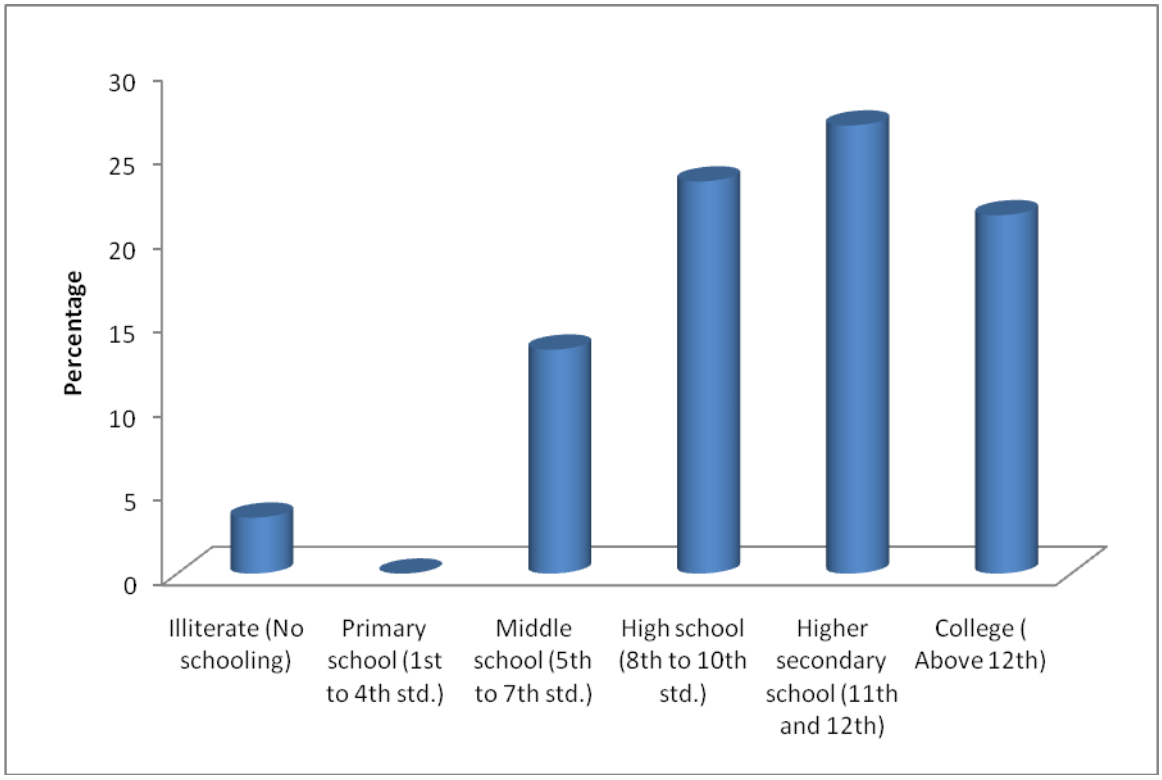

Fig. 4 Distribution of the respondents according to their education

per cent respondents were educated up to middle school and 3.33 per cent respondents were illiterate.

Table 6: Distribution of the respondents according to their education

Sr. No.	Education	Respondents (n=150)	
		Number	Percentage
1	Illiterate (No schooling)	5	3.33
2	Primary school (1st to 4th std.)	18	12,00
3	Middle school (5th to 7th std.)	20	13.33
4	High school (8th to 10th std.)	35	23.34
5	Higher secondary school (11th and 12th)	40	26.67
6	College (Above 12th)	32	21.33
	Total	150	100.00

From the above observation it has clearly seen that majority of the respondents were educated up to higher secondary school level.

Parate (2014) observed the similar observation and had stated that majority of the respondents were educated up to high school level.

5.1.1.3 Land holding

Land holding was assumed as an important variable that influences adoption behaviour of the respondents. The results obtained have been presented in Table 7.

It is evident from Table 7 that maximum (43.34%) respondents belonged to category of small land holding ranging from 1.01 to 2.00 ha. It was followed by 25.33 per cent of the respondents belonging to category of semi-medium land holding possessing land from 2.01 to 4.00 ha. Then 16.00 per cent of the respondents possessed medium land holding (4.01 to 10.00 ha.) Whereas 14 per cent of the respondent have marginal land holding possessing land up to 1.00 ha. Only 1.33 per cent

respondents belonging to large land holding category possessed the land more than 10.00 ha.

Table 7: Distribution of the respondents according to their land holding

Sr. No.	Land holding (ha)	Respondents (n=150)	
		Number	Percentage
1	Marginal (Up to 1.00)	21	14.00
2	Small (1 .01 to 2.00)	65	43.34
3	Semi medium (2.01 to 4.00)	38	25.33
4	Medium (4.01 to 10.00)	24	16.00
5	Large (Above 10.00)	2	1.33
	Total	150	100.00

Yadav *et al.* (2013) observed the similar observation and had stated that maximum number of the respondents possessed small size land holding.

5.1.1.4 Annual income

Annual income provides for availability of capital for farming. It is assumed that annual income plays an important role for the adoption of recommended practices of soil and water conservation by the farmers hence it is considered in the present study. The results obtained have been presented in Table 8.

Table 8: Distribution of the respondents according to their annual income

Sr. No.	Annual income (Rs.)	Respondents (n=150)	
		Number	Percentage
1.	Up to 1,00,000	34	22.67
2.	1,00,001 to 2,00,000	42	28.00
3.	2,00,001 to 3,00,000	23	15.33
4.	3,00,001 to 4,00,000	16	10.67
5.	Above 4,00,000	35	23.33
	Total	150	100.00

