



E-mail: [srsthiruvalla@kau.in](mailto:srsthiruvalla@kau.in)

Phone: 0469-2604181

**KERALA AGRICULTURAL UNIVERSITY**  
**Sugarcane Research Station, Kallungal .P.O., Thiruvalla 689 102**

---

No. SRS II/287/07

Dated: 19.06.2014

From,  
Professor and Head

To,  
Dr. O.K.Sinha,  
Project Coordinator,  
AICRP on Sugarcane,  
Indian Institute of Sugarcane Research,  
LUCKNOW- 226 002, U.P.

Sir,  
Sub:- KAU-SRS- Thiruvalla- AICRP ON Sugarcane – Annual report 2011-12-reg

I am forwarding herewith the Annual Report of the AICRP (S) ( Crop Improvement, Crop Production and Plant Pathology) experiments conducted at this station for the year 2013 -14 for necessary action. The reports of Crop Improvement, Crop Production and Plant Pathology have been already sent to the respective PIs. This is for favour of your kind information.

Yours faithfully

Professor and Head

# KERALA AGRICULTURAL UNIVERSITY



## AICRP ON SUGARCANE

### ANNUAL REPORT 2013-2014

---

Sugarcane Research Station, Kallumkal  
Thiruvalla, Kerala-689102

## Staff Position

<b>Discipline</b>	<b>Post/ Designation</b>	<b>Number of sanctioned post</b>	<b>Name of the incumbent</b>	<b>Remarks</b>
Plant Breeding	Associate Professor	1	Dr. Shajan, V.R.	
Plant Pathology	Assistant Professor	1	Dr. Sajeena	
Agronomy	Assistant Professor	1	Smt.Bindhu.J.S.	Up to 19-2- 2014
	Assistant Professor		Sri. Jayakumar, G	From 19-2- 2014
	1. Farm Officer. Gr.II	1	Sri.Georgy Joseph	From 27-11-2013
	2. Lab. Assistant	1	Vacant	Vacant
	3. Technical Officer Gr.II	1	Vacant	Vacant

# Plant Pathology

**KERALA AGRICULTURAL UNIVERSITY  
SUGARCANE RESEARCH STATION  
THIRUVALLA**

**ANNUAL REPORT FOR 2013-14**

1. Project No : PP.17.
2. Title : **Evaluation of zonal varieties for resistance to red rot**
3. Objectives : To gather information on the relative resistance to red rot of the entries in zonal varietal trials of the respective zones
4. Technical programme
- a. Varieties/genotypes : All the centers will test all the entries of early and mid late genotypes under IVT and AVT (2013-14) of the respective zone.
- b. Inoculum : Isolates chosen will be only from local red rot collection.
- c. Method of inoculation : Plug and cotton swab methods of inoculation to be done in the fortnight of August to first week of September when 6 to 7 well formed internodes are formed.
- d. Observation : One observation at the 60<sup>th</sup> day of inoculation. The canes are split opened longitudinally along the point of inoculation. This is graded on the international scale of 0-9.

5. Evaluation (Results)

(a) **INITIAL VARIETAL TRIALS**

All the entries in the IVT (Early & Midlate) were inoculated by plug and cotton swab methods of inoculation with the isolates of red rot pathogen and observations were recorded 60 days after inoculation (Table 1).

(i) **Initial Varietal Trial (Early)**

Out of the 12 entries tested in the IVT (Early) trial, seven varieties *viz.*, Co 10005, Co 10006, Co 10026, Co 10027, CoN 10071, CoN 10072 and CoT 10367 showed moderate resistance (MR) reaction, three varieties *viz.*, Co 10004, Co 10024 and CoT 10366 showed moderate susceptibility (MS) reaction and two varieties *viz.* CoM 10081 and CoM 10082 showed highly susceptible (HS) reaction to plug method of inoculation.

All the varieties except two (CoM 10081 and CoM 10082) showed resistant reaction to cotton swab method of inoculation.

(ii) **Initial Varietal Trial (Midlate)**

Out of the 14 entries tested in the IVT (Midlate) trial, ten varieties *viz.*, Co 10015, Co 10031, Co 10033, CoM 10083, CoN 10073, CoT 10368, CoT 10369, CoVC 10061, PI

10131 and PI 10132 showed moderately resistance reaction, one variety *viz.*, Co 10017 showed moderately susceptible reaction (MS), one variety *viz* CoN 10073 showed susceptibility reaction (S) and two varieties *viz.*, Co VSI 10121 and Co VSI 10122 showed highly susceptible (HS) reaction to plug method of inoculation.

