



## Evaluation of plant extracts against *Alternaria tagetica* under *in vitro* condition, and losses in the seed yield of African marigold due to the disease

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**Abstract :** All the tested botanicals significantly inhibited growth of *Alternaria tagetica* under all the three tested concentrations. All the botanicals were more effective under higher concentrations. Under lowest concentration (Leaf extracts @ 5%; oil, bulb and rhizome extract @ 1%). The neem oil and Eucalyptus oil were found best as these two were significantly superior over other plant extracts except Eucalyptus leaf extract. Under medium concentration (Leaf extracts @ 10%; oil, bulb and rhizome extracts @ 5%). Neem oil absolutely inhibited fungal growth of *Alternaria tagetica* and it was significantly superior over other plant extracts except Eucalyptus oil in which only 3.33 mm fungal growth of the pathogen was recorded. The maximum radial growth (81.67 mm) was recorded in control. Under higher concentration (Leaf extracts @ 20% ; oil, bulb and rhizome extracts @ 10%). Neem oil and Eucalyptus oil absolutely inhibited the fungal growth and these two were significantly superior over Iopmia leaf extract (50.33 mm), Lantana leaf extract (42.67mm), Parthenium leaf extract (36.00 mm), *Calotropis* leaf extract (27.67 mm), *Onion* bulb extract (17.67 mm) and *Datura* leaf extract (16.33 mm). Neem oil and Eucalyptus oil were statistically at par with *Ginger* bulb extract (4.00 mm), Neem leaf extract (5.00 mm), Eucalyptus leaf extract (6.33), Tulsi leaf extract (7.00 mm), Garlic bulb extract (7.00 mm) and Pudina leaf extract (9.00 mm). The maximum radial growth (76.33 mm) was recorded in control. The correlation coefficient “ $r = -0.9974^{**}$ ” shows a strong significantly negative correlation between the flower blight intensity and the seed yield. The regression equation “ $y = 14.61 - 0.1345 x$ ” indicates 14.61 gm of seed yield of 10 flowers under disease free condition and thereafter the seed yield would decrease by 0.13 g with unit (1% each) increase of intensity of flower blight. The correlation coefficient  $r_1 = 0.9974^{**}$  indicate that the seed yield losses were gradually and significantly increased with the corresponding increases in the intensity of flower blight. The regression equation “ $y_1 = -4.8892 + 0.965 x$ ” indicates that with one unit of increase in the intensity of flower blight the seed yield loss would increase by 0.965 per cent. The correlation coefficient “ $r = -0.9870^{**}$ ” showed a highly significant and negative correlation between the flower blight intensity and the seed germination. The regression equation “ $y = 52.657 - 0.638 x$ ” indicated 52.65 per cent seed germination under disease free condition and thereafter it decreased by 0.638 per cent with unit increase (1% each) in the intensity of flower blight.

**Key Words :** Flower blight, *Alternaria tagetica*, African marigold, Evaluation of botanicals

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### INTRODUCTION

The leaf spot and flower blight of marigold incited by *Alternaria tagetica* (Shome and Mustafee, 1966) is a serious disease of marigold in the country and in northern Madhya Pradesh. The disease gets initiated as dark brown necrotic spots on leaves, stem and flowers. With the progress of the disease, the spots expand, coalesce which leads to drying of

leaves. Now-a-days the disease has become a most important biotic constraint in the full exploitation of high yielding scented African marigold varieties.

Marigold (*Tagetes* sp. Linn.) is one of the most commonly grown ornamental and commercially exploited flower crop in India, *Tagetes erecta* (African marigold) and *Tagetes patula* (French marigold) are the dominant species of marigold in India. Out of these two *Tagetes erecta* is more popular in the

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