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COMPARATIVE STUDIES OF SOME EXOTIC POTATO CULTIVARS

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Present study was conducted to screen few exotic potato varieties received from abroad and to evaluate them for recommending the cultivation of the best selected variety. Five varieties i.e. Gigant, Wada, Mirakel, Fambo and Arkula imported form Holland were tested for their vegetative and reproductive characteristics under local conditions. It was found that the cultivar Fambo superseded all other cultivars with regard to growth and yield potential.. The cultivars Wada, Mirakel and Arkula also appeared to be promising for adoption in future. Gigant cultivar was found at bottom in terms of growth and yield parameters.

Key words: exotic potato cultivars, growth and yield, vegetative and reproductive characteristics

INTRODUCTION

Potato *(Solanum tuberosum* L.) is an important vegetable crop throughout the world. Potato gives higher production even than wheat and rice and at the same time its nutritional value is superior than most of the food crops. It is the richest source of carbohydrates. Potato is planted as a cash and food crop in Pakistan and plays an important role in agricultural economy of the country. Three crops of potato are raised during one year in this country, two in plains and third one in hilly areas. Presently it is being cultivated on an area of 92.5 thousand hectares with an annual production of 1038.78 thousand tonnes (Anonymous, 2000).

It has been observed that the potato varieties being cultivated in Pakistan are very low yielding and do not compete well with the varieties grown in advanced countries of the world. Thus introduction of new plant material from abroad will certainly prove beneficial.. Seeds of a large number of vegetables presently under cultivation in various parts of the country are imported from different foreign sources. It is therefore, considered worthwhile to test and evaluate the various potato cultivars received from different countries through various sources. Estevez et al. (1982) studied the factors affecting tuber yield in eight potato cultivars. They observed that the number of tubers per plant, average tuber weight and plant height were most closely related to tuber yield. Estevez (1982) studied tuber yield of seventeen potato varieties from Canada, France, Holland and Germany. The cultivars with the heaviest tuber weight gave the best yield and had the lowest number of tubers per plant.. Jablouski (1990) reported that tubers of potatoes cv. Ronda and Sowa were planted at three depths, deeper planting increased number of days to emerge but had no effect on maturity date. Ronda gave higher seed tuber yield than Sowa. Bisen and Barholia (1991) tested cultivars of potato for various parameters of growth. They found that among 8 varieties of potato, the Kufri and Joyti were the highest yielding varieties (32.5 and 29.7 tonnes/ha). Keeping in view the above factors, present project was undertaken to evaluate different potato cultivars in terms of their growth and yield parameters.

MATERIALS AND METHODS

This study was carried out in the Vegetable Experimental Area, Department of Horticulture, University of Agriculture, Faisalabad during 1998-99. The potato seed of all the varieties was imported from Holland through the Punjab Seed Corporation. All of them were white-skinned. Following were the varieties used in the experiment each with four replications: VI Gigant, V_2 Wada, V" Mirakel, V_4 Fambo and Vs Arkula.

Following data were recorded:

Vegetative Characters: Days to germinate, germination percentage, number of stems per plant, number of branches per plant, number of branches per stem and number of leaves per branch.

Reproductive Characters: Number of tubers per plant, number of tubers per plot, weight of tubers per plant, weight of tubers per plot, single tuber weight and yield per hectare.

In order to study the above mentioned characters, five plants were randomly selected from each treatment.. The experiment was designed in accordance with randomized complete block design and differences among treatment means were compared by DMR test at 5% probability as described by Steel and Torrie (1980).

RESUL TS AND DISCUSSION

1. Vegetative Characters: Table I reveals that out of various vegetative characters studied, differences in days taken to germination and number of stems per plant were found non-significant.. All the varieties behaved similarly with regard to these vegetative characters with minor differences. However, other characters were found significantly different.. Germination percentage of various cultivars was found highly significant (Table I). V_4 gave the highest germination percentage. It was followed by V_2. The next in order was Vs. Minimum germination percentage was observed in V" and V_1. Maximum number of branches per plant were observed in V_4 and V_2 and both were at par statistically. Minimum number of branches was observed in VI and V_3. Vs was intermediate in between. Similarly. number of branches per stem of various cultivars were found significantly different.. The variety (V2) produced the maximum number of branches per stem. All the other varieties behaved almost similarly with minor differences.

Table 1. Comparative studies of some exotic potato cultivars for their vegetative characteristics

Varieties	Days to germinate	Germination (%)	No. of stems/ plant	No. of branches/ plant	No. of branches/ stem	No. of leaves! branch
VI - Gigant	12.25	85.50 c	5.25	35.55 b	9.00 b	6.48c
V_2 - Wada	11.50	91.75 be	5.00	45.85 a	11.25 a	7.43 b
V_3 - Mirakel	11.75	89.25 bc	4.25	34.40 b	8.00 b	6.33 c
V_4 - Fambo	11.50	94.75 a	6.00	48.50 a	8.75 b	8.25 a
Vs -Arkula	11.25	90.00 b	5.00	40.90 ab	8.50 b	6.85 c

Table 2. Comparative studies of some exotic potato cultivars for their reproductive characteristics

Varieties	No. of tubers/plant	No. of tubers/plot	Weight of tubers/ plant (kg)	Weight of tubers/ ~ot (kg)	Single tuber weight (g)	Yield per hectare (tonnes)
VI - Gigant	7.98	295.50	264.00	7.44 c	35.52	12.03 c
V_2 - Wada	12.22	318.25	338.25	10.77 a	29.76	16.32 ab
V_3 - Mirakel	10.55	315.00	335.75	8.98 b	33.60	14.53 be
V~ - Fambo	14.22	409.00	368.75	11.22 a	26.94	18.15 a
V-, - Arkula	10.22	206.75	368.00	8.65 bc	35.82	14.21 be

With regard to number of leaves per branch, dif~erent varieties showed highly significant differences. Maximum number of leaves per branch were recorded in V_4. Next in order was V_2; both of them were significantly different. All other varieties i.e. VI, V_3 and Vs behaved almost alike.

2. Reproductive Characters:

It was found that various cultivars under study behaved in the same way in most of the cases. In case of number of tubers per plant, number of tubers per plot, weight of tubers per plant and single tuber weight, no marked difference could be observed among any of the cultivars Table 2). With regard to weight of tubers per plot and yield per hectare, all the varieties behaved differently. V_4 and V_2 produced maximum weight of tubers per plot and were at par statistically. Next in order was V_3 which was found statistically at par with Vs. Depending upon the variable weight of tubers per plot produced by different varieties of potato. weight of tubers per hectare also followed the same trend. V_4 was found at the top by producing the maximum weight of tubers per hectare followed by V_1. V_3 and Vs showed the same trend in this respect, while V I produced the least weight of tubers per hectare.

Conclusion: Different varieties behaved alike in respect of some characteristics, whereas the reverse was true for some other characteristics. From economic point of view, the variety Fambo was found superior than all other varieties. Although, other cultivars such as Wada, Mirakel and Arkula also showed better performance and thus can be recommended for cultivation.

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