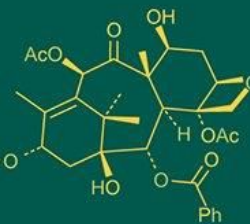
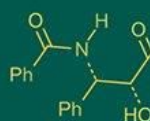


International Journal of Advanced Biochemistry Research



ISSN Print: 2617-4693
ISSN Online: 2617-4707
IJABR 2024; 8(9): 352-354
www.biochemjournal.com
Received: 25-06-2024
Accepted: 29-07-2024

Anand Kumar Prajapati
Department of Plant
pathology, Tilak Dhari Post
Graduate College, Jaunpur,
Uttar Pradesh, India

Ramesh Singh
Department of Plant
pathology, Tilak Dhari Post
Graduate College, Jaunpur,
Uttar Pradesh, India

Shubham Singh
Department of Plant
pathology, Tilak Dhari Post
Graduate College, Jaunpur,
Uttar Pradesh, India

Gaurav
Department of Plant
pathology, Tilak Dhari Post
Graduate College, Jaunpur,
Uttar Pradesh, India

Corresponding Author:
Anand Kumar Prajapati
Department of Plant
pathology, Tilak Dhari Post
Graduate College, Jaunpur,
Uttar Pradesh, India

Incidence of stem gall of coriander (*Coriandrum sativum* L.) caused by *Protomyces macrosporus* in different part of Eastern Uttar Pradesh

Anand Kumar Prajapati, Ramesh Singh, Shubham Singh and Gaurav

DOI: <https://doi.org/10.33545/26174693.2024.v8.i9e.2169>

Abstract

Coriander (*Coriandrum sativum* L.) was one of the first spices to be used by man as a common flavouring substance. Coriander (*Coriandrum sativum* L.) was one of the first spices to be used by man as a common flavouring substance. The disease Stem gall is caused by *Protomyces macrosporus* Unger and is responsible for severe loss in yield. In the year 2021-22 the maximum average percent of disease incidence was recorded in Jaunpur (25.58) followed by Bhadohi (24.16) and Varanasi (22.49). The minimum PDI was recorded in Mirzapur (15.41). In year 2022-23 the maximum average disease incidence was recorded in Jaunpur (24.74) followed by Azamgarh (23.41) and Mirzapur (22.66). The minimum was recorded in Varanasi (20.91).

Keywords: Disease, incidence, coriander

Introduction

Coriander (*Coriandrum sativum* L.) is one of the first spices to be used by man as a common flavouring substance. The name coriander, *Coriandrum*, first noted by Pliny, was derived from 'Kopis' (a bedbug) + ander (resembling) and refers to the supposed similarity of the scent of the crushed leaves to the distinctive odour of bedbugs. Coriander is a single plant, also called Chinese parsley and its leaves are known as Cilantro. It is an annual herb, mainly cultivated for its fruits as well as tender green leaves. Coriander is cultivated all over the world as green leafy vegetable and seeds as a spice for essential oil production. India is the largest producer of coriander in the world, accounting for about 80 per cent of the global production (Singh and Singh, 1996) [8]. The crop is attacked by several pathogens causing diseases like vascular wilt (*Fusarium oxysporum* f sp. *coriander*), stem rot (*Sclerotinia sclerotiorum*), root rot (*Rhizoctonia solani*), charcoal rot (*Rhizoctonia bataticola*), seedling blight (*Alternaria poonensis*), stem gall (*Protomyces macrosporus*) and many bacterial, nematodal and viral disease. The disease Stem gall is caused by *Protomyces macrosporus* Unger and is responsible for severe loss in yield (Gupta, 1954) [2]. The epidemiology, histopathology, biochemistry and control measures have all been well studied by several worker Viz., (Mukhopadhyay and Pavgi, 1971; Pavgi and Mukhopadhyay, 1972 and Lakra, 1999) [5, 6, 4].

Materials and Methods

The survey will be conducted to record the occurrence and distribution of Stem Gall of Coriander in two blocks of each Five major Coriander growing districts in Eastern Uttar Pradesh, India Viz. Jaunpur, Varanasi, Mirzapur, Bhadohi and Azamgarh during Rabi season of 2021- 2022 and 2022-2023. The blocks in each district will be selected randomly. The number of fields visited per blocks ranged from 5- 10 and a distance of 15-20 Km. The surveyed and information on soil type, cultivars grown, percent disease incidence and agronomic practices were recorded. 1m² quadrants will be randomly selected in each field and infected plant will be conducted in each quadrant.

