

## AWARENESS ABOUT MPKV RECOMMENDED RABI ONION PRACTICES BY THE ONION GROWERS

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### ABSTRACT

Onion is an important bulb crop grown in India. Considering the demand and export potential of the onion crop, it has more economic value. It is grown on large area in Maharashtra state. The study was undertaken with the intention to know the awareness among the onion growers about recommended Mahatma Phule Krishi Vidyapeeth production technology for rabi onion. The study was conducted in Ambegaon tehsil of Pune district. Responses about awareness regarding rabi onion recommendations were documented from 81 respondents of 9 villages. It was found that more than half of the respondents belonged to middle age, had small size of family, farming as their major occupation and had small size of land holding. Nearly one-third of them had irrigated+ rainfed land and no social participation. Majority of them belonged to medium use of information sources. More than half (56.75 per cent) of the onion growers had medium awareness about recommended technology for rabi onion. Three-fifth of the respondents were aware about recommendations regarding bulb planting in first week of November for onion seed production while more than half of them had awareness about spraying of water soluble fertilizer for higher green top yield and spraying of acephate or aetamiprid for control of onion thrips. There was less awareness regarding recommendation given about process for preparation of dehydrated onion flakes, application of N in soybean (kharif) and onion (rabi) crop sequence and application of irrigation.

**Keywords:** awareness, MPKV recommended practices, rabi onion, onion growers

### INTRODUCTION

Vegetable cultivation in India is quite ancient. A variety of vegetable crops like fruit vegetables, leafy vegetables, cole vegetable, bulb vegetables etc. are grown throughout India. Vegetable growing is an effective source for generating greater income from per unit area and additional employment. Onion (*Allium cepa*) is the most important vegetable crop among of the India next to potato (Sable and Sonpure 2018). Some scientists believe that onion was first domesticated in Central Asia and others in Middle East by Babylonian culture in Iran and West Pakistan. (Indu Mehta, 2017; Ghetiya *et al.*, 2019). Onion crop is hardy and can be grown in varied conditions. Generally, most of the times after harvesting onions are dried for marketing. Processed forms of onion are also available. It is widely used in cooking due to its flavor and has medicinal value. Onions are hardy and can be grown in a varied conditions.

During 2019-20 kharif onion production was estimated at 38.43 lakh tones, for late kharif 16.68 lakh tonnes and rabi production was estimated at 213.45 lakh tonnes. Maharashtra stands first in onion production with the

share of 43 per cent and production of 11363 thousand tonnes (Anonymous, 2020).

Considering the export potential of onion, quality production of onion is vital aspect. Agricultural universities had recommended various technologies for improving the quality as well as quantity of onion production. From the extension point of view, awareness of the crop technology among the farmers is very essential. It helps to promote the adoption of technology among the farming population. Considering the production of rabi onion, the study was undertaken with the objectives TO Know the Profile of Rabi Onion Growers and their Awareness about the Recommended Technology for Rabi onion.

### OBJECTIVES

- (1) To know the distribution of the respondents according to their personal and socio-economic characteristics
- (2) To know the distribution of the respondents according to their awareness about recommendations for rabi onion production technology
- (3) To know the Distribution of the respondents according to their recommendation wise awareness

## METHODOLOGY

The study was conducted in Maharashtra state. Ambegaon tehsil in Pune district was selected on the basis of large area under onion crop cultivation. Nine villages were selected on above criteria as area under rabi onion.

From each village, 9 respondents were selected randomly to have the sample size of 81. Data was collected with the help of interview schedule prepared for the study. Ex-post facto research design was used. Frequency, percentage, mean and standard deviation were used as statistical tools for analysis of data.

