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**G Amrutha Veena**

Department of Plant Pathology,  
S.V. Agricultural College,  
ANGRAU, Tirupati, Andhra  
Pradesh, India

**B Padmodaya**

Department of Plant Pathology,  
S.V. Agricultural College,  
ANGRAU, Tirupati, Andhra  
Pradesh, India

**R Sarada Jayalakshmi Devi**

Department of Plant Pathology,  
S.V. Agricultural College,  
ANGRAU, Tirupati, Andhra  
Pradesh, India

**K Manjula**

Department of Entomology,  
Institute of Frontier Technology,  
ANGRAU, Tirupati, Andhra  
Pradesh, India

**G Mohan Naidu**

Department of Statistics &  
Mathematics, S.V. Agricultural  
College, ANGRAU, Tirupati,  
Andhra Pradesh, India

## Survey for disease incidence of groundnut collar rot, stem rot and root rot in Ananthapur, Kadapa, Chittoor, Kurnool and Nellore districts of Andhra Pradesh

**G Amrutha Veena, B Padmodaya, R Sarada Jayalakshmi Devi, K Manjula and G Mohan Naidu**

### Abstract

Roving survey was carried out for studying groundnut collar rot, stem rot and root rot disease incidences in Ananthapur, Kadapa, Kurnool, Chittoor and Nellore districts. Ten mandals were surveyed in each district. Highest root rot incidence was noticed in Ananthapur, stem rot incidence in Nellore and chittoor, collar rot incidence in Kadapa districts.

**Keywords:** Groundnut, collar rot, stem rot, root rot and disease incidence

### 1. Introduction

Groundnut is a major legume and important oil seed crop in India. In Rayalaseema region it is grown both under *kharif* and *rabi* seasons. Soil borne diseases have been recognized as one of the major factors limiting groundnut production. Among soil borne pathogens, *Aspergillus niger*, *Sclerotium rolfsii* and *Rhizoctonia bataticola* have been reported to be major limitations (Ghewande *et al.*, 2002) [1]. These pathogens attack groundnut plants at all stages and cause pre emergence rotting in seeds, soft rot in emerging seedlings and collar rot, stem rot and dry root rot in mature plants. Keeping in this view an attempt was made to conduct roving survey for disease incidence against three diseases in Rayalaseema region and Nellore district.

### 2. Materials and Methods

Roving survey was conducted in groundnut growing mandals of Anantapur, Kadapa, Chittoor, Kurnool and Nellore districts of Andhra Pradesh during *Kharif* 2014 to study the incidence of collar rot, stem rot and dry root rot. In each mandal ten districts were selected for the study of disease incidence. Ten mandals *viz.*, Kadiri, Mudigubba, Nallacheruvu, Gandlapenta, Ananthapur, Rappthadu, Atmakur, B K Samudram and Singanamala of Ananthapur district, Thondur, Lingala, Pendlimarri, Vemappli, C K Dinne, Vallur, Kamalapuram, Yerraguntla, Lakkireddipalli and Sambepalli of Kadapa district, Chagalamarri, Allagadda, Nandyal, Mahanandi, Sirvel, Gospadu, Koilakuntla, Rudravaram, Banaganapalli and Dornipadu of Kurnool district, Tirupati Rural, Chinnagottigallu, Chandragiri, Srikalahasti, Vadamalapeta, Yerpedu, G D Nellore, Rompicherla, Puthlapattu and Chittoor of Chittoor district and Sulurpeta, Doravarisatram, Naidupeta, Gudur, Podalakur, Vakadu, Manubolu, Sidapuram, Pellakur and Nellore of Nellore district were surveyed. In each mandal five fields were selected randomly and the disease incidence was calculated in a square metre area at five different places in a field.

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

### 3. Results and Discussion

Generally the collar rot affected seeds showed the blackish testa, rotted internal tissue. In case of emerging hypocotyledons, affected seedlings showed yellow colored and rotten cotyledons. The collar rot affected mature plants showed wilting and rotting of the tissue just below the ground level.

