

Performance Evaluation of Onion (*Allium Cepa* L. Var. *Cepa*) Varieties for Their Suitability in Kollam District

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Abstract: The demand for onion is increasing worldwide. It is used both in raw and mature bulb stage as vegetable and spice. There is a general concept that onion cannot be cultivated in Kerala conditions and the only way is to purchase it from market. It is a wrong concept. Even though onion is a cool season crop we can now cultivate onion in homesteads, kitchen gardens and also in roof tops due to the availability of those varieties, which can perform better in our climatic conditions. Three months from November-December or March to April is the best season for onion cultivation in Kerala. Successful onion production depends on the selection of varieties that are adapted to different climatic conditions imposed by specific environment. No systematic study has been conducted to assess the suitability of onion cultivation in Kollam district of Kerala, for which standardization of varieties is of immense utility. Hence, the present experiment was conducted to study the response of some improved varieties of onion (*Allium cepa* L. var. *cepa*) for their suitability for cultivation in Kollam district of Kerala. The investigation was carried out by Krishi Vigyan Kendra, Kollam during 2013-2014 to assess the performance of onion varieties in Kollam district under scientific management practices. Three high yielding onion varieties were tested with seven replications. Different treatments included onion variety Agrifound Dark Red (T_1), onion variety N53 (T_2), onion variety Arka Kalyan (T_3) in replications of seven farmer fields. The results revealed that highest plant height (38.6 cm) was reported from onion variety N53 and the lowest by Agrifound Dark Red (35.2 cm). Similarly onion variety Arka Kalyan registered maximum number of leaves (15.4) and the lowest by N53 (10.4). The highest bulb yield of $8.2 t ha^{-1}$ was obtained from the cultivar Agrifound Dark Red and the lowest bulb yield was reported from N 53. Highest B:C Ratio (1.67) was reported from cultivation of onion variety Agrifound Dark Red and the lowest from

N 53 (1.2). It was concluded from the study that onion variety Agrifound Dark Red had better performance in the trial and is recommended for cultivation in Kollam district.

Keywords: Onion, bulb, yield, variety, harvest

1. INTRODUCTION

The onion (*Allium cepa* L. var. *cepa*) is the most widely cultivated species of the genus *Allium*. It is one of the most important commercial vegetable crops grown in India. The demand for onion is increasing worldwide. It is used both in raw and mature bulb stage as vegetable and spice. The pungency in onion is due to the presence of volatile oil known as allyl propyl disulphide (Mohanty and Prusti, 2001). The bulb of onion consists of swollen bases of green foliage leaves and fleshy scales. Onion is one among the world famous spice commodities used for flavoring the dishes (Bhonde *et al.*, 1992). Besides culinary purposes, it is considered as valuable medicinal plants (Booer, 1946). Dehydrated powder and flakes and paste prepared out of onion provide rich agro-industrial base for these commodities. There is a general concept that onion cannot be cultivated in Kerala conditions and the only way is to purchase it from market. It is a wrong concept. Even though onion is a cool season crop we can now cultivate onion in homesteads, kitchen gardens and also in roof tops due to the availability of those varieties, which can perform better in our climatic conditions. Three months from November-December or March to April is the best season for onion cultivation in Kerala. Onion can be grown under a wide range of climatic condition (Singh *et al.*, 1991). But it succeeds best in mild season without extremes of heat and cold. Successful onion production depends on the selection of varieties that are adapted to different climatic conditions imposed by specific environment (Pandey, 1989). No systematic study has been conducted to assess the suitability of onion cultivation in Kollam district of Kerala, for which standardization of varieties is of immense utility. Hence, the present

experiment was conducted to study the response of some improved varieties of onion (*Allium cepa* L. var. *cepa*) for their suitability for cultivation in Kollam district of Kerala.

2. MATERIALS AND METHODS

The investigation was carried out by Krishi Vigyan Kendra, Kollam during 2013-2014 to assess the performance of onion varieties in Kollam district under scientific management practices. Three high yielding onion varieties were tested with seven replications. Different treatments included onion variety Agrifound Dark Red (T₁), onion variety N53 (T₂), onion variety Arka Kalyan (T₃) in replications of seven farmer fields. Seeds are sown in nursery during the middle of September. Forty five days old healthy seedlings of each variety were transplanted on beds of 1m width and convenient length at a spacing of 15 x 10 cm during the first week of November. Recommended cultural practices were followed to raise the crops successfully. The observations recorded included plant height, number of leaves per plant, weight of bulb, diameter of the bulb, days to harvest and bulb yield.

