

Chrysanthemum cultivars



Him Aditya
Him Pushkar
Him Shikhar
Him Ujjwala
Him Shringar



सीएसआईआर-हिमालय जैवसंपदा प्रौद्योगिकी संस्थान
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Palampur Himachal Pradesh - 176 061 INDIA



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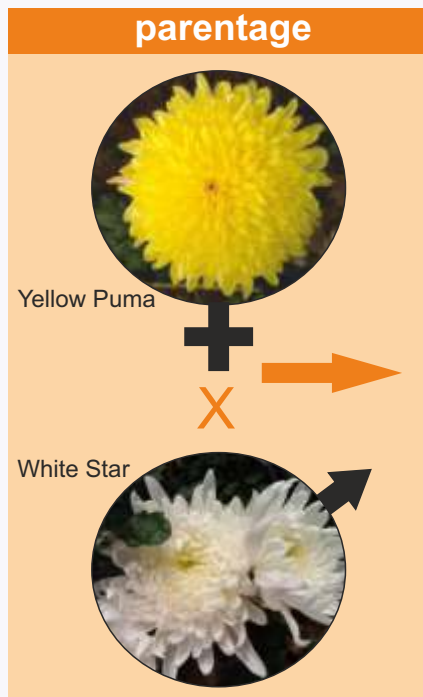
Introduction

Chrysanthemum is one of the important ornamental cut flower plants in the world and is ranked second among top ten cut flowers sold in the global market. It is commercially grown for cut flowers, garden display and pot culture. It belongs to the family Asteraceae and is well adapted to different agro-climatic conditions. With an objective to develop unique flower types in chrysanthemum 857 F₁ hybrids were developed through different cross combinations in controlled crossing program. The hybrid F₁ genotypes were morphologically characterized under field conditions with respect to floral traits and evaluated for agronomic performance. The selected nineteen F₁ hybrids of chrysanthemum were evaluated for morphological and floral traits under protected cultivation over a period of four years from 2015 to 2018.

Cultivars of chrysanthemum 'Him Aditya (CSIR-IHBT-CH-14-1), Him Ujjwala (CSIR-IHBT-CH-14-2), Him Shringar (CSIR-IHBT-CH-14-4), Him Pushkar (CSIR-IHBT-CH-14-8) and Him Shikhar (CSIR-IHBT-CH-14-18)' were developed by CSIR-Institute of Himalayan Bioresource Technology, Palampur, Himachal Pradesh (Latitude: 32.0934° N, Longitude: 76.5439° E and at an altitude of 1300m amsl) through hybridization and selection programme.

Him Aditya (CSIR-IHBT-CH-14-1)

The parentage of Him Aditya (CSIR-IHBT-CH-14-1) is Yellow Puma x White Star. Based on mean performance of F₁ hybrid selections, Him Aditya (CSIR-IHBT-CH-14-1) was found promising having yellow coloured, double flower shape, average flower head diameter of 8.36 cm and spray type.



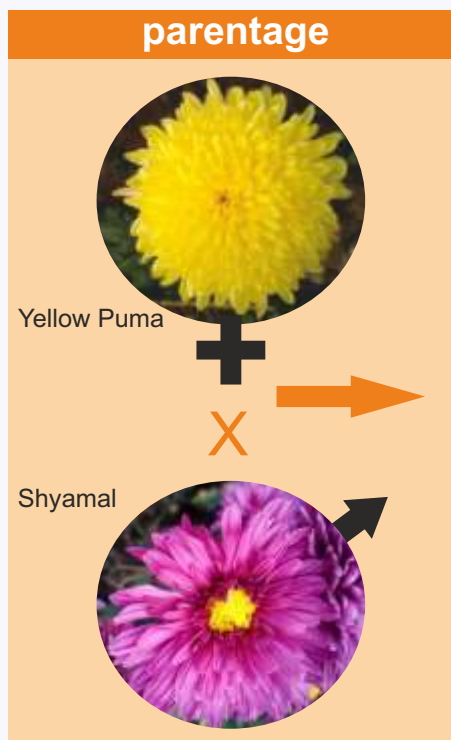
Salient features of cultivar Him Aditya (CSIR-IHBT-CH-14-1)



Traits	CSIR-IHBT-CH-14-1
Colour	Yellow
Parentage	Yellow Puma x White Star
Average plant Height	72.28 cm
Average flower diameter	8.36 cm
Average flower number/plant	54.76

Him Ujjwala (CSIR-IHBT-CH-14-2)

The parentage of Him Ujjwala (CSIR-IHBT-CH-14-2) is Yellow Puma x Shyamal. Based on mean performance of F₁ hybrid selections, Him Ujjwala (CSIR-IHBT-CH-14-2) was found promising having brick red flowers with yellow tip of florets, double flower shape, average flower head diameter of 6.19 cm and spray type.



