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Survey for the occurrence of arecanut diseases in Shivamogga district of Karnataka

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Abstract

Arecanut (*Areca catechu* L.) is an important cash crop in the Eastern Ghats, Western Ghats, East and North Eastern regions of India. Karnataka is the leading producer of arecanut in India accounting for more than half of the area grown in the country. The farmers of Malnad, Coastal and Maidan areas are facing lot of difficulties in arecanut production as the crop is severely affected by various biotic and abiotic stresses which causes a drastic reduction in yield. In order to know the occurrence of various diseases an intensive roving survey was carried out during *kharif* and *rabi* 2018-19, 2019-20 and 2020-21 in arecanut growing taluks of Shivamogga district in Karnataka. The results revealed the prevalence of all most all the diseases in arecanut except yellow leaf disease.

Keywords: arecanut, roving survey, diseases, Shivamogga, Karnataka

Introduction

Arecanut (*Areca catechu* L.) is a palm that belongs to the family Arecaceae, which is grown in most parts of tropical Asia and East Africa. This palm is believed to be originated from Philippines or Malaysia (Germplasm Resources Information Network, 2008) [4]. It is an important cash crop in the Eastern Ghats, Western Ghats, East and North Eastern regions of India. India ranks first in arecanut production. According to second advanced estimates for the year 2019-20, arecanut is cultivated in an area of 5.18 lakh hectares with a production of 901.78 lakh MT and productivity of 1739 kg/ha. The major area under cultivation is confined to Karnataka, Kerala, and Assam. Karnataka ranks first in all the area, production, and productivity, where it is cultivated in an area of 2.79 lakh hectare accounting for more than half of the area grown in the country. Karnataka alone produced 606.18 lakh MT with a productivity of 2169 kg/ha which is higher than the country's productivity (Anon., 2019) [1]. Farmers of Malnad, Coastal and Maidan areas are facing lot of difficulties in arecanut production as the crop is severely affected by various biotic and abiotic stresses which cause a drastic reduction in yield. Biotic stresses include several plant diseases such as Bud rot, Crown rot and Fruit rot caused by *Phytophthora meadii*. Inflorescence die back caused by *Collectotrichum gleosporoides*, Crown chocking caused by phytoplasma. Leaf blight caused by *Collectotrichum gleosporoides*, Phyllosticta leaf spot caused by *Phyllosticta arecae*. Bacterial leaf stripe caused by *Xanthomonas vasicola* pv. *arecae* and Ganoderma wilt caused by *Ganoderma lucidum* (Chowdappa *et al.*, 2014a & b) [2, 3] are predominant under field conditions throughout arecanut growing areas of Malnad region. So by considering the economic importance of the crop and reduction in its production due to various diseases roving survey was undertaken to know the incidence of diseases in all arecanut growing taluks of Shivamogga district in Karnataka.

Material and Methods

Intensive roving survey was conducted from AICRP on Palms (Arecanut) to know the incidence of Arecanut diseases in all the talukas of Shivamogga district viz., Bhadravathi, Hosanagara, Shivamogga, Sagara, Thirthahalli, Soraba and Shikaripura during 2018-19, 2019-20 and 2020-21. During the study the palms were randomly examined for the various diseases and their occurrence was scored visually.

Results and Discussions

Roving survey was conducted to collect the information regarding the incidence of the arecanut diseases, their distribution in different agro climatic eco system and also to find out

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the prevalence and diversity of various diseases in different arecanut growing taluks of Shivamogga district in Karnataka during *kharif* and *rabi* season of 2017-18, 2018-19 and 2019-20. The incidence of different diseases was assessed in the areca gardens with the crop age ranging between 1 to 50 years.

Incidence of various diseases during 2018-19:

The survey results during 2018-19 revealed that, among the diseases observed Phyllosticta leaf spot and Inflorescence die back was found to be most common in almost all gardens surveyed with a mean incidence ranging from 10.0 to 82.3 per cent and 33.3 to 93.8 per cent respectively. The diseases viz., Fruit rot and Crown rot appeared to be common in Thirthahalli, Hosanagara and Sagara taluks, whereas Crown chocking was severe in Shikaripura (58.8 %), Soraba (50.0 %), Bhadravathi (35.0 %) and Shivamogga (30.7 %). However, Yellow leaf disease was not observed in Shivamogga district (Table 1.).

Incidence of various diseases during 2019-20:

Roving survey conducted during 2019-20 revealed that, among the diseases observed Phyllosticta leaf spot, Inflorescence die back and Fruit rot found to be most common in majority of gardens surveyed with a mean incidence ranging from 9.4 to 24.3, 32.5 to 85.1 and 10.40 to 95.4 per cent respectively. The diseases viz., Leaf blight, Bud rot and Crown rot appeared to be common in Thirthahalli, Hosanagara and Sagara taluks, whereas, Bacterial leaf stripe was severe in Shivamogga (30.1 %), Bhadravathi (28.1 %) and Shikaripura (25.2 %). Crown chocking was severe in Shikaripura (25.5%), Bhadravathi (24.1 %), Shivamogga (22.2 %) and Soraba (12.3 %) taluks, However, Yellow leaf disease was not observed in any of the surveyed taluks of

Shivamogga district (Table 1.).

Incidence of various diseases during 2020-21:

Roving survey conducted during 2020-21 revealed the presence of Phyllosticta leaf spot, Inflorescence die back and Fruit rot to be most common in majority of gardens surveyed with a mean incidence ranging from 13.45, 12.60, 46.93, 2.42, 0.75, 58.40, 14.87, 8.11, and 2.54 per cent respectively. Inflorescence die back and Fruit rot appeared to be severe in almost all the taluks surveyed. However, yellow leaf disease was not observed in any of the surveyed taluks of Shivamogga district (Table 1.).

