

TAMIL NADU AGRICULTURAL UNIVERSITY

From
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To
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Lucknow- 226 002

No.SRS/CDL/AICRP(S)/PATH/Annual Report /2014 dt. 29.05.2014

Sir,

Sub: Sugarcane Research Station, Cuddalore – AICRP on Sugarcane-Annual report-
Plant Pathology section for the year 2013-2014-regarding,

Ref: Letter No.F.No 18-2007/CPTN(Vol I)Dt17.06.2013 of the Project
Coordinator (Sugarcane) IISR, Lucknow

I submit to enclose herewith the Annual report of AICRP on Sugarcane pertaining to
Plant Pathology division of this centre for the period of 2013 -2014. for your kind perusal.

Professor and Head

Encl: Hard and soft copy of the AICRP(S) plant pathology Annual Report 2012-2013

Copy: to The Head, Plant Pathology, -AICRP on Sugarcane, Division of Crop Protection,
Sugarcane Breeding Institute, Coimbatore-641007.

ALL INDIA CO-ORDINATED RESEARCH REPORT ON SUGARCANE-PLANT PATHOLOGY

ANNUAL REPORT -2013

CENTRE: CUDDALORE (EAST COAST ZONE)

DISCIPLINE: PLANT PATHOLOGY

PP14: Identification of pathotypes/races in red rot pathogen

Location: Cuddalore (East Coast Zone)

During 2013 -2014 thirteen sugarcane differentials for red rot pathogen listed in the technical programme (AICRP- Sugarcane) viz., Co 419, Co 7717, Co 997, Co 1148, SES 594, Baragua, Co J 64, Bo 91, Co 975, Khakkai, Co 62399, Co S 767, and CoC 671 were planted on 29.03.2012. The above differentials were inoculated with the isolates (collected from the different sugarcane varieties) along with reference isolates and they were graded and the results were tabulated below

Isolates	Source	Co997	Co1148	Khakkai	CoJ64	Co62399	Co419	CO975	Co7717	CoC671	Baragua	CoS767	Bo91	SES594
Cf 04	Co419	X	S	S	S	R	S	S	S	S	R	R	R	R
Cf06	CoC671	S	X	X	S	R	R	X	R	S	S	R	R	R
Cf10	85A261	S	R	R	-	-	S	S	S	S	S	R	R	R
IsolateI	CoSi6	S	X	X	S	R	R	X	R	S	S	R	R	R
IsolateII	Co94025	X	S	S	S	R	S	S	S	S	R	R	R	R
IsolateIII	93V297	S	R	R	S	R	S	S	S	S	S	R	R	R
IsolateIV	CoC24	S	X	X	S	R	R	X	R	S	S	R	R	R
IsolateV	CoC671	S	X	X	S	R	R	X	R	S	S	R	R	R
IsolateVI	CoV94101	X	S	S	S	R	S	S	S	S	R	R	R	R

R =Resistant

S = susceptible

X = Intermediate

During 2013 six isolates of *Colletotrichum falcatum* were tested. Results indicated that the Isolate I (CoSi6), Isolate IV (CoC24), IsolateV (CoC671) behaved similar to Cf06, While the Isolates II (Co94025) and Isolate VI (CoV94101) were similar to Cf04. The Isolate III (93V297) was similar to Cf 10. There is no introduction of new pathotypes/races of red rot pathogen.

PP17 a: Evaluation of Pre –Zonal/IET varieties and genotypes for resistance in red rot (*Colletotrichum falcatum* Went)

Location: Cuddalore

2013-14

RED ROT REACTION: 2013 – 2014 (Cf06)

s.no	Clones	Plug method (Cf06)		Nodal method(cf06)	
S.no	Clone	Total Score	Grade	Total Score	Grade
1	CoA 11 - 321	6.2	S	4.2	MS
2	CoA – 11 - 324	8.2	HS	6.2	S
3	CoA – 11 - 325	8.8	HS	7.4	S
4	CoA – 11 - 326	7.6	S	5.6	MS
5	Co 7219	7.2	S	5.2	MS
6	CoA – 11 - 323	8.4	HS	5.3	MS
7	CoC – 10 – 337	8.4	HS	6.9	S
8	CoOR – 10 - 346	9.0	HS	6.2	S
9	CoC – 10 - 336	3.9	MR	3.2	MR
10	CoA – 12 - 321	3.8	MR	3.6	MR
11	CoV92102	9.0	HS	7.6	S
12	CoA – 12 - 322	3.9	MR	3.4	MR
13	CoC – 01 – 061	9.0	HS	8.0	S
14	CoA92081	8.6	HS	7.6	S
15	CoC – 11 - 336	3.7	MR	3.4	MR
16	Co86249	2.0	R	2.0	R
17	Co6907	6.2	S	5.6	MS
18	CoOR -08 - 376	8.4	HS	6.6	S

