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Survey of wilt disease in coriander growing areas of Navsari district

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Abstract

Coriander (*Coriandrum sativum* L.) is an important spice crop affected by several diseases. Wilt is one of the major disease, caused by *Fusarium solani*. In South Gujarat region its occurrence on coriander is reported for the first time. A random roving survey was conducted to record wilt disease incidence in different coriander growing villages of Jalalpore and Chikhli talukas of Navsari district during *rabi* 2024-25 and 2025-26. The survey covered 10 villages viz., Bhutsad, Eroo, Bodali, Kharsad, Tavdi, Amadhara, Chari, Ghej, Maliyadhara and Sadakpor. The disease incidence ranged from 07.69 to 20.58 per cent during 2024-25 and 09.09 to 26.47 per cent during 2025-26. The survey result indicated that wilt incidence was comparatively higher during 2025-26 than during 2024-25. Among all surveyed villages, Eroo village of Jalalpore taluka recorded the highest disease incidence (26.47%), whereas Sadakpor village of Chikhli taluka recorded in lowest disease incidence (07.69-09.09%) during the survey period.

Keywords: *Coriandrum sativum* L., *Fusarium solani*, Wilt, Disease incidence

Introduction

India is known as the “Land of Spices” as foreign invaders invaded India for spices in ancient times. Vasco De Gama discovered hazardous sea route to India is only for spices trade (Sastri and Sharma, 2001) ^[14]. India is largest producer, consumer and exporter of spices in the world. According to the Spice Board of India, the country produces more than 12 million metric tonnes of spices annually (Anonymous, 2026a). In India total area of cultivation 627008 hectares with total production 869443 metric tonnes in 2024-25 (Anon., 2026b). The top five state of India in area and production of spice as Madhya Pradesh lead in production followed by Gujarat, Andhra Pradesh, Rajasthan and Telangana. India's spices export growth has significantly increased, reaching 4.45 billion US\$ in 2013-14 (Anon., 2025). The major seed spices of India are coriander, cumin, fenugreek, ajwain, dill and fennel as they are cultivated in large area. Among them coriander is second most important seed spice with respect to exports and getting foreign exchange earnings after cumin (Peter *et al.*, 2006) ^[13]. Coriander (*Coriandrum sativum* L.) is an important spice cum vegetable crop, popularly known as “dhania” belonging to the family *Apiaceae* synonym to *Umbelliferae* with chromosome number (2n = 22). This crop is native to Southern Europe and the Eastern Mediterranean (Bhandari and Gupta, 1993) ^[6]. It is an annual herbaceous vegetable and spice grown in both tropical and sub-tropical regions. Coriander is affected by number of diseases such as fungal, bacterial, nematode or viral. The major fungal diseases viz., stem gall (*Protomyces macrosporus*), powdery mildew (*Erysiphe polygoni*), wilt (*Fusarium solani*, *F. oxysporum* f. sp. *corianderii*), stem and root rot (*Rhizoctonia solani*) Khare *et al.*, 2017 ^[9]. The wilt disease causes up to 60 per cent yield loss in coriander (Manoranjitham *et al.*, 2003) ^[10]. It is affected with a number of soil and air borne fungal pathogens that causes major diseases. The important diseases which reduce the yield are wilt, root rot, powdery mildew, stem gall as reported by various workers (Muthulakshmi *et al.*, 2002; Bhaliya and Jadeja, 2014; Singh and Rao, 2016; Mishra and Pandey, 2015; Garibaldi *et al.*, 2010) ^[12, 5, 15, 11, 7].

Material and Methods

A random roving survey was conducted to assess wilt disease incidence in different coriander growing villages of Jalalpore and Chikhli talukas of Navsari district during *rabi* 2024-25 and 2025-26. The survey was carried out in fields of 10 villages viz., Bhutsad, Eroo, Bodali, Kharsad, Tavdi, Amadhara, Chari, Ghej, Maliyadhara and Sadakpor. In each field, five random sites of $1 \times 1 \text{ m}^2$ area were selected for recording disease incidence. The per cent disease incidence was calculated using the standard formula suggested by Wheeler (1969) [16].

$$\text{Disease incidence (\%)} = \frac{\text{Number of infected plants}}{\text{Total number of plants}} \times 100$$

Collection of Infected Samples

Infected samples showing typical symptoms of wilt disease were collected from coriander field of the different villages of Navsari district and brought to the laboratory for isolation of pathogen. All collection points were georeferenced using a Global Positioning System (GPS).