## RESULTS AND DISCUSSION

### Profile of onion growers

**Table 1: Distribution of the respondents according to their personal and socio-economic characteristics (n=81)**

Sr. No.	Category	Frequency	Percentage
<b>A</b>	<b>Age</b>		
1	Young (Up to 35 years )	07	08.64
2	Middle (36 to 50 years )	46	56.79
3	Old (50 years and above )	28	34.57
<b>B</b>	<b>Size of Family</b>		
1	Small (Up to 5 members)	43	53.09
2	Medium(6 to 10 members)	35	43.21
3	Large (11 members and above)	03	03.70
<b>C</b>	<b>Occupation</b>		
1	Agriculture	44	54.32
2	Agriculture+ Subsidiary occupation	31	38.27
3	Agriculture +Business	04	04.94
4	Agriculture +Service	02	02.47
<b>D</b>	<b>Land holding</b>		
1	Marginal (Upto 1.00 ha.)	16	19.75
2	Small (1.01 to 2.00 ha.)	46	56.79
3	Semi-medium (2.01 to 4.00 ha.)	15	18.52
4	Medium (4.01 and 10 ha.)	04	04.94
5	Large (above 10 ha.)	0	0.00
<b>G</b>	<b>Type of land</b>		
1	Irrigated	26	32.10
2	Rainfed	03	03.70
3	Irrigated +Rainfed	52	64.20
<b>I</b>	<b>Social participation</b>		
1	No (o score)	55	67.90
2	Medium (1 score)	17	20.99
3	High (more than 1 score)	09	11.11
<b>J</b>	<b>Sources of Information</b>		
1	Low ( score upto 10)	12	14.81
2	Medium (score between 11 to 15)	62	76.55
3	High (Score more than 15)	07	08.64

Data from Table 1 depicts that 56.79 per cent of the respondents belonged to middle age group while 34.57 per cent and 8.64 per cent of them had old age and young age, respectively. More than half (53.09 per cent) of the respondents belonged to small family. 43.21 of the respondents had medium family size and meager per cent (3.70 per cent) of them belonged to large family having 11 and more members. 54.32 per cent of the respondents had agriculture as their major occupation followed by agriculture

+ subsidiary occupation (38.27 per cent). Only 4.94 per cent and 2.47 per cent of them had agriculture+ business and agriculture +service as their occupation, respectively.

Table 1 further reveals that 56.79 per cent of the respondents belonged to small land holding (1.01 ha. to 2.00 ha.) followed by marginal (19.75 per cent) and semi-medium (18.52 per cent) land holding. 4.94 per cent of them had medium land holding while none of them belonged to large

land holding. 64.20 per cent of the respondents had irrigated+ rainfed land. 32.10 per cent and 3.70 per cent had irrigated and rainfed land, respectively. Regarding social participation, it was observed that more than two-third (67.90 per cent) and one-fifth (20.99) of the respondent onion growers had

no and medium social participation, respectively. Only 11.11 per cent of them had high social participation. More than three-fourth (76.55 per cent) of the respondents belonged to medium source of information followed by low (14.81 per cent) and high (8.64per cent) source of information.

**Awareness of the respondents about the recommended cultivation practices for rabi onion**

**Table 2 : Distribution of the respondents according to their awareness about recommendations for rabi onion production technology** (n =81)

Sr. No.	Category	Frequency	Percentage
1	<b>Low</b> (score upto 5)	21	25.93
2	<b>Medium</b> (score between 6 to 14)	46	56.79
3	<b>High</b> (score 15 and above)	14	17.28

Mean: 10.53 S.D.: 5.41

Table 2 reveals that 56.79 per cent of the respondents belonged to medium group of awareness about recommendations made for rabi onion. One-fourth (25.93 per

cent) of them had low awareness while 17.28 per cent of them high awareness about recommended rabi onion practices.