RED ROT REACTION: 2013 – 2014 (Cf04)

s.no	Clones	Plug method (Cf04)		Nodal method(cf04)	
S.no	Clone	Total Score	Grade	Total Score	Grade
1	CoA 11 - 321	5.6	MS	3.8	MR
2	CoA – 11 - 324	6.6	S	5.6	MS
3	CoA – 11 - 325	6.8	S	5.4	MS
4	CoA – 11 - 326	4.2	MS	3.9	MR
5	Co 7219	5.8	MS	5.6	MS
6	CoA – 11 - 323	8.0	HS	6.2	S
7	CoC – 10 – 337	6.6	S	5.4	MS
8	CoOR – 10 - 346	6.8	S	5.8	MS
9	CoC – 10 - 336	3.8	MR	3.2	MR
10	CoA – 12 - 321	3.2	MR	2.0	R
11	CoV92102	9.0	HS	8.2	S
12	CoA – 12 - 322	3.9	MR	1.8	R
13	CoC – 01 – 061	8.6	HS	7.2	S
14	CoA92081	8.8	HS	7.6	S
15	CoC – 11 - 336	3.6	MR	3.9	MR
16	Co86249	2.0	R	2.0	R
17	Co6907	7.0	S	5.8	MS
18	CoOR -08 - 376	8.1	HS	7.8	S

Four clones viz, CoC- 10 – 336, CoC – 11 – 336, CoA – 12 – 321 , CoA – 12 – 322 showed MR reaction in plug method of inoculation using Cf06 and Cf04. CoA – 12 – 321 and CoA – 12 – 322 showed R reaction in nodal method of inoculation using Cf04.and showed MR reaction by using Cf06.

PP.17b: Evaluation of Pre –Zonal/IET varieties and genotypes for resistance to smut (*Ustilago scitaminea* Syd.) Syn. *Sporosorium scitamineum*

Location: Cuddalore

During this year, setts (three buds) of the twenty five clones were steeped in freshly prepared smut spores suspension (90%viability) with a spore load of one million spores per milliliter for 30 minutes and planted on 29.03.2013. in a randomized block design with two replications. Smut incidence was recorded at fortnightly intervals from 35 DAP to till harvest. Number of smut affected clumps per row was recorded.

Smut Reaction -2013

s.no	Clones	Total Score	Grade	S.No	Clones	Total Score	Grade
1	CoA 11 - 321	14.25	MS	10	CoA – 12 - 321	21.50	S
2	CoA – 11 - 324	27.82	S	11	CoV92102	12.71	MS
3	CoA – 11 - 325	10.41	MS	12	CoA – 12 - 322	27.05	S
4	CoA – 11 - 326	24.23	S	13	CoC – 01 – 061	14.83	MS
5	Co 7219	36.52	HS	14	CoA92081	19.52	MS
6	CoA – 12 - 323	13.56	MS	15	CoC – 11 - 336	11.20	MS
7	CoC – 10 – 337	10.58	MS	16	Co86249	6.06	MR
8	CoOR – 10 - 346	16.76	MS	17	Co6907	45.56	HS
9	CoC – 10 -336	8.51	MR	18	CoOR -08 - 376	14.2	MS

The clones viz., **CoC – 10 -336** and **Co 86032** showed “MR” reaction.

PP22. Survey of sugarcane diseases occurring naturally in the area on important sugarcane varieties.

Location: Cuddalore

During this year, sugarcane disease survey has been conducted in the following sugar factory areas.

1. M/s E.I.D.Parry India., Ariyur, Pondicherry
2. M/s Chengalrayan Co-operative Sugar Mills Ltd, Periyasevali, Villupuram.

3. M/s Pondicherry Co-operative Sugar Mills Ltd., Lingareddipalayam, Pondicherry.
4. M/s MRK Co-operative Sugar Mills Ltd., Seithiathope
5. M/s Rajashree sugars Ltd., Mundiampakkam
6. M/s Maduranthagam co-operative sugar mills Ltd, Maduranthagam.

KAALAKURICHI CO-OPERATIVE SUGAR MILLS LTD, MOONGILTHURAI PATTU.

S.No	Variety	Farmers holdings	Crop stage(Months)	Name of the disease	Incidence (per cent)	Month of survey
1	CoC 24	4.60acre	6-7 months	Red rot, YLD	20 % 40%	December-2013
	CoC 24	2.50 acre	6 – 7 months	Red rot	15%	December-2013
2	Co86032	1.85 acre	8 months	WILT	10%	Nov-2013
3	MC707	5.50 acre	6 - 7 months	Smut	35%	July-2013
4	Co89017	2.0 acre	6-7 months	Red rot	15%	December-2013

Chengalrayan Co-operative Sugar Mills Ltd, Periyasevali, Villupuram.

