

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

ANNUAL REPORT 2014-15

CENTRE: CUDDALORE (EAST COAST ZONE)

DISCIPLINE: PLANT PATHOLOGY

PP14: Identification of pathotypes/races in red rot pathogen

Thirteen sugarcane differentials for red rot pathogen viz., Co 419, Co 975, Co 997, Co 1148, Co 7717, Co 62399, CoC 671, CoJ 64, CoS 767, BO 91, Baragua, Kakhai and SES 594, were planted on 28.01.2014. 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

PP 14. Pathogenic behaviour of isolates of *C. falcatum* on host differential

Isolates	Source	Reaction of host differentials												
		Co 419	Co 975	Co 997	Co 1148	Co 7717	Co 62399	CoC 671	CoJ 64	CoS 767	BO 91	Baragua	Kakhai	SES 594
CF 04	Co 419	S	S	X	S	R	R	S	S	R	R	R	S	R
CF 05	Co 997	S	S	S	X	R	R	S	S	R	R	R	R	R
CF 06	CoC 671	R	X	S	X	R	R	S	S	R	R	S	X	R
Isolate 1	CoC 24	X	S	S	X	R	R	S	S	R	R	S	X	R
Isolate 2	CoSi 6	R	X	S	X	X	R	S	S	R	R	S	X	R
Isolate 3	CoV 46	X	X	S	X	X	R	S	S	R	R	S	X	R
Isolate 4	CoG 95076	X	S	X	S	X	R	S	S	R	R	R	S	R

R =Resistant S = susceptible X = Intermediate

Four isolates of *Colletotrichum falcatum* were tested. Results indicated that the Isolate 1 (CoC 24), Isolate 2 (CoSi 6), and Isolate 3 (CoV 46) behaved similar to CF 06, and the Isolate 4 (CoG 95076) behaved similar to CF 04. There is no introduction of new pathotypes /races of red rot pathogen.

PP17A. Evaluation of zonal varieties for resistance to red rot

Sugarcane clones were screened against red rot by using pathotypes CF 04 and pathotype CF 06 following plug method and nodal method of inoculation separately and graded in 0-9 scale, results are presented below

Evaluation of sugarcane genotypes for red rot (CF 04) (2014-15)

S. No.	Clones	Plug method		Nodal method
		Score	Reaction	
IVT - Early				
1.	CoA 12321	3.8	MR	R
2.	CoA 12322	7.4	S	S
3.	CoA 12323	3.7	MR	R
4.	CoOr 12346	7.9	S	S
5.	CoV 12356	2.1	MR	R
AVT – Early (I Plant)				
6.	CoA 11321	5.8	MS	R
7.	CoA 11323	8.4	HS	S
8.	CoC 10336	5.8	MS	S
9.	CoC 11336	4.2	MS	R
AVT – Mid late (II Plant)				
10.	CoA 10321	7.0	S	R
11.	CoC 10337	7.8	S	S
12.	CoOr 10346	7.2	S	S
Checks				
13.	Co 86249	2.0	R	R
14.	CoC 671	9.0	HS	S

Among the 12 clones screened for resistance against CF 04 pathotype the clones viz., CoA 12321, CoV 12356 and CoA 12323 were found to be moderately resistant in plug method of inoculation and the clones CoA 11321 and CoC 10336 were found to be moderately

susceptible. In the nodal method of inoculation six clones viz., CoA 11321, CoA 10321, CoC 11336, CoA 12321, CoV 12356 and CoA 12323 recorded resistant reaction.

Evaluation of sugarcane genotypes for red rot (CF 06) (2014-15)

S. No.	Clones	Plug method		Nodal method
		Score	Reaction	
IVT - Early				
1.	CoA 12321	4.0	MR	R
2.	CoA 12322	7.8	S	R
3.	CoA 12323	3.8	MR	R
4.	CoOr 12346	7.4	S	S
5.	CoV 12356	2.4	MR	R
AVT – Early (I Plant)				
6.	CoA 11321	6.6	S	R
7.	CoA 11323	8.2	HS	S
8.	CoC 10336	6.4	S	S
9.	CoC 11336	3.8	MR	R
AVT – Mid late (II Plant)				
10.	CoA 10321	6.6	S	R
11.	CoC 10337	7.0	S	S
12.	CoOr 10346	9.0	HS	S
Checks				
13.	Co 86249	2.0	R	R
14.	CoC 671	9.0	HS	S

Among the clones screened for resistance against CF 06 pathotype the four clones viz., CoC 11336, CoA 12321, CoV 12356 and CoA 12323 were found to be moderately resistant in plug method of inoculation. In the nodal method of inoculation seven clones viz., CoA 11321, CoA 10321, CoA 12322, CoC 11336, CoA 12321, CoV 12356 and CoA 12323 recorded resistant reaction.