Disease incidence (%) of stem gall of coriander of each village was estimated with the formula given below:

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

Disease severity (%) was determined according to the scale of (Biswas *et al.*, 1992)^[1].

Result and Discussion

In order to know the disease incidence of stem gall of

coriander, a survey was conducted for collection of natural disease samples during the *Rabi* season 2021-22 and 2022-23 from different districts of Eastern Uttar Pradesh. During the survey, it was found that most farmers grow local variety of coriander. The less infection of coriander may be due to crop rotation followed by the farmers or resistance was present in local variety. The data are presented in Table-1.

Table 1: Disease incidence, soil type and cultivar grown of stem gall of coriander during *Rabi* season 2021-22 and 2022-23

Districts	Block	Village	Soil type	Cultivar grown	Percent disease incidence 2021-22	Average percent disease incidence 2021-22	Percent disease incidence 2022-23	Average percent disease incidence 2022-23
Jaunpur	Sodhi Shahganj	Takha Purab	Sandy soil	Suguna	13.33	25.58	27.00	24.74
		Shivpur	Sandy soil	Local	29.00		22.66	
	Khuthan	Gobraha	Alluvial	Local	26.66		25.33	
		Nakabi	Alluvial	Sadhna	33.33		24.00	
Azamgarh	Pawai	Bhadsar	Sandy loam	Sindhua	17.33	21.41	19.00	23.41
		Khanjapapur	Sandy loam	Local	23.00		24.33	
	Rani ki sarai	Nadauli	Loam	Sudha	24.66		22.33	
		Kotwalipur	Loam	Swathi	20.66		28.00	
Varanasi	Pindra	Ashapur	Sandy Loam	Local	17.33	22.49	24.66	20.91
		Balrampur	Sandy Loam	Local	27.66		15.00	
	Chiragaon	Amauli	Loam to Clay loam	Suguna	23.00		26.00	
		Mugdampur	Loam	Suguna	22.00		18.00	
Mirzapur	Patehra	Lalapur	Clay soil	Suruchi	21.33	15.41	26.00	22.66
		Newarhia	Clay to sandy	Local	12.00		15.33	
	Rajgarh	Khamharia	Rocky to sandy loam	Local	12.66		26.66	
		Rajapur	Rocky to sandy loam	Swathi	15.66		22.66	
Bhadohi	Aurai	Basantpur	Silty loam	Sadhna	23.33	24.16	20.00	21.49
		Saduli	Silty loam	Local	24.33		27.00	
	Suriyawan	Karanpur	Silty to sandy loam	Local	25.66		22.33	
		Masaudhi	Silty to sandy loam	Local	23.33		16.66	