Salient features of cultivar Him Ujjwala (CSIR-IHBT-CH-14-2)



Traits	CSIR-IHBT-CH-14-2
Colour	Brick red with yellow tip of petals
Parentage	Yellow Puma x Shyamal
Average plant Height	63.46 cm
Average flower diameter	6.19 cm
Average flower number/plant	48.56

Propagation

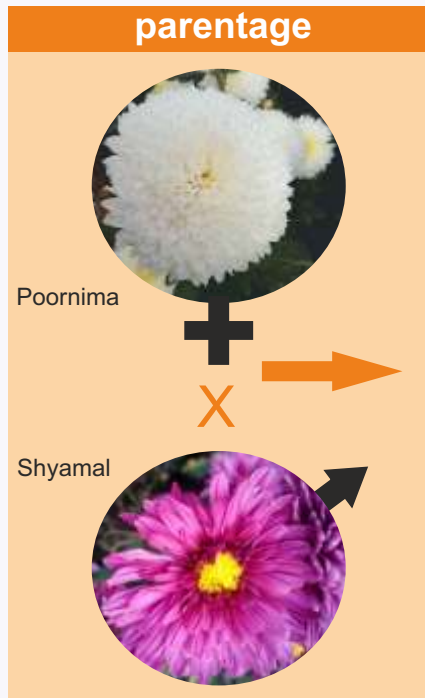
The conventional method of propagation in chrysanthemum is through cuttings. About 4 to 6 inch length of stem is cut from the top of a healthy, mature chrysanthemum plant. Leaves are removed from the lower half of the cuttings and a sharp cut is made at the base of node. Insert the cuttings into the moist soil beds or in pots/trays. It is ensured that only the bare stem is planted and one or two nodes are below the soil. Frequent watering is required to keep the soil slightly moist all times. Check the cuttings for roots in three to four weeks. The cuttings are ready to transplant when the roots are 1 inch long.



Propagation of chrysanthemum through cuttings in nursery

Him Pushkar (CSIR- IHBT-CH-14-8)

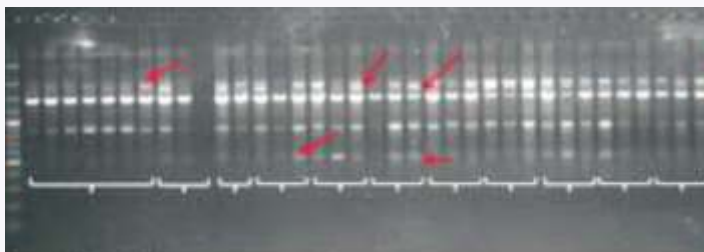
The parentage of Him Pushkar (CSIR- IHBT-CH-14-8) is Poornima x Shyamal. Based on mean performance of F₁ hybrid selections, Him Pushkar (CSIR- IHBT-CH-14-8) was found promising having dark pink spoon shaped ray florets, double flower shape, average flower head diameter of 7.99 cm and spray type.



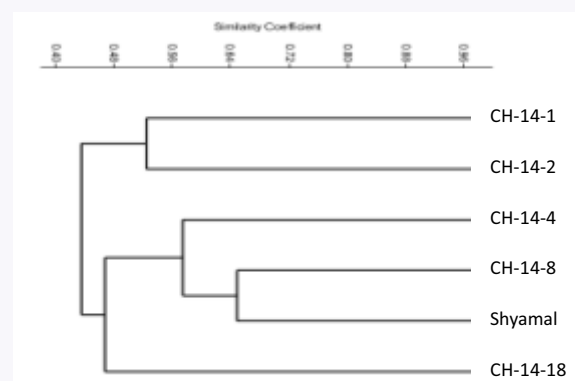
Salient features of cultivar Him Pushkar (CSIR- IHBT-CH-14-8)



Traits	CSIR-IHBT-CH-14-8
Colour	Dark Pink spoon shaped ray florets
Parentage	Poornima x Shyamal
Average plant Height	75.20 cm
Average flower diameter	7.99 cm
Average flower number/plant	32.98



