

Annual Report of AICRP on Sugarcane Pathology (2013-14)
SBIRC, Karnal

PP 14: Identification of pathotypes in red rot pathogen

Objective: To gather information on the major pathotypes of red rot from the north western zone

Location: SBI-RC, Karnal

Year of Start: 1983-84 (Continuing project)

Results

In differential host studies, seven established pathotypes along with 15 isolates collected from CoJ 64 (7), BO 138 (1), CoSe 95422 (1), CoBlIn 05221(1) and CoS 8436 (5) were inoculated independently on 14 differential hosts. Overall, disease reaction revealed that there was clear pathogenic variation of test pathotypes/isolates on the differentials. In pathogenic behavior, no pathotype/isolate resembled another pathotype/isolate. Among the seven designated pathotypes, CF11, CF02, CF01 and CF08 showed more virulence than CF03, CF07 and CF09. Of the CoJ 64 isolates, CfCoJ I was found to be the most virulent and showed susceptible/intermediate reaction on Co 419, Co 997, Co 1148, Co 7717, Co 62399, CoC 671, CoJ 64, CoS 767, CoS 8436 and Khakai. The results presented in Table 1 reveal that all the CoS 8436 isolates showed almost similar reactions, but differential CoS 8436 succumbed to the isolate Cf8436 (Karnal) only. One differential CoC671 exhibited susceptible reaction and three differentials (BO 91, Baragua, CoS 767 and SES 594) showed complete resistance to all the isolates. Among the tested 22 pathotypes/isolates, CfCoJ I was found to be the most virulent, suggests the possible emergence of new pathotype in the subtropics.

PP 17 A: Evaluation of Zonal varieties for red rot

Objective: To gather information on the relative resistance to red rot of the entries in zonal varietal trial.

Location: SBI-RC, Karnal

Year of Start: 1986-87 (Continuing project)

Results

Thirty five zonal entries including standard checks (CoJ 64, CoPant 84211, CoS 767, CoS 8436, CoPant 97222) were evaluated by plug and cotton swab methods of inoculation using conidial suspension of *C. falcatum* pathotypes viz. CF08, CF09 and Cfmix (CF08+CF09). By plug method of inoculation, two clones: Co10039 (IVT- Mid late) and CoPb 08212 (AVT (E) II Plant) showed susceptible reaction with CF08 and CF mix inocula, while one AVT (E)- I Plant clone CoPb 09181 with CF08, CF09 and Cfmix inocula (Table 2). However, all the other entries showed resistant/moderately resistant/moderately susceptible reactions to red rot. Similarly, CoH 10261 (IVT- E) and CoPb 08212 (AVT (E) - II Plant) clones were also susceptible by cotton swab method with CF08 and Cfmix inocula.

PP 22: Survey of Sugarcane diseases naturally occurring in the area on important varieties

Objective: To gather information on the diseases naturally occurring in the north western zone on important sugarcane varieties

Location: SBI-RC, Karnal

Year of Start: 1989-90

Results

During the survey under reserved area of 13 sugar mills of Haryana, red rot was noticed up to 20.0% in the ratoon of variety CoS 8436 under Panipat and by 3.0% both in ratoon and plant crops of Kaithal, Sahabad, Karnal, Bhadson (Haryana) and Shamli (UP) areas. A severe incidence of pokkahboeng (30-40%) was recorded in ratoon and 8-10% in plant crops of variety CoS 8436 under Jind fields. In the area of Nawan Sahahr Co-operative Sugar Mills (Punjab), incidence of YLD was noticed in most of the cultivated varieties and traces of wilt in variety Co 89003. Similarly, severe incidence of GSD (2-20%) was also recorded in variety CoS 767 under Bhagpat Cooperative Sugar Mill, UP.

Table1. Pathogenic behaviour of *C. falcatum* pathotypes on host differentials – SBIRC, Karnal

