STUDY ON ADOPTION OF ONION PRODUCTION TECHNOLOGY IN SATARA DISTRICT

By

Mr. ROMAN PRAMODKUMAR ABASO
(Reg. No. R/013/106)

A Thesis submitted to the

MAHATMA PHULE KRISHI VIDYAPEETH,

RAHURI - 413 722, DIST.AHMEDNAGAR,

MAHARASHTRA, INDIA

in partial fulfilment of the requirements for the degree

of

MASTER OF SCIENCE (AGRICULTURE)

in

AGRICULTURAL EXTENSION

DEPARTMENT OF EXTENSION EDUCATION

POST GRADUATE INSTITUTE

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MAHATMA PHULE KRISHI VIDYAPEETH,
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MAHARASHTRA, INDIA
2015

CANDIDATE'S DECLARATION

I hereby declare that this thesis or part there of has not been submitted by me or any other person to any other University or Institute for a Degree or Diploma

Place: MPKV, Rahuri

Date: / /2015 **(P. A. Roman)**

Dr. G. K. Sasane
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Maharashtra (India)

C E R T I F I C A T E

This is to certify that the thesis **STUDY ON ADOPTION OF ONION PRODUCTION TECHNOLOGY IN SATARA DISTRICT,** submitted to the Faculty of Agriculture, Mahatma Phule Krishi Vidyapeeth, Rahuri, Dist. Ahmednagar, Maharashtra (India), in partial fulfilment of the requirements for the degree of **MASTER OF SCIENCE (AGRICULTURE)** IN **AGRICULTURAL EXTENSION,** embodies of results of piece of bonafide research work carried out by **MR. ROMAN PRAMODKUMAR ABASO,** under my guidance and supervision and that no part of the thesis has been submitted to any other University for degree or diploma.

The assistance and help received during the course of this investigation and sources of reference have been duly acknowledged.

Place : MPKV, Rahuri
Date : / /2015

(G. K. Sasane)
Research Guide

Dr. B. R. Ulmek
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Post Graduate Institute,
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Rahuri - 413 722, Dist. Ahmednagar,
Maharashtra, (India)

C E R T I F I C A T E

This is to certify that the thesis entitled **STUDY ON ADOPTION OF ONION PRODUCTION TECHNOLOGY IN SATARA DISTRICT,** submitted to the Faculty of Agriculture, Mahatma Phule Krishi Vidyapeeth, Rahuri, Dist. Ahmednagar, Maharashtra (India), in partial fulfillment of the requirements for the degree of **MASTER OF SCIENCE (AGRICULTURE)** IN **AGRICULTURAL EXTENSION,** embodies of results of piece of bonafide research work carried out by **MR. ROMAN PRAMODKUMAR ABASO,**under the guidance and supervision of **Dr. G. K. Sasane**, Professor, Agril. Extn. Department of Extension Education, Mahatma Phule Krishi Vidyapeeth, Rahuri and that no part of the thesis has been submitted for any other Degree or Diploma.

Place : MPKV, Rahuri **(B. R. Ulmek)**
Date : / /2015 Associate Dean

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While travelling on the path of life and education, many hands pushed me forth, learned hearts put me on the right path, unlighted by their knowledge and experience, I ever remain thankful to them all.

Place : MPKV, Rahuri

Date : / /2015 **(P.A. Roman)**

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ABBREVATIONS USED

Dr. PDKV	:	Dr. Panjabrao Deshmukh Krishi Vidyapeeth
et al	:	et alli (and other)
etc.	:	etcetra
Fig.	:	Figure
ha	:	Hectare
i.e.	:	idest (That is)
MPKV	:	Mahatma PhuleKrishiVidyapeeth
PGI	:	Post Graduate Institute
Rs.	:	Rupees
S.D.	:	Standard Deviation
viz.	:	Vide licet (Namely)

ABSTRACT

STUDY ON ADOPTION OF ONION PRODUCTION TECHNOLOGY IN SATARA DISTRICT.

By

Mr. Roman Pramodkumar Abaso

A candidate for the degree

of

Master of Science (Agriculture)

MAHATMA PHULE KRISHI VIDYAPEETH,

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2015

Research Guide	**:**	**Dr. G.K. Sasane**
Department	**:**	**Extension Education**

Onion is one of the important vegetable crop grown in Maharashtra. It is an important indispensible item in every kitchen as condiment and vegetable. Although the Maharashtra is leading state in onion production. Hence, The present study was conducted with the objectives. To study the personal and socio-economic characteristics of the onion growers, To study the adoption of onion production technology by onion growers, To ascertain the relationship between personal and socio-economic characteristics of onion grower and their adoption of onion production technology, To study the constraints faced by onion growers and suggestions for overcoming their constraints of onion crop.

The locale of the study was purposively selected Phaltan tahsil villages were selected with 120 respondents by simple random sampling method.

Study was conducted considering the adoption of onion growers like age, education, size of family, sources of information, social participation, size of land holding, area under onion, annual income and knowledge. The study revealed that the 61.66 per cent respondents belonged to the middle age having age 36 to 55 years. Where as the 42.50 per cent respondents received secondary school level of education. The 66.66 per cent respondents belonged to the medium category of size of family. The 65.84 per cent of the respondent had medium sources of information. The 58.33 per cent of the respondent had medium social participation. The 51.66 per cent respondents had medium size of land holding. The 60.00 per cent respondents had medium area under onion crop. The 70.00 per cent of the respondents were under the medium annual income category. The 64.16 per cent respondents belonged to the medium category of knowledge.

Majority of respondents had medium level of knowledge about management practices of onion production technology. It was also observed that all the respondent had complete knowledge about selection of proper soil type, ploughing , weeding ,proper time of harvesting.

It was concluded that Majority of respondents had medium level (66.66 percent) of adoption about management practices of onion production technology.

Abstract contd... **P. A. Roman**

It was also observed that all the respondents had adopted the selected onion production practices like selection of proper soil type, ploughing, weeding, proper time of harvesting.

It can be seen that there was positive correlation with education, sources of information, social participation, size of land holding, area under onion, annual income and knowledge with adoption of management practices of onion production technology. while age and size of family showed negative correlation with adoption.

The study revealed that major constraints in adoption of onion production technology were Unavailability of recommended insecticides and pesticides , high cost of FYM and chemical fertilizers, lacking scientific and technical information about storage, prices fluctuation in market prices.

The major suggestions given by the onion growers were Government should fix the minimum support price for onion, Stable market price for onion and NAFED need to purchase onion at reasonable rate.

1. INTRODUCTION

Vegetable cultivation in India is quite ancient. Variety of vegetable crops like leafy vegetables, cole crops, bulb vegetables etc are grown throughout India. Vegetable growing is an effective instrument for generating greater income per unit area; provide additional employment, provision of nutritive and proteinous diet and diversification of cropping pattern. Vegetable play a crucial role in the human diet. Among vegetables, onion is the most important bulb crop and one of the most popular crop.

Importance of Onion

Onion (*Allium cepa L.)* is an important and indispensable item in every kitchen as condiment and vegetable. The green leaves, immature bulbs are eaten raw or used in preparation of vegetable. It is valued much on account of its special characteristics of pungency. Onion is used in soup, Sauces and seasoning food. Attention is therefore given to crispiness, juiciness, pungency and keeping quality of the bulbs. The small bulbs and shallots are pickled in vinegar or brine. Dehydrated bulb or onion powder is in a great demand which reduces the transport cost and storage losses. Dried onion flakes can be reconstituted by cooking in water.

Onion has medicinal properties too. It has many uses as folk remedies and recent reports suggest that onion plays a part in preventing heart disease and other ailments. It is diuretic and can be applied on bruises, boils and wounds. It relieves heat sensation. Bulb juice is used as smelling on hysterial fits in faintness. It is used to relieve insect bites and sore throat.

1.1 Area and production of onion in India and Maharashtra

The demand for onion is worldwide and it is not limited to any particular climate or nationality. China ranks first in onion production in the world, while India ranks second.

In India total area under cultivation of onion crop is 1051.53 thousand ha. With the total production of 168.13 lakh metric tons (India stat .com)

Maharashtra is the leading state of India for onion with the total area of 260 thousands ha. And total production of 46.60 lakh metric tonns. In Maharashtra 60 per cent onion production comes from kharif and late kharif season, while, 40 per cent production comes from rabi season. The Nashik, Ahemadnagar, Satara, Pune are important onion growing districts in Maharashtra. It is important to note that 85 per cent area of onion of Maharashtra comes under the jurisdiction of MPKV Rahuri.

1.2 Statement of problem

It is experienced that all the farmers do not adopt the recommended crop production technologies at the same time and at the same rate. This raises the questions like why some farmers adopt improved crop production technologies quickly? While others do not.

Those who are not adopting, what are the reasons for their not adoption?

Are there any personal, social, economical and psychological components responsible for not adoption in addition to even though natural and physical resources are available with the farmer? To ascertain the reason for this,

“study on adoption of onion production technology in Satara district was planned”.

1.3 Need of the study

Farmers play important role in agriculture production and productivity, which contribute national productivity so, I proposed the survey of phaltan tahsil to study the adoption of onion production technology of farmers. By considering onion growers regarding new cultivation practices recommended by various agriculture universities, research stations etc have been studied to find out level of adoption of onion production technology has been under taken following objectives :

1. To study the personal and socio-economic characteristics of the onion growers.
2. To study the adoption of onion production technology by onion growers.
3. To ascertain the relationship between personal and socio-economic characteristics of onion grower and their adoption of onion production technology.
4. To study the constraints faced by onion growers and suggestions for overcoming their constraints.

1.4 Hypothesis

The personal and socio-economic characteristics of the onion growers are associated with their extent of adoption of onion growing technology.

1.5 Limitations of the study

As the present study was confined to only 120 onion growing farmers selected from Phaltan tahsil of Satara district, for single investigator within short period it is difficult to complete the study with less resources its findings would have

limited implications. The finding of the study might be applicable to localities having environmental, ecological and social environment as that of Phaltan tahsil.

Therefore , for more generalization similar studies at a different location with larger sample size need to be undertaken. In short the present investigation has been of exploratory nature and needs to be replicated for wider applicability and generalization of the findings.