PP17B. Evaluation of zonal varieties for resistance to smut (2014-15)

Sugarcane clones were screened against smut disease as per technical programme and the results are presented below

S. No.	Clones	Progressive smut per cent	Disease reaction
IVT - Early			
1.	CoA 12321	24.56	S
2.	CoA 12322	0	R
3.	CoA 12323	16.58	MS
4.	CoOr 12346	8.84	MR
5.	CoV 12356	6.71	MR
AVT – Early (I Plant)			
6.	CoA 11321	16.85	MS
7.	CoA 11323	14.28	MS
8.	CoC 10336	2.47	MR
9.	CoC 11336	8.93	MR
AVT – Mid late (II Plant)			
10.	CoA 10321	2.85	MR
11.	CoC 10337	22.89	S
12.	CoOr 10346	14.36	MS
Checks			
13.	Co 7219	34.45	HS
14.	Co 6907	41.67	HS

Among the 12 AICRP clones screened for resistance to smut disease CoA 12322 found to be resistant. Five entries viz., CoOr 12346, CoV 12356, CoC 10336, CoC 11336 and CoA 10321 recorded moderately resistant reaction to smut.

PP 22. Survey of sugarcane diseases naturally occurring in the area on important sugarcane varieties

Survey was conducted in the following sugar mills area for the incidence of diseases

1. Kallakurichi Co-operative Sugar Mills Ltd., Unit I Moongilthuraipattu, Villupuram district
2. M.R.Krishnamurthy Co-operative Sugar Mills Ltd, Sethiathope, Cuddalore district
3. Shree Ambiga Sugar Mills Ltd., Pennadam , Cuddalore district
4. Sakthi Sugars Ltd., Kannariruppumattur, Paddamathur , Sivaganga district

1. Survey conducted in Kallakurichi Co-operative sugar mill Unit I Mungithuraipattu area

S. No.	Farmer Name and village	Variety	Crop / area	Date of planting / ratoon	Stage of the Crop	Disease observed
1.	Radhakrishnan S/o Cinnasamy, Thenkarumbalur	CoG 95076	II Ratoon 2.25 ac	10.12.13	11 months	Red rot 20 %
2.	Balasundaram S/o Sundaramoorthy Eduthalur	Co 86032	Plant 1 ac	18.02.14	9 months	YLD 5 %
3.	Ezhuthambigai w/o Balasundaram Eduthalur	PI 001110	Plant 2.5 ac	15.02.14	9 months	Wilt 5 % Red rot 1 %
4.	T. Kusalen S/o Thulasi Naidu Puliyankottai	Co 86032	I Ratoon	14.11.13	10 months	Wilt 30 %
5.	V. Sundapillai s/o Vengatachalam Suthamalai	CoV 92102	Plant 2.75 ac	28.09.2014	3 months	Smut 5 %

2. Survey conducted in M.R.Krishnamurthy Co-operative Sugar Mills Ltd., Sethiathope

S. No.	Farmer Name and village	Variety	Crop / area	Date of planting / ratooning	Stage of the crop	Disease observed
1.	A. Rajasekar S/o Adhimulam Chinnakuppam	CoC 24	2.5 ac Ratoon	29.12.2013	11 months	Red rot 25 %
2.	T. Murugam Agaralambadi	CoC 24	0.25 ac Ratoon	20.02.2014	9 months	Red rot 20 %

3.	S. Palanivel Agaraalampadi	CoC 24	0.1 ac Ratoon	21.12.2013	11 months	Red rot 20 %
4.	N. Tamilmani Veeramaudiyathanam	CoC 24	-	-	10 months	Red rot 15 %
5.	R. Rajendran Vattathur	CoC 24	4 ac Plant	11.01.2014	10 months	Red rot 25 %
6.	P. Subashchandraboss s/o Pavadai Nantheeswaram mangalam	CoC 24	3 ac Ratoon	31.01.2014	10 months	Red rot 15 %
7.	G. Kalaiselvan s/o Govindasamy Pudaiyur	CoC 24	3 ac Ratoon	17.02.2014	9 months	Red rot 30 %
8.	G. Kanagavalli w/o Ganesan Vadakupalayam	CoC 24	2 ac	12.03.2014	8 months	Red rot 15 % Wilt 5%
9.	Vengatesan Pudaiyur	CoC 24	-	-	10 months	Red rot 25 %
10.	Ramadoss Erumbanur	CoC 24	4 ac Ratoon	29.12.2013	11 months	YLD 5 %

