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STUDY OF EPIDEMIOLOGICAL PARAMETERS FOR CORIANDER (*Coriandrum sativum* L.) WILT DISEASE DEVELOPMENT

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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. Epidemiological studies conducted during the 2024-25 and 2025-26 in *rabi* season. The pooled data revealed that maximum temperature had correlation ($r = 0.722$), soil moisture at 5 and 10 cm depth ($r = 0.810$) and ($r = 0.659$) exhibit highly positive correlations at 1% level of significant, indicating that higher temperature, soil moisture at 5 and 10 cm depth are strongly linked to increased disease incidence. Conversely, soil temperature at 5 and 10 cm depth ($r = 0.182$) and ($r = 0.142$) positive correlations. The correlation per cent disease incidence of wilt had higher positive correlation ($r = 0.896$) with Nitrogen at 5% level of significant. The coefficient of determination (R^2) indicated that weather parameters contributed 86.40 and 56.00 per cent towards disease development during 2024-25 and 2025-26 cropping seasons.

Key words : *Coriandrum sativum* L., *Fusarium solani*, Epidemiology, Correlation.

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 (Sastry and Sharma, 2001). 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 (Anonymous, 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 (Anonymous, 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).

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). 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).

The wilt disease causes up to 60 per cent yield loss in coriander (Manoranjitham *et al.*, 2003). 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).

Materials and Methods

The development and spread of plant diseases are greatly influenced by the presence of host plants and favourable weather conditions. Understanding the interaction between these factors is essential for effective disease management. Epidemiological studies are important as they provide valuable information about when, where and how severely specific diseases may occur in a particular area, thereby helping farmers make better decisions about disease management.

To study the effect of different weather parameters on the development of coriander wilt under field conditions during 2024-25 and 2025-26, disease observations are recorded in 20 m × 20 m plot. Five sites (1 m × 1 m) were selected randomly and total no. of plants and infected plants were recorded at weekly intervals throughout the cropping season. The data of Standard Meteorological Week (SMW) pertaining to maximum temperature, minimum temperature, morning and evening relative humidity, rainfall, soil temperature and moisture at different depth (5 & 10 cm) were collected from the Meteorological Department, NMCA, NAU, Navsari.

The per cent disease incidence was calculated by using following standard formula given by Wheeler (1969).

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

Correlation coefficient between disease incidence and different weather parameters were determined using Karl Pearson's correlation coefficient formula and tested individually for their significance at 5 per cent and 1 per cent probability level. The correlation between weather factors and disease development was analysed and their significance was tested through t-test (Gomez and Gomez, 1984).

$$t = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}}$$

Where,

t = Test of significance

r = Correlation coefficient and

n = Number of observations

Results and Discussion

Epidemiological studies are generally divided into two groups (1) those established for studying the effect of as many variables as possible including host, pathogen and environment on disease development (Holistic approach) and (2) those in which only key variables are studied to

explain most of the factors governing disease epidemics (Meristemic approach). The decision whether to employ holistic or meristemic approach depends to not only the purpose of study or to the research facilities, but also on financial, instrumental and staff situation, etc.

A field experiment was carried out to study the effect of soil and weather parameters on the development of coriander wilt during *rabi* 2024-25 and 2025-26 using susceptible cultivar/genotype NCOR-199 at the college farm, N.M. College of Agriculture, NAU, Navsari. Meteorological parameters viz., maximum temperature, minimum temperature, morning and evening relative humidity, soil temperature (5 and 10 cm), soil moisture (5 and 10 cm) and rainfall were collected from the Department of Agricultural Meteorology, N.M. College of Agriculture, NAU, Navsari. Observations on per cent disease incidence were recorded at weekly interval.

Progressive percent Disease incidence of Coriander wilt under Natural Field condition

The wilt disease caused by *Fusarium solani* is one of the major disease of coriander and causes yield losses. Limited information is available regarding the effect of weather parameters on disease development. Therefore, the present study was undertaken to evaluate the impact of environmental factors on the development of coriander wilt under natural field conditions.

The crop was sown on 25th November 2024 (47th Standard Meteorological week) during 2024-25 and 8th December 2025 (49th Standard Meteorological week) during 2025-26. The first appearance of coriander wilt was observed 51st Standard Meteorological week in both the year. Tables 1 and 2 indicated a progressive increase in disease incidence reaching a maximum of 38.09 and 36.84 per cent during 2024-25 & 2025-26, respectively.

