From

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To

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Memo. No. RRS/K/2015/ Dated:

Sub: Annual Report for AICRP on sugarcane Plant pathology 2015-16 of Uchani centre.

Respected Sir,

Please find enclosed herewith a copy of Annual Report for AICRP on sugarcane Plant Pathology 2015-16 of CCS HAU RRS, Uchani centre. It is for your submission and necessary action, please.

With regards

Yours sincerely

(Rakesh Mehra)

ALL INDIA COORDINATED RESEARCH PROJECT ON SUGARCANE (ICAR)

ANNUAL REPORT (PLANT PATHOLOGY)

20015-16

CCS HARYANA AGRICULTURAL UNIVERSITY

REGIONAL RESEARCH STATION, UCHANI, KARNAL-132001

PP.14

Identification of pathotypes of red rot pathogen

Objective: To gather information on the major pathotypes of red rot pathogen

Year of Start: 1983-84

Location: RRS, Uchani (Karnal)

Technical programme:

A given set of differentials to be inoculated by plug method with different local isolates of red rot pathogen and observations will be recorded on disease development after sixty days.

Results of the current year:

Pathogenic variability in *Colletotrichum falcatum* was studied at CCS Haryana Agricultural University, Regional Research Station, Uchani (Karnal) on fourteen 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 and SES 594).All the designated pathotypes viz., CF 01, CF 02, CF 03, CF 07, CF 08 and CF 09 and CF11 along with five new isolates RR-XV(CoJ 85), RR-XVI(CoJ 85), RR-XVII(CoS 8436) and RR-XVIII (CoJ 64) and RR- XVIII(CoS 89003) collected from different mill zone area of Haryana were used for pathogenic variability. The inoculations were done during last week of August 2015. Red rot observations were recorded 60 days after inoculation and red rot reactions were categorized into three groups viz. resistant (R), susceptible (S) and intermediate (I) based on the various symptomatic parameters as per the technical programme (Table 1).

Observations recorded indicate that all the pathotypes/isolates exhibited susceptible reaction on Co 997, CoC 671, and Khakai, whereas resistant reaction on BO 91, SES 594, and Baragua. Observations recorded indicate that clones Co 7717, Co 1148, Co 975, and Co 419 and Co 62399 exhibited a clear cut differential reaction (S/R/I).Isolate RR-XV shows susceptible reaction on Co 419 ,Co975 ,Co 997, Co 1148,Co7717 ,Co 62399, CoC 671,CoJ 64 and Khakai and resistant reaction on CoC 671, CoS 8436 , BO 91, Baragua and SES 594 . Isolates RR-XVI showed susceptible reaction on Co 419 ,Co975 , Co 1148,Co7717 ,Co 62399, CoC 671,CoJ 64 and Khakai and intermediate reaction on Co 997 and resistant reaction on rest of the differentials. Isolate RR-XVII shows susceptible reaction on Co 997, Co7717 , CoC 671,CoJ 64, CoS 8436 and Khakai and resistant / intermediate reaction on other differentials. Isolate RR-XVIII shows

susceptible reaction on Co 419, Co 997, Co 1148, Co 7717,Co 62399, CoC 671,CoJ 64. CoS 8436 and Khakai and intermediate reaction on Co 975 and resistant reaction on CoC 671, Co 1148, CoS 8436 , BO 91, Baragua and SES 594 .Isolate RR-XIV shows susceptible reaction on Co 997, Co 62399,CoC 671, CoJ 64, CoS 8436 and Khakai and intermediate reaction on Co 975 and Co 1148. Isolates RR- XV, RR- XVI, RR- XVII and RR- XVIII showed similarity as with CF 08 .Isolate RR-XIV although showed similarity with CF 09 but intermediate on Co 1148 and susceptible reaction on CoS 8436 .