**Table 3 : Distribution of the respondents according to their recommendation wise awareness** (n =81)

Sr. No.	Recommendation	Awareness																																																	
		Frequency	Percentage																																																
1	To obtain good yield, for absorption of micronutrients, efficient use of nutrients and to have economic benefits from onion crop cultivated on light soils of Western Maharashtra, Spraying of Phule Grade-II B 0.3% (3% Iron, 5% Zinc, 0.5% Manganese,0.5% Boron, 0.5%Cu) along with the recommended fertilizer dose (100:50:50) after 35 and 55 days is recommended.	34	41.98																																																
2	To obtain good yield from seed production, for absorption of micronutrients and to have economic benefits from onion crop cultivated on medium deep soils of Western Maharashtra, after planting of onion got Spraying of Phule Grade-II B 0.3% (3% Iron, 5% Zinc, 0.5% Manganese,0.5% Boron, 0.5%Cu) along with the recommended fertilizer dose (100:50:50) after 55 and 65 days is recommended.	39	48.15																																																
3	To obtain good yield from rabi onion on medium deep soils cultivated in Western Maharashtra and to have efficient use of water and fertilizer it is recommended to give 100% of recommended fertilizer dose (100:50:50) in the form of water soluble fertilizer using drip irrigation  Table: Schedule of 13 fertilizer doses to be given for rabi onion crop through drip irrigation	28	34.56																																																
<table border="1"> <thead> <tr> <th rowspan="2">Period after planting (weeks)</th> <th colspan="2">Quantity of Urea</th> <th colspan="2">Quantity of Phosphorus</th> <th colspan="2">Quantity of Potash</th> </tr> <tr> <th>Per cent</th> <th>Kg/ha</th> <th>Per cent</th> <th>Kg/ha</th> <th>Per cent</th> <th>Kg/ha</th> </tr> </thead> <tbody> <tr> <td>1-21 ( 3 weeks)</td> <td>20</td> <td>20.0</td> <td>30</td> <td>15.0</td> <td>10</td> <td>5.0</td> </tr> <tr> <td>22-42 (3 weeks)</td> <td>40</td> <td>40.0</td> <td>40</td> <td>20.0</td> <td>20</td> <td>10.0</td> </tr> <tr> <td>43-70 ( 4 weeks)</td> <td>30</td> <td>30.0</td> <td>25</td> <td>12.5</td> <td>40</td> <td>20.0</td> </tr> <tr> <td>71-91 (6 weeks)</td> <td>10</td> <td>10.0</td> <td>05</td> <td>2.5</td> <td>30</td> <td>15.0</td> </tr> <tr> <td>Total</td> <td>100</td> <td>100</td> <td>100</td> <td>50.0</td> <td>100</td> <td>50.0</td> </tr> </tbody> </table>		Period after planting (weeks)	Quantity of Urea		Quantity of Phosphorus		Quantity of Potash		Per cent	Kg/ha	Per cent	Kg/ha	Per cent	Kg/ha	1-21 ( 3 weeks)	20	20.0	30	15.0	10	5.0	22-42 (3 weeks)	40	40.0	40	20.0	20	10.0	43-70 ( 4 weeks)	30	30.0	25	12.5	40	20.0	71-91 (6 weeks)	10	10.0	05	2.5	30	15.0	Total	100	100	100	50.0	100	50.0		
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4	Drip irrigation at 40% of evapotranspiration (ETc) during initial stage (0 to 20 days) & 80% of ETc in remaining period is recommended to minimize the reduction in rabi onion yield under water scarcity condition of Western Maharashtra.	25	30.86																					
5	Onion seed production is recommended in West Ghat zone with bulb planting in first week of November with fertilizer dose of 150 : 75 : 75 Kg NPK / ha. for maximum monetary returns.	49	60.49																					
6	The yield targeted equations of major nutrients ( i.e. N, P and K) for optimal yield of onion seeds (i.e. 400 to 450 Kg ha <sup>-1</sup> ) in medium deep black soils is recommended with and without FYM for balance nutrition and maintaining soil fertility.  <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">With FYM (20 t ha<sup>-1</sup>)</th> <th style="width: 50%;">Without FYM</th> </tr> </thead> <tbody> <tr> <td>FN=0.55XT- 0.65XSN-2.42XFYM</td> <td>FN=0.66XT-0.77XSN</td> </tr> <tr> <td>FP<sub>2</sub> O<sub>5</sub> =0.28 xT-3.01xSP-1.20xFYM</td> <td>FP<sub>2</sub> O<sub>5</sub> =0.33xT-3.63xSP</td> </tr> <tr> <td>FK<sub>2</sub>O = 0.28xT-0.11XSK-0.80xFYM</td> <td>FK<sub>2</sub>O =0.31xT-0.13xSK</td> </tr> </tbody> </table> <p>Where FN, FP<sub>2</sub> O<sub>5</sub> &amp; K<sub>2</sub>O are fertilizer N, P<sub>2</sub> O<sub>5</sub> &amp; K<sub>2</sub>O in K ha<sup>-1</sup> T is yield target (Kgha<sup>-1</sup>) &amp; SW, SP, &amp; SK are soil available N, P &amp; K in kg ha<sup>-1</sup> &amp; FYM is farm yard manure in t ha<sup>-1</sup>.</p>	With FYM (20 t ha <sup>-1</sup> )	Without FYM	FN=0.55XT- 0.65XSN-2.42XFYM	FN=0.66XT-0.77XSN	FP <sub>2</sub> O <sub>5</sub> =0.28 xT-3.01xSP-1.20xFYM	FP <sub>2</sub> O <sub>5</sub> =0.33xT-3.63xSP	FK <sub>2</sub> O = 0.28xT-0.11XSK-0.80xFYM	FK <sub>2</sub> O =0.31xT-0.13xSK	40	49.38													
