



ISSN (E): 2277- 7695  
ISSN (P): 2349-8242  
NAAS Rating: 5.23  
TPI 2021; SP-10(8): 581-583  
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Received: 13-06-2021  
Accepted: 31-07-2021

**Rajendra Prasad**  
Department of Plant Pathology,  
Narendra Deva University of  
Agriculture and Technology  
Kumarganj, Ayodhya, Uttar  
Pradesh, India

**Subhash Chandra**  
Department of Plant Pathology,  
Narendra Deva University of  
Agriculture and Technology  
Kumarganj, Ayodhya, Uttar  
Pradesh, India

**Sushil Kumar Singh**  
Department of Plant Pathology,  
Narendra Deva University of  
Agriculture and Technology  
Kumarganj, Ayodhya, Uttar  
Pradesh, India

**Shiv Pratap Singh**  
Department of Plant Pathology,  
Narendra Deva University of  
Agriculture and Technology  
Kumarganj, Ayodhya, Uttar  
Pradesh, India

**Manish Kumar Maurya**  
Department of Plant Pathology,  
Narendra Deva University of  
Agriculture and Technology  
Kumarganj, Ayodhya, Uttar  
Pradesh, India

**Vikash Kumar Yadav**  
Department of Plant Pathology,  
Narendra Deva University of  
Agriculture and Technology  
Kumarganj, Ayodhya, Uttar  
Pradesh, India

**Corresponding Author**  
**Subhash Chandra**  
Department of Plant Pathology,  
Narendra Deva University of  
Agriculture and Technology  
Kumarganj, Ayodhya, Uttar  
Pradesh, India

## Symptomatology and survey of lentil wilt in Uttar Pradesh

**Rajendra Prasad, Subhash Chandra, Sushil Kumar Singh, Shiv Pratap Singh, Manish Kumar Maurya and Vikash Kumar Yadav**

### Abstract

Status of wilt of lentil (*Lens culinaris* Medik) in five district viz., Banda, Sitapur, Ayodhya, Kapur and Gonda of Uttar Pradesh carried out of survey of the lentil growing areas in villages of Banda, Sitapur, Ayodhya, Kapur and Gonda districts during 2019-20 in Rabi season. In all surveyed fields none of them free from this disease. Incidence of wilt in the surveyed field ranged from 9.07 to 16.92 per cent. The maximum wilt occurrence was observed in district Kanpur i.e., 18.95% and 14.27% at flowering and podding stage respectively followed by Gonda (16.24%; 13.58%), Sitapur (15.82%; 13.69%), Banda (11.57%; 11.00%) and Ayodhya (11.50%; 10.86%). Among villages, maximum incidence was observed in Chauve Pur i. e. 38.16% and 17.13% at flowering and podding stage respectively. The first symptoms of wilt occurred as an isolated patch more or less circular. Curling of the leaves beings from the lower end and extend upwards. The crown then drops and this is followed by the death of the plant. The root system is poorly developed and discoloured brown.

**Keywords:** Lentil, wilt and *fusarium oxysporum* f. sp. *lentis*

### Introduction

Legumes occupy unique crops in the world by virtue of their high protein content (15-35), carbohydrates, fiber, minerals and nutrients in seeds. In India most of the population is primarily vegetarian pulses has a special place in the daily diet about (7-15%) of food grain, of people due to its high protein contents and several uses. India is a major pulse growing country of the world. In India pulses were grown on 1.51 million hectare with the production of 1.56 million tones and average yield 1032 kg/ha (Anonymous, 2019) [1].

In Uttar Pradesh it grown about 4.47 lakh hectare with 4.60 lakh tones production and productivity 1029 kg/hectare (Anonymous, 2019) [1]. In India, it is grown in winter season. Mostly lentil is grown in India as a rain fed crop by marginal farmers in their marginal lands using their local seeds without any input like improved seeds, fertilizers, irrigation and pesticides and consequently economic return is poor. A number of factors are responsible for this low yield. Depredations by diseases are one of them.