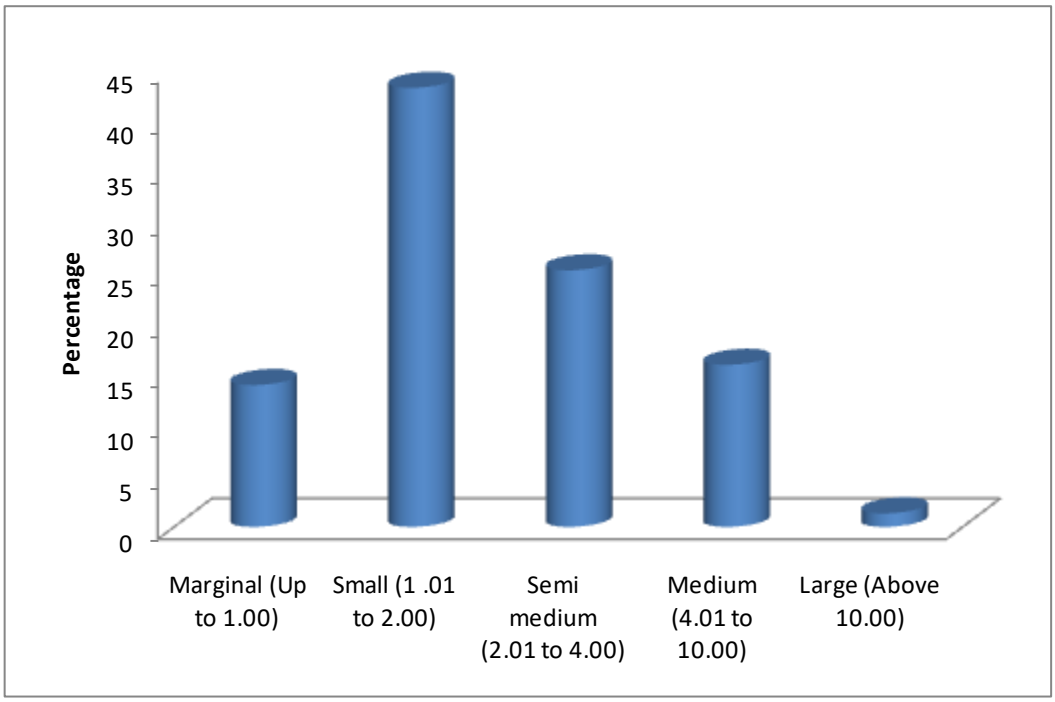

Fig. 5 Distribution of the respondents according to their land holding

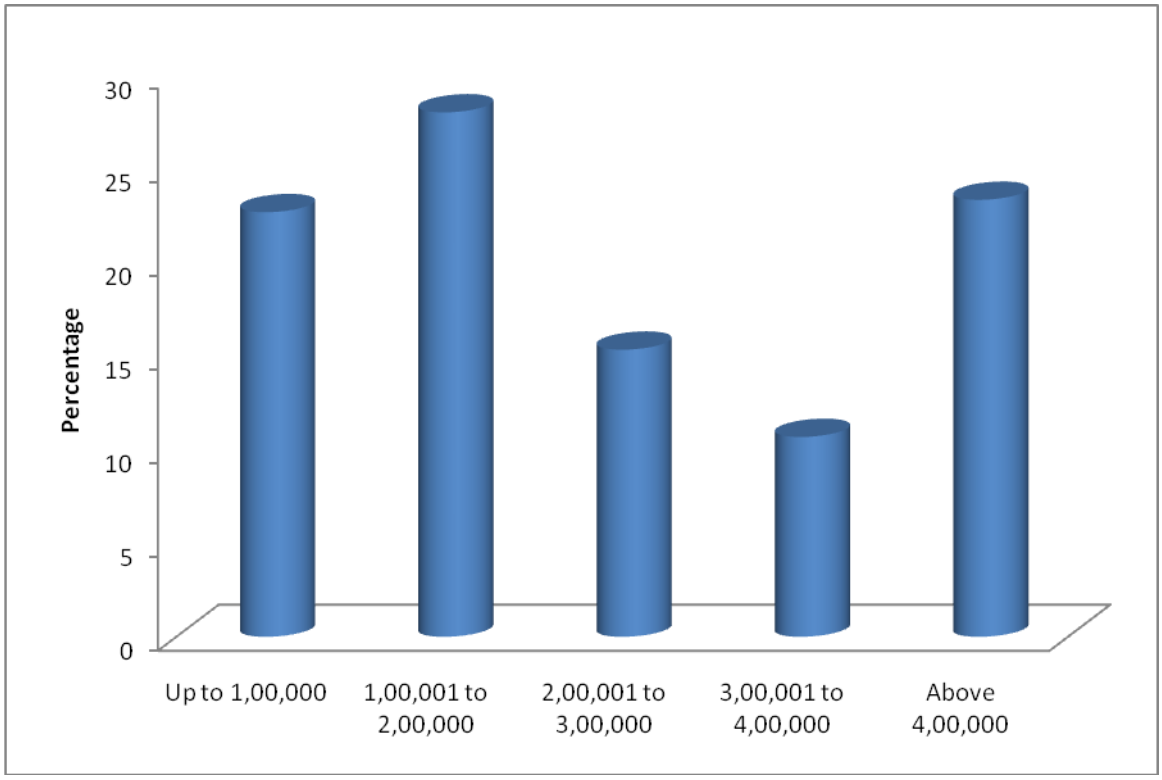

Fig. 6 Distribution of the respondents according to their annual income

From the distribution of the respondents according to annual income in Table 8 observed that maximum (28.00%) number of the respondents had annual income between 1,00,001 to 2,00,000 followed by 23.33 per cent respondents were found to have annual income above Rs.4,00,000. The respondents having annual income up to Rs.1, 00,000 were 22.67 per cent. The percentage of the respondents having annual income between Rs. 2,00,001 to 3,00,000 were found to 15.33 per cent and very less respondents having annual income between Rs 3,00,001 to 4,00,000.

5.1.1.5 Occupation

The occupation of the respondents was studied and the result has been presented in Table 9.

Table 9: Distribution of the respondents according to their occupation

Sr. No.	Occupation	Respondents (n=150)	
		Number	Percentage
1	Agriculture	101	67.34
2	Agriculture + Labour	17	11.33
3	Agriculture + Allied occupation	10	6.67
4	Agriculture + Business	14	9.33
5	Agriculture +Service	8	5.33
	Total	150	100.00

From the distribution in Table 9 it is observed that the majority (67.34%) of the respondents had their main occupation as a agriculture, followed by 11.33 per cent respondents having occupation agriculture and labour. The 9.33 per cent respondents had occupation agriculture with business. The only 5.33 per cent and 6.67 per cent respondents having occupation agriculture plus service and agriculture plus allied occupation respectively.

The finding of the present study are contradictory to the finding of Dighe (2004) who found that majority of the respondents had agriculture as main occupation.

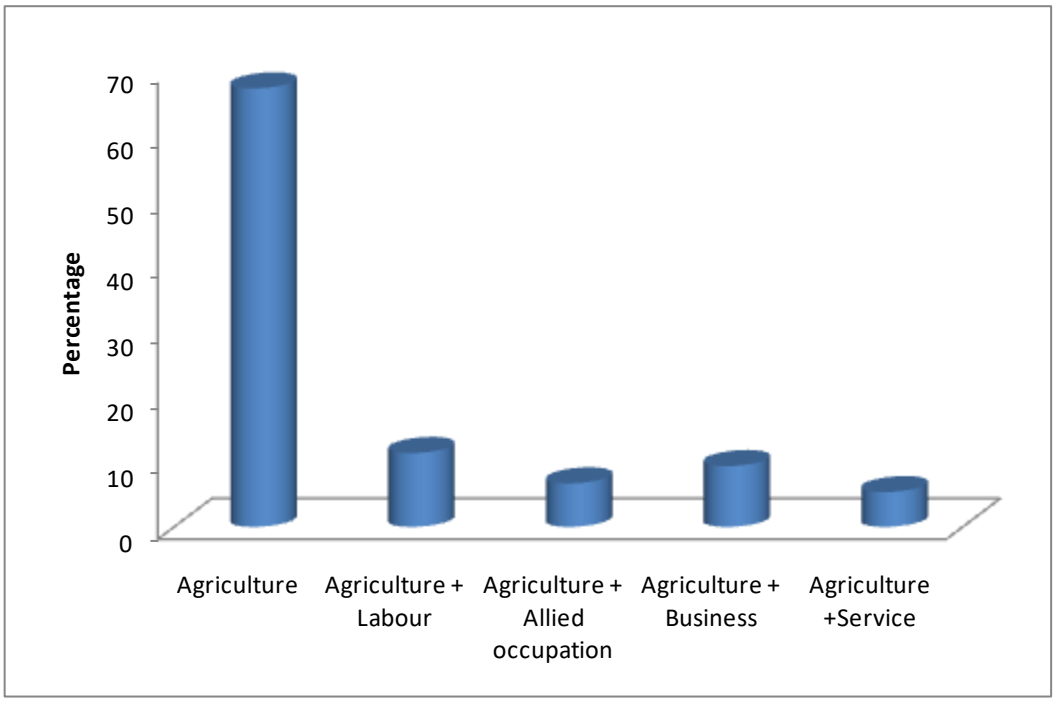

Fig. 7 Distribution of the respondents according to their occupation

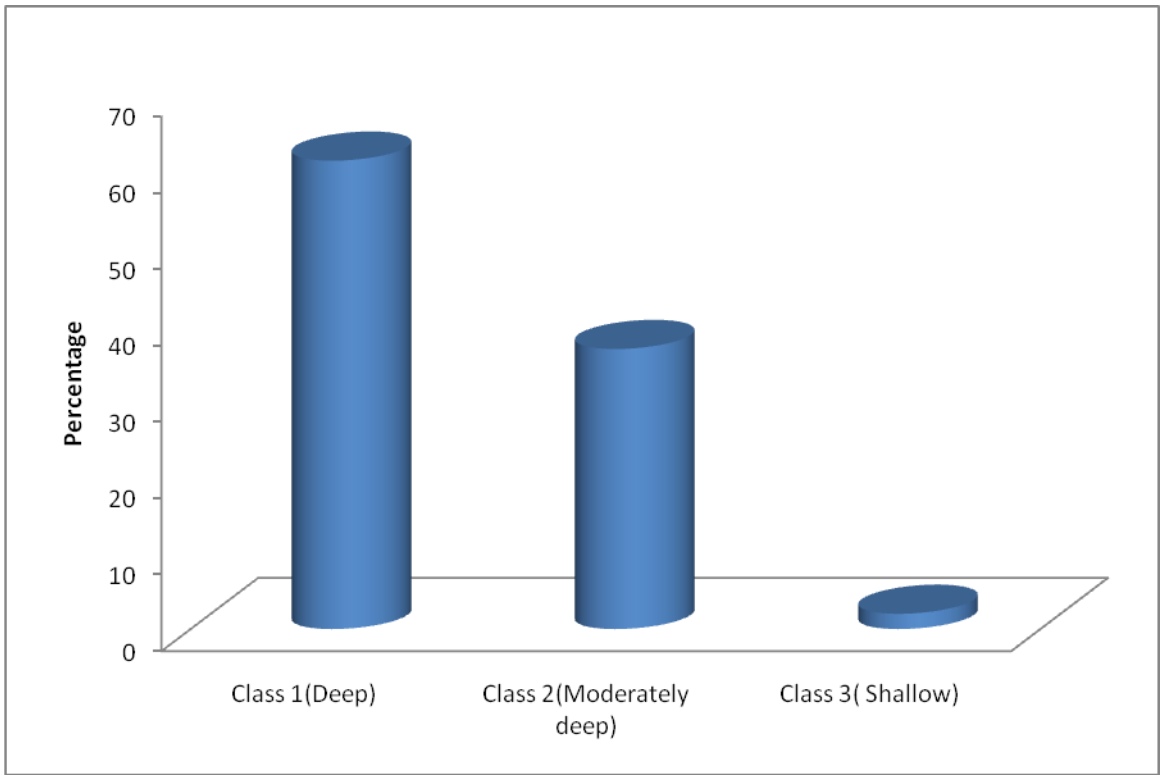

Fig. 8 Distribution of respondents according to their type of land

5.1.1.6 Type of soil

Crops yield depends on various factors, out of which type of soil is one of the important prerequisites for better yield of the crops. The data regarding the type of soil of the selected farmers has been presented in Table 10.

Table 10: Distribution of respondents according to their type of land

Sr. No.	Soil type	Respondents (n=150)	
		Number	Percentage
1	Class 1(Deep)	92	61.33
2	Class 2(Moderately deep)	55	36.67
3	Class 3(Shallow)	3	2.00
	Total	150	100.00

The data regarding the type of soil of the selected farmers had presented in Table 10 revealed that majority (61.33%) of the respondents were having class 1 type of soil followed by 36.67per cent respondents having class 2. The 2.oo per cent respondents having class 3 type of soil, and no having class 4 type of soil thus it was concluded from above data that, majority of the respondents in study area having class 1 type of soil.

5.1.1.7 Topography of land

The distribution of respondents for topography of land was presented in following Table11.