All the varieties except one *viz* Co VSI 10122 exhibited resistance (R) reaction by tested by cotton swab method of inoculation.

**(b) Advanced Varietal Trials**

All the entries in the AVT (Early & Midlate) were inoculated by plug and cotton swab methods of inoculation with the isolates of red rot pathogen and observations were recorded 60 days after inoculation (Table 2).

**(iii) Advance Varietal Trial (Early) II Plant**

Out of the seven entries tested in the AVT (Early II Plant), only one variety *viz* ., Co 94008 showed moderately resistance (MR) reaction, two varieties *viz.*, Co 08001 and Co 99004 exhibited moderately susceptible (MS) reaction, two varieties *viz* Co 85004 and Co 86032 showed susceptible (S) reaction and two varieties *viz* VSI 08121 and CoC 671 showed highly susceptible (HS) reaction to plug method of inoculation.

All the varieties except two varieties *viz.*, VSI 08121 and CoC 671 showed resistance reaction to cotton swab method of inoculation.

**(ii) Advance Varietal Trial (Midlate) II Plant**

Out of the five entries tested in the AVT (Midlate II Plant), three varieties *viz.*, Co 08009, Co 08009 and Co Snk 08101 showed moderately resistant (MR) reaction, where as two varieties *viz.*, Co 08016 and Co 08020 showed moderately susceptible reaction (MS) to plug method of inoculation.

All the varieties showed resistance reaction to cotton swab method of inoculation.

**Sd/-**

Signature of Scientist

**Sd/-**

Signature of Head of office

**Evaluation of Zonal varieties/genotypes for resistance to red rot disease (2013-14)**  
**Location: Sugarcane Research Station, Thiruvalla**

**Table 1. Initial varietal trial (Early and Mid late)**

Sl. No	Genotypes	Plug Method		Cotton swab Method
		Reaction	Score	Reaction
<b>A. IVT (EARLY)</b>				
1.	Co 10004	MS	5.2	R
2.	Co 10005	MR	3.4	R
3.	Co 10006	MR	4.0	R
4.	Co 10024	MS	5.4	R
5.	Co 10026	MR	3.4	R
6.	Co 10027	MR	3.4	R
7.	CoM 10081	HS	8.4	S
8.	CoM 10082	HS	8.6	S
9.	CoN 10071	MR	3.6	R
10.	CoN 10072	MR	3.8	R
11.	CoT 10366	MS	5.0	R
12.	CoT 10367	MR	3.2	R
<b>B. IVT (MID LATE)</b>				
1.	Co 10015	MR	3.4	R
2.	Co 10017	MS	5.4	R
3.	Co 10031	MR	3.2	R
4.	Co 10033	MR	3.8	R
5.	CoM 10083	MR	3.6	R
6.	CoM 10084	S	7.2	R
7.	CoN 10073	MR	3.8	R
8.	CoT 10368	MR	3.2	R
9.	CoT 10369	MR	4.0	R
10.	CoVC 10061	MR	3.4	R
11.	CoVSI 10121	HS	8.2	R
12.	CoVSI 10122	HS	8.4	S
13.	PI 10131	MR	3.4	R
14.	PI 10132	MR	3.0	R

**Table 2. Advanced varietal trial**

SL.No	Genotypes	Plug Method		Nodal Method
		Reaction	Score	Reaction
<b>a. AVT (Early) II Plant</b>				
1.	Co 08001	MS	5.2	R
2.	VSI 08121	HS	8.4	S
3.	Co 85004	S	7.6	R
4.	Co 94008	MR	3.8	R
5.	CoC 671	HS	8.4	S
6.	Co 99004	MS	5.6	R
7.	Co 86032	S	7.0	R

**D. AVT (Midlate) II Plant**

Sl. No	Genotypes	Plug Method		Cotton swab Method
		Reaction	Score	Reaction
1.	Co 08008	MR	3.6	R
2.	Co 08009	MR	3.6	R
3.	Co 08016	MS	5.6	R
4.	Co 08020	MS	5.4	R
5.	Co Snk 08101	MR	4.0	R