Progressive per cent disease incidence of coriander wilt during 2024-25

During 2024-25 (Table 1), the first symptoms of coriander wilt on genotype NCOR-199 were observed on December 17, 2024, during the 51st Standard Meteorological Week (SMW), with an initial disease incidence of 5.26 per cent. From the 51st SMW in 2024 to the 10th SMW in 2025, there was a linear increase in PDI, reaching a maximum of 38.09 per cent.

A sharp increase in disease incidence was observed from 3rd SMW (22.72%) to the 4th SMW (27.27%), due to the favourable weather conditions. These conditions included a maximum temperature of 31.4°C, a minimum temperature of 15.7°C, morning relative humidity of 82 per cent, evening relative humidity of 42 per cent, no rainfall, soil temperature (5 and 10 cm) at (20.8 and

Table 1 : Weather parameters and progress of per cent disease incidence of coriander wilt during 2024-25.

SMW	Per cent disease incidence(%)	Max. Temperature (°C)	Min. Temperature (°C)	Morning Relative Humidity (%)	Evening Relative Humidity (%)	Rainfall (mm)	Soil Temperature (°C)		Soil Moisture (%)	
							5 cm	10 cm	5 cm	10 cm
47	0.00	32.8	16.6	76.8	39.2	0.0	22.7	26.1	35.4	33.4
48	0.00	30.6	16.0	68.4	34.6	0.0	20.4	24.7	37.3	31.5
49	0.00	32.8	16.8	82.5	39.1	0.0	22.9	26.1	38.4	32.4
50	0.00	30.0	13.9	62.9	30.7	0.0	19.6	23.4	36.6	29.2
51	5.26	31.0	13.8	91.3	45.7	0.0	19.5	23.1	34.1	28.0
52	10.52	29.6	15.7	89.5	48.9	0.0	20.8	23.8	34.1	28.8
1	15.78	32.3	14.4	81.0	35.0	0.0	20.1	23.9	38.3	30.1
2	21.05	30.1	14.1	79.0	41.0	0.0	19.6	23.1	35.7	28.3
3	22.72	31.4	15.7	82.0	42.0	0.0	20.8	24.1	37.6	30.9
4	27.27	32.6	14.3	86.9	39.7	0.0	20.2	23.7	38.6	33.1
5	28.57	32.4	12.9	92.0	35.0	0.0	19.6	23.7	38.9	31.1
6	30.00	32.7	14.4	75.0	32.0	0.0	19.7	24.4	39.9	32.6
7	31.57	34.0	13.7	84.0	32.0	0.0	21.0	24.4	40.9	36.1
8	36.36	35.3	14.8	74.0	25.0	0.0	22.9	25.7	42.7	38.1
9	36.84	35.9	16.3	75.0	29.8	0.0	23.6	27.4	41.9	37.0
10	38.09	36.5	15.9	69.0	17.0	0.0	22.3	27.0	46.7	35.4
Correlation coefficient		0.695**	-0.238 ^{NS}	0.048 ^{NS}	-0.546*	0.0	0.198 ^{NS}	0.277 ^{NS}	0.758**	0.622*

*Correlation is significant at the 5% level, **Correlation is significant at the 1% level.

24.1°C) and soil moisture (5 and 10 cm) at (37.6 and 30.9°C). Consequently, this period was identified as a critical window for the increase in PDI of coriander wilt caused by *F. solani*.

Progressive per cent disease incidence of coriander wilt during 2025-26

During 2025-26 (Table 2), the occurrence of wilt was lower compared to the previous year. The first symptoms were observed on December 17, 2025, during the 51st Standard Meteorological Week (SMW), with an initial disease incidence of 4.34 per cent on genotype NCOR-199. From the 51st SMW in 2025 to the 10th SMW of 2026, there was a linear increase in PDI, reaching a maximum 36.84 per cent.

A rapid increase in disease incidence was observed from the (16.66%) 5th SMW to the 6th SMW (28.57%) under favourable weather conditions. During this period, a maximum temperature was 33.3°C, a minimum temperature of 16.8°C, morning relative humidity of 94 per cent, evening relative humidity of 33 per cent, no rainfall was recorded. Soil temperature at 5 and 10 cm depth was 20.7 and 21.9 °C respectively, while soil moisture at 5 and 10 cm depth was 36.4 and 34.9°C per cent, respectively. This condition was identified as a critical window period for the development of coriander wilt caused by *F. solani*.

