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 2014-15 of Uchani centre.

Sir,

Please find enclosed herewith a copy of Annual Report for AICRP on sugarcane Plant Pathology 2014-15 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)

20014-15

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 six designated pathotypes viz. CF 01, CF 02, CF 03, CF 07, CF 08 and CF 09 alongwith four new isolates RR-XV(CoJ 85),RR-XVI(CoS 8436), RR-XVII(CoJ 64)and RR-XVIII (CoS 89003) RR- XVIII XVI(CoS 8436), collected from different mill zone area of Haryana were used for pathogenic variability. The inoculations were done during first week of September 2014. 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). Isolates RR-XV showed susceptible reaction on Co 997, CoC 671, CoJ 64, CoS 8436 and Khakai and resistant reaction on other differentials. Isolate RR-XVI 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.SES 594 . 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 Co975, Co 997, Co Co7717, Co 62399, CoC 671, CoJ 64 and Khakai and resistant reaction on rest of the differentials. Isolate RR-XVIII shows susceptible reaction on Co975, Co

997, CoC 671, CoJ 64, CoS 8436 Isolates RR- XV, RR- XVI, RR- XVII and RR- XVIII showed similarity with CF 03, CF 07, CF 08 and CF 09.

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

Sr. No	Pathotypes/ Isolates		Reaction on host differentials												
		Source	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 84**	I	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	**RR XV**	**CoJ 85**	R	R	S	R	R	R	S	S	R	S	R	R	S	R
8	**RR XVI**	**CoS 8436**	S	S	S	S	S	S	S	S	R	R	R	R	S	R
9	**RR XVII**	**CoJ 64**	R	R	S	R	S	R	S	S	R	S	R	R	S	R
9	**RR XVIII**	**CoS 89003**	R	S	S	R	S	S	S	S	R	R	R	R	S	R
10	**RR XVIIII**	**CoS 8436**	I	S	S	R	I	R	S	S	R	S	R	R	S	R

R = Resistant; I = Intermediate; S = Susceptible

PP.17: Evaluation of zonal varieties for resistance 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 first week of September, 2014. Observations on disease development were recorded after 60 days of inoculations and varieties were categorized on 0-9 scale.

AVT (early) Plant-1: Three genotypes (Co 10035, CoH 10261 and CoS 10231) along with two standards *viz.* CoJ 64 and CoPant 84211 were evaluated against CF 08 and CF 09 by plug and nodal cotton swab method of inoculations (Table 2). Genotypes CoH 10261 and Co 10035 were moderately resistant by plug and resistant by nodal cotton swab methods against CF 08 and CF 09 pathotypes. Entry CoS 10039 was found moderately susceptible to CF 08 and moderately resistant to CF 09 by plug but resistant to both CF 08 and CF 09 by nodal cotton swab method of inoculations. Two standards CoJ 64 and CoPant 84211 behaved highly susceptible/susceptible by both plug and nodal cotton swab methods of inoculation.

AVT (early) Plant II: Five entries (CoH 09262, CoH 09263 ,CoLk 09202 , CoS 09246, CoPb 09181 and) along with two checks CoJ 64 and CoPant 84211 were evaluated against CF 08 and CF 09. Four entries viz.,CoH 09262, CoH 09263, CoLk 09202 and CoS 09246 showed resistant/moderately resistant reaction by plug and resistant reaction by nodal cotton swab methods against CF 08 and CF 09 (Table 2). However, CoPb 09181 entry showed moderately resistant reaction by CF 08 and moderately susceptible to CF 09 using plug method but resistant to both CF 08 and CF 09 by nodal cotton swab method of inoculations.

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: 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. 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.All the five entries viz., Co 10036, CoH 11262, CoPt 10221, CoPb 10181 and CoPb 10182 showed resistant/ moderately resistant reaction by plug and resistant reaction by nodal cotton swab methods against CF 08 and CF 09 (Table 4).