The fungus attacked the root system, made its way through the epidemic, cortex and finally in to xylem vessels of the tap root from where it spread. As a result, the lateral roots might wither of. Due to variation in genotypes, climate conditions and cultivation practices in different locations of these districts. In this regard survey of all the major lentil growing areas of these districts have been made. So in this survey has been done twenty five areas of five districts of Uttar Pradesh for finding wilt incidence in these areas for making a better management strategy in that areas.

### Materials and Methods

Lentil growing districts like Banda, Sitapur, Ayodhya, Kapur and Gonda of Uttar Pradesh were surveyed to find out the incidence of wilt during Rabi-2019-20 and 2020-21. Five location of each districts were selected like Banda (Baberoo, Chilla, Pachula, Mawai and Mahokhar khurd), Sitapur (Govinda sarain, Kamlapur, Etaawa, Manpur and Sidhauri), Ayodhya (Taundhipur, Poorelila Pande, Babharmau, Jorium and Akama), Kanpur (Ludhaura, Kalyanpur, Chauve Pur, Pukharaya and Baghpur) and Gonda (Mahangupur, Tarabganj, Nagwan, Kalyanpur and Ballipur). Thus total of twenty five locations were selected and each locality five fields were randomly selected. In each field the wilt incidence was randomly recorded on randomly selected lentil plants (at flowering and podding stage) 1m<sup>2</sup> patches. The wilt incidence on the plants selected patches was recorded with the help of following formula.

$$\text{Wilt incidence (\%)} = \frac{\text{Wilt infected plants}}{\text{CTotal number of plants}} \times 100$$

**Table 1:** Collection of diseased plants/roots samples of lentil collected from different districts of Uttar Pradesh.

S. No.	District	Villages/Locations
1.	Banda	Baberoo, Chilla, Pachula, Mawai and Mahokhar khurd
2.	Sitapur	Govinda sarain, Kamlapur, Etaawa, Manpur and Sidhauli
3.	Ayodhya	Taundhipur, Poorelila Pande, Babharmau, Jorium and Akama
4.	Kanpur	Ludhaura, Kalyanpur, Chauve Pur, Pukharaya and Baghpur
5.	Gonda	Mahangupur, Tarabganj, Nagwan, Kalyanpur and Ballipur

## Results and Discussion

### Symptomatology

The seedling was droop down followed by sudden death. The foliage showed chlorosis before wilting. The infected root, collar region & main stem showing the typical symptoms of the disease. The first symptoms of wilt occurs in a patches more or less circular in outline. These spots are enlarging in favorable weather condition. Curling of the leaves being from lower end and extends upward. The root system is poorly developed and discolored brown. In early cases the tap root system is destroyed at the tip and is abnormally short. The similar work was carried by Vasudeva *et al.* (1952)<sup>[7]</sup> and Sharma *et al.* (2016)<sup>[6]</sup>.

The survey was conducted to find the occurrence of wilt disease in five selected districts of Uttar Pradesh i.e. Banda, Sitapur, Ayodhya, Kanpur and Gonda during 2019-20 and 2020-21. The diseased samples were collected from the surveying areas of Uttar Pradesh. During 2019-20, maximum wilt occurrence was observed in district Kanpur i.e., 18.95% and 14.27% at flowering and podding stage respectively followed by Gonda (16.24%; 13.58%), Sitapur (15.82%; 13.69%), Banda (11.57%; 11.00%) and Ayodhya (11.50%; 10.86%). Among villages, maximum incidence was observed in Chauve Pur i. e. 38.16% and 17.13% at flowering and

podding stage respectively.

During 2020-21, maximum wilt occurrence was observed in district Sitapur i.e., 15.18% and 13.56% at flowering and podding stage respectively followed by Kanpur (14.2%; 15.75%), Ayodhya (11.73%; 09.86%), Gonda (11.70%; 13.41%), Banda (11.70%; 10.54%). Among villages, maximum incidence was observed in Taundhipur in district Ayodhya i.e. 18.25% and 13.90% at flowering and podding stage respectively followed by Pukharaya in Kanpur district (17.32% and 16.57%). also revealed that, the severity and incidence of wilt of lentil varied from location to location, obviously due to various factors like temperature, relative humidity, rainfall, sowing dates, diverse cultivars used and even it could also be attributed to existence of pathogenic variability. The higher disease incidence may be due to susceptibility of the cultivars or favorable environmental conditions. That must have helped for buildup of inoculum and subsequently resulting in increased disease severity. It is also reported that in lentil suitable soil temperature and moisture during early crop growth, winter rains and terminal drought favor invasion of the crop by many root-invading pathogens. These results also correlated with Honnareddy and Dubey (2007)<sup>[2]</sup>, Mondal *et al.* (2013)<sup>[4]</sup>, Kesham *et al.* (2014)<sup>[3]</sup>, Sharma *et al.* (2016)<sup>[6]</sup> and Nath *et al.* (2017).