**KERALA AGRICULTURAL UNIVERSITY  
SUGARCANE RESEARCH STATION, THIRUVALLA**

**ANNUAL REPORT FOR 2013-2014**

Project No	: PP.14
Title	: <b>Identification of pathotypes of red rot pathogen</b>
Objective	: To gather information on the major pathotypes of red rot pathogen from the different areas /zones.
Location	: Peninsular zone-Thiruvalla, Sugarcane Research Station, Thiruvalla.
Year of start	: 1983-84 (continuing project)
Differential varieties/genotypes	: Baragua Khakai SES 594 CoS 767 BO 91 CoC 671 Co 7717 Co 997 Co J 64 Co 1148 Co 419 Co 62399 Co 975 CoS 8436
No. of isolates	: Virulent isolates collected from redroot affected canes of commercially cultivated varieties in the zone.
Method of inoculation	: Plug method of inoculation to be done. Inoculations with each isolate to be done on all the varieties with freshly prepared spore suspension. All inoculations to be completed in 2 days by last week of August.
Observation	: One observation at the 60 <sup>th</sup> day of inoculation.

Evaluation : The canes are to be split opened longitudinally along the point of inoculation. This is graded of the international scale of 0-9.

Result :

Ten new isolates viz., CF91017, CF94012 (T), CF94012 (G), CFSi6 (T), CFSi6 (K), CFSi6 (KARAIKUDI), CFSi97021 (P), CF0323 (G), CF09356 (E) and CoT188322 along with the designated pathotype for Peninsular zone (CF06) were inoculated and tested for red rot resistance against fourteen differentials by plug method of artificial inoculation. Five differentials (CoSe 95422, CoV 92102, Co 7805, Co 86002 and Co 86032) for inclusion as standard differentials were also multiplied for further artificial inoculation during the next year. All the new isolates tested exhibited similar reaction to red rot as that of the standard isolate and hence there is no emergence of new pathotype of red rot pathogen in this zone.

**Sd/-**  
Signature of Scientist

**Sd/-**  
Signature of Head of office

**Pathogenic behavior of isolates of red rot pathogen on a set of 14 differentials by plug method (2013-14)**

S. N	Isolate	Differentials													
		Co 419	Co 975	Co 997	Co 1148	Co 62399	Co 7717	CoC 671	CoJ 64	CoS 767	CoS 8436	BO 91	Baragua	Khakai	SES 594
1	CF06	S	S	I	I	S	R	S	I	R	R	R	R	R	R
2	CF91017	S	S	S	R	S	I	S	I	R	R	R	R	I	R
3	CF94012 (T)	S	S	S	S	S	I	S	I	R	R	R	R	S	R
4	CF94012 (G)	S	I	S	S	S	R	S	S	R	R	R	R	I	R
5	CFSi6 (T)	S	I	I	S	I	I	S	I	R	R	R	R	I	R
6	CFSi6 (Kanchipuram)	S	I	I	S	I	I	S	S	I	R	R	R	I	R
7	CFSi6 (Karaikudi)	S	S	S	S	S	I	S	S	R	R	R	R	I	R
8	CFSi97021 Pacheri	S	S	I	I	S	I	S	I	R	R	R	R	R	R
9	CF0323 (G)	I	I	I	I	S	R	S	I	R	R	R	R	S	R
10	CF09356 Elanganur	S	S	S	S	S	S	S	S	I	R	R	R	S	R
11	CoTI88322	I	S	I	S	S	I	S	I	R	R	R	R	I	R

**KERALA AGRICULTURAL UNIVERSITY  
SUGARCANE RESEARCH STATION, THIRUVALLA  
ANNUAL REPORT FOR 2013-14**

1. Project No : P.P.22
2. Title: **Survey of sugarcane diseases naturally occurring in the area on important sugarcane varieties.**
3. Objective To gather information on the diseases naturally occurring in the area on varieties for compiling an all India disease status report yearly
4. Location Peninsular zone-Thiruvalla  
Sugarcane Research Station, Thiruvalla
5. Year of start 1989-90
6. Technical programme Survey will be conducted in the sugarcane growing areas and to take periodic observations in June, September and December in all locations to gather information on the per cent incidence of diseases on all varieties of the area (General survey)
7. Phase to be covered during the Survey of major diseases occurring in the area on important varieties and their identification period
8. Result : (1). **Red rot:** The disease was observed only in few pockets.  
(2). **Pokkah Boeng:** Prominently observed with its first appearance during May month. The leaves are found to turn yellow, become twisted, crinkled and the plant appears to be stunted. But the affected plants are found to recover from the infection by the onset of monsoon. The plants are not found turning to top rot infection stage and hence are saved.