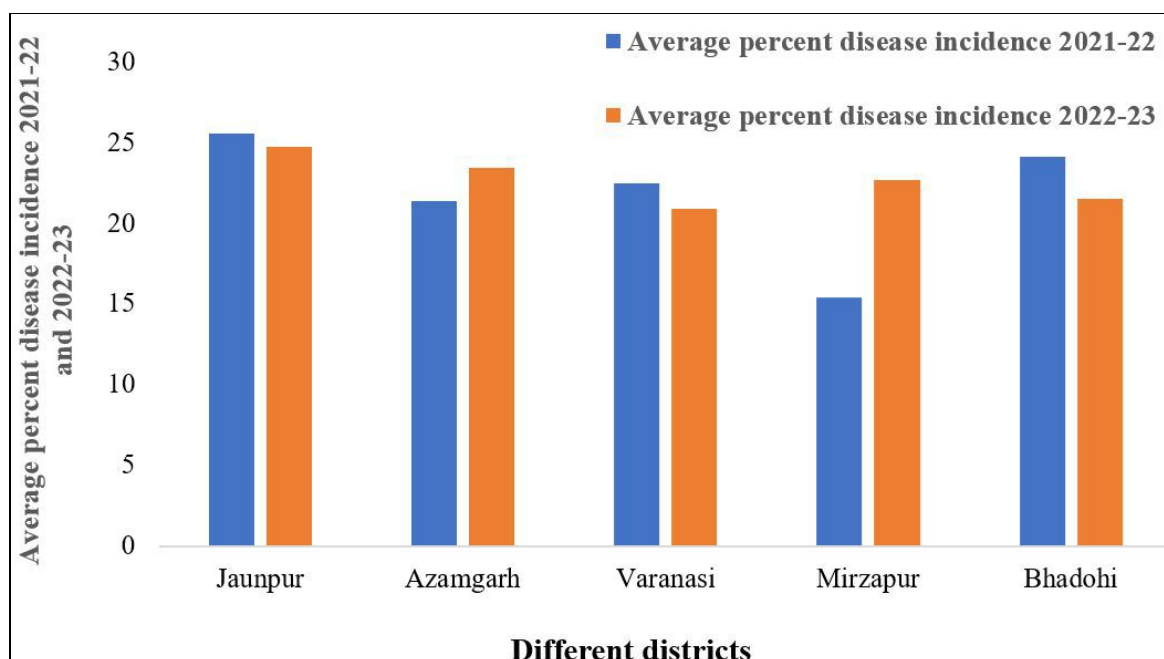


Fig 1: Disease incidence of stem gall of coriander during *Rabi* season 2021-22 and 2022-23

The result presented in Table-1 and corresponding histogram (Fig-1) the maximum percent of disease incidence (PDI) was recorded in Jaunpur (25.58) followed by Bhadohi (24.16), Varanasi (22.49), Azamgarh (21.41) and minimum PDI was recorded in Mirzapur (15.41) in year 2021-22. The maximum (33.33%) disease incidence was

recorded in Nakabi in Khutahan block, Jaunpur and minimum (12.00%) disease incidence were recorded in Newarhia, in Petahra block, Mirzapur in 2021-22.

In year 2022-23 result presented in Table 1 and corresponding histogram (Fig-1) the maximum average PDI (%) was recorded in Jaunpur (24.74) followed by Azamgarh

(23.41), Mirzapur (22.66), Bhadohi (21.49) and minimum average PDI (%) was recorded in Varanasi (20.91). The maximum PDI (28.00) was recorded in Kotwalipur village of Rani li Sarai of Azamgarh district and minimum PDI (15.00) was recorded in Balrampur village in Pindra block of Varanasi in 2022-23.

The present findings were coincide with findings of several workers of coriander due to 3.8–21 percent disease intensity of stem gall on coriander under field conditions.

Conclusion

The survey conducted during the Rabi seasons of 2021-22 and 2022-23 across Eastern Uttar Pradesh revealed significant variations in stem gall disease incidence in coriander. Jaunpur consistently recorded the highest percent disease incidence (PDI), with maximum values observed in Nakabi and Kotwalipur villages, while Mirzapur and Varanasi had the lowest incidences. The data suggests that factors such as local variety resistance and crop rotation practices may contribute to lower disease levels in some areas. Overall, the findings align with previous studies indicating a 3.8–21% disease intensity range for stem gall on coriander under field conditions.

Reference

1. Biswas S, Teotia RS, Manal SK. Some field observations on the severity of powdery mildew (*Phyllactinia corylea*) in mulberry. Indian J Sci. 1992;31:67-69.
2. Gupta JS. Disease appraisal of stem gall of coriander. Indian Phytopathol. 1954;7:53-60.
3. Gupta RN, Sinha S. Varietal field trials in the control of stem gall disease of coriander. Indian Phytopathol. 1973;26:337-340.
4. Lakra BS. Assessment of losses due to stem gall in coriander. Plant Dis Res. 1999;14(1):85-87.
5. Mukhopadhyay AN, Pavgi MS. Environment in relation to infection of coriander by *Protomyces macrosporus* Unger. Ann Phytopathol Soc Jpn. 1971;37:215-9.
6. Pavgi MS, Mukhopadhyay AN. Development of coriander fruit infected by *Protomyces macrosporus* Unger. Cytologia. 1972;37:619-27.
7. Singh SP, Gupta JS, Sharma AK. Disease appraisal and crop loss estimates in coriander attacked by *Protomyces macrosporus* Unger in Uttar Pradesh. Geobios. 1984;11:276-278.
8. Singh VB, Singh K. Spices. New Age Internet Pvt Ltd; New Delhi; c1996. p. 100-112.