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Survey and epidemiological status of alternaria blight of clusterbean in northern Madhya Pradesh

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Abstract

Clusterbean [*Cyamopsis tetragonoloba* (L.) Taub.] is an important leguminous crop cultivated in arid and semi-arid regions of India for vegetable, fodder, industrial gum, and soil improvement purposes. Alternaria blight caused by *Alternaria cyamopsidis* is considered one of the major foliar diseases reducing clusterbean productivity in several growing regions. A comprehensive roving survey was conducted during Kharif 2021 and 2022 in major clusterbean-growing districts of Northern Madhya Pradesh, namely Gwalior, Morena, and Shivpuri, to assess the prevalence and intensity of Alternaria blight disease. The survey revealed that the disease was prevalent in all surveyed districts with varying intensity. Among the districts surveyed, Gwalior recorded the highest disease intensity followed by Morena, whereas Shivpuri showed the lowest disease intensity during both years. During Kharif 2022, mean Alternaria blight intensity increased to 19.86% compared with 17.96% recorded during 2021. Among different blocks, Dabra block of Gwalior district consistently recorded maximum disease intensity, while Karera block of Shivpuri district showed minimum disease intensity during both years. At village level, Lohgarh village in Dabra block exhibited the highest disease intensity, whereas Narahi village in Karera block recorded the lowest disease severity. The present investigation confirms the widespread occurrence of Alternaria blight in Northern Madhya Pradesh and highlights the need for continuous disease monitoring and integrated disease management strategies for sustainable clusterbean production.

Keywords: Alternaria blight, alternaria cyamopsidis, clusterbean, disease intensity, northern Madhya Pradesh, survey

Introduction

Clusterbean [*Cyamopsis tetragonoloba* (L.) Taub.], commonly known as guar, is an important drought-tolerant leguminous crop cultivated extensively in India. It is valued for its industrial gum, vegetable pods, fodder, green manure, and soil-enriching properties. India is the leading producer and exporter of guar gum in the world. Madhya Pradesh is emerging as an important clusterbean-growing state due to favorable agro-climatic conditions.

Despite its economic importance, clusterbean cultivation is adversely affected by several fungal, bacterial, and viral diseases. Among these, Alternaria blight caused by *Alternaria cyamopsidis* is one of the destructive foliar diseases responsible for considerable reduction in yield and quality. The disease affects leaves, stems, petioles, and pods, resulting in premature defoliation and weakening of plants.

The disease initially appears as small, circular to irregular brown necrotic spots on leaves, which later enlarge and coalesce under favorable environmental conditions. Severe infection causes extensive blighting and drying of foliage. Warm temperature and high humidity favor disease development and spread.

Knowledge regarding disease prevalence and distribution is essential for designing effective management practices. Therefore, the present investigation was conducted to assess the incidence and severity of Alternaria blight of clusterbean in major clusterbean-growing districts of Northern Madhya Pradesh during Kharif 2021 and 2022.

2. Materials and Methods

2.1 Survey area

A systematic roving survey was conducted during Kharif seasons of 2021 and 2022 in major

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clusterbean-growing districts of Northern Madhya Pradesh, namely Gwalior, Morena, and Shivpuri. Different villages and blocks representing major clusterbean cultivation areas were selected for disease assessment.

2.2 Method of survey

The survey was conducted at flowering to pod development stages of the crop. In each village, five fields were selected randomly for disease assessment. Observations were recorded on disease incidence and severity.

2.3 Disease assessment

Disease intensity was recorded based on visual symptoms observed on aerial plant parts including leaves, stems, petioles, and pods. Percent disease intensity was calculated using standard disease rating procedures.

Percent Disease Intensity (PDI) = [Sum of all numerical disease ratings / (Total number of observations × Maximum disease grade)] × 100.

2.4 Statistical analysis

The mean disease intensity for districts, blocks, and villages was calculated for both years. Comparative analysis was carried out to determine variations in disease severity across locations and years.

3. Results

The survey conducted during Kharif 2021 and 2022 revealed that *Alternaria* blight disease was prevalent in all surveyed districts of Northern Madhya Pradesh. Disease intensity varied considerably among districts, blocks, and villages.

