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Screening of onion genotypes for sets production and raising of early *kharif* crop

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Abstract

An experiment was conducted to screening of onion varieties suitable for sets production and raising of early *kharif* crop through sets. Eighteen onion varieties including advance lines were sown in three replications at the Experimental Farm of ICAR-Directorate of Onion and Garlic Research, Rajgurunagar, Pune (Maharashtra). The significant differences were observed in varieties under onion sets production. Maximum number of onion sets were recorded in DOGR-1203 (554.83/m^2) followed by Bhima Super (530.17/m^2), B-780 (518.00/m^2), Bhima Raj (475.33/m^2) and RGO-53 (462.08/m^2). The sets were graded according to their diameter as <10 mm, 10-15 mm, 16-20 mm and >20 mm onion sets. Highest percentage of 10-15 mm onion sets was recorded in W-448 (44.88%) followed by DOGR-1203 (44.55%), Agrifound White (44.03%), JNDWO-85 (43.80%) and Phule Safed (42.44%). Different groups of onion sets were planted with three replications for production of early *kharif* crop through sets. Little variations were observed among four groups of onion sets in respect of marketable yield of all the varieties. Days for bulbs maturity varied from 75 to 95 days in crop through onion sets whereas, 96 to 113 days in transplanted crop. On the basis of overall mean of all the onion sets groups, highest marketable yield was recorded in R-Kh-M-I (22.09 t/ha) followed by RGO-53 (20.16 t/ha), Bhima Shweta (20.10 t/ha), Bhima Super (19.13 t/ha), R-Kh-M-III (18.50 t/ha) and these varieties gave higher yield under cultivation through sets in comparison to transplanted crop except Bhima Super. The results clearly indicated that early and higher bulb yield can be obtained through onion sets during *kharif* cultivation.

Key words: Onion sets, bulblets, sets' production, *kharif* onion.

Introduction

Kharif onion plays a very important role in bridging the critical gap of demand and supply from November to February throughout the country when price of onion shoots up a level and becomes a serious concern for food supply. Because of its high export potential, it comes under cash crop. About 55-60% of onion comes from *rabi* and 40-45% from *kharif* and *late kharif* seasons. Because of its special characteristic of pungency, it has more value than other vegetable crops. Apart from its importance for regular supply in domestic markets, it has got very good export potential for earning valuable foreign exchange for the country (Singh and Gupta 2016). Onion is grown either from seeds, seedlings or sets for both green and dry bulbs (Elhag and Osman 2013). Availability of healthy, disease-free seedlings will play the most critical factor for growing onion in *kharif* season (Mandal et al. 2016). Though, *kharif* crop is more sensitive and vulnerable forms, plays a crucial role for maintaining demand and supply and price stabilization. Usually, *kharif* onion is grown by raising nursery in April-May under hot and humid conditions, thus making it difficult to properly manage nursery seedlings. *Kharif* onion can be successfully grown through sets or bulblets which largely avoid the risk of seedling raising during heavy rains in June-July (Singh and Gupta 2013). Sets, being much larger than seeds have greater vigour for the early establishment of plants which allows to grow successfully in less favourable growing conditions where the use of seedlings or direct sowing is difficult. The seed-set-seed production method implies lower costs and duration than the traditional seed-bulb-seed method (Peluffo et al. 2016). Onion sets production is affected by cultivar, density and environmental conditions (Cheema et al. 2003; Anonymous 2011). The main environmental factors which affects onion bulb and sets production are temperature, photoperiod and interaction between them (Im et al. 2002; Diaz-Perez et al. 2003; Huh et al. 2002). The use of sets can help in extending the availability of the commodity throughout the season. Also, there is significant demand from professional growers to produce early crops through sets. In this

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aspect, a research was conducted with a view to assess the onion cultivars with appropriate set size suitable for sets production for raising early *kharif* crop.

