

**RESEARCH ARTICLE :**

# Adoption of recommended cultivation practices by the onion growers in north-Karnataka

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**SUMMARY :** Among commercially grown vegetable crops in India, onion occupies predominant place; it is also the only member of bulb crops grown to a great extent in India. India occupies second position in area and production of onion in world after China. The present study was conducted in Vijayapur district of North-Karnataka during 2017-18. The findings of the study revealed that as high as 48.67 per cent of respondents belonged to medium adoption category, whereas 30.00 per cent and 21.33 per cent of the respondents belonged to low and high adoption categories, respectively. Majority of the respondents had adopted summer ploughing, method of sowing, sowing time, frequency of irrigation, hand weeding, spacing, seed treatment pest and disease control measures. However, majority of farmers had not adopted practices like storage, hybrid/ variety sown, FYM application, intercropping, chemical weeding and fertilizers application. Further, it was found that variables such as age, education, extension contact, extension participation, mass media exposure and innovativeness exhibited significant relationship with the adoption level of respondents.

**KEY WORDS:**

Adoption, Onion growers, Recommended practices, Relationship of adoption with socio-economic characters

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## **BACKGROUND AND OBJECTIVES**

The onion (*Allium cepa* L.), also known as the “bulb onion” or “common onion” is a vegetable and is the most widely cultivated species of the genus *Allium*. Onion can be successfully cultivated under a wide range of climatic conditions. Onion can be cultivated well on wide range of soils but among them sandy loam, silty loam and deep friable soils are best suited for profitable and efficient cultivation. Onion crop is sensitive to high acidity and alkalinity thus an optimum soil pH range between 5.8 and 6.5 is favourable.

In India, total area under onion production is 1305.64 thousand hectares, with production of 22427.43 billion tonnes and productivity of 17.18 tonnes/ha (2016-17). Major onion producing states in India are Maharashtra, Karnataka, Madhya Pradesh, Andhra Pradesh, Bihar, Gujarat, Rajasthan and Haryana, which together account for 85.00 per cent of total onion production. (Source: [www.nhdrf.org](http://www.nhdrf.org)).

Karnataka is one of the leading states in the cultivation of onion in the country next to Maharashtra. In Karnataka, onion is produced in all three seasons in early *Kharif*, *Kharif*

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and *Rabi*. However, it is predominantly a winter crop. Karnataka accounts for 20.00 per cent area and 13.00 per cent total output of onion in India with total area of 217.82 thousand hectares, production of 3049.48 billion tonnes and productivity of 14.00 tonnes/ha in 2016-17. Chitradurga, Vijayapur, Dharwad, Gadag, Haveri, Bagalkot and Davengere are the major onion growing districts in Karnataka (Source: *www.nhdrf.org*).

Keeping in view above facts, this study was conducted with the following specific objectives:

- To determine the adoption of recommended onion production practices among onion growers
- To ascertain relationship between adoption and different socio-economic characteristics of onion growers.

## RESOURCES AND METHODS

In the present investigation, *Ex-post-facto* research design was used. The study was conducted in the Vijayapur district of Northern Karnataka in the year 2017-18. Among five taluks of Vijayapur district, Vijayapur and Basavana Bagewadi taluks were selected and five villages from each taluk namely Jainapur, Bellubbi, Mamadapur, Uppaladinni and Kanabur from Vijayapur taluk and the other five namely Telgi, Kaulgi, Cheeradinni, Ronihal and Sulakhod from Basavana Bagewadi taluk were selected for the study based on the criteria of highest area under onion cultivation. From each of the selected villages, a list of farmers cultivating onion was obtained from the Department of Horticulture and among them, 15 Respondents from each village were selected by random sampling procedure. This constituted a total of 75 farmers from each taluk making total sample size of 150 respondents. The selected farmers were interviewed and desired information was collected with the help of predesigned and pre-tested schedule. The data collected were scored, tabulated and analyzed by using statistical tools such as frequency, percentage, mean, standard deviation and correlation co-efficient.

