



## Marigold : A flower for worship beauty and decor

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In India marigold is one of the most commonly grown flowers and used extensively on religious and social functions in different forms, the marigolds have become one of the most popular flowers in our country. Flowers are sold in the market as loose or as garlands. Due to its variable height and colour marigold is especially use for decoration and included in landscape.

**Importance:** –Marigold is one of the most commonly grown flowers for garden decoration and extensively used as loose flowers for making garlands for religious and social functions.

–It has gained popularity amongst the gardeners on account of its easy culture and wide adaptability.

– Marigolds are ideal for cut flowers, especially for making garlands.

– They can be planted in the beds for mass display or grown in pots. The french marigolds are suitable for hanging basket and edging.

– The demand for marigold flowers during Dashara and Diwali is very high.

**Varieties :** There are two common types of marigold:

*The African marigold (Tagetes erecta):* The African marigolds are generally tall (upto 90 cm) with large sized double globular flowers of lemon, yellow, golden yellow, primrose, orange or bright yellow colours. There are also dwarf varieties (20 to 30 cm) having large double flowers. The important varieties are: Giant double African orange, Giant double African yellow, Cracker jack, Climax, Dubloon, Golden age, Chrysanthemum charm, Crown of gold, Spun gold.

*French marigold (Tagetes patula):* The french marigolds are mostly dwarf, early- flowering and compact with dainty single or double blooms, borne freely and almost covering the entire plant. The colour flowers may be yellow, orange, golden yellow, primrose, mahogany, rusty red, tangerine or deep scarlet or a combination of these colours. The important varieties are: Red borcade, Rusty ted, Butter scotch, Valencia, Sussana. However, in the market mostly orange colour varieties are preferred and the variety which is dominating is African giant double orange.



**Climate and soil:** The marigolds are hardy and can be successfully grown in different types of soils and climate. Marigold can be successfully cultivated on a wide variety of soil. Soil is deep fertile friable having good water holding capacity well drained and near to neutral in reaction viz., pH 7.0-7.5 is most desirable. They can grow in almost all seasons except in very cold weather, as they are susceptible to frost. Marigolds require mild climate of luxuriant growth and profuse flowering. For seeds germination optimum temperature ranges 18 to 30° C. Soil and planting is carried out during rainy season winter and summer season hence, flowers of marigold can be had almost throughout the year.

Flowering season	Sowing time	Transplanting time
Rainy season	Middle of June	Middle of July
Winter	Middle of August	Middle of September
Summer	First week of January	First week of February

**Nursery rising:** – The marigold seeds are black in colour and remain viable for about 1-2 years for rising of seedling.

– Seed germinate in 5-7 days. Before sowing the seeds should be treated with captan 2g/kg of seed to prevent damping off.

– Seeds should be sowed in pots, seed boxes or raised nursery beds.

– Nursery beds are prepared by digging area and incorporating well rotten FYM.

– Before sowing the seeds, the soils should be drenched with captan to avoid the ants, which carry away the seeds.

– Seeds should be sown thinly (6-8 cm row to row) and 2 cm deep and covered with sieved leaf mold.

– The nursery beds should be remained moist during entire period.

– The quantity of seed required depends upon the level of its purity and germination rate.

– Generally 200-300 g seed/acre is required for raising the nursery in summer and rainy season, and 150-200g/acre for winter season.

– About 1.0-1.5 kg seeds is required for planting in one hectare whereas 250 g/ha is sufficient in case of F<sub>1</sub> hybrid. Seed germinate in 5-7 days.

– The seed germinate 4-5 days after sowing and seedlings become ready for transplanting after 3-4 weeks for sowing.

**Planting :** There are two common methods of propagation

of marigold: – By seeds – By cuttings

**Seed rate:** - 1.5 kg for raising seedlings for 1 hectare. Seeds can be sown in lines or by broadcast method. Seeds need to be covered with light soil or sand or strained leaf mould.

**Nursery beds:** - 3 x 1m size mixed with 10 kg of well rotten farmyard manure per sq.meter. Nursery bed should be kept moist by watering accordingly.

**Spacing :** – *African marigold:* African marigold: 40 x 30 cm 40 x 30 cm ·

– *French marigold:* French marigold: 30 x 30 cm 30 x 30 cm ·

– *Dwarf cultivars:* Dwarf cultivars: 30 x 20 cm 30 x 20 cm ·

– *Pots (20 cm):* Pots (20 cm): 1 or 3 seedlings/pot.



**Propagation:** – Marigold is commercially grown through seeds.

– About 500 About 500-600g seed is sufficient to grow marigold 600g seed is sufficient to grow marigold in one hectare area.

– Double marigold cultivars are also perpetuated through 5-10 cm long terminal stem cuttings taken during July during July-September. September.

– These cuttings are treated with IBA/NAA 500 ppm solution for 1 solution for 1-2 minutes before planting in beds/ 2 minutes before planting in beds/ rooting chamber.

– The nursery becomes ready for transplanting at 4 The nursery becomes ready for transplanting at 4- leaf



stage coming after 4 leaf stage coming after 4-6 weeks 6 week.