AVT (mid late) Plant-II: Five entries (CoH 09022, CoH 09264, CoLK 09204, CoPb 09214 and CoS 09232) along with three checks CoS 767, CoS 8436 and CoPant 97222 were evaluated against pathotypes CF 08 and CF 09. 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. Entries *viz*., CoH 09022, CoH 09264 and CoS 09232 showed resistant/ moderately resistant reaction by plug and resistant reaction by nodal cotton swab methods against CF 08 and CF 09 (Table 5). CoLK 09204 and CoPb 09214 entries showed moderately resistant reaction by CF 08 and moderately susceptible by CF 09 with plug method but resistant reaction by nodal cotton swab method of inoculation by CF 08 and CF 09 pathotypes.

IVT (early): Seven genotypes (CoH 11261, CoH 10262, Co LK 11201, Co LK 11202, Co LK 11203, CoPb 11211 and CoPb 11212) along with two standards *viz.* CoJ 64 and Co 0238 were evaluated against CF 08 and CF 09 by plug and nodal cotton swab method of inoculations (Table 6). Entry Co LK 11202 showed resistant reaction by plug and nodal cotton swab methods against CF 08 and CF 09 pathotypes .Genotypes CoH 11261 , CoH 10262, Co LK 11201, CoPb 11212 and Co 0238 were moderately resistant by plug and resistant by nodal cotton swab methods against both CF 08 and CF 09 pathotypes . Entries Co LK 11203 and CoPb 11211 were found moderately susceptible by plug and resistant by nodal cotton swab methods against CF 08 and CF 09 except CoPb 11211 which showed moderately resistant reaction to CF 09 by plug method. 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): Thirteen entries (Co 11026, Co 11027, CoH 11263, CoH 11264, CoLK 11204 CoLK 11205, ColK 11206, CoPb 1118, CoPb 11182, Co Pb 11213, CoPb 11214, CoS 11231 CoS 11232) including 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 ,CoH 11264, CoLK 11205, CoPb 11181 , Co Pb 11213, 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-7). Entries namely Co 11026, CoLK 11204, ColK 11206 and CoPb 11214 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. Entries CoS 11231 and CoPb 11182 showed moderately susceptible and 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, CoPant 97222 showed moderately susceptible/ susceptible reaction by plug method and susceptible reaction by nodal cotton swab method to CF 08 and CF 09 pathotypes.

Table-2: Reaction of genotypes of A V T (early) Plant I 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	MR	R	R
3.	CoS 10231	MS	MR	R	R
5.	CoJ 64	S	S	S	S
6	Co Pant 84211	S	HS	S	S

Table-3: Reaction of genotypes of A V T (early) Plant II against red rot

Sr. No.	Genotype/Variety	Plug method		Nodal cotton swab method	
		CF 08	CF 09	CF 08	CF 09
1.	CoH 09262	R	R	R	R
2.	CoH 09263	R	R	R	R
3.	CoLk 09202	MR	MR	R	R
4.	CoS 09246	MR	MR	R	R
5.	CoPb 09181	MR	MS	R	R
6.	CoJ 64	HS	HS	S	S
7	CoPant 84211	S	HS	S	S

Table-4: Reaction of genotypes of AVT (mid late) Plant I against red rot

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

Table-5: Reaction of genotypes of AVT (mid late) Plant II against red rot

Sr. No.	Genotype/Variety	Plug method		Nodal cotton swab method	
		CF 08	CF 09	CF 08	CF 09
1.	Co 09022	MR	MR	R	R
2.	CoH 09264	MR	R	R	R
3.	Colk 09204	MR	MS	R	R
4.	CoPb 09214	MR	MS	R	R
5.	CoS 09232	MR	R	R	R
6.	CoS 767	MS	S	S	S
7.	CoS 8436	MR	MR	R	R
8.	Co Pant 97222	S	MS	S	S

Table-6: Reaction of genotypes of IVT early against red rot

Sr. No.	Genotypes	Plug method		Nodal cotton swab method	
		CF 08	CF 09	CF 08	CF 09
1.	CoH 11261	MR	MR	R	R
2.	CoH 11262	MR	MR	R	R
3	Co LK 11201	MR	R	R	R
4	Co LK 11202	R	R	R	R
5	Co LK 11203	MS	MS	R	R
6	CoPb 11211	MS	MR	R	R
7	CoPb 11212	MR	MR	R	R
8	CoJ 64	HS	HS	S	S
9	Co 0238	MR	MR	R	R