2. REVIEW OF LITERATURE

A review of literature is necessary for any scientific investigation. It is guideline to researcher for his research. Review of literature is useful to compare the findings of the study with the studies under taken by previous research worker. There are references relating directly as well as indirectly to the present research problem. Which are received from research paper previous thesis, journals. Considering the objectives, the review of literature of present investigation has been presented as under.

2.1 Personal, social, economical and psychological characteristics of the respondents.

2.1.1 Age

Kaur (2006) reported that majority of respondents (58.33 per cent) was in middle age group, 25 per cent were in old age group and 16.67 per cent were in young age group.

Mate (2006) Reported that 41.50 per cent of the respondent were are middle age group of 36-50 year.

Deshmukh *et al.* (2007) revealed that majority of the respondents belonged to middle age group (47.22 per cent) followed by young age group (34.72 per cent) and old age group (18.06 per cent)

Borhade (2011) Reported that nearly half (48.67 per cent) of the respondents were in middle age group of 36 to 50 years, followed by (38.66 per cent) respondents were observed in the old age group of above 51 years. The percentage of

respondents in young age group that is up to 35 years was found to be (12.67 per cent).

Ashok Kumar (2012) showed that highest proportion (49.17per cent) of the vegetable grower was in young age group (<40 years) as compared to 35.83 per cent belonged to middle age group and only 15.00 per cent in old age category. This led to a conclusion that maximum of the young respondents opt for vegetable cultivation which may be due to its better return as compared to other crops.

Chouhan (2012) reported that majority (50.83 per cent) of the sugarcane grower from middle age group (36-55 years). This finding has conformity with Naik (2005).

Mohanty A. K. *et al.* (2013) showed that highest proportion (49.17 per cent) of the respondents was in young age group (<40 years) as compared to 35.83 per cent belonged to middle age group and only 15.00 per cent in old age category. This led to a conclusion that maximum of the young respondents opt for vegetable cultivation which may be due to its better return as compared to other crops.

2.1.2 Education

Chavan (2005) reported that 56.00 per cent of the grape growers having primary level of education.

Mate (2006) reported that 55.00 percent of respondents were having primary level of education

Kadam et al. (2007) large numbers of respondents were educated upto higher secondary and above (25.69 per cent). Similarly the percentage of secondary education was 24.65 per cent followed by illiterate (17.01 per cent), primary level

education (16.66 per cent) and middle standard (15.97 per cent), respectively.

Walke (2008) revealed that 70 per cent of respondent brinjal growers had received secondary education,11.60 per cent of them higher secondary education, 7.50 per cent of them received college education and 7.50 per cent received primary education however 3.34 per cent of respondents Brinjal growers had received no education.

Salunke (2009) found that majority of the beneficiaries (53per cent) had secondary level of education followed by 34 per cent and 22.50 percent were belong in to college and above level of education respectively.

Tayade (2010) revealed that 76.67 per cent of the cotton growers had received secondary education while 10 per cent of them received primary education. Only 5.00 per cent of the respondent received higher secondary education, Whereas 5.83 per cent of them illiterate.

Ashok Kumar (2012) reported that the maximum of the vegetable growing farmers (51.68 per cent) are confined to an education level up to secondary followed by higher secondary (21.67 per cent).

Mohanty A. K. *et al.* (2013) revealed that maximum of the vegetable growing farmers (51.68 per cent) are confined to a education level up to secondary followed by higher secondary (21.67 per cent).

2.1.3 Size of family

Wankhede (2004) revealed that three fourth of the respondents (61.33 per cent) were from medium size of family (i.e. 4 to 7 members).

Dhakane (2005) observed that a majority of the grape growers (56.00 per cent) are from the medium size of family consisting of 6 to 10 members followed by 27.34 per cent having small size of family (up to 5 members) and 16.66 per cent of them had large family size (i.e. 11 and above members).

Mate (2006) reported that 57 percent of the respondents were having medium size of family consisting of 5-8 member.

Yadav *et al.* (2007) reported that in hills a family of vegetable grower consists of 5-6 members.

Walke (2008) in her study, she observed that nearly half of the brinjal growers (49.16 per cent) were having medium family size, whereas 36.67 per cent and 14.17 per cent of the respondents were having small and large family, respectively.

2.1.4 Sources of information

Chavan (2005) found that about 69 per cent of the grape grower used medium sources of information.

Mate (2006) Reported that 70.50 per cent of respondents were using medium source of information.

Deshmukh *et al.* (2007) observed that majority of respondents had medium (79.51 per cent) extension contact; while 13.88 per cent had high and 6.59 per cent had low extension contact it was observed that majority of respondents fall under medium sources of information (69.09 per cent). However, remaining had high sources of information i.e. 16.66 per cent and only 14.23 per cent of the respondents showed low source of information.

Yadav et al. (2007) reported that most of the vegetable growers (82.50 per cent) were in medium category of sources of

information utilization. In this respect, relatives and traders were main sources for information on marketing agency, market preference of consumers, package of practices of vegetable cultivation etc.

Walke (2008) revealed that a majority (72.50 per cent) of the respondent brinjal growers were using medium sources of information whereas 20.00 and 7.50 per cent of the respondent brinjal growers had used low and high sources of information, respectively.

Kadam (2010) reported that majority of respondents (51.92 per cent) had sometime used source of information followed by 34.62 per cent and 13.46 per cent of them were regularly and relatively used respectively.

Tayade (2010) observed that about 77.50 per cent of the respondent cotton growers were using medium sources of information whereas 12.50 and 10 per cent of them had used low and high sources of information respectively.

Chouhan (2012) indicate that out of total sugarcane growers, 4.17 per cent and 12.5 per cent listen to agricultural programmes regularly and occasionally, respectively. In case of general programmes, 11.67 per cent and 16.67 per cent listen regularly and occasionally, respectively. In case of television, 15 per cent viewed respondent the agricultural programmes regularly and 30.83 per cent viewed occasionally.

Mohanty A.K. *et al.* (2013) revealed that 46.67 per cent of respondents having low and 40 percent having moderate extension agency contact while only 13.33 per cent of them had high contact.

2.1.5 Social participation

Naik (2006) observed that majority of respondents of agriculture (58.33 per cent), sugar (55.33 per cent) and dairy (63.33 per cent) co-operative sectors had medium level of social participation.

Pawar (2009) reported that more than two fifth farmers (41.50 per cent) had lower level of social participation.

Patil (2007) found that about 21.25 per cent of the users of drip irrigation system for grape orchard had low level of social participation, while 52.50 per cent and 26.25 per cent of them had medium and high level of social participation respectively.

Wankhede (2008) reported that, more than half (58.86 per cent) of the respondents banana growers had medium social participation level followed by 26.82 per cent and 14.32 per cent had low and high level of social participation.

Tayade (2010) found that majority (45.00 per cent) of respondents were in medium social participation category. While 40.00 and 15.00 per cent of respondents were low and high social participation category, respectively.

Jamadar (2012) indicated that most of the sugarcane growers 70.84 per cent had medium social participation. While, 15.83 per cent of the growers had low social participation and 13.33 per cent of them were found in high social participation category.

2.1.6 Annual income

Borse (2002) Reported that more than 50 per cent of respondents belong to medium annual income group while 25.45

percent of them were high annual income and 23 per cent were having low annual income.

Chavan (2004) observed that annual income and knowledge level was significant and positively related.

Suradkar (2005) observed that 56 per cent of gram panchayat member had medium income while 25 per cent and 19 per cent member had low and high annual income respectively.

Deshmukh et al. (2007) revealed that the annual income majority of the respondents (81.59 per cent) fall under medium level of income having Rs. 10001 to 87000 annum, while 10.76 per cent respondents were of high level of income and remaining only 7.63 per cent were low level of income.

Yadav et al. (2007) reported that vegetable growers in hilly areas have annual income up to Rs.50,000.

Ashok Kumar (2012) reported that the highest proportion (43.34per cent) of the vegetable growers belonged to low income group (>30,000/ –60,000/-) followed by medium income group (>60,000–1,00,000/-). The percentage of farmers in the poor, high and very high categories was 10, 9.16 and 3.33 per cent, respectively. Since the greater proportion (77.51 per cent) of the farmers were in low and medium income groups, it is logical to assume that they had limited access to modern high-cost technologies.

Chouhan (2012) reported that the maximum proportions of the sugarcane grower (52.5 per cent) had having middle level of annual income (Rs 2.01- 5.00 lakh) followed by 34.16 per cent low income (<2 lakh) and 13.34 per cent high annual income (>5.01 lakh).

Mohanty A.K. *et al.* (2013) revealed that the highest proportion (43.34%) of the respondents belonged to low income group (>30,000/ –60,000/-) followed by medium income group (>60,000–1,00,000/-) showing the mean, standard deviation and coefficient of variation as 62.58, 55.42, and 68.88 per cent. The percentage of farmers in the poor, high and very high categories was 10, 9.16 and 3.33 per cent, respectively.

2.1.7 Area under onion

Mane (2005) concluded that 64 per cent of the respondents had area under soybean crop ranged between 1.01 to 3.00 ha.

Maghade (2007) reported that a maximum number (64 per cent) of the respondent had medium area under onion (0.6-9 ha.) while 20.50 per cent them had small area under onion crop (up to 5 ha.) and 15.50 per cent has large area under onion crop.

Walke (2008) reported that maximum(72.50 per cent) of the respondent had medium area under brinjal crop while 20 per cent of them small area under brinjal crop and 7.5 per cent large area.

2.1.8 Knowledge

Chavan (2004) observed that 56.00 per cent of the respondents had medium level of knowledge, while 12.66 and 31.34 per cent respondents had low and high knowledge level about IPM technology, respectively.

Chavai (2005) found that majority (56 per cent) of the respondents were in the medium knowledge level group, while 31.24 per cent and 12.66 percent of them were having high and low knowledge level respectively about IPM cotton

Chavan (2005) observed that 62.00 per cent of the respondent was found in the group of medium level knowledge; whereas about 20 per cent and 18 per cent of the respondent were having low knowledge level and high knowledge level respectively.

Khaire (2005) reported that a majority of the respondent had medium level of (67.50 per cent) of knowledge, while 17.55 per cent of respondent had high level of knowledge, and only 15 per cent of the respondent had low level of knowledge.

Dhakane (2005) revealed that a majority (71.03 per cent) of the respondents had medium level of knowledge, while 15.34 per cent of them had low level of knowledge. Only 13.33 per cent had high level of knowledge.