Table-1: Pathogenic behavior of isolates of *Colletotrichum falcatum* on a set of differentials (Uchani)

Sr. No	Pathotypes/ Isolates	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	**CF 01**	**Co 1148**	I	I	S	S	I	S	S	I	R	R	R	R	S	R
2	**CF 02**	**CoJ 7717**	I	R	S	R	S	I	S	R	R	R	R	R	S	R
3	**CF 03**	**CoJ 64**	R	R	S	R	R	R	S	S	R	R	R	R	S	R
4	**CF 07**	**CoJ 64**	I	R	S	S	R	R	S	S	R	R	R	R	S	R
5	**CF 08**	**CoJ 64**	S	S	S	S	S	S	S	S	R	R	R	R	S	R
6	**CF 09**	**CoS 767**	R	R	S	S	R	R	S	S	S	R	R	R	S	R
7	**CF-11**	**CoJ 64**	**S**	**I**	**S**	**I**	**I**	**I**	**I**	**S**	**S**	**R**	**I**	**I**	**S**	**R**
8	**RR XV**	**CoJ 85**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**R**	**R**	**R**	**R**	**S**	**R**
9	**RR XVI**	**CoJ 85**	S	S	I	S	S	S	S	S	R	R	R	R	S	R
10	**RR XVII**	**CoS 8436**	S	S	S	R	S	S	S	S	R	S	R	R	S	R
11	**RR XVIII**	**CoJ 64**	S	I	S	S	S	S	S	S	R	R	R	R	S	R
12	**RR XVIII**	**Co 89003**	R	I	S	I	R	S	S	S	R	S	R	R	S	R

PP 17;

Evaluation of zonal varieties for resistence to red rot , smut and wilt

Objective: To gather information on relative resistance to red rot of the entries in pre-zonal/zonal varietal trials of the respective zones

Year of Start: 1986-87

Location: RRS, Uchani (Karnal)

Technical programme:

Early and mid-late genotypes/varieties to be evaluated against red rot by the plug and nodal cotton swab method of inoculations.

Results of the current year:

Entries of zonal varietal trials along with standard checks were evaluated for resistance to red rot by plug and nodal cotton swab methods of inoculations at CCS Haryana Agricultural University, Regional Research Station, Uchani (Karnal). Entries of AVT (early and mid late) and IVT (early and mid late) were inoculated with CF 08 and CF 09 pathotypes separately. Inoculations were carried out during last week of August 2015. Observations on disease development were recorded after 60 days of inoculations and varieties were categorized on 0-9 scale.

AVT (early) Plant-1:

Four genotypes (CoH 10262, Co LK 11201, Co LK 11202 and Co LK 11203) along with two standards CoJ 64 and Co 0238 were evaluated against CF 08 and CF 09 by plug and nodal cotton swab method of inoculations (Table 2). Entries viz., CoH 10262, Co LK 11202 and Co LK 11203 and Co 0238 showed resistant/ moderately reaction by plug and resistant by nodal cotton swab methods against CF 08 and CF 09 pathotypes. Entry Co LK 11201 found moderately susceptible by CF 08 and resistant by CF 09 with plug method and resistant by nodal cotton swab methods against CF 08 and CF 09. Among two standards CoJ 64 behaved highly susceptible/susceptible by both plug and nodal cotton swab methods of inoculation with CF 08 and CF 09.

AVT (early) Plant-1I:

Three genotypes (Co 10035, CoH 10261 and CoS 10231) along with two standard. CoJ 64 and CoPant 84211 were evaluated against CF 08 and CF 09 by plug and nodal cotton swab method of inoculations (Table 3). All the genotypes viz., CoH 10261, Co 10035 and CoS 10231 were found resistant/ moderately resistant by plug and resistant by nodal cotton swab

methods against CF 08 and CF 09 pathotypes. Two standards CoJ 64 and CoPant 84211 behaved highly susceptible/susceptible by both plug and nodal cotton swab methods of inoculation.

AVT (mid late) Plant-1:

Six entries (Co 11027, CoH 11263, CoLK 11204 ,CoLK 11204, ColK 11206, CoPb 11214, CoS 11232) and three checks *viz.*, CoS 767, CoS 8436 and Co Pant 97222 were evaluated against CF 08 and CF 09 by plug and nodal cotton swab methods of inoculation. Entries viz., Co 11027 , CoH 11263 , CoLK 11204, ColK 11206,CoS 11232 and CoS 8436 showed resistant/moderately resistant reaction by plug method and resistant reaction by nodal cotton swab methods of inoculations to both CF 08 and CF 09 pathotypes (Table-4). CoPb 11214 behaved moderately resistant against CF 08 and moderately susceptible against CF 09 by plug method and resistant reaction by nodal cotton swab methods against both CF 08 and CF 09 pathotypes. Check CoS 767 shows moderately susceptible/susceptible reaction by plug method and susceptible reaction by nodal cotton swab method. However, CoPant 97222 showed moderately susceptible/ susceptible reaction by plug method and susceptible reaction by nodal cotton swab method.