Table 1: Survey conducted of Coriander wilt disease in Jalalpore and Chikhli talukas of Navsari district during *rabi* 2024-25 and 2025-26

Sr. No.	Village	GPS location	PDI* (%) 2024-25	Mean PDI (Taluka) 2024-25	GPS location	PDI* (%) 2025-26	Mean PDI (Taluka) 2025-26
1	Bhutsad	Latitude: 20.898916°N Longitude: 72.885476°E	14.70	14.05 (Jalalpore)	Latitude: 20.898879°N Longitude: 72.882013°E	15.67	16.82 (Jalalpore)
2	Eroo	Latitude: 20.909099°N Longitude: 72.906852°E	20.58		Latitude: 20.907746°N Longitude: 72.906872°E	26.47	
3	Bodali	Latitude: 20.946963°N Longitude: 72.878544°E	10.00		Latitude: 20.837440°N Longitude: 72.907938°E	12.12	
4	Kharsad	Latitude: 20.834095°N Longitude: 72.912325°E	16.66		Latitude: 20.938327°N Longitude: 72.871527°E	17.85	
5	Tavdi	Latitude: 20.978997°N Longitude: 72.909049°E	08.33		Latitude: 20.979100°N Longitude: 72.908799°E	12.00	
6	Amadhara	Latitude: 20.707874°N Longitude: 73.127182°E	15.15	12.45 (Chikhli)	Latitude: 20.720345°N Longitude: 73.110857°E	16.00	13.52 (Chikhli)
7	Chari	Latitude: 20.681689°N Longitude: 73.048148°E	11.54		Latitude: 20.666004°N Longitude: 73.044033°E	12.50	
8	Ghej	Latitude: 20.675679°N Longitude: 73.071365°E	15.38		Latitude: 20.671614°N Longitude: 73.074627°E	17.00	
9	Maliyadhara	Latitude: 20.706247°N Longitude: 73.064141°E	12.50		Latitude: 20.708169°N Longitude: 73.061427°E	13.04	
10	Sadakpor	Latitude: 20.736566°N Longitude: 73.111951°E	07.69		Latitude: 20.741813°N Longitude: 73.114604°E	09.09	
	Average mean per cent disease incidence in Navsari district during 2024-25		13.25		Average mean per cent disease incidence in Navsari district during 2025-26		15.17