## OBSERVATIONS AND ANALYSIS

The results obtained from the present study as well as discussions have been summarized under following heads:

### Adoption of improved cultivation practices among

#### onion growers :

*Overall adoption level of improved onion cultivation practices by onion growers :*

Table 1 represents the overall adoption of recommended cultivation practices of onion by the selected respondents. The data revealed that, 48.67 per cent of respondents belonged to medium level adoption category followed by 30.00 per cent and 21.33 per cent of the respondents belonged to low and high level adoption categories, respectively.

**Table 1 : Overall adoption level of improved onion cultivation practices by onion growers (n=150)**

Sr. No.	Categories	Respondents	
		F	%
1.	Low (<22.70)	45	30.00
2.	Medium (22.70-23.92)	73	48.67
3.	High (>23.92)	32	21.33
Mean= 23.31		SD=1.42	

The probable reasons for medium adoption might be due to the fact that farmers try to modify the new technologies known to them according to their previous knowledge and as per their convenience and suitability to their land, thus it results in medium adoption of majority of practices. Further, the findings that majority of the respondents belonged to medium aged group, medium extension contact, medium mass media exposure and medium cosmopolitanism categories also contribute to medium adoption level of the respondents. Therefore, the farmers need to be educated through skill oriented trainings, result demonstrations, field days and exposure visits. Similar trend was seen in the findings of Singh *et al.* (2010) and Wadekar *et al.* (2017).

*Extent of adoption of onion cultivation practices by onion growers :*

Table 2 depicted the adoption of recommended cultivation practices of onion by the respondents.

The data revealed that, majority (98.67%) of the respondents had adopted summer ploughing practice. Possible reason might be that summer ploughing is a traditional practice that follows from generation to generation and farmers are well aware of the benefits of summer ploughing.

With regard to adoption of recommended varieties, only 32.67 per cent of the respondents had adopted recommended varieties of onion. Seed is the crucial input

**Table 2 : Extent of adoption of onion cultivation practices by onion growers (n=150)**

Sr. No.	Practices	Adoption level			
		Adopted		Non-adopted	
		F	%	F	%
1.	Summer ploughing	148	98.67	2	1.33
2.	Hybrid/Variety sown (Bellary Red, Telagi red and Pusa red)	49	32.67	101	67.33
3.	Seed treatment (Captan)	122	81.33	28	18.67
4.	FYM applied (12 tones/ac)	19	12.67	131	87.33
5.	Sowing time (June-July, Sept.-Oct and Jan – Feb)	137	91.33	13	8.67
6.	Method of sowing (seed sowing, seedling transplant, bulb sowing)	142	94.67	8	5.33
7.	Seed rate (7.5 -10 kg and 5-6 kg per hectare)	136	90.67	14	9.33
8.	Spacing (10x15 cm)	122	81.33	28	18.67
9.	Intercropping	19	12.67	131	87.33
10.	Frequency of irrigation (once in 4 to 6 days)	141	94.00	9	6.00
11.	Hand weeding	134	89.33	16	10.67
12.	Chemical weeding (Pendimethalin, Butaclore and Oxyflorofin)	31	20.67	119	79.33
13.	Fertilizers (50:25:50 kg/ac)	22	14.67	128	85.33
14.	Disease control (Diphenconazole, Captan and Mancozeb)	107	71.33	43	28.67
15.	Pest control (Imidachloprid, Spinosad)	110	73.33	40	26.67
16.	Storage (Bamboo container)	11	7.33	139	92.67

influencing the yield level. The probable reason might be that recently introduced varieties perform better than the recommended varieties and are gaining much popularity among framers. Further, most of the farmers usually used locally saved seeds for sowing during *Rabi* season and many of them are unaware of improved varieties available.

However, seed treatment with Captan and also the use of correct dosage for seed treatment was adopted by 81.33 per cent of respondents. Probable reason could be that seeds sold in the market are already treated with seed treatment chemicals and farmers use the same treated seeds for sowing.

With regard to fertilizer management, majority (87.33 %) of the respondents had not adopted the application of recommended quantity of FYM. With regard to application of NPK fertilizer, only 14.67 per cent of the respondents had adopted. Possible reason for this might be lack of knowledge about recommended dose of fertilizers among the respondents. Usually, farmers tend to apply fertilizers in more than quantities because they believe that application of more quantity of fertilizers make their soil more productive and finally yield would be increased.

