

## Chrysanthemum

(\*Nandan Sah, Janakiraman and Chintala Uday Krishna Sai)

School of Agriculture, Lovely Professional University, Phagwara-144401, Punjab, India

\*Corresponding Author's email: [sahnndn@gmail.com](mailto:sahnndn@gmail.com)

Chrysanthemum is known as the Queen of the East grown for its beautiful blooms that are of various types like Pompon, Anemone, Spider, Incurving, Reflexing, Spoon type, Quilled, Incurved and Ball type. In North India, chrysanthemum is primarily grown for landscape gardening either in the ground or in pots. In Southern part of the country, it is mostly grown as loose flowers for garland, hair decoration by women and offerings to god. The first chrysanthemum known to the USA was 'Dark Purple' imported by a scientist John Stevens in 1798.

Scientific Name - *Chrysanthemum indicum*  
Family - Asteraceae  
Origin - East Asia and northeastern Europe.

### Botanical description

The genus *Chrysanthemum* are perennial herbaceous flowering plants, sometimes subshrubs. The leaves are alternate, divided into leaflets and may be pinnatisect, lobed, or serrate (toothed) but rarely entire. The compound inflorescence is an array of several flower heads, or sometimes a solitary head. The head has a base covered in layers of phyllaries. The simple row of ray florets is white, yellow, or red. The disc florets are yellow. grains are approximately 34 microns. The fruit is a ribbed achene.

### Physical description



### Species

- *Chrysanthemum aphrodite* Kitam.
- *Chrysanthemum arcticum* L.
- *Chrysanthemum argrophyllum* Ling

- *Chrysanthemum arisanense* Hayata
- *Chrysanthemum chalchingolicum* Grubov
- *Chrysanthemum chanetii*
- *Chrysanthemum crassum* (Kitam.) Kitam.
- *Chrysanthemum cuneifolium* Kitam.
- *Chrysanthemum daucifolium* Pers.
- *Chrysanthemum dichrum*

### Main Species

- **Shasta daisy, giant marguerite (*chrysanthemum maximum*):** It is an herbaceous plant from southern Europe up to 70 cm. Erect stems with toothed leaves above. Large flowers till 10 cm wide with a yellow Centre and white florets. Flowers appear in spring or summer.
- **Tricolor chrysanthemum = tricolor daisy (*chrysanthemum arinatum*=*chrysanthemum tricolor*):** It is form Morocco. It has simple flower like daisies with two or three colors. Plant size is stockier (about 60 cm high and 30wide). Very divided and flashy leaves. It is widely used to make plant beds and as cut flower. Young shoots can be eaten cooked or raw as a vegetable before the plant bloom.
- **Garland Chrysanthemum (*chrysanthemum conarium*):** A leafy herb, the garland chrysanthemum is one of the few annual plants in its genus. It has yellow ray florets grouped in small flower heads and aromatic, bipinnately lobed leaves. Its seeds are ribbed and winged cypselae. The vegetable grows very well in mild or slightly cold climates, but will go quickly into premature flowering in warm summer conditions. Seeds are sown in early spring and fall.
- **Corn Marigold (*chrysanthemum segetum*):** It is a species of flowering plant in the family Asteraceae, probably native only to the eastern Mediterranean region but now naturalized in western and northern Europe as well as China and parts of North America. Common names include corn marigold and corn daisy.



### Management

- Always use disease free planting material if they are grown on larger scale
- Crop rotation should be practiced for better yield.
- Proper pinching and disbudding should be followed for standard/spray chrysanthemum production.



- Maintain proper temperature for quality flower production.
- Use bamboo stick for the support of tender stem of the plants.

### Planting Tips

1. **Plot that has access to sun 5-6 hours a day.** Choose a spot that gets sunny — a little bit of shade is okay. Chrysanthemums like the morning sun, so try to place them in a spot that gets sunlight in the earlier hours of the day.
2. **Ensure the soil is well-drained and fertile.** Chrysanthemums don't like being constantly wet, so make sure the soil is able to drain easily and that there's plenty of air circulation. If you're unsure whether or not your soil is able to drain efficiently, dig a hole using a shovel that's roughly 1 foot (30 cm) deep. Fill the hole with water and see if all of the water is able to drain out in under 10 minutes. If it's not, your soil isn't well-drained.
3. **Provide the plants with protection from the wind.** Chrysanthemums like a mild climate, so if you live somewhere where it's often windy, provide a buffer for your plants. Try spreading a layer of mulch over the soil where the chrysanthemums are planted. The mulch layer doesn't need to be incredibly thick, but it should cover all of the soil completely. You can also plant your chrysanthemums along a fence to help protect them from the wind.
4. Prepare the soil carefully and amend it generously with organic manures such as ripe compost. Lighten it with coarse sand or gravel if it tends to retain water in the winter.
5. Mulch the soil around the plant to limit water input or the effect of frost if planting in the fall.