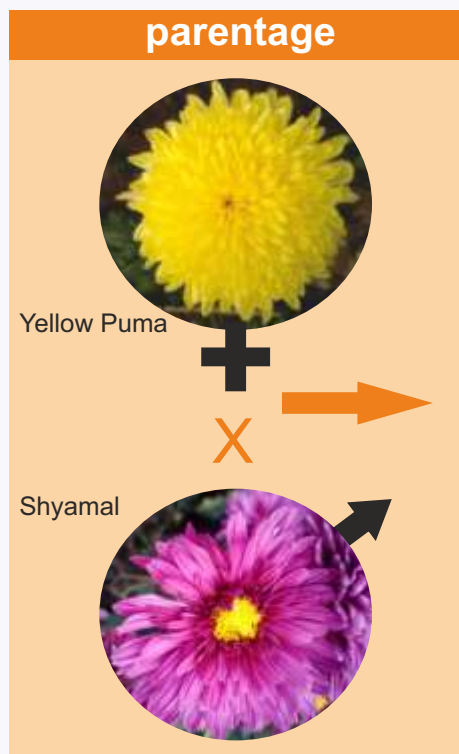
Representative RAPD profile of chrysanthemum selections and parents using RAPD primers



Dendrogram of chrysanthemum selections representing genetic diversity (scale indicates Jaccard's similarity coefficient)

Him Shringar (CSIR-IHBT-CH-14-4)

The parentage of Him Shringar (CSIR-IHBT-CH-14-4) is Yellow Puma x Shyamal. Based on mean performance of F₁ hybrid selections, Him Shringar (CSIR-IHBT-CH-14-4) was found promising having pink flowers, double flower shape, average flower head diameter of 9.94 cm and spray type.



Salient features of cultivar Him Shringar (CSIR-IHBT-CH-14-4)



Traits	CSIR-IHBT-CH-14-4
Colour	Pink
Parentage	Yellow Puma x Shyamal
Average plant Height	100.97 cm
Average flower diameter	9.94 cm
Average flower number/plant	46.12

DNA Fingerprinting of chrysanthemum cultivars using RAPD markers

The genetic distinction of chrysanthemum cultivars 'Him Aditya (CSIR-IHBT-CH-14-1), Him Ujjwala (CSIR-IHBT-CH-14-2), Him Shringar (CSIR-IHBT-CH-14-4), Him Pushkar (CSIR-IHBT-CH-14-8) and Him Shikhar (CSIR-IHBT-CH-14-18)' were established using 73 RAPD markers. The cultivars along with the parental lines were used for comparison purpose. In total, 53 alleles were detected with an average of 3.53 alleles per RAPD locus. Twenty RAPD markers evincing reproducible polymorphic loci among the improved selection 'Him Aditya (CSIR-IHBT-CH-14-1), Him Ujjwala (CSIR-IHBT-CH-14-2), Him Shringar (CSIR-IHBT-CH-14-4), Him Pushkar (CSIR-IHBT-CH-14-8), Him Shikhar (CSIR-IHBT-CH-14-18)' and parental lines were used for development of fingerprints. Based on the RAPD data, consolidated DNA fingerprints were developed with unique marker loci. The genetic diversity ranged from 0.26 to 0.71 with an average of 0.55. Cluster analysis of chrysanthemum genotypes based on 73 polymorphic loci grouped in three major groups. Genetic similarity data suggested that improved chrysanthemum selections have captured high level of genetic diversity and can be potentially used as promising parental group for future genetic improvement programme of chrysanthemum.

Him Shikhar (CSIR-IHBT-CH-14-18)

The parentage of Him Shikhar (CSIR-IHBT-CH-14-18) is Yellow Puma x Poornima. Based on mean performance of F₁ hybrid selections, Him Shikhar (CSIR-IHBT-CH-14-18) was found promising having creamish white flowers with yellow centre, double flower shape, flower head diameter of 6.91 cm and spray type.



Salient features of cultivar Him Shikhar (CSIR-IHBT-CH-14-18)



Traits	CSIR-IHBT-CH-14-18
Colour	Creamish white with yellow centre
Parentage	Yellow Puma x Poornima
Average plant Height	61.77 cm
Average flower diameter	6.91 cm
Average flower number/plant	45.25

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