Materials and Methods

The effect of set size on bulb yield in 18 onion genotypes including varieties and advance lines were evaluated at the Experimental Farm of ICAR-Directorate of Onion and Garlic Research, Rajgurunagar, Pune (Maharashtra) during 2010-11 and 2011-12. Seeds of all the genotypes were sown in raised beds @ 15 g/m^2 in last week of January in both the years. Harvesting of onion sets of different genotypes were done in first week of May in both years on different dates according to maturity. Number of onion sets (per square meter) produced from different varieties were recorded. The onion sets were graded according to the diameter as <10 mm, 10-15 mm, 16-20 mm and >20 mm sets and stored at room temperature in a ventilated storage structure till planting in the field. Comparison between crop raised through onion sets and seedlings transplanted was done. Different groups of onion set and seedlings were planted 17th July, 2010 and 21st July, 2011 on raised beds with three replications in Randomized Block Design with spacing of 10×15 cm for both sets and seedlings crop. Number of sets and seedlings used were 400 sets/ 6 m^2 and 400 seedlings/ 6 m^2, respectively.

All the recommended agronomic and plant protection practices were adopted for raising the healthy crop. The performance of the cultivars were assessed on the basis of twenty-one important growth, yield and quality parameters. *viz*., plant height (cm), number of leaves/ plant, collar thickness (mm), polar diameter (cm), equatorial diameter (cm), neck thickness (mm), A grade bulbs (%), B grade bulbs (%), C grade bulbs (%), double bulbs (%), unmarketable bulbs (%), bolter bulbs (%), rotted bulbs (%), marketable bulbs (%), marketable yield (t/ha), total yield (t/ha), total soluble solids (%), number of centerness, average marketable bulb weight (g), days to harvesting after planting and plant establishment (%). Mean data for all the sets group were utilized for comparing the result. Steps involved in raising of early *kharif* onion crop through sets technology. Statistical analysis was done according to the methods suggested by Panse and Sukhatme (1967).

Results and Discussion

Significant differences were observed in different varieties in respect of onion sets production. Maximum number of onion sets were recorded in DOGR-1203 (554.83 sets/m^2) followed by Bhima Super (530.17 sets/ m^2), B-780 (518.00 sets/m^2), Bhima Raj (475.33 sets/ m^2) and RGO-53 (462.08 sets/m^2). Highest initial weight of onion sets was recorded in B-780 (1.73 kg/m^2) followed by RGO-53 (1.57 kg/m^2), Bhima Shweta (1.41 kg/m^2), R-Kh-M-I (1.36 kg/m^2) and Agrifound White (1.29 kg/m^2). Percentage of less than 10 mm onion sets varied from 11.84% (B-780) to 42.36% (R-Kh-M-IV) whereas, more than 20 mm onion sets ranged from 6.67% (DOGR-1203) to 26.64% (B-780). Highest percentage of 10-15 mm onion sets was recorded in W-448 (48.88%) followed by DOGR-1203 (44.55%), Agrifound White (44.03%), JNDWO-85 (43.80%) and Phule Safed (42.44%) (Table 1).

Onion set size is one of the important factors for producing onion bulb or green onion (Khokhar et al. 2001). The results of this experiment revealed that marketable yield of <10 mm, 10-15 mm, 16-20 mm, >20 mm onion sets and transplanted crop varied from 3.36 to 26.02 t/ha, 7.74 to 23.51 t/ha, 5.56 to 22.50 t/ ha, 3.87 to 21.36 t/ha and 0.00 to 19.49 t/ha, respectively (Table 2). Little variations were observed among four groups of onion sets in respect of marketable yield of all varieties (13.80 to 16.75 t/ha) whereas, seedlings transplanted crop recorded 12.35 t/ha marketable yield. Irrespective of variety, marketable yield was higher when appropriate sized sets (10-20 mm) were used. Patil et al. (2009) and Sharma et al. (2009) also reported that the size of sets exhibited significant bearing on the bulb yield and the large sets recorded highest yield of onion bulb. The results also agreed with those of Verma et al. (1971), Mohanty et al. (1990), Madisa (1993), Seetohul and Hanoomanjee (2001), Khokhar et al. (2001) and Gupta et al. (2016).