AVT (mid late) Plant-1I:

Five entries *viz.*, Co 10036, CoH 11262, CoPt 10221, CoPb 10181 and CoPb 10182 along with three checks CoS 767, CoS 8436 and CoPant 97222 were evaluated against pathotypes CF 08 and CF 09. Three entries viz., CoH 11262, CoPt 10221, CoPb 10181 showed resistant/ moderately resistant reaction by plug and resistant reaction by nodal cotton swab methods against CF 08 and CF 09. Two entries Co 10036 and CoPb 10182 showed moderately susceptible reaction with CF 08 and moderately resistant reaction against CF 09 by plug method and resistant reaction by nodal cotton swab methods against CF 08 and CF 09(Table 5). Check CoS 8436 behaved as moderately resistant/resistant with CF 08 and CF 09 pathotypes. However, CoS 767 and Co Pant 97222 showed moderately susceptible/susceptible reaction by plug method and susceptible reaction by nodal cotton swab method.

IVT (early):

Ten genotypes (Co 12026, Co 12027, CoH 12261, CoLk 12201, CoLk 12202, CoLk 12203, CoLk 12204, CoPant 12221, CoPant 12222 and CoS 12231) along with two standards CoJ 64 and Co 0238 were evaluated against CF 08 and CF 09 by plug and nodal cotton swab

method of inoculations (Table 6). Entries CoH 12261 and CoPant 12221showed moderately resistant reaction against CF 08 and resistant reaction by CF 09 by plug method and resistant by nodal cotton swab methods against both CF 08 and CF 09 pathotypes . Varieties *viz.,* Co 12026, Co 12027, CoLk 12203, CoPant 12222, CoS 12231 and Co 0238 were moderately resistant by plug and resistant by nodal cotton swab methods against both CF 08 and CF 09 pathotype . Entry CoLk 12204 found moderately susceptible/ susceptible by plug and resistant by nodal cotton swab methods against CF 08 and CF 09. However CoLk 12201 exhibit susceptible reaction by both plug and nodal cotton swab methods of inoculation with CF 08 and CF 09.Among two standards CoJ 64 behaved highly susceptible/susceptible by both plug and nodal cotton swab methods of inoculation with CF 08 and CF 09.

IVT (mid late):

Fifteen entries (Co 12028, Co 12029, CoH 12262, CoH 12263, CoLk 12205, CoLk 12206, CoPant 12223, CoPant 12224, CoPant 12225, CoPant 12226, CoPb 12181, CoPb 12182, CoPb 12211, CoPb 12212 and CoS 12232) along with three checks *viz.,* CoS 767, CoS 8436 and Co Pant 97222 were evaluated against CF 08 and CF 09 by plug and nodal cotton swab methods of inoculation. Entries viz., Co 12028, Co 12029, CoH 12262, CoH 12263,CoLk 12206,CoPant 12223,CoPant 12224,CoPant 12225, CoPb 12211, CoPb 12212 and CoS 12232 and CoS 8436 showed resistant/moderately resistant reaction by plug and resistant reaction by nodal cotton swab methods of inoculations to both CF 08 and CF 09 pathotypes (Table-7). Entries namely CoLk 12205, CoPb 12181 and CoPb 12182 behaved moderately susceptible against CF 08 and moderately resistant against CF 09 by plug method and resistant reaction by nodal cotton swab methods against both CF 08 and CF 09 pathotypes. However, CoPant 12226 showed moderately susceptible reaction respectively by plug method but resistant reaction by nodal cotton swab method against both CF 08 and CF 09 pathotypes. Check CoS 767 shows moderately susceptible/susceptible reaction by plug method and susceptible reaction by nodal cotton swab method. However, Co Pant 97222 showed moderately susceptible/ susceptible reaction by plug method and resistant reaction by nodal cotton swab method to CF 08 and CF 09 pathotypes.