Among the surveyed districts, Gwalior recorded the highest disease intensity during both years, followed by Morena, whereas Shivpuri exhibited the lowest disease intensity. The variation in disease severity may be attributed to differences in environmental conditions, crop management practices, varietal susceptibility, and inoculum availability.

The results further indicated that disease intensity increased during 2022 compared with 2021. During 2021, mean disease intensity was 17.96%, whereas during 2022 it increased to 19.86%.

3.1 District-wise disease intensity

Gwalior recorded the highest incidence of *Alternaria* blight during both years. The Dabra block of Gwalior district consistently showed maximum disease intensity, and Lohgarh village recorded the highest disease severity. Morena district recorded moderate disease intensity during both years. Disease symptoms were commonly observed in surveyed fields, although severity remained lower than in Gwalior district.

Shivpuri district recorded the lowest disease intensity among all surveyed districts. Within Shivpuri district, Karera block showed minimum disease intensity during both years, and Narahi village exhibited the lowest disease severity among all surveyed

villages.

3.2 Comparison between Kharif 2021 and 2022

The present investigation demonstrated a noticeable increase in disease intensity during Kharif 2022 over Kharif 2021. The average disease intensity increased from 17.96% during 2021 to 19.86% during 2022.

This increase in disease severity may be attributed to prevailing climatic conditions such as higher relative humidity, intermittent rainfall, and moderate temperatures that favored pathogen growth and infection.

4. Discussion

The findings of the present study are in close agreement with earlier reports. Sasode *et al.* reported maximum *Alternaria* leaf blight intensity (19.90%) in Gwalior district and stated that the disease significantly affects clusterbean productivity.^[4]

Tomar conducted a survey in clusterbean-growing regions of Gwalior and Morena districts and reported disease intensity ranging from 8.80 to 28.10%, with symptoms observed on all aerial plant parts.^[5]

Rangaswami and Rao first reported severe incidence of *Alternaria* blight on clusterbean during 1953. Subsequently, the disease was also reported from Pakistan and South Africa by Hussaini and Singh and Westhuizen *et al.*, respectively.^[1,3,6]

Prasad *et al.* carried out a survey on *Alternaria* blight of pigeonpea in Eastern Uttar Pradesh and adjoining districts of Bihar during Rabi seasons 2009-10 and 2010-11. They observed maximum disease severity in different districts across the two seasons, indicating the influence of agro-climatic conditions on disease severity.^[2]

The consistency of the present findings with earlier investigations confirms that *Alternaria* blight is an economically important disease in pulse and legume crops under favorable environmental conditions.

Table 1: District-wise disease intensity of *Alternaria* blight of clusterbean during Kharif 2021 and 2022

District	Mean disease intensity (%) 2021	Mean disease intensity (%) 2022
Gwalior	21.40	23.85
Morena	17.20	19.35
Shivpuri	15.28	16.38
Overall mean	17.96	19.86

Table 2: Block-wise disease intensity in surveyed districts

District	Block	Disease intensity (%) 2021	Disease intensity (%) 2022
Gwalior	Dabra	24.60	27.10
Gwalior	Bhitarwar	20.80	22.95
Morena	Morena	18.10	20.05
Morena	Ambah	16.30	18.25
Shivpuri	Karera	13.90	15.05
Shivpuri	Pohri	16.65	17.70

Table 3: Village-wise comparison of disease severity

District	Block	Village	Disease intensity (%) 2021	Disease intensity (%) 2022
Gwalior	Dabra	Lohgarh	28.10	30.45
Gwalior	Bhitarwar	Chinor	19.85	21.90
Morena	Morena	Joura	18.20	20.10
Morena	Ambah	Ratan Basai	15.75	17.45
Shivpuri	Karera	Narahi	12.40	13.85
Shivpuri	Pohri	Bamra	16.20	17.25

Table 4: Comparative increase in disease intensity during Kharif 2021 and 2022

Year	Mean disease intensity (%)	Increase over previous year (%)
2021	17.96	
2022	19.86	1.90