The time to bulb maturation increased with decreasing size of sets. The small size sets took relatively more time *i.e.* in case of <10 mm size onion sets, it took 93.76 days for bulbs to mature as compared to 10-15 mm (92.75 days), 16-20 mm (90.71 days) and >20 mm (87.29 days). The results are in conformity with those of Heath and Holdsworth (1948), and Jones and Mann (1963), who reported that large sets are used to produce early matured bulbs. However, results differ with those of Khokhar et al. (2001) who reported delayed maturity of onion bulbs by large sets. Days to bulb maturity ranged from 75 to 95 days in crop through onion sets whereas 96 to 113 days in transplanted crop which revealed that onion sets are useful for early production of onion bulbs as compared to transplanted crop (Fig. 1). This is in conformity with Brewster (1994), O' Connor De (2006) and Ansari (2007). Minimum days to harvest in case of crop through sets were recorded in DOGR-1203 (74.88 days) followed by Agrifound White (87.08 days), JNDWO-85 (87.13

Table 1: Production of onion sets of different varieties/ lines for raising early *kharif* crops (Mean data of 2010-11 and 2011-12)

S. No.	Entries	Total wt. of sets/ sq.m (kg)	Total No. of Sets/sq.m	Percentage of Sets				Average weight of Sets (g)	DOH (Days)
				<10 mm	10-15 mm	16-20 mm	>20 mm		
1	Agrifound Dark Red	1.10	303.33	29.21	32.14	28.12	10.53	3.35	103.50
2	Agrifound White	1.29	435.50	19.44	44.03	24.10	12.43	2.60	103.50
3	Arka Kalyan	0.57	159.67	18.16	37.37	21.09	23.38	3.54	115.00
4	B-780	1.73	518.00	11.84	30.37	31.15	26.64	3.33	105.00
5	Bhima Raj	1.27	475.33	33.73	30.74	23.73	11.80	2.53	108.00
6	Bhima Red	1.28	419.00	36.85	27.69	25.28	10.18	2.70	108.00
7	Bhima Shweta	1.41	414.50	16.25	38.56	34.67	10.52	2.32	103.50
8	Bhima Super	1.05	530.17	39.28	35.88	17.45	7.38	2.35	108.00
9	DOGR-1203	0.91	554.83	32.99	44.55	15.78	6.67	2.31	81.00
10	JNDWO-85	1.17	284.17	16.28	43.80	24.67	15.25	3.25	104.50
11	L-28	0.71	247.25	29.74	29.55	26.47	14.24	2.23	109.00
12	Phule Safed	1.23	298.83	16.53	42.44	25.51	15.52	3.04	105.50
13	Phule Samarth	0.52	120.83	26.06	24.42	29.36	20.15	2.16	96.67
14	RGO-53	1.57	462.08	35.28	31.01	21.53	12.18	2.93	103.50
15	R-Kh-M-I	1.36	385.00	33.56	38.76	16.46	11.22	2.99	104.50
16	R-Kh-M-III	0.94	339.67	31.61	30.90	22.90	14.59	2.73	106.50
17	R-Kh-M-IV	0.53	138.92	42.36	24.67	17.85	15.12	4.38	107.00
18	W-448	1.28	235.83	14.25	48.88	26.84	10.33	3.68	106.50
	Min	0.52	120.83	11.84	24.42	15.78	6.67	2.16	81.00
	Max	1.73	554.83	42.36	48.88	34.67	26.64	4.38	115.00
	Mean	1.11	351.27	26.86	35.32	24.05	13.79	2.91	104.40
	S.E.	0.17	25.37	-	-	-	-	-	0.08
	C.D. at 5%	0.49	72.92	-	-	-	-	-	0.23

days), Phule Samarth (89.75 days) and Bhima Super (89.88 days) whereas, in case of transplanted crop, minimum days to harvest were recorded in DOGR-1203 (96 days) followed by Agrifound White (105.50 days), L-28 (106.50 days), Arka Kalyan (108 days) and Bhima Shweta (110 days).

