

AICRP Report on Sugarcane Pathology (2014-15)

Location: Coimbatore

PP14: Identification of pathotypes/races in red rot pathogen

Three new isolates (Cf0323- Pettavaithalai, Cf92012-Kanjanur and Cf91017- Nellikuppam) along with 1 old isolate (Cfv09356- Elanganur) and 1 standard isolate (Cf671) were inoculated by plug method on 19 sugarcane differentials during September 2014 and the inoculated canes were evaluated during November 2014 for disease reaction. The disease reaction on the differential hosts indicated that among the four isolates Cfv09356 (Elanganur) exhibited more virulence followed by Cf91017 (Nellikuppam). The isolate Cfv09356 behaved differently from standard isolate for the second consecutive year. It has produced intermediate (I) reaction on CoS 767 and BO91, R reaction on CoS 8436, Baragua, SES 595, CoSe95422 and Co86032 and S reaction on all other sugarcane differentials (Table 1).

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

a.Red rot

During the season, 39 IVT entries along with two susceptible standards Co 94012 and CoC 671 were evaluated for red rot resistance against Cf671 pathotype(CF06) under field conditions. About 32 entries were identified as resistant /moderately resistant to red rot under plug method of inoculation (Table 2).

b. Smut

About 41 IVT entries were evaluated for smut resistance following the standard procedure recommended by the AICRP. Cumulative smut incidence at the end of the season identified only 12 of the entries as R/MR. The susceptible checks Co 96007 and Co 97009 exhibited HS reaction.

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

Survey for different diseases were conducted in cane growing regions in Tamil Nadu and Andhra Pradesh. As in the previous seasons, YLD appeared in epidemic form on different varieties. Due to the disease severity, cane growth and final yield parameters declined in sugarcane varieties. YLD-free seed nursery programmes have been found to be successful to effectively manage the disease. Trace to moderate levels of red rot were recorded in the following varieties CoV94101 (Thiruloki), CoV09356 (Keerangudi), Co 91017 (Nellikuppam), Co 94012 (Cholasiramani), CoSi 6 (Keerangudi), CoSi 97071 (Thiruloki), PI 1401 (Kadaganur and Viswanathapuram), Co 0323 (Tirunelveli), TNAU Si 8 (Kallapuliyur) and CoG 93076 (Kannargudi) from Tamil Nadu.

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

Field tolerance to red rot in 39 genotypes which were susceptible to red rot by plug method was assessed against grain inoculum in the field along with susceptible, tolerant and resistant checks in the field. Out of 39 entries tested for field tolerance using grain based inoculum, 18 entries showed disease incidence. Susceptible standards CoC 671 and Co 94012 showed disease reaction of 25% and 75% respectively whereas the field tolerant standard Co 86032 and resistant standard Co 93009 remained free from showed 0% disease incidence. Typical mid-rib lesion was observed in the entries M-1, 2012-16 and 2012-48 and also in the susceptible standard Co 94012. Yellowing of the shoot was observed in RMS-28, GH-16, 2012-183, 2012-16, 2012-48 and 2009-513 and also in susceptible standards CoC 671 and Co 94012. In most of the entries showing disease incidence, drying was observed in all stages of crop starting from germination while in some clones viz., 2012-95 and 2012-183 drying was observed in 4th month after planting (Table 3).

Table 2 Screening ZVT entries for red rot and smut (Coimbatore)

S.no	Clone	Red rot			Smut	
		Plug method		Nodal method	Disease incidence (%)	Disease rating
		Score	Disease reaction			
1	Co 11001	1.5	R	R	3.6	MR
2	Co 11004	1.5	MR	R	30.2	HS
3	Co 11016	0.5	R	R	28.6	S
4	Co 11017	9	HS	S	54.3	HS
5	Co 11018	3	MR	R	35.7	HS
6	CoM 11081	0.5	R	R	20.0	MS
7	CoM 11082	5.3	MS	-	4.8	MR
8	CoM 11083	5.0	S	S	90.5	HS
9	CoM 11084	2.5	MR	-	24.5	S
10	CoN 11071	2	MR	R	38.8	HS
11	CoN 11072	9	HS	S	6.1	MR
12	CoT 11366	2.3	MR	-	12.5	MS
13	PI 11131	5.3	MS	R	40.0	HS
14	Co 11005	1.0	R	R	17.9	MS
15	Co 11007	2.5	MR	-	28.6	S
16	Co 11012	2.5	MR	R	0	R
17	Co 11019	0.0	R	R	42.9	HS
18	Co 11020	1.8	R	-	7.1	MR
19	Co 11021	2.2	MR	R	38.1	HS
20	Co 11022	1.0	R	R	2.0	MR
21	Co 11023	4.0	MR	R	36.7	HS
22	Co 11024	0.6	R	R	10.2	MS
23	CoM 11085	1.6	R	-	49.0	HS
24	CoM 11086	0.0	R	R	38.8	HS
25	CoM 11087	2.7	MR	R	64.3	HS
26	CoN 11073	2.0	R	R	6.1	MR
27	CoN 11074	1.5	R	R	42.9	HS
28	Co 13021	1.5	R	R	28.6	S
29	Co 13022	4.2	MS	-	6.1	MR