Table-2: Reaction of genotypes of Advanced Varietal Trial (Early) – I Plant against red rot

Sr. No.	Genotypes	Plug method		Nodal cotton swab method	
		CF 08	CF 09	CF 08	CF 09
1	CoH 11262	MR	R	R	R
2	Co LK 11201	MS	MR	R	R
3	Co LK 11202	MR	MR	R	R
4	Co LK 11203	MR	MR	R	R
5	CoJ 64	HS	S	S	S
9	Co 0238	MR	MR	R	R

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Table-3: Reaction of genotypes of Advanced Varietal Trial (Early) – II Plant against red rot

Sr. No.	Genotype/Variety	Plug method		Nodal cotton swab method	
		CF 08	CF 09	CF 08	CF 09
1.	Co 10035	MR	MR	R	R
2.	CoH 10261	R	R	R	R
3.	CoS 10231	MR	MR	R	R
5.	CoJ 64	S	S	S	S
6	Co Pant 84211	S	S	S	S

Table-4 Reaction of genotypes of Advanced Varietal Trial (Midlate) – I Plant against red rot

Sr. No.	Genotypes	Plug method		Nodal cotton swab method	
		CF 08	CF 09	CF 08	CF 09
1	Co 11027	MR	MR	R	R
2.	CoH 11263	R	R	R	R
3.	CoLK 11204	MR	MR	R	R
4.	ColK 11206	MR	MR	R	R
5.	CoPb 11214	MR	MS	R	R
6.	CoS 11232	MR	MR	R	R
7.	Co S 767	MS	S	S	S
8.	CoS 8436	MR	MR	R	R
9.	CoPant 97222	S	MS	S	S

Table-5: Reaction of genotypes of Advanced Varietal Trial (Midlate) – II Plant against red rot

Sr. No.	Genotypes/ Variety	Plug method		Nodal cotton swab method	
		CF 08	CF 09	CF 08	CF 09
1.	Co 10036	MS	MR	R	R
2.	CoH 10262	MR	R	R	R
3.	CoPt 10221	MR	MR	R	R
4.	CoPb10281	MR	MR	R	R
5.	CoPb 10182	MS	MR	R	R
6.	CoS 767	S	MS	S	S
7.	CoS 8436	MR	MR	R	R
8.	Co Pant 97222	S	MS	S	S

Table-6: Reaction of genotypes of Initial Varietal Trial - Early against red rot

Sr. No.	Genotype/Variety	Plug method		Nodal cotton swab method	
		CF 08	CF 09	CF 08	CF 09
1.	Co 12026	MR	MR	R	R
2.	Co 12027	MR	MR	R	R
3	CoH 12261	MR	R	R	R
4	CoLk 12201	S	S	S	S
5	CoLk 12202	MS	MR	R	R
6	CoLk 12203	MR	MR	R	R
7	CoLk 12204	S	MS	R	R
8	CoPant 12221	MR	R	R	R
9	CoPant 12222	MR	MR	R	R
10	CoS 12231	MR	MR	R	R
11	CoJ 64	HS	S	S	S
12	Co 0238	MR	MR	R	R

Table-7 Reaction of genotypes of Initial Varietal Trial – Mid late against red rot

Sr. No.	Genotype/Variety	Plug method		Nodal cotton swab method	
		CF 08	CF 09	CF 08	CF 09
1.	Co 12028	MR	MR	R	R
2.	Co 12029	MR	R	R	R
3.	CoH 12262	R	R	R	R
4.	CoH 12263	R	R	R	R
5.	CoLK 12205	MS	MR	R	R
6	CoLK 12206	MR	MR	R	R
7	CoPant 12223	MR	R	R	R
8	CoPant 12224	MR	R	R	R

9	CoPant 12225	MR	MR	R	R
10	CoPant 12226	MS	MS	R	R
11	CoPb 12181	MS	MR	R	R
12	CoPb 12182	MS	MR	R	R
13	CoPb 12211	MR	R	R	R
14	CoPb 12212	MR	MR	R	R
15	CoS 12232	MR	MR	R	R
16	Co S 767	MS	S	R	R
17	CoS 8436	MR	MR	R	R
18	CoPant 97222	S	MS	S	S

Score Reaction

0-2 : R (Resistant)
2.1-4 : MR (Moderately Resistant)
4.1-6 : MS (Moderately Susceptible)
6.1-8 : S (Susceptible)
> 8 : HS(Highly Susceptible)

PP.17D:

Evaluation of zonal varieties for resistance to yellow ieaf disease(YLD)

Objective: To gather information on relative resistance to YLD of the entries in pre-zonal/zonal varietal trials of the respective zones

Year of Start: 2014- 15

Location: RRS, Uchani (Karnal)

Technical programme:

Early and mid-late varieties to be evaluated against YLD under natural conditions **Results of the current year:**

Eighteen AVT **(**early& mid late) and twenty five IVT **(**early& mid late) entries of zonal varietal trials along with six standard checks were evaluated for resistance to YLD at CCS Haryana Agricultural University, Regional Research Station, Uchani Karnal. Observations on disease development were recorded following 0-5 scale.