Progressive per cent disease incidence of coriander wilt during pooled analysis (2024-25 & 2025-26)

The pooled data presented in Table 3 revealed that the first appearance of wilt was recorded during the 51st SMW with an initial disease incidence of 4.80 per cent on genotype NCOR-199. Disease incidence increases progressively from the 51st SMW to the 10th SMW and reached a maximum of 37.46 per cent.

The PDI peaked periodically, rising from 22.61 per cent in 5th SMW to 29.28 per cent in 6th SMW due to favourable weather conditions. During this period, the maximum temperature was 32.1°C, minimum temperature 15.8°C, morning relative humidity 93.0 per cent, evening relative humidity 37.5

Table 2 : Weather parameters and progress of per cent disease incidence of coriander wilt during 2025-26.

SMW	Per cent disease incidence(%)	Max. Temperature (°C)	Min. Temperature (°C)	Morning Relative Humidity (%)	Evening Relative Humidity (%)	Rainfall (mm)	Soil Temperature (°C)		Soil Moisture (%)	
							5 cm	10 cm	5 cm	10 cm
47	0.00	31.7	17.3	94.0	44.0	0.0	22.7	24.6	35.6	33.3
48	0.00	33.2	18.3	89.0	41.0	0.0	22.6	24.1	36.9	35.0
49	0.00	31.7	18.1	89.0	36.0	0.0	22.1	23.9	37.0	35.1
50	0.00	32.1	16.1	94.0	29.0	0.0	19.3	20.9	36.4	34.7
51	4.34	32.0	16.5	92.0	30.0	0.0	19.7	21.0	36.4	34.0
52	5.26	31.3	16.8	94.0	34.0	0.0	20.1	21.9	37.4	36.0
1	9.09	30.1	17.5	94.0	48.0	0.0	19.9	21.6	35.0	33.4
2	10.00	30.3	16.3	94.0	39.0	0.0	19.4	21.0	36.3	33.1
3	10.52	29.8	14.6	91.0	39.0	0.0	18.9	20.3	35.3	31.3
4	11.11	30.4	16.0	95.0	41.0	0.0	19.1	20.3	34.0	31.6
5	16.66	31.9	18.7	94.0	40.0	0.0	21.4	22.9	35.6	33.9
6	28.57	33.3	16.8	94.0	33.0	0.0	20.7	21.9	36.4	34.9
7	33.33	33.4	17.3	95.0	33.0	0.0	21.1	22.6	36.6	34.9
8	35.29	34.2	17.7	92.0	37.0	0.0	23.4	22.3	37.1	36.0
9	36.36	33.1	18.3	94.0	44.0	0.0	24.4	23.3	37.9	35.1
10	36.84	31.9	15.5	81.0	24.0	0.0	19.3	21.7	38.9	35.7
Correlation coefficient		0.503*	0.042 ^{NS}	-0.171 ^{NS}	-0.210 ^{NS}	0.0	0.260 ^{NS}	-0.037 ^{NS}	0.443 ^{NS}	0.358 ^{NS}

* Correlation is significant at the 5% level ** Correlation is significant at the 1% level.

per cent and no rainfall occurred. Soil temperature at 5 and 10 cm was 20.5 and 23.3°C respectively, whereas, soil moisture at 5 and 10 cm depth was 37.2 and 32.5°C per cent, respectively. These conditions favoured and identified as a critical window period for disease development of coriander wilt caused by *F. solani*.

Correlation Coefficient studies between percent Disease incidence of Coriander wilt and Weather parameters

The correlation coefficients between disease incidence and different meteorological parameters were worked out using simple correlation analysis. The epidemiological studies were performed right from initiation of the disease development. The correlation coefficient between disease incidence and weather and soil parameters are presented in Table 3 and Fig. 1.

Correlation of per cent disease incidence of coriander wilt with weather parameters during 2024-25

The correlation coefficients between disease incidence and meteorological parameters during 2024-25 are presented in Table 3.

