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ALL INDIA COORDINATED RESEARCH PROJECT ON SUGARCANE

(Indian Council of Agricultural Research)

MONITORING REPORT

(2021-22)



Dr A.D. Pathak
DIRECTOR & PROJECT COORDINATOR
(SUGARCANE)



ICAR- INDIAN INSTITUTE OF SUGARCANE RESEARCH
POST-DILKUSHA, LUCKNOW - 226 002

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All India Coordinated Research Project on Sugarcane

Constitution of Monitoring Team for Crop Season 2021-2022

(F. No. 12-11(M)/2021-PCS, dated 15.09.2021)

1. **NORTH WEST ZONE**
 - i) **Dr S. K. Pandey, Entomologist, SBI-RC, Karnal** - **Team Leader**
 - ii) Dr Gulzar S. Sanghera, Breeder, PAURRS, Kapurthala - Member
 - iii) Dr Sujeet Pratap Singh, Pathologist, UPCSR, Shahjahanpur - Member
 - iv) Dr V.P. Jaiswal, Agronomist, ICAR-IISR, Lucknow - Member
2. **NORTH CENTRAL & NORTH EASTERN ZONE**
 - i) **Dr Kashinath Mandal, Breeder, SRS, Bethuadahari** - **Team Leader**
 - ii) Dr M. Minatullah, Pathologist, SRI, Pusa - Member
 - iii) Dr. Vinay Mishra, Entomologist, GSSBRI, Seorahi - Member
3. **PENINSULAR ZONE I**
 - i) **Dr A. Annadurai, Breeder, ICAR-SBI, Coimbatore** - **Team Leader**
 - ii) Dr Lalan Sharma, Pathologist, ICAR-IISR, Lucknow - Member
 - iii) Dr K.P. Salin, Entomologist, ICAR-SBI, Coimbatore - Member
4. **PENINSULAR ZONE II**
 - i) **Dr S.B. Patil, Breeder, ARS, Sankeshwar** - **Team Leader**
 - ii) Dr Mona Nagargade, Agronomist, ICAR-IISR, Lucknow - Member
 - iii) Dr V.K. Biradar, Entomologist, SRS, Tharsa - Member
 - (iv) Shri B.H. Pawar, Pathologist, VSI, Pune - Member
5. **EAST COAST ZONE**
 - i) **Dr P.K. Nayak, Breeder, SRS, Nayagarh** - **Team Leader**
 - ii) Dr. P. Kishore Verma, Pathologist, RARS, Ankapalle - Member
 - iii) Dr Arun Baitha, Entomologist, ICAR-IISR, Lucknow - Member
 - iv) Dr. S.K. Yadav, Agronomist, ICAR-IISR, Lucknow - Member

Facilitators for Monitoring Team

Sl. No.	Zone	Name & Designation	Contact details
1.	North Central & North Eastern Zones	Shri Adil Zubair, Chief Technical Officer	E-mail: adizubi64@gmail.com Mob.: 09451086378
2.	Peninsular Zone-I	Dr Lalan Sharma, Scientist (Plant Pathologist)	E-mail: sharmanbaim@gmail.com Mob.: 080040-81721; 08887960911 Facilitator-cum-Member
3.	Peninsular Zone-II	Dr G.K. Singh, Chief Technical Officer	E-mail: gayakaraniisr@gmail.com Mob: 9198848204
4.	East Coast Zone	Dr S.K. Yadav, Scientist (Agronomy)	E-mail: sanjaybhu05@rediffmail.com Mob.: 094021-34428 Facilitator-cum-Member

Visit Schedule of the Monitoring Teams during 2021-22 crop season

Zone	Centres monitored	Visit schedule
North West Zone	Lucknow, Shahjahanpur, Pantnagar, Muzaffarnagar, Uchani, Karnal, Kapurthala, Gurdaspur, Sriganaganagar and Kota	15.11.2021 to 25.11.2021
North Central & North East Zones	Seorahi, Motipur, Pusa, Bethuadahari and Buralikson	02.12.2021 to 10.12.2021
Peninsular Zone-I	Perumalapalle, Pugalur, Coimbatore, Thiruvalla, Mandya, Belagavi, Sankeshwar, Sameerwadi and Kolhapur	07.12.2021 to 15.12.2021
Peninsular Zone-II	Padegaon, Pune, Pravaranagar, Navsari, Powarkheda, Kawardha (Raipur), Basmathnagar and Rudrur	12.11.2021 to 25.11.2021
East Coast Zone	Nellikuppam, Cuddalore, Vuyyuru, Anakapalle and Nayagarh	01.12.2021 to 10.12.2021

Monitoring Team Report of North West Zone (Crop Season 2021-22)

Monitoring team constituted by the Project Coordinator vide letter no. F No. 12-11 (M)/2021-PCS dated September 15, 2021 for the assessment of performance of AICRP on sugarcane trials at both regular as well as voluntary centres of North West Zone comprised of the following scientists.

Sl. No.	Name, Designation & Address of the Members	
1	Dr. S.K. Pandey Principal Scientist(Entomology), ICAR-SBI, Regional Centre, Karnal-132001 (Haryana)	Team Leader
2	Dr. Gulzar S. Sanghera, Principal Scientist (PBG) Sugarcane, PAU, Regional Research Station, Kapurthala-144601, (Punjab)	Member
3	Dr. Sujeet Pratap singh Scientific Officer (Pathology), UPCSR, Shahjahanpur (UP)	Member
4	Dr. Vijay Prakash Jaiswal Scientist (Agronomy) ICAR-IISR, Lucknow	Member

The team assembled at the ICAR-IISR, Lucknow on 15th November, 2021 and subsequently visited and monitored the AICRP (Sugarcane) regular as well as voluntary centres i.e, Lucknow, Shahjahanpur, Pantnagar, Muzaffarnagar, Karnal, Uchani, Kapurthala, Gurdaspur, Faridkot, Sriganaganar, Sikar and kota from 15th November to 25th November 2021. The discipline-wise observations made during the visit of different Research Stations and recommendations are reported as under:

(A) Crop Improvement

Project Coordinator AICRP (S) provided the technical programme for crop season 2021-22 in crop improvement discipline for North West Zone (NWZ), all the seven trials of the crop improvement were allotted to all the centers of NWZ except CCS HAU, Research Station, Uchani and ICAR – SBI, Regional centre, Karnal. Four trials namely IVT (Early), AVT-IP (Midlate), AVT-IIP (Early) and AVT-Ratoon (Early)) were allotted to Uchani centre. Similarly, 03 trials i.e. IVT (Mid-late), AVT-II P (Midlate) and AVT Mid-late ratoon were allotted to Karnal centre. **All the allotted trials were conducted by all the centers except AVT early ratoon at Uchani and AVT Mid-late ratoon at Pantnagar.** The trials allotted and those conducted by the centers of NWZ are given in the **Table 1**. The overall grading of the trials

observed during monitoring by constituted the team is presented in **Table 2**. The centre wise observations on different trials are given below:

1. ICAR-INDIAN INSTITUTE OF SUGARCANE RESEARCH, LUCKNOW

All the seven trials were conducted as per the technical programme for 2021-22 of North West Zone. The performance of 2 experiments (AVT IIP early and AVT IIP mid-late) was excellent, AVT IP mid-late was good and two IVT early & mid-late were average and both the ratoons (early & mid-late) were poor in performance, reason outlined were outbreak of COVID 19 second wave pandemic, subsequent restrictions/ curfews and late planning that hampered the management of trials. The observations on crop stand with respect to individual entries in the trials are given below.

