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Unveiling the prevalence and severity of *Alternaria*-induced leaf spot and flower blight in marigold: a comprehensive survey of Navsari District of South Gujarat

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Abstract

According to survey, the leaf spot severity and flower blight incidence of marigold was occurred in range from 25.45 to 48.25 percent and 32 to 57 percent respectively in Navsari District. The maximum leaf spot severity (48.25%) was observed in Kharel village. While, the minimum severity was observed in Eru village (25.45%). The highest flower blight incidence 57.00 percent was recorded in Unn village. While, the lowest flower blight incidence was observed in Eru village (32.00%).

Keywords: Marigold (*Tagetes* spp.), *Alternaria tenuissima*, leaf spot severity, flower blight incidence, disease survey, Navsari district, field assessment, disease intensity, epidemiology

1. Introduction

Marigold (*Tagetes* spp.) is one of the most economically valuable flowering plants belonging to the Asteraceae family. In India, Madhya Pradesh, Karnataka, Gujarat, Andhra Pradesh, Haryana, West Bengal, Maharashtra, Chhattisgarh, Sikkim and Tamil Nadu are the major marigold growing states. The total area of production under marigold cultivation is 66.13 thousand hectares with a total production of 603.18 thousand tonnes (Anonymous, 2017) [1]. In Gujarat, the marigold growing region is concentrated in and around the districts of Ahmedabad, Anand, Navsari, Vadodara, Kheda, Gandhinagar, Surat and Bharuch with an output of 84414 metric tonnes over an area of 8818 ha (Anonymous, 2017) [1]. Although the area under marigold cultivation is growing year after year but average flower production yield per unit area fluctuates as a result of pest and disease incidence. Leaf spot and flower blight of marigold is one of the most damaging and economically important diseases and leads to low productivity, resulting in a 50-60 percent loss of flower yield (Cotty *et al.*, 1983) [2].

2. Material and Method

In the course of present investigations, different marigold growing areas of Navsari districts of Gujarat were surveyed during the peak period of disease outbreak to record both severity of leaf spot and flower blight incidence incited by *A. tenuissima*. Survey was carried out in 10 fields of 10 villages of Navsari district. The data on severity and incidence were recorded by examining twenty randomly selected plants from infected fields using 0-5 scale evolved by Hotchkiss (1983) [3] which is given below:

Rating scale	Area of leaf infected (%)	Disease discription
0	0	No visible symptom
1	0-10	0-10 percent leaf area infected
2	11 - 20	11 - 20 percent leaf area infected
3	21 - 30	21 - 30 percent leaf area infected
4	31 - 40	31 - 40 percent leaf area infected
5	≥ 41	≥ 41 percent leaf areas infected

2.1 Percent leaf spot severity (%)

The percent leaf spot severity was calculated according to McKinney (1923) as below.

$$\text{Leaf spot severity (\%)} = \frac{\text{Sum of all disease ratings}}{\text{Total no. of ratings} \times \text{maximum disease grade}} \times 100$$

2.2 Flower blight incidence (%)

The data on flower blight incidence was recorded randomly from the infected fields by selected 20 plants of marigold

and percent flower blight incidence was calculated by the following formula (Shinde, 2017) [5].

$$\text{Flower blight incidence (\%)} = \frac{\text{No. of infected flowers}}{\text{Total No. of flowers per plant}} \times 100$$

3. Results and Discussion

3.1 Leaf spot severity (%)

The Table 1 and Fig. 1 indicated that the leaf spot severity of marigold was recorded ranged from 25.45 to 48.25 percent in different villages of Navsari district. The maximum leaf spot severity (48.25%) was observed in Kharel village followed by Unn (43.92%) and Bhula faliya (43.45%) villages. While, the minimum severity was observed in Eru village (25.45%). The average leaf spot 38.11 percent was recorded in Navsari district.

3.2 Flower blight incidence (%)

The percent flower blight incidence of marigold was recorded ranged from 32.00 to 57.00 percent in different villages of Navsari district (Table 1 and Fig.1). The highest flower blight incidence 57.00 percent was recorded in Unn village followed by Matwad (54.00%), Kharel (52.00%) and Bhula faliya (49.00%) villages while, the lowest flower blight incidence was observed in Eru village (32.00%). The average flower blight incidence 44.40 percent observed in Navsari district.

In Navsari districts villages like Eru, Kachhol, Rajwada and Tighra were recorded lowest leaf spot severity while Eru, Kachhol and Rajwada were noticed less flower blight

incidence. Rest of the villages of Navsari district facing the problem of low flower production due to this single disease problem only. The results of the present survey are very clear that the disease is very serious problem because of susceptible variety and most congenial weather condition. These varieties are prone to all the growth stages viz., flowers, leaves, bud, stalk, petals, sepals and peduncle. This suggests for urgent need to develop management strategies including resistant varieties.

In India other scientist has also been surveyed in different states with findings of Uke (2011) [7] surveyed ten villages of Gwalior district to assess the intensity of *Alternaria* leaf spot and flower blight of marigold, out of which intensity of leaf spot and flower blight was recorded in the range of 25.20 to 35.83 and 11.63 to 18.87 percent, respectively. However, Singh (2007) [6] carried out the survey on the severity and incidence of leaf spot and flower blight disease of African and French marigold at Solan and Sirmour district of Himachal Pradesh and observed that leaf spot severity and flower blight incidence were varied from 63.93 to 79.30 and 41.40 to 77.27 percent in African marigold, respectively and for French marigold 23.33 to 32.50 and 12.93 to 42.60 percent, respectively.