The correlation analysis revealed that disease incidence showed a highly significant positive correlation ($r = 0.695$) with maximum temperature and ($r = 0.758$) with soil moisture 5 cm depth at 1% level of significant. Soil moisture at 10 cm depth ($r = 0.622$) also showed significantly positive correlation at 5% level. Evening relative humidity exhibited a significantly negative correlation ($r = -0.546$). However, morning relative humidity ($r = 0.048$), soil temperature at 5 and 10 cm depth at ($r = 0.198$) and ($r = 0.277$) respectively, showed non-significant positive correlations, whereas rainfall showed no correlation with disease development.

Correlation of per cent disease incidence of coriander wilt with weather parameters during 2025-26

The correlation coefficients between disease incidence and meteorological parameters during 2025-26 are presented in Table 4.

Table 3 : Weather parameters and progress of per cent disease incidence of coriander wilt pooled in 2024-25 and 2025-26.

SMW	Per cent disease incidence(%)	Max. Temperature (°C)	Min. Temperature (°C)	Morning Relative Humidity (%)	Evening Relative Humidity (%)	Rainfall (mm)	Soil Temperature (°C)		Soil Moisture (%)	
							5 cm	10 cm	5 cm	10 cm
47	0.00	32.2	16.9	85.4	41.6	0.0	22.7	25.3	35.5	33.3
48	0.00	31.9	17.1	78.7	35.3	0.0	21.5	24.4	37.1	33.2
49	0.00	32.2	17.4	85.7	37.5	0.0	22.5	25.0	36.5	33.7
50	0.00	31.0	15.0	78.4	29.8	0.0	19.4	22.1	36.5	31.9
51	4.80	31.5	15.1	91.6	37.8	0.0	19.6	22.0	35.2	31.0
52	7.89	30.4	16.2	91.7	41.4	0.0	20.4	22.8	35.7	32.4
1	12.43	31.2	15.9	87.5	41.5	0.0	20.0	22.7	36.6	31.7
2	15.52	30.2	15.2	86.5	40.0	0.0	14.5	22.0	36.0	30.7
3	16.62	30.6	15.1	86.5	40.5	0.0	19.8	22.2	36.4	31.1
4	19.19	31.5	15.1	90.9	40.3	0.0	19.6	22.0	36.3	32.3
5	22.61	32.1	15.8	93.0	37.5	0.0	20.5	23.3	37.2	32.5
6	29.28	33.0	15.6	84.5	32.5	0.0	20.2	23.2	38.1	33.7
7	32.45	33.7	15.5	89.5	32.5	0.0	21.2	23.5	38.7	35.5
8	35.82	34.7	16.2	83.0	31	0.0	23.1	24.0	39.9	37.0
9	36.60	34.5	17.3	84.5	36.9	0.0	24.0	25.3	39.9	36.0
10	37.46	34.2	15.7	75.0	20.5	0.0	20.8	24.3	42.8	35.5
Correlation coefficient		0.722**	-0.127 ^{NS}	-0.078 ^{NS}	-0.483 ^{NS}	0.0	0.182 ^{NS}	0.142 ^{NS}	0.810**	0.659**

* Correlation is significant at the 5% level ** Correlation is significant at the 1% level.

The correlation analysis revealed that the per cent disease incidence showed a highly significant positive correlation ($r = 0.503$) with maximum temperature at 5% level. Minimum temperature ($r = 0.042$), soil temperature at 5 cm depth ($r = 0.260$), soil moisture at 5 and 10 cm depth ($r = 0.443$) and ($r = 0.358$) respectively, showed non-significant positive correlations. However, morning relative humidity ($r = -0.171$), evening relative humidity ($r = -0.210$), soil temperature at 10 cm depth ($r = -0.037$) non-significant negative correlations, whereas rainfall showed no correlation with disease development.

Correlation of per cent disease incidence of coriander wilt with weather parameters during pooled (2024-25 and 2025-26)

The pooled correlation coefficients between disease incidence and meteorological parameters during year 2024-25 and 2025-26 are presented in Table 4 and Fig. 2.

The correlation analysis, presented in table for pooled data, significant associations between wilt disease incidence and various meteorological factors. Notably, maximum temperature had correlation ($r = 0.722$), soil moisture at 5 and 10 cm depth ($r = 0.810$) and ($r = 0.659$) exhibit highly positive correlations at 1% level of significant, indicating that higher temperature, soil moisture at 5 and 10 cm depth are strongly linked to increased disease incidence. Conversely, soil temperature at 5 and 10 cm depth ($r = 0.182$) and ($r = 0.142$) positive correlations. Minimum temperature ($r = -0.127$), morning and evening relative humidity ($r = -0.078$) and ($r = -0.483$) showed non-significant negative correlations. whereas rainfall showed no correlation with disease development.