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7	Planting of Rabi onion under drip irrigation on flat bed and irrigation at alternate day on 100% ETC and application of RDF (100:50:50 Kg N: P <sub>2</sub> O <sub>5</sub> : K <sub>2</sub> O/ha. along with 10 t/ ha. FYM is recommended in medium deep soil of Maharashtra for obtaining higher yield (29%), water saving 46% improve storability and monetary returns.	21	25.93																					
8	Irrigation at 80% Etc through drip irrigation at alternate days is recommended for maximum production of rabi onion on raised bed in medium deep black soils of Western Maharashtra.	27	33.33																					
9	The good quality dehydrated iron flakes with higher yield and rehydration ratio (1 : 6) can be prepared from CV Phule Safed by adopting following process  <ul style="list-style-type: none"> <li>- Cutting the onion slice into 2.5 to 3.5 mm</li> <li>- Pre treating the slices with 0.2% KMS and drying at 55°C for 8 to 9 hours</li> <li>- Packing of flakes in laminated pouches for storage upto 90 days at ambient temperature.</li> </ul>	13	16.05																					
10	Spraying of Herbicide oxyflurofen 23.5% EC@ 7.5 ml + quizalofop-ethyl 15% EC @ 10ml per 10 lit. of water at 25 days after transplanting and one hand weeding at 45 DAT is recommended for efficient weed control in onion.	37	45.68																					
11	In nitrogen nutrient based organic farming of soybean (kharif) and onion (rabi) crop sequence, the application of 50 & 100 kg N ha <sup>-1</sup> to soybean & onion respectively is recommended through organic matter viz. one third each from FYM, vermi compost and neem seed cake coupled with N and P Bio-fertilizer application.  <b>Technique</b>  <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">Organic inputs (kg ha<sup>-1</sup>)</th> <th style="width: 25%;">Soybean</th> <th style="width: 25%;">Onion</th> </tr> </thead> <tbody> <tr> <td>FYM</td> <td>2500</td> <td>6000</td> </tr> <tr> <td>Vermi compost</td> <td>1000</td> <td>2000</td> </tr> <tr> <td>Neem seed cake</td> <td>400</td> <td>800</td> </tr> <tr> <td>Rhizobium</td> <td>250 gm 10 kg<sup>-1</sup> seed</td> <td>-</td> </tr> <tr> <td>PSB</td> <td>250 gm 10 kg<sup>-1</sup> seed</td> <td>4 kg with 25 kg FYM</td> </tr> <tr> <td>Azotobacter</td> <td>-</td> <td>4 kg with 25 kg FYM</td> </tr> </tbody> </table>	Organic inputs (kg ha <sup>-1</sup> )	Soybean	Onion	FYM	2500	6000	Vermi compost	1000	2000	Neem seed cake	400	800	Rhizobium	250 gm 10 kg <sup>-1</sup> seed	-	PSB	250 gm 10 kg <sup>-1</sup> seed	4 kg with 25 kg FYM	Azotobacter	-	4 kg with 25 kg FYM	14	17.28
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Sr. No.	Recommendation	Awareness	
		Frequency	Percentage
12	Spraying of 19:19:19 water soluble fertilizer @ 0.5% at 30 & 45 days after transplanting along with basal dose of fertilizer (50:50:50 N,P <sub>2</sub> O <sub>5</sub> and K <sub>2</sub> O <sub>5</sub> is recommended for obtaining higher green top onion yield and higher monetary returns.	43	53.09
13	Four sprays of 75% SP acephate @ 8.0 g or 20% SP acetamiprid @ 2.5 g per 10 lit. of water at an interval of 15 days after observing population at economic threshold level (20 thrips/plant) are recommended for control of onion thrips.	46	56.79
14	Application of 60% recommended fertilizer dose (100:50:50 NPK Kg/ ha.) in water soluble form in 10 equal weekly splits starting from transplanting through micro sprinkler is recommended for higher yield, insufficient use of water and nutrient for onion on medium deep black soil.	13	20.00
15	Application of water at 75% of crop evapotranspiration at 3 days interval through drip is recommended for efficient water use and higher yield of onion seed in medium black soil.	21	25.93
16	In a zinc deficit soils of Western Maharashtra it is recommended to give 20 kg of ferrous sulphate with the recommended fertilizer dose (100:50:50 N,P,K + 10 tonnes of compost per ha.)	28	34.57
17	For the control of fruit fly alternate three spraying s of fipronil 5 S.C. 15 ml or profenophos 50 E.C. 10 ml or carbosulfan 25 E.C. 10 ml per 10 lit. of water for one ha. is recommended.	34	41.98