Table 1: Leaf spot and flower blight disease of marigold in different villages of Navsari district in South Gujarat

Sr. No.	Villages	GPS location		Leaf spot severity (%)	Flower blight incidence (%)
		Latitude	Longitude		
1	Kharel	20°52'13" N	73°4'18" E	48.25	52.00
2	Matwad	20°52'33" N	73°3'44" E	42.96	54.00
3	Rajwada	20°52'53" N	73°3'8" E	32.44	36.00
4	Bhula faliya	20°53'54" N	73°2'27" E	43.45	49.00
5	Eru	20°50'47" N	72°57'20" E	25.45	32.00
6	Panjrapol	20°54'48" N	73°1'7" E	35.67	43.00
7	Sisodra	20°55'56" N	72°58'35" E	41.33	45.00
8	Unn	20°55'22" N	72°59'59" E	43.92	57.00
9	Kachhol	20°55'15" N	73°0'23" E	29.22	33.00
10	Tighra	20°55'47" N	72°58'20" E	38.45	43.00
Average				38.11	44.40



Fig 1: Survey and collection of diseased samples from different villages of Navsari district

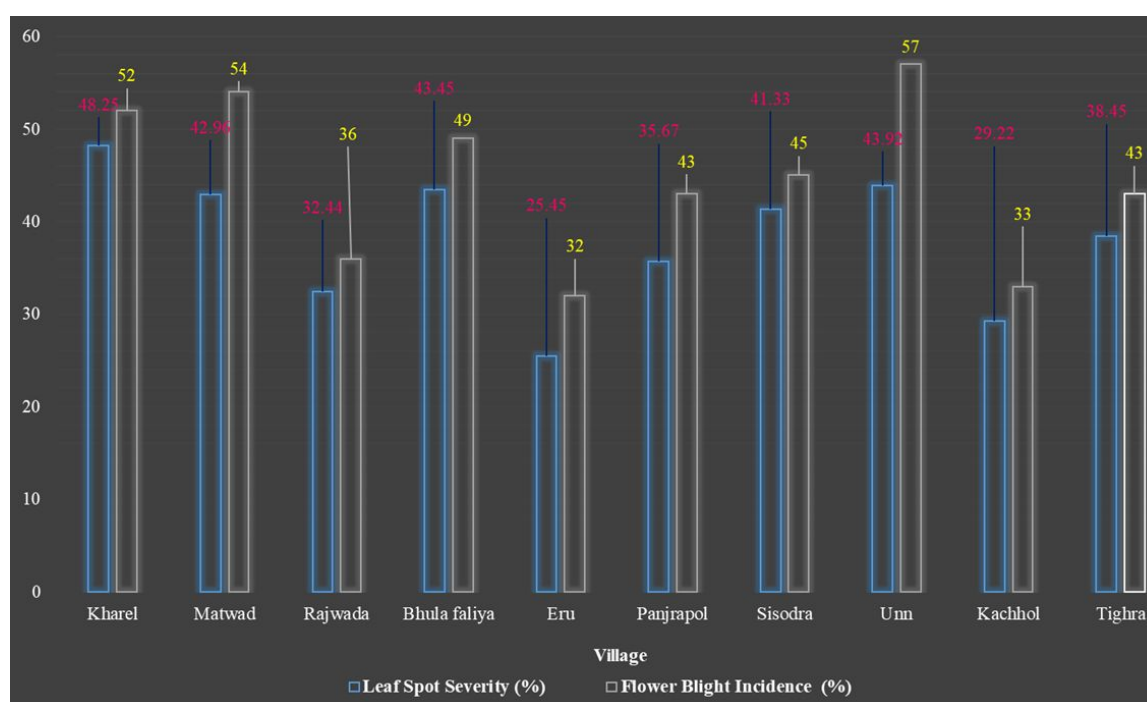


Fig 2: Leaf spot severity and flower blight incidence of marigold in different villages of Navsari district

References

- Anonymous. Horticultural statistics at a glance 2017. New Delhi: Horticulture Statistics Division, Department of Agriculture, Cooperation & Farmers Welfare, Ministry of Agriculture & Farmers Welfare, Government of India; c2017. p. 481.
- Cotty PJ, Misaghi IJ, Hine RB. Production of zinnitol by *Alternaria tagetica* and its phytotoxic effect on *Tagetes erecta*. *Phytopathology*. 1983;73(9):1326-1328.
- Hotchkiss ES. Pathogenicity of *Alternaria tagetica* on *Tagetes*. *Plant Dis*. 1983;67:1288-1290.
- McKinney HH. Influence of soil temperature and moisture on inhibition of wheat seedlings by *Helminthosporium sativum*. *J Agric Res*. 1923;26(2):171-179.
- Shindhe M. Studies on leaf spot and flower blight of marigold caused by *Alternaria tagetica* (Shome and Mustafee). Shivamogga (India): University of Agricultural and Horticultural Sciences; c2017. p. 90.
- Singh ARK. Studies on leaf spot and flower blight of marigold caused by *Alternaria zinnia* Rape. Nauni, Solan (India): Dr. Yashwant Singh Parmar University of Horticulture and Forestry; c2007. p. 116.
- Uke M. Studies on *Alternaria* blight of marigold. Gwalior (India): Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya; c2011. p. 72.