

Studies on response of Common Hyacinth (*Hyacinthus orientalis* L.) to scooping technique of propagation on propagule formation.

Abstract

An investigation on propagation through scooping in different cultivars of Hyacinth viz. Purple Sensation, Yellow Stone, Purple Star, Fondant, Gipsy Queen and Aladdin was carried out in the Division of Floriculture and Landscape Architecture SKUAST K, Shalimar Srinagar during 2019-20 with an objective to study response to scooping technique and propagule ratio. Results depicts minimum days for sectioning after incubation (36.00 days), visible bud formation days (46.50), days to bud development (84.50) resulted with cultivar Yellow stone. Further maximum no of bulbils per bulb(18.90), bulbil diameter(9.95mm), bud length(2.93 cm) and bud weight(0.38g) after incubation resulted in cultivar yellow stone where as maximum days for sectioning after incubation (47.50 days), visible bud formation days (68.00 days), days to bud development (100.50days) and minimum values for no of bulbils per bulb(13.20), bulbil diameter(8.25mm), bud length(2.33 cm) and bud weight(0.21 g) after incubation resulted in cultivar Gipsy queen. Response of different cultivars to scooping for propagule ratio showed significant variation.

Key Words: Hyacinth, Cultivars, Propagation, Scooping

Introduction:

Commercial floriculture is growing at a fast rate with around 10% annual growth rate. Demand of flowers is growing throughout the world which reflects scope for propagation. Temperate bulbous crops are in huge demand not only in temperate zones but also in plains due to breezing flowering beauty. The efforts of bulb production are confined to the people with home lawns or to a few commercial growers who produce these on little larger scales, but the production level is still meager. Hyacinth is an important temperate ornamental bulbous crop is known for its beauty and fragrance. Hyacinth is a common name of around 30 perennial flowering plants and belongs to family Liliaceae. Common Hyacinth (*Hyacinthus orientalis* L.) is the most important from commercial point of view and is originated in Anatolia and was brought to Europe and other continents in the 16th century. The Hyacinth bulb produces a dense, compact spike of flowers, 6-12 inches (15-30 cm) tall.

Hyacinths are highly fragrant, bell-shaped flowers with reflexed petals. Term 'bulb' is commonly used to designate, a range of clearly diverse group of storage organs which include true, bulbs, corms, tubers, tuberous roots and stems, rhizomes and pseudo bulbs. The life span of Hyacinth bulbs is 3 to 4 years so it is important to maintain offset production. Propagation ratio of hyacinth is 1:2 on annual basis as far as offsets arising from base edges of bulb are concerned. Every year there is import of bulbs including Hyacinth worth crores from Europe and each bulb of Hyacinth costs Rs 30 to 50 in Indian market. This draws an attention or specialized means of propagation like Scoring and scooping techniques so as to ensure maximum propagules which can help in minimizing the import. But importance of scale position and growth regulators in success of propagation rate is always questionable. Thus the present investigation was carried out to work out the response of different hyacinth cultivars to scooping and success of propagule formation.

Material and method:-

“Studies on response of Common Hyacinth (*Hyacinthus orientalis* L.) to scooping technique of propagation on propagule formation” was carried out in the laboratory of Division of Floriculture and Landscape Architecture SKUAST-K Shalimar during year 2019-21.

Lifting of bulbs and scooping

The bulbs of 12-14 size were uplifted from the field in the month of July. Scooping operation was carried out by wounding the base of bulb in such a way to ensure complete removal of basal plate which was followed by treating bulbs with contact fungicides. If the scooped bulbs are not treated with fungicides then it may lead to 75-90% loss as far as propagule formation is concerned. This procedure aimed to entail the complete removal of the basal plate using a spoon shaped or curved bladed knife.

Incubation and observations recorded

Coca peat was used as source of media and bulbs after scooping were placed on this media with scooped portion facing upwards. Moisture of the media was ensured to keep bulbs viable and were kept at 20-25°C temperature under dark conditions for 3 months. 3 months duration leads to the development of sectioning and propagule formation.