### **(3). Foliar diseases**

**(a). Ring spot:** This disease is the most common and predominant foliar disease observed even from two months age up to harvest. But proper field sanitation and detrashing at regular interval for two to three times can reduce the incidence of this disease.

**(b). Rust:** Rust disease was observed during this year in a severe form in several varieties. Uredospores were observed as light orange pustules on leaf lamina during the month of August, 2011. The next stage of teliospores was observed as black pustules as raised spots during September, month. The severely affected leaves got dried up. But any how the disease subsided by August with the onset of North East monsoon showers.

**(4) Mosaic:** Mosaic is seen commonly in most of the crop varieties, but the disease is not in such a stage to cause any severe yield reduction.

**(5) YLD:** The disease has been observed in some varieties. Its prominent symptoms started with yellowing of midrib, later resulting in drying up of the leaves from tip downwards. Screening of all varieties for their susceptibility to this disease is being undertaken.

#### 9. Discussion and summary

: In the current year, foliar disease viz., ring spot was prominent but not severe to cause any drastic yield loss. YLD disease was also noticed randomly in some plots and in severe stages in some varieties. The other diseases observed as usual were rust, mosaic as well as Pokkah Boeng. But none of the diseases were in a severe stage to cause any drastic yield decline.

**Sd/-**  
Signature of Scientist

**Sd/-**  
Signature of Head of office

**PP 22: Survey of naturally occurring sugarcane diseases (2013-14)**

SI. No	Disease	Name of area surveyed	% Disease incidence	Varieties affected	Crop stage	Any other information
1.	Smut	Disease not present in any area	-	-	-	-
2.	Wilt	Disease not present in any area	-	-	-	-
3.	RSD	Disease not present in any area	-	-	-	-
4.	YLD	Disease observed in some varieties	Iramallikkara, Thiruvananthoor, Vallamkulam	CoTl 88322, Co VSI 08121, Coc 671, CoT 10369, Co 08020,	4 month	-
6.	Foliar diseases (a). Ring spot	Iramallikkara, Pandanadu and Thiruvananthoor of Alleppey district, Kuttor, Nedumbram, Venpala, Niranam and Thengeli of Pathanamthitta district and Aramanoor and Kidangoor of Kottayam district	Moderate	Madhuri, Co 7745, Co 6304, Co 72146	2 month onwards	Ring spot is associated with almost all varieties till harvest
	(b). Banded sclerotial disease	Iramallikkara, Pandanadu and Thiruvananthoor of Alleppey district, Kuttor, Nedumbram, Venpala, Niranam and Thengeli of Pathanamthitta district and Aramanoor and Kidangoor of Kottayam district	Mild	-	2 month onwards	
7.	Other diseases a. Pokkah Boeng	Iramallikkara, Pandanadu and Thiruvananthoor of Alleppey district, Kuttor, Nedumbram, Venpala, Niranam and Thengeli of Pathanamthitta district and Aramanoor and Kidangoor of Kottayam district	Mild	Co Tl 88322, CO 08001, CoM 10081, Co 10017, Co 10031, CoM 10082, PI 10132, Co 86032. Co 10026	4-6 month	The disease appears during May month and is found to disappear after shower during July- August
	b. Rust	Kuttor, Nedumbram, Venpala, Niranam and Thengeli of Pathanamthitta district, Aramanoor and	Mild	CoTl 88322, Co 08001, Co 94008, Co 10015, CoT 10368, Co 08008,	5-6 month	The disease appears during June month. Uredospores

		Kidangoor of Kottayam district and Pandanadu and Thiruvanmandoor of Alleppey district		Co SNk 08101, Snk 088789		and teliospores are found to arise. The disease subsides during August with the onset of monsoon.
	Red rot	Kuttor, Nedumbram, Venpala, Niranam and Thengeli of Pathanamthitta district, Aramanoor and Kidangoor of Kottayam district and Pandanadu and Thiruvanmandoor of Alleppey district	Mild	-	-	-