3. RESULTS AND CONCLUSIONS

The datas of the trial in onion are presented in Table 1, Table 2 and Table 3. The results revealed that highest plant height (38.6 cm) was reported from onion variety N53 (Table 1) followed by Arka Kalyan and the lowest by Agrifound Dark Red (35.2 cm). Similarly onion variety Arka Kalyan registered maximum number of leaves (15.4) followed by Agrifound Dark Red and the lowest by N53 (10.4)

Table1. Biometric characters of selected onion cultivars

Treatments	Plant height(cm)	Number of leaves
T ₁ (Agrifound Dark Red)	35.20	13.10
T ₂ (N53)	38.60	10.40
T ₃ (Arka Kalyan)	37.50	15.40
CD (0.05)	3.62	2.20

The highest bulb yield of 8.2 t ha⁻¹ (Table 2) was obtained from the cultivar Agrifound Dark Red followed by Arka Kalyan (7.1 t ha⁻¹) and the lowest bulb yield was reported from N53(5.9 t ha⁻¹). Similar results were also obtained from the works of Bhonde (1998) and Bajaj *et al.* (1992). Highest B:C Ratio (1.67) was reported from cultivation of onion variety Agrifound Dark Red followed by Arka Kalyan (1.45) and the lowest from N 53 (1.2).

Table 2. Yield and B:C Ratio of selected onion cultivars

Treatments	Yield (t/ha)	B:C Ratio
T ₁ (Agrifound Dark Red)	8.2	1.67
T ₂ (N 53)	5.9	1.20
T ₃ (Arka Kalyan)	7.1	1.45
CD (0.05)	2.89	0.25

The biggest bulb of 5.2 cm diameter was noticed in onion variety Agrifound Dark Red (Table 3) followed by Arka Kalyan (4.4 cm) whereas N 53 expressed the least diameter (4.1 cm) of bulb. Similarly the largest bulb of 65.0 g weight was observed in case of onion variety Agrifound Dark Red followed by Arka Kalyan (55.0 g) while the smallest bulb was possessed by onion variety N 53 (46 g). Similar results were also reported by Patil and Kale (1985).

Table3. Yield attributes of selected onion cultivars

Treatments	Weight of bulb(g)	Diameter of bulb(cm)
T ₁ (Agrifound Dark Red)	65.0	5.20
T ₂ (N53)	46.0	4.10
T ₃ (Arka Kalyan)	55.0	4.40
CD (0.05)	1.44	1.43

Early harvest (100 days) was reported from onion variety Agrifound Dark Red (Fig. 1) followed by N 53 (110 days) and highest days for harvest (140 days) was observed in the variety Arka Kalyan (days)

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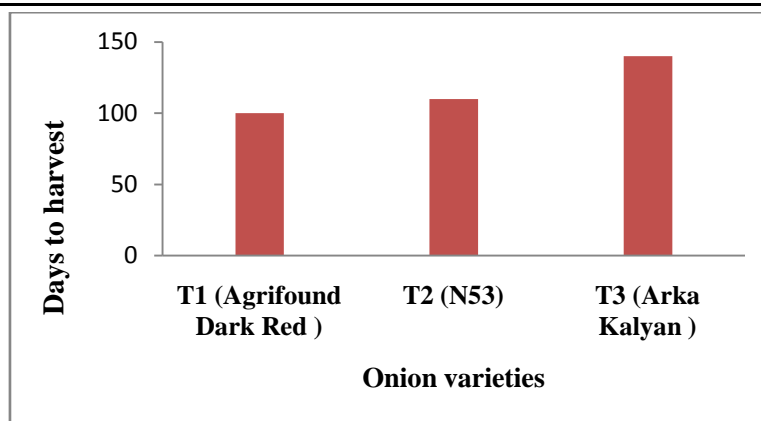


Fig1. Days to harvest of onion varieties

It was concluded from the study that onion variety Agrifound Dark Red had better performance in the trial and is recommended for cultivation in Kollam district.

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