To assess YLD severity, the disease severity grades were recorded during maturity stages of the crop (3 observations by 8^{th}, 10^{th} and 12^{th}months). Each time, minimum of 25 canes (free from other biotic stresses) were scored.

AVT (early) Plant-1

Four genotypes (CoH 10262, Co LK 11201, Co LK 11202, Co LK 11203) along with two standards CoJ 64 and Co 0238 were evaluated against YLD (Table 8). Two entries CoH 10262 and Co LK were resistant to YLD. Two entries viz., Co LK 11202 and Co LK 11203 showed moderately resistant reaction. However, two standards CoJ 64 and Co 0238 showed resistant and moderately susceptible reaction against YLD, respectively.

AVT (early) Plant II

Three varieties (Co 10035, CoH 10261 and CoS 10231) along with two standards CoJ 64 and CoPant 84211 were evaluated against YLD under natural conditions (Table 9). Entry CoH 10261 exibited resistant reaction and genotypes *viz.,* CoS 10035 and CoS 10231 were found moderately susceptible against YLD. However, two standards CoJ 64 and CoPant 84211 showed moderately resistant reaction against YLD.

AVT (Mid late) Plant-1

Six entries (Co 11027, CoH 11263, CoLK 11204, ColK 11206, , CoPb 11214 and CoS 11232) including three checks *viz.,* CoS 767, CoS 8436 and Co Pant 97222 were evaluated against YLD under natural conditions (Table 10). Entry CoH 11263 showed resistant reaction and CoS 8436 showed moderately resistant reaction against YLD. Two entries (CoLK 11204 and CoS 11232)showed moderately susceptible reaction and five entries (Co 11027, ColK 11206, CoPb 11214, CoS 767 and Co Pant 97222) showed susceptible reaction against YLD.

AVT (Mid late) –II

Ten entries *viz.,* Co 10036, CoH 11262, CoPt 10221, CoPb 10181 and CoPb 10182 along with three checks CoS 767, CoS 8436 and CoPant 97222 were evaluated against YLD under natural conditions (Table 11). Two entries CoH 11262 and CoPb10182 showed resistant reaction. Three entries namely, Co 10036, CoPt 10221 and CoPb 10181 were found moderately susceptible for YLD. Check CoS 8436 behaved as resistant, however Co Pant 97222 and CoS 767 showed susceptible and highly susceptible reaction, respectively against YLD.

IVT (early)

Ten genotypes (Co 12026, Co 12027, CoH 12261, CoLk 12201, CoLk 12202, CoLk 12203, CoLk 12204, CoPant 12221, CoPant 12222 and CoS 12231) along with two standards CoJ 64 and Co 0238 were evaluated against YLD under natural conditions (Table 12). Three entries viz., CoH 12261, Co LK 12201 and Co LK 12202 were found resistant and two varieties Co LK 12203 and Co LK 12204 showed moderately resistant reaction. However, five entries Co 12026, Co 12027, CoPant 12221, CoPant 12222 and CoS 12231were found moderately susceptible against YLD. Among the two standards CoJ 64 and Co 0238 behaved resistant and susceptible respectively, against YLD.

IVT (mid late)

Fifteen entries (Co 12028, Co 12029, CoH 12262, CoH 12263, CoLk 12205, CoLk 12206, CoPant 12223, CoPant 12224, CoPant 12225, CoPant 12226, CoPb 12181, CoPb 12182, CoPb 12211, CoPb 12212 and CoS 12232) along with three checks *viz.,* CoS 767, CoS 8436 and Co Pant 97222 were evaluated against YLD under natural conditions (Table 13). Two entries CoLk 12205 and CoPb12211 showed resistant reaction and three entries namely Co 12028, CoH 12262 and CoH 12263were moderately resistant against YLD. Seven entries (Co 12028, CoLk 12206, CoPant 12223, CoPant 12225, CoPant 12226, CoPb 12181and CoPb 12182) were moderately susceptible and two varieties(CoPb 12212 and CoS 12232) showed susceptible reaction against YLD. Check CoS 8436 behaved as moderately resistant however, Co Pant 97222 and CoS 767 entries showed susceptible reaction against YLD.

