

## **ALL INDIA COORDINATED RESEARCH PROJECT (SUGARCANE)**

**Report for the period 2015-16**

**Centre- SBI, Coimbatore**

### **PP 14: Identification of pathotypes of red rot pathogen**

Two new isolates CfPI1110- Kothangudi and CfPI1401-Kadaganur along with 5 old isolates Cf0323- Pettavaithalai, Cf92012 Kanjanur, Cf91017- Nellikuppam, Cfv09356- Elanganur and Cf94012- Old TN and 1 standard pathotype Cf671 were independently inoculated by plug method on 19 sugarcane differentials and disease intensity was rated. The disease development on differential hosts indicated that among the seven isolates 2 new isolates and 2 old isolates viz., Cf92012 Kanjanur and Cf94012- Old TN behaved more or less similar to standard pathotype and 3 old isolates viz., Cf0323- Pettavaithalai, Cfv09356- Elanganur and Cf91017- Nellikuppam exhibited different reaction from standard pathotype. Among 8 isolates Cfv09356 exhibited more virulence followed by Cf0323 and Cf91017 (Table 1).

### **PP 17: Evaluation of IET / Zonal varieties for resistance to red rot, smut & YLD**

#### **a. Red rot**

About 27 IVT entries along with the susceptible checks CoC 671 and Co 94012 were inoculated with the pathotype CF06 of red rot pathogen by the plug and nodal methods of inoculation under field conditions. Evaluation of the inoculated clones for red rot resistance revealed that 13 entries were resistant / moderately resistant in the plug method whereas in the nodal method, 20 of them behaved as resistant.

#### **b. Smut**

During the season, 27 IVT entries along with two susceptible checks Co 96007 and Co 97009 and resistant check Co 6806 were evaluated for smut resistance following the AICRP procedure. Cumulative smut incidence in the entries revealed that four 4 entries Co 12003, 12017, 12021 and 12083 were MR, 6 MS, 2 S and 15 were to smut.

#### **d. Yellow leaf disease**

Under this activity, IVT and AVT entries were monitored throughout the season with regard to YLD severity based on the 0-5 scale.

IVT (early): Of the 12 entries and three standards, 9 entries viz. Co 12001, Co 12008, Co 12006, Co 12007, CoM 12082, CoM 12083, CoT 12366, CoN 12071 and CoN 12072 exhibited R reaction and the standard CoC 671 had shown MS reaction to YLD.

IVT ( mid late): Totally 9 entries Co 12016, Co 12019, Co 12014, Co 12021, CoN12073, Co 12009, Co 12017, Co 86032, Co 12012 exhibited R reaction to YLD and 5 entries had shown MR reaction to YLD.

AVT ( Early ) Plant I: Of the 11 entries, 7 entries viz. Co 10026, Co 10005, Co 94008, Co 10027, Co 10024, CoT 10367, and Co 10006 had shown R and 2 (CoT 10366, Co 10004) entries had shown MR reaction to YLD

AVT (early) Plant II: All the 3 entries (Co 09004, CoN 09072, Co 09007) exhibited MS reaction and the standards, Co 94008 and Co 85004 had shown MR reaction.

AVT (mid late): Four entries viz. Co 10015, CoM 10083, CoVc 10061, CoT 10369, Co 10017 had shown R and 6 entries exhibited MR and 2 entries CoT 10368, Co 10031 had shown MS reaction to YLD.

## **PP 22: Survey of sugarcane diseases naturally occurring in the area on important sugarcane varieties**

During this period, surveys were conducted in the parts of Tamil Nadu for red rot, smut, wilt, pokkahboeng and YLD, assessed disease status and collected new isolates of the pathogens. Surveys revealed endemic or sporadic occurrence of red rot in Cauvery delta in Tamil Nadu. Red rot was found in the cvs CoV 09356, Co 0323, PI1110 and Co 86032 in different districts. The cv Co 86032 exhibited red rot only in one field in Cauvery delta. Severe smut was noticed on CoA 92081, Co 97009, PI96-843 and CoC 22 in different districts. Moderate levels of smut were observed in the clone 2007-291. Severe YLD along with degeneration was observed in Co 86032 in different districts especially Tiruppur, Erode and Sivaganga. Wilt was observed in CoC 22, TNAU Si8 and CoSi 6. Pokkahboeng was also observed in many varieties other than Co 86032. Healthy seed nursery programme through tissue culture raised seedlings is gaining momentum in different factory areas to manage YLD and improve cane productivity.

## **PP23: Assessment of elite ISH clones for resistance to red rot**

About 27 ISH clones were multiplied and supplied to different AICRP centres for screening the entries during 2016-17 season.

Table 1 Reaction of differentials to *C. falcatum* pathotypes (Coimbatore)

Sl. No	Pathotype	Reaction on host differentials																		
		Co 419	Co 975	Co 997	Co 1148	Co7717	Co 62399	CoC 671	CoJ 64	CoS 767	CoS 8436	BO 91	Baragua	Khakai	SES594	CoSe 95422	Co 7805	Co 86002	CoV 92102	Co 86032
1	CF06	S	I	S	R	I	S	S	S	I	R	R	R	R	R	R	I	I	I	I
2	Cf0323 Pettavaithalai	S	S	S	S	R	S	S	S	I	R	R	R	S	R	R	S	I	I	S
3	Cf92012Kanj anur	S	I	I	R	S	I	S	S	I	R	R	R	I	R	R	I	S	S	I
4	Cf91017 Nellikuppam	S	I	I	I	S	I	S	I	I	R	R	R	S	R	I	S	S	S	S
5	Cfv09356 Elanganur	S	S	S	S	S	S	S	S	I	R	I	R	I	R	R	S	S	S	I
6	Cf94012 Old TN	S	I	I	S	S	I	S	S	I	R	R	R	I	R	R	I	I	I	I
7	CfPI1110 Kothangudi	S	I	I	R	S	I	S	I	I	R	R	R	R	R	R	I	I	I	I
8	CfPI1401 Kadaganur	S	I	R	I	S	I	S	S	I	R	R	R	R	R	R	S	S	I	I