#### Correspondence

**G Amrutha Veena**

Department of Plant Pathology,  
S.V. Agricultural College,  
ANGRAU, Tirupati, Andhra  
Pradesh, India

The affected portion turned dark, shrunken and shredded, and later covered by black spores of the pathogen

The groundnut stem rot affected plants showed symptoms such as yellowing and drying of leaves, collar rot and wilting of plants, and association of white mycelial threads along with brown mustard seed like sclerotial bodies on the affected groundnut plant parts.

The dry root rot affected plants were identified in the field based on key symptoms like withering and drying of plants. When such plants were pulled out showed blackening of tap root, shredding of bark coming out in the form of flakes and devoid of lateral and finer roots.

Usha Rani *et al.* (2009) [6] reported that root rot in groundnut caused by *Macrophomina phaseolina* causes serious economic losses ranging from 20 to 30 per cent under dry warm conditions.

**Table 1:** Survey for the occurrence of groundnut collar rot, stem rot and root rot in Ananthapur

S. No	Mandal	Collar rot	Stem rot	Dry root rot
1	Singanamala	11.65	11.25	15.50
2	BK Samudram	17.50	10.75	13.00
3	Atmakur	14.25	7.50	16.00
4	Rapthadu	15.65	8.20	10.50
5	Ananthapur	12.50	9.50	11.50
6	Kadiri	10.50	10.00	22.00
7	Mudigubba	10.00	11.00	20.00
8	Nallacheruvu	11.50	13.50	18.50
9	Nallamada	9.50	9.00	12.00
10	Gandlapenta	8.00	11.50	15.50

In Ananthapur district the highest average collar rot disease incidence was recorded in Bukkarayasamudram mandal (17.5%), while the lowest average collar rot disease incidence (8.00%) was recorded in Gandlapenta mandal. The highest average stem rot incidence was recorded in Nallacheruvu mandal (13.5%), while the lowest average stem rot incidence was recorded in Atmakur mandal (7.5%). Highest dry root rot incidence was recorded in kadiri mandal (22.00%), and least dry root rot disease incidence was recorded in Rapthadu mandal (10.00%).

Johnson *et al.* (2007) [3] reported that stem rot of groundnut caused by *Sclerotium rolfsii* Sacc. has attained the major disease status and yield losses ranged from 10-45% during the years 1994 to 1997 in Anantapur.

**Table 2:** Survey for the occurrence of groundnut collar rot, stem rot and root rot in Chittoor

S. No	Mandal	Collar rot	Stem rot	Dry root rot
1	Tirupati Rural	16.95	10.50	9.50
2	Chinnagottigallu	14.15	9.00	11.00
3	Chandragiri	14.50	11.50	8.00
4	Srikalahasti	16.15	12.25	9.00
5	Chittoor	13.50	14.00	4.50
6	Vadamalapeta	17.00	13.00	5.00
7	Yerpedu	18.00	10.00	6.00
8	GD Nellore	12.75	19.50	8.50
9	Rompicherla	13.60	13.90	4.00
10	Puthalapattu	17.85	17.60	3.00

In Chittoor district the highest average collar rot disease incidence was recorded in Yerpedu mandal (18.00%), while the lowest average collar rot disease incidence was recorded in Gangadhara Nellore mandal (12.75%). The highest average stem rot incidence was recorded in Gangadhara Nellore mandal (19.5%), while the lowest average stem rot incidence

was recorded in Chinnagottigallu mandal (9.00%). Highest dry root rot incidence was recorded in Chinnagottigallu mandal (11.00%), and least dry root rot disease incidence was recorded in Puthalapattu mandal (3.00%).

Nandeesh *et al.* (2013) [4] conducted a roving survey for the occurrence of collar rot disease in groundnut growing areas around Tirupati in Andhra Pradesh. Among all the areas, the highest average per cent (11.21%) of disease incidence was recorded in Srikalahasti area and least (6.47%) was in Chandragiri area.

Radhaiah and Devamma (2013) [5] collected *A. niger* isolates from the severely infected groundnut fields in and around Srikalahasti regions of Chittoor district, Andhra Pradesh during 2010 and 2011.