Table 11: Distribution of respondents according to topography of land

Sr. No.	Topography of land	Respondents (n=150)	
		Number	Percentage
1	Plane land	103	68.67
2	Undulating land	35	23.33
3	Both	12	8.00
	Total	150	100.00

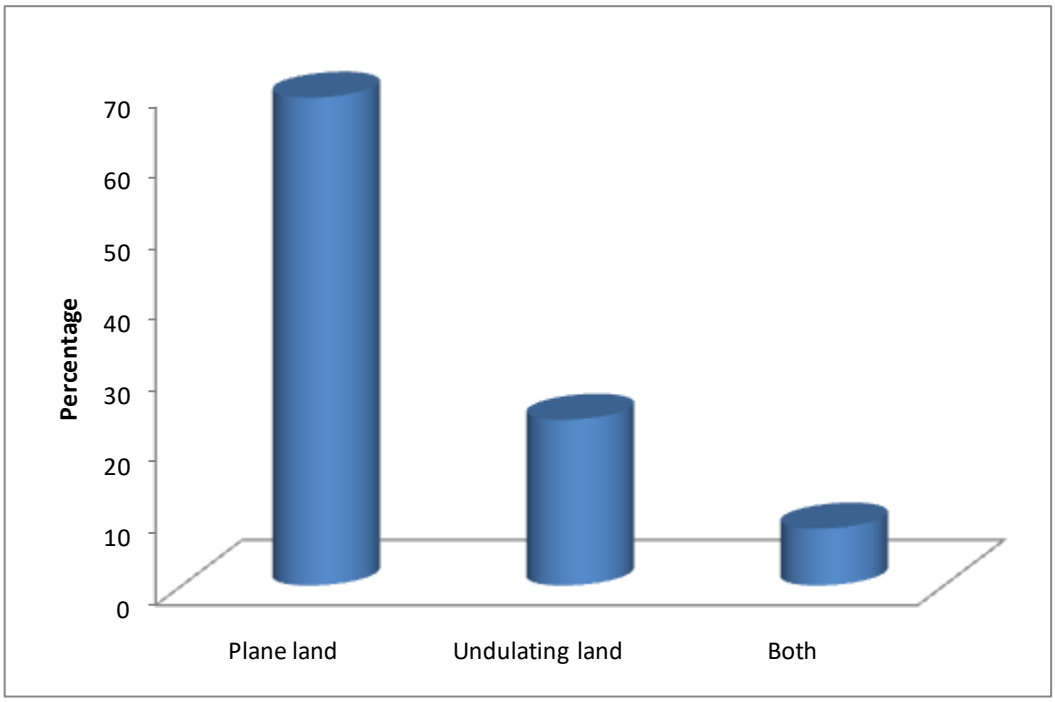

Fig. 9 Distribution of respondents according to topography of land

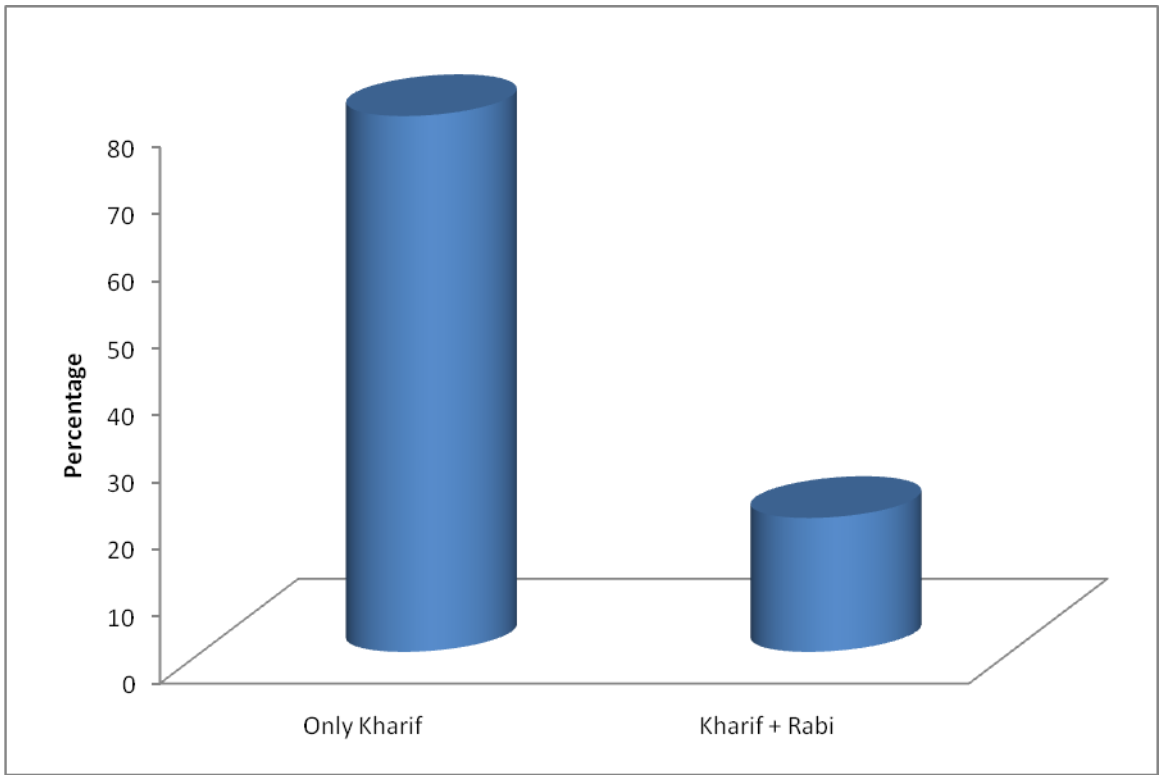

Fig. 10 Distribution of respondents according to cropping pattern

From the above Table 11 it was observed that majority (68.67%) of the respondents having plane topography of land followed by 23.33 per cent respondents having undulating topography of land and remaining 8.00 per cent respondent having plane as well as undulating topography of land.

Todmal (2012) observed the similar result and stated that majority of the respondents were having plane topography of land.

5.1 .1.8 Cropping Pattern

The distribution of respondents for topography of land was presented in following Table 12.

Table 12: Distribution of respondents according to cropping pattern

Sr. No.	Cropping pattern	Respondents (n=150)	
		Number	Percentage
1	Only Kharif	120	80.00
2	Kharif + Rabi	30	20.00
	Total	150	100.00

From the above table 12 it is observed that majority of the respondents (80.00 %) having only Kharif cropping pattern followed by 20.00 per cent respondent having cropping pattern kharif + Rabi .

Barkhade (2015) observed the similar result and stated that majority of the respondents having the seasonal cropping pattern.

5.1.1.9 Irrigation status

Distribution of farmers according to their Irrigation status is presented in Table 13 as follow.

Table 13: Distribution of respondents according to irrigation status

Sr. No.	Irrigation status	Respondents (n=150)	
		Number	Percentage
1	No irrigation	122	81.33
2	Up to 1 ha	28	18.67
	Total	150	100.00