Higher number of doubles and bigger neck thickness in onion bulbs are considered as undesirable traits which render the bulb as unmarketable. Highest percentage of doubles were recorded in >20 mm sets (9.32%) followed by <10 mm sets (7.18%) and 16-20 mm sets (6.85%) whereas, lowest in 10-15 mm sets (6.59%). Results showed that percentage of doubles increased with the increasing set size. Rabinowitch (1979) also found the similar results and explained the differences in doubling between plants developing from small or large onion sets, as large sets of a variety probably have a higher number scales *i.e.* leaf bases and hence, large sets either have the required number of leaves before planting or they are just a few leaves off the minimum number needed for doubling. These results are in conformity with those of Thompson (1934), Chipman and Thorpe (1977), Seetohul and Hanoomanjee (2001) and Khokhar et al. (2002). On the basis of varietal differences in sets group, minimum doubles were observed in DOGR-1203 (0.15%) followed by Bhima Super (1.86%), B-780 (2.31%) and RGO-53 (2.60%). In case of transplanted onion crop, doubles were found absent or less in Bhima Raj, Bhima Shweta, Bhima Super, DOGR-1203, JNDWO-85, Phule Safed, R-Kh-M-I and W-448. The results also agreed with those of Gupta et al. (2011) and (2016).

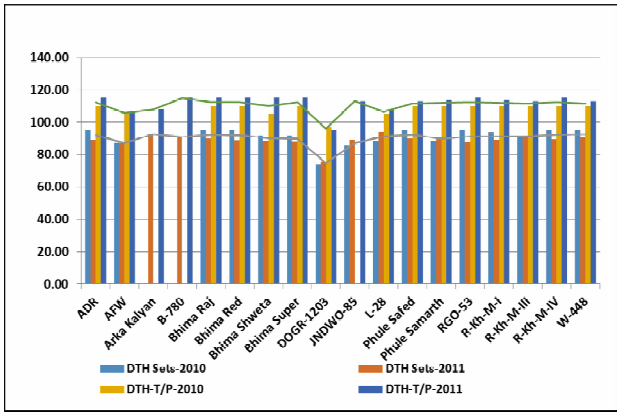

Fig. 1: Days to harvest comparison between cultivation of onion crop through sets and through seedling transplanted during *kharif* 2010-11 and 2011-12

Mean neck thickness was recorded minimum in 10-15 mm (4.40 mm) followed by <10 mm sets (4.71 mm) and 16-20 mm sets (5.01 mm) whereas, >20 mm sets recorded maximum neck thickness (5.57 mm). Neck thickness increased with increasing set size. This is in conformity with Seetohul and Hanoomanjee (2001) who reported that higher levels of bulbs with more neck thickness were obtained when large sets were used. Hirave et al. (2015) and Tarai et al. (2015) reported cultivar variation for this trait of onion. Mandal et al. (2018) reported that neck diameter of the onion bulblets progressively increased with time. In case of sets crop,

on the basis of overall mean, minimum neck thickness was recorded in DOGR-1203 (3.20 mm) followed by JNDWO-85 (3.93 mm), Phule Safed (4.29 mm), L-28 (4.38 mm) and Agrifound White (4.58 mm) whereas, in case of transplanted crop, minimum neck thickness was recorded in L-28 (3.96 mm) followed by Agrifound White (4.35 mm), R-Kh-M-I (5.01 mm), R-Kh-M-IV (5.36 mm) and Phule Samarth (5.52 mm). Irrespective of variety and set size, percentage of plant establishment through sets was found higher as compared to that of transplanted crop. The mean percentage of plant establishment through sets was found 74.77% as compared to transplanted crop (63.09%). This is in agreement with Brewster (1997) and Gupta et al. (2011).