Table-7 Reaction of genotypes of IVT (Mid Late) against red rot

Sr. No.	Genotypes	Plug method		Nodal cotton swab method	
		CF 08	CF 09	CF 08	CF 09
1.	Co 11026	MS	MR	R	R
2.	Co 11027	MR	MR	R	R
3.	CoH 11263	R	R	R	R
4.	CoH 11264	R	R	R	R
5.	CoLK 11204	MS	MR	R	R
6.	CoLK 11205	MR	R	R	R
7.	ColK 11206	MS	MR	R	R
8.	CoPb 11181	R	R	R	R
9.	CoPb 11182	S	S	S	S
10.	Co Pb 11213	R	R	R	R
11.	CoPb 11214	MS	MR	R	R
12.	CoS 11231	MS	MS	R	R
13.	CoS 11232	MR	MR	R	R
14.	Co S 767	MS	S	S	S
15.	CoS 8436	MR	MR	R	R
16.	CoPant 97222	S	MS	S	S

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

PP.17D: **Evaluation of zonal varieties for resistance to 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 IVT **(**early& mid late) entries of zonal varietal trials along with six standard checks were evaluated for resistance to YLD under natural conditions at CCS Haryana Agricultural University, Regional Research Station, Uchani. 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: Three genotypes (Co 10035, CoH 10261 and CoS 10231) along with two standards *viz.* CoJ 64 and CoPant 84211 were evaluated against YLD under natural conditions (Table 8). CoH 10261 exibited resistant reaction and genotypes viz., CoS 10039 and CoS 10231 were found moderately resistant against YLD. However, two standards CoJ 64 and CoPant 84211 showed resistant reaction against YLD.

AVT (early) Plant II: Five entries (CoH 09262, CoH 09263 ,CoLk 09202 , CoS 09246 and CoPb 09181) along with two checks CoJ 64 and CoPant 84211 were evaluated against YLD under natural conditions (Table 9). Three entries CoH 09262, CoH 09263 and CoPb 09181 showed resistant reaction however, two enteries viz., CoLk 09202 and CoS 09246 exibited moderately resistant reaction against YLD. Two standards CoJ 64 and CoPant 84211 showed resistant reaction against YLD, respectively.

AVT (mid late) Plant-1: 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 YLD under natural conditions (Table 10). Two entries CoH 11262 and CoPb10182 showed resistant reaction. Three entries namely, Co 10036, CoPt 10221 and CoPb 10181 entries 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.

AVT (mid late) Plant-II: Five entries (Co 09022, CoH 09264, CoLK 09204, CoPb 09214 and CoS 09232) along with three checks CoS 767, CoS 8436 and CoPant 97222 were evaluated against YLD (Table 11). Entries *viz*., CoH 09264, CoLK 09204 and CoPb 09214 showed resistant reaction against YLD. Entry Co 09022 showed moderately resistant and CoS 09232 susceptible reaction against YLD. Check CoS 767 and Co Pant 97222 showed susceptible reaction however, CoS 8436 behaved as resistant against YLD.

IVT (early): Seven genotypes (CoH 11261, CoH 10262, Co LK 11201, Co LK 11202, Co LK 11203, CoPb 11211 and CoPb 11212) along with two standards CoJ 64 and Co 0238 were evaluated against YLD under natural conditions (Table 12). Two entries CoH 11261 and Co LK 11201 were resistant. Five entries viz., CoH 10262, Co LK 11201, Co LK 11203 CoPb 11211 and CoPb 11212 showed moderately resistant reaction. However Co LK 11202 found moderately susceptible f against YLD. Among the two standards CoJ 64 and Co 0238 behaved resistant and susceptible respectively, against YLD.

IVT (mid late): Thirteen entries (Co 11026, Co 11027, CoH 11263, CoH 11264, CoLK 11204, CoLK 11205, ColK 11206, CoPb 11181, CoPb 11182, CoPb 11213, CoPb 11214, CoS 11231, CoS 11232) including three checks *viz.*, CoS 767, CoS 8436 and Co Pant 97222 were evaluated against YLD under natural conditions (Table 12). Four entries viz., CoH 11263,CoH 11264, CoLK 11206 and Co Pb 11213 showed resistant reaction and four entries namely Co 11027, CoPb 11181, CoPb 11214 and CoS 11231 were moderately resistant against YLD. Four entries (Co11026, CoLK 11205, CoPb 11182 and CoS 11232) were moderately susceptible against YLD. Check CoS 8436 behaved as resistant however, Co Pant 97222 and CoS 767 entries showed susceptible reaction against YLD.