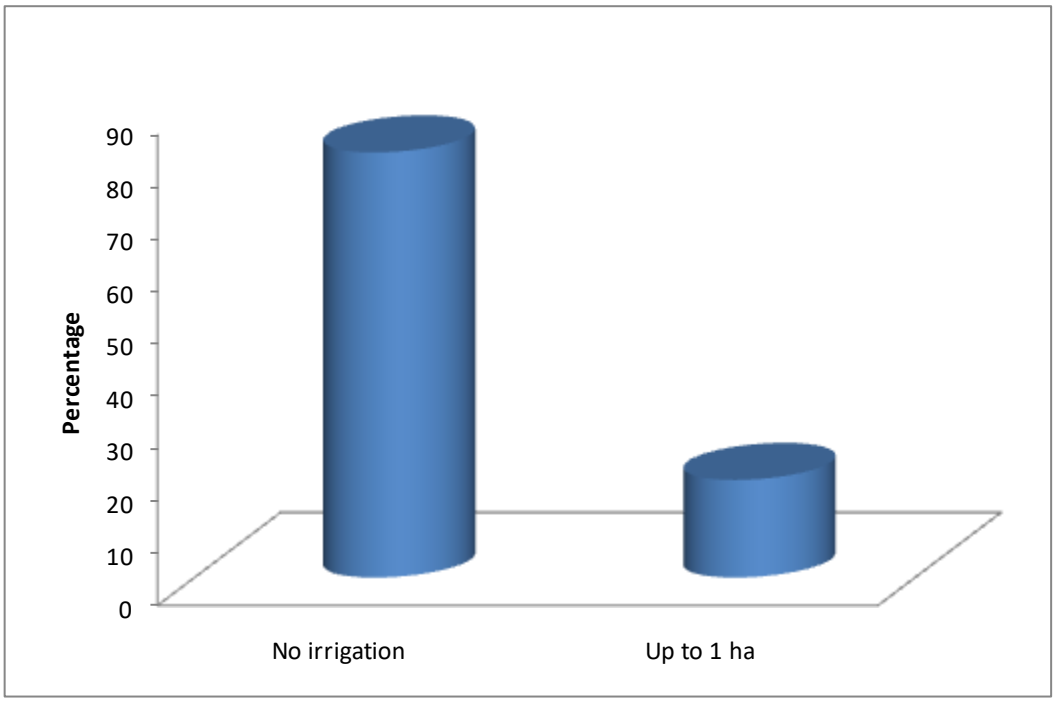

Fig. 11 Distribution of respondents according to irrigation status

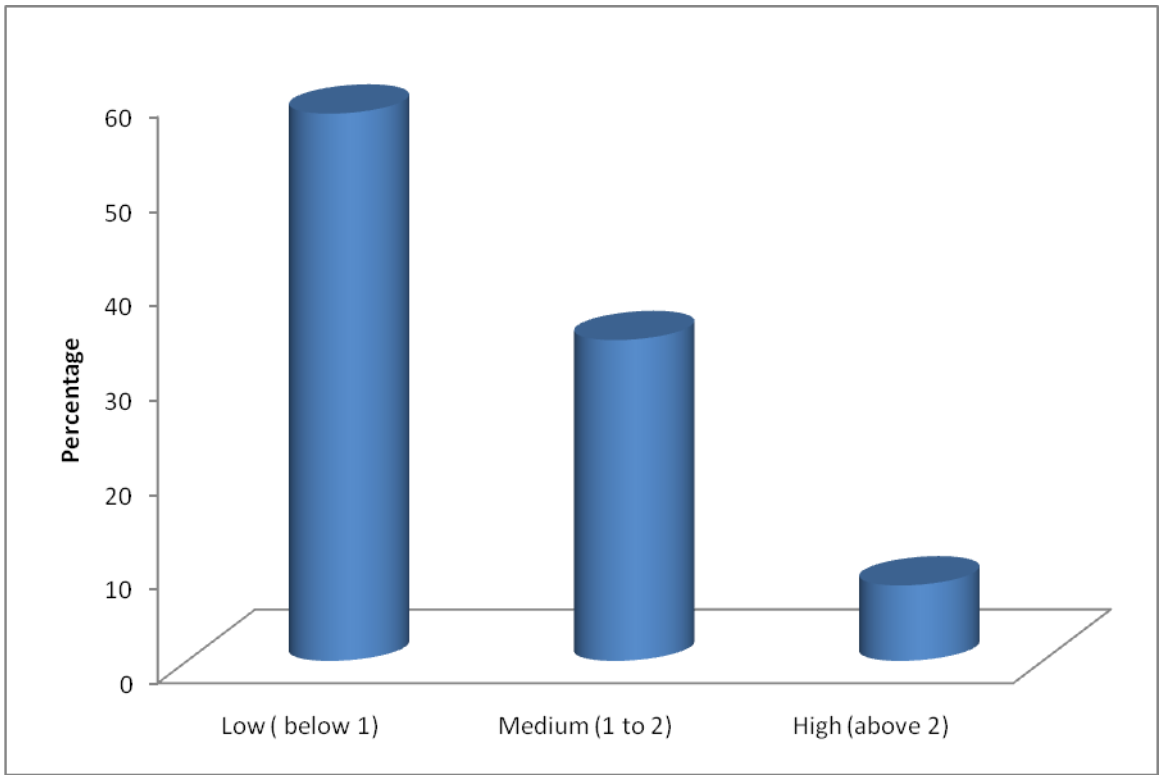

Fig. 12 Distribution of respondents according to their social participation

From distribution given in table 13 it is observed that majority of farmers (81.33%) having no irrigation and followed by 18.67 per cent farmers having irrigation up to 1. ha. land.

5.1.1.10 Social participation

The distribution of the respondents according to social participation was ascertained and has been presented in Table 14.

Table 14: Distribution of respondents according to their social participation

Sr. No.	Social participation	Respondents (n=150)	
		Number	Percentage
1	Low (below 1)	87	58.00
2	Medium (1 to 2)	51	34.00
3	High (above 2)	12	8.00
	Total	150	100.00

Result presented in the Table 14, indicated that the majority (58.00%) of the selected respondents were in low social participation category followed by 34.00 per cent respondents under medium social participation category and remaining 08.00 per cent respondents having high social participation.

Dighe (2004) observed the similar result and stated that the majority of the respondents having low level of social participation.

5.1.1.11 Extension contact:

Extension contact is important from adoption of recommended technologies point of view. It is assumed that the farmers having more contacts with extension worker and other agencies may derive more benefits from development agencies and hence it was studied in present study.

Table 15: Distribution of the respondents according to their extension contact

Sr. No.	Extension contact	Respondents (n=150)	
		Number	Percentage
1	Low (Up to 33.33)	129	86.00
2	Medium (33.34 to 66.66)	21	14.00
3	High (above 66.66)	00	00.00
	Total	**150**	**100.00**

Result presented in the Table 15, indicated that the majority (86.00%) of respondent kept low extension contact with extension agencies for seeking information followed by 14.00 per cent of the respondent farmers having medium extension contact with extension agencies respectively.

Therefore It was inferred that, majority of the respondent farmers had low extension contact.

Kale (2011) was observed the similar observation and had stated that the per cent selected farmers of Purna Valley having low extension contact.

5.1.1.12 Risk preference

The respondents were distributed as follows according to their risk preference level in Table16.

Table 16: Distribution of the respondents according to risk preference

Sr. No.	Risk preference	Respondents (n=150)	
		Number	Percentage
1	Medium	85	56.67
2	High	65	43.33
	Total	**150**	**100.00**

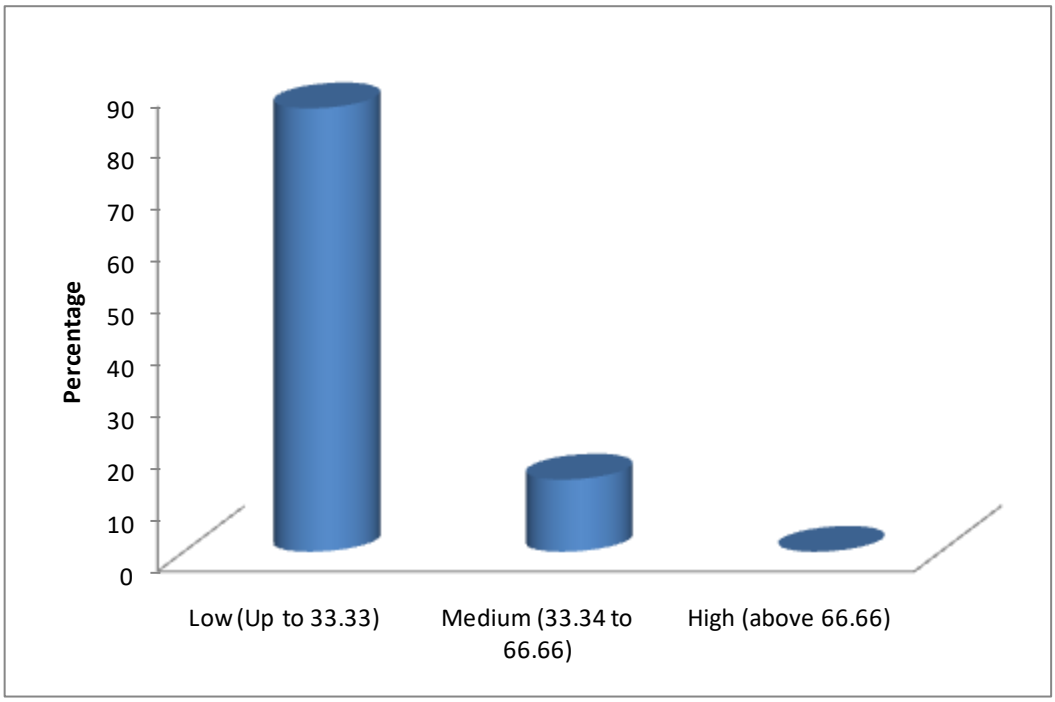

Fig. 13 Distribution of the respondents according to their extension contact

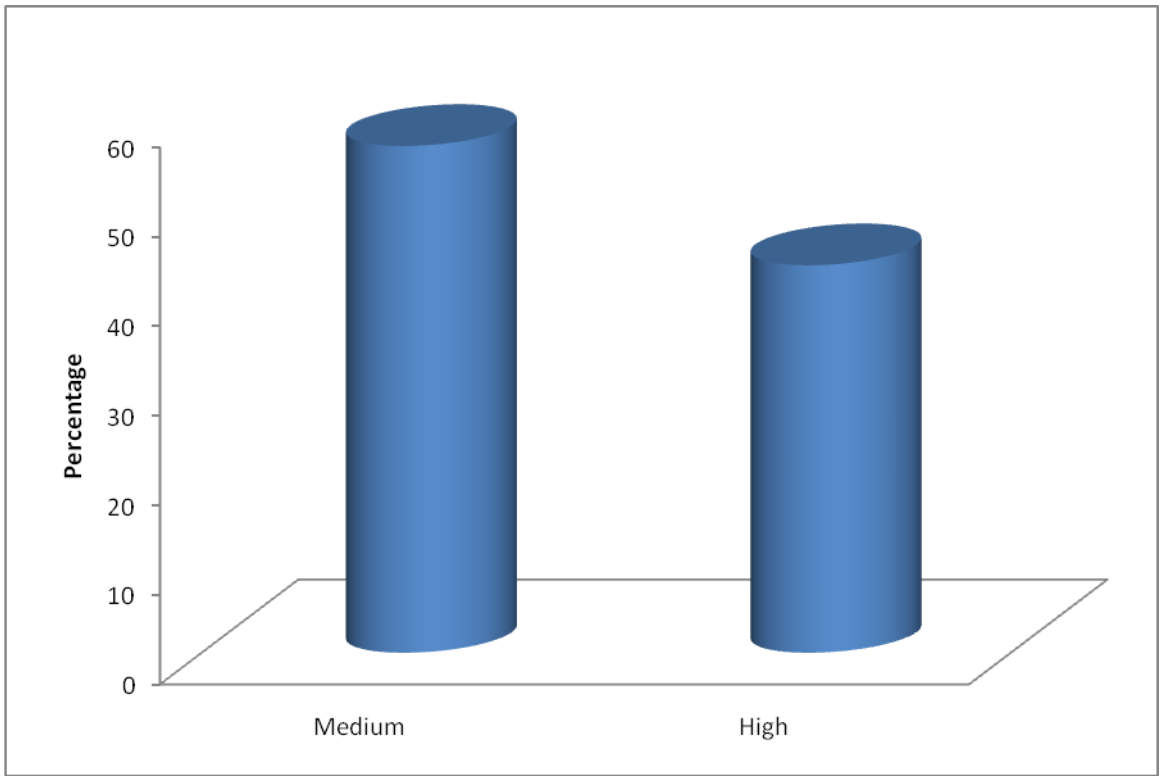

Fig. 14 Distribution of the respondents according to risk preference

From the above distribution table 16 observed that the majority (56.67%) of the respondents having medium level of risk preference followed by 43.33 per cent having high level of risk preference.

Ingole (2013) was observed the similar finding and stated that most of that respondents were having medium level of risk preference category.

5.1.2 Distribution of respondents according to their knowledge about recommended soil and water conservation practices.

5.1.2.1 Knowledge

The knowledge possessed by the respondents about the selected practices of the soil and water conservation was ascertained and result are depicted in Table 17.

Table 17: Distribution of the respondents according to practice wise knowledge about recommended soil and water conservation practices.