30	Co 13023	2.0	R	R	25.0	S
31	Co 13024	1.3	R	-	17.9	MS
32	Co 13025	1.8	R	R	11.9	MS
33	Co 13026	7.5	HS	R	0	R
34	Co 13027	1.8	R	R	7.1	MR
35	Co 13028	0.5	R	R	65.7	HS
36	Co 13029	0.5	R	R	14.3	MS
37	Co 13030	0.8	R	R	0	R
38	Co 13031	0.5	R	R	9.5	MR
39	Co 13032	2.2	MR	R	14.3	MS
40	SBITN 09071	7.5	S	S	17.1	MS
41	SBITN 09382	1.3	R	R	22.9	S
40	CoC 671 (Std)	9.0	HS	S	Not tested	
41	Co 96007	Not tested	Not tested	Not tested	24.5	S
42	Co 97009	Not tested	Not tested	Not tested	20.4	S
43	Co 6806	Not tested	Not tested	Not tested	0.0	R

Table 3 Screening for field tolerance to red ort in sugarcane clones

S. No.	Clone	Percent infection	Disease reaction
1	2010-211	8.0	Drying (from 45 days)
2	M-32	0.0	-
3	M-17	0.0	-
4	M-1	3.3	Mid-rib lesion, drying (from 45 days)
5	M-171	3.1	Drying (from 45 days)
6	GH-5	4.8	Drying (from 30 days)
7	RMS-28	20.0	Yellowing, drying (from 30 days)
8	GH-205	0.0	-
9	M-26	10.0	Drying (from 45 days)
10	M-75	6.3	Drying (from 45 days)
11	M-238	0.0	-
12	GH-16	25.0	Yellowing, drying (from 30 days)
13	2012-64	0.0	-
14	2012-245	0.0	-
15	2012-95	10.9	Drying (from 4th month)
16	2012-46	2.4	Drying (from 45 days)
17	2012-136	8.3	Drying (from 45 days)
18	2012-170	0.0	-
19	2012-84	0.0	-
20	2012-132	0.0	-
21	2012-148	0.0	-
22	2012-93	0.0	-
23	2012-183	6.7	Yellowing, drying (from 4th month)
24	2012-254	0.0	-
25	2012-16	31.0	Midrib lesion, yellowing, drying (from 30 days)
26	2012-108	16.7	Drying (from 45 days)
27	2012-48	9.6	Midrib lesion, yellowing, drying (from 30 days)
28	2007-13	0.0	-
29	2007-41	0.0	-
30	2007-164	0.0	-
31	2007-197	0.0	-
32	2007-286	0.0	-
33	2007-287	0.0	-
34	2007-332	0.0	-
35	2009-207	20.0	Drying (from 30 days)
36	2009-314	4.2	Drying (from 45 days)
37	2009-513	69.2	Yellowing, drying (from 45 days)
38	Co 11015	0.0	-
39	2010-191	0.0	-
Standard	CoC 671	25.0	Yellowing, drying (from 30 days)
Standard	Co 94012	75.0	Midrib lesion, yellowing, drying (from 30 days)
Standard	Co 86032	0.0	-
Standard	Co 93009	0.0	-

Table Reaction *C. falcatum* pathotype/isolates on host differentials

Sl. No	Pathotypes	Reaction on host differentials																		
		Co 419	Co 975	Co 997	Co 1148	Co 7717	Co 62399	CoC 671	CoJ 64	CoS 767	CoS 8436	Bo 91	Baragua	Khakai	SES 594	CoSe 95422	Co 7805	Co 95003	CoV 92102	Co 86032
1	Cf0323 Pettavaithalai	S	I	S	S	R	S	S	I	R	R	R	R	I	R	R	S	I	R	R
2	Cf92012Kanjan ur	S	I	S	R	S	I	S	S	I	R	R	R	R	R	R	I	I	I	R
3	Cf91017 Nellikuppam	S	I	I	I	S	S	S	S	I	R	R	R	I	R	R	S	S	I	S
4	Cfv09356 Elanganur	S	S	S	S	S	S	S	S	I	R	I	R	S	R	R	S	S	S	R
5	Cf671	S	I	S	R	R	I	S	I	R	R	R	R	R	R	R	I	I	R	R