Scoring

Scooping

Design and Observations recorded

Experimental data was analyzed statistically adopting the technique of analysis of variance ANOVA for CRD. Observations were recorded after incubation on days for sectioning, visible bud formation days, days to bud development, no of bulbils per bulb, bulbil diameter, bud length and bud weight after incubation. The level of significance of treatment mean square at 5% probability was tested against F calculated value.

Results and discussion.

As evident from the results of the investigation minimum days for sectioning after incubation (36.00 days), visible bud formation days (46.50), days to bud development (84.50) resulted with cultivar Yellow stone. Further maximum no of bulbils per bulb(18.90), bulbil diameter(9.95mm), bud length(2.93 cm) and bud weight(0.38g) after incubation resulted in cultivar yellow stone where as maximum days for sectioning after incubation (47.50 days), visible bud formation days (68.00 days), days to bud development (100.50days) and minimum values for no of bulbils per bulb(13.20), bulbil diameter(8.25mm), bud length(2.33 cm) and bud weight(0.21 g) after incubation resulted in cultivar Gipsy queen. Most of the differences among the treatments for almost all recorded parameters were statistically significant(Table 1). Suh, Jeuno Keun and Lee Jong Suk (1996) while working on propagation of Lilium reported that genetic response in changes of hormones are closely related to the degree of dormant bulblet formation. Park, Nou Bog (1996) reported different response of bulblet formation after incubation by 'Stargazer', *L. longiflorum*, 'Gelria' and *L. lancifolium species in scales* experimentation. Masoodi *et. al* 2018 while working on Lilium found rapid multiplication rate

of *Lilium* through scaling and use of media in combination with scales treated with plant growth regulators. Masoodi *et. al*(2019) while working on chipping of daffodils reported even and individual chips of same specie respond different to growth regulators. The above findings are in close association with the current study.

Table 1: Response of Common Hyacinth (*Hyacinthus orientalis* L.) to scooping technique of propagation

Cultivars	Sectioning (Days after incubation)	Visible bud formation (Days after incubation	Days to Bud development after incubation	No. of bulbils Per bulb	Bulbil diameter (mm) at maturity	Bud length(cm)	Bud wt. (g)
V ₁ (Purple Sensation)	37.50	48.50	87.50	18.05	9.85	2.18	0.31
V ₂ (Yellow Stone)	36.00	46.50	84.50	18.90	9.95	2.93	0.38
V ₃ (Purple Star)	42.50	52.50	92.50	15.15	8.55	2.73	0.28
V ₄ (Fondant)	40.50	50.50	90.00	16.62	8.65	2.76	0.26
V ₅ (Gipsy Queen)	47.50	68.00	100.50	13.20	8.25	2.33	0.21
V ₆ (Aladdin)	46.50	56.00	92.00	15.04	8.45	2.42	0.26
CD p≤0.05	1.44	1.98	2.93	0.62	0.15	0.25	0.02