The only dis-advantage observed in cultivation of onion through sets while comparing it with cultivation through seedlings transplanted is that the number of bolters which were higher in case of the crop through sets as compared to the transplanted crop (Fig. 2). It ranged from 0 to 4.73% in onion crop through sets whereas, from 0 to 0.65% in transplanted crop. On the basis of overall mean of all the onion sets, the minimum bolters were observed in DOGR-1203 (0.00) followed by Agrifound White (0.37%), L-28 (0.50%), Arka Kalyan (0.59%) and JNDWO-85 (0.83%). In case of transplanted crop, bolters were absent in almost all the varieties under observation except Agrifound Dark Red, Phule Samarth (0.43%) and B-780 (0.65%).

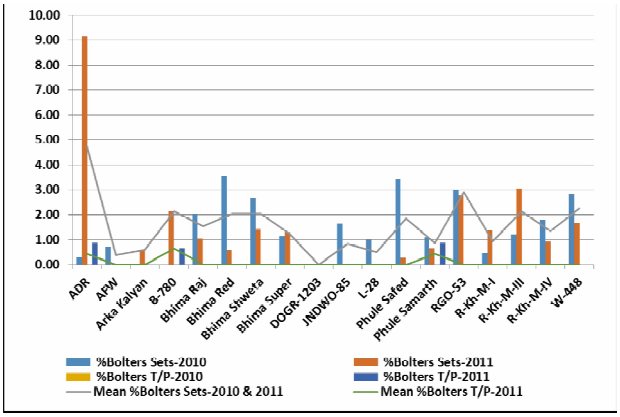

Fig. 2: Percent bolters comparison between cultivation of onion crop through sets and through seedlings transplanted during *kharif* 2010-11 and 2011-12

On the basis of overall mean of all the onion sets group, highest marketable yield was recorded in R-Kh-M-I (22.09 t/ha) followed by RGO-53 (20.16 t/ha), Bhima Shweta (20.10 t/ha), Bhima Super (19.13 t/ha) and R-Kh-M-IV (18.50 t/ha) (Table 2). These varieties also gave higher marketable yield under crops through onion sets in comparison of transplanted crops except Bhima Super. The results clearly indicated that early and higher

Table 2: Performance of different varieties/ lines for production of bulb yield through different sized sets during *kharif* 2010-11 and 2011-12