Sr. No	Pathotype / isolate	Source	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
1.	CF01	Co 1148	S	R	S	S	R	S	S	I	I	I	R	R	R	R
2	CF02	Co 7717	S	S	S	I	S	S	S	I	R	R	R	R	I	R
3	CF03	CoJ 64	I	R	R	I	R	R	S	S	R	R	R	R	I	R
4	CFO7	CoJ 64	I	R	R	R	R	I	S	S	R	I	R	R	S	R
5	CF08	CoJ 64	I	R	I	R	R	S	S	S	S	S	R	R	I	R
6	CF09	CoS 767	I	I	R	I	R	R	S	S	S	S	R	R	R	R
7	CF11	CoJ 64	S	R	S	S	S	S	S	I	R	R	R	R	I	R
8	cfCoJ I	CoJ 64	S	R	S	S	S	S	S	I	I	S	R	R	S	R
9	cfCoJ II	CoJ 64	R	R	R	R	R	I	S	I	R	R	R	R	R	R
10	cfCoJ III	CoJ 64	R	R	R	R	I	R	S	S	R	R	R	R	R	R
11	cfCoJ IV	CoJ 64	S	S	S	R	I	S	S	I	R	S	R	R	S	R
12	cf8436 (K)	CoS 8436	R	R	S	R	R	R	S	I	R	S	R	R	I	R
13	cf8436 (R)	CoS 8436	S	S	S	I	R	S	S	R	R	R	R	R	I	R
14	cf8436 (O)	CoS 8436	S	S	S	S	R	I	S	I	R	R	R	R	S	R
15	cf8436 (RI)	CoS 8436	S	I	S	R	R	I	S	R	R	R	R	R	I	R
16	cf8436 (P)	CoS 8436	S	R	S	S	R	I	S	I	R	R	R	R	R	R
17	cfBO138	BO 138	R	S	R	R	R	R	S	R	R	R	R	R	R	R
18	cfUP 1	CoJ 64	S	R	S	R	R	S	S	R	R	R	R	R	I	R
19	cfUP 2	CoJ 64	R	R	S	R	R	I	S	S	R	R	R	R	I	R
20	cfUP3	CoJ 64	R	R	R	R	R	R	S	I	R	R	R	R	I	R
21	cfSe 95422	CoSe 95422	R	R	R	R	R	S	S	R	R	R	R	R	R	R
22	cfBLN 05521	CoBlN 05521	R	R	I	R	R	R	S	S	R	R	R	R	S	R

R- Resistant; I- Intermediate; S- Susceptible

Table 2. Evaluation of zonal varieties for red rot resistance - SBIRC, Karnal

Sr. No.	Entry	Plug method			Cotton swab method		
		CF08	CF09	Cf mix (CF08+CF09)	CF08	CF09	Cf mix (CF08 + CF09)
IVT (Early)							
1	Co 10035	R	R	R	R	R	R
2	CoH 10261	MS	MR	MS	S	R	S
3	CoS 10231	MR	R	MR	R	R	R
IVT (Midlate)							
1	Co 10036	R	R	MR	R	R	R
2	Co 10037	MR	R	MR	R	R	R
3	Co 10039	MS	S	S	R	R	R
4	CoH 10262	R	R	R	R	R	R
5	CoPant 10221	R	R	R	R	R	R
6	CoPb 10181	R	R	R	R	R	R
7	CoPb 10182	MR	R	MR	R	R	R
8	CoPb 10183	MR	R	MR	R	R	R
9	CoPb 10211	MR	R	MR	R	R	R
AVT(Early) – I Plant							
1	CoH 09262	MR	R	MR	R	R	R
2	CoH 09263	MR	R	MR	R	R	R
3	CoLk 09202	R	MR	MR	R	R	R
4	CoPb 09181	S	S	S	R	R	R
5	CoS 09246	R	R	R	R	R	R
AVT(Early) – II Plant							
1	CoPb 08211	R	R	MR	R	R	R
2	CoPb 08212	S	MR	S	S	R	S
3	CoS 08233	MS	MS	MS	R	R	R
AVT(Midlate) - I Plant							
1	Co 09022	R	R	R	R	R	R
2	CoH 09264	MS	R	R	R	R	R
3	CoLk 09204	MR	R	R	R	R	R
4	CoPb 09214	MR	MR	MS	R	R	R
5	CoS 09232	R	R	R	R	R	R
AVT(Midlate) - II Plant							
1	CoH 08262	Repeat					
2	CoH 08263	MS	MR	MS	R	R	R
3	CoH 08264	MS	MR	MR	R	R	R
4	CoPb 08217	MR	R	MR	R	R	R
5	CoS 08234	MR	R	MR	R	R	R
6	CoS 08235	MR	MR	R	R	R	R
Standards							
1	CoPant 97222	MS	MS	MS	R	R	R
2	CoS 767	MS	S	S	S	S	S
3	CoPant 84211	S	S	S	R	R	R
4	CoJ 64	HS	S	S	S	S	S
5	CoS 8436	S	MS	S	S	R	S

R- Resistant; MR-Moderately Resistant; MS- Moderately Susceptible; S- Susceptible; HS- Highly Susceptible

