Asian Journal of Plant Sciences

ISSN 1682-3974

science alert

ANSInet
an open access publisher
http://ansinet.com

Asian Journal of Plant Sciences
Volume 1 Number 5: 565-566, 2002

Evaluation of Exotic Cultivars of Dahlia (*Dahlia coccinea*) under Rawalakot Conditions

M. Jamil Ahmed and Shagufta Gul
Department of Horticulture, University College of Agriculture, Rawalakot, Azad Kashmir, Pakistan

Abstract: Five hybrid cultivars of Dhalia namely Siedler Stolz, Mystery day, Hajley Jane, Procyon and Vuurvogel were evaluated for their performance in terms of vegetative, floral and tuber production characteristics. Among these cultivars Sielder Stolz, Hajly Jane, Mystery day and Vuurvogel were superior for number of branches per plant, number of leaves, number of buds, number of flowers, flower life and weight of tuber per plant. Procyon showed non-significant differences with Hajley Jane for plant height, number of days to sprouting, number of plants per tuber and number of tubers per plant cultivar. Non significant results were obtained for number of tubers per plant for Vuurvogel, Hajley Jane and Procyon cultivars. The cultivars under study, i.e., Vuurvogel, Siedler Stolz, Mystery day, Hajley Jane and Procyon found successful and recommended for general cultivation.

Key words: Cultivars, *Dahlia coccinea*, evaluation, performance, tubers, variations

Introduction

Dahlia (*Dahlia coccinea)* belongs to the family compositeae. There are approximately fifty thousand varieties cultivated all over the world (Baura and Maharana, 1990). It is the largest garden flower and easy to grow. It is a crop originated from areas with minimal germination temperature of 50-60 °F (Hossain *et al.*, 1990). It has greater economic values for garden decoration. Its demand is increasing day by day due to its flower, forms, colour and natural ability to grow in the season (Mishra *et al.*, 1990). It is adaptable for wide range of climatic conditions. It prefers direct sunshine for good production. It requires light soil, containing organic residue, and humus with pH range from 6.5-8.0. Dahlias are mostly, propagated by means of tubers but can be grown by seeds for variable colours. It is grown in field and pots. Planting time is Mrach-April in hills and September-October in plains (Pudelska and Hatman, 1996). Dahlia is one of the most important cut flowers. It is used as garden flower. Giant and large flowers are used for exhibitions. It is used for making bouquets and wreaths. The long, clean and stiff stalks, are very suitable for both handling and decoration purpose (Mishra *et al.*, 1990).

Although a lot of work has been done on Dahlia in other parts of the world but little or no work has been done on this important floral plant in our country. Keeping in view the commercial and aesthetic importance of this flowering crop, different exotic cultivars were grown under Rawalakot conditions to study their performance.

Materials and Methods

These studies were carried out at University College of Agriculture, Rawalakot, Azad Kashmir, during 2000. Five exotic cultivars Vuurvogel, Hajley Jane, Siedler Stolz, Procyon and Mystery Day collected from Awan Nursery and Seed Store Rawalpindi were planted. The experiment was laid out according to randomized complete block design (RCBD). There were five treatments with three replications per treatment. There were 15 plots out of which three were randomly allocated to each cultivar.

Data were collected on number of days to sprouting, plants per tuber, number of branches per plant, leaves per plant, plant height (cm), days to flower bud emergence, flower per plant, diameter of flower (cm), flower life (days), number of tuber per plant, tuber weight (g) and diameter of tuber (cm). Data collected were statistically analyzed and results exhibiting significant differences were subjected to DMR test for comparison of their means (Steel and Torrie, 1981).

Results and Discussion

Vegetative characteristics: For days to sprouting Siedler Stolz, sprouted earlier and took 35.0 days. Mystery Day, sprouted within (35.5 days). Procyon took more days (38.0) for sprouting. Hajley Janeand Vuurvogel took 37.0 days and 36.35 days respectively for sprouting (Table 1).

Maximum plants (5.0) per tuber were recorded for Procyon and Hajley Jane. As far as number of leaves per plant is concerned, Vuurvogel produced more leaves, (196) per plant, followed by Sidler Stolz (191) and Mystery Day (189.66). Minimum leaves (170) per plant were produced by Procyon. For plant height superiority was shown by Mystery Day with plant height of 61.25cm. Procyon and Siedler Stolz produced plants of shorter length, i.e., 52.75 and 50.75, respectively. Siedler Stolz produced more branches per plant, i.e. 15.75. Vuurvogel and Mystery Day produced comparatively lesser branches, i.e., 12.75 and 11.75 respectively. Minimum branches (6.6) per plant were produced by Procyon.

One can observe variations among the vegetative characteristics of the Dahlia cultivars. These variations might be due to genetic composition, which interacts differently to the similar soil and climatic conditions. Moser and Hess (1968) also found variations in vegetative and reproductive characteristics of Dahlia cultivars. Gegory (1965) observed variations in morphological and physiological characteristics of Dahlia cultivars.

