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**KC Deepthi**

Dept. of Agril. Microbiology,  
PJTSAU, R' nagar, Hyderabad,  
Telangana, India

**Dr. NP Eswara Reddy**

Professor and Head (Retd.),  
Dept. of Plant pathology, SV  
agricultural college, Tirupati,  
Andhra Pradesh, India

## Disease incidence assessment of stem rot and collar rot of groundnut (*Arachis hypogaea* L.) in Kadapa and Chittor districts of Andhra Pradesh

**KC Deepthi and Dr. NP Eswara Reddy**

**Abstract**

A survey was conducted in groundnut growing regions of Rayalaseema districts to inhibit the major soil borne diseases of stem rot causing *S. rolfisii* and collar rot causing *Aspergillus niger* of groundnut. A study was carried out in the year 2017-2018 during kharif and rabi to observe the disease incidence of collar rot and stem rot diseases in Kadapa and Chittor districts respectively. Kadapa and Chittor districts were selected in each district eight mandals were surveyed to record the disease incidence. The highest percent disease incidence of collar rot 23.2 (Nagalapuram) and lowest incidence of stem rot 6.0 (Satyavedu) were observed in Chittor district.

**Keywords:** Groundnut, *Sclerotium rolfisii*, *Aspergillus niger*, disease incidence

**Introduction**

Groundnut (*Arachis hypogaea* L.) is an important oilseed crop cultivated around the world in tropical, sub-tropical and warm temperate climates. In India, it is cultivated in 4.99 million hectares, with an annual production of 7.2 million tons and yield was 1444 kg/ha in the year 2018. In Andhra Pradesh, its productivity 1.04 million tons and yield was 1416 kg/ha. Approximately 80% of the world's groundnut crop was produced in developing countries, including India, but diseases caused by various plant pathogens is one of the major contributing factors for decreased pod yields. India is one of the largest exporters which closely competes with USA, China by sharing 20-25% in global markets (Anon 2017) [1]. The majority of the pod yield was reduced due to this soil born diseases *S. rolfisii* and *Aspergillus niger* where the pathogen infects basal part of the stem by forming whitish mycelium and spreads the mycelium including plant root, leaf and pod. Mehan and McDonald (1990) reported that groundnut plants were mostly infected near the soil surface and reach up to pods causing severe damage to pods & pegs. So an attempt was made to conduct survey for disease incidence in two districts.

**Materials and Methods**

A field survey was carried out in two districts of kadapa and chittor districts to record the data of disease incidence of stem rot and collar rot was studied during the period 2017- 2018. Eight mandals viz., Chandragiri, Puttur, Nagalapuram, Varadaiah palem, Pichatur, Kalikiri, Satyavedu, Pakala of Chittor districts. Veerapunyanipalli, Chennur, Chakrayapeta, Chinnamanden, Sambepalli, Sundupalli, Ramapuram, Rayachoti of Kadapa district were surveyed. Five fields were selected in each mandal randomly ten plants were taken per field and the disease incidence was recorded. The per cent disease incidence was calculated using following formula

$$\text{Percent disease incidence} = \frac{\text{Number of diseased plants}}{\text{Total number of seeds germinated}} \times 100$$

**Results and Discussion:****Collar rots (*Aspergillus niger*)**

The collar rot disease ranged from 10.5 (Ramapuram of kadapa district) to 23.2 (Nagalapuram of Chittor district). Collar rot incidence was highest in 23.2 (Nagalapuram) followed by Pichatur (21.5), Pakala (20.0), Varadaiah palem (18.0), Puttur (17.0), Kalikiri (16.0), Chandragiri (12.0) and lowest disease incidence were recorded 11.0 (Satyavedu) mandals of chittor district. In kadapa district highest disease incidence 21.50 (Chakrayapeta), 21.0 (Sambepalli), 20.45 (Veerapunyanipalli), 18.0 (Rayachoti), 17.5 (Chennur), 15.0

**Corresponding Author:****KC Deepthi**

Dept. of Agril. Microbiology,  
PJTSAU, R' nagar, Hyderabad,  
Telangana, India

(Chinnamanden), 12.0 (Sundupalli), and lowest disease incidence were recorded 10.5 (Ramapuram) in table 1. Similar findings were observed by Radhaiah *et al.* (2013)<sup>[6]</sup> collected *A. niger* isolates from different infected groundnut fields in and around chittoor districts of Andhra Pradesh. A survey was conducted for the occurrence of collar rot disease in groundnut growing areas around Tirupati in Andhra Pradesh Nandeesh *et al.* (2013)<sup>[5]</sup>.

#### Stem rot (*S.rolfsii*)

Stem rot causing *S.rolfsii* disease incidence were recorded as highest in 22.7 (Pichatur) followed by 17.5 (Pakala), 16.09 (Nagalapuram), 11.0 (Puttur), 10.5 (Varadaiah palem), 10.0 (Chandragiri), 9.0 (Kalikiri), 6.0 (Satyavedu) showed lowest disease incidence of Chittoor district. In Kadapa district the disease incidence was ranged between 7.4 to 16.3 recorded in table 1. Highest incidence was recorded as 16.3 (Veerapunyanipalli) followed by 11.0 (Sambepalli), 10.7 (Chennur), 10.0 (Rayachoti), 9.6 (Sundupalli), 8.5 (Chakrayapeta), 8.0 (Chinnamanden), 7.4 (Ramapuram) was recorded lowest disease incidence. Similar findings were recorded by Durga Prasad *et al.* (2009)<sup>[3]</sup> in Chittoor and Kadapa districts of Rayalaseema region reported that the incidence of stem rot caused by *S. rolfsii* ranged from 1-85 per cent. Amrutha *et al.* (2019)<sup>[2]</sup> reported that stem rot incidence ranged between 6.0 to 17.5 percent disease incidence in surrounding regions of kadapa districts.

#### Conclusion

This survey reported that both collar rot 23.2 (Nagalapuram) and stem rot 22.7 (Pichatur) disease incidence was high in chittoor district followed by least incidence of collar rot was observed in 10.5 (Ramapuram) of kadapa district where as stem rot lowest incidence recorded as 6.0 (Satyavedu) of chittoor districts.

**Table 1:** Collar rot and Stem rot disease incidence in major groundnut growing areas of Kadapa and Chittoor

District	Location/Mandal	Percent disease incidence	
		Collar rot	Stem rot
Chittoor	Chandragiri	12.0	10.0
	Puttur	17.0	11.0
	Nagalapuram	23.2	16.0
	Varadaiah palem	18.0	10.5
	Pichatur	21.5	22.7
	Kalikiri	16.0	9.0
	Satyavedu	11.0	6.0
	Pakala	20.0	17.5
	Mean	17.70	12.80
Kadapa	Veerapunyanipalli	20.45	16.3
	Chennur	17.5	10.7
	Chakrayapeta	21.50	8.5
	Chinnamanden	15.0	8.0
	Sambepalli	21.0	11.0
	Sundupalli	12.0	9.6
	Ramapuram	10.5	7.4
	Rayachoti	18.0	10.0
Mean	17.00	10.20	

\*Data is the mean of eight villages

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