Table 2 Screening of IVT entries for red rot and smut resistance (Coimbatore)

S. No.	Entry	Red rot reaction			Smut	
		Plug method		Nodal method		
1	Co 12001	MR	2.2	R	MS	20.0
2	Co 12003	MR	2.2	R	MR	10.0
3	Co 12006	MR	2.3	R	MS	13.0
4	Co 12007	MS	4.1	R	HS	63.6
5	Co 12008	R	1.3	R	HS	85.0
6	Co 12009	MS	4.4	R	HS	62.5
7	Co 12012	MS	4.2	R	HS	4.0
8	Co 12014	R	0.6	R	MS	17.4
9	Co 12016	MR	3.0	R	S	23.8
10	Co 12017	S	6.1	S	MR	9.1
11	Co 12019	R	1.1	R	HS	37.5
12	Co 12021	MS	4.3	R	MR	10.0
13	Co 12024	-	-	R	HS	89.5
14	CoM 12081	S	6.3	R	HS	90.5
15	CoM 12082	R	2.0	R	HS	60.9
16	CoM 12083	S	6.1	S	MR	4.5
17	CoM 12084	S	6.1	R	S	27.3
18	CoM 12085	HS	9.0	S	HS	57.1
19	CoM 12086	MS	5.2	R	HS	85.0
20	CoN 12071	MR	2.4	-	HS	40.0
21	CoN 12072	R	1.0	R	HS	47.6
22	CoN 12073	MR	3.6	R	MS	15.0
23	CoN 12074	HS	9.0	S	HS	61.9
24	CoT 12366	MR	2.9	R	MS	15.0
25	CoT 12367	MR	2.8	R	MS	11.1
26	CoT 12368	HS	9.0	S	HS	34.8
27	VSI 12121	S	8.0	S	HS	86.4
28	Co 11019	R	0.8	R	-	
29	Co 11020	S	8.0	S	-	
30	CoM 11085	MR	2.7	R	-	
31	CoM 11087	MR	2.9	R	-	
32	Co 13022	HS	9.0	S	-	
33	Co 13024	MS	4.6	R	-	
34	CoC 671 (Std)	HS	9.0	S	-	
35	Co 94012 (Std)	HS	9.0	S	-	
36	Co 96007 (Std)	-		-	HS	54.2
37	Co 97009 S-Std	-		-	HS	42.9
38	Co 6806 R-Std	-		-	R	0.0

Table 3 Assessing YLD severity in ZVT entries based on 0-5 rating scale (Coimbatore)

S. No.	Entries	YLD	
		Mean YLD severity index	Disease reaction
	<b>IVT (early)</b>		
1	Co 12001	0.5	R
2	Co 12003	1.5	MR
3	Co 12006	1.0	R
4	Co 12007	1.0	R
5	Co 12008	1.0	R
6	CoM 12081	2.0	MR
7	CoM 12082	0.5	R
8	CoM 12083	0.5	R
9	CoT 12366	0.5	R
10	CoT 12367	1.5	MR
11	CoN 12071	1	R
12	CoN 12072	0.5	R
13	CoC 671 (Std)	2.5	MS
14	Co 85004 (Std)	1.5	MR
15	Co 94008(Std)	1.5	MR
	<b>IVT (Mid late)</b>		
1	Co 12009	1.0	R
2	Co 12012	0.5	R
3	Co 12014	0.5	R
4	Co 12016	0.5	R
5	Co 12017	1.0	R
6	Co 12019	0.5	R
7	Co 12021	0.5	R
8	Co 12024	3.0	MS
9	CoM 12084	1.5	MR
10	CoM12085	1.5	MR
11	CoM 12086	2.0	MR
12	CoN12073	0.5	R
13	CoN 12074	2.0	MR
14	CoT 12368	2.0	MR
15	VSI 12121	2.5	MS
17	Co 86032	0.5	R
18	Co 99004	2.5	MS
	<b>AVT (Early I)</b>		
1	Co 10004	1.6	MR
2	Co 10005	0.3	R
3	Co 10006	0.3	R
4	Co 10024	0.3	R
5	Co 10026	0.3	R
6	Co 10027	1.0	R

7	CoT 10366	2.0	MR
8	CoT 10367	1.0	R
9	Co 85004	0.3	R
10	Co 94008	1.0	R
	<b>AVT (Early II)</b>		
1	Co 09004	2.8	MS
2	Co 09007	2.5	MS
3	CoN 09072	2.5	MS
4	CoC 671 (std)	2.8	MS
5	Co 94008 (std)	1.3	MR
6	Co 85004(std)	1.8	MR
	<b>AVT (mid late)</b>		
1	Co 09009	1.5	MR
2	Co 10015	0.5	R
3	Co 10017	1.0	R
4	Co 10031	3.0	MS
5	Co 10033	1.5	MR
6	CoM 10083	0.5	R
7	CoT 10368	2.5	MS
8	CoT 10369	1.5	MR
9	CoVc 10061	0.5	R
10	PI 10131	1.5	MR
11	PI 10132	1.5	MR
12	Co 86032	2.0	MR
13	Co 99004	0.5	R