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EVALUATION OF CHRYSANTHEMUM VARIETIES SUITABLE FOR PROPAGATION THROUGH FLORAL BUD CUTTINGS

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ABSTRACT:

Chrysanthemums, which are widely cultivated for loose flowers, cut flowers and potted plants all over the world, are commercially propagated by rooting of cuttings. In this study, cuttings with single floral bud from 12 different varieties *viz*., Pusa Anmol, Yellow star, Salora, Selection 5, Chandrika, Plant and seed choice, Pink, Suganda yellow, Paper yellow, HYDC 11, Neelima & Mother Theresa were taken and evaluated for rooting percentage, number of days for rooting, plant height, number of leaves, number of days for flower bud opening and flower diameter. Among various varieties evaluated, Pusa Anmol was found best suitable for rooting of floral bud cuttings. While, Paper yellow and Mother Theresa had not recorded any rooting.

KEY WORD: *Chrysanthemum varieties, Floral bud cuttings, Rooting percentage.*

INTRODUCTION:

Chrysanthemum (*Dendranthema grandiflora*) known as the Queen of the East, Autumn queen or Guldaudi; belongs to family Asteraceace, occupy an important position in the world and ranks second among all flowers (Ganesh *et al*., 2014). In India, it occupies place after Jasmine and Rose with an area of 11.05 thousand hectares and production of 106.76 thousand MT of loose flowers and 6.03 Lakh numbers of cut flowers, respectively (Anon., 2014). In south India, chrysanthemums with different colours ranging from are

grown as loose flowers for garland, hair decoration and offering to god. In north India, chrysanthemums with different colours ranging from hues of red, purple, yellow and white are grown for landscape gardening either in pots or ground. Karnataka occupies top most position in area (5.1 thousand hectares) and production of loose flowers (61.2 thousand MT); Himachal Pradesh occupies first in production of cut flowers (4.65 lakhs) (Anon., 2014).

Vegetative propagation is commonly used to multiply elite individual in many horticultural crops (Liao *et al.*, 2010). Commercially chrysanthemums are propagated by terminal cuttings 5-7 cm length, taken from healthy stock plants and are induced to rooting by treating with IBA (1000 ppm). Generally farmers take cuttings without flower bud for propagation; as it hinders the growth of cuttings by utilizing available carbohydrates for its growth and development. However, nursery men instead of normal vegetative cutting if they grow cuttings having flower bud improves the market value of chrysanthemums as the presence of flower bud in opened condition adds more beauty, thereby improves the marketing value of pot chrysanthemums and add benefit to commercial growers. Information on propagation of chrysanthemum through floral bud cuttings is meagre. Hence this experiment is aimed to evaluate chrysanthemum varieties with a view to identify the suitable varieties that could be successfully propagated through floral bud cuttings.

MATERIALS AND METHODS:

An experiment was conducted in Horticultural Research Station, Anantharajupeta of Andhra Pradesh state during 2017 using floral bud cuttings of 12 treatments (chrysanthemum varieties viz., Pusa Anmol, Yellow star, Salora, Selection 5, Chandrika, Plant and seed choice, Pink, Suganda yellow, Paper yellow, HYDC 11, Neelima & Mother theresa) of 6 cm length with single floral bud. Floral bud cuttings were treated with IBA solution of 1000 ppm and planted in portrays filled with media containing coco peat and vermicompost at a ratio of 1:1, placed in polytunnels (Plate 1). After root development, they were transferred to polyhouse. Rooted floral bud cuttings from the portrays were transferred to polybag containing soil (Plate 2) and vermicompost at the ratio of 1:1 after establishment. The varieties were arranged in a completely randomized design with 12 cuttings each variety (Plate 3). Observations regarding rooting percentage, number of days for rooting, plant height (cm), number of leaves, number of days for flower bud opening and flower diameter were recorded at 60 days after planting. The data was analyzed by using software OPSTAT in CRD (Panse and Sukhatme, 1985).

RESULTS AND DISCUSSION:

Among various treatments, Pusa Anmol had recorded maximum rooting percentage of 91.2 per cent (Table 1) since, IBA could partially overcome the negative effect of flowering on root formation, but if cuttings taken after the flower buds had fully opened, it failed to root even after auxin treatment.