### Uses

- Improve skin health and promote cell regeneration.
- Help to prevent cancer such as colon cancer.
- Boosts energy levels in body.
- Prevent heart disease.
- Strengthens immune system.
- Reduce severity of arthritis and asthma.
- Protect skin against damage caused by sun and ageing
- Ornamental uses
- Culinary use In some parts of East Asia, the yellow or white chrysanthemum flowers of the purple chrysanthemum are boiled to make tea. The resulting drink is simply called chrysanthemum tea.



- **Insecticidal use-** Pyrethrum Chrysanthemum is economically important as a natural source of insecticides. The flowers are crushed and the active ingredients called pyrethrin's present in the achenes are extracted and sold as oleoresin. It is applied as a suspension or powder in water or oil. Pyrethrin attack the nervous system of all insects and inhibit female mosquito bites.
- **Environmental use** The NASA Clean Air Study shows that chrysanthemum plants can reduce indoor air pollution.

### Propagation

The methods are:

1. Terminal Cuttings
2. Root Suckers
3. Seeds
4. Pinching and Disbudding
5. Standard Chrysanthemum
6. Spray Chrysanthemum
7. Staking
8. Growing of Chrysanthemum in Pots
9. Growing for Loose Flowers.

### Cultivation practices

Soil requirement in chrysanthemum cultivation: The best suitable soil for chrysanthemum cultivation is well-drained sandy loam good textured soils. Having good amount of organic matter will result in excellent yield. Avoid the soils where too much of water stagnation in possible. The optimal soil pH range for its growth is 6.5 to 7.5.

Land preparation in chrysanthemum: The land should be prepared by giving 2 to 3 ploughings followed by harrowing to prepare the beds for planting. Supplementing the farm yard manure of 20 to 25 Tonnes/ha in the last plough is recommended.

Planting season in chrysanthemum cultivation: Terminal cuttings of stock plants should be taken in the month of June and they should be transplanted after rooting in 15 cm pots at end of July. These plants should be ready for pinching during end of Aug or beginning of Sept.

Manures and fertilizer in chrysanthemum cultivation: Chrysanthemum crop responds very well to manuring and requires about 10-12 Tonnes of well rotten farmyard manures (FYM) per acre. This farm yard manure can be supplemented at the time of land or soil preparation. As a basal dose, apply 50kg of Nitrogen, 160kg P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O. For increasing the flower yield, spray GA3 at 50ppm at 30, 45 and 60 days after planting. Micronutrients like foliar spray of ZnSO<sub>4</sub> 0.25% + MgSO<sub>4</sub> 0.5% can be applied. As part of biofertilizer, soil application of 2kg each of Az spirillum and phosphorous bacteria per ha at the time per ha at the time of planting should be applied. It should be mixed with 100kg of farmyard manure (FYM) and applied.

Irrigation in chrysanthemum cultivation: The frequency of irrigation depends on the stage of growth, soil and weather conditions. Proper drainage system should be maintained for chrysanthemum grown both in beds and pots. Irrigation should be carried twice a week in the first month and subsequently at weekly intervals.

### Pest and Diseases

Aphids, mites, thrips, leaf miners, leaf folder, leaf spot, rust, powdery mildew, chrysanthemum stunt and chrysanthemum mosaic disease are some common pests and diseases found in chrysanthemum cultivation. For control measures of these pests and disease, contact floriculture department.

### Flowering and Harvesting

Usually, chrysanthemum plants take 5 to 6 months from planting to flowering. It all depends on the cultivar(varieties), plant start yielding flower after 3 to 4 months of transplanting in the field. For cut-flower purpose, stem should be cut about 10 cm



above the soil to avoid cutting into wooden tissue. The lower 1/3 of stem should be placed in water to extend the life of cut flower. The best way to protect the flower is to sleeve the flower bunch with a transparent plastic sleeve. The right stage for harvesting depends on the variety grown, marketing and purpose.

### **Post-harvest handling**

Loose flower can be packed in bamboo baskets or gunny bags for marketing. The capacity of bamboo baskets ranges from 1 to 7 kg while gunny bags can be accommodated 30 to 35 kg of loose flower.

### **Conclusion**

Chrysanthemum is best flower for growing commercial purpose. It has ornamental uses, culinary uses, economically important as a natural source of insecticide, medicinal uses. There are about 7 top exporting ports in India which trade Chrysanthemum Flowers from India, Bangalore Air Cargo exports the majority of Chrysanthemum Flowers shipments from India with the share of 88.0%, followed by Delhi Air Cargo with 6.0%. it mostly grown in every state of India and commercially grown Tamil Nadu, Karnataka, Maharashtra. Chrysanthemum is best for growing as ornamental crop.