Multiple linear regression models for weather parameter on wilt of coriander during the cropping season 2024-25 & 2025-26

The data in the Table 5 shows the coefficient of determination (R^2) of selected weather parameters i.e. maximum and

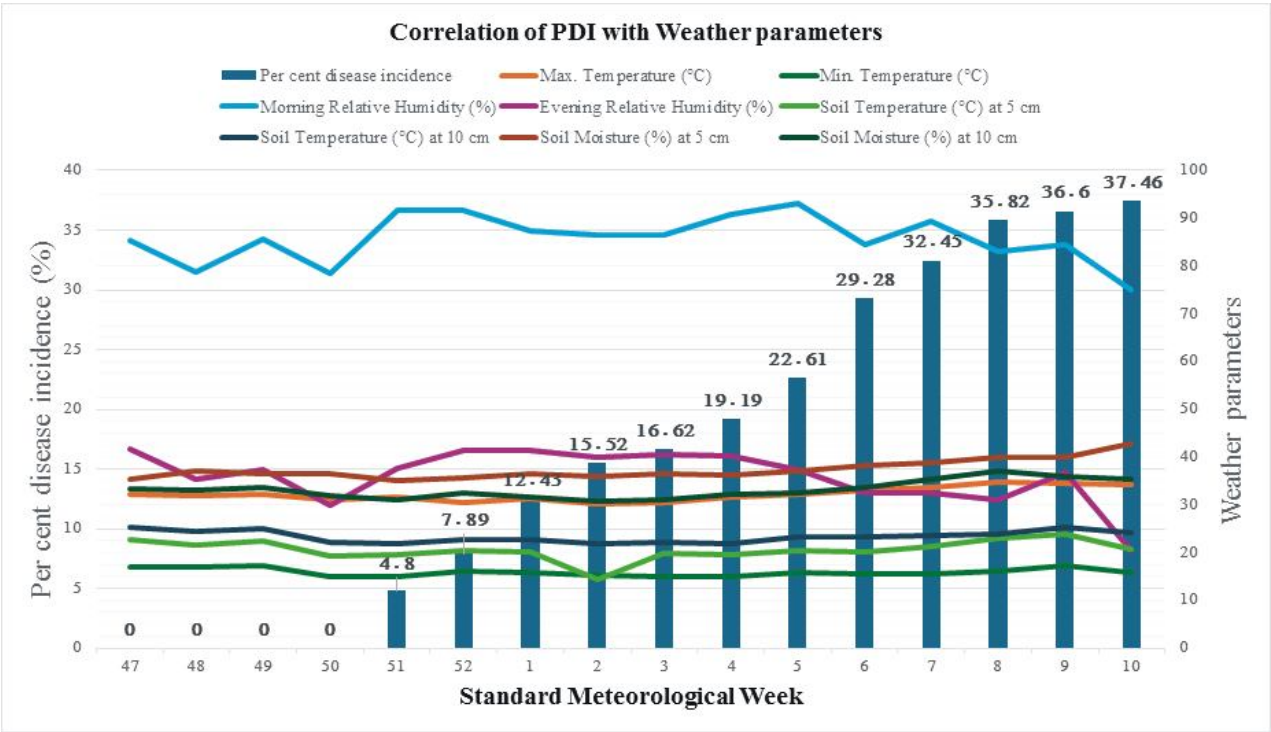


Fig. 1 : The impact of different weather parameters on disease development of Fusarium wilt of coriander pooled in 2024-25 & 2025-26.

