

Evaluation of French Marigold (*Tagetes Patula L.*) Varieties for Different Landscaping Purposes

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French marigold (*Tagetes patula L.*) is an annual ornamental plant. It is a member of Aster family, Compositae or Asteraceae. It belongs to genus *Tagetes*, also called “genus of herbs”. The genus *Tagetes* has 33 species out of which *Tagetes patula* (French marigold), *Tagetes erecta* (African marigold) and *Tagetes minuta* (wild marigold) are valued under commercial cultivation in India (Dixit *et al.*, 2013). French marigold bears small flowers as compared to African marigold. The ploidy level of French marigold is allotetraploid having chromosome number of $2n=48$. The place of origin of marigold is Mexico, South America.

Botanically, marigold is a herbaceous plant with profused alternating branches originating from main single stem. Stems are non-woody and cylindrical in shape, dark green to reddish in colour. Roots of marigold are fibrous. Side branches have pinnately compound leaves with reticulate venation. Flowers of marigold are born axially on the branch. Flower is known as head which is composed of disc florets with dense center and ray florets with sparse, long petals. Colour of bloom varies from attractive light yellow to orange to mehroon, according to level of breeding.

India is leading in loose flower production as well as in consumption. In India, the estimated area under cultivation is 31,3000 ha with the production of 2865 M tonnes per ha (National Horticulture Board, 2019). In India, Marigold ranks first among the loose flowers followed by Chrysanthemum, Jasmine, Tuberose, Crossandra (National Horticulture Board, 2019). It is one of the dominating flowers fetching great market price. Tamil Nadu is the largest producer of French marigold in India with a production of 4.17 lakh MT.

Marigold is available all round the year which adds to its production and make it available for consumption in every season. Loose flowers of marigold are an evergreen essential in the markets. For the purpose of decoration in various ceremonies both loose petals as well as garlands made from whole flowers are in higher demand. Marigold tiaras and flower jewellery is creating a new market nowadays.

Marigold can be grown in pots, gardens or as herbaceous borders to add a pop of colors to landscapes (Singh *et al.*, 2017). Due to its bushy appearance, profuse leaves when planted in close spacing, could be used to border the area and used for the purpose of edging and hedging the lawns. It is known as “Herb of Sun” representing passion and creativity. Marigold symbolizes prosperity. It is associated with legendary, brave and courageous lion. The bunch and bushes never fail to bring sunshine and happiness in homes and surroundings. The constituents of marigold include flavanols- quercetin, quercetagenin, patuletin and lutiens (Shetty *et al.*, 2015). It is a rich source of anti-oxidants, antibiotics and vitamin C.

Marigold has gained its popularity due to ease of cultivation, wide adaptability and production throughout the year. It can be grown in open field conditions, poly house depending on the season and commercial scale of production.

A Hedge is a line of closely spaced shrubs planted and trained to form a barrier or to mark boundary between two areas. Usually hedges are grown up to one meter height. Along with providing protection to the area, live fencing can be visually rewarding and provides structure and definition to the garden. Not only woody and long plants are used as hedges but instead dwarf shrubs and vibrant flowering plants are in use nowadays. Marigold, due to its height, bushy habit and plant spread in French marigold, could be grown for hedging purpose (Gulia *et al.*, 2017).

Edges are the dwarf herbs grown up to a height of 20-30 cm only. These are used to especially border the flower beds, demarking the areas around trees and used to beautify the focal points in lawns and buildings. These can be planed for impact and colour contrast in front of taller hedge. Some dwarf French marigold varieties have shorter height and less plant spread (15.20 cm in ‘cherry red’ and 14 cm plant spread in ‘Hero spry’)(Kumar *et al.*, 2015). Such varieties could be used for the purpose of edging. These could add to the liveliness of the place instead of using artificial edges. French Marigolds are ideal for edging flower beds and in mass plantings (Dixit *et al.*, 2014)

Apart from its prestine uses in landscaping, it has numerous other uses. Essential oils present in marigold are valued for cosmetic purpose on commercial scale. Both the flowers and leaves are used for medicinal purposes (Tripathy and Gupta, 1991). Marigold is rich in linoleic acid content which is natural anti-inflammatory and works wonders for people with sensitive skin and is beneficial to those affected by eczema and psoriasis as it is non-

irritating. Marigold garlands and wreaths are in high demand in religious functions and ceremonies.

Petals or leaves of marigold are eaten raw or blanched, fresh or dry, sweet or savoury. To make marigold edible, one need to prepare the marigold petals by pulling them and then cutting off the white and green portion from below that could give bitter taste. Marigold is also called “Poor Man’s Saffron”. These could have taste either mildly citrusy to subtly spicy. One can add petals to salads, make them stir fry or add them to tea for some beautiful colour and aroma.

The yellow colored pigment called lutien, present in Marigold is used as colorant in dairy supplements in poultry industry to enhance the broiler skin color and egg yolk pigmentation (Sreekala *et al.*, 2003). Extraction of Marigold essential Oils for cosmetics purpose is leading to expansion of oil industry in this sector. All parts of *Tagetes patula* contains essential oils which are used as insect repllents because of production of specific odour (Dhingra and Dhingra, 1956). Marigold is used extensively as Trap crop in vegetable crops especially in Tomato. *Tagetes* species produces a substance called alpha-terthienyl which aids in reduction of root nematodes and other disease promoting organisms such as bacteria, viruses and fungi (Dixit *et al.*, 2013). Cultivation of marigold controls the nematode population.

Commercial utilization of marigold in India is carried out for use as loose flowers, garland making and decoration purposes. More morphological characters could be analyzed by planting various suitable varieties in the respective regions.

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