Rooting percentage was found nil in Paper yellow and Mother Theresa varieties which may be due to the negative influence of flowering on root formation. Viver (1997) also reported that the flowering stimulus is a result of photoperiodic induction rather than a direct competition for resources between flowers and developing roots. Minimum number of days for rooting was recorded for Pusa Anmol *i.e.*, 9.6 days (Table 1) followed by Yellow star, Salora, Plant and seed choice, Selection 5 Suganda yellow, Pink, Chandrika, HYDC 11 and Neelima. There was no significant difference observed between Salora & Plant and seed choice, Selection 5 and Sugandha yellow, Pink and Chandrika regarding no. of days for rooting. Since the source and growth of roots in chrysanthemum was found to be endogenous (Almeida and Pivette, 2003). Maximum plant height was recorded for Pusa Anmol (14 cm) which might be due to presence of high nitrogen content in plant tissues which had resulted in increased plant height as reported by Grewal and Tanya, 2016. Minimum plant height was recorded by selection 5 (10.8 cm) (Table 1). HYDC 11 had recorded maximum number of leaves (12) followed by Pusa Anmol and Suganda yellow and minimum number of leaves (5) were recorded for selection 5 (Table 1). Maximum number of days for flower bud opening was recorded for HYDC 11 followed by Neelima, Chandrika and pink whereas; minimum number of days for flower bud opening was recorded for Pusa Anmol (10 days). Flower diameter was recorded highest for HYDC 11 (4 cm) followed by Neelima and Salora whereas; minimum flower diameter was recorded for Selection 5 (2.2cm) (Table 1) since flower diameter mainly depends on varietal character and floral bud size.

CONCLUSION:

Among the various varieties evaluated Pusa Anmol had shown highest rooting percentage and best suitable for floral bud cuttings, whereas, varieties Paper yellow and Mother Theresa did not show any root initiation hence they are not suitable for floral bud cuttings.

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Table1. Performance of different Chrysanthemum varieties propagated by single floral bud cuttings

Treatments	Rooting percentage (%)	No .of days for rooting	Plant height (cm)	No of leaves	No of days for flower bud opening	Flower diameter (cm)
Pusa Anmol	91.2	9.6	14.0	10.6	10.0	2.70
Yellow Star	84.0	10.3	12.6	6.0	11.5	2.03
Salora	75.0	11.0	12.0	6.3	12	3.03
Selection 5	82.0	12.0	10.8	5.0	11.0	2.20
Chandrika	82.6	12.6	11.6	7.0	12.6	2.96
Plant and seed Choice	81.6	11.0	12.2	6.6	10.6	2.36
Pink	64.3	12.6	11.5	7.6	12.5	3.13
Suganda Yellow	41.3	12.0	12.3	9.0	12.0	2.60
Paper Yellow	0	0	0	0	0	0
HYDC 11	83	13.6	14.0	12.0	13.6	4.0
Neelima	41	14.6	12.6	7.3	13.0	3.21
Mother Theresa	0	0	0	0	0	0
S Em ±	0.564	0.289	0.481	0.272	0.3	0.083
C D (P=0.05)	1.656	0.848	1.413	0.799	0.9	0.243

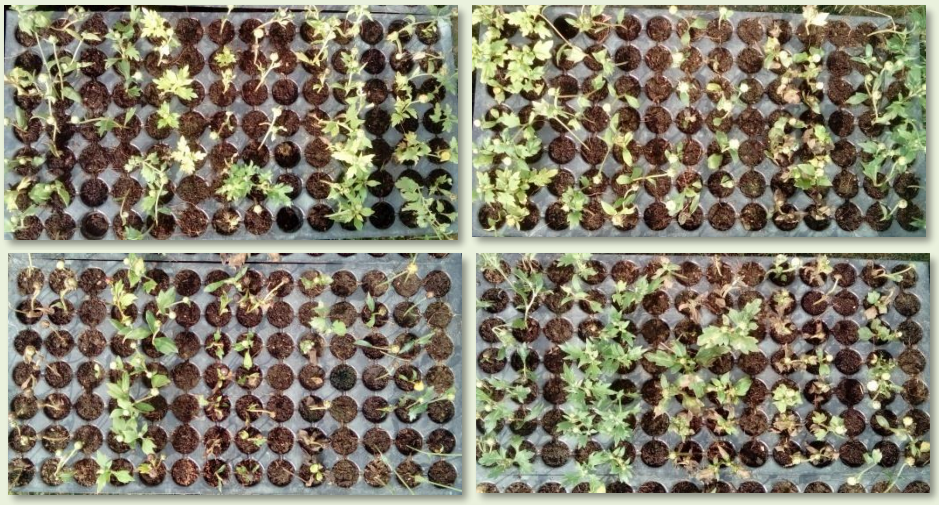

Plate 1. Floral bud cuttings placed in portrays after IBA treatment

Plate 2. Transplanting of established rooted floral bud cuttings to polybags

Plate 3. Transplanted rooted floral bud cuttings under polyhouse