Majority (91.33%) of the respondents had sown the crop as per the recommended time. In case of seed rate, 90.67 per cent of the respondents had adopted sowing of recommended seed rate. In case of method of sowing,

majority (94.67%) had adopted the recommended technology. With respect to the adoption of recommended spacing, 81.33 per cent had adopted the recommended practices. The probable reasons in these cases might be that seed sowing practices depends upon the climatic factors. Moreover, farmers know the importance of above practices by their farming experience. Timely availability of seeds, availability of irrigation and labor facilities in time also influence the adoption of above practices. Following recommended spacing allows proper growth and development of crops with optimum yields.

Very less (12.67%) number of respondents had adopted the inter-cropping system according to recommended technology. It is because farmers are in the notion that sole cropping gives higher yields and also that inter-cropping might hinder the inter-cultivation practices.

In case of frequency of irrigation, 94.00 per cent of them had adopted as per recommended practice because of availability of good irrigation facilities to majority of them during *Kharif* season.

Regarding weed management, 89.33 per cent of respondents carried hand weeding during cropping period. In case of chemical method of weed management, only around 20.67 per cent of respondents had adopted. Possible reason for this might be that farmers don't have knowledge about the chemicals recommended and they

are also in the notion that spraying weedicides may also damage main crop plants.

With respect to disease management, 71.33 per cent of the respondents had fully adopted the recommended control measures and with respect to insect pest management, around 73.33 per cent of respondents had adopted the recommended management measures. The possible reasons for this might be that pest and disease management is crucial component in onion cultivation as it has direct influence on crop yields.

Among the respondents, only 7.33 per cent of the respondents adopted recommended storage practices. The possible reason for this is that farmers follow traditional storage practices of onion that have been followed from their ancestors. The results presented above are in line with the findings of Manjunath (2011) and Vijayakumar (2012).

#### *Relationship between adoption and personal socio-economic characteristics of onion growers :*

The results presented in Table 3 depicted that the variable age showed a significant negative relationship with adoption level at 0.01 level of probability. The probable reason for this might be the fact that as age increases, the mindset of the farmers becomes more saturated with traditional practices and they tend to become more skeptical about adoption of any innovation.

Education showed positively significant relationship with adoption level at 0.01 level of probability. Education

is the production of desirable changes in human behavior. It helps the individual to make progress in right direction and it develops awareness about new technology among the farmers. It could be inferred that higher the formal education, higher is the adoption of recommended practices.

The variables like extension contact, extension participation, mass media exposure and innovativeness showed positively significant relationship with adoption levels of respondents at 0.05 level of probability. The probable reasons for this could be that more the exposure of farmers to sources outside their social system, more is the agricultural information input and this might help farmers to understand and analyze the benefits of new technology leading to higher adoption.

Whereas variables like annual income, family type, land holding, farming experience, social participation, decision making ability and cosmopolitaness did not show any signification relationship with adoption level. Similar trends were observed in the findings of Gajanand *et al.* (2017) and Kumar *et al.* (2017).

#### **Conclusion :**

In the study area, majority of the respondents belonged to medium level adoption with respect to recommended cultivation practices of onion. State departments, State Agricultural Universities, ICAR institutes, KVKs, NGOs etc. may provide necessary information and training regarding practice of improved onion production technologies, pest and disease management and post harvest management of onion crop. Further, variables such as age, education, extension contact, extension participation, mass media exposure and innovativeness exhibited significant relationship with the adoption level of respondents. The government and private organizations may aim at manipulating these variables to their advantage for promoting adoption behaviour among the onion growing farmers.

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**Table 3 : Correlation of personal and socio-economic characteristics of onion growers with adoption levels (n=150)**

Independent variables	r
Age	-0.166*
Education	0.165*
Annual income	0.082NS
Family type	0.027NS
Land holding	0.007NS
Farming experience	-0.149NS
Extension contact	0.392**
Extension participation	0.156**
Mass media exposure	0.253**
Social participation	0.017NS
Decision making ability	0.038NS
Innovativeness	0.152**
Cosmopolitaness	0.076NS

r = Correlation co-efficient      NS = Non-significant

\* and \*\* indicate significance of values at P=0.05 and 0.01, respectively

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