Table-8: Reaction of genotypes of Advanced Varietal Trial (Early) – I Plant against YLD

Sr. No.	Genotypes/ Variety	YLD	
		score	reaction
1	CoH 11262	1.0	R
2.	Co LK 11201	1.0	R
3.	Co LK 11202	2.0	MR
4.	Co LK 11203	3.0	MR
5.	CoJ 64	3.0	MR
6.	Co 0238	3.5	MS

Table-9: Reaction of genotypes of Advanced Varietal Trial (Early) – II Plant against ` YLD

Sr. No.	Genotype/Variety	YLD	
		Score	Reaction
1.	Co 10035	3.0	MS
2.	CoH 10261	0.0	R
3.	CoS 10231	3.0	MS
5.	CoJ 64	2.0	MR
6.	Co Pant 84211	2.0	MR

Table-10: Reaction of genotypes of Advanced Varietal Trial (Midlate) – I Plant against YLD

Sr. No.	Genotype/Variety	YLD	
		Score	Reaction
1.	Co 11027	4.0	S
2.	CoH 11263	1.0	R
3.	CoLK 11204	3.0	MS
4.	ColK 11206	4.0	S
5.	CoPb 11214	4.0	S
6.	CoS 11232	3.0	MS
7.	Co S 767	5.0	S
8.	CoS 8436	2.0	MR
9.	CoPant 97222	4.5	S

Table-11: Reaction of genotypes of Advanced Varietal Trial (Midlate) –II Plant against YLD

Sr. No.	Genotypes/ Variety	YLD	
		Score	Reaction
1.	Co 10036	2.5	MS
2.	CoH 10262	2.0	MR
3.	CoPt 10221	3.0	MS
4.	CoPb10281	2,0	MR
5.	CoPb 10182	0.0	R
6.	CoS 767	5.0	S
7.	CoS 8436	2.0	MR
8.	Co Pant 97222	5.0	S

Table-12: Reaction of genotypes o Initial Varietal Trial - Early against YLD

Sr. No.	Genotypes/ Variety	YLD	
		Score	Reaction
1.	Co 12026	2.5	MS
2.	Co 12027	2.5	MS
3	CoH 12261	1.0	R
4	CoLk 12201	0.0	R
5	CoLk 12202	0.0	R

6	CoLk 12203	2.0	MR
7	CoLk 12204	2.0	MR
8	CoPant 12221	3.0	MS
9	CoPant 12222	3.0	MS
10	CoS 12231	3.0	MS
11	CoJ 64	2.0	MR
12	Co 0238	3.5	S

Table-13: Reaction of genotypes of Initial Varietal Trial – Midlate against YLD

Sr. No.	Genotype/Variety	YLD	
		Score	Reaction
1.	Co 12028	3.0	MS
2.	Co 12029	2,0	MR
3.	CoH 12262	2,0	MR
4.	CoH 12263	2.0	MR
5.	CoLK 12205	0.0	R
6.	CoLK 12206	3,0	MS
7.	CoPant 12223	3,0	MS
8.	CoPant 12224	4.0	S
9.	CoPant 12225	3,0	MS
10.	CoPant 12226	3.0	MS
11.	CoPb 12181	2,5	MS
12.	CoPb 12182	2.5	MS
13.	CoPb 12211	0.0	R
14.	CoPb 12212	4.0	S
15.	CoS 12232	4.0	S
16.	Co S 767	4.0	S
17.	CoS 8436	2,0	MR
18.	CoPant 97222	4.0	S

PP-22:

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

Objective: To gather information on diseases naturally occurring in the mill area on important sugarcane varieties

Year of Start: 1989-90

Location: Different mill zone areas of Haryana.

Results of current year:

Survey was conducted in various mill zones areas of different co- operative and pvt sugar mills of Haryana state during pre and post monsoon seasons for sugarcane diseases on important sugarcane varieties (Table 14).