Sr. No.	Soil and water conservation practices	Knowledge	
		Yes	No
1	Sowing direction- Across the slope / On the contour	102 (68 .00)	48 (32.00)
2	Cropping system- Intercropping / Crop sequence	150 (100.00)	00 (00.00)
3	Mulching	88 (58.67)	62 (41.33)
4	Green manuring	47 (31.33)	103 (68.67)
5	Dense growing crop	79 (52.67)	71 (47.33)
6	Wind strip cropping	20 (13.33)	130 (86.67)
7	Broad bed furrow method	145 (96.67)	5 (3.33)
8	Ridged and furrow method	148 (98.67)	2 (1.33)

9	Surface drains	138 (92.00)	12 (08.00)
10	Contour bunding	49 (32.67)	101 (67.33)
11	Compartment bunding	54 (36.00)	96 (64.00)
12	Vegetative bunds	102 (68 .00)	48 (32.00)
13	Farm pond	110 (73.33)	40 (26.67)
14	Nala opening	143 (95.33)	7 (4.67)
15	Check dam	77 (51.33)	73 (48.67)
16	Earthen embankment	148 (98.67)	2 (1.33)
17	Gabion embankment	101 (67.33)	49 (33.67)
18	Grass wood dam	41 (27.33)	109 (72.67)
19	Grasses across water ways	72 (48.00)	78 (52.00)
20	Diversion of rainwater into well	146 (97.33)	2 (2.67)
21	Sprinkler irrigation	142 (94.67)	8 (5.33)
22	Drip irrigation	123 (82.00)	27 (18.00)

The data regarding practice wise knowledge of respondents about soil and water conservation in Table 17 revealed that 100.00 per cent respondents had knowledge about cropping system followed by each of the 98.67 per cent respondents having knowledge about ridges and furrow method and earthen embankment as soil and water conservation practices.

The 97.33 per cent respondents having knowledge about diversion of rainwater into well. Knowledge about sprinkler irrigation and broad bed furrow method having to 96.67 per cent respondents for each. Majority (95.33%) farmers having knowledge about nala opening. Knowledge about mulching having to the 58.67 per cent respondents. The 92.00 per cent respondents having knowledge about surface drains. Knowledge about drip irrigation having to 82.00 per cent respondents.

The 73.33 per cent respondents were having knowledge about farm pond. Knowledge about gabion embankment was having to the 67.33 per cent respondents. While 68.00 per cent respondents know about vegetative bunds using vetiver grass or any other grasses and same per cent respondents having the knowledge about sowing direction which included practices like sowing across the slope and on the contour.

Knowledge about dense growing crop having to the 52.67 per cent respondents, while 51.33 per cent respondents having knowledge about check dam. The 48.00 per cent respondents having knowledge about grass across water ways by using grasses for control the flow of water and 36.00 per cent respondents having knowledge about compartment bunding, while 32.67 per cent respondents have knowledge about contour bunding.

The 31.33 per cent respondents having knowledge about green manuring and 27.33 per cent respondents having knowledge about grass wood dam. Very less (13.33%) number of respondents having knowledge about wind strip cropping.

Majority (86.67%) of the respondents had no knowledge about wind strip cropping as practice of soil and water conservation. The probable reasons for no knowledge about these practices may be that these practices are somewhat technical, which cannot be understood easily by the farmer.

Equipping the farmers with the requisite knowledge about various recommended practices in selected areas through organizing farmers training and arranging guidance campaigning may therefore prove

useful in this regards. A simple literature, illustrations, figures and diagrams will also prove useful in creating awareness among farmers about recommended soil and water conservation practices.

The overall knowledge of respondents about all soil and water conservation practices was ascertained on the basis of knowledge level of the respondents about all practices, and result were depicted in Table18.

Table 18: Distribution of the respondents according to their overall knowledge about selected soil and water conservation practices

Sr. No.	Knowledge level	Respondents (n=150)	
		Number	Percentage
1	Low (up to 33.33	00	00.00
2	Medium (33.34 to 66.66)	64	42.67
3	High (Above 66.66)	86	57.33
	Total	**150**	**100.00**

It could observed from the Table 18, that overall the majority (57.33%) of the respondents had high level of knowledge about the recommended soil and water conservation practices by the farmers, whereas 42.67 per cent respondents were having medium knowledge about soil and water conservation practices.

Thus study concluded that, relatively of the respondent farmers had high level of knowledge about soil and water conservation practices.

Todmal (2012) observed the similar result that the respondents having more knowledge about broad bed furrow method, ridges and furrow method, intercropping etc. She has concluded from the observation that majority of the respondents had high level of knowledge about soil and water conservation practices.

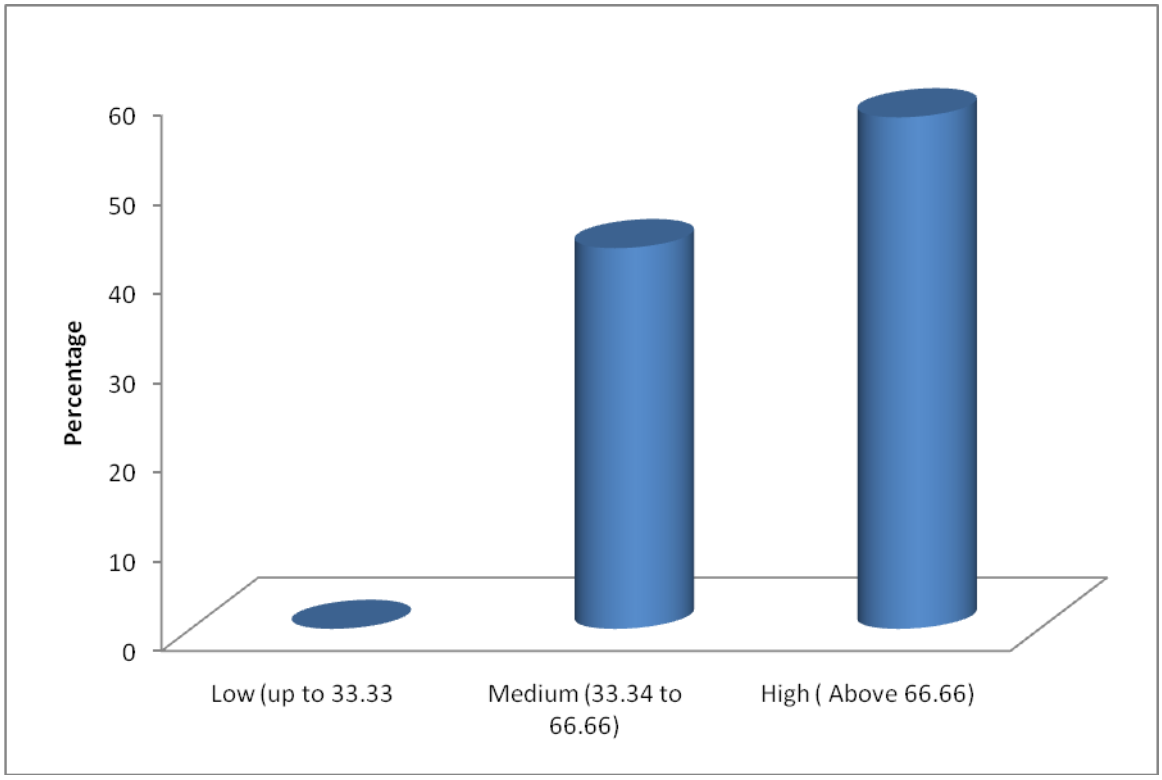

Fig. 15 Distribution of the respondents according to their overall knowledge about selected soil and water conservation practices

Table 19: Distribution of the respondents according to practice wise adoption of recommended soil and water conservation practices

Sr. No.	Soil and water conservation practices	Adoption		
		Full	Partial	No
1	Sowing direction- Across the slope / On the contour	6 (04.00)	2 (1.33)	142 (94.67)
2	Cropping system- Intercropping / Crop sequence	116 (77.33)	30 (20.00)	4 (02.67)
3	Mulching	15 (10.00)	65 (43.33)	70 (46.67)
4	Green manuring	2 (1.33)	7 (04.67)	141 (94.00)
5	Dense growing crop	0 (0.00)	45 (30.00)	105 (70.00)
6	Wind strip cropping	2 (1.33)	3 (2.00)	145 (96.67)
7	Broad bed furrow method	29 (19.33)	93 (62.00)	28 (18.67)
8	Ridges and furrow method	25 (16.67)	106 (70.67)	19 (12.67)
9	Surface drains	37 (24.67)	44 (29.33)	69 (46.00)
10	Contour bunding	0 (0.00)	10 (06.67)	140 (93.33)
11	Compartment bunding	2 (1.33)	15 (10.00)	133 (88.67)
12	Vegetative bunds	20 (13.33)	49 (32.67)	81 (54.00)
13	Farm pond	5 (03.33)	0 (00.00)	145 (96.67)
14	Nala opening	28 (18.67)	95 (63.33)	27 (18.00)

15	Check dam	1 (0.67)	0 (0.00)	149 (99.33)
16	Earthen embankment	30 (20.00)	110 (73.33)	10 (06.67)
17	Gabion embankment	6 (4.00)	46 (36.67)	98 (65.33)
18	Grass wood dam	0 (0.00)	4 (02.67)	14 6 (97.33)
19	Grass water ways	3 (2.00)	28 (18.67)	119 79.33)
20	Diversion of rainwater into well	18 (12.00)	60 (40.00)	72 (48.00)
21	Sprinkler irrigation	81 (54.00)	3 (2.00)	66 (44.00)
22	Drip irrigation	18 (12.00)	3 (2.00)	129 (86.00)

The distribution of respondents according to practice wise adoption of soil and water conservation in Table 19 shows that Majority (77.33 %) of the respondents had full adopted the cropping system. The 54.00 per cent respondents having adoption of sprinkler irrigation.