3. Survey conducted in Shree Ambiga Sugar Mills Ltd., Pennadam

S. No.	Farmer Name and village	Variety	Crop / area	Date of planting / ratooning	Stage of the crop	Disease observed
1.	R. Indrakumari Pulikarampalur	Co 86032	2.00 ac Ratoon	27.02.2014	10 months	YLD 10 %
2.	Sudarraj Edaiseruvai	CoSi 6	1.20 ac Ratoon v	04.04.2014	8 months	Red rot 15 %
3.	Angamal Eraiyyur	CoSi 6	Ratoon II	31.12.13	11 months	Smut 15 % Top rot trace YLD 5 %
4.	Gunasekaran s/o Tandavan Thozhudur	Co 86032	Ratoon 2.00 ac	-	9 months	YLD 5 %
5.	Govindarajan Eraiyyur	CoV 09356	Plant	-	8 months	YLD trace
6.	K. Sudharsan Neyivasal	CoSi 6	2.30 ac Ratoon	30.12.13	10 months	Red rot 10 % Wilt 5 %
7.	N. Natarajan, Nemam Karuveppilankurichy	CoC 22	Ratoon II 2.0 ac	-	10 months	Smut 20 %

8.	R. Kannyan, Nemam Karuveppilankurichy	CoC 22 CoV 09356	Ratoon II 0.30 ac 1.0 ac	-	11 months	Smut 25 % YLD 5 %
9.	S. Kasthuri, Nemam Karuveppilankurichy	CoC 22	Ratoon II 1.0 ac	-	12 months	Smut 20 %

4. Survey conducted at Sakthi Sugars Ltd., Kannariruppu mattur Paddamathur

S. No.	Farmer Name and village	Variety	Crop / area	Date of planting / ratooning	Stage of the crop	Disease observed
1.	S.Dhanabalan S/o Sivasamy Thirupachathe	CoSi 6	Ratoon II 0.70 ac	15.01.2014	11 months	Red rot 5 %
2.	Subramaniyabharathi S/o Selvam Thirupachathe	CoSi 6	Ratoon II 0.50 ac	26.01.2014	10 months	Red rot 5 %
3.	K. Kannan Karumbalur	CoSi 6	Ratoon 1.0 ac	10.01.2014	11 months	Red rot 5 %
4.	G. Muthulakshmi w/o Gokulavasan Tandupadi Melapadi	CoV 2007-291	Plant 2.0 ac	15.03.2014	9 months	Smut 10 %

Survey indicated that incidence of red rot was observed in varieties viz., CoC 24, CoSi 6, CoG 95076 and PI 001110 and it ranged from 1 to 30 per cent. Incidence of wilt diseases was recorded in Co 86032, CoSi 6, CoC 24 and PI 001110 and it ranged between 5 and 30 %. Yellow leaf disease was observed in Co 86032, CoV 09356, CoSi 6 and CoC 24 and ranged from 5 to 10 per cent. Smut disease was noticed in CoV 2007-291, CoSi 6, CoC 22 and CoV 92102 and the incidence ranged from 5 to 25 per cent.

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

During 2014-15 IVT and AVT entries (12 Nos.) along with the standards were planted as per the technical programme 150 g of grain inoculums / 20 ft row was applied at the time of planting. Disease development was observed at monthly interval.

S. No.	Variety	Resistance level (MR/S)	Symptoms observed followed by no. of days after planting	<i>C. falcatum</i> recovered (Yes/No)	Any other information
1.	CoA 12321	S	SY (60), SD (90)	No	-
2.	CoA 12322	MR	-	-	-
3.	CoA 12323	MR	-	-	-
4.	CoOr 12346	S	SY (60), SD (90)	Yes	-
5.	CoV 12356	MR	-	-	-
6.	CoA 11321	S	-	-	-
7.	CoA 11323	HS	SY (60), SD (90), SM(120)	Yes	-
8.	CoC 10336	S	SY (60), SD (90)	Yes	-
9.	CoC 11336	MR	-	-	-
10.	CoA 10321	S	-	-	-
11.	CoC 10337	S	SY (90), SD (110),	Yes	-
12.	CoOr 10346	HS	SY (60), SD (90), SM(120), CD	Yes	-
13.	CoC 671	HS	SY (60), SD (90), CR(120), CD(150)	Yes	-
14.	Co 86249	R	-	-	-
15.	CoC 22	R	-	-	-

Among the 15 entries tested for field tolerance, infection of red rot was observed in the varieties viz., CoA 12321, CoOr 12346, CoA 11323, CoC 10336, CoC 10337, CoOr 10346 and CoC 671. Moderately resistant varieties viz., CoA 12322, CoA 12323, CoV 12356 and CoC 11336 were free from red rot infection. The entry CoA 10321 which is susceptible to red rot was found to be field tolerant to red rot disease.

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From
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To
The Project Coordinator
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No.P&H/SRS/CDL/AICRP(S)/Pathology/Annual Report /2015 dt. 05.06.2015

Sir,

Sub : Sugarcane Research Station, Cuddalore – AICRP on Sugarcane-Annual report-
Plant Pathology - 2014-2015- Submitted - regarding,

I submit to enclose herewith the Annual report of AICRP on Sugarcane pertaining to
Plant Pathology division of this centre for the period of 2014-2015 for your kind perusal.

Professor and Head

Copy to the Head, Division of Crop Protection, & PI, Plant Pathology, AICRP on Sugarcane,
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