**Table 2:** Survey of lentil wilt incidence at different crop growth stages in different location of Uttar Pradesh during

S. No.	District	Surveyed Villages	Wilt incidence (%) Rabi-2019-20		Wilt incidence (%) Rabi-2020-21	
			At Flowering stage	At Podding stage	At Flowering stage	At Podding stage
(1)	Banda	Baberoo	15.12	14.74	15.05	13.48
		Chilla	6.82	7.18	7.29	6.54
		Pachula	17.38	16.32	16.38	15.28
		Mawai	8.51	7.36	8.47	7.28
		Mahokhar khurd	10.03	9.43	11.33	10.13
		Mean	11.57	11.00	11.70	10.54
(2)	Sitapur	Govinda sarain	13.73	13.84	13.28	13.62
		Kamlapur	18.31	17.63	16.07	16.52
		Etaawa	17.62	16.38	16.38	17.19
		Manpur	16.13	10.84	16.24	12.05
		Sidhauli	13.33	9.79	13.95	8.40
		Mean	15.82	13.69	15.18	13.56
(3)	Ayodhya	Taundhipur	19.37	19.08	18.25	13.90
		Poorelila Pande	6.49	6.69	7.24	6.80
		Babharmau	14.65	13.71	15.19	13.99
		Jorium	8.37	6.57	8.36	7.20
		Akama	8.66	8.28	9.59	7.39
		Mean	11.50	10.86	11.73	9.86
(4)	Kanpur	C.S.A Campus	17.50	16.25	15.35	15.64
		Kalyanpur	14.38	13.29	16.30	13.64
		Chauve Pur	38.16	17.13	13.12	16.33
		Pukharaya	8.71	9.28	17.32	16.57
		IIPR	16.03	15.43	8.91	16.57
		Mean	18.95	14.27	14.2	15.75
(5)	Gonda	Mahangupur	15.30	15.52	15.05	15.50
		Tarabganj	25.33	13.12	7.29	11.80

	Nagwan	6.61	6.71	16.38	6.72
	Kalyanpur	17.42	17.25	8.47	17.51
	Ballipur	16.57	15.31	11.33	15.51
	Mean	16.24	13.58	11.70	13.41

## References

1. Anonymous. Project Coordinator's Report. Annuls group meet, (Rabi) 18-19 September. All India Coordinated Research Project on MULLaRP. IIPR, Kanpur 2019, 16-22.
2. Honnareddy N, Dubey SC. Morphology characterization of Indian isolation of *Fusarium oxysporum* f. sp. *Ciceri* causing chickpea wilt. Indian phytopath 2007;60(3):373-376.
3. Kashem MA, Islam F, Sarker S, Puteh AB, Modal MMA. Legume Research 2014;37(6):665-669.
4. Modal MMA, Puteh AB, Malek MA, Kabir AKMR. Legume Research 2013;36:153-157.
5. Nath N, Ahmed AU, Aminuzzaman FM. Morphological and physiological variation of *Fusarium oxysporum* f. sp. *ciceri* isolates causing wilt disease in chickpea. International Journal of Environment Agriculture and Biotechnology 2017;2(1):202-212.
6. Sharma OP, Pachori A, Yadav S, Bhadhouria DS, Sasode R. Symptomatology and survey of lentil wilt in northern Madhya Pradesh. International Journal of Agriculture Sciences 2016;50(8):2171-2172.
7. Vasudeva RS, Srinivasan KV. Studies on the wilt disease of lentil (*Lens esculenta* Moench.). Indian Phytopathology 1952;5(1):23-32.