S. No.	Entries	<10 mm sets (MY t/ha)			10-15 mm sets (MY t/ha)			16-20 mm sets (MY t/ha)			> 20 mm sets (MY t/ha)			Mean of MY through all the sets groups (t/ha)			MY through Seedlings transplanted (t/ha)		
		2010	2011	Mean	2010	2011	Mean	2010	2011	Mean	2010	2011	Mean	2010	2011	Mean	2010	2011	Mean
1	Agrifound Dark Red	14.88	10.63	12.76	9.42	13.50	11.46	12.06	6.41	9.24	8.77	3.81	6.29	11.28	8.59	9.93	11.33	14.27	12.80
2	Agrifound White	14.12	7.14	10.63	11.46	5.47	8.47	10.57	1.71	6.14	37.33	0.00	18.67	18.37	3.58	10.98	4.00	5.56	4.78
3	Arka Kalyan	-	20.74	20.74	-	14.26	14.26	-	10.07	10.07	-	4.81	4.81	-	12.47	12.47	-	7.95	7.95
4	B-780	-	12.38	12.38	-	14.27	14.27	-	5.56	5.56	-	3.87	3.87	-	9.02	9.02	-	13.50	13.50
5	Bhima Raj	14.51	17.46	15.99	19.62	13.68	16.65	24.76	6.67	15.71	38.60	4.13	21.36	24.37	10.48	17.43	19.17	5.38	12.28
6	Bhima Red	21.04	16.51	18.77	21.69	10.68	16.19	24.83	8.55	16.69	28.13	2.86	15.49	23.92	9.65	16.78	21.67	5.47	13.57
7	Bhima Shweta	22.22	17.30	19.76	28.55	17.95	23.25	25.93	9.15	17.54	34.31	5.40	19.85	27.75	12.45	20.10	20.56	9.57	15.07
8	Bhima Super	18.46	14.13	16.29	24.37	22.65	23.51	30.98	7.61	19.29	32.00	8.26	20.13	26.45	11.81	19.13	31.11	7.86	19.49
9	DOGR-1203	3.23	3.49	3.36	7.62	7.86	7.74	10.71	7.44	9.07	20.83	8.25	14.54	10.60	6.76	8.68	-	0.00	0.00
10	JNDWO-85	13.44	6.30	9.87	18.68	3.46	11.07	13.98	3.33	8.66	25.00	0.00	12.50	17.78	3.27	10.53	-	3.85	3.85
11	L-28	24.11	6.03	15.07	14.44	4.27	9.36	14.93	0.62	7.77	19.05	3.33	11.19	18.13	3.56	10.85	12.78	4.10	8.44
12	Phule Safed	26.55	14.44	20.50	25.16	13.59	19.37	19.89	5.87	12.88	24.73	1.11	12.92	24.08	8.75	16.42	18.89	2.65	10.77
13	Phule Samarth	24.44	15.56	20.00	16.67	21.04	18.85	14.01	12.22	13.12	31.01	11.67	21.34	21.53	15.12	18.33	19.44	12.65	16.04
14	RGO-53	22.18	24.13	23.15	24.83	21.11	22.97	21.80	9.74	15.77	29.33	8.13	18.73	24.54	15.78	20.16	31.11	5.13	18.12
15	R-Kh-M-I	31.56	20.48	26.02	25.76	17.44	21.60	34.92	10.09	22.50	31.88	4.60	18.24	31.03	13.15	22.09	28.89	9.40	19.15
16	R-Kh-M-III	22.75	16.67	19.71	28.04	16.24	22.14	30.41	11.11	20.76	18.63	3.41	11.02	24.96	11.86	18.41	27.78	8.38	18.08
17	R-Kh-M-IV	23.69	9.26	16.47	25.71	6.67	16.19	34.17	8.52	21.34	40.00	0.00	20.00	30.89	6.11	18.50	21.67	11.47	16.57
18	W-448	22.48	17.42	19.95	20.74	15.30	18.02	27.81	4.69	16.25	33.33	1.59	17.46	26.09	9.75	17.92	17.22	6.32	11.77
	Min	3.23	3.49	3.36	7.62	3.46	7.74	10.57	0.62	5.56	8.77	0.00	3.87	10.60	3.27	8.68	4.00	0.00	0.00
	Max	31.56	24.13	26.02	28.55	22.65	23.51	34.92	12.22	22.50	40.00	11.67	21.36	31.03	15.78	22.09	31.11	14.27	19.49
	Mean	19.98	13.89	16.75	20.17	13.30	16.41	21.99	7.19	13.80	28.31	3.88	14.76	22.61	9.56	15.43	20.40	7.42	12.35
	S.E.	2.13	2.41	2.27	1.8	3.22	2.51	1.35	2.18	1.77	-	2.1	2.10	1.76	2.12	1.94	3.56	2.89	3.23
	C.D. at 5%	6.39	6.92	6.66	5.18	9.25	7.22	4.05	6.27	5.16	-	6.05	6.05	5.21	6.17	5.69	10.81	8.31	9.56

MY= Marketable yield (t/ha)

bulb yield was obtained by crop through onion sets in comparison with transplanted crop. It can be concluded that R-Kh-M-I, RGO-53, Bhima Shweta, Bhima Super and R-Kh-M-IV can be utilized for sets production to raise *kharif* onion crop. Mandal et al. (2018) also found Bhima Shweta as one of the suitable variety for producing bulblets/sets targeting bulb or green onion production during *kharif* season under Red and Laterite Zone of West Bengal.