Table-8: Reaction of genotypes of A V T (early) Plant I against YLD

Sr. No.	Genotype/Variety	YLD	
		score	reaction
1.	Co 10035	2.0	MR
2.	CoH 10261	1.0	R
3.	CoS 10231	2.0	MR
5.	CoJ 64	1.0	R
6.	Co Pant 84211	1.0	R

Table-9: Reaction of genotypes of A V T (early) Plant II against YLD

Sr. No.	Genotype/Variety	YLD	
		score	reaction
1.	CoH 09262	0.0	R
2.	CoH 09263	1.0	R
3.	CoLk 09202	2.0	MR
4.	CoS 09246	2.0	MR
5.	CoPb 09181	1.0	R
6.	CoJ 64	1.0	R
7.	CoPant 84211	1.0	R

Table-10: Reaction of genotypes of AVT (mid late) Plant I against YLD

Sr. No.	Genotypes/ Variety	YLD	
		score	reaction
1.	Co 10036	3.0	MS
2.	CoH 10262	1.0	R
3.	CoPt 10221	3.0	MS
4.	CoPb10281	3.0	MS
5.	CoPb 10182	0.0	R
6.	CoS 767	4.0	S
7.	CoS 8436	1.0	R
8.	Co Pant 97222	4.0	S

Table11: Reaction of genotypes of AVT (mid late) Plant II against YLD

Sr. No.	Genotype/Variety	YLD	
		score	reaction
1.	Co 09022	2.0	MR
2.	CoH 09264	1.0	R
3.	Colk 09204	0.0	R
4.	CoPb 09214	0.0	R

5.	CoS 09232	3.0	MS
6.	CoS 767	4.0	S
7.	CoS 8436	1.0	R
8.	Co Pant 97222	4.0	S

Table-`12: Reaction of genotypes of IVT early against YLD

Sr. No.	Genotypes	YLD	
		score	reaction
1.	CoH 11261	1.0	R
2.	CoH 11262	2.0	MR
3.	Co LK 11201	1.0	R
4.	Co LK 11202	2.0	MR
5.	Co LK 11203	2.0	MR
6.	CoPb 11211	2.0	MR
7.	CoPb 11212	2.0	MR
8.	CoJ 64	1.0	R
9.	Co 0238	3.0	MS

Table-13 Reaction of genotypes of IVT (Mid Late) against YLD

Sr. No.	Genotypes	YLD	
		Score	Reaction
1.	Co 11026	3.0	MS
2.	Co 11027	2.0	MR
3.	CoH 11263	0.0	R
4.	CoH 11264	0.0	R
5.	CoLK 11204	4.0	S
6.	CoLK 11205	3.0	MS
7.	ColK 11206	1.0	R
8.	CoPb 11181	2.0	MR
9.	CoPb 11182	3.0	MS
10.	Co Pb 11213	0.0	R
11.	CoPb 11214	2.0	MR
12.	CoS 11231	3.0	MR
13.	CoS 11232	3.0	MS
14.	Co S 767	4.0	S
15.	CoS 8436	1.0	R
16.	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 (Table 8).

Red rot: Red rot was observed on plant and ratoon crop of CoS 8436, CoJ 85and Co 89003 varieties in sugar mill zone areas of Shahabad, Karnal, Panipat, Kaithal, Asandh, Bhadsu and Yamunanagar during both pre and post monsoon ranging from 5 to 85 per cent.

Top rot: Top rot was observed on varieties viz., CoS 8436, CoJ 85, CoH 152,CoH 133 and Co 0238 in Shahabad, Kaithal, Karnal, Jind,Palwal andYamunanagar sugar mill zone areas ranging from traces to 25 per cent..