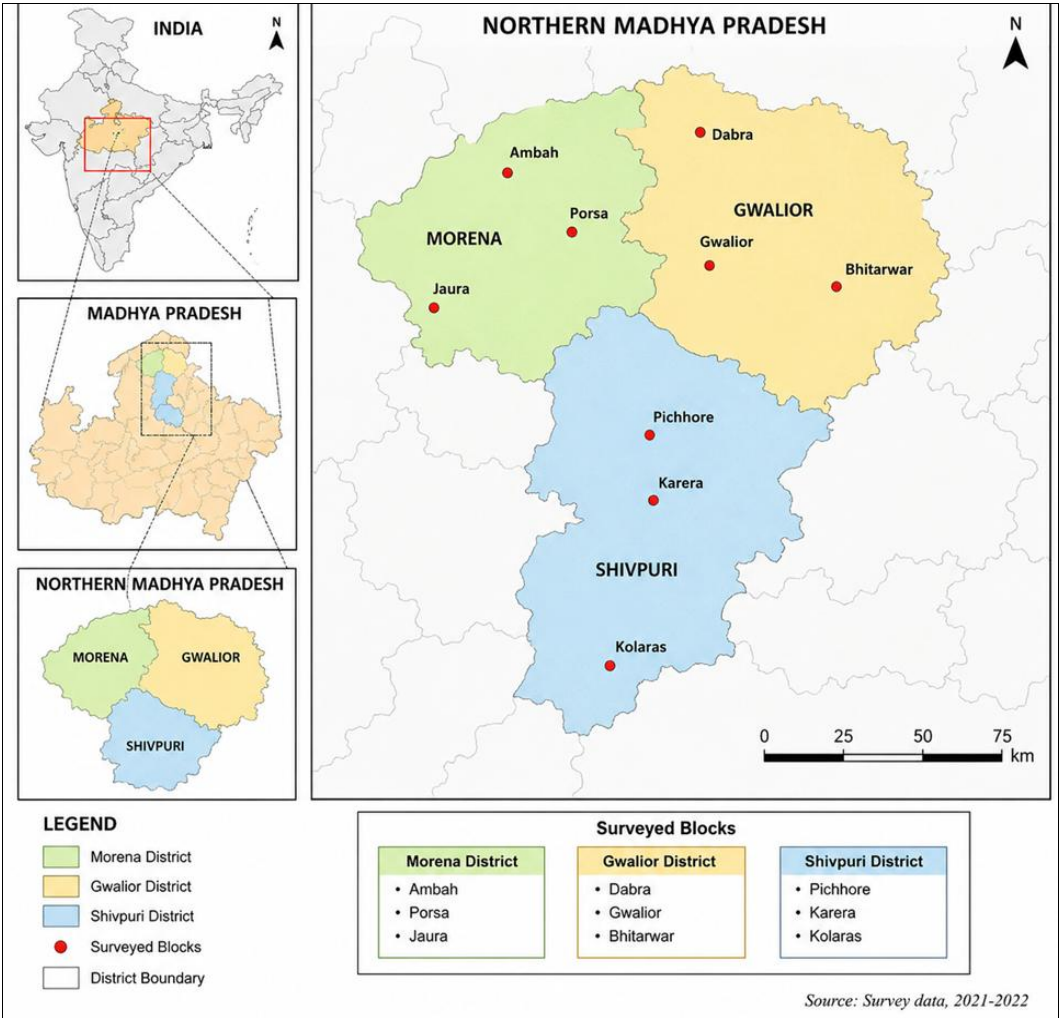


Fig 1: Map showing surveyed districts of Northern Madhya Pradesh

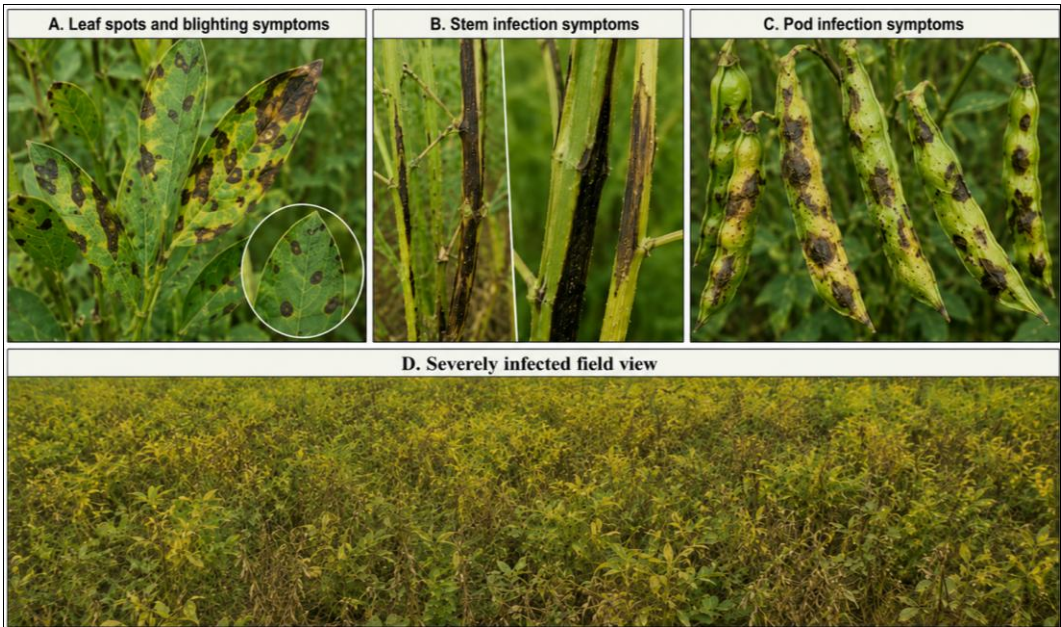


Fig 2: Symptoms of Alternaria blight on clusterbean

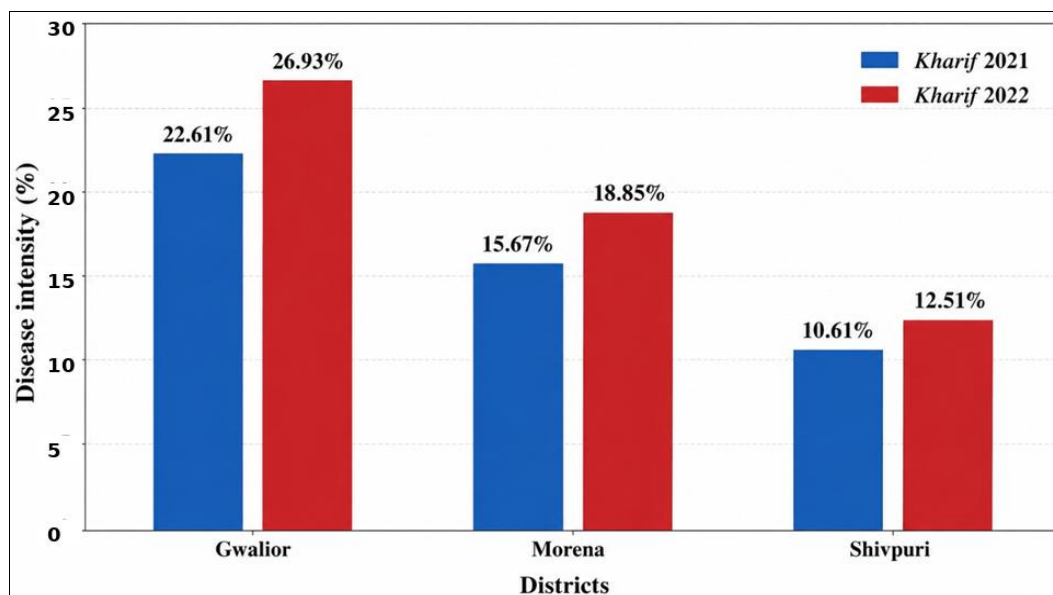


Fig 3: District-wise disease intensity during Kharif 2021 and 2022

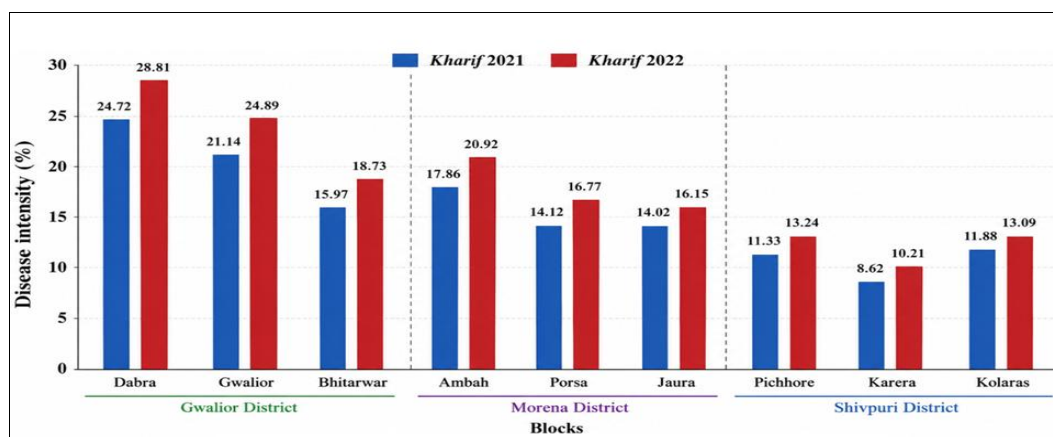


Fig 4: Block-wise comparison of Alternaria blight intensity

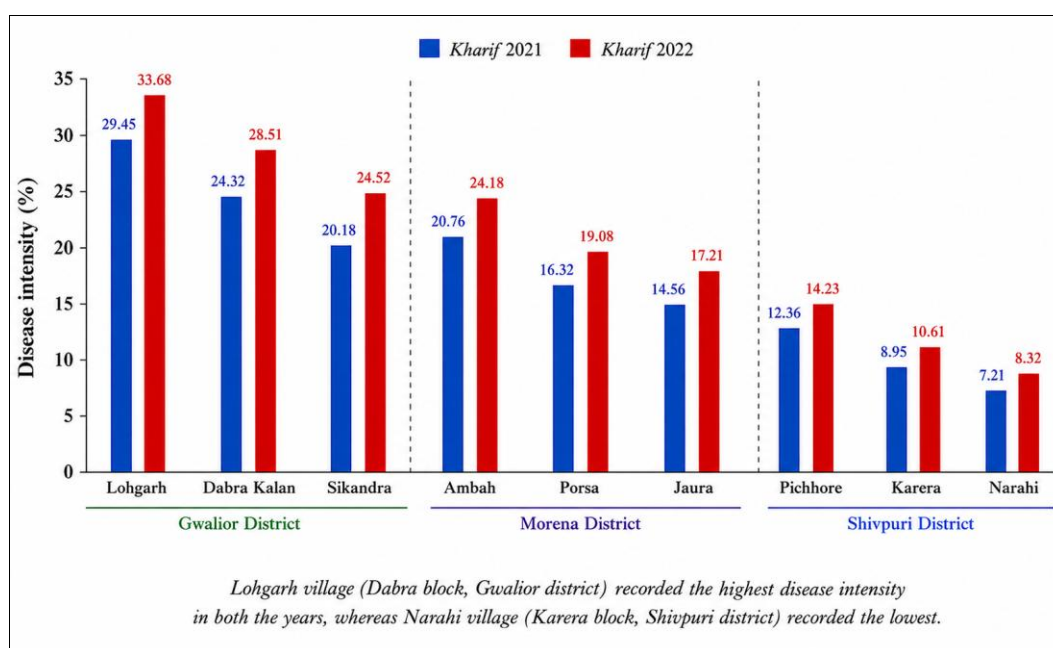


Fig 5: Village-wise comparison of disease severity

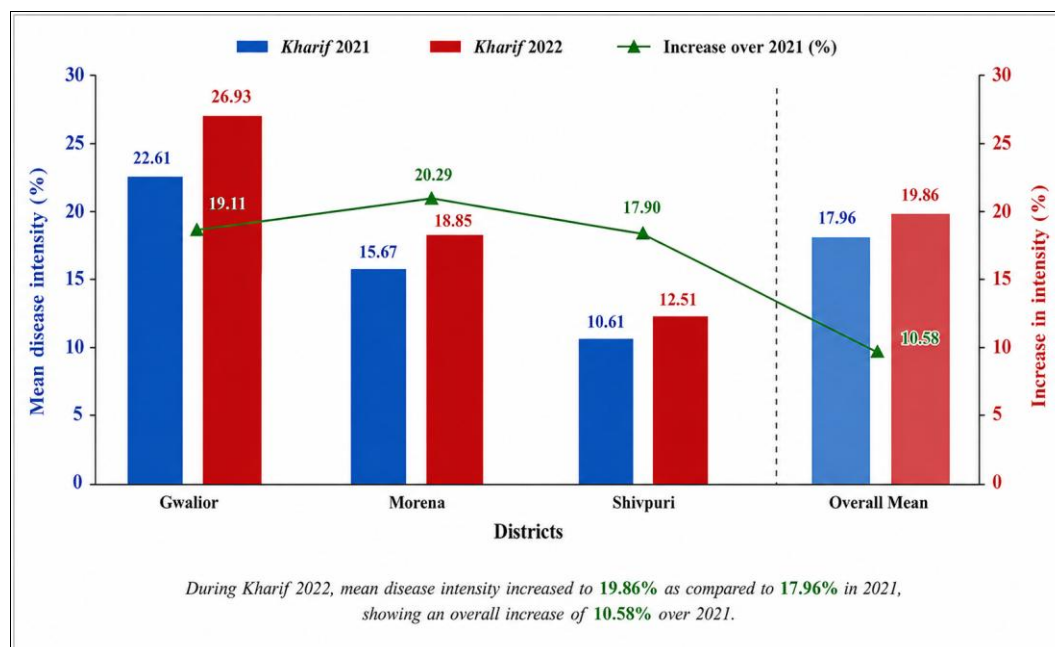


Fig 6: Comparative increase in disease intensity during 2021 and 2022

5. Conclusion