The full adoption of practices like surface drains, broad bed furrow method, nala opening, ridges and furrow method, earthen embankment, vegetative bunds, diversion of rainwater into well, drip irrigation etc were found to be adopted by nearly bellow the fifty percentage of the respondents.

The 73.33 per cent respondents having partial adoption of earthen embankment followed by 70.67 per cent respondents having partial adoption of ridges and furrow method. Above fifty per cent respondents having the partial adoption of practices like broad bed furrow method, nala opening etc. and partial adoption of soil and water conservation practices like mulching surface drains, vegetative bunds, diversion of rainwater into well, gabion embankment, dense growing crops,

cropping system like intercropping etc were found to be adopted by nearly below fifty per cent.

The majority (99.33%) of the respondents had no adoption of conservation practices like check dam, 96.67 per cent respondents having no adoption of wind strip cropping followed by 93.33 per cent respondents having no adoption of contour bunding, farm pond (96.67%) and grass wood dam (97.33%).

Table 20: Distribution of the respondents according to their level of adoption of soil and water conservation practices

Sr. No.	Adoption level	Respondents (n=150)	
		Number	Percentage
1.	Low (Up to 33.33)	114	76
2.	Medium (33.34 to 66.66)	36	24
3	High(above 66.66)	00	00.00
	Total	**150**	**100**

It is however surprised to note that majority (94.00%) of respondent had not adopted green manuring with Dhaincha and sun hemp, 94.67 per cent respondents were not adopted sowing direction which include sowing across the slope and on the contour. Majority 88.67 per cent respondents had not adopted compartment bunding and 86.00 per cent were not adopted drip irrigation as conservation practices.

Adoption of soil and water conservation practices like dense growing crop, vegetative bunds, gabion embankment, grass water ways, etc. found above the fifty per cent and mulching, surface drains, diversion of rainwater into well, sprinkler irrigation etc. below the fifty per cent.

It was observed from Table 20 that most (76.oo) of the respondents had low level of adoption of recommended soil and water conservation practices. The percentage of respondents having medium level of adoption was 24.00 per cent.

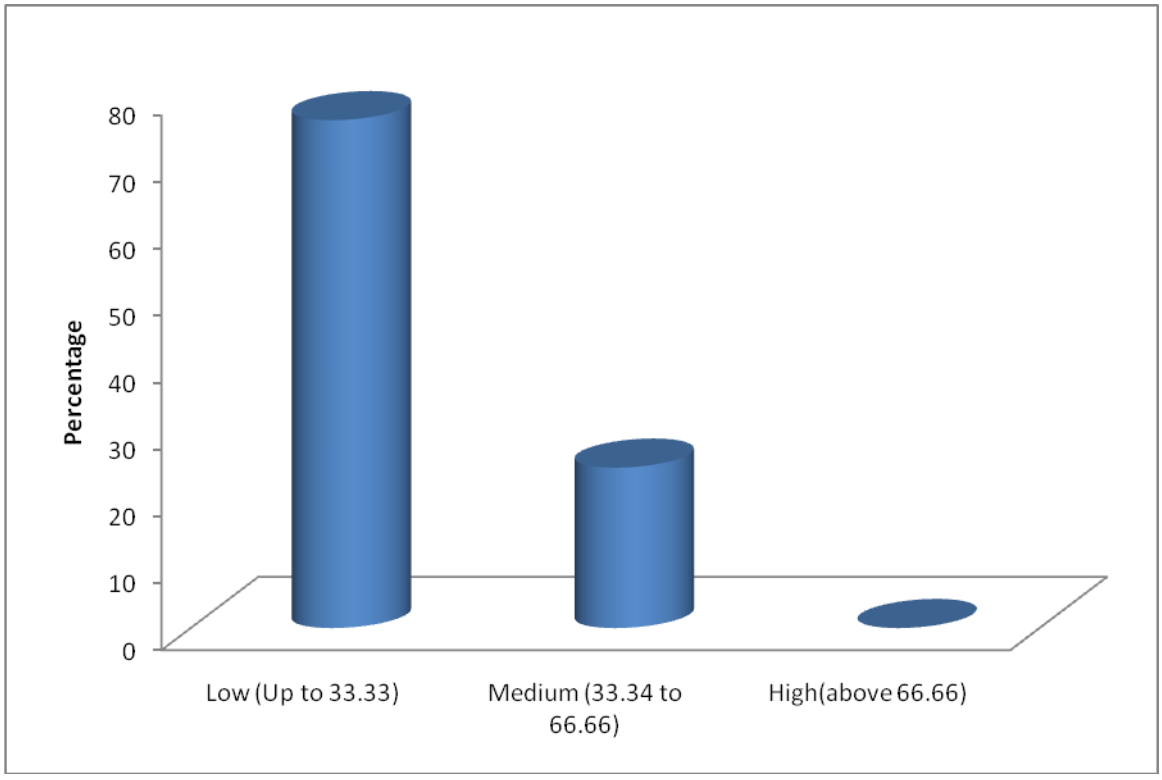

Fig. 16 Distribution of the respondents according to their level of adoption of soil and water conservation practices

Thus, this study concluded that majority (76.00) of the respondents was grouped in low level of adoption about soil and water conservation practices.

Dighe (2004) observed that the similar result and had stated that majority of the respondents were in low level of adoption category.

5.3. Relational analysis

5.3.1 Relationship of selected profile of respondents with knowledge and adoption

The correlation coefficients of knowledge and adoption with personal, situational, communicational and psychological characteristics of the respondents have been depicted in Table 21 as follows.

Table 21: Coefficient of correlation between selected characteristics of the respondents with their knowledge

Sl. No	Variables	''r'' Values
1	Age	-0.1148
2	Education	0.2305**
3	Land holding	0.2476**
4	Annual Income	0.2013**
5	Occupation	0.0159
6	Type of soil	0.0233
7	Topography of land	0.2128**
8	Cropping pattern	0.2915**
9	Irrigation status	0.1342
10	Social participation	0.1362
11	Extension contact	-0.1311
12	Risk preference	0.1694*

* Significant at 0.05 level of probability

** Significant at 0.01 level of probability

It could be seen from table 21 that among selected variables education, land holding, annual income, topography of land, cropping pattern, risk preference are positively significant with knowledge about soil and water conservation practices at 0.01 level of probability. Therefore the null hypothesis was rejected for these characteristics stating that their exits significant relation between these characteristics and knowledge. This indicate that if education, land holding, annual income, topography of land, cropping pattern, risk preference increase the knowledge about soil and water conservation practices.

Whereas age of respondents, occupation, type of soil, irrigation status, social participation, extension contact were not significantly correlated with knowledge about soil and water conservation practices at 0.05 level of probability. Therefore null hypothesis of these variables were accepted.

Table 22: Coefficient of correlation between selected characteristics of the respondents with their Adoption

Sl. No	Variables	''r'' Values
1	Age	-0.2078**
2	Education	0.2208**
3	Land holding	0.3802**
4	Annual income	0.4123**
5	Occupation	-0.0123
6	Type of soil	0.1463
7	Topography of land	0.3052**
8	Cropping pattern	0.3730**
9	Irrigation status	0.3910**
10	Social participation	0.1214
11	Extension contact	-0.1510
12	Risk preference	0.4406**

** Significant at 0.01 level of probability

It could be seen from table 22 that among the selected variables education, land holding, annual income, and topography of land, cropping pattern, and irrigation status and risk preference are significantly

correlated with adoption of soil and water conservation practices. Thus, the null hypothesis was rejected for these characteristics. This indicate that if education, land holding, annual income, topography of land, cropping pattern, irrigation status and risk preference increases the adoption of soil and water conservation practices also increases.

Whereas age of respondents are negatively significant with adoption of soil and water conservation practices. This indicted that if age of respondents is increases adoption will decreases.

Whereas occupation, type of soil, social participation, extension contact are none significantly correlated with adoption of soil and water conservation practices. Thus the null hypothesis was accepted for these selected characteristics.

5.3.2 Regression analysis

Table 23: Regression analysis of independent variables with knowledge index of soil and water conservation practices

Sr. No.	Variable	Coefficient of regression 'b'	SE of 'b'	t– stat
1	Age	-0.064	0.096	-0.6387
2	Education	0.608	0.294	2.064*
3	Land holding	0.644	0.716	0.9020
4	Annual income	1.734	2.463	0.070
5	Occupation	-0.543	0.926	-0.584
6	Type of soil	-1.516	2.144	-0.7058
7	Topography of land	3.324	2.470	1.345
8	Cropping pattern	1.600	0.575	2.773 **
9	Irrigation status	-0.785	0.718	-1.090
10	Social participation	0.313	1.193	0.262
11	Extension contact	-0.774	0.464	-1.672
12	Risk preference	0.847	0.561	1.510

$R^2 = 0.200$

F = 2.862**

* - Significant at 0.05 level of probability

** - Significant at 0.01 level of probability

With a view to find, the significant contributions of independent variables in influencing the knowledge of soil and water conservation practices all the selected variables were fitted into the simple linear regression model. The result pertaining to the regression analysis is presented in Table 23. The data reveals that there is positive and highly significant contribution of education and cropping pattern with knowledge about soil and water conservation practices. It means that increase in education and cropping pattern increases the knowledge about soil and water conservation practices.