* Per cent disease incidence

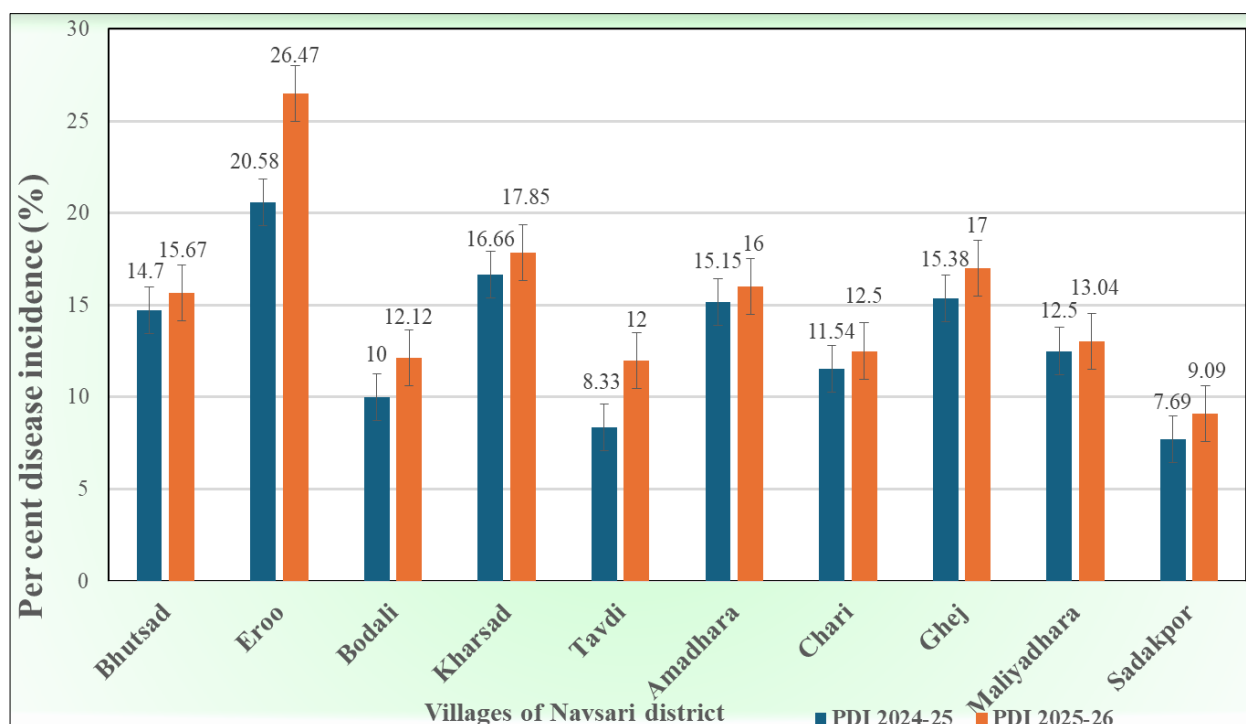


Fig 1: Per cent disease incidence of coriander wilt disease in ten villages of Navsari district during *rabi* 2024-25 & 2025-26

Results and Discussion

A random roving survey was conducted to record wilt disease incidence in different coriander growing villages of Jalalpore and Chikhli talukas of Navsari district during *rabi* 2024-25 and 2025-26. The survey covered 10 villages viz., Bhutsad, Eroo, Bodali, Kharsad, Tavdi, Amadhara, Chari, Ghej, Maliyadhara and Sadakpor. In each field, five random sites of 1×1 m² area were selected. The numbers of healthy and infected plants of each field were counted to determine the incidence of coriander wilt. The observations on disease incidence were recorded from seedling stage to maturity stage of the crop during *rabi* 2024-25 and 2025-26. The presented in Table 1 and Figure 1 revealed that wilt incidence ranged from 07.69 to 20.58 per cent during *rabi* 2024-25 and 09.09 to 26.47 per cent during *rabi* 2025-26.

Survey during *rabi* 2024-25

During *rabi* 2024-25, the maximum disease incidence (20.58%) was observed in Eroo village followed by Kharsad (16.66%), Ghej (15.38%), Amadhara (15.15%) and Bhutsad (14.70%). The minimum disease incidence (07.69%) was observed in Sadkpor village followed Tavdi (08.33%). Among the talukas, Jalalpore taluka recorded a higher mean disease incidence (14.05%) as compared to Chikhli taluka (12.45%). The average mean disease incidence in Navsari district during 2024-25 was 13.25 per cent under South Gujarat conditions.

Survey during *rabi* 2025-26

During *rabi* 2025-26, the maximum disease incidence (26.47%) was recorded in Eroo village followed by Kharsad (17.85%), Ghej (17.00%), Amadhara (16.00%) and Bhutsad (15.67%). The minimum disease incidence (09.09%) was observed in Sadkpor village. Among the talukas, Jalalpore taluka recorded the higher mean disease incidence (16.82%), whereas Chikhli taluka recorded comparatively lower disease incidence (13.52%). The average mean disease incidence in Navsari district during 2025-26 was 15.17 per cent under South Gujarat conditions.

Overall mean Disease Incidence

The survey result indicated that wilt incidence was comparatively higher during 2025-26 than during 2024-25. Among all surveyed villages, Eroo village of Jalalpore taluka recorded the highest disease incidence (26.47%), whereas Sadakpor village of Chikhli taluka recorded in lowest disease incidence (07.69-09.09%) during the survey period. Similar findings are in agreement with those of Bammidi and Dandnayak (2018) who conducted a roving survey for coriander wilt incidence in coriander growing areas of Maharashtra during *kharif*, 2016-2017. They reported highest wilt incidence in Osmanabad district (17.09%) followed by Beed (13.71%) and Latur (11.42%). Similar findings were also reported by Gosai (2024) who conducted a roving survey of pigeon pea fields from July, 2023 to February, 2024 in Bharuch (Jambusar & Vagra) and Narmada (Dediyapada & Sagbara) districts to record pigeon pea wilt incidence from seedling stage to maturity stage of the crop. The disease incidence ranged from 06.20 to 11.00 per cent. The highest disease incidence (11.00%) was reported in Pakhajan village of Vagra taluka, whereas the lowest disease incidence (06.20%) was observed in Bore village of Dediyapada taluka. The maximum mean disease incidence (10.30%) was recorded in Vagra taluka while

minimum mean disease incidence (07.10%) was recorded in Dediyapada taluka under South Gujarat condition.

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