



# Package and practices of Marigold

# Introduction

- ▶ Marigold is native of Central and South America, especially Mexico.
- ▶ From Mexico it spread to different parts of the world during early part of the 16th century.
- ▶ The name ‘**Tagetes**’ was given after ‘**Tages**’, a demigod, known for his beauty.
- ▶ In language of flowers, marigold, in general, means anxiety but despair or grief, in particular.
- ▶ African marigold represents vulgar minds whereas French marigold is a symbol of jealousy
- ▶ Marigold is also known as ‘friendship flower’ in the United States.
- ▶ African marigold was **first introduced** into ‘**Spain**’ early in the 16<sup>th</sup> century and became popular in Southern Europe under the name, ‘**Rose of the Indies**’.
- ▶ It continued to be so called until well upto the 18<sup>th</sup> century, although it was correctly figured as *Plantas tagetes indica* in Fuch’s Herbal of 1547 (Genders, 1971).
- ▶ Another well known type of marigold i.e. French marigold (*T. patula*) followed a similar route from Mexico to that of African type.

## MARIGOLD

Scientific Name:

*Tagetes spp.*

Hindi Name:

Gainda



Season in which crop is grown Marigold can be grown three times in a year - rainy, winter and summer seasons.

Flowering season	Sowing Time	Transplanting Time
Late rains	Mid June	Mid July
Winter	Mid September	Mid October
Summer	January-February	February-March

# Uses/Nutrient Value

- ✓ As an ornamental crop for loose flowers.
- ✓ As a source of pigment for poultry feed.
- ✓ Garlands purpose.
- ✓ Also used as cut flower.
- ✓ Important flower of landscape garden due to its variable height and colour of flowers.
- ✓ It is highly suitable as a bedding plant purpose in herbaceous border and shrubbery.
- ✓ French marigold is ideal for rockeries, edging, hanging baskets and window boxes.
- ✓ Medicinal Properties:
  - Leaf paste is used externally against boils and carbuncles.
  - Leaf extract is a good remedy for ear ache.
  - Flowers extract is considered as blood purifier, a cure for bleeding piles
  - A good remedy for eye disease and ulcers.
- ✓ The essential oil present in different species of *Tagetes* can find use in the perfume industry.

# Botanical Description

In genus *Tagetes* there are 33 species, but commercially two species i.e *T. erecta* and *T. patula* are grown in our country.

## ***Tagetes erecta* (African marigold)**

- The African marigold plant is hardy, annual; about 90 cm tall erect and branched.
- Leaves are pinnately divided and leaflets are lanceolate and serrated.
- Flowers are single to fully double with large globular heads.
- The florets are either 2-lipped or quilled. Flower colour varies from lemon yellow to yellow, golden yellow or orange.

Varieties-Giant Double African Orange, Giant Double African Yellow, Crackerjack, Climax, Doubloon, Golden Age, Chrysanthemum Charm, Crown of Gold, Spun Gold.

## ***Tagetes Patula* (French marigold)**

- The French marigold is a hardy annual, about 30 cm tall, forming a bushy plant.
- Foliage is dark green with reddish stem. Leaves are pinnately divided and leaflets are linear lanceolate and serrated.
- Flowers are small, either single or double borne on proportionately long peduncles. The flower colour varies from yellow to



# Climatic Requirement

- Marigold requires mild climate for luxuriant growth and flowering.
- Mild climate during growing period ( $14.5^{\circ}$ - $28.6^{\circ}$ C) greatly improves flowering while higher temperature ( $26.2^{\circ}$ - $36.4^{\circ}$ C) adversely affects flower production.

# Soil Requirement

- Marigold is adaptable to different types of soil conditions and thus can grow successfully in a wide variety of soils.
- However, a deep, fertile, friable soil having good water holding capacity, well drained and near to neutral in reaction (pH 7.0 - 7.5) is most desirable.
- An ideal soil for marigold cultivation is fertile and sandy loam.

# Field Preparation and Sowing

- ▶ Preparation of Field
- ▶ Nursery beds are thoroughly prepared by digging and incorporating well rotten FYM.
- ▶ Before sowing the seeds, Malathion dust should be dusted on outer side of nursery beds to avoid ants.
- ▶ **Planting Material and Propogation**
  - Marigold is mainly propagated by seeds, besides; it can also propagated by cuttings.
  - Crop raised from seeds is tall, vigorous and heavy bloomer.
  - For raising seedling for one hectare, about 1.0 -1.5 kg seed is required. For raising seedlings
  - seeds can be sown in pots, seed boxes or on flat or raised nursery beds.