Floral characteristics: Number of days to flower bud formation showed that Mystery Day took minimum days (39.0) for floral bud formation, whereas Siedler Stolz took 44.25 days. Maximum days (72.0) were taken by Hajley Jane for sprouting (Table 2). Procyon and Vuurvogel took intermediate days, i.e., 53.25 and 55.66 respectively. Maximum number of buds (101.66) per plant were recorded for Vuurvogel whereas minimum (71.66) were recorded for Procyon and Siedler Stolz. Maximum number of flowers (95.0) per plant was recorded for Vuurvogel whereas minimum flower (55.0) were recorded for Procyon and Hajley Jane. Flower of maximum diameter (16.5cm) was recorded for Hajley Jane whereas minimum flower diameter (13.25cm) for Vuurvogel. Sieldler Stolz exhibited maximum flower life, i.e., 47.33 days. Shorter flower life (37.33 days) was exhibited by Mystery Day, Procyon presented minimum flower life, i.e., 31.66 days.

Tuber characteristics: Number of tuber per plant showed non-significant differences for Vuurvogel, Procyon and Hajly Jane. Siedler Stolz produced tuber of maximum diameter (6.17cm) whereas minimum tuber diameter (4.24cm) was recorded for Hajly Jane (Table 3). Results on weight of tuber showed superiority for Siedler Stolz (145.93g), Mystery Day (109.81g) and for Vuurvogel (64.84g). Procyon produced tubers of minimum weight (42.85g). Maximum number of tuber (12.33) per plant was recorded for Vurrvogel, whereas minimum (6.33) was recorded for Mystery Day. Siedler Stolz showed maximum weight per tuber (145.93g).

Table 1: Vegetative characteristics of Dahlia cultivars

Cultivars	Days to sprouting	No. of plants/ tuber	No. of leaves per plant	Plant height (cm)	No. of branches per plant
Siedler Stloz	3.5.0c	4.5b	191.0a	50.75d	15.75a
Vuurvogel	36.25a	3.8c	196.0a	57.5ab	12.75b
Mystery day	35.5b	4.0c	189.6ab	61.25a	11.75b
Hajley Jane	37.0a	5.0a	183.5c	53.5c	14.25a
Procyon	38.0a	5.0a	170.0d	52.75bc	06.6c

Means sharing same letter are not significant at P > 0.05

Table 2: Floral characteristics of Dahlia cultivars

Cultivars	Days to flower bud formation	No. of buds per plant	No. of flower per plant	Diameter of flower (cm)	Flower life (days)
Vuurvogel	55.66b	101.66a	95.0a	13.25c	44.0a
Mystery Day	39.00d	90.0b	75.0b	15.75ab	37.33b
Siedler Stolz	44.25b	71.66c	65.0c	16.0a	47.33c
Procyon	53.25b	71.66d	55.0d	14.75ab	31.66c
Hajly Jane	72.00a	80.0c	55.0d	16.5a	40.0b

Means sharing same letter are not significant at P > 0.05

Table 3: Tuber characteristics of Dahlia cultivars

Cultivars	No. of tubers per plant	Weight of tuber (g)	Diameter of tuber (cm)
Vuurvogel	12.33a	064.84c	4.72b
Mystery day	6.33c	109.81b	5.22a
Siedler Stolz	8.33b	145.93a	6.17a
Procyon	9.33a	042.85e	5.72a
Hajley Jane	9.0a	052.35d	4.24c

Means sharing same letter are not significant at P > 0.05

Minimum weight (42.24g) per tuber was recorded for Procyon. Variations in tuber characteristics for various cultivars were might be due to their genetic make up and interaction with soil and environmental conditions (prased *et al.*, 1998). Skelmersdale (1978) observed variations in size, weight and diameter of tubers of various Dahlia cultivars.

The cultivars under study Vuurvogel, for general cultivation keeping in view their performance for vegetative, floral and tuber characteristics.

References

Baura, S. and T. Maharana, 1990. Genetic variance in different Dahlia varieties. Orissa, 190 :169-172

Gegory, L.E., 1965. Physiology of tuberization in dahlia. In Encyclopedia of Pl. Physiol. Vol. 15. Berlin: Springer-Verlag, pp: 1328-1354.

Hossain, M.M., D. Mukherjee and B.K. Mohantyh, 1990. Effects of cycocel on growth and flowering of dahlia. Advan. Pl. Sci., 12: 355-259.

Mishra, H.P., K.P. Singh, G.M. Mishra and B. Prasad, 1990. Performance of some dahlia varieties under late planted condition in calcareous soil of plains. Haryana J. Hort. Sci.,19: 284-290.

Moser, B.C. and C.E. Hess, 1968. The physiology of tuberous root development in dahlia cultivars. Proc. Am. Soc. Hort. Sci., 93: 595-603.

Prasad, A., R. Kumar, D. Singh and S. Agya, 1998. Studies on genetic diversity in dahlia Recent, Horticulture, 4: 77-81.

Pudelska, K. and J. Hatman, 1996. Influence of growing conditions: the growth and flowering of dahlia. Folia. Univ. Agric., 70 : 105-115.

Skelmersdale, L., 1978. Propagation of bulbous and tuberous plants. Proc. Inter. Pl. Prop. Soc., 28: 209-215.

Steel, R.G.D. and J.H. Torrie, 1981. Principles and procedures of statistics; a biometrical approach. McGraw Hill, Tokyo.