Sawant (2006) observed that (61.67 per cent) of the respondents were possessing medium level of knowledge followed by 25.00 per cent of the respondents possessing high level of knowledge and 13.33 per cent of respondents possessing low level of knowledge.

Bangarva *et al.* (2009) revealed that 41 respondents (66.67 per cent) fall in medium knowledge groups, whereas, 10 respondents (18.33 per cent) were found in low knowledge and remaining 9 respondents (15.00 per cent) possessed high knowledge about recommended cultivation practices of mungbean.

2.1.9 Size of land holding

Bannapure (2007) showed that near about two third (64.55 per cent) of the respondents had medium size of land

holding followed by 26.36 per cent respondents having small size of land holding.

Sindram (2008) reported that the big land holders category occupied the highest percentage (60.83 per cent) while 23.33 and 15.83 per cent of the respondents' were in medium and small land holder category.

Mande and Thombre (2009) stated that 34.72 per cent of the sugarcane growers had medium size of land holding.

Bahire (2011) found that maximum number (40.83 per cent) of the respondents had semi-medium size of land holding, followed by 20.83 per cent had small size of land holding, 17.50 per cent had medium land holding, 16.66 per cent had marginal land holding and 4.16 per cent had large size of land holding.

Mohanty *et al.* (2013) reported that 40.00 per cent of respondents were small farmers 30.83 percents of the respondents were medium farmers 22.60 percent respondents were marginal farmers and 6.60 percent respondents' of large farmers .

2.2 Level of adoption and its relationship with selected Personal, social, economical and psychological characteristics of the respondents of onion growers

2.2.1 Level of Adoption of onion production technology

Katker and Ahire (2006) found that half (50.00 percent) of the respondents had medium level of adoption, 25.00 per cent of the respondents had low level of adoption and 19.00 per cent had high level of adoption.

Bannapure (2007) observed that more than half of the respondents (54.54 per cent) had medium level of adoption of

recommended practices related to drip irrigation system followed by 23.64 per cent and 21.82 per cent who had high and low level of adoption.

Shashindhara *et al.* (2007) revealed that half of the respondents (55.55 per cent) were noticed in medium adoption category, while 21.11 per cent in high and 23.33 per cent in low adoption categories.

Singh *et al.* (2010) revealed that 66 per cent of the respondents had medium level of adoption while 19 and 15 percent had low and high level of adoption respectively.

Badhe *et al.* (2011) reported that about 58.33 per cent of the respondents hade medium level of adoption while 24.17 and 17.50 per cent had low and high level of adoption, respectively.

Bahire (2011) elucidated that 78.33 per cent respondent had medium level of adoption of recommended management practices related to drip irrigation system for banana followed by 11.66 per cent respondents had high level of adoption and 10.00 per cent had low level of adoption.

Kumar *et al.* (2012) observed that about 62.00 per cent of the farmers were found to be medium adopters. While 23.00 per cent were low adopters and only 15.00 percent of the respondents were high adopters.

2.2.2 Age and adoption

Nadre and Dhakne (2003) indicated that the age of the respondents had negative significant relationship with the adoption of recommended drip irrigation management practices.

Bannapure (2007) observed that relationship between age and the level of adoption was negative and significant.

Shashindhara *et al.* (2007) observed that the relationship between the age and adoption level was non-significant.

Bahire (2011) indicated that relationship between the age and adoption level was negative and significant.

2.2.3 Education and adoption

Katkar and Ahire (2006) observed that there was positive and significant relationship between education of the respondents and adoption.

Bannapure (2007) observed that relationship between education and adoption of level of drip adoption was found to be positively significant.

Shashindhara *et al.* (2007) observed that the relationship between the education and adoption level was non significant.

Bahire (2011) observed that the relation between education and adoption level of drip users was found to be positively significant.

2.2.4 Size of family and adoption

Shinde (2003) found that there was non-significant association between family size and adoption behaviour of the groundnut growers.

Wankhede (2004) conducted study on adoption level of dry land agricultural practices and reported that there exist a significant positive relationship between size of family and level of adoption.

Mate (2006) observed that the family size had non-significant relationship with the adoption level of the potato growing respondents.

Patil (2007) reported that there exist a positive and significant relationship between size of family and level of adoption of groundnut production technology.

Patil (2010) observed that relationship between the family size and level of adoption of sericulture management practices was positive and significant.

Kumar et al. (2012) observed that the relationship between size of family and adoption level of chickpea respondents was positive and statistically significant.

2.2.5 Sources of information and adoption

Mane (2005) observed that there was a significant and positive relationship between uses of information sources and level of adoption.

Mate (2006) found that the relationship between sources of information used by the potato growing respondent and adoption level was positive and highly significant.

Patil (2007) revealed that the relationship between sources of information used by groundnut growing respondents and adoption level was positive and significant.

Walke (2008) conducted study on technological gap in brinjal cultivation, reported there exist a positive relationship between information sources use and level of adoption.

Patil (2010) revealed that there was positive and significant relationship between information sources use and level of adoption of sericulture management practices.

Kumar *et al.* (2012) found that the relationship between sources of information and adoption level of chickpea growing respondents was positive and significant.

2.2.6 Social participation and adoption

Sonwalkar (2002) found that social participation had positive and significant relationship with adoption of drip management practices.

Shashindhara *et al.* (2007) observed that the relationship between the social participation and adoption level was no significant.

Patil (2010) found that social participation had positive and significant relationship with adoption level of banana production technology under drip irrigation.

2.2.7 Annual income and adoption

Mane (2005) observed that there was a significant and positive relationship between annual income and level of adoption of soybean production technology.

Mate (2006) reported that the potato growing respondent exhibited positive and highly significant relationship with level of adoption and annual income.

Patil (2007) observed that there was significant and positive relationship between annual income and level of adoption of groundnut production technology.

Patil (2010) revealed that there was positive and significant relationship between annual income and level of adoption of sericulture management practices.

Kumar *et al.* (2012) reported that the relationship between annual income and adoption level of chickpea growing respondents was positive and statistically significant.

2.2.8 Size of Land holding and adoption

Mate (2006) reported that there was a positive and significant correlation between size of land holding and adoption level by potato growing respondents.

Patil (2007) observed that there was a positive and significant relationship between size of land holding and adoption level of groundnut production technology

Maghade (2007) observed that there exist a positive correlation between size of land holding and level of adoption in onion cultivation.

Walke (2008) conducted study on technological gap in brinjal cultivation, reported that there exists a positive correlation between size of land holding and level of adoption.

Patil (2010) reported that there was a positive and significant relationship between size of land holding and level of adoption in sericulture management practices.

Kumar *et al.* (2012) reported that the relationship between size of land holding and adoption level of chickpea growing respondents was positive and statistically significant.

2.2.9 Area under onion and adoption

Raut (2006) observed that actual area under orange cultivation have positive correlation with adoption of selected practices of orange cultivation.

2.2.10 Knowledge and adoption

Zade (1998) reported that knowledge possessed by the respondents was found to bepositive and significantly correlated with adoption.

Mane (2005) found that the correlation between knowledge and adoption level of the respondent about

recommended soybean production technology was positive and significant.

2.3 Constraints faced by respondent's onion growers in adoption of improved onion production technology.

Kolte (2002) concluded that a majority of the respondent suggestion included that reasonable selling price of chilli (75.00 per cent), providing fertilizer and pesticide at reasonable rate (69.50 per cent) were the major constraints reported by the respondents.

Thorat *et al.* (2004) observed that the constraints like lack of knowledge (41.67 per cent) and unavailability of planting material (48.33 per cent), lack of knowledge (23.33 per cent) and high cost of chemical fertilizers were constraints in application of recommended doses of chemical fertilizers by the farmers, while, high cost of micro-nutrients (66.67 per cent), lack of knowledge (50.00 per cent) and non-availability of different micro-nutrients (33.33 per cent) were the major constraints reported by the respondents regarding its use to the sugarcane crop.

Mane (2005) reported that lack of labour (77.50 per cent), high cost of chemical fertilizer (54.50 per cent), and exploitation by the traders (61.50 per cent) were the major constraints in adoption of soybean production technology.

Maghade (2007) reported high cost of chemical fertilizers 91.97 per cent) lack of knowledge about improved storage structure (80.00 per cent) shortage of labour during weeding operation (64.17 per cent), non availability of quality seeds planting material in time (53.33per cent), hand weeding time and labour consuming as well as expensive (51.67 per

cent), irregular supply of electricity (35.83 per cent) were the major constraints for existing technological gap in cultivation practices in onion.

Mande and Thombre (2009) observed the problems like irregular supply of electricity, low prices offered by sugar factories and harvesting schedule not followed properly by sugar factories in adoption of sugarcane cultivation practices.

2.4. Suggestions of the respondents

Thorat *et al.* (2004) concluded that most (89.44 per cent) of the respondents suggested that technical information in respect of latest technologies should be given to the farmers followed by demonstrations of improved varieties be conducted on farmers field (57.22 per cent), planting material of improved varieties be made available (85.55 per cent) and low cost technology of sugarcane cultivation be generated by the University (53.89 per cent) and there should be close linkage between scientists and farmers (37.22 per cent).

Shinde (2004) reported that the practical knowledge regarding plant protection measures be improved (71 per cent) was one of the important suggestion other suggestion were financial assistance in the form of subsidies (65 per cent) Making available good quality seed (63.50 per cent) timely supplied of seeds (57 per cent), fertilizers (53 per cent) and pesticide (51.50 per cent).

Solanki *et al.* (2004) revealed that (62.37 per cent) growers suggested that prices of inputs should be reduced, about (54.00 per cent) suggested that improved implements should be made available to the growers in time.

Mane (2005) pointed suggestions like remunerative rice to marketable soybean produced in the market (83.00 per cent) providing chemical fertilizer at subsidized rate (80.50 per cent) availability of high yielding variety seed (78.00 per cent) availability of pesticide (73.00 per cent).

Maghade (2007) observed the major suggestions viz., stable market price for onion (74.16 per cent), co-operative marketing societies be established (60.83 per cent), government should fix the minimum support price for onion (78.33 per cent), NAFED need to purchase onion at reasonable rate (58.33 per cent), effective and efficient marketing system (57.50 per cent), provision of quality seed and planting material with technical know-how (53.33 per cent).

