Original Research Article

Performance of different Common Hyacinth (*Hyacinthus orientalis)* to qualitative and quantitative traits of growth and propagation

ABSTRACT

Evaluation of Hyacinth cultivars includingJan Bose, Annabella ,Aqua, Blue jacket ,Purple sensation, Purple star, Yellow stone, Gipsy queen, Aladdin, Pink pearl genotypes was carried out during year 2018 at Division Of Floriculture and Landscape Architecture SKUAST- K Shalimar with an objective to assess the performance of vegetative traits and propagation ratio. Data depicts cultivar yellow stone with maximum plant height at maturity (17.97cm), Leaf length (12.98cm), Leaf width (3.64cm), Number of leaves per plant 24.58(SE) and minimum values for Plant height at maturity (15.02cm), Leaf length (11.06cm), Leaf width (1.93cm), Number of leaves per plant 17.58 resulted with cultivar Pink pearl. Minimum to maximum values for bulb weight (28.87 to 34.53g) , bulb Size(8.18 to 10.03cm), number of offsets per bulb(2.00 to 3.58) and weight of offsets(11.09 to 16.94g) were observed with cultivar pink pearl and yellow stone respectively.Most of the variation for growth and propagation were significant among the cultivars.

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Keywords: Hyacinth cultivars, Evaluation, Vegetative traits, Propagation

1. Introduction

India imports around 20 crores bulbs of Lilium , Tulip, Hyacinth etc annually from Holland which costs huge foreign exchange. Area under bulbous crops globally is 50000 ha and India has only 3500 ha under this sector that too propagating Gladiolus in 1200 ha followed by tuberose 800 ha. Ornamental temperate bulbous crops have an important place in floriculture trade. Among these bulbous crops *Hyacinthus orientalis* is one of the important bulbous crop which has been commercially used as it is having landscape use under temperate and subtropical climatic conditions. Hyacinth belongs to family Asparagaceae. These are commonly called as “Hyacinth”. Hyacinthus is native to Eastern Mediterranean region including Turkey, Iraq, Turkmenistan, Iran, Lebanon, Syria and the Palestine region. Mostly in European parts including Netherlands, France, Italy, Croatia, Serbia, Albania it is grown under naturalized conditions.Mass multiplication of bulbous plants is one of the important factors for economic feasibility of commercial floriculture. To increase a particular variety of bulb rapidly the primary concern is to see feasibility of cultivars for propagation purposes. Most of the cultivated cultivars in India are imported ones and differ in performance as far as agro climatic conditions are concerned. It has been observed a cultivars can perform good from flowering point of view and after the season is over the propagation ratio is almost failure. This invites a thrust for regular import. To come over this issue screening and evaluation of cultivars is an important consideration and this can help in taking up few

cultivars which can be propagated for commercialization purposes. Keeping in view the huge cost of hyacinth bulb ranging from Rs 40 to Rs 80 in Indian market, this work has a significance for economic upliftment and minimizing the import.

2.MATERIAL AND METHODS

2.1 Geographical features

Srinagar, the summer capital of Jammu and Kashmir, India is situated between 34º05′ to 34º07′ north latitude and 74º08′ to 74º09′ east longitude at an altitude of about 1587 m above mean sea level. It is flanked on the southeast and northeast by the lofty Himalayan ranges.

2.2 Morphological parameters

Studied parameters include plant height at maturity, leaf length, leaf width , number of leaves per plant , bulb weight , bulb size, number of offsets per bulb, weight of offsets for Jan Bose, Annabella ,Aqua, Blue jacket ,Purple sensation, Purple star, Yellow stone, Gipsy queen, Aladdin, Pink pearl genotypes.

2.3 Statistical analysis

Statistical analysis of the data collected for different parameters during the present investigation was subjected to analysis of variance for complete randomized block design with three replications (Gomez and Gomez, 1983).

3.Results and Discussion

Performance of Hyacinth genotypes (Table 1) showed significant variation for all the vegetative parameters. Maximum plant height at maturity (17.97cm), leaf length (12.98cm), leaf width (3.64cm), number of leaves per plant 24.58 resulted with cultivar Yellow stone where as minimum values for plant height at maturity (15.02cm), leaf length (11.06cm), leaf width (1.93cm), number of leaves per plant 17.58 resulted with cultivar Pink pearl. Minimum to maximum values for bulb weight (28.87 to 34.53g) , bulb Size(8.18 to 10.03cm), number of offsets per bulb(2.00 to 3.58) and weight of offsets(11.09 to 16.94g) were observed with cultivar pink pearl and yellow stone respectively(Table 2). Most of the variation for growth and propagation traits were significant among the cultivars. Cultivar response to a specific agro climatic conditions is due to the suitability in a particular agro climatic condition. Vegetative growth depends upon the optimum and target climatic conditions received by particular specie. Using metabolites is very important and varietal response for the same differs which ultimatelygives out put for propagation ratio. Photoperiodic induction involves the production of a flowering stimulus in the leaves and its translocation to the stem apex under certain day length.Endogenous circadian changes in activity, regulated by a physiological clock is responsible for rhythmic quantitative and qualitative changes in the plants. This internal clock allows the plants to measure time independent of the environmental periodicity and these factors contribute to its response for

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Comment [5]: three replicates seems very little if you do not give an idea of the sample size