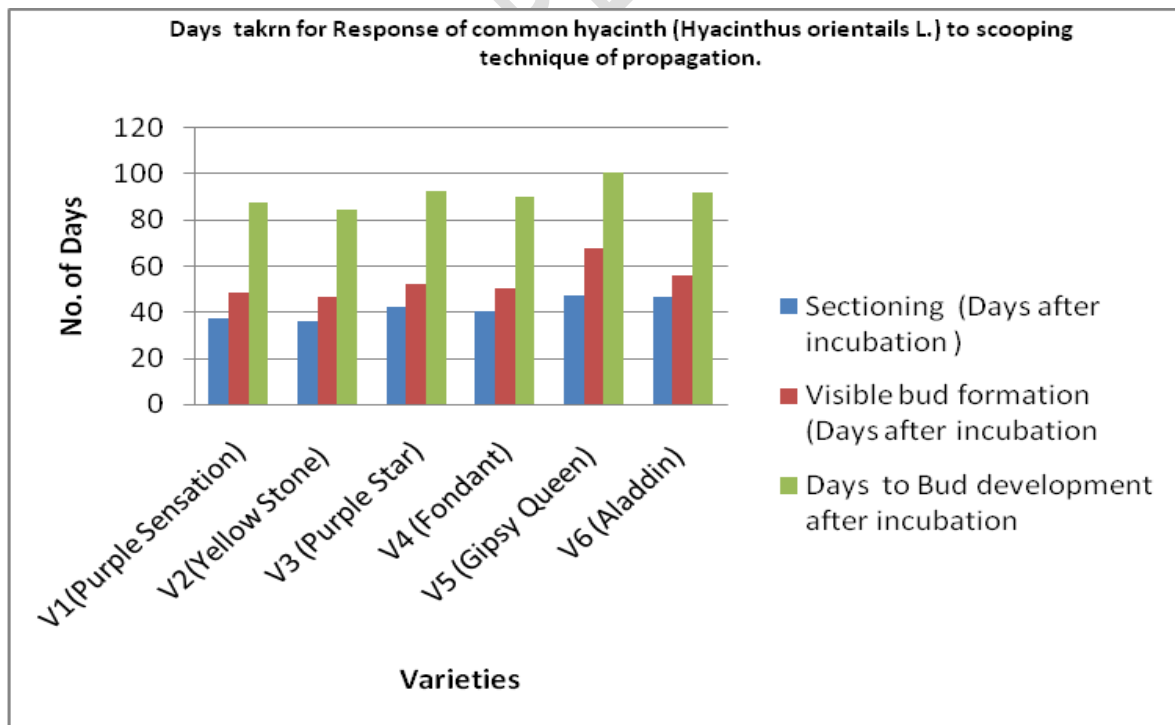


Figure 1 : Days Taken for Response of common hyacinth (*Hyacinthus orientalis* L.) to scooping technique of propagation.

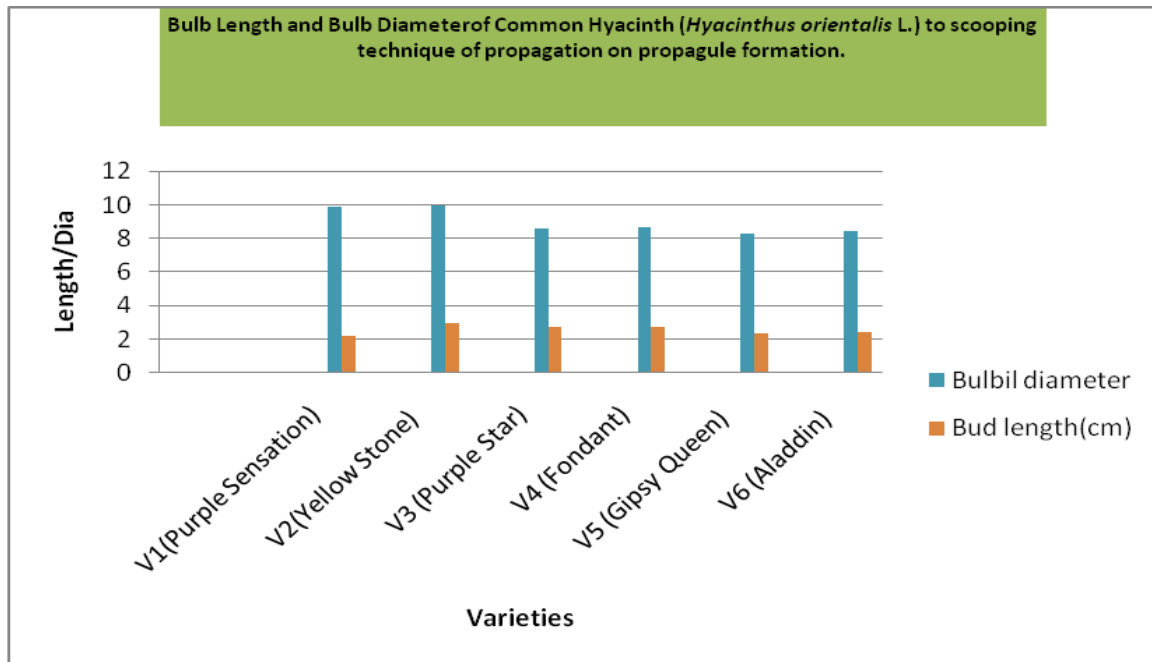


Figure 2 : Bulb Length and Diameter of common hyacinth (*Hyacinthus orientalis* L.) in response to scooping technique of propagation.