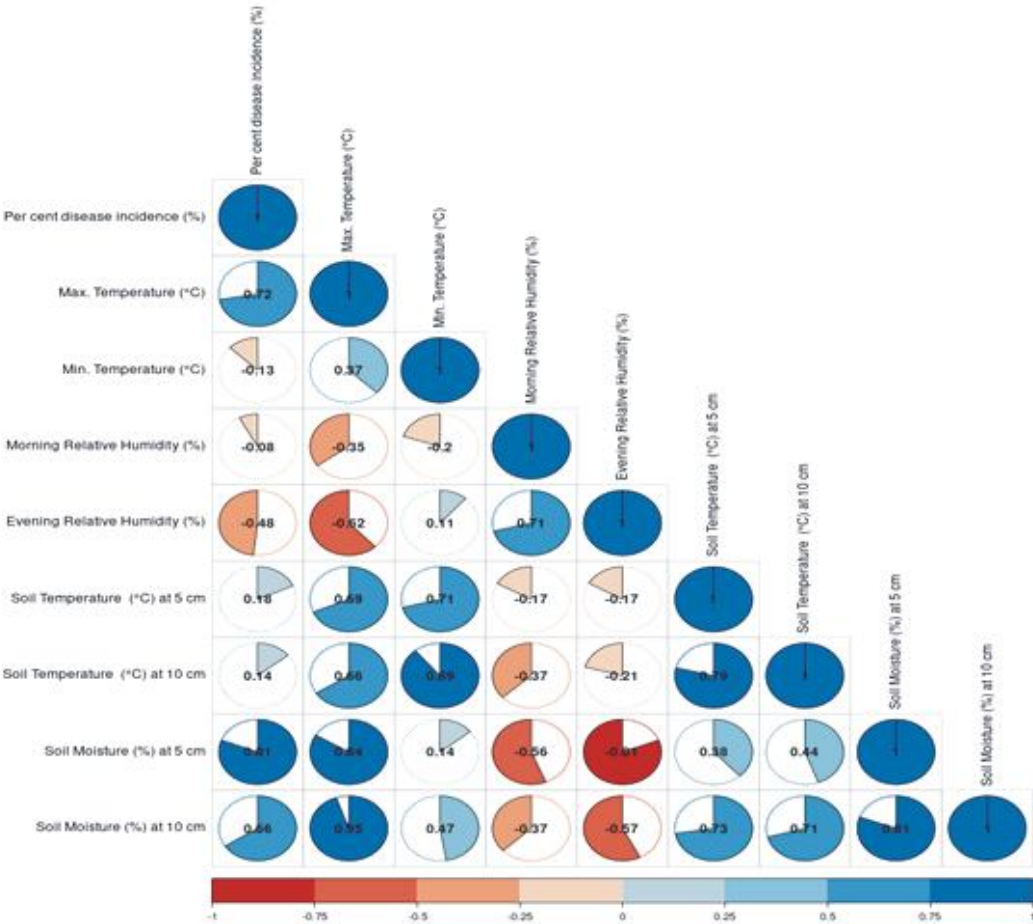


Fig. 2 : Correlation matrix between per cent disease incidence of coriander wilt and weather parameters pooled in 2024-25 and 2025-26.

minimum temperature, morning and evening relative humidity, soil temperature and moisture at depth of (5 and 10 cm) contributed 86.40 and 56.00 per cent towards disease development during 2024-25 and 2025-26 cropping seasons. The R^2 value of the model was significant at 5 per cent level of significance.

The regression equation for disease incidence during 2024-25 crop was, $(Y) = +1.464 x_1 - 12.530 x_2 - 1.220 x_3 + 4.089 x_4 - 0.202 x_5 + 5.327 x_6 + 9.042 x_7 + 0.090 x_8$ indicating an unit increase in maximum temperature, evening relative humidity, soil temperature at 10 cm and soil moisture at 5 and 10 cm enhance the disease incidence by 1.464, 4.089, 5.327, 9.042 and 0.090 units, respectively. Whereas, every unit increase in minimum temperature, morning relative humidity and soil temperature at 5 cm found to decrease the incidence of disease by 12.530, 1.220 and 0.202 units, respectively.

Regression equation for disease incidence during 2025-26 crop was, $(Y) = +10.521 x_1 + 1.032 x_2 - 0.464 x_3 + 1.241 x_4 - 1.225 x_5 - 7.179 x_6 + 9.734 x_7 - 4.898 x_8$ indicating an unit increase in maximum temperature, minimum temperature, evening relative humidity and soil moisture at 5 cm enhance the disease incidence by 10.521, 1.032, 1.241 and 9.734 units, respectively. Whereas, every unit increase in morning relative humidity, soil temperature at 5 and 10 cm and soil moisture at 10 cm found to decrease the incidence of disease by 0.464, 1.225, 7.179 and 4.898 units, respectively.