Initial Varietal Trial (Early)

The trial performance was average and assessment for the individual clone is appended in **Table 2 & 3**. Standard Co 0238 was the best, among 8 test clones, four clones namely CoS 17232, CoPb 18182, CoPb 18212 and CoPant 18221 were adjudged as on par with best standard and remaining four clones along with standards Co 05009 and CoJ 64 were observed poor in their performance (**Table 3**). Besides heavy lodging was found in clones CoPb 18182, wilt and smut in CoPb 18181, yellow leaf disease in CoS CoS17232 and poor germination in CoPb 18211 & CoS 17232.

Initial Variety Trial (Midlate)

This trial was also rated as average in overall grading of trials and the assessment of individual clones is presented in (**Table 2 & 4**). Among the standards in this trial Cos 767 was the best followed by CoPant 97222 and Co 05011. Eleven clones were observed for their performance against the pest standard Cos 767 and four clones viz. Co18022, CoLk 18203, CoPant 18222 and CoS 18231 were found better, 3 clones (CoPb 18213, CoS 18232 & CoS 18233) were observed on par and remaining 4 were poor (**Table 4**). Clone Co 18021 was severely affected by wilt, poor germination observed in clones CoLk 18204, CoPb 18213, Co 18022 & CoS 18232).

Advanced Varietal Trial (Midlate) –I Plant Crop

In AVT I plant (Mid late) was rated as good for overall performance, variety CoPant 97222 was the best standard in this trial (**Table 2 & 5**). Among 9 test clones only one clone CoS 17235 was observed better than check and CoS 17234 as on par while remaining clones were poor (**Table 5**). However, wilt was observed in two clones (Co 17018 & CoS 17236) and poor germination in 5 test entries (Co 17018, CoPb 17215, CoS 17234, CoS 17236 and CoH 17262 while there was no cane formation in CoLk 17204).

Advanced Varietal Trial (Early) – II Plant Crop

In the AVT II plant (early) trial was found rated excellent in grading, Co 0238 was the best standard. Only one clone CoLk 16202 was observed better, four clones namely Co 16029, CoLk 16201, CoPb 16181 and CoLk 14201 (**Table 2 & 6**) were on par while Co15025 was poor because of poor germination and wilt incidence. Though wilt was also noticed in CoPb 16181 & Co16029.

Advanced Varietal Trial (Mid-late) – II Plant Crop

AVT II plant (Midlate) was also rated excellent, CoS 767 was the best standard. Three test entries i. e. Co 16030, CoLk 16203 and CoS 16233 were better performing for cane and growth traits, while CoLk 16204 was on par and CoS 16232 was poor (**Table 2 & 7**). CoLk 16204 showed GSD and yellow leaf disease was noticed in CoS 16232 & 16233.

Advanced Varietal Trial (Early) – Ratoon

AVT Early ratoon trial was poor, though Co 0238 was the best standard, CoLk 16201 and CoLk 14201 observed on par, CoLk 16202 was poor (**Table 2 & 8**). However, three clones; Co 16029, Co 15025 and CoPb 16181 were very severely affected by wilt and there was no cane in plots.

Advanced Varietal Trial – Ratoon (Midlate)

In this trial best standard was CoS 767 and three clones namely CoLk 16203, CoLk 16204 and CoS 16233 were adjudged on par in comparison to standard though the trial was rated poor in grading (**Table 2 & 9**). However, two clones Co 16030 and Cos 16232 were found poor.

Seed multiplication of new ZVT entries

It was reported that there was no cane available for clones CoH 19262 and CoPb 19182 and less cane Co 19016, CoPb 19212, CoPb 19181CoLk 19202 and CoPb 19211, it will be discussed in the forthcoming plant breeders meet.

Fluff supply programme

Fluff was sown and 17000 seedlings raised and final field stand will be discussed in the forthcoming plant breeders meet.

2. U. P. COUNCIL OF SUGARCANE RESEARCH, SHAHJAHANPUR

All the seven trials were conducted as per the technical programme for 2021-22 of North West Zone and were well maintained as per the crop growth. The trials were without weeds and cultural operations were carried out in time. Four trials were rated excellent, one very good and two (ratoons) as good. The observations on crop stand with respect to individual entries in the trials are given below:

Initial Varietal Trial (Early)

The IVT (Early), was rated excellent and Co 0238 was the best standard with respect to crop stand. In this trial five clones namely CoS 17232, CoPb 18182, CoLk 18202, CoPb 18212 and CoPant 18221 were observed better while three clones CoPb 18181, CoLk 18201, CoPb 18211 were on par in their performance in comparison best standard (**Table 2&3**). The clone CoPb18182 was prone to lodging.

Initial Variety Trial (Midlate)

In the IVT (midlate) trial, CoPant 97222 was the best standard and trial was rated very good. In this trial six clones, Co 18022, CoLk 18203, CoPb 18213, CoPant 18222, CoS 18231 and CoS 18232 were adjudged as better performing and four clones CoLk 18204, CoPb 18214, CoS 18233 and CoS 18234 were on par in comparison to best standard (**Table 2 & 4**). Test clone; Co 18021 was poor due to low plant stand.

Advanced Varietal Trial (Midlate) – I Plant Crop

The AVT I plant (midlate) trial was rated excellent, CoPant 97222 was the best standard and four clones namely CoPb 17215, CoS 17234, CoS 14235 and CoS 17236 were found better than the best standard while one clone Co 17018, CoPant 17223, CoH 17261, CoH 17262 were on par to the standard in performance (**Table 2&5**).

Advanced Varietal Trial (Early) – II Plant Crop

This trial was also rated excellent and Co 0238 was the best standard. Only one clone CoLk 16202 was rated better. However, four clones Co 16029, CoLk 16201, CoPb 16181 and CoLk 14201 were found on par for cane growth parameters. Co 15025 was ranked poor and also having poor germination (**Table 2&6**).

Advanced Varietal Trial (Midlate) – II Plant Crop

In the AVT II plant (Midlate), five test clones were planted and CoS 767 was the best standard. The trial was rated as excellent. Test entries i.e. Co 16030 and CoLk 16204, CoS 16232 were found better while CoLk 16203 and CoS 16233 were on par in their performance (**Table 2&7**).

Advanced Varietal Trial (Early) – Ratoon

The AVT Early ratoon trial was adjudged good with Co 0238 as the best standard. In this trial two clones namely CoLk 16202 and CoLk 14201 were better and two clones CoLk 16201 and CoPb 16181 were on par with the best standard (**Table 2 & 8**). However, Co 16029 was poor and sparse while Co15025 was affected by wilt and there was no cane in the plot.

Advanced Varietal Trial – Ratoon (Midlate)

In the AVT ratoon (midlate) trial, CoS 767 was the best standard. The trial was rated good. Two test entries namely CoLk 16203 and CoLk 16204 were found better and Co 16030 & CoS 16233 were on par while CoS 16232 was poor (**Table 2 & 9**). Clone Co16030 has sparse plant population.

Seed multiplication

It will be discussed in the forthcoming plant breeders meet.

Fluff supply programme:

It will be discussed in the forthcoming plant breeders meet.