Table 24: Regression analysis of independent variables with adoption of soil and water conservation practices

Sl. No.	Variable	Coefficient of regression 'b'	SE of 'b'	t – stat
1	Age	-0.125	0.042	-2.857**
2	Education	0.025	0.133	0.156
3	Land holding	-0.263	0.323	-0.816
4	Annual income	1.626	1.108	1.463
5	Occupation	-0.916	0.417	-2.187*
6	Type of soil	0.699	0.966	0.720
7	Topography of land	3.114	1.118	2.781**
8	Cropping pattern	0.413	0.266	1.550
9	Irrigation status	0.962	0.324	2.960**
s10	Social participation	-0.266	0.536	-0.497
11	Extension contact	-0.224	0.210	-1.065
12	Risk preference	1.267	0.254	4.972**
13	Knowledge	0.294	0.037	7.617**

$R^2 = 0.6376$
F = 18.410**
* - Significant at 0.05 level of probability
** - Significant at 0.01 level of probability

While, age, land holding, annual income, occupation, type of soil, topography of land, irrigation status, social participation, extension contact, risk preference, has shown no significant contribution with knowledge about soil and water conservation practices. When all the 12 variables were fitted in multiple regression equation the Coefficient of Multiple Determination (R2) comes to 0.200 and the obtained R2 value was tested for its significance by computing “F” value and comparing it with “t” table value at n-k-1 degrees of freedom and was found significant. This shows that all the selected 12 variables contributed 20.04 per cent variation in knowledge about soil and water conservation practices with the selected respondents.

Hence, this research study clears that increase the education and cropping pattern for increase the knowledge. It will definitely helps for reducing future constraints in adoption of soil and water conservation practices and increasing the income level of the farmers by increasing the yield level.

With a view to find, the significant contributions of independent variables in influencing the adoption of soil and water conservation practices all the selected variables were fitted into the simple linear regression model. The result pertaining to the regression analysis is presented in Table 24. The data reveals that there is positive and highly significant contribution of topography of land, irrigation status, risk preference and knowledge with adoption of soil and water conservation practices. It means that increase in topography of land, irrigation status, risk preference and knowledge increases the adoption of soil and water conservation practices. Whereas age and occupation are negatively significant with adoption it means that age and occupation decreases the adoption of soil and water conservation practices.

While, education, land holding, annual income, type of soil, cropping pattern, social participation, extension contact, has shown no significant contribution with adoption of soil and water conservation practices. When all the 13 variables were fitted in multiple regression equation the Coefficient of Multiple Determination (R2) comes to 0.6376

and the obtained R2 value was tested for its significance by computing “F” value and comparing it with “t” table value at n-k-1 degrees of freedom and was found significant. This shows that all the selected 13 variables contributed 63.76 per cent variation in adoption of soil and water conservation practices with the selected respondents.

Hence, this research study clears that increase in the topography of land, irrigation status, risk preference and knowledge for increase the adoption of soil and water conservation practices. It will definitely helps for reducing future constraints in adoption of soil and water conservation practices and increasing the income level of the farmers by increasing the yield level.

5.4 Constraints

The constraints generally restrict the adoption of new farm technology. The problems faced by the farmers about adoption of soil and water conservation practices were collected and depicted in Table 25 as follows.

From table 25 it is observed that maximum (34.00%) number of farmer having lack of technical skill about soil and water conservation practices followed by respondents having constraints of lack of money (30.67%), 24.67 per cent respondents having constraints of high initial investment and late sanctioning of subsidy from Agriculture Department.

The 22.00 per cent respondents having constraints of less land holding and loss of land due to farm pond. Whereas 19.33 per cent respondents having constraints of reduction in operational area.

The constraint of unavailability of mulching material to 15.33 per cent respondents while 13.33 per cent respondents having constraints of lack of detail knowledge about soil and water conservation practices. The 14.00 per cent selected respondents having constraints of stagnation of water in field due to high rainfall and absence of vetiver grass for vegetative bunds.

Table 25: Constraint expressed by the selected farmers in adoption of soil and water conservation practices

Sl. No.	Constraints	Respondents	
		Number	Percentage
1.	Lack of detail knowledge about soil and water conservation practices	20	13.33
2.	Lack of technical skill about soil and water conservation practices.	51	34
3.	In case of mulching unavailability of mulching material	23	15.33
4.	Reduction in operational area.	29	19.33
5.	Lack of money	46	30.66
6.	Stagnation of water on the soil surface due to flat land and in case of heavy rainfall	21	14
7.	Less land holdings and loss of land due to farm pond	33	22
8.	High initial investment and late sanctioning of subsidy from Agriculture Department	37	24.66
9.	Absence of Vetiver grass or natural grass to construct bunds	21	14

Empirical Research Model

Considering the empirical relations amongst the independent variables and dependent variables the empirical model was prepared and relationship has been depicted in figure The empirical model shows that the observed relation of independent variables age, education, land holding, annual income, occupation, type of soil, topography of land, cropping pattern, irrigation status, social participation, extension contact, risk preference and dependent variables, knowledge and adoption of the respondents.

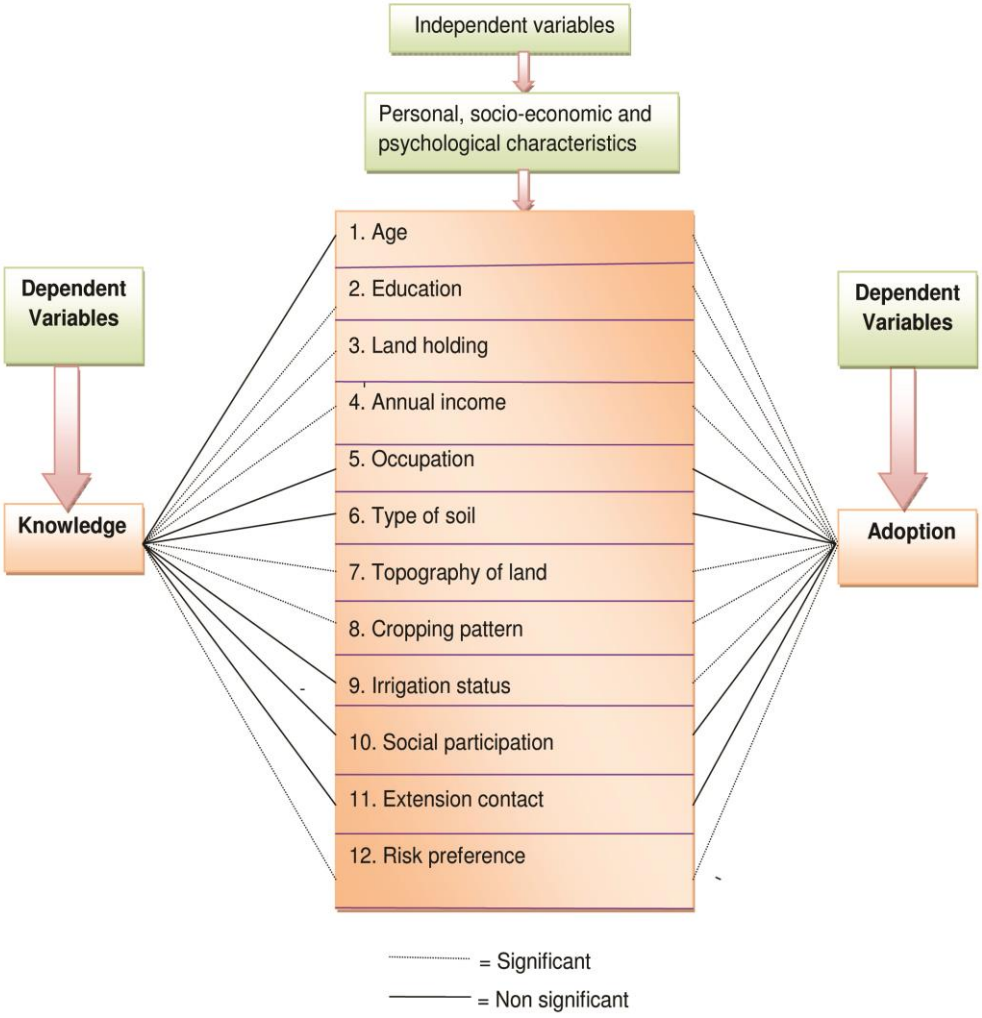

Fig. 17. Empirical Model of study

CHAPTER VI

SUMMARY AND CONCLUSION

The present study “Knowledge and Adoption of farmers about Soil and Water Conservation Practices’’ was conducted in Akola district. The study was planned to investigate knowledge and adoption of farmers about soil and water conservation practices. With the view in mind this study was carried out with following specific objectives.

1. To study the personal, socio-economic, communication and psychological characteristics of farmers.
2. To study the knowledge of farmers about soil and water conservation practices.
2. To study the adoption of farmers about soil and water conservation practices.
3. To study the relationship of personal, socio-economic, psychological and communication characteristics with the knowledge and adoption of farmers about soil and water conservation practices.
4. To study the constraints in the adoption of soil and water conservation practices

The exploratory research design of social research was used for the present investigation. The present study was undertaken in Akola district of Vidharbha in Maharashtra state. The farmers were selected from Akola district two tehsil Barsi Takil and Patur were selected. Thus, the total ten villages were selected. Data were collected by personally interviewing the respondents with the help of pretested and structured interview schedule. The data collected were tabulated and the statistical tools namely mean, standard deviation, percentage, frequency, correlation coefficient regression were employed for interpretation of the findings. Null hypothesis set for the study was tested for its acceptance or rejection. The respondents were selected by random sampling method to constitute sample size of 150 respondents.

The characteristics of the respondents includes namely age, education, land holding, annual income, occupation, type of soil, topography of land, cropping pattern, irrigation status, social participation, extension contact, risk preference as independent variables while knowledge and adoption as dependent variable.

6.1 FINDINGS

The salient findings of the study are summarized in succeeding paragraphs.