Red rot:

Red rot was observed on plant and ratoon crop of CoS 8436, CoJ 85 ,CoPant 84212 and Co 89003 varieties in sugar mill zone areas o Shahabad, Karnal,Bhadsu ,Jind Panipat Asand and Yamunanagar during both pre and post monsoon seasons ranging from 2 to 30 per cent.

Top rot:

Top rot was observed on varieties viz., CoJ 85, CoH 152,CoH 119, CoPant 84212 and Co 0238 in Shahabad, Karnal, Yamunanagar Palwal, Maham and Rohtak sugar mill zone areas ranging from 2 to 25 per cent.

Wilt:

Wilt was noticed in varieties namely Co 89003. CoH 119,Co 7717, Co 767, CoS 8436 and Co 05011 in Panipat, Bhadsu,Yamunanagar ,Palwal,Jind ,Asand and karnal sugar mill zone areas ranging from 5 to 50 per cent. The incidence of wilt in association with red rot and was also observed in Panipat and Karnal sugar mill zone areas. The incidence of wilt in association with red rot and root borer was also observed in Jind, Karnal, Panipat and Rohtak sugar mill zone areas.

Smut:

Smut incidence ranging from 2- 25 per cent was observed on varieties CoH 150,Co 0238, Co 89003,CoH167and CoH 99 in Shahabad, Karnal, Bhadsu, Maham and Rohtak sugar mill zone areas.

Grassy shoot disease:

GSD was observed in trace-15 per cent in Shahabad, Karnal, Yamunanagar, gagsina Palwal,Jind,Maham and Rohtak sugar mill zone areas of Haryana on varieties which include Co 0238,Co89003, CoS 8436,CoH 119, CoH 152 , CoH 160 and CoS 767.

Pokkah boeng:

Pokkah boeng (traces to 40%) appeared on varieties viz., Co 0238,Co89003, CoS 8436,CoH 119 and CoH 160 in Yamunanagar, Karnal,Palwal,Jind,Maham, Rohtak,Shahabad, Gohana and Panipat sugar mill zone area.

YLD:

Yellow leaf disease was noticed in traces on varieties viz., Co0238,CoS 8436, CoH 119,CoH 152, CoS 767,Co 89003, CoH 119, CoH 160, Co 05011 in Yamunanagar ,Karnal Palwal, Jind, Maham and Rohtak sugar mill zone areas.

Mosiac:

Incidence of mosaic in traces was observed in CoH 119, CoS 96267 and CoS 8436 varieties in sugar mill zone areas of Palwal and Karnal.

Table 14: Survey of sugarcane disease naturally occurring in the Haryana State on important sugarcane varieties

Name of disease	Location	Disease incidence	Varieties affected	Crop stage when observed
Red rot	Shahabad, Karnal,Bhadsu , Jind ,Panipat, Asandh, and Yamunanagar	2-30 %	CoS 8436, CoPant 84212, Co 89003 and CoJ 85	3-8 months
Top rot	Shahabad, Karnal, Yamunanagar Palwal Maham, and Rohtak	2 to 25%	CoJ 85,CoH 119 ,Co 0238, CoPant 84212 and CoH 152	4-7 months
Wilt	Panipat, Bhadsu Yamunanagar, Asandh,Palwal,Jind and karnal	5 to 50%	Co89003, CoH 119 Co 7717, Co 767, CoS 8436 and Co 05011	6-8 months
Smut	Shahabad, Karnal, Bhadsu,Maham and Rohtak	2- 25%	CoH 150,Co 0238, Co 89003,CoH167andCoH 99,	4-6 months
Grassy shoot disease (GSD)	Shahabad, Karnal, Yamunanagar,gagsina Palwal,Jind,Maham and Rohta	Traces-15%	Co 0238,Co89003, CoS 8436.CoH 119, CoH 152, CoH 160 and CoS 767	5-6 months
Pokkah boeng	Yamunanagar ,Karnal Palwal,Jind,Maham Rohtak,Shahabad,Gohana, and Panipat,	Traces to 40 %	Co 0238 Co89003, CoS 8436 CoH 119 , Co 0238 and CoH 160	4-9months
YLD	Yamunanagar ,Karnal Palwal,Jind,Maham Rohtak,Shahabad and	Traces-5 %	Co0238,CoS 8436, CoH 119,CoH 152, , Co S 767 ,Co 89003	7-9 months