For production of onion sets, 15 g seeds per sq m in nursery found significantly superior than other treatments. 10-20 mm sets with 2-4 g weight found suitable for commercial cultivation of *kharif* onion. Maximum number of sets were recorded in DOGR-1203 (554.83/m^2) followed by Bhima Super (530.17/m^2), B-780 (518.00/m^2), Bhima Raj (475.33/m^2) and RGO-53 (462.08/m^2). Maximum commercial bulb yield was recorded in R-Kh-M-I (22.09 t/ha) followed by RGO-53 (20.16 t/ha), Bhima Shweta (20.10 t/ha) and Bhima Super (19.13 t/ha) through sets. Through sets technology, crop matures about one month earlier than transplanted crop. Bhima Super and RGO-53 performed better in production of sets as well as commercial bulb crop raised through sets and are recommended for Sets Technology.

सारांश

खरीफ, प्याज की खेती के सेट्स के माध्यम से उत्पादन हेतु उपयुक्त किस्मों की जांच के लिए एक प्रयोग किया गया। अग्रिम लाइनों सहित अठारह प्याज किस्मों को तीन पुनरावृत्ति में प्रायोगिक प्रक्षेत्र प्याज एवं लहसुन अनुसंधान निदेशालय, राजगुरूनगर, पुणे (महाराष्ट्र) में लगाया गया। सेट्स उत्पादन के तहत प्याज की किस्मों में सार्थक व महत्वपूर्ण अंतर देखा गया। डीओजीआर–1203 (554.83 / वर्ग मीटर) में अधिकतम संख्या में प्याज के सेट्स दर्ज किए गए तथा इसके बाद भीमा सुपर (530.17 / वर्ग मीटर), बी–780 (518.00 / वर्ग मीटर), भीमा राज (475.33 / वर्ग मीटर) और आरजीओ–53 (462.08 / वर्ग मीटर) का स्थान रहा। प्याज के सेट्स को उनके व्यास के अनुसार <10 मीमी., 10–15 मिमी., 16–20 मिमी. और >20 मिमी. में वर्गीकृत किया गया। सामान्यतः 10–15 मिमी. वाले प्याज सेट्स का उच्चतम प्रतिशत डब्ल्यू–448 (44.88 प्रतिशत) में दर्ज किया गया तथा इसके बाद डीओजीआर–1203 (44.55 प्रतिशत), एग्रीफाउंड व्हाइट (44.03 प्रतिशत), जेएनडीडब्ल्यूओ–85 (43.80 प्रतिशत) और फूले सफेद (42.44 प्रतिशत) रहा। प्याज के विभिन्न समूहों को तीन पुनरावृत्ति में सेट्स के द्वारा अगेती खरीफ उत्पादन हेतु लगाया गया। प्याज के चार समूहों के बीच सभी किस्मों की विपणन योग्य उपज के बीच मामूली अन्तर देखा गया। प्याज सेट्स के माध्यम से फसल में 75 से 95 दिनों में कंद की परिपक्वता दर्ज की गयी जबकि रोपाई वाली फसल में 96 से 113 दिनों में कंद की परिपक्वता देखी गयी। सभी प्याज सेट्स समूहों में आर.के.एच.एम.–I (22.09 टन प्रति हे.), आरजीओ–53 (20.16 टन प्रति हे.), भीमा श्वेता (20.9 टन प्रति हे.), भीमा सुपर (19.13 टन प्रति हे.) और आर.के.एच.एम.–III (18.50 टन प्रति हे.) में उच्च विपणन योग्य उपज दर्ज की गयी। इन किसमों में भीमा सुपर को छोड़कर अन्य रोपाई के द्वारा ली गयी फसल के तुलना में प्याज के सेट्स के माध्यम से खेती के तहत अधिक उपज प्राप्त हुयी। परिणामों से स्पष्ट रूप से संकेत प्राप्त हुआ कि रोपित फसल की तुलना में प्याज के सेट्स द्वारा ली गयी फसल से शीघ्र और ज्यादा कंद उपज को प्राप्त किया जा सकता है।

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