Regression equation for disease incidence during 2024-25 & 2025-26 crop was, $(Y) = +3.716 x_1 - 5.579 x_2 + 0.464 x_3 + 1.518 x_4 - 1.427 x_5 - 1.110 x_6 + 7.399 x_7 + 1.710 x_8$ indicating an unit increase in maximum temperature, morning and evening relative humidity and soil moisture at 5 and 10 cm enhance the disease incidence by 3.716, 0.464, 1.518, 7.399 and 1.710 units, respectively. Whereas, every unit increase in minimum temperature and soil temperature at 5 and 10 cm found to decrease the incidence of disease by 5.579, 1.427 and 1.110 units, respectively.

These result of correlation are more or less supported by earlier reports of Pal (2019), who investigated linseed wilt disease incidence during 2015-16 and found a positive correlation with maximum temperature, minimum temperature and soil temperature, whereas disease incidence showed negative correlation with evening relative humidity. During 2016-17, disease incidences showed a positive correlation with minimum temperature and soil temperature at 10 cm depth and negative correlation with morning and evening relative humidity. The coefficient of determination (R^2) indicated that

Table 4 : Correlation matrix between per cent disease incidence of coriander wilt and weather parameters.

Cropping Season	Correlation coefficient with weather parameters						
	Max. temperature (°C)	Min. temperature (°C)	Morning Relative Humidity (%)	Evening Relative Humidity (%)	Rainfall (mm)	Soil temperature (°C)	
						5 cm	10 cm
2024-25	0.695**	-0.238 ^{NS}	0.048 ^{NS}	-0.546*	0.0	0.198 ^{NS}	0.277 ^{NS}
2025-26	0.503*	0.042 ^{NS}	-0.171 ^{NS}	-0.210 ^{NS}	0.0	0.260 ^{NS}	-0.037 ^{NS}
(Pooled)	0.722**	-0.127 ^{NS}	-0.078 ^{NS}	-0.483 ^{NS}	0.0	0.182 ^{NS}	0.142 ^{NS}
						5 cm	10 cm
						0.758**	0.622*
						0.443 ^{NS}	0.358 ^{NS}
						0.810**	0.659**

* Correlation is significant at the 5% level ** Correlation is significant at the 1% level

Table 5 : Multiple linear regression models for weather parameter on wilt of coriander during the cropping season 2024-25 & 2025-26.

Per cent disease incidence (%)	Multiple linear regression with weather parameters								R ²
	Max. temperature (°C) (X ₁)	Min. temperature (°C) (X ₂)	Morning relative Humidity (%) (X ₃)	Evening Relative humidity (%) (X ₄)	Soil temperature (°C)		Soil moisture (%)		
					5 cm (X ₅)	10 cm (X ₆)	5 cm (X ₇)	10 cm (X ₈)	
(Y) 2024-25	1.464 x ₁	-12.530 x ₂	-1.220 x ₃	4.089 x ₄	-0.202 x ₅	5.327 x ₆	9.042 x ₇	0.090 x ₈	0.864
Multiple regression equation (2024-25):- Y = +1.464 x ₁ -12.530 x ₂ -1.220 x ₃ +4.089 x ₄ -0.202 x ₅ +5.327 x ₆ +9.042 x ₇ +0.090 x ₈									
(Y) 2025-26	10.521 x ₁	1.032 x ₂	-0.464 x ₃	1.241 x ₄	-1.225 x ₅	-7.179 x ₆	9.734 x ₇	-4.898 x ₈	0.560
Multiple regression equation (2025-26):- Y = +10.521 x ₁ +1.032 x ₂ -0.464 x ₃ +1.241 x ₄ -1.225 x ₅ -7.179 x ₆ +9.734 x ₇ -4.898 x ₈									
(Y) (Pooled)	3.716 x ₁	-5.579 x ₂	0.464 x ₃	1.518 x ₄	-1.427 x ₅	-1.110 x ₆	7.399 x ₇	1.710 x ₈	0.970
Multiple regression equation (2024-25 & 2025-26):- Y = +3.716 x ₁ -5.579 x ₂ +0.464 x ₃ +1.518 x ₄ -1.427 x ₅ -1.110 x ₆ +7.399 x ₇ +1.710 x ₈									

weather parameters contributed 57 and 89 per cent towards disease development during 2015-16 and 2016-17 crop seasons, respectively.

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