# PROPAGATION

Marigold is propagated by both methods i.e.,

1. Seeds
2. Cuttings.

## BY SEEDS:

- ❖ Crop raised from seeds is taller than the vegetative propagated one and vigorous and heavy bloomer; thus, it is preferred over cuttings.
- ❖ For better seed germination, optimum temperature range between 18 to 30°C is required.
- ❖ Seed rate of 1.5 kg is required for one hectare area.
- ❖ Seeds of marigold can be sown in pots, seed boxes or on flat or raised nursery beds.
- ❖ Nursery beds of 3 x 1 m size are thoroughly prepared and mixed with 10 kg of well decomposed farmyard manure per sq m

## SPACING:

- ❖ In general *Tagetes erecta* requires wider spacing than *T. patula*.
- ❖ However a wide range is practiced all over the country for higher yield.

### ***Tagetes erecta***

- 1) 40 x 40cm
- 2) 45 x 30cm
- 3) 60 x 45cm

### ***Tagetes patula***

- 1) 20 x 20cm
- 2) 30 x 30cm

## Nutrient Management

- To get highest flower yield, 100 kg N, 100 kg P<sub>2</sub>O<sub>5</sub> and 100 kg K<sub>2</sub>O should be mixed at the time of preparation of land.
- African Marigold: 5 Kg FYM, N 30g, P 10g, K 10g/ m<sup>2</sup>.
- French Marigold: 3 Kg FYM, N 20g, P 10g, K 10g/ m<sup>2</sup>.
- All dose of FYM, 1/3rd N, full dose of P and K are mixed in soil at the time of final field preparation.
- Remaining 100 kg N per ha should be applied in 2 splits @ 30 and 40 days after transplanted.

## Water and Irrigation Management

- The frequency and quantity of water mainly depends upon factors like soil and season.
- In lighter soil, more frequent irrigation is required than heavy soil.
- Weekly irrigation is necessary from September-March in sandy loam soil.
- During summer months from April to June, frequent irrigation at an interval of 4-5 days is required.

# Weed Management

- ❖ Weed Management In marigold production, control of weeds is an important operation.
- ❖ In India, 3-4 manual weeding are required for entire period. Chemical weed control is also recommended.
- ❖ It takes about 55-60 days to complete vegetative growth and to enter into reproductive phase.
- ❖ Season of planting determines the frequency of irrigation. □ If rainfall is normal and well distributed, irrigation is not frequently



## PINCHING:

- In pinching terminal growing shoot about 2-3 cm long is removed to overcome apical dominance and to promote side branching when the plants are about 15-20 cm height.
- However the apical portion of the shoot is removed at the early stage to get more number of axillaries which in turn produces more flowers.
- Pinching the plants at 40 days after transplanting enabled the plants to yield more flowers.
- Late pinching at 50 or 60 days proved less effective in this respect.



## FLOWERING

- In summer season crop - commences by the middle of May with maximum intensity in the month of June and continues till the onset of rains.
- Rainy season crop - by the middle of September and the flowering will continue till December.
- Flowering in winter crop - by the middle of January and will continue till March.

## HARVESTING

- Marigold flower should be plucked when they attain the full size depending upon the variety.
- Plucking of flowers should be done in cool hours of the day i.e, either in the morning or evening.
- Field should be irrigated before harvesting so that, flowers keep well for longer period after plucking.
- Plucked flowers should be covered with moist gunny bags if kept overnight before taking to market.
- Productivity of plants increases considerably by regular plucking of flowers.

## AVERAGE YIELD

	<b>No. of flowers (Million/ha)</b>	<b>Fresh flower (tonnes/ha)</b>
1) African marigold	1.5 - 2.5	11 - 18
2) French marigold	6.0 - 8.0	8 - 12



# PESTS AND DISEASES:

## Fungal diseases

Damping off It is caused by *Rhizoctonia solani* and appears as brown necrotic spots girdling the radicle, later on extends to plumule and pre-emergence mortality. When infected seedlings are pulled, the root system appears fully or partially decayed. Seeds should be treated with Captan @ 3 g or Carbendazim @ 2.5 g per kilogram of seeds before sowing.

## Causal organism Measures

1. Damping off (*Rhizoctonia solani*) Seed treatment with captan @ 0.5%
2. Collor rot: (*Rhizoctonia solani*): Seed treatment with captan @ 0.5%.
- Phytophthora sp. Pythium sp. Sclerotium rolfsi
3. Leaf spot (*Alternaria tagetica*) Spray with Blitox @ 0.4% or Cercospora spp. Bavistin @ 0.1%
4. Blight (*Colletotrichum capsia*) DM 45 @ 0.2%
5. Inflorescence blight (*Alternaria zinnac*) DM 45 @ 0.2% or Bavistin @ 0.1%
6. Powdery mildew (*Oidium sp.*) Spray with calixin, sulfex @ 0.2% (WS) @ 0.2%

**Viral diseases:** Marigold is infected by CMV, Aster yellow virus

THANK  
YOU