The present survey confirmed the widespread occurrence of *Alternaria* blight disease in major clusterbean-growing districts of Northern Madhya Pradesh during Kharif 2021 and 2022. Gwalior district recorded maximum disease intensity, while Shivpuri showed minimum disease intensity during both years. Dabra block and Lohgarh village exhibited the highest disease severity, whereas Karera block and Narahi village recorded the lowest disease intensity.

The increase in disease severity during 2022 indicates that environmental conditions play a crucial role in disease development. The findings emphasize the need for continuous disease monitoring and implementation of integrated disease management practices including resistant varieties, seed treatment, crop rotation, balanced fertilization, and timely fungicidal application.

Further research should focus on epidemiology, pathogen variability, host resistance, and development of eco-friendly management strategies for sustainable clusterbean cultivation.

References

1. Hussaini SS, Singh RA. Occurrence of *Alternaria* blight of clusterbean. Indian Phytopathology. 1989;42:275-278.
2. Prasad K, Singh RK, Singh AK. Survey and assessment of *Alternaria* blight of pigeonpea in Eastern Uttar Pradesh and Bihar. Journal of Food Legumes. 2013;26(1-2):87-90.
3. Rangaswami G, Rao AV. Studies on *Alternaria* blight disease of clusterbean. Madras Agricultural Journal. 1957;44:123-126.
4. Sasode DS, Sharma M, Tomar A. Survey of *Alternaria* leaf blight of clusterbean in Northern Madhya Pradesh. Journal of Plant Disease Sciences. 2022;17(2):145-149.
5. Tomar A. Studies on *Alternaria* blight of clusterbean in Gwalior and Morena districts of Madhya Pradesh [MSc thesis]. Gwalior: Rajmata Vijayaraje Scindia Krishi Vishwavidyalaya; 2000.
6. Westhuizen GCA, Human DJ, Venter SL. *Alternaria* disease of guar in South Africa. Plant Disease Reporter. 1987;71:430-432.