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vegetative growth and propagule formation. performance of a cultivar differs in terms of its environmental suitability and genetic potential. Masoodi *et al* (2022) reported co related findings while working on altitude influence on different tulip cultivars. Phenotypic variation depends upon genetic makeup of Lilium cultivars and the estimates of phenotypic and genotypic co-efficients of variance showed a low disparity for plant height and number of leaves indicating effect of environment on different traits and phenotypic variability could be a reliable measure of genotypic variability (Grassotti *et al.* (1990) , Balode (2010) and Masoodi *et al* 2018). Singh and Sen (2000) suggested that if the phenotypic coefficient of variation is greater than the genotypic co-efficient of variation, the apparent variation is not only due to genotypes, but also due to influence of environment.Bhatia *et al.* (2013) reported variability in different cultivars of tulips for vegetative and flowering phases. Co related findings were reported by Singh and Kumar (2008) in marigold for plant height, Dhiman *et al.* (2015) in Asiatic hybrid lily, Masoodi *et. al.* (2018)in Asiatic, Oriental and La hybrids. Genotypic and phenotypic co-efficient of variation for number of flowers per stem were reported in China Aster (Ravikumar and Patil 2003), Misra and Saini (1990) in gladiolus and in French marigold and number of florets per spike in gladiolus. Singh and Sen (2000) suggested that if the phenotypic coefficient of variation is greater than the genotypic co-efficient of variation, the apparent variation is not only due to genotypes, but also due to influence of environment.The estimates of phenotypic and genotypic co-efficients of variance showed a low disparity for plant height, number of leaves per plant and inflorescence diameter indicating the least effect of environment on different traits and phenotypic variability could be a reliable measure of genotypic variability.. Bhatia *et al.* (2013),Panse and Sukhatme, (1985) reported low genotypic co-efficient of variation helps in the measurement of genetic diversity in the qualitative and quantitative characters.The estimation of heritability has a greater role to play in determining the effectiveness of selection provided it is considered in conjunction with the predicated genetic advance.

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Table : 1: **Performance of Hyacinth cultivars to growth traits**

Treatment Symbol	Plant height at maturity (cm)	Leaf length (cm)	Leaf width (cm)	Number of leaves per plant
Jan Bose	17.56	11.81	2.74	22.33
Annabella	17.05	11.10	2.03	21.58
Aqua	17.29	11.48	2.77	22.26
Blue jacket	16.73	11.18	2.31	19.33
Purple sensation	16.05	11.43	2.41	19.58
Purple star	17.29	11.86	2.51	20.16
Yellow stone	**17.97**	12.98	3.64	24.58
Gipsy queen	15.93	11.42	2.74	18.83
Aladdin	16.04	11.46	2.57	18.33
Pink pearl	15.02	11.06	1.93	17.58
C.D($p \leq 0.05$)	0.07	0.07	0.20	0.19

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Table-2: Response of Hyacinth cultivars to propagation ratio

reatment Symbol	Bulb weight (g)	Bulb Size(cm)	Number of offsets per bulb	Weight of offsets(g)
Jan Bose	30.25	9.59	3.22	16.79
Annabella	29.77	9.12	3.00	16.15
Aqua	29.40	9.34	3.16	16.39
Blue jacket	30.85	8.90	3.11	13.10
Purple sensation	31.44	9.30	3.11	14.49
Purple star	31.86	9.13	3.10	14.56
Yellow stone	34.53	10.03	3.58	16.94
Gipsy queen	29.61	8.30	2.66	11.17
Aladdin	30.63	9.63	2.91	11.05
Pink pearl	28.87	8.18	2.00	11.09
C.D($p \leq 0.05$)	0.76	0.05	0.18	0.49

Fig 1: Performance of Hyacinth cultivars to growth traits

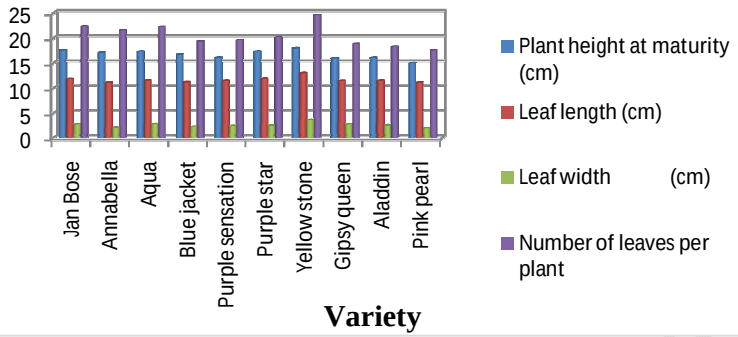
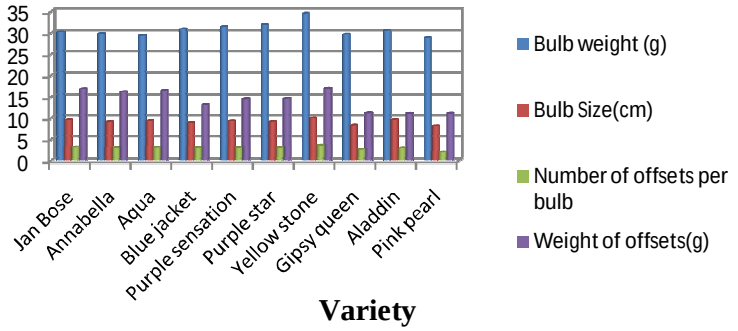


Fig 2: Response of Hyacinth cultivars to propagation ratioTitle



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References:

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