With respect to the mean data collected during three years *i.e* 2018-19, 2019-20 and 2020-21 it was observed that Phyllosticta leaf spot to be a common problem in almost all the talukas of Shivamogga district, however it was found to be maximum in Shivamogga taluk (37.6 %) followed by Shikaripura taluk (36.4 %), while Bacterial leaf stripe was severe in Shivamogga taluk (37.7 %) followed by Bhadravathi taluk (32.0 %). Whereas, Fruit rot was severe in Hosanagara taluk (94.0 %) followed by Thirthahalli taluk (91.4 %). However, Bud rot was highest in Hosanagara taluk (15.7 %) followed by Bhadravathi taluk (14.0 %). While, Crown rot was maximum in Thirthahalli taluk (18.0 %) followed by Hosanagara taluk (13.4 %). Meanwhile, Inflorescence die back was severe in Shivamogga taluk (71.9 %) followed by Bhadravathi taluk (69.8 %). However Crown chocking was predominant in Shikaripura taluk (37.8 %) and Bhadravathi taluk (28.0 %). Likewise, Leaf blight was noticed in Bhadravathi taluk (16.9 %) and Shikaripura taluk (13.9 %). Similarly Ganoderma incidence was found to be maximum in Shikaripura taluk (12.7 %) followed by Shivamogga taluk (8.7 %). While, Yellow leaf disease was not observed in all the three years in any taluks of Shivamogga district (Table 1.).

Table 1: Survey for the occurrence of Arecanut Diseases in Shivamogga district from 2018-19 to 2020-21

Taluk	Phyllosticta leaf spot				Bacterial leaf stripe				Fruit rot				Bud rot				Crown rot			
	2018	2019	2020	Mean	2018	2019	2020	Mean	2018	2019	2020	Mean	2018	2019	2020	Mean	2018	2019	2020	Mean
Shivamogga	65.4	24.3	23.2	37.6	50.0	30.1	33.1	37.7	7.7	10.4	11.2	9.77	15.4	2.3	2.9	6.9	0.0	0.0	0.0	0.0
Thirthahalli	70.0	20.3	12.3	34.2	10.0	0.0	0.0	3.3	95.0	90.1	89.1	91.40	20.0	3.8	3.5	9.1	50.0	2.2	1.8	18.0
Hosanagara	31.3	18.4	8.5	19.4	0.0	0.0	0.0	0.0	93.8	95.4	93.0	94.07	37.5	4.6	4.9	15.7	37.5	1.3	1.3	13.4
Shikaripura	82.3	14.3	12.7	36.4	29.4	25.2	19.2	24.6	0.0	22.4	20.7	14.37	17.6	1.3	1.0	6.6	8.0	0.2	0.2	2.8
Soraba	80.0	9.4	9.2	32.9	50.0	5.3	6.3	20.5	0.0	30.2	28.5	19.57	0.0	1.3	1.2	0.8	0.0	0.0	0.0	0.0
Bhadravathi	38.4	15.3	18.1	23.9	38.4	28.1	29.6	32.0	10.0	15.1	10.1	11.73	38.4	1.5	2.0	14.0	0.0	0.0	0.0	0.0
Sagara	10.0	11.6	10.0	10.5	0.0	0.0	0.0	0.0	66.7	75.4	75.7	72.60	18.0	1.3	1.5	6.9	26.7	2.2	2.0	10.3
Mean	53.9	16.23	13.4	27.8	25.4	12.67	12.6	16.9	39.0	48.43	46.9	44.78	21.0	2.30	2.42	8.6	17.5	0.84	0.7	6.3

Taluk	Inflorescence die back				Crown chocking				Leaf blight				Ganoderma wilt				Yellow leaf			
	2018	2019	2020	Mean	2018	2019	2020	Mean	2018	2019	2020	Mean	2018	2019	2020	Mean	2018	2019	2020	Mean
Shivamogga	42.3	85.1	88.2	71.9	30.7	22.2	27.1	26.7	19.2	8.0	13.5	13.6	20.0	2.3	3.7	8.7	0.0	0.0	0.0	0.0
Thirthahalli	90.0	34.3	37.7	54.0	20.0	2.2	3.7	8.6	10.0	1.2	3.9	5.0	7.6	1.3	1.1	3.3	0.0	0.0	0.0	0.0
Hosanagara	93.8	40.1	45.1	59.7	6.3	1.8	2.2	3.4	6.3	1.3	9.85	5.8	6.3	1.4	1.2	3.0	0.0	0.0	0.0	0.0
Shikaripura	35.3	70.1	69.2	58.2	58.8	25.5	29.0	37.8	27.0	5.4	9.15	13.9	33.3	2.3	2.4	12.7	0.0	0.0	0.0	0.0
Soraba	50.0	45.4	47.7	47.7	50.0	12.3	15.5	25.9	25.0	3.8	6.50	11.8	0.0	2.7	2.9	1.9	0.0	0.0	0.0	0.0
Bhadravathi	50.0	75.2	84.2	69.8	35.0	24.1	25.0	28.0	30.8	9.2	10.7	16.9	15.0	4.3	4.5	7.9	0.0	0.0	0.0	0.0
Sagara	33.3	32.5	36.5	34.1	13.3	1.6	1.5	5.5	10.0	1.1	3.2	4.8	17.6	1.8	2.0	7.1	0.0	0.0	0.0	0.0
Mean	56.4	54.67	58.4	56.5	30.6	12.81	14.8	19.4	18.3	4.29	8.1	10.2	14.3	2.3	2.5	6.4	0.0	0.0	0.0	0.0

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