Wilt: Wilt was noticed in varieties namely Co 89003.Co 7717, Co 767, Co 1148, CoS 8436, CoH 119, Co 05011 in Panipat sugar mill,Karnal sugar mill ,Rohtak sugar mill and Gohana sugar mill zone areas ranging from traces to 5 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 Karnal, Panipat and Rohtak sugar mill zone areas.

Smut: Smut incidence ranging from traces to 28 per cent was observed on varieties Co 0238, Co 89003, CoH 119, CoH 150. CoH 99 and Co 05011 in Shahabad, Karnal, Panipat ,Jind and Rohtak sugar mill zone areas.

Grassy Shoot Diseases: GSD was observed in traces (even 60 to 70 per cent at one location in Shahabad in ratoon crop of Co 0238) in most of the sugar mill zone areas of Haryana on varieties which includes CoS 8436, CoH 152, CoS 767 and Co 89003, Co 0118, Co 0238, CoH 119, CoS 767, Co 98014 and CoH 160.

Pokkah boeng: Pokkah boeng (traces to 8 %) appeared on most of the varieties in Haryana. Varieties viz., CoS 8436, CoH 151, CoH 119, CoH152, Co 0118, CoJ 85, Co 0238, CoH

160 and Co 0118 were infected in Shahabad, Kaithal, Gohana,Panipat, Rohtak ,Yamunanagar and Karnal sugar mill zone area

YLD: Yellow leaf disease was noticed in traces on varieties viz., CoS 8436, Co 89003 and CoH 119 in Shahabad sugar mill, Panipat sugar mill an Karnal sugar mill zone areas.

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, Panipat, Kaithal, Asandh, Bhadsu and Yamunanagar	5 to 85%	CoS 8436, CoJ 85, Co 89003	3-8 months
Top rot	Shahabad, Kaithal, Karnal, Jind,Palwal andYamunanagar	Traces to 25%	CoH 152, CoS 8436 CoJ 85 and CoH 133 and Co 0238	5-6 months
Wilt	Panipat, Gohana, Karnal , Rohtak ,Jind, Palwal and Shahabad	Traces to 5%	Co 89003.Co 7717, Co 767, Co 1148, CoS 8436,CoH 119, Co 05011	7 months
Smut	Shahabad, Karnal, Rohtak, Jind and Panipat	Traces to28 %	Co 89003, Co 0238, CoH 119, CoH 150, CoH 99,Co 05011	4 months
Grassy shoot disease (GSD)	All sugar mills zone area	Trace (60-70% at one location)	CoS 8436, CoH 152, CoS 767 , Co 89003, Co 0118, Co 0238, CoH 119 CoS 767, CoH 160, Co 98014 and CoS 8436	5-6 months
Pokkah boeng	Shahabad, Kaithal, Gohana,Panipat, Rohtak ,Yamunanagar and Karnal	Traces to 8%	CoS 8436, CoH 151, CoH 119, CoH152 Co 0118, CoJ 85, Co 0238, CoH 160 and Co 0118	4-5 months
YLD	Shahabad ,Karnal and Panipat	Traces	CoS 8436, Co 89003,CoH 119	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 first week of September, 2014. Observations on disease development were recorded after 60 days of inoculations and clones were categorized on 0-9 scale.

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 of inoculation using CF 08. 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/high susceptible reaction against red rot pathotype CF 08.

PP31: Epidemiology, varietal screening and management of *pokkah boeng (*AICRP)

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 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 condtions. Incidence on important varieties viz., CoS 8436 (11 %), CoS 0238(21 %), CoH 133 (17%) and CoH 119 (6 %) was observed during July

Twenty four varieties of sugarcane were screened against pokkah boeng disease under natural conditions. Co 0238 variety showed highly susceptible reaction.Varieties namely CoH 110, CoH 152, CoS 8436, and CoH 133 were found susceptible to pokkah boeng

disease. Varieties CoH 156, CoH 151, CoH 119, Co 0118, Co 1148, CoH 56, CoH 128, Co 7717, Co 0237, CoJ 64 and CoJ 85 were found moderately susceptible to pokkah boeng disease. Varieties namely CoH 92, CoH 160, CoH 164, CoH 167, CoH 150, CoH 99 and Co 05011 were found resistant to pokkah boeng disease

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

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

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.