3. METHODOLOGY

The chapter methodology deals with where and how the study was carried out. For scientific study of any research problem, the researcher has to adopt appropriate research methodology in order to arrive at useful conclusions. Keeping this view in mind, this chapter deals with where and how research work was carried out, how to construct the interview schedules, methods used for the selection of the respondents, way adopted for the quantification of qualitative characters and preparation of primary and secondary tables. The details of the procedure used in this study are given here as under.

3.1 Locale of the study
3.2 Sampling procedure
3.3 Preparation of interview schedule
3.4 Pre testing of interview schedule
3.5 Procedure of data collection
3.6 Compilation of data
3.7 Selection of variables and their empirical measurement
3.8 Statistical tools used for analysis of data
3.9 Operational definitions and terms used

3.1 Locale of the study

3.1.1 Geographical location

The study was conducted in Phaltan tahsil of Satara district of Maharashtra state. This tahsil is situated on eastern part of Satara district. The location of tahsil is about 60 km east of Satara city. The Phaltan tahsil is surrounded by Khatav tahsil

to east-west, Karad tahsil to south, Man tahsil to the east and Koregaon tahsil to west.

3.1.2 Area and population

The total geographical area of the Satara district is 10582 square kilometers. Area under Phaltan tahsil is 3495 ha. According 2011 census the total population of Satara district was 5296200 however, Phaltan tahsil has 452000.

3.1.3 Soil and climate

Different type of soils are prevalent in Satara district. The soil of Phaltan tahsil has varied nature ranging from lateratic to medium black and deep black. Lateratic soils are mainly observed on the elevated areas of mountain, medium black soils are observed on the plains, while deep soils are observed along the river banks. Krishna and Koyna flows through the district, while Nira river flows in Phaltan tahsil.

Average rainfall of Satara district is 400 mm, whereas Phaltan tahsil only 320mm.

3.1.4 Sources of irrigation

The sources of irrigation in the district are canals, wells, tanks and river. The total irrigated area is constituted as 16.32 per cent by canal and 83.68 per cent by wells. The remaining area is irrigated by other sources.

3.2 Sampling procedure

Sampling is the method of selecting a fraction of the population in such a way that the selected sample represents the population. For selection of sample for the study, multi stage sampling method namely selection of district, taluka, selection of villages and selection of respondents was followed.

3.2.1 Selection of villages

The list of onion growing villages of the Phaltan taluka of Satara district was obtained from taluka agriculture officer of the state department of agriculture.

There are 109 villages in Phaltan tahsil out of this 6 villages were selected randomly for the study on the basis of area under onion crop.

3.2.2 Selection of respondents

With the help of Taluka Agriculture Officer list of onion growers was prepared for each village. Twenty onion growers were selected by simple random sampling method from each village. Thus in all total 120 onion growers were selected by simple random sampling method from six village of phaltan tahsil of Satara district. The details of the selected villages and number of respondents from each village are shown in bellow:

Satara (District)

⇩

Phaltan (Tahsil)

⇩

Villages (6)

Sr. No.	Name of village	No. of respondants
1.	Rajale	20
2.	Gunware	20
3.	Tawadi	20
4.	Padegaon	20
5.	Vidni	20
6.	Upalve	20

3.3 Preparation of interview schedule

The structured interview schedule serves as a tool for collection of data. In view of this, interview schedule was prepared on the basis of objectives of the study, which includes relevant questions for seeking information in respect of independent and dependent variables. Efforts were also made to formulate a interview schedule with clear and easy questions. The questions were asked to respondents in both Marathi and English language in order to get accurate response of the respondents.

3.4 Pre testing of interview schedule

The interview schedule was tested prior to its finalization by the researcher. It was pretested by interviewing 10 onion growers who were non-respondents, from the sample area to know whether the onion growers furnish the required information.

After pretesting, necessary improvements were made in the draft schedule and then sufficient copies were made of the refined schedule.

3.5 Procedure of data collection

The researcher personally interviewed the respondents included in the sample. The help of local leaders and progressive farmers were sought for establishing repport with the onion growers. The farmers were contacted during the time which was convenient to them. This facilitated to obtain free and natural responses from them to the various questions/items included in the schedule. The respondents were assured that the information collected from them will only used for the research purpose. The replies of the respondents were recorded while the interviews were in progress. The

questionnaire thus filled in was checked before closure of interview for its completion in all respects.

3.6 Compilation of data

The information collected through interview was processed into primary table and then into the secondary tables. The qualitative data were quantified and later the quantified data were converted into frequency, percentages, wherever necessary the scoring was also done. Further the coefficient of correlation was worked out and inferences were drawn.

3.7 Variables and their empirical measurements

The measurement of independent and dependent variables is given below.

Sr. No.	Variables	Measurements
I	**Independent variables**	
1	Age	Chronological age of the respondents at the time of interview.
2	Education	Formal education obtained by respondents at the time of interview.
3	Size of family	Measured as total no. of members in family at the respondents.
4	Source of information	Schedule was developed.
5	Social participation	Schedule was developed.
6	Annual income	Total annual income of respondents family obtained from all sources in the year.
7	Area under onion	Schedule was developed.
8	Knowledge	Schedule was developed.
9	Size of land holding	Actual area of land in ha was consider.
II	**Dependent variable**	
1	Adoption	Schedule was developed

A. Independent variables

1. Age

The age has been operational as the chronological age of the respondents in completed years at the time of interview. The respondents were categorized in the following categories.

Sr. No.	Category	Age range (years)
1	Young	Up to 35
2	Middle	36 to 55
3	Old	56 and above

2. Education

Education referred to the formal education attained by the onion growers. According to the formal education level respondent onion growers were classified into different categories as follows:

Sr. No.	Level of education	Category
1.	No education	Illiterate
2.	Upto 4th standard	Primary
3.	5th to 10th standard	Secondary
4.	11th to 12th standard	Higher secondary
5.	Above 12th standard	Graduation and Post Graduation

3. Size of family

The size of family refers to the total number of members living together under a common roof having blood relation and according to onion growers were grouped into following categories:

Sr. No.	Category	No.of Members
1	Small	Upto 5 Members
2	Medium	6-9 Members
3	Big	Above 10 Members

4. Sources of information

This referred to the various information sources and channels used by the respondents for getting information about the various selected onion growing practices by the onion growers. Sources of information were included in the schedule, in which personal sources of information group contact sources of information, mass contact sources of information. The respondents were asked to give response to one of the three alternatives viz., regular, sometime and never. Score two, one and zero was given to these alternatives, respectively. Then onion growers were grouped into three categories of information sources on the basis of Mean $\pm$ Standard Deviation, as below.

Sr. No.	Category	Score
1	Low	Up to 8
2	Medium	9-20
3	High	21 and above

Mean =14.2 **S.D. =6.7**

5. Social participation

Social participation is defined as respondents involved in the activities of formal or informal organization as member or office bearer.

The total score of social participation was worked out as under

Member of one organization : 1 score

Member of two or more organization : 2 score

Office bearer of any organization : 3 score

6. Annual Income

This refers to the total income earned during the year from the farm and nonfarm sources. The gross family income as reported by the respondents was taken into consideration to measure this variable. The categories were made on the basis of using Mean ± S.D. as under.

Sr. No.	Category	Annual Income (Rs)
1	Low income	Up to 62201
2	Medium income	62202 to 221899
3	High income	221900 and above

Mean =142050 **S.D. = 79849**

7. Size of land holding

It refers to total land holding possessed by the respondent. In the present investigation the size of land holding was measured in hectares of land possessed by the respondents. They were grouped on the basis of government norm.

Sr. No.	Characteristics Category	Frequency (N=120)	Percentage
1	Marginal (Up to 1 ha.)	12	10.00
2	Small (1.01 to 2 ha.)	28	23.34
3	Medium (2.01 to 4 ha.)	62	51.66
4	Large (4.01 and above)	18	15.00
	Total	**120**	**100.00**

8. Area under onion

This was operationalised as the total area in hectares under onion crop. As per the area under onion of the individual farmer, they were grouped into the three categories viz.

Sr. No.	Category	Score
1	Small area under onion	Up to 0.50
2	Medium area under onion	0.51to 1.80
3	Large area under onion	1.81 and above

Mean =1.66 S.D. = 0.66

9. Knowledge

The concept 'Knowledge' in the present investigation was operationalised as understood information possessed by the respondents about the management practices of onion crop.

To begin with, an inventory of the practices/techniques recommended for the management of the onion crop was prepared. According to the extent of the knowledge of the respondants the score was assigned to them for complete knowledge of each practice score 2 was assigned and one score was assigned for partial knowledge while zero

score was assigned for no knowledge about the production technology. To decide the level of knowledge according to the total. score, the respondents were grouped by using formula Mean ± S.D.

Sr. No.	Category	Knowledge Level
1	Low	Up to 17
2	Medium	18 to 27
3	High	28 and above

Mean =22.15 **S.D. = 5.65**

B. Dependent variables

1. Adoption

It is continuous use of the advocated onion cultivation practices practices of onion cultivation by onion growers.

In the present study adoption level of the onion grower in respect to onion production technology was studied by computing the adoption score. For complete adoption score 2 was assigned and 1 score was assigned for partial adoption, while zero score was assigned for no adoption.

Then onion growers were grouped into three categories on the basis of Mean ± Standard Deviation, as below

1.1 Adoption Level

Sr. No.	Category	Adoption Level
1	Low	Up to10
2	Medium	11 to 20
3	High	21and above

Mean = 15.15 **S.D. =5.46**

3.8 Statistical method used

3.8.1 Frequency and percentage

Frequency and percentage were used for simple comparisons. The frequency of the particular category was multiplied by hundred and divided by total number of respondents to get percentage.

3.8.2 Mean

The arithmetic mean (X) is the quotient that results when the sum of all the items in the series is derived by the number (n) of items.

The mean was calculated by using formula

$$\mathbf{X} = \frac{\mathbf{Xi}}{\mathbf{n}}$$

Where,

X = Mean,

n = Total number of observation

Xi = sum of value of observations

3.8.3 Standard Deviation

The standard deviation will be obtained by the square root of the average of the square deviation from mean by the following formula:

$$\mathbf{S.D} = \sqrt{\frac{(\mathbf{Xi} - \mathbf{X})^2}{\mathbf{n} - \mathbf{1}}}$$

Where,

S.D. = Standard deviation,

X_i = Individual score of the i^{th} respondent

$\overline{X}$ = Mean of the sample

n = Total number of respondents

3.8.4 Karl Pearson's coefficients of correlation

To find out the relationship between the selected independent and dependent variable Karl Pearson's coefficient of correlation 'r' use by following formula.

$$r_{xy} = \frac{\sum XY - \frac{\sum X - \sum Y}{N}}{\sqrt{\frac{\sum X^2 - (\sum X)^2}{N} \times \frac{\sum Y^2 - (\sum Y)^2}{N}}}$$

Where,

r = Coefficient of Corrélations

X = Value Independent variables

Y = Value of dependent variables

N = Number of respondents

3.9 Operational definitions and terms used

1. **Age**: Age refers to the chronological age of the selected onion growers at the time of interview.
2. **Education:** Education is a standard of formal schooling possessed by the respondents.
3. **Size of family:** size of family refers to the total number of members living together under a common roof having blood relation.
4. **Sources of information**: It refers to the use of sources of agricultural information channels for seeking information by selected onion growers.
5. **Social participation:** Active participation of respondents in various informal organizations.
6. **Annual income**: It refers to the total annual income obtained from agricultural and other sources by the respondent farmers.
7. **Size of Land holding**: It refers to the number of hectares of

land owned and operated by the onion growers.

8. **Area under onion**: This was operationalized as the total area covered in hectare under onion crop by the respondents.
9. **Knowledge:** The term knowledge refers to the extent of information known by farmers about onion cultivation practices.
10. **Adoption:** Adoption is the mental process through which an individual passes from first hearing about an innovation to final adoption by onion growers.

4. RESULTS AND DISCUSSION

This chapter deals with the presentation of the results of investigation and critical discussion of the results presented. The data collected from 120 onion growers of 6 villages from Phaltan tahsil, were compiled in to primary tables. Later, they were transferred in to secondary tables in view of the objectives of the study. Appropriate statistical tests were used to analyze the data in order to draw the inferences.

The results of investigation are presented and discussed in this chapter under following heads.

4.1 Personal, social, economic and psychological characteristics of the onion grower.

4.1.1 Age

Age denotes the chronologically completed calendar years by the onion growers. It influences behavior of an individual by exposing to varied situation number of times. Thus, it becomes an essential aspect to consider age of the respondents in this study. The information pertaining to the age of the onion growers was collected, tabulated and analyzed. The results are presented in Table 1.

Table-1. Distribution of the onion growers according to their age

Sr. No.	Age group (Years)	Frequency (n=120)	Per cent
1.	Young (Up to 35years)	22	18.34
2.	Middle (36 to 55years)	74	61.66
3.	Old (56 and above years)	24	20.00
	Total	**120**	**100.00**

Table– 1 revealed that more than half (61.66 per cent) of the onion growers were from middle age group where as 18.34 per cent onion growers belonged to young age group and 20.00 per cent onion growers belonged to the old age group. However, in the present study it was found that average age of the onion growers was 42 years, whereas minimum age was observed 27 years and maximum age was 62 years.

Thus, it could be inferred that a large proportion of onion growers belonged to middle age group which was considered as actively working age groups of onion growers. These findings are in line with the findings of Kaur (2006), Kumar (2012)

4.1.2 Education

The level of formal education attained by an individual tends to influence the extent to which they are exposed to new ideas and information. It plays an important role in problem solving capacity of onion growers. The information pertaining to the education of the onion growers was collected, tabulated and analyzed. The results are presented in Table 2.

Table 2 Distribution of the onion growers according to their level of education

Sr. No.	Characteristics Category	Frequency (n=120)	Per cent
1	Illiterate	09	7.50
2	Primary Education (1st to 4th Standard)	20	16.66
3	Secondary Education (5th to 10th Standard	51	42.50
4	Higher Secondary Education (11th to 12th Standard)	21	17.50
5	Graduation and Post Graduation (Above 12th Std.)	19	15.84
	Total	**120**	**100.00**

The data from Table 2 showed that 42.50 per cent of the respondents were educated up to secondary school level. Whereas, 17.50 per cent respondents were educated up to higher secondary, remaining 15.84 per cent of respondents were educated upto college level and 16.66 per cent respondents had received primary education and only 7.50 per cent of respondents were illiterate.

Thus, it can be concluded that a majority of the onion growers had received secondary and higher secondary education. The individuals having higher education are more change oriented, take certain risk, more respective to new idea and have greater knowledge about an innovation. However, the proportion of onion growers with high education was very small because they might have sought or might be in search of job opportunities in the industrial or other sectors.

The findings of the present study are in the line with the findings of Walke (2006), Salunkhe (2009) and kumar (2012) wherein they found that 40.00 per cent of the respondents were secondary educated.

4.1.3 Size of family

Size of family refers to the total number of members living together under a common roof having blood relation. The information pertaining to the size of family of the respondents was collected, tabulated and analyzed. The results are presented in Table 3.

Table 3.Distribution of respondents by their family size

Sr. No.	Size of family	Frequency (n=120)	Percentage
1.	Small (Upto 5)	22	18.34
2.	Medium (6-9)	80	66.66
3.	Large (10 and above)	18	15.00
	Total	**120**	**100.00**

Table 3 revealed that the two-third (66.66 per cent) of the respondents had medium size of family (i.e. 6-9 members). The 18.34 per cent of them belonged to small size of family i.e. upto 5 members and 15.00 per cent of them found from large size i.e. 10 and above. However, in the present investigation, it was found that average family size was 6 members whereas, minimum size of family was 3 member and maximum size of family was 13 members.

Thus, it can be concluded that vast majority of the respondent onion growers belonged to medium size of family followed by small and large size of family. Present findings are supported from the result of Dhakne (2005) and Wankhede (2008).

4.1.4 Sources of information

Attempts were made to know about the use of resources for receiving information about management practices of onion production. As respondents have more sources of information more impact on socio-economic status, it becomes an important factor of one's personality also. The data pertaining to the information sources of onion growers were collected, tabulated and analyzed. The results are presented in Table 4.

Table 4. Distribution of the respondent onion growers according to their information sources use

Sr. No.	Characteristics category	Frequency (n=120)	Per cent
1.	Low (Up to 8 score)	18	15.00
2.	Medium (9 to 20 score)	79	65.84
3.	High (21 and above score)	23	19.16
	Total	**120**	**100.00**

The data from Table 4. indicates that 65.84 per cent of the onion grower had used medium sources of information

followed by 19.16 per cent had high, while 15.00 per cent had used low sources of information.

The finding is in line with the finding of Chavan (2005), Deshmukh (2007) and Yadav (2007).

The detail data pertaining to the information sources of onion growers were collected, tabulated and analyzed. The results are presented in Table-5.

Sr. No.	Sources	Always		Sometimes		Never	
		Frequency	percent	Frequency	percent	Frequency	percent
A) Formal Personal Sources							
1	Gramsevak	9	7.50	22	18.33	89	74.17
2	Agril. Assistant	51	42.50	29	24.17	40	33.33
3	Circal Agril Officer	5	4.16	12	10.00	103	85.84
B) Informal Personal Sources							
1	Seed distributor	1	0.84	12	10	107	89.16
2	KrishiSeva Kendra	1	0.84	19	15.83	100	83.33
3	Progressive Farmer	9	7.50	22	18.33	89	74.17
4	Local Leader	5	4.16	12	10.00	103	85.84
C) Group sources							
1	Crop demonstration	7	5.83	45	37.50	68	56.67
2	Group discussion	20	16.67	46	38.33	54	45
3	Training Programme	29	24.17	40	33.33	51	42.50

D) Electronic media							
1	Radio	43	35.83	40	33.33	37	30.87
2	T.V.	96	80	20	16.67	4	3.33
E) Print media							
1	Magazine	23	19.17	81	67.50	16	13.33
2	Newspaper	96	80.00	16	13.33	8	6.67
3	Krishidarshani	20	16.67	46	38.33	54	45

A. Formal Personal sources

Table-5 indicates that amongst personal sources, very low percentage of the onion growers had frequently used formal personal sources as source of information. It was observed that, 42.50 per cent respondents received information rarely from Agriculture assistantof Agriculture Department of State Government followed by Gramsevak (7.50 per cent).

B. Informal Personal sources

It was revealed that the onion growers always used progressive farmers (7.50 per cent) as source of information followed by and local leader (4.15 per cent).

C. Group contact sources

Table-5 indicates very low percentage of the onion growers had frequently used group contact sources as source of information. It was observed that, 24.17 per cent of the onion growers had rarely used training programmes as a source of information followed by group discussion (16.67 per cent).

D. Electronic media

It is observed from Table-5 that, 80.00 per cent of the onion growers frequently used Television as their source of information followed by and Radio (35.83 per cent).

E. Print media

It is observed from Table-5 that, 80.00 per cent of the onion growers frequently used newspaper as their source of information followed by and Magazine (19.17 per cent).

4.1.5 Social participation

Social participation refers to membership or holding of an official position in any of the formal and informal organization. It was hypothesized that the onion growers who participated in more number of formal and informal organizations would tend to adopt the practice more. In view of this the data pertaining to the level of social participation of the respondents were categorized into three groups. The results are given in Table 6.

Table 6. Distribution of respondents according to their social participation

Sr. No.	Category	Frequency (n=120)	Percentage
1	Low (Up to 1 score)	28	23.33
2	Medium (2 score)	70	58.33
3	High (3 score)	22	18.34
	Total	**120**	**100.00**

It is elucidated from Table 6 that 58 per cent of the respondents had medium social participation, while 23.33 per cent of the respondent had low social participation and 18.34 per cent of them had high social participation.

Thus, it is concluded that more than half of the onion growers belonged to medium social participation category. These findings is in line with those of Wankhede (2004) and Patil (2007).

The detail data pertaining to the social participation of onion growers were collected, tabulated and analyzed. The results are presented in Table-7.

Table 7. Social participation wise distributionof the onion growers

Sr. No.	Name of organization	Member	Per cent	Office bearer	Per cent
1.	Gram Panchayat	9	7.50	3	2.50
2.	Panchayat Samiti	0	0	0	0
3.	Zilla Parishad	0	0	0	0
4.	Co-operative society	56	46.67	12	10.00
5.	Educational institution	46	38.33	3	2.50
6.	Dairy co-operative society	74	61.67	11	9.16
7.	District central co-operative society	30	25.00	1	0.83
8.	Primary Agril. Marketing society	62	51.67	15	12.50
9.	School committee	62	51.67	15	12.50
10.	College committee	9	7.50	3	2.50
11.	Farmer scientist	0	0	0	0

Table-7 indicates that majority (61.67 per cent) of the onion growers were the members of dairy cooperative society followed by 51.67 per cent of the Primary Agril. Marketing society, 51.67 per cent were the members of school committee.

4.1.6 Total Annual income

It refers to the total income in a year from all sources that were farm and non- farm sources of all the family members

of the onion growers. The information pertaining to the annual income of the onion growers was collected, tabulated and analyzed. The results are presented in Table 8.

Table 8. Distribution of the onion growers by their level of annual income

Sr. No.	Characteristics Category	Frequency (n=120)	Per cent
1	Low (Up to 62,201 Rs.)	16	13.34
2	Medium (62,202 to 2,21,899 Rs.)	84	70.00
3	High (2,21,900 and above)	20	16.66
	Total	**120**	**100.00**

Table 8 revealed that majority i.e.70.00 per cent onion growers had medium annual income where as 16.66 per cent respondents had high level income and 13.34 per cent had low level of annul income.

Thus, it is seen form the data that majority of onion growers had medium annual income ranging from Rs 62,202 to 2,21899 /-. These findings are in line with that of Deshmukh (2007) and Ashok kumar (2012).

4.1.7 Size of land holding

It refers to number of hectare of land owned and operated by the onion growers. It largely determines the socio-economic status of family and source of livelihood. The data of the present investigation in this regard are presented in Table 9.

Table 9. Distribution of the onion growers by their size of land holding

Sr. No.	Characteristics Category	Frequency (n=120)	Percentage
1	Marginal (Up to 1 ha.)	12	10.00
2	Small (1.01 to 2 ha.)	28	23.34
3	Medium (2.01 to 4 ha.)	62	51.66
4	Large (4.01 and above)	18	15.00
	Total	**120**	**100.00**

The data from the Table 9 revealed that about 51.66 per cent of the onion growers had medium size of land holding i.e. 2.01 to 4.00 ha while, 23.34 per cent of the onion growers had small size of land holding followed by large size (15.00 per cent). Similar findings were reported by Bannapure (2007).

4.1.8 Area under onion

This was operationalised as the total area in hectares under onion crop. The data of the present investigation in this regard are presented in Table 10.

Table 10. Distribution of respondents according to their area under onion crop.

Sr. No.	Category	Frequency (N=120)	Percentage
1	Small area under onion (Up to 0.50)	16	13.34
2	Medium area under onion (0.51 to 1.80)	72	60.00
3	Large area under onion (1.81 and above)	32	26.66
	Total	**120**	**100.00**

The data presented in Table 10showed that 60.00 per cent of the respondents had medium area under onion crop, whereas, 26.66 per cent and 13.34 per cent respondents possessed large and small area under onion, respectively.

This finding is in line with the study of maghade (2007) and Walke (2008)

4.1.9 Knowledge

The concept 'Knowledge' in the present investigation was operationalised as functional understanding of the respondents or the body of information possessed by the respondents about the management practices of onion crop. The knowledge score of each respondent farmer was calculated and converted into percentage. The respondents were classified into three categories viz., a) low knowledge level, b) medium knowledge level and c) high knowledge level. The results are presented in Table-11.

Table 11. Distribution of the respondents according to their level of overall knowledge

Sr. No.	Knowledge Level	Frequency (N=120)	Percentage
1	Low (Up to 17)	12	10.00
2	Medium (18 to 27)	77	64.16
3	High (28 and above)	31	25.84
	Total	**120**	**100.00**

The data presented in Table 11. revealed that majority (64.16 per cent) of the respondents had medium level of knowledge about onion production technology followed by 10.00 and 25.84 per cent of the respondents having low and high level of knowledge, respectively.

The finding is in line with the finding of Chavan (2005), Dhakane (2005) ,Sawnt (2006).

Distribution of the respondents according to their practice wise knowledge

Further the information pertaining to practice wise knowledge of respondent about selected package of practices of onion production technology was collected and analyzed. The results are presented in Table-12.

Practice wise data in Table-12 revealed that cent percent of the onion growers (100 per cent) were viz, selection of proper soil type, ploughing, weeding and proper time of harvesting.

The practices which are known to the majority of the respondents grading (79.16per cent), storage (85.00per cent), irrigation in *kharif* (97.50per cent), sowing distance (70.83per cent), improved varieties (87.50per cent), harrowing (73.33per cent), hoeing (85.00per cent).

The onion growers were lacking in knowledge about some of the important selected practices like farm yard manure (30.00per cent), pests and diseases control like thrips and wilt (39.16per cent).

Thus, it can be inferred that the knowledge level regarding management practices of onion crop by the majority of the onion growers were satisfactory. The medium knowledge level of majority of the onion growers might be due to the fact that the farmers might have exposed to the different communication channels of information sources

TableNo.12- Disribution of respondents by their practicewise knowledge of selected onion production technology

Sr No.	Practice selected	Complete Knowledge		Partial Knowledge		No Knowledge	
		frequency	Per cent	frequency	Per cent	frequency	Per cent
1.	Soil type (Medium/well drained)	120	100.00	0.00	0.00	0.00	0.00
2.	Primary tillage						
	a. Ploughing	120	100.00	0.00	0.00	0.00	0.00
	b. Harrowing	88	73.33	32	26.67	0.00	0.00
3.	Farm yard manure(20-25 t/ha)	36	30.00	81	67.50	3	2.50
4.	Improved varieties (N-53, Basvant-780, Phule Samarth,N-2-4-1)	105	87.50	15	12.50	0.00	0.00
5.	Recommended fertilizer dose (100:50:50 kg N:P:K/ha)	64	53.34	51	42.50	5	4.16
6.	Seed rate (8-10 kg/ha)	85	70.83	35	29.17	0.00	0.00
7.	Sowing distance						
	Kharif = 15 x 10 cm	85	70.83	35	29.17	0.00	0.00
	Rabi = 12.5 x 7.5 cm	87	72.50	33	27.50	0.00	0.00
8.	Inter culturing						

	Weeding – 2-3 times	120	100.00	0.00	0.00	0.00	0.00
	Hoeing - 2-3 times	102	85.00	18	15.00	0.00	0.00
10.	Irrigation						
	Kharif – 8-10 times	117	97.50	0.00	0.00	3	2.50
	Rabi - 10-15 times	119	99.16	0.00	0.00	1	0.84
11.	Pest and diseases control thrips and wilt a. Dithane M-45 (0.3%) b. Profenophos (0.1%)	47	39.16	35	29.16	38	31.68
12.	Harvesting (After 110-140 days)	120	100.00	0.00	0.00	0.00	0.00
13.	Storage in ware house	102	85.00	12	10.00	6	5.00
14.	Grading of onion bulb Small Medium Large	95	79.16	25	20.84	0.00	0.00

4.2 The level of adoption of recommended management practices of onion grower.

The information about the extent of adoption of selected onion production technology adopted by the respondent was collected, tabulated and analyzed. The results are presented in Table- 13

Table 13. Distribution of the respondents according to their level of overall adoption

Sr. No.	Adoption Level	Frequency (N=120)	Percentage
1	Low (Up to 10)	22	18.34
2	Medium (11-20)	80	66.66
3	High (21 and above)	18	15.00
	Total	**120**	**100.00**

It is elucidated from Table 13 that 66.66 per cent respondents had medium level of adoption of recommended management practices related to onion crop, followed by 18.34 per cent respondents had low level of adoption and 15.00 per cent had high level of adoption.

The finding is in line with the finding reported by Singh (2010) Bahire (2011) and Kumar (2012).

Table No.14- Disribution of respondents by their practice wise adoption of selected onion production technology

Sr No	Practice selected	Complete Adoption		Partial Adoption		No Adoption	
		frequency	Per cent	frequency	Per cent	frequency	Per cent
1.	Soil type(Medium/well drained)	120	100.00	0.00	0.00	0.00	0.00
2.	Primary tillage						
	a.Ploughing	120	100.00	0.00	0.00	0.00	0.00
	b.Harrowing	36	30.00	69	57.50	15	12.50
3.	Farm yard manure (20-25 t/ha)	8	6.66	71	59.16	41	34.18
4.	Improved varieties (N-53, Basvant-780, Phule Samarth,N-2-4-1)	90	75.00	24	20.00	6	5.00
5.	Recommended fertilizer dose (100:50:50 kg N:P:K/ha)	32	26.66	81	67.50	7	5.84
6.	Seed rate (8-10 kg/ha)	80	66.66	40	33.34	0.00	0.00
7.	Sowing distance						
	Kharif = 15 x 10 cm	80	66.66	40	33.34	0.00	0.00
	Rabi = 12.5 x	82	68.33	38	31.67	0.00	0.00

Table Contd…

	7.5 cm						
8.	Inter culturing						
	Weeding – 2-3 times	120	100.00	0.00	0.00	0.00	0.00
	Hoeing - 2-3 times	92	76.66	28	23.34	0.00	0.00
10.	Irrigation						
	Kharif – 8-10 times	107	89.16	13	10.84	0.00	0.00
	Rabi - 10-15 times	115	95.83	5	4.17	0.00	0.00
11.	Pest and disease control thrips and wilt c. Dithane M-45 (0.3%) d. Profenophos (0.1%)	25	20.83	40	33.33	55	45.84
12.	Harvesting (After 110-140 days)	120	100.00	0.00	0.00	0.00	0.00
13.	Storage were house	92	76.66	28	23.34	0.00	0.00
14.	Grading Small Medium Large	85	70.83	35	29.17	0.00	0.00

Data in table-14 revealed that practices which are adopted all the respondents (100 per cent) were viz, selection of proper soil type, ploughing, weeding, proper time of harvesting.

It was further observed the majority of respondents were followed hoeing (76.66 per cent), irrigation (89.16 per cent), seed rate (66.66 per cent), sowing distance (66.66 per cent). storage ware house (76.66 percent), grading (70.83 per cent).

However, majority of respondents were adopted considerably less number of onion production practices which is Pest and disease control like thrips and wilt (20.83 per cent), recommended fertilizer (26.66 per cent), Farm yard manure (6.66 per cent).

4.3 Relationship between personal, social, economic and psychological characteristics of the onion grower respondents and their extent of adoption.

In the present investigation an attempt was made to find out the nature of relationship between the selected attributes of the onion grower respondents and their extent of adoption.

The correlation coefficient (r) between adoption with various independent variablesare presented in table 15.

Table 15. Relationship between selected independent and dependent variable

Sr. No.	Independent variable	Correlation coefficient (r)
1.	Age	-0.091^{NS}
2.	Education	0.187*
3.	Size of family	-0.166^{NS}
4.	Source of information	0.183*
5.	Social participation	0.313**
6.	Annual income	0.698**

7.	Size of land holding	0.654**
8.	Area under onion	0.707**
9.	Knowledge	0.689**

* Significant at 0.05 per cent level of probability

** Significant at 0.01 per cent level of probability

NS - Non significant

4.3.1 Age and adoption

The statistical correlation analysis between age and adoption of the respondents indicated that relationship between the age and adoption level (r=-0.091) was non-significant.

The farmers who are in young age generally are enthusiastic, creative and progressive in nature, so they adopt any new technique as early as possible. Also the older farmers who are rich in experience found risk to new innovation. From this it can be inferred that the onion grower adoption was decreased with advancement of their age.

This finding shows conformity with the findings of Jaiswal (2002), Nadre and Asane (2003).

4.3.2 Education and adoption

Relation between education and adoption level (r=0.187) of onion was found to be positively significant.This may be because education brings about desirable changes in the behavior of knowledge, skill and attitude.Educated farmers have more exposure to modern techniques.

It is, therefore, concluded that higher the education, more was the adoption level. They can read the relevant literature and grasp modern techniques of agriculture. All this

might have resulted in higher correlation between adoption level and education.

This finding shows conformity with the findings of Katkar and Ahire (2006), Bannapure (2007) and Bahire (2011).

4.3.3 Size of family and adoption

Relationship between size of family and adoption level (r=-0.166) of onion was found to be negatively significant. Thus it is inferred that size of family did not exhibit any influence of adoption of onion production practices. These findings are in line with the findings with the findings of Shinde (2003) mate (2006).

4.3.4 Sources of information and adoption

Sources of information has showed positive andsignificant correlation (r=0.183) with level of adoption of management practices of onion production. Farmers who had used different sources of information for getting more information about management practices of onion production.

Similar result reported by mate (2006) and Walke (2008).

4.3.5 Social participation and adoption

There was positive and significant correlation between social participation and adoption level ('r' = 0.313) of onion grower.

Similar result was reported by Sonwalkar (2002).

4.3.6 Annual income and adoption

The relationship between the adoption of the management practices in onion production by the respondents and their annual income was significant and positively correlated with adoption.

The above result exhibited that with the rise in annual income of farmers, there was an increase in adoption level (r=0.698).

Similar results are reported by Mate (2006).

4.3.7 Size of land holding and adoption

Relationship between the size of land holding and adoption level (r=0.654) of management practices of onion production was significant and positively correlated with adoption.Farmers with large size of land holding may be having better income level. This might have led to more adoption.

This finding shows conformity with the findings of Mate (2006) and Walke (2008).

4.3.8 Area under onion and adoption

Area under onion was positively and significantly related with the adoption level (r=0.707) of management practices onion grower. Farmers who had large size of area under onion crop might have better income level resulting into higher adoption.

This finding shows conformity with the findings of Raut (2006).

4.3.9 Knowledge and adoption

Knowledge was positively and significantly related with the adoption level (r=0.689) of management practices onion grower.

Thus, this indicate that higher the knowledge, more will be the adoption level of onion production technology by the respondents. This finding shows conformity with the findings of Zade (1998).

4.4 Constraints faced by onion grower respondents in adoption of selected onion production technology

One of the objectives of the study was to identify the constraints in the adoption of management practices of onion production. The various constraints faced by the onion growers in adoption of production technology are given in Table 16.

Table 16. Constraints faced by respondent onion growers.

Sr. No.	Constraints	Frequency (n=120)	Per cent
A	**Supply constraints**		
1.	Unavailability of recommended insecticide and pesticides	75	62.50
2.	Shortage of labour	71	59.16
3.	Unavailability of chemical fertilizer in time	58	48.33
4.	Shortage of irrigation water	50	41.66
5.	Lack of seed of improved varieties	35	29.16
B	**Economical constraints**		
1.	High cost of FYM and chemical fertilizer	104	86.66
2.	High labour charges	89	74.16
3.	Insufficient capital	44	36.66
4.	Unavailability of loan for onion production	39	32.50
5.	Higher charges of transportation	38	31.66
C	**Marketing constraints**		

Table Contd…

1.	Price fluctuation	87	72.50
2.	Difficulty to sell onion produce without middleman or commission agents	73	60.83
3.	Malpractices adopted in market	33	27.50
D	**Technical constraints**		
1.	Lack of scientific and technical information about storage.	90	75.00
2.	Lack of knowledge about application of chemical fertilizer	75	62.50
3.	Lack of information about transplanting.	69	57.50
4.	Lack of information about availability of seed.	43	35.83
5.	Lack of information about pest and disease control.	42	35.00

A. Supply constraints

From the Table 16 it is observed that majority of the respondents faced the problems of unavailability of recommended insecticide and pesticide (62.50 per cent) and shortage of labour (59.16 per cent).

The other major problems expressed by the respondents were unavailability of chemical fertilizer in time (48.33 per cent) shortage of irrigation water (41.66 per cent), lack of seed of improved varieties (29.16 per cent).

B.Economical constraints

It was observed that majority of the respondents faced the problem high cost of FYM and chemical fertilizer (86.66 per cent) and high labour of charges (74.16 per cent)

The other major problems expressed by the respondents were insufficient capital (36.66 per cent), Unavailability of loan for onion production (32.50 per cent), malpractices adopted in market (31.66 per cent).

C. Marketing constraints

With regards to marketing of onion produce, 72.50 per cent respondent had experienced prices fluctuation in market as the major constraints. The other constraints faced by difficulty to sell onion produce without middleman or commission agents (60.83 per cent) and malpractices adopted in market (27.50 per cent).

D. Technical constraints

It was observed that majority of the respondents were lacking scientific and technical information about storage (75.00 per cent) and application of chemical fertilizer (62.50 per cent).

The other major technical problems expressed by the respondents lack of information about or transplanting (57.50 per cent), lack of information about availability of seed (35.83 per cent) lack of information about pest and disease control.(35.00 per cent),

These finding are in the conformity with finding of Maghade (2007).

4.5 Suggestions made by the respondent onion grower respondents for overcoming the constraint faced by them

Suggestions were invited from the respondent to overcome constraints faced by them in adoption of onion production technology. Suggestions made by the respondents are shown in Table 17.

Table 17. Suggestion to overcome the constraints associated with adoption of onion production technology

Sr. No.	Suggestions	Frequency (n = 120)	Per cent
1.	Government should fix the minimum support price for onion	88	73.33
2.	Stable market price for onion	83	69.16
3.	Co-operative marketing societies areestablished.	66	55.00
4.	NAFED need to purchase onion at reasonable rate.	64	53.33
5.	Effective and efficient marketing system.	63	52.50
6.	Provision of quality seed planting material.	58	48.33
7.	Establishment of improved storage facility.	51	42.50
8.	Availability of timely and adequate supply of production input.	43	35.83
9.	Regular supply of electricity.	37	30.83

The respondents of onion growers had made important suggestions regarding cultivation, storage and

marketing of onion. It is observed from Table 17 regarding cultivation of the important suggestions made were Government should fix the minimum support price for onion (73.33 per cent) and Stable market price for onion (69.16 per cent)

The other suggestions were made for establishment of Co-operative marketing societies (55.00 per cent), NAFED need to purchase onion at reasonable rate (53.33 per cent) and effective and efficient marketing system (52.50 per cent)

Quality seed and planting material (48.33 per cent) and Availability of timely and adequate supply of production input (35.83per cent).

The suggestion made about storage was arrangement about care of onion produce during storage (42.50 per cent)

Similar findings were repoted by Maghade (2007).

5. SUMMARY, CONCLUSIONS AND IMPLICATIONS

This chapter includes summary, conclusions and implications for further research and action. A brief summary of this research includes the conclusions drawn on the basis of analysis and interpretation of data. This is followed by the implications for further action, particularly for solving the problems.

The present study investigation entitled, study of adoption of onion production technology in Satara district was designed and conducted with following objectives.

1. To study the personal and socio-economic characteristics of the onion growers.
2. To study the adoption of onion production technology by onion growers.
3. To ascertain the relationship between personal and socio-economic and psychological characteristics of onion grower and their adoption of onion production technology.
4. To study the constraints faced by onion growers and Suggestions for overcoming their constraints.

5.1 Summary

5.1.1 Personal, social, economic and psychological characteristics of the respondent onion growers

The study revealed that majority (61.66 per cent) of the respondents belonged to the middle age group, while 18.34 and 20.00 per cent of them belonged to young and old age group, respectively.

Less than half (42.50 per cent) of the respondents had secondary education followed by 17.50 per cent of higher secondary education. Whereas, primary and graduation category had 16.66 per cent and 15.83 per cent respondents, respectively. Only 7.50 per cent illiterate.

About 66.66 per cent of the respondents had medium size of family. While, 18.34 per cent of the respondents had small size of family followed by large size 15.00 per cent.

Majority (65.84 per cent) of the onion growers had used medium sources of information followed by 19.16 per cent had high, while 15.00 per cent had used low sources of information.

More than half (58.33 per cent) of the respondents had medium social participation, while 23.33 and 18.34 per cent of the respondent had low and high social participation respectively.

Vast majority i.e. 70.00 per cent respondents had medium annual income whereas, 16.66 per cent respondents had high level income and 13.34 per cent had low level of annul income.

About 51.66 per cent of the respondents had medium size of land holding. While, 23.34 per cent of the respondents had small size of land holding followed by large size 15.00 per cent of land holding.

More than half 60.00 per cent of the respondents had medium area under onion crop, whereas, 26.66 per cent and 13.34 per cent respondents possessed large and small area under onion crop, respectively.

Majority (64.16 per cent) of the respondents had medium level of knowledge about onion production technology, followed by 10.00 and 25.84 per cent of the respondents having low and high level of knowledge, respectively.

5.1.2 Level of adoption of the onion grower respondent

Two third of (66.66 per cent) respondents had medium level of adoption of recommended management practices related to onion crop followed by 18.34 per cent respondents had low level of adoption and 15.00 per cent had high level of adoption.

5.1.3 Relationship between personal, social, economic and psychological characteristics of the respondent onion growers with their level of adoption

The independent variables namely education, source of information, social participation, size of land holding, area under onion, annual income, and knowledge were positively and significantly related with adoption level. Whereas, age and size of family having negatively significant relationship with adoption level of management practices of onion.

5.1.4 Constraints faced by onion growers in adoption of onion production technology

The important supply constraints faced by the respondent of unavailability of recommended insecticide and pesticide (62.50 per cent) and shortage of labour (59.16 per cent). The other major problems expressed by the respondents were Unavailability of chemical fertilizer in time (48.33 per cent), shortage of irrigation water (41.66 per cent) lack of seed of improved varieties (29.16 per cent).

Majority of the respondents faced the economic problem like high cost of FYM and chemical fertilizer (86.66 per cent) and high labour of charges (74.16 per cent). The other major problems expressed by the respondents were insufficient capital (36.66 per cent), unavailability of loan for onion production (32.50 per cent), malpractices adopted in market (31.66 per cent).

With regards to marketing of onion produce, 72.50 per cent respondent had experienced prices fluctuation in market prices as the major constraints. Thus, other constraints faced are difficulty to sell onion produce without middleman or commission agents (60.83 per cent) and malpractices adopted in market (27.50per cent)

Major technical constraints of the respondents were lack of scientific and technical information about storage (75.00 per cent) and application of chemical fertilizer (62.50 per cent). The other major technical problems expressed by the respondents lack of information about or transplanting (57.50 per cent), lack of information about availability of seed (35.83 per cent), lack of information about pests and diseases control (35.00 per cent)

5.1.5 Suggestions made by the onion growers for overcoming the constraint faced by them

The respondents of onion grower had made important suggestions regarding cultivation, storage and marketing of onion. It is observed from table regarding cultivation of the important suggestions made were Government should fix the minimum support price for onion (73.33 per cent) and Stable market price for onion (69.16 per cent). The other suggestions

made were establishment of Co-operative marketing societies (55.00 per cent), NAFED need to purchase onion at reasonable rate (53.33 per cent), and effective and efficient marketing system (52.50 per cent). quality seeds and planting material (48.33 per cent) and availability of timely and adequate supply of production input (35.83 per cent). The suggestion made about storage were arrangement about care of onion produce during storage (42.50 per cent).

5.2 CONCLUSIONS

Following conclusions were drawn from the present study.

5.2.1 Characteristics of onion growers

Most of the respondents were from middle age group, had education upto secondary school level and belonged to medium size of land holding and medium size of family. Majority of onion grower had medium area under onion crop with annual income of Rs. 62201 to 221899 per annum.

Majority of onion grower (65.84 per cent) had medium source of information, 58.33 per cent had medium social participation.

5.2.2 Adoption

As regards levels of adoption of the respondents were under medium category in adoption of management practices of onion production technology.

5.2.3 Relationship of selected independent variables of respondent with their adoption

It was found that personal characteristics like education, size of land holding, area under onion, annual incomeand sources of information, social participation and

knowledge had positive and significant relationship with adoption of management practices of onion crop. While age and size of family showed negatively significant relationship with adoption.

5.2.4 Constraints

Lastly, while studying constraints in adoption of management practices of onion grower, it was observed that major constraints faced by onion grower were unavailability of recommended insecticide and pesticide, high cost of FYM and chemical fertilizer,lacking scientific and technical information about storage, low prices of fluctuation in market prices.

5.2.5 Suggestions

The major suggestions endorsed by the onion grower were Government should fix the minimum support price for onion, stable market price for onion and NAFED need to purchase onion at reasonable rate.

5.3 Implications

The researcher hopes that this research study would be highly useful in understanding the personal, social, economic and psychological characteristics of the onion growers with their level of adoption and constraint faced by them while adopting the onion production technology. Moreover, the results of this study will help to the extension workers and other associated with onion production in performing their functions more effectively. On the basis of the results of the study following implications are drawn.

5.3.1 Action Implications

1) The research findings indicated that a majority of the onion growers were ignorant about fertilizer application plant

protection measures, FYM application so there was less adoption related to these aspects. The extension agencies,therefore, need to their training programmes towards upgrading farmers regarding these practices by giving training and result demonstration.

2) The majority of the onion growers were no aware of the difference in the market rate that they receive from the commission agent and the one that consumer pay in market. Hence, it is necessary that the farmer themselves organize a co-operative society which would take care of marketing of their onion produce.

3) Most of the onion growers were lacking in the knowledge about the improved storage structure since storage of onion is an important aspect, state department of Agriculture should provide information and credit to the farmer at reasonable rates for constructing improved storage structure.

4) Some of the onion growers have suggested to make technical information available and hence, it is recommend that the necessary information of onion cultivation need to be given through mass media like newspaper, radio, internet and extension publications.

5) The study pointed out the several constraints faced by onion growers. These is a need to make the farmers aware of the recommended onion production technologies and communicating it to the onion growers by extension agencies through effective extension education methods like demonstrations, trainings and use of mass media.

5.2.2 Research implication

The present study was exploratory type, the findings will have to be tested to a greater depth in other parts of the state and also in India to judge its validity on universal scale. However, these studies will be useful as a benchmark for further probe in to the studies of similar types.

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7. APPENDIX

STUDY ON ADOPTION OF ONION PRODUCTION TECHNOLOGY IN SATARA DISTRICT

Researcher

Name- Roman PramodkumarAbaso.
Reg.No.-R/13/106

Research Guide

Dr. G.K.Sasane
Professor of Agril. Extn.

PART – I

1. **Name of farmer** :
2. **Village** : **Tal:**
   Dist : **PIN:**
3. **Education** :
4. **Age** : Years
5. **Size of family** :

Male	Female	Children	Total

6. **Size of land holding:**

Sr.No.	Type	ha
1	Rainfed	
2	Irrigated	
3	Fallow	
4	Total	

7. **Area under onion crop:** **ha.**

8. Annual income:

Sr. No.	Occupation	Income (Rs.)
1.	Agriculture	
2.	Dairy	
3.	poultry	
4.	service	
5.	Other	

9. Sources of information:

Sr. No.	Sources	Always	Sometimes	Never
B) Formal Personal Source				
1	Gramsevak			
2	Agril. Assistant			
3	Circal Agril Officer			
C) Informal Personal Source				
1	Seed distributor			
2	Krishi Seva Kendra			
3	Progressive Farmer			
4	Local Leader			
D) Group source				
1	Crop demonstration			
2	Farmer tour			
3	Group discussion			
4	Training Programme			
E) Electronic media				

1	Radio			
2	T.V.			
F) Print media				
1	Magazine			
2	Newspaper			
3	Krishidarshani			

10. Social participation

Sr. No.	Name of institute	Member	Office bearer
1.	Gramspanchayat		
2.	Panchayatsamiti		
3.	Zillaparishad		
4.	Co-operative society		
5.	Educational institution		
6.	Dairy co-operative society		
7.	District central co-operative society		
8.	Primary Agril. Marketing society		
9.	School committee		
10.	College committee		
11.	Farmer scientist		
12.	Co-operative sugar factory		
13.	Other		

PART – II

11. Knoeledge and Adoption of onion production technology

Sr. No.	Onion production technology	Knowledge			Adoption		
		Complete	Partial	No	Complete	Partial	No
1.	Soil type(Medium/well drained)						
2.	Primary tillage						
	c. Ploughing						
	d. Harrowing						
3.	Farm yard manure (20-25 t/ha)						
4.	Improved varieties (N-53, Basvant-780, Phule Samarth,N-2-4-1)						
5.	Recommended fertilizer dose (100:50:50 kg N:P:K/ha)						
6.	Seed selected						
	a. Previous year						
	b. Onion research station						
	c. Krishividyapeeth						
	d. Krishi service centre						
	e. Other						
7.	Seed rate (8-10 Kg/ha)						

8.	Sowing distance						
	Kharif = 15 x 10 cm						
	Rabi = 12.5 x 7.5 cm						
9.	Inter culturing						
	Weeding – 2-3 times						
	Hoeing - 2-3 times						
10.	Irrigation						
	Kharif – 8-10 times						
	Rabi - 10-15 times						
11.	Pest and disease control thrips and wilt e. Dithane M-45 (0.3%) f. Profenophos (0.1%)						
12.	Harvesting (After 110-140 days)						
13.	Yield *Kharif* – 15-20 t/ha						
14.	Storage were house						
15.	Grading Small Medium Large						

12. Constraints faced in Adoption of onion production technology

Sr.No.	Constraints	Yes	No
1	Irregular Rainfall		
2	Disease Infection		
3	Labour shortage		
4	High prices of seed		
5	High prices of fertilizer		
6	Less availability of capital		
7	Storage facility not available		

13. Suggestions:-

1.

2.

3.

8. VITA

ROMAN PRAMODKUMAR ABASO

A candidate for the degree

of

MASTER OF SCIENCE (AGRICULTURE)

in

AGRICULTURAL EXTENSION

2015

Title of Thesis	☛ " Study on Adoption of onion production technology in satara district"
Major field	☛ Agricultural Extension.
Biographical information	
* Personal	☛ Born at Veloshi, Tal.Phaltan, Dist.Satara on 9th June, 1992, Son of Sou. Laxmi and Shri. Abaso Roman.
* Educational	☛ Completed S.S.C. from Dalwadi madhyamik Vidyalaya Dalwadi in 2007 with 77.84 % marks. ☛ Passed H.S.C. from Malojiraje Sheti Vidyalaya and Junior College, Phaltan in 2009 with 74.50 % marks. ☛ Received Bachelor of Science (Agriculture) degree in First class from college of Agriculture Kolhapur, Mahatma Phule Krishi Vidhyapeeth, Rahuri in 2013 with 7.81/10.00 CGPA.
* NSS and NCC	☛ Enrolled as N.S.S. volunteer and attended one special camp held at Mudshingi, Tal. Karveer, Dist. Kolhapur. Completed NCC 'C' certificate and attended two annual training Camp.
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