S.No	Variety	Farmers holdings	Crop stage(Months)	Name of the disease	Incidence (per cent)	Month of survey
1	CoC 24	2.65acre	8 months	Red rot,	25 %	Nov-2013
	CoC 24	3.0 acre	7 months	Red rot	10%	December-2013
2	Co86032	7.50 acre	8 months	Wilt YLD	20% 25%	Nov-2013
3	PI 110	5.00 acre	6 months	Smut	20%	July-2013
4	Co86249	3.0 acre	6-7 months	Wilt	15%	December-2013

MRK Co-operative Sugar Mills Ltd., Seithiathope

S.No	Variety	Farmers holdings	Crop stage(Months)	Name of the disease	Incidence (per cent)	Month of survey
1	CoC 24	6.50acre	8-9 months	Red rot,	35 %	Nov-2013
2	CoV940101	13.0 acre	7 - 8 months	Red rot	20%	Nov-2013
3	CoV92102	11.0	7 months	Wilt	15%	Nov-2013

		acre		YLD	20%	
4	CoC 22	4.0 acre	6 -7 months	Smut	10%	July-2013
5	Co86032	1.5 acre	6-7 months	Wilt,	10%	Nov,Dec-2013
6	CoV09356	2.0acre	6 months	Smut	15%	July-August2013

Rajashree sugars Ltd., Munndiyampakkam.

S.No	Variety	Farmers holdings	Crop stage(Months)	Name of the disease	Incidence (per cent)	Month of survey
1	CoC 24	2.75acre	7 months	Red rot,	30%	Nov-2013
	CoC 24	1.25 acre	6 months	Red rot	15%	Novr-2013
2	Co86032	12.0 acre	6 months	Wilt GSD	20% 10%	Nov-2013
3	MC707	4.0 acre	8 months	Smut	35%	July-2013
4	Co92102	2.5 acre	7 months	Red rot	15%	December-2013

SAKTHI SUGARSLTD,-Sivagangai (as per the official letter received from the mill)

S.No	Name of the disease	Variety affected	Percentage)
1	YLD	Co86032	>70
2	Smut	CoA92081	<20
3	Smut	G98743	<10
4	Smut	83R23	
5	Wilt	G98743 83R23 92R62	10 - 15
6	GSD	Co86032 CoA92081 G98743 83R23	> 5

Maduranthagam co-operative sugar mills Ltd, Maduranthagam.

S.No	Ryot Name	Variety	Date of Planting	Name of the disease	Area	Incidence (per cent)	Month of survey
1	.V.Shanmugasundram	CoC 24	31.07.2013	Red rot	5.0 acre	25%	Nov-2013
2	.Bagthavatchalam	CoC 24	31.07.2013	Red rot	8.0	20%	Nov-

					acre		2013
3	.K.Appadurai	CoC 24	26.12.2012	Red rot	0.70 acre	20%	Nov- 2013
4	.A.Perumal	CoC 24	31.12.2012	Red rot	0.65 acre	15%	Nov- 2013

The red rot incidence was noticed in Cosi6,CoC24, Co92102, CoV940101 and Co89017ranging from 10% to 35 %

PP 23. Assessment of elite and ISH genotypes for resistance to red rot.

Location: Cuddalore

The seed material was not available this year to take up the experiment.

PP 30. Assessment of field resistance in sugarcane to red rot.

Location: Cuddalore

During 2013 -2014 AVT entries and IVT entries (14 entries) along with standards were planted in 6 meters rows with two replications to screen them against red rot.

150 gm of grain inoculums/20 ft row was applied at the time of plant of planting.

Disease development was observed at monthly intervals.

S.No	Variety	Resistance Level(MR/S)	Symptoms observed followed by no of days	C.falcatum recovered (Yes/ No)	Anyother information
1	CoA 11 - 321	S	SY(60),CR/LD	Y	-
2	CoA – 11 - 324	HS	SM(90)CR(105)/CD(155)	Y	Disease appears in all clumps-
3	CoA – 11 - 325	HS	SY(68)CR(142)/LD	Y	-
4	CoA – 11 - 326	S	SY(60),CR(148)/LD	Y	-
5	CoC 671	HS	SM(90)CR(95)/CD(110)	Y	Clumps dried
6	CoA – 12 – 323	S	SY(60),CR(155)/LD	Y	-
7	CoC – 10 – 337	S	SY(60),CR(155)/LD	Y	-

8	CoOR – 10 – 346	HS	SM(90)CR/CD	Y	Clumps dried
9	CoC – 10 -336	MR	SY,SD	N	-
10	CoA – 12 – 321	MR	SY,SD	N	
11	CoV92102	HS	SM(90)CR(95)/CD(110)	Y	Clumps dried
12	CoA – 12 – 322	MR	SY,SD		
13	CoC – 01 – 061	HS	SM(90)CR(95)/CD(110)	Y	Disease appears in all clumps
14	CoC22	MR	SY,SD	N	

Among the fourteen entries tested for durable field resistance only three clones viz., **CoA – 12 – 322** , **CoC – 10 -336** and **CoA – 12 – 321** have been identified as “MR “category. Recovery and re- isolation of the pathogen was successfully obtained from the S, and HS category. The re – isolation of the pathogen from S and HS clones confirmed that the positive colonization / infection in the susceptible seedlings by the red rot pathogen.