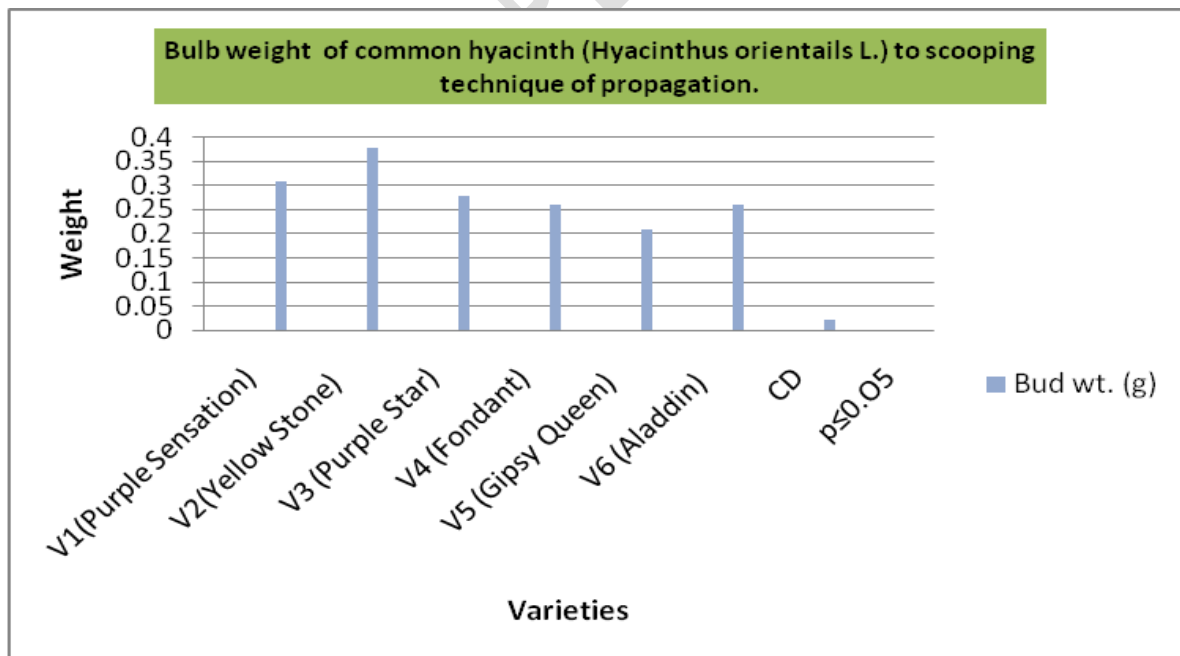


Figure 3 : Bulb weight of common hyacinth (*Hyacinthus orientalis* L.) in response to scooping technique of propagation.



Figure 4 : Experimental view

Conclusion:

Coca peat was used as source of media and bulbs after scooping were placed on this media with scooped portion facing upwards. Moisture of the media was ensured to keep bulbs viable and were kept at 20-25°C temperature under dark conditions for 3 months. 3 months duration leads to the development of sectioning and propagule formation. and other Observations were recorded after incubation on days for sectioning, visible bud formation days, days to bud development, no of bulbils per bulb, bulbil diameter, bud length and bud weight after incubation. The level of significance of treatment mean square at 5% probability was tested against F calculated value. Study conducted on the response of Hyacinth cultivars to scooping concluded that yellow stone resulted with maximum success ratio among Hyacinth cultivars. Scooping method proved efficient in propagation of hyacinth which can help in better returns.

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