

## Marigold as Commercial Crop, Attractant Plant, Pharmaceutical and Nutraceutical Value

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As the title self-explanatory, the marigold crop can harvest the handsome returns and can also reduce the use of more plant protection chemicals because it acts as insect attractant in many agriculture and horticulture crops. Nutraceutical point of view the petals of marigold contained Vit A which can help in the preparation of pharmaceutical and nutraceutical valued products. With this background it's very important to know about marigold crops agricultural history and its value in modern times.

At the earliest 1552 marigold used by Aztec people who attributed this flower as magical, religious and its medicinal properties. The herbal records of marigold use were to cure the hiccups. Aztecs were use to bred the marigold for its larger bloom. It was recorded that during 1500's marigold seeds were transferred from Aztecs to Spain. From Spain to it was reached Northern Africa and it was naturalised there. In recent times it was called as Tall African marigold. Marigold travelled northern Africa to Mexico and Latin America where it was used for decoration purpose. It took several hundreds of years to marigold to reach American gardens. During 1915 David Burpee features marigold in his seed company catalogue and did research. Since 1920's marigold breeding has developed hundreds of new varieties.

It is possible to cultivate marigold commercially in all season of the year. The reason behind is its high demand in flower decoration and social functions. Nowadays availability of hybrids in marigold crop made its cultivation profitable. It is basically 130-150 days crop making it to cultivate two time in a year. The cultivator of marigold crop should plan in such a way that the flowering period should coincide with the festival seasons where one can get the good market price. Well drained and fertile red sandy loamy soils are suitable for this crop cultivation. The shades of yellow to orange red hybrids are available in the market are developed and released from both public and private sector. The marigold hybrids with yellow shades are best suitable for commercial cultivation purpose and marigold hybrids with orange shades are very much suitable for

Carotenes and Carotenoids extraction which are the precursor of Vit A. cultivation of marigold crop is more profitable because of free flowering habit, short duration to produce marketable flowers with longer duration of flowering period, good spectrum of flower colour, shape, size and promising keeping quality. This flower crop is very much suitable for cultivation by small and marginal farmers. Fungal diseases and sucking pest aphids are the important to take up the plant protection measures. The average cost benefit ratio was observed from 1:1.98 to 1:2.61.

One of the traditional methods of pest management is use of trap crops which attract the pest in more number making productive growth and development of the main crop. The characteristic feature of the trap crop is to arrest the flight and dispersal of the pest that it attracted. The reason is the visual brightness and olfactory cues of the trap crops. Marigold is also can be used as one of the important trap crops. Marigold species *T patula*, *T erecta* and *T minuta* are the important ones to control pests in some the vegetables and fruit crops. There are some of the examples where marigold is used as trap crop.

- In Tomato Chilli and Cabbage crop to control the *Helicoverpa armigera*
- In green house crop to control Thrips
- In Tomato and Guava for nematode management
- In Chilli crop for fruit borer and sucking pest management

Marigold contained sulphur containing bio compound which are nematocidal, insecticidal, fungicidal, antiviral, and cytotoxic activities. As a nematocidal action marigold root releases  $\alpha$ -therthienyl a bio-active compound.

In historical background marigold was used as spice in India, China and Indonesia, subsequently its use was extended as medicinal also. In 5000 years ago marigold was used as spice in preparation of curries. The parts and the products of marigold which are of pharmaceutical and nutraceutical value are tagetes oil, carotenoids, flowers and leaves. As a specie *Tagetes*

*erecta* used in diverse pharmaceutical activities than *Tagetes patula*. Tagetes oil mainly used in compounding of high-grade perfumes. Carotenoids are the major pigment of marigold of which orange pigments are rich in carotene and yellow pigments are rich in Xanthophyll. The lutein compound in the marigold petals accounts for 90% of total carotenoid used for food fortification and in cosmetics. Leaves used in curing kidney troubles, muscular pain, piles,

boils and carbuncles. Flowers are used in fevers, epileptic fits, astringents, carminatives, scabies and lever complaints. Marigold flower is also rich in antioxidants which can protect the cells and stimulate collagen production helps in better skin health.

Marigold as commercial crop including more health benefits with cultural significance is very important flower crop for cultivation.

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