**Manures and fertilizers:** 200:100:100 NPK kg/ha should be applied to get highest flower yield. 100:100:100 NPK kg /ha at the time of land preparation and remaining 100 kg N/ha should be applied one month after seedlings are transplanted.

**Irrigation:** Marigold takes about 55-60 days to complete vegetative growth and to enter into reproductive phase. At vegetative and flowering period sufficient amount of moisture in soil is essential. The frequency and quantity of water mainly depends upon soil and climatic condition. Though plants tolerate dry weather upto 10 days without irrigation but growth and flower production is affected adversely. From April to June, frequent irrigation at the interval of 4-5 days is required.

**Pinching/ nipping and earthing up:**

- Three weeks after transplanting earthing up is done and then one week after earthing up or 1 month after transplanting the seedlings.

- Pinching is followed for bushy growth of the plant and development of lateral branches.

- Pinching is generally done for the 40 days after transplanting, late pinching at 50-60 days proved less effective for branching.

- Pinching results into production of more number of flowers.

**Diseases and insect pests:**

In general, the marigolds are hardy and almost free from diseases and insects. However, occasionally the following diseases and insect pests having observed.

**Harvesting:** Marigold should be plucked when they attain the full size depending upon the variety. It should be done in cool hours of the day that is either in the morning or evening. Field should be irrigated before plucking productivity of plants is increased considerably by regular plucking flowers.

**Packing:** For the local market marigold flowers are taken into gunny bags whereas from distant market bamboo

baskets are used.

**Transportation:** Different means of transportation viz., rickshaws, buses, trains are used to carry the flowers to market depending upon the distance.

**Yield:** On an average a fresh flower yield of - 200-225 q per ha during rainy season 150 to 175 q per ha in winter 100-120 q/ha in summer can be obtained.

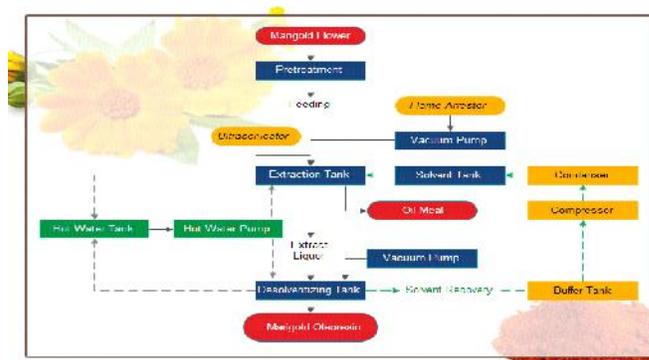
**Postharvest processing, grading, packing and storage:** After harvesting the flowers they are dried on floor under shade for 2-3 days. Upon drying, the seeds are separated by hammering the flowers and the flower straw is separated out by winnowing of the hammered flowers. The seeds are thoroughly cleaned and graded before packing in poly bags or cloths bags, and are stored in cool places. The moisture contents of the seeds must be examined before the packing.

Marigold (*Tagetes erecta* L.) is a commercially important specialty cut flower, but postharvest handling protocols for extending vase life need to be optimized.

Harvest stage, harvest/handling procedures and exogenous ethylene had no effect on cut ‘Sovereign’ Gold Coin African marigold stem longevity; however, an anti-ethylene agent, silver thiosulfate (STS), increased the vase life of cut marigold stems 2.1 days longer than deionized water.

**Extraction of oil and quality control:** All parts of *Tagetes patula* contain essential oil, which can readily be extracted by steam distillation. The oil has a pronounced odour and acts as a repellent to flies. It has been reported that I-limonene, ocimene, I-linalyl acetate and I-linalool have been extracted from *Tagetes erecta*. While evaluating the different species for essential oil contents, *Tagetes signata* contained higher essential oil (4.25% of dry matter) of very good quality which can be used in perfume industry.

**Marketing, distribution and transportation:** Crop has a good demand in decoration, garlands, loose flower and religious function etc. So can be marketed to major/big



cities where these can be supplied to hotels, institutions, etc. For garlands distributed to the market flower should be packed in bamboo basket which should be covered under moist muslin cloth.

**Important tips and best practices for crop cultivation:**

- Always use disease free planting material
- Timely weed management should be done.
- Flower should be harvested at proper time and stage.

**Alternative uses of produce or value addition:**

Marigold flowers can be used as loose flower, cut flower, perfumery industry, bedding purpose, medicinal and cosmetic industry, dye making, garland, decoration etc.

**Care for marigolds:** Marigolds have a pungent odor

which keeps insects at bay, but they can be bothered by slugs. Also, tall American and Triploid marigold varieties need staking to protect them from strong winds and heavy rainfall. Learn more on growing and taking care of marigolds.

**Packing:** – After harvesting, it is better to keep flowers in cool place.

– The marigold is packed in gunny bags for local market and for distance market bamboo basket are used.

**Yield:** African marigolds yield about 15-28 t/ha whereas the French marigold yields 10-12 t/ha.

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