	Panipat		CoH 119, CoH 160 and Co 05011	
Mosiac	Palwal and Karnal	Traces	CoH 119, CoS 96267 and CoS 8436	7-9 months

PP-23:

Assessment of elite and ISH genotypes for resistance to red rot

Objective: To gather information on *Saccharum* sp. and elite genotypes for resistance to red rot, so that the resistant genotypes could be used in breeding programme as possible donor for resistance

Location: RRS, Uchani (Karnal)

Results of current year:

Nine ISH clones viz., IA 31-32, F1108, IA 30-17, IA 31-35, B 44-167, IA 30-14, Q-65, Q-45 and 57 NG 131 were evaluated for resistance to red rot by plug method using pathotype CF 08 . Inoculations were carried out during last week of August, 2015. Observations on disease development were recorded after 60 days of inoculations and clones were categorized on 0-9 scale.

The clones namely IA 31-32, F1108, IA 30-17, and IA 31-35 were found resistant/moderately resistant whereas, genotypes B 44-167, IA 30-14, Q-65, Q-45 and 57 NG 131 showed susceptible reaction against red rot pathotype CF 08.

PP 31:

Epidemiology, varietal screening and management of pokkah boeng

Objective: To study epidemiology and management of pokkah boeng disease

Year of start: 2011-12

Location: Karnal

Result of current year:

Pokkah boeng incidence was noticed in first week of June 2015 at Karnal. Initial symptoms showed whitish and chloratic yellow leaves. Malformed or twisted top symptoms develop during rainy season period. Yellowing of foliage, wilting and reddening of spindles also noticed at later stage. Pokkah boeng incidence starts increasing during rainfall with high humidity conditions. Incidence on important varieties viz., CoS 8436 (16 %), CoS 0238(24 %), CoH 133 (19%) and CoH 119 (8 %) was observed during July- August ,2015.

Twenty six varieties of sugarcane were screened against pokkah boeng disease under natural conditions. Varieties namely CoH 92, CoH 160, CoH 164, CoH 167, CoH 150, CoH 99 and

were found resistant to pokkah boeng disease. Varieties CoH 56, CoH 151, CoH 119, Co 0118, Co 1148, CoH 56, CoH 128, Co 7717, Co 0237, CoJ 64, Co 05011,CoJ 85, Co 05011 , S -11 252 and S-11 202 were found moderately susceptible to pokkah boeng disease.Varieties namely CoH 110, CoH 152, CoS 8436, and CoH 133 were found susceptible to pokkah boeng disease. Co 0238 variety showed highly susceptible reaction.

Table 15: Reaction of sugarcane clones for resistance to Pokkha boeng

Sr.No.	Genotype	Total incidence (%)	Disease reaction
1.	CoH 110	18	S
2.	CoH 152	18	S
3.	CoH 156	7	MS
4.	CoH 151	7	MS
5.	CoH 119	8	MS
6.	Co 0118	9	MS
7.	CoH 133	19	S
8.	CoH 128	7	MS
9.	CoH 92	0	R
10.	CoH 160	4	R
11.	CoH 56	8	MS
12.	Co 1148	9	MS
13	CoS 8436	16	S
14	Co 7717	8	MS
15.	Co 0238	24	HS
16.	Co 0237	9	MS
17.	CoJ 85	8	MS
18.	CoH 167	3	R
19.	CoH 164	3	R
20.	CoS 767	0	R
21.	CoJ 64	7	MS
22.	CoH 150	0	R
23.	CoH 99	0	R
24	Co 05011	6	MS
25	S 11 252	8	MS
26	S-11 202	9	MS
27	S-11 733	9	MS

For management of pokkah boeng , experiment was conducted by following three treatments viz. T_1 Sett treatment (overnight soaking with carbendazim 0.1%), T_2 Foliar spray with carbendazim 0.05% - 3 sprays at 15 days interval and T_3 (T_1 + T_2) and control with three replications on varieties Co 238 and CoS 8436. Overnight cane soaking with carbendazim 0.1% and foliar sprays with carbendazim was found best in controlling the pokkah boeng which gave lowest disease incidence of 6.4 per cent and 5.5 per cent in Co 0238 and CoS 8436 respectively and also increase germination.