**Table 3:** Survey for the occurrence of groundnut collar rot, stem rot and root rot in kadapa

S. No	Mandal	Collar rot	Stem rot	Dry root rot
1	Thondur	19.45	9.50	12.00
2	Lingala	20.80	10.60	13.00
3	Pendlimarri	15.65	17.00	15.00
4	Vempalli	12.00	15.00	-
5	Chintakommanne	22.80	6.00	-
6	Vallur	10.50	8.50	9.00
7	Kamalapuram	15.00	17.50	10.00
8	Yerraguntla	23.00	12.00	11.50
9	Lakkireddipalli	16.00	11.00	12.00
10	Sambepalli	17.50	8.50	16.50

In kadapa district the highest average collar rot disease incidence was recorded in Yerraguntla mandal (23.00%), while the lowest average collar rot disease incidence was recorded in Vallur mandal (10.50%). The highest average stem rot incidence was recorded in Kamalapuram mandal (17.50%), while the lowest average stem rot incidence was recorded in Chintakommanne mandal (6.00%). Highest dry root rot incidence was recorded in Sambepalli mandal (16.50%), while least dry root rot disease incidence was recorded in Vallur mandal (9.00%) and there is no disease incidence in Vempalli and Chintakommanne.

Durga Prasad *et al.* (2009) [2] conducted roving survey in Chittoor and Kadapa districts of Rayalaseema region and reported that the incidence of stem rot disease caused by *S. rolfsii* ranged from 1-85 per cent in different parts of these districts.

**Table 4:** Survey for the occurrence of groundnut collar rot, stem rot and root rot in Kurnool

S. No	Mandal	Collar rot	Stem rot	Dry root rot
1	Chagalamarri	16.50	8.00	12.00
2	Allagadda	18.00	12.00	14.00
3	Nandyal	19.50	11.00	8.00
4	Mahanandi	20.00	10.50	11.00
5	Sirvel	15.50	11.50	12.00
6	Gospadu	17.50	10.00	16.50
7	Koilakuntla	21.00	8.00	12.00
8	Rudravaram	18.00	11.00	13.50
9	Banaganapalli	12.50	7.50	10.50
10	Dornipadu	11.50	8.50	13.00

In Kurnool district the highest average collar rot disease incidence was recorded in koilakuntla mandal (21.00%), while the lowest average collar rot disease incidence was recorded in dornipadu mandal (11.50%). The highest average stem rot incidence was recorded in Allagadda mandal (12.00%), while the lowest average stem rot incidence was

recorded in Banaganapalli mandal (7.50%). Highest dry root rot incidence was recorded in Gospadu mandal (16.50%), while least dry root rot disease incidence was recorded in Nandyal mandal (8.00%).

**Table 5:** Survey for the occurrence of groundnut collar rot, stem rot and root rot in Nellore

S. No	Mandal	Collar rot	Stem rot	Dry root rot
1	Sullurpeta	17.50	9.50	7.50
2	Doravarisatram	13.00	14.00	8.00
3	Naidupeta	11.00	15.00	-
4	Gudur	12.00	19.00	11.00
5	Podalakur	15.50	12.50	-
6	Vakadu	18.00	12.00	8.00
7	Manubolu	17.00	10.50	10.50
8	Sidapuram	16.50	13.00	15.00
9	Pellakur	14.00	16.00	-
10	Nellore	11.00	13.00	11.00

In Nellore district the highest average collar rot disease incidence was recorded in Vakadu mandal (18.00%), while the lowest average collar rot disease incidence was recorded in Nellore mandal (11.00%). The highest average stem rot incidence was recorded in gudur mandal (19.00%), while the lowest average stem rot incidence was recorded in Sullurpeta mandal (9.50%). Highest dry root rot incidence was recorded in Sidapuram mandal (15.00%), while least dry root rot disease incidence was recorded in Sullurpeta mandal (7.50%). Collar rot incidence was observed from germination to 30 DAS. Stem rot incidence was observed from 60 DAS to upto harvesting stage. Dry root rot incidence was observed from 30 DAS to harvesting stage. In all the districts Kadiri-6 was grown in a larger extent followed by Dharani.

#### 4. Acknowledgement

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