6.1.1 Distributional analysis:

6.1.1.1. Profile of the respondents:

1. Majority (44.00%) of respondents were included in the middle age (36 to 50) category followed by 36.00 per cent respondents were observed in old age (Above 50 years) category.
2. More than one fourth (26.67%) 0f the respondents were educated up to higher secondary school level, followed by 23.33 per cent of the respondents were educated up to high school level.
3. Maximum (43.33%) of the respondents belonged to category of small land holding ranging from 1.01 to 2.00 ha.
4. Majority (28.67%) of the respondents had annual income between 1, 00,001 to 2, 00,000 followed by 23 .33 per cent respondents were found to have annual income above Rs.4, 00,000.
5. Majority (67.34%) of the respondents had agriculture as a main occupation.
6. More than fifty per cent (61.33%) respondents were having class 1 type of soil followed by 36.67 per cent respondents having class 2.
7. Majority (68.67%) of the respondents having plane topography of land followed by 23.33 per cent respondents having undulating topography of land.
8. Majority (80.00%) of the respondents having cropping pattern kharif + rabbi followed by 20.00 per cent respondent having cropping pattern only kharif.

9. Majority of farmers (81.33%) having irrigation on up to 1 ha.
10. The majority (58.00%) of the selected respondents were in low social participation category followed by 34.00 per cent respondents under medium social participation category and 8.00 per cent respondents having high social participation.
11. Majority of respondent (86.00%) kept low extension contact with extension agencies for seeking information.
12. 12. Majority (56.67%) of the respondents having medium level of risk preference followed by 43.33 per cent high level of risk preference.

6.2 Dependent variable

1. Majority (57.33%) of the respondents had high level of knowledge about the recommended soil and water conservation practices by the farmers, whereas 42.67 per cent respondents were having medium level of knowledge.
2. Most of the respondents (76.00%) had low level of adoption of recommended soil and water conservation practices. The percentage of respondents having medium level of adoption was 24.00 per cent.

6.3 Relational Analysis

The results of relational analysis are delineated as follows.

The variables namely education, land holding, annual income, topography of land, cropping pattern, risk preference are positively significant with knowledge about soil and water conservation practices at 0.01 level of probability.

Whereas age of respondents, occupation, type of soil, irrigation status, social participation, extension contact were not significantly correlated with knowledge about soil and water conservation practices at 0.05 level of probability.

The variables namely education, land holding, annual income, topography of land, cropping pattern, irrigation status and risk preference are significantly correlated with Kendra's, NGOs, Agriculture universities, etc through demonstration, workshop, seminars, distribute the leaflet,

folders, and other printed materials etc for imparting knowledge and adoption about soil and water conservation practices.

As per results related to knowledge and adoption of farmers about soil and water conservation practices, the right proportion of respondents had not adopted soil and water conservation practices in contributing towards more yields, extension agency workers should take note of this high gap planning and implementing extension activities programme in the study area. It is suggested to conduct different short duration training to improve skill and creation of confidence and attitude among the farmers for adoption of soil and water conservation practices.

Knowledge and adoption analysis revealed that the ignorance of the farmers about the recommended soil and water conservation practices. It observed that constrains for non adoption of recommended soil and water conservation practices were low credit supply, low production, high initial expenditure, and unavailability of adoption of soil and water conservation practices.

Whereas age of respondents was negatively significant with adoption of soil and water conservation practices by the farmers.

Whereas occupation, type of soil, social participation, extension contact are non significantly correlated with adoption of soil and water conservation practices

The result pertaining to the regression analysis is positive and highly significant contribution of topography of land, cropping pattern, irrigation status, risk preference with knowledge and adoption of soil and water conservation practices. It means that increase in topography of land, cropping pattern, irrigation status, risk preference increases the knowledge and adoption of soil and water conservation practices.

The majority (34.00%) of farmer having lack of technical skill about soil and water conservation practices followed by respondents having constraints of lack of money (30.67%). Whereas 24.67 per cent respondents having constraints of high initial investment and late sanctioning of subsidy from Agriculture Department

CHAPTER VII

IMPLICATION

Implications emerging from the present study “Knowledge and adoption of farmers about soil and water conservation practices” are reported in this section in two parts .The part first is concerned with the implications for action and the second deals with implication for future research. The findings of the study would be useful to policy makers, administrators, researchers, extension workers and university scientists in promoting the knowledge and adoption of soil and water conservation practices for increasing productivity and profitability of the crop.

7.1 Implications for action

The findings emerged out that majority of the farmers having high level of knowledge but their level of adoption was low about soil and water conservation practices hence this study implied that extension functionaries should create awareness among the farming community about various soil and water conservation practices, it will definitely useful for increasing the adoption level and indirectly to raise the productivity of various crops. It will also useful to maintain the soil health.

In this context, it is also suggested that the information regarding these practices should be disseminated to the farmers by extension functionaries of state department of agriculture, Proprietor of Krishi Seva inputs, adverse climatic conditions and sometime lack of knowledge etc. Therefore in order to increase the adoption of the farmers long term development programmes should be implemented by the government agencies. It is necessary to remove these constraints for long term development of these district. Different infrastructure and institutional development programmes should arranged in these regions.

7.2 Implication for future research

1. The present study is confined only to limited number of respondents in Akola district. To be more realistic and in its true sense, research should have wider area and large samples. Another study may be planned in different locations with larger sample.
2. To increases the contribution of independent variables in explaining variations in knowledge and adoption of soil and water conservation practices, some more independent varieties should be identified and be included in to future research on Knowledge and Adoption of farmers about soil and water conservation practices.
3. The present study was carried out for studying Knowledge and adoption of farmers about soil and water conservation practices by the farmers. Hence it may be suggested that a comprehensive study may be under taken for distress prone area of other region.

CHAPTER VIII

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VITA

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7. Field of Interest : Extension activities and administration

Place: Akola **Signature of Student**

Date: / / 2019

(Waridullah)

INTERVIEW SCHEDULE

Title of Research Project: **Knowledge and Adoption of Farmers about Soil and Water Conservation Practices.**

Name of Researcher : **Mr. Waridullah**
M.Sc (Agri)
Department of Extension Education,
Dr.PDKV, Akola.

General Information

Name of farmer :
……
Village : …… …….. Taluk ha: …… Dist: A kola

A) Personal and socio-economic characteristics

1. **Age / Years**
2. **Education** :…….Std.

Sl. No.	Education	Standard
1	Illiterate	No schooling
2	Can read only	
3	Can read and write	
4	Primary school	
5	Middle school	
6	High school	
7	High secondary school	
8	College	

3. **Land holding**:
   Rainfed: ……. Acres
   Irrigated : ……. Acres
   Total : ……. Acres

4. **Annual income** : a) Main source :Rs ……..
   b) Subsidiary source :Rs ……..
   c) Total :Rs ……..

5. **Occupation** : a) Main :…….
   : b) Subsidiary :……

6. Type of soil: Very deep / Deep / Moderately deep / Shallow / Very shallow

7. .Topography of land:

a) Plane land
:…….ha

b) Undulating land:
:…….ha

B. Situational characteristics

8. Cropping Pattern:

Sl.No.	Cropping pattern	score	
1	Only Kharif		
2	Kharif + Rabi		
3	Kharif + rabi + Summer		
4	Annual		
5	Perennial		

9. Irrigation status:

Sl.No.	Irrigation status(ha)	Score	
1	No irrigation		
2	Upto 1.00		
4	1.01 to 2.00		
5	Above 2.00		

9.B. Irrigation source:

Sl.No.	Irrigation source	
1	Well	
2	Tube well	
3	Canal	
4	Other	

10. Social participation:

Sl.No.	Name of the organization	Office bearer	Member
A	**Formal organization**		
1	Gram panchayat		
2	Panchayat samiti		
3	Zilha parishad		
4	Co-operative society		
5	Co-operative dairy society		
6	Others		
B	**Informal organization**		
1	Bhajani mandal		
2	Self help group		
3	Youth club		
4	Shetkari mandal		
5	Others		

11. Extension contact

Sl. No.	Extension contact	Frequency of contact		
		Always (2)	Sometime (1)	Never (0)
1	Gram sevak			
2	Agriculture assistant / Krushi Sevak			
3	Agriculture supervisor			
4	Taluka Agriculture officer			
5	University scientist			
6	Proprietor of Krishi seva Kendra			
7	Krushi Sevak			
8	Progressive farmers			
9	Any others			

D) Psycological characteristicts

12. Risk preference: There are six statements given below, indicate whether you agree or disagree with the statement

Sl.No.	Statement	SA	A	UD	D	SD
1	A farmer should grow large number of crops to avoid greater risks involved in growing one or two crops					
2	A farmer should rather take more of a chance making a big profit than to be content with a smaller but less profit					
3	A farmer who is willing to take greater risks than the average farmer usually does better					
4	It is good for a farmer to take risks when he knows his chance of success is fairly high					
5	It is better for a farmer not to try new farming methods, unless most other farmers have used them with success					
6	Trying an entirely new method in farming by a farmer involving risks but it is worth					

13. Knowledge and Adoption

Sl. No	Soil and water conservation practices	Knowledge		Adoption		
1.		Yes	No	Full	Partial	No
2.	Sowing direction- a) Across the slope b) On the contour					
3.	Cropping system- a) Intercropping Example 1. 2. b) Crop sequence Example 1.					

	2.					
4.	Mulching					
5.	Green manuring					
6.	Dense growing crop					
7.	Wind strip cropping					
8.	Broad bed furrow method					
9.	Ridges and furrow method					
10.	Surface drains					
11.	Contour bunding					
12.	Compartment bunding					
13.	Vegetative bunds					
14.	Farm pond					
15.	Nala opening					
16.	Check dam					
17.	Earthen embankment					
18.	Gabion embankment					
19.	Grass wood dam					
20.	Grass water ways					
21.	Divertion of rainwater into well					
22.	Type of irrigation					
	a)Sprinkler irrigation					
	b)Drip irrigation					
23.	Other					

16. Problem faced by the farmers in adoption of soil and water conservation practices

Sl No.	**Problem faced by the farmers in adoption**	
1.		
2.		
3.		
4.		

17. Suggestions perceived from the farmers about soil and water conservation practices

Sl No.	**Suggestions perceived from the farmers**	
1.		
2.		
3.		
4.		