Table 3 shows that 41.98 per cent of the respondents were aware about spraying of Phule Grade-II B with the recommended fertilizer dose after 35 and 55 days of planting for the onion crop cultivated on light soils in Western Maharashtra. 48.15 per cent of them had awareness about the similar recommendation regarding spraying of Grade-II B but for the onion grown on medium soils. With respect to recommendation made for application of recommended dose of fertilizer in the form of water soluble fertilizer for the rabi onion grown on medium deep soils, 34.56 per cent of the respondents were aware.

The data further indicates that 30.86 per cent of the respondent onion growers were aware about the recommendation regarding application of drip irrigation at 40% of evapotranspiration (ETc) during initial stage (0 to 20 days) and 80% of evapotranspiration in remaining period for the rabi onion grown under water scarcity condition whereas 60.49 per cent of them had awareness about onion seed production recommendation in West Ghat Zone with bulb planting in first week of November with the fertilizer dose of 150: 75:75 kg NPK/ha for maximum monetary returns. Nearly half (49.38 per cent) of the respondents were aware about application of major nutrients for optimal yield of onion seeds in medium deep black soil according to the yield targeted equations.

Results from Table 3 also reveal that one-fourth (25.93 per cent) of the respondents had awareness about planting of rabi onion under drip irrigation on flat bed and irrigation at alternate day on 100% ETC and application of

recommended dose of fertilizer to have higher yield, improve storability and monetary returns. Regarding application of irrigation at alternate day at 80% ETC through drip for rabi onion on raised bed, one third (33.33 per cent) of the respondents had awareness about it. Less awareness was observed in respect of process of preparation of dehydrated iron flakes from Phule Safed cultivar (16.05 per cent).

Findings also showed that 45.68 per cent of the onion respondents had awareness about spraying of herbicide oxyfluorfen and quizalofop-ethyl and one hand weeding for control of weed in onion. 17.28 per cent of the respondents were aware about the application of Nitrogen through organic matter in organic farming of soybean and onion.

Table further indicates that more than half (53.09 per cent) of the respondents were aware regarding spraying of 19:19:19 water soluble fertilizer after transplanting along with the basal dose of fertilizer. 56.79 per cent of them had awareness regarding spraying of acephate or acetamiprid for control of thrips.

Two fifth (20.00 per cent) of the onion respondents were aware about application of 60% recommended fertilizer dose in water soluble form in 10 equal weekly splits for higher yield. One-fourth (25.93 per cent) of them had awareness regarding application of water at 75% of crop evapotranspiration at 3 days of interval through drip for efficient water use and higher yield of onion seed. 34.57 per cent respondents were aware in respect of application of ferrous sulphate in zinc deficit soils with the recommended

dose of fertilizer. 41.98 per cent of the onion respondents had awareness about spraying of fipronil or profenophos or carbosulfan for control of fruit fly.

## CONCLUSION

It was observed that there was medium overall awareness about recommendations made for rabi onion. However, awareness about recommended technology for preparation of dehydrated onion flakes, application of nitrogen through organic matter in soybean and onion crop sequence and application of irrigation at various ETC was less among the rabi onion respondents. Considering the increased use of e-sources by the farming population, especially in the current pandemic situation, the awareness about recommended technology shall be improved by publishing the information through e-sources such as various Mobile app, SMS services, internet etc. Also in region with more area under rabi onion cultivation awareness campaigns, result and Font Line Demonstrations in consultation with Agricultural University should be conducted by the State Department of Agriculture.

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