3. G B PANT UNIVERSITY OF AGRICULTURE AND TECHNOLOGY, PANTNAGAR

Seven trials were allotted to this centre and six trials were conducted. AVT mid-late, ratoon was not conducted. Six experiments were executed as per the technical programme. Due to heavy rain and hail storms in the month of October lodging of trials was witnessed. The observations on crop stand with respect to individual entries in the trials are given below:

Initial Varietal Trial (Early)

In the IVT (Early) trial was rated good and Co 05009 was the best standard with respect to crop growth. The test entries CoS 17232, CoPb 18181, CoPb 18182, CoLk 18202, CoPb18211, CoPb 18212 and CoPant 18221 were better while CoLk 18201 was on par in performance as compared to best standard (**Table 2 & 3**). Severe lodging was observed for clones CoS17232, CoPb 18182 and moderate in CoPant 18221.

Initial Variety Trial (Midlate)

In the IVT (midlate) trial, CoPant 97222 was the best standard. Six test clones namely Co 18022, CoLk18203, CoPb18213, CoPant18222 and, CoS18232 were found better in their performance to the best standard. While three clones (Co18021, CoPb18214, CoS18233) were adjudged on par and two clones as poor performers in this trial as compared to CoPant 97222 (**Table 2&4**). Lodging was observed in clone Co18021, CoLk18203, CoS18231 while very poor crop stand CoLk18204.

Advanced Varietal Trial (Midlate) –I Plant Crop

In the AVT I plant (mid-late) trial nine clones were tested against the CoPant 97222 best standard. The trial was rated very good and five clones Co17018, CoPb17215, CoS 17234, CoS 17235 and CoS 17236 were better; two clones CoLk 17204 and CoPant 17223 were on par and CoH17261 and CoH17262 were poor in performance (**Table 2&5**). Lodging was observed for clones CoPant 17223, CoS17234 and CoS17235. There was no cane for clone CoH 17262.

Advanced Varietal Trial (Early) – II Plant Crop

In the AVT II plant (early) trial was rated very good with Co05009 as best standard followed by Co 0238. Test clone CoLk 16201 and CoPb16181 were better than best standard. However, two clones Co 15025 and CoLk 16202 were found on par and remaining two clones were rated poor for their crop stand (**Table 2 & 6**). Crop stand was sparse w.r.t. clones Co15025 and Co16029.

Advanced Varietal Trial (Midlate) – II Plant Crop

In the AVT II plant (Midlate), CoPant 97222 was the best standard and Test clone Co16030 was better while other four clones CoLk 16203, CoLk16204, CoS 16232 and CoS 16233 were on par with standard CoPant 97222 (**Table 2 & 7**). Lodging was observed for clone Co 16030 and CoLk16204.

Advanced Varietal Trial (Early) – Ratoon

In the AVT early ratoon trial, Co 05009 was the best standard. Test clones Co 16029, CoLk 16201, CoLk 16202, CoPb16181 and CoLk 14201 were on par and Co 15025 was poor in comparison to best standard (**Table 2 & 8**). Heavy lodging of clones was observed.

Advanced Varietal Trial – Ratoon (Midlate)

This trial was not conducted because of the very poor performance of AVT Midlate I plant trial during crop season 2020-2021.

Seed multiplication

No cane available for clones Co19016, CoPb 19182 and less cane for clones CoH 19262 CoPb 19181, CoS 19235, CoPb 19212, CoLk 19201, CoLK 19202, CoLK 19203, Co 19017 and CoPb 19211. It will be discussed in the forthcoming plant breeders meet.

Fluff supply programme

As reported 2,232 seedlings were planted in field. It will be discussed in the forthcoming plant breeders meet.

4. SUGARCANE RESEARCH STATION (UPCSR), MUZAFFARNAGAR

All the Seven trials were conducted as per the technical programme for 2021-22. All the experiments were well executed. Four trials were excellent one was very good and two were observed poor. The observations on crop stand with respect to individual entries in the trials are given below.

Initial Varietal Trial (Early)

In the IVT (Early), Co 0238 was the best standard with respect to crop stand. The test entries CoPb18182, CoLk18202, CoPb 18211 and CoPb 18212 were found better in performance

than standard. Clones CoS 17232, Copb 18181, CoLk 18201 and CoPant 18221 were found on par (**Table 2 & 3**). Trial was free from weeds. Lodging was observed in clone CoPb18182 and sparse crop stand in CoPant 18221.

Initial Variety Trial (Midlate)

In the IVT (mid-late) trial, CoPant 97222 was the best standard, in this trial, four test clones namely Co 18021, Co 18022, CoLk18203, CoS18231 showed better performance and five clones viz., CoLk 18204, CoPb 18214, CoPant18222, CoS 18232 and CoS 18233 showed on par performance as compared to standard (**Table 2 & 4**). CoLk18203 and CoLk 18204 showed flowering symptoms while Co18021 and CoPant 18222 reflected sparse crop stand. The overall grading of the trial was very good.

Advanced Varietal Trial (Midlate) – I Plant Crop

It was rated as excellent trial and CoPant 97222 was the best standard. Three test clones Co 17018, CoPb 17215 and CoS 17236 were found better performing and four clones CoPant17223, CoS 17234, CoS 17235 and CoH 17261 were on par with standards for their performance in this trial (**Table 2 & 5**). Smut infection was observed in CoPant 17223.

Advanced Varietal Trial (Early) – II Plant Crop

In the AVT II plant (early) trial six clones were tested against the best standard Co 0238 for which the trial was rated excellent. Only one clone was found better than the standard while five clones (Co16029, Co15025, CoLk16201, CoPb16181 and CoLk14201) were on par as compared to standard (**Table 2 & 6**). Sparse crop stand was observed Co16029 and Co15025.

Advanced Varietal Trial (Midlate) – II Plant Crop

In the AVT II plant (Midlate), CoPant 97222 was the best standard and trial was rated excellent. Three clones namely Co16030, CoS 16232, CoS 16233 were found better than standard while CoLk 16203 and CoLk 16204 were found on par with best standard (**Table 2 & 7**).

Advanced Varietal Trial (Early) – Ratoon

In the AVT Early ratoon trial, Co 0238 was the best standard and four clones CoLk 16201, CoLk 16202, CoPb 16181, CoLK 14201 were on par for ratoon performance and Co16029 and Co15025 showed poor performance in this trial as compared to standard (**Table 2 & 8**). Wilt and very sparse crop stand were noticed in Co15025. The trial rated as poor.

Advanced Varietal Trial – Ratoon (Midlate):

In the AVT ratoon (midlate) trial, Co 05011 was the best standard and trial was rated as poor. In this trial two clones namely CoLK 16203, CoLk 16204 were observed better than the standard and three clones Co 16030, CoS 16232 and CoS 16233 were found at par (**Table 2 &**

9). Severe Lodging observed for clones CoS 16233, CoS 16232 while Smut and lodging were observed in Co 16030.

Seed multiplication

All the clones in ZVT multiplication have sufficient material. It will be discussed in the forthcoming plant breeders meet.

5. RRS (CCSHAU), UCHANI

This centre was allotted four trials out of which three trials were conducted as per the technical programme for 2021-22 of North West Zone and one trial AVT (early) Ratoon was abandoned due to shifting of land from HAU, RRS Uchani to MHU, Karnal . All the experiments were well executed. The trials were provided with timely Cultural operations and were without weeds. The observations on crop stand with respect to individual entries in the trials are given below.

Initial varietal trial (Early)

In the IVT (Early), Co 0238 was the best standard with respect to crop stand and the trial was rated excellent. The test entries CoPb18211 was better while other seven entries on par with standard (**Table 2 & 3**). Smut disease was observed in clone CoPb 18181 and lodging in CoS 17232 & CoPb18182.

Advanced Varietal Trial (Midlate) –I Plant Crop

In the AVT-I plant (Midlate) five test clones Co170018, CoLk17204, CoPb 17215, CoPant 17223 and CoS 17236 were adjudged better against CoPant 97222 as a best standard with respect to crop stand. The trial was rated excellent. The four test entries CoS17234, CoS 17235, CoH17261 and CoS17262 were on par with best standard (**Table 2 & 5**). Smut disease was observed for clone CoS 17234.

Advanced Varietal Trial (Early) – II Plant Crop

In the AVT (Early) Six test clones were adjudged against Co 0238 as a best standard with respect to crop stand. The trial was rated excellent. The test entries CoLk16202 was better while remaining five entries were on par with standard (**Table 2 & 6**).

Advanced Varietal Trial (Early) – Ratoon

Not conducted due to shifting of land from HAU, RRS Uchani to MHU, Karnal.

Initial Variety Trial (Midlate): Not allotted.

Advanced Varietal Trial (Midlate) – II Plant Crop: Not allotted.

Advanced Varietal Trial – Ratoon (Midlate): Not allotted.

Seed multiplication

Sufficient seed cane is available for ZVT clones. It will be discussed in the forthcoming plant breeders meet.

Fluff supply programme

Field survival of 4700 seedlings was reported. It will be discussed in the forthcoming plant breeders meet.

6. ICAR-SBI, RC, KARNAL

This centre was allotted 3 trials. All the allotted trials were conducted as per the technical programme for 2021-22 of North West Zone. All the experiments were well executed. The trials were without weeds and cultural operations were carried out in time. The observations on crop stand with respect to individual entries in the trials are given below.

Initial Varietal Trial (Early): Not allotted.

Advanced Varietal Trial (Early) – I Plant Crop: Not allotted.

Advanced Varietal Trial (Early) – II Plant Crop: Not allotted

Advanced Varietal Trial (Early) – Ratoon: Not Allotted

Initial Variety Trial (Midlate)

In this trial eleven clones were assessed against Co05011 as the best standard. Among test clones Co 18021, Co 18022 and CoS 18232 were better while six clones CoLk 18203, CoPb 18213, CoPb 18214, CoPant 18222, CoS 18231, CoS 18233 were on par and CoLk 18204, CoS 18234 were poor as compared to the standard Co 05011(**Table 2 & 4**). Smut disease was observed CoS18231.

Advanced Varietal Trial (Midlate) –I Plant Crop: Not allotted.

Advanced Varietal Trial (Midlate) – II Plant Crop

This trial was rated excellent with best standard CoPant 97222 and five clones were assessed against the best standard. Three test clones Co 16030, CoS16232 and CoS 16233 were better while six clones CoLk 16203 and CoLk 16204 were on par (**Table 2 & 7**).

Advanced Varietal Trial – Ratoon (Midlate)

In this trial the best standard was CoPant 97222 and the trial was rated excellent in terms of crop stand. Two clones (Co16030 and CoLk16204) were assessed better against the best standard. Three test clones CoLk16203, CoS16232 and CoS 16233 were on par (**Table 2 & 9**).

Seed multiplication

Seed cane was less for CoPb19211 and CoPb 19212. It will be discussed in the forthcoming plant breeders meet.

Fluff supply programme

It will be discussed in the forthcoming plant breeders meet.

7. PAU, RRS, KAPURTHALA

All the seven trials were conducted as per the technical programme for 2021-22 of North West Zone. All the experiments were well executed. The trials were without weeds and cultural operations were carried out in time. The station experienced a heavy hail storm during last week of October 2021 that led to lodging of sugarcane crop. The observations on crop stand with respect to individual entries in the trials are given below:

Initial Varietal Trial (Early)

This trial was rated as excellent and Co 0238 was the best standard with respect to crop stand. Five test entries CoPb 18181, CoLk 18202, CoPn 18211, CoPb 18212 and CoPant 18221 were found better and three clones namely Cos 17232, CoPb 18182 & CoLk 18201 were adjudged on par with standard (**Table 2 & 3**). Clone CoPb 18182 prone to heavy lodging.

Initial Variety Trial (Midlate)

This trial was rated excellent in performance and Co 05011 was the best standard in it. Eleven clones were tested and 6 clones namely Co 18022, CoLk 18203, CoPb 18214, CoPant 18222, CoS 18231 and CoS 18232 were better in their performance than the best standard. However, two clone CoLk 18204 and CoS 18234 were poor while rest of the clones were found at par to the standard (**Table 2 & 4**). Smut disease was observed in standard CoPant 97222.

Advanced Varietal Trial (Midlate) –I Plant Crop

In the AVT I plant (midlate) trial, Co 05011 was the best standard and trial was excellent in conduct. Three clones viz. Co 17018, CoPb 17215 and CoS 17236 were better performing while remaining clones like CoLk 17204, CoPant 17223, CoS 17234, CoS 17235 and CoH 17261 were found on par for their performance compared to best standard (**Table 2 & 5**). Smut infection in standard CoPant 17222 was observed.

Advanced Varietal Trial (Early) – II Plant Crop

In the AVT II plant (early) trial, Co 0238 was the best standard and the trial was excellent in execution and maintenance. Among test clones Co 16029 and CoLk 16202 were better in performance and CoLk 16201, CoPb 16181, Co 15025, and CoLk 14201 were on par with the standard (**Table 2 & 6**). CoPb 16181 showed lodging tendency and Co 15025 was found to have sparse crop stand.

Advanced Varietal Trial (Midlate) – II Plant Crop

This trial was rated excellent in its conduct. Among three checks in the trial, Co 05011 was the best standard. Two clones namely Co 16030 and CoS 16233 were better in performance than check. Other three clones CoLk 16203, CoLk 116204 and CoS 16232 were on par (**Table 2 & 7**). Smut disease was present in check CoPant 97222 in all replicates.

Advanced Varietal Trial (Early) – Ratoon

In the AVT Early ratoon trial, Co 0238 was the best standard and trial was rated as very good based on crop maintenance. Among test clones CoLk 16202 was better in performance & Co 16029, CoLk 16201, CoPb 16181 and CoLk 14201 were on par with standard and Co 15025 was poor due to wilt and sparse crop stand (**Table 2 & 8**). CoPb 16181 was observed with high lodging tendency.

Advanced Varietal Trial – Ratoon (Midlate)

In the AVT ratoon (midlate) trial, Co 05011 was the best standard and trial was rated very good. Among test clones, only one clone CoLk 16204 was better in performance than best standard while remaining four clones (CoLk 16203, Co 16030, CoS 16232 and CoS 16233) were on par as compared to the best standard Co 05011 (**Table 2 & 9**). Smut disease incidence was high in check CoPant 97222.

Seed multiplication

Sufficient seed cane is available for ZVT entries except four clones namely CoS 19233, Cos 19234, CoLk 19203 and Co19016 that have lesser number of canes. It will be discussed in the forthcoming plant breeders meet.

Fluff supply programme

Field survival of seedling after transplanting is 4975. It will be discussed in the forthcoming plant breeders meet.

8. PAU, RRS, FARIDKOT/GURDASPUR

All seven trials were conducted as per the technical programme of North West Zone for 2021-22. Six plant trials (early and mid-late) were conducted at RRS, Gurdaspur while both Ratoon trials (early and mid-late) were conducted at RRS, Faridkot. All the experiments were well executed. The trials were without weeds and cultural operations were carried out in time. However, heavy hail storms during last week of October 2021 resulted in lodging of experiments. The observations on crop stand with respect to individual entries in the trials are given below.

Initial Varietal Trial (Early)

Co 05009 was the best standard with respect to crop stand and growth. The trial was rated as good. Three clones CoPb18211, CoPb18212 and CoPant 18221 were better than the best

standard while three clones namely CoS 17232, CoPb 18181 and CoPb 18182 were on par with standard whereas rest of two clones were observed poor in their performance (**Table 2 & 3**).

Initial Variety Trial (Midlate)

In the IVT (mid-late) trial, Co 05011 was the best standard. Among test entries four clones (Co 18022, CoLk18203, CoPant 18222, CoS18231) were better, four (Co18021, CoPb 18013, CoS 18232, CoS 18233) were on par in their performance as compared to the best standard. However, three (CoLk18204, CoPb18214, CoS18234) were poor in their performance as compared to standard (**Table 2 & 4**), though the trial was adjudged as good.

Advanced Varietal Trial (Midlate) –I Plant Crop

The trial performance was very good. In this trial, CoPant97222 was the best standard. Among test five clones (Co17018, CoPb17215, CoPant17223, CoS17234 and CoS17236) were better, two clones (CoLk 17204, CoH17261) were on par and (CoPant17223 and CoH17262) were found poor as compared to the standard (**Table 2 & 5**).

Advanced Varietal Trial (Early) – II Plant Crop

In the AVT II plant (early) trial, Co 0238 was the best standard. Three clones Co 15025, Co 16029, CoLk 16202 were better. However, CoLk16201 and CoPb 18181and CoLk14201 were on par as compared to best standard (**Table 2 & 6**). The trial was rated excellent.

Advanced Varietal Trial (Midlate) – II Plant Crop

In the AVT II plant (Midlate), Co05011 was the best standard. Among test clones Co16030 was better and three clones (CoLk 16203, CoS 16232, CoS 16233) were on par and CoLk 16204 was poor (**Table 2 & 7**) in comparison to the best standard. The trial was adjudged excellent in execution.

Advanced Varietal Trial (Early) – Ratoon

This trial was conducted at RRS, Faridkot as per the technical programme for the year 2021-22 with six test clones. In this trial, Co 05009 was the best standard. Two entries Co 16029 and CoLk 16202 were better and remaining four clones were on par in their performance as compared to the best standard (**Table 2 & 8**). The trial was rated as excellent.

Advanced Varietal Trial – Ratoon (Midlate)

In the AVT ratoon (midlate) trial laid out at RRS, Faridkot, Co 05011 was the best standard. In this trial three clones CoLk 16204, CoS 16232, CoS 16233 were better whereas Co16030 and CoLk 16203 were on par in their performance as compared to the standard (**Table 2 & 9**). The trial was rated as excellent.

Seed multiplication

Sufficient seed cane is available for all the ZVT entries, It will be discussed in the forthcoming plant breeders meet.

Fluff supply programme

At RRS Gurdaspur, 3500 seedlings in ground nursery after field transplanting. It will be discussed in the forthcoming plant breeders meet.

9. ARS, SRIGANGANAGAR

All the Seven trials were conducted and the experiments were well executed. The trials were without weeds and cultural operations carried out in time. Two trials (AVT II-early and AVT I-midlate) were rated excellent, (IVT-early, IVT-Midlate and AVT II-Midlate were very good), (AVT-R early) was good whereas (AVT Ratoon) rated as Poor. The observations on crop stand with respect to individual entries in the trials are given below:

Initial Varietal Trial (Early)

Co 0238 was the best standard with respect to crop stand and growth. Two clones CoLk 18202 and CoPb 18211 were better and five clones (CoPb 18181, CoPb 18182, CoLk 18201, CoPb18212, CoPant18221) were on par and one (CoS17232) were poor as compared to best standard for plant growth (**Table 2&3**). The trial was adjudged very good. Lodging was observed in CoPb18182.

Initial Variety Trial (Midlate)

In the IVT (mid-late) trial, CoPant 97222 was the best standard. In this trial two clones (Co18022, CoLk18203) were adjudged better than standard (**Table 2&4**) and six clones (CoPb 18213, CoPb18214, CoPant18222, CoS18231, Co18232, CoS18233) were at par while others were poor in their performance as compared to the best standard. The trial was rated as very good.

Advanced Varietal Trial (Mid-Late) – I Plant Crop

In the AVT I plant (early) trial, CoPant 97222 was the best standard. In this trial Co17018, CoPb17215 were better in growth than standard whereas, CoPant 17223, CoS 17234, CoS17235, CoS17236 were at par for their performance in comparison to check (**Table 2 & 5**). The trial was adjudged as excellent.

Advanced Varietal Trial (Early) – II Plant Crop

This trial was rated excellent in conduct, Co 05009 was best standard. Clone CoPb 16181 was better, Co 16029 was at par in performance (**Table 2 & 6**). Three clones (Co15025, CoLk 16201 and CoLk 16202) were poor. Two standards viz Co 0238 and CoJ 64 were not pure needs replacement. Also CoLk 14201 was not in its pure form.

Advanced Varietal Trial (Mid-Late) – II Plant Crop

In this trial, CoPant 97222 was the best standard. In this trial CoS 16233 was on par in with standard whereas, Co16030, CoLk16203, CoLk16204 and CoS16232 were adjudged poor in comparison to best standard (**Table 2 & 7**). The trial was adjudged as very good. No cane formation in clone CoLk16203.

Advanced Varietal Trial (Early) – Ratoon

In the AVT Early ratoon trial, Co 0238 was the best standard. Among test clones, CoLk16202 was better and CoPb 16181 was found at par while Co 16029 and CoLk 14201 were poor as compared to standard (**Table 2 & 8**). The trial was assessed as good. Severe incidence of wilt in CoLk 16201.

Advanced Varietal Trial – Ratoon (Midlate)

In the AVT ratoon (midlate) trial, CoPant 97222 was the best standard. In this trial test clones CoLk 16204 was better, two (Co16030, CoLk16203, CoS16233) was at par and remaining were poor for their growth as compared to best standard (**Table 2 & 9**). The trial was rated poor. Wilt was observed in CoS16232.

Seed multiplication

Sufficient cane material was available. It will be discussed in the forthcoming plant breeders meet.

10. ARS, KOTA

All the eight trials were conducted and the experiments were well executed. The trials were without weeds and cultural operations carried out in time. The observations on crop stand with respect to individual entries in the trials are given below.

Initial Varietal Trial (Early)

Among checks Co 0238 was the best standard with respect to crop stand and growth in this trial. Three test clones (CoLk 18202, CoPb 18211, CoPant 18221) were better than check for growth performance and four (CoPb18181, CoPb18182, CoLk18201, CoPb 18212) were on par and one (CoS17232) poor (**Table 2 & 3**). The trial was adjudged as very good. Lodging in CoPb18181 was observed.

Initial Variety Trial (Midlate)

It was excellent trial with eleven test clones having Co 05011 as the best standard. Among test clones (Co18022, CoPb 18213, CoS 18231, Cos18232 and CoS18233) were adjudged better, while five clones (Co18021, CoLk18203, CoPb18213, CoPb18214 and CoS 18234) were on par in their performance as compared to standard (**Table 2 & 4**).

Advanced Varietal Trial (Midlate) –I Plant Crop

In this trial, Co 05011 was the best standard and its performance was adjudged as very good. Four clones CoPb17215, CoPant17223, CoS17235 & CoS 17236 were better performing. However, Co17018, CoS 17234, CoH17261 were on par and two clones CoLk 17204 and CoH 17262 were poor in comparison to standard (**Table 2 & 5**). Lodging was observed in clones CoLk17204, CoPant 17223 and sparse crop stand CoH17261.

Advanced Varietal Trial (Early) – II Plant Crop

In the AVT II plant (early) trial, Co 0238 was the best standard. Among test clones CoLk 16202 was observed better while, Co 16029, Co15025, Co16181 were found on par as compared to standard (**Table 2 & 6**). Two clones CoLk16201 and CoLk14201 were poor. The trial was rated as very good. Lodging was observed in Co15025 and has sparse crop stand.

Advanced Varietal Trial (Midlate) – II Plant Crop

This trial was rated as very good with CoPant 97222 as the best standard. In this trial four clones Co 16030, CoLk 16203, CoLk 16204 & CoS 16232 were on par with standard and CoS16233 was poor in its performance as compared to best standard. (**Table 2 & 7**). Lodging was observed in CoLk16203, CoS16232 and CoS16233.

Advanced Varietal Trial (Early) – Ratoon

The trial was poor in execution having, Co 05009 as the best standard. Among test clones Co 16202 was observed better while, CoPb 16181 on par, CoLk 16201 and CoLk14201 were found poor as compared to standard (**Table 2 & 8**). In two clones Co16029 and Co15025 there were no canes in the plot.

Advanced Varietal Trial – Ratoon (Midlate)

In this trial Co 05011 was the best standard and was rated as poor. Four clones (Co 16030, CoLk 16203, CoLk 16204 & CoS 16232) were on par and CoS16233 was poor in its performance as compared to best standard. (**Table 2 & 9**). There was no cane in plots for CoS16233.

Seed multiplication

All clones have sufficient seed cane in ZVT multiplication. It will be discussed in the forthcoming plant breeders meet.

Table 1. Allotment and conduct of crop improvement trials at different centers in North West Zone

Trial	Lucknow	Shahjahanpur	Pantnagar	M.nagar	Karnal	Uchani	Kapurthala	Faridkot / Gurdaspur	Sriganganagar	Kota
IVT (Early)	C	C	C	C	NA	C	C	C	C	C
AVT (Early) I Plant	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AVT (Early)II Plant	C	C	C	C	NA	C	C	C	C	C
AVT (Early) Ratoon	C	C	C	C	NA	Ab	C	C*	C	C
IVT (Midlate)	C	C	C	C	C	NA	C	C	C	C
AVT(Midlate) I Plant	C	C	C	C	NA	C	C	C	C	C
AVT(Midlate) II Plant	C	C	C	C	C	NA	C	C	C	C
AVT(Midlate) Ratoon	C	C	NC	C	C	NA	C	C*	C	C
Fluff supply Programme										

C= Conducted; NA= Not Allotted; NC: Not conducted; Ab: Abandoned due to shifting of land to MHU, Karnal; C*: conducted at Faridkot

Table 2. Overall grading of the trials based on the observations made during monitoring of Trials

Trial	Lucknow	Shahjahanpur	Pantnagar	M.Nagar	Karnal	Uchani	Kapurthala	Gurdaspur / Faridkot	Sriganganagar	Kota
IVT (Early)	G	E	G	E	NA	E	E	G	VG	VG
AVT-II (Early)	E	E	VG	E	NA	E	E	E	E	VG
AVT-R (Early)	P	G	P	P	NA	AB	VG	E	G	P
IVT (Mid-late)	G	VG	VG	VG	E	NA	E	G	VG	E
AVT-I (Mid-late)	G	E	VG	E	NA	E	E	VG	E	VG
AVT-II(Midlate)	E	E	VG	E	E	NA	E	E	VG	VG
AVT-R (Midlate)	P	G	NC	P	E	NA	VG	E	P	P

E=Excellent, VG= Very Good, G=Good, A= Average, P=Poor, NA= Not Allotted; NC=Not Conducted; AB= Abandoned

Each trial was rated in five scales:

Sl. No	Score (%) obtained	Rating
1	81-100	Excellent
2	61-80	Very good
3	41-60	Good
4	21-40	Average
5	0-20	Poor

Assessment of the trial should be based on

1. Whether conducted as per the technical programme
2. General growth and maintenance of the trial
3. If the trial is unfit for evaluation Grade **POOR** may be given.
4. When the trial is not allotted, it may be indicated as **Not Allotted**

Table 3: Performance of test entries in relation to standards in Initial Varietal Trial (Early)

S.	Genotype	Lucknow	Shahja'pur	Pantnagar	Muzza'gar	Karnal	Uchani	Kapurthala	Gurdaspur/ Faridkot	Sriganganagar	Kota
1	CoS 17232	On par	Better	Better	On par	NA	On par	On par	On par	Poor	Poor
2	CoPb 18181	Poor	On par	Better	On par	NA	On par	Better	On par	On par	On par
3	CoPb 18182	On par	Better	Better	Better	NA	On par	On par	On par	On par	On par
4	CoLk 18201	Poor	On par	On par	On par	NA	On par	On par	Poor	On par	On par
5	CoLk 18202	Poor	Better	Better	Better	NA	On par	Better	Poor	Better	Better
6	CoPb 18211	Poor	On par	Better	Better	NA	Better	Better	Better	Better	Better
7	CoPb 18212	On par	Better	Better	Better	NA	On par	Better	Better	On par	On par
8	CoPant 18221	On par	Better	Better	On par	NA	On Par	Better	Better	On par	Better
	Standards										
1	CoJ 64	III	III	III	III	NA	III	III	III	Co 6617	III
2	Co 0238	I	I	II	I	NA	I	I	II	I*	I
3	Co 05009	II	II	I	II	NA	II	II	I	II*	II

NA=Not allotted, * Checks were not in pure form

a) Among the standards the best was indicated and others were ranked II and III

b) The entries were compared with the best standard based on cane characters and field stand and rated as:

1. Better;
2. On par and
3. Poor

Table 4: Performance of test entries in relation to standards in Initial Varietal Trial (Mid-late)

S. No	Genotype	Lucknow	Shahjahanpur	Pantnagar	Muzzaffarnagar	Karnal	Uchani	Kapurthala	Faridkot/ Gurdaspur	Sriganganagar	Kota
1	Co 18021	Poor	Poor	On par	Better	Better	NA	On par	On par	Poor	On par
2	Co 18022	Better	Better	Better	Better	Better	NA	Better	Better	Better	Better
3	CoLk 18203	Better	Better	Better	Better	On par	NA	Better	Better	Better	On par
4	CoLk 18204	Poor	On par	Poor	On par	Poor	NA	Poor	Poor	Poor	Poor
5	CoPb 18213	On par	Better	Better	Poor	On par	NA	On par	On par	On par	Better
6	CoPb 18214	Poor	On par	On par	On par	On par	NA	Better	Poor	On par	On par
7	CoPant 18222	Better	Better	Better	On par	On par	NA	Better	Better	On par	On par
8	CoS 18231	Better	Better	Better	Better	On par	NA	Better	Better	On par	Better
9	CoS 18232	On par	Better	Better	On par	Better	NA	Better	On par	On par	Better
10	CoS 18233	On par	On par	On par	On par	On par	NA	On par	On par	On par	Better
11	CoS 18234	Poor	On par	Poor	Poor	Poor	NA	Poor	Poor	Poor	On par
1	CoS 767	I	II	III	III	III	NA	II	III	III	II
2	CoPant 97222	II	I	I	I	II	NA	III	II	I	III
3	Co 05011	III	III	II	II	I	NA	I	I	II	I
Remarks if any											

NA= Not Allotted**Table 5: Performance of test entries in relation to standards in Advanced Varietal Trial-I Plant (Mid-late)**

S. No	Genotype	Luckno	Shahjahanpur	Pantnagar	M.nagar	Karnal	Uchani	Kapurthala	Faridkot	Sriganganagar	Kota
1	Co 17018	Poor	On par	Better	Better	NA	Better	Better	Better	Better	On par
2	CoLk 17204	Poor	On par	On par	Poor	NA	Better	On par	On Par	Poor	Poor
3	CoPb 17215	Poor	Better	Better	Better	NA	Better	Better	Better	Better	Better

4	CoPant 17223	Poor	On par	On par	On par	NA	Better	On par	Poor	On par	Better
5	CoS 17234	On par	Better	Better	On par	NA	On par	On par	Better	On par	On par
6	CoS 17235	Better	Better	Better	On par	NA	On par	On par	Better	On par	Better
7	CoS 17236	Poor	Better	Better	Better	NA	Better	Better	Better	On par	Better
8	CoH 17261	Poor	On Par	Poor	On par	NA	On par	On par	On par	Poor	On par
9	CoH 17262	Poor	On par	Poor	Poor	NA	On par	Poor	Poor	Poor	Poor
	Standards										
1	CoS 767	III	III	III	III	NA	III	II	III	III	III
2	CoPant 97222	I	I	I	I	NA	I	III	I	I	II
3	Co 05011	II	II	II	II	NA	II	I	II	II	I

NA= Not allotted.

Table 6: Performance of test entries in relation to standards in Advanced Varietal Trial-II Plant (Early)

S. No	Genotype	Lucknow	Shahjahanpur	Pantnagar	Muzzaffarnagar	Karnal	Uchani	Kapurthala	Faridkot/ Gurdaspur	Sriganganagar	Kota
1	Co 16030	Better	Better	Better	Better	Better	NA	Better	Better	Poor	On par
2	CoLk 16203	Better	On par	On par	On par	On par	NA	On par	On par	Poor	On par
3	CoLk 16204	On par	Better	On par	On par	On par	NA	On par	Poor	Poor	On par
4	CoS 16232	Poor	Better	On par	Better	Better	NA	On par	On par	Poor	On par
5	CoS 16233	Better	On par	On par	Better	Better	NA	Better	On par	On par	Poor
	Standards										
1	CoS 767	I	I	III	III	III	NA	II	II	II	III
2	CoPant 97222	II	II	I	I	I	NA	III	III	I	I
3	Co 05011	III	III	II	II	II	NA	II	I	II	II

Table 7: Performance of test entries in relation to standards in Advanced Varietal Trial-II Plant (Midlate)

S. No	Genotype	Lucknow	Shahjahanpur	Pantnagar	Muzzaffarnagar	Karnal	Uchani	Kapurthala	Faridkot/ Gurdaspur	Sriganganagar	Kota
1	Co 16029	On par	On par	Poor	On par	NA	On par	Better	Better	On par	On par
2	Co 15025	Poor	Poor	On par	On par	NA	On par	On par	Better	Poor	On par
3	CoLk 16201	On par	On par	Better	On par	NA	On par	On par	On par	Poor	Poor
4	CoLk 16202	Better	Better	On par	Better	NA	Better	Better	Better	Poor	Better
5	CoPb 16181	On par	On par	Better	On par	NA	On par	On par	On par	Better	On par
6	CoLk 14201	On par	On par	Poor	On par	NA	On par	On par	On par	Not pure	Poor
	Standards										
1	CoJ 64	III	III	III	III	NA	III	III	III	Not pure	III
2	Co 0238	I	I	II	I	NA	I	I	I	Not pure	I
3	Co 05009	II	II	I	II	NA	II	II	II	I	II

NA= Not allotted.

Table 8: Performance of test entries in relation to standards in Advanced Varietal Trial-Ratoon (Early)

S. No	Genotype	Lucknow	Shahjahanpur	Pantnagar	Muzzaffarnagar	Karnal	Uchani	Kapurthala	Faridkot	Sriganganagar	Kota
1	Co 16029	NC*	Poor	On par	Poor	NA	AB	On par	Better	Poor	NC*
2	Co 15025	NC*	NC*	Poor	Poor	NA	AB	Poor	On par	NC*	NC*
3	CoLk 16201	On par	On par	On par	On par	NA	AB	On par	On par	NC*	Poor
4	CoLk 16202	Poor	Better	On par	On par	NA	AB	Better	Better	Better	Better
5	CoPb 16181	NC*	On par	On par	On par	NA	AB	On par	On par	On par	On par

6	CoLk 14201	On par	Better	On par	On par	NA	AB	On par	On par	Poor	Poor
	Standards										
1	CoJ 64	NC*	II	III	III	NA	AB	III	III	III	III
2	Co 0238	I	I	II	I	NA	AB	I	II	I	II
3	Co 05009	II	III	I	II	NA	AB	II	I	II	I

NA= Not allotted; AB- Abandoned due to shifting of land; NC*- No cane in plots (Not suitable for assessment)

Table 9: Performance of test entries in relation to standards in Advanced Varietal Trial-Ratoon (Midlate)

S. No	Genotype	Lucknow	Shahjahanpur	Pantnagar	M.nagar	Karnal	Uchani	Kapurthala	Faridkot	Sriganganagar	Kota
1	Co 16030	Poor	On par	NC	On par	Better	NA	On par	On par	On par	On par
2	CoLk 16203	On par	Better	NC	Better	On par	NA	On par	On par	On par	On par
3	CoLk 16204	On par	Better	NC	Better	Better	NA	Better	Better	Better	On par
4	CoS 16232	Poor	Poor	NC	On par	On par	NA	On par	Better	Poor	On par
5	CoS 16233	On par	On par	NC	On par	On par	NA	On par	Better	On par	Poor
	Standards										
1	CoS 767	I	I	NC	III	III	NA	II	III	III	II
2	CoPant 97222	II	III	NC	II	I	NA	III	II	I	III
3	Co 05011	III	II	NC	I	II	NA	I	I	II	I

NA= Not allotted; NC- Not conducted

(B) Crop Production**➤ Agronomy and Soil Science****1) Centre-wise status of trials allotted and conducted**

Experiment No & Title	AS72: Agronomic performance of elite sugarcane genotypes	AS73: Assessment of climate change impact on sugarcane productivity	AS74: Evaluation of sugarcane varieties for drought tolerance	AS75: Precision nutrient management through rescheduling time of application for widely spaced sugarcane plant-ratoon system.	AS76: Evaluating efficacy of PSAP for enhancement of sugarcane growth, yield and quality
Centre					
Lucknow	Conducted	Compiled data	Conducted	Conducted	Conducted
Shahjahanpur	Conducted	-	Conducted	Conducted	-
Uchani	Conducted	Compiled data	Conducted	Conducted	Conducted
Faridkot/ Gurdaspur	Conducted	Compiled data	Conducted	Conducted	Conducted
Kota	Conducted	Compiled data	Conducted	Conducted	-

2) General observations made during online presentation

Centre	AS72	AS73	AS74	AS 75	AS 76
Lucknow	The trial was conducted as per approved technical programme with early and mid late variety planted at 120cm spacing with two fertility levels (100 & 125%). Early variety, CoLk 16201 recorded higher germination over check. There was not much visible	Data is being compiled	The experiment has been laid down as per technical programme. The overall crop growth was very good with no incidence of disease and insect pest. Among early maturing varieties, CoPk 05191 and among mid late varieties, CoLk 11206 showed minimum	The treatments were applied in successive ratoon crop. Band placement method exhibited higher tiller population and plant height recorded from 90 day - 180 Dai compared to broadcasting method. Seven splitting of N&K recorded higher tillers and height at all stages of crop growth.	The experiment has been conducted as per technical programme. The crop growth was good. T9 having recommended N and 50% P&K along with sett soaking with PSAP and foliar spray of PSAP at 60, 90, 120 DAP is performing

	<p>difference between two fertilizer levels. Among midlate genotypes (CoLk 16203, CoLk 16204, CoS 16233 showed higher shoot count as compared to other genotypes</p>		<p>reduction in 0.3 over 1.0 IW/CPE ratio in cane height tiller production and cane thickness.</p>	<p>However, splitting did not significantly improve tiller and plant height compared to two splitting (conventional method)</p>	<p>better which at par with T10</p>
Shahjhanpur	<p>The treatments were executed as per technical programme. The highest number of shoot were appeared in genotype CoLk 16202 while maximum growth and height were observed in Co 0238 early maturing genotype. Among mid-late maturing genotype CoS 16232 was found better in number of shoots produced per hectare. All genotypes were performing better with 125% NPK in terms of shoot as compared to 100% NPK</p>	-	<p>Among early varieties, CoLk 14201 and mid-late variety, CoS 14233 showed better performance and recorded maximum shoots per hectare. Higher number of shoots were observed with IW/CPE ratio 1.0 as compared to 0.3 ratio in both early and mid-late group.</p>	<p>The first ratoon crop has not been taken up. However, new separate experiment has been initiated with second plant crop as per technical programme. Maximum number of shoots were recorded in band placement compared to broadcasting method, while RDN and RDK in seven splits were found better over others.</p>	-
Uchani	<p>The experiment was conducted as per technical programme with approved AVTII entries of N-W zone with two</p>	Data is being compiled	<p>Among early maturing varieties, Co 0238 and among mid-late varieties, CoH 167 is</p>	<p>The experiment has been laid out as per technical programme in second plant crop. Band placement</p>	<p>The trial has been conducted as per technical programme. T9 having recommended N and 50%</p>

	spacing (90 and 120 cm) and two fertilizer levels i.e 100 & 125% NPK. Best performing early varieties were in order of CoLk 16202 and Co 0238 (highest cane yield expected). Mid late variety Co-Pant 97222 were showing better performance among all the entries and check. All the varieties responded to 125% RDF in term of growth and phenotypic appearance over 100% RDF.		performing better in terms of overall growth parameters. However, higher values of tillers, plant height and other characters of varieties were observed at IW/CPE ratio 1.0 over 0.3.	seemed to be better as compared to broadcasting method of nutrient application. Higher splits of N & K seemed to be better as compared to three splits in terms of cane height and plant population and tiller population.	P&K along with sett soaking with PSAP and foliar spray of PSAP at 60, 90, 120 DAP is performing better.
Faridkot	The trial was conducted as per the technical programme. Early varieties sown with RDF 125% are showing thick and heavy canes and better growth than others. However, Mid-late varieties were showing thick and heavy canes at 120 cm spacing. Some varieties are looking better at 125% fertilizer.	Data are being compiled.	Early and mid-late varieties planted under irrigation regime 1.0 IW/CPE ratio is performing well and found better compared to 0.3 ratio in term of crop growth and plant stand.	At Gurdaspur centre band placement method was found better compared to broadcasting method in ratoon crop. Splitting of fertilizer application is better than three splitting. However, a new experiment has been initiated at Faridkot with second plant crop. Band placement method with splitting of fertilizer was	Crop planted with recommended dose of fertilizer along with more number of foliar sprays of PSAP were showing good performance in term of crop growth.

				found better compared to broadcasting method in terms of crop growth and plant stand.	
Kota	The experiment has been conducted as per the technical program with approved early and mid-late maturing entries. Crop performance under field condition at 120	Data are being compiled.	Among early maturing varieties, CoPk 05191 (Pratap Ganna-1) and among mid-late varieties, Co 09022 were performing better in terms of plant stand and crop growth. Overall crop responses	Band placement fertilizer application found better over broadcasting method. However, RDN + RDK in seven splits (Basal 10 % remaining at 45, 75, 90, 120, 150 and 180 DAP in equal splits)	-

3) Salient observations made about trials

Name of centre	Experiments No.	Execution of allotted trials as per approved technical programme.	Health standard, and sanitation	Proper labeling in the experimental plots.	Agronomic management of trials (weed mgt, earthing etc)	Overall rating
Lucknow	AS72	Yes	Excellent	Yes	Very Good	A
	AS73	Data of weather parameters are being recorded				
	AS74	Yes	Excellent	Yes	Excellent	A
	AS 75	Yes	Excellent	Yes	Excellent	A
	AS76	Yes	Excellent	Yes	Excellent	A
Shahjhanpur	AS72	Yes	Excellent	Yes	Excellent	A
	AS74	Yes	Excellent	Yes	Very good	A
	AS 75	Yes	Excellent	Yes	Excellent	A
Uchani	AS72	Yes	Excellent	Yes	Excellent	A
	AS73	Data of weather parameters are being recorded				
	AS74	Yes	Excellent	Yes	Excellent	A
	AS 75	Yes	Excellent	Yes	Excellent	A
	AS76	Yes	Excellent	Yes	Excellent	A
Faridkot/ Gurdaspur	AS72	Yes	Very Good	Yes	Very good	A
	AS73	Data of weather parameters are being recorded				
	AS74	Yes	Good	Yes	Good	B
	AS 75	Yes	Excellent	Yes	Excellent	A
	AS76	Yes	Good	Yes	Good	B
Kota	AS72	Yes	Very Good	Yes	Very Good	A
	AS73	Data of weather parameters are being recorded				
	AS74	Yes	Very Good	Yes	Very Good	A
	AS 75	Yes	Very Good	Yes	Very Good	A

(A: Very good, B: good, C: average & D: below average)

4) Grading of centre with allotted experiment of crop production

Centres	Grading					Overall grading of experiment
	AS-72	AS 73	AS 74	AS 75	AS76	
Lucknow	Excellent	*	Excellent	Excellent	Excellent	Excellent
Shahjhanpur	Excellent	-	Excellent	Excellent	-	Excellent
Uchani	Excellent	*	Excellent	Excellent	Excellent	Excellent
Faridkