



Research Article

SEASONAL INCIDENCE OF GROUNDNUT DISEASES IN WESTERN MAHARASHTRA

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Abstract: Roving survey was conducted in groundnut growing areas of Western Maharashtra during summer and *kharif* season 2018-19. In summer season, late leaf spot was the major disease observed in surveyed area. In *kharif* season, incidence of early leaf spot, late leaf spot and stem rot diseases was recorded. The maximum intensity of early and late leaf spot was 17.46 and 28.57 percent, respectively. Rust incidence was recorded only in *kharif* season. Late leaf spot was the major disease of groundnut crop in both seasons.

Keywords: Groundnut, Disease Survey, Seasonal Incidence

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Introduction

Groundnut is an important oilseed crop of tropical and subtropical regions of the world. Like many other crops, productivity of this crop is restrained by various biotic and abiotic stresses [1]. Among the biotic stresses, important diseases infecting the crop are early leaf spot (*Cercospora arachidicola*), late leaf spot (*Phaeoisariopsis personata*), rust (*Puccinia arachidis*), Alternaria leaf blight (*Alternaria alternata*), stem rot (*Sclerotium rolfsii*), and collar rot (*Aspergillus niger*) [2]. These fungal diseases adversely affect the growth of the crop and cause reduction in yield. Maharashtra is one of leading state in groundnut cultivation [3]. The crop is mainly grown in Western Maharashtra and Marathwada region of the state in *kharif* as well as summer season. Though the crop is infected by various diseases, their incidence and severity vary according to season. Weather conditions significantly influences the development of disease during a particular season. Taking this into consideration, investigation was carried out on seasonal incidence of groundnut diseases in Western Maharashtra.

Material and Methods

Roving survey was carried out during summer and *kharif* season 2018-19 to record the incidence of various diseases in major groundnut growing areas of Western Maharashtra. The survey was conducted in 20 villages from five major groundnut growing districts i.e., Dhule, Jalgaon, Ahmednagar, Pune and Satara. Four villages from each district were surveyed during both summer and *kharif* season. The intensity of various foliar diseases was recorded using 0-9 scale [4], while for stem rot percent diseases incidence was calculated. Villages where groundnut crop is cultivated in both seasons i.e., summer and *kharif* were selected for disease survey. The diseases were identified visually based on typical symptoms.

Results and Discussion

Disease situation in summer season

Observations recorded on intensity/incidence of various diseases on groundnut crop during survey in summer season are presented in [Table-1]. From the data it is revealed that incidence of the diseases varied according to location.

Late leaf spot was the major disease observed during the season and the maximum intensity was upto 19 percent. The disease was prevalent in most of the surveyed villages except two villages in Jalgaon and one in Dhule district. Other diseases observed during the season were stem rot (3.57%) and Alternaria leaf blight (2.57%). However, they occurred sporadically only in few villages. Rust and early leaf spot were not observed in any village under survey.

Disease situation in *kharif* season

In *kharif* season [Table-2] except Alternaria blight, incidence of other fungal diseases i.e., early leaf spot, late leaf spot and stem rot was recorded in most of the surveyed villages. The maximum intensity of early leaf spot and late leaf spot was 17.46 and 28.57 percent, respectively. The maximum rust intensity was upto 15 percent. Stem rot incidence was also recorded in some of the villages.

Thus, from the data presented in [Table-1] and [Table-2] it is revealed that fungal foliar diseases were predominant in *kharif* as compared to summer season in Western Maharashtra. During both seasons stem rot incidence was observed while Alternaria leaf blight occurred only in summer season. The commonly occurring and widespread diseases i.e., early and late leaf spot infected the crop in *kharif* season whereas in summer only late leaf spot infection was observed. Rust incidence was recorded only *kharif* season. The variation in occurrence of diseases may be attributed to environmental conditions during that particular season.

Earlier Subramanyam and McDonald (1987) [5] reported that rust and leaf spot were the most common and severe diseases in all major groundnut growing areas of India. Mayee and Datar (1988) [6] conducted a survey of groundnut diseases and reported that groundnut yield losses due to stem rot were about 25 percent in Maharashtra. Kadam et al. (2011) [7] conducted survey of stem rot of groundnut in Marathwada region of Maharashtra and recorded maximum disease incidence of 17.8 percent. During present studies stem rot sporadic occurrence of stem rot was recorded. Pande and Narayan Rao (2000) [8] conducted survey groundnut diseases in Andhra Pradesh, Karnataka and Tamil Nadu states and found that in case of foliar diseases, early leaf spot, late leaf spot and rust occurred predominantly in surveyed area.

Table-1 Incidence of various diseases on groundnut crop during summer season

SN	Location	Variety	Per cent disease intensity/incidence				
			SR	AL	R	ELS	LLS
District : Ahmednagar							
1	Kotul	TAG-24	0	0	0	0	14.28
2	Ghargaon	TAG-24	0	0	0	0	11.23
3	Songaon	JL-501	7.14	12.69	0	0	16.66
4	Kolhar	TAG-24	0	0	0	0	18.25
Average			1.79	3.17	0	0	15.11
District: Jalgaon							
1	Yawal	JL-501	14.28	0	0	0	17.46
2	Bhalod	TPG-41	0	0	0	0	0
3	Dharangaon	JL-501	7.14	11.9	0	0	13.49
4	Nhavi	TAG-24	0	0	0	0	0
Average			5.36	2.98	0	0	7.74
District: Dhule							
1	Shirpur	JL-776	0	0	0	0	13.49
2	Taradi	TAG-24	0	0	0	0	0
3	Kapadne	JL-501	7.14	0	0	0	19.84
4	Pimpalner	JL-776	0	0	0	0	16.66
Average			1.79	0	0	0	12.5
District: Satara							
1	Nimbalak	TAG-24	0	0	0	0	13.14
2	Sangavi	JL-286	0	11.9	0	0	18.25
3	Sonwadi	JL-286	0	0	0	0	15.07
4	Vidani	JL-501	14.28	0	0	0	16.66
Average			3.57	2.98	0	0	15.78
District: Pune							
1	Otur	JL-501	0	0	0	0	14.28
2	Bori	TAG-24	7.14	0	0	0	12.22
3	Kalam	TAG-24	0	0	0	0	18.25
4	Mahalunge	JL-501	14.28	11.9	0	0	19.04
Average			5.36	2.98	0	0	15.95
Cumulative %			3.57	2.42	0	0	13.41

SR- Stem rot, AL- Alternaria leaf blight, R- Rust, ELS- Early leaf spot, LLS- Late leaf spot

Table-2 Incidence of various diseases on groundnut during kharif season

SN	Location	Variety	Percent disease intensity/incidence				
			SR	AL	R	ELS	LLS
District: Ahmednagar							
1	Kotul	TAG-24	7.14	0	0	12.69	19.04
2	Ghargaon	TAG-24	0	0	14.28	13.49	18.25
3	Loni	JL-24	0	0	12.69	16.66	28.57
4	Sonai	JL-286	7.14	0	11.9	15.07	23.01
Average			3.57	0	9.72	14.48	22.22
District: Jalgaon							
1	Yawal	JL-501	0	0	13.49	14.28	25.39
2	Kingaon	TAG-24	0	0	15.07	13.49	22.22
3	Khirda	JL-286	14.28	0	0	16.66	25.39
4	Nhavi	TPG-41	0	0	12.69	12.69	23.80
Average			3.57	0	10.31	14.28	24.20
District: Dhule							
1	Shirpur	JL-776	14.28	0	14.28	13.49	21.42
2	Kulthe	TPG-41	0	0	0	14.28	19.84
3	Aarvi	JL-776	7.14	0	15.87	13.49	22.22
4	Pimpalner	TAG-24	0	0	0	12.69	18.25
Average			5.36	0	7.54	13.49	20.43
District: Satara							
1	Dudhebavi	JL-286	0	0	12.69	17.46	23.80
2	Sangavi	JL-24	7.14	0	12.69	17.46	25.39
3	Sonwadi	JL-501	0	0	0	14.28	15.87
4	Rajale	JL-501	0	0	13.49	15.07	17.46
Average			1.79	0	9.72	16.07	20.63
District: Pune							
1	Otur	JL-501	7.14	0	0	14.28	20.63
2	Bori	JL-286	7.14	0	12.69	16.66	24.60
3	Kalam	TAG-24	0	0	14.28	13.49	26.19
4	Golegaon	TAG-24	0	0	12.69	15.87	27.77
Average			3.57	0	9.92	15.08	24.80
Cumulative %			3.57	0	9.44	14.68	22.46

SR- Stem rot, AL- Alternaria leaf blight, R- Rust, ELS- Early leaf spot, LLS- Late leaf spot

Survey is a continuous process to know the disease situation in a particular crop; to have information on change in disease pattern, occurrence of any new disease in changing climatic conditions, etc.

Application of research: These observations are useful in planning future crop breeding strategies. The same implies for present finding, also. Present survey indicated that late leaf spot is the major disease infecting groundnut crop in Western Maharashtra in both seasons.

Research Category: Crop Science

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Study area / Sample Collection: Dhule, Jalgaon, Ahmednagar, Pune and Satara

Cultivar / Variety / Breed name: Groundnut

Conflict of Interest: None declared

Ethical approval: This article does not contain any studies with human participants or animals performed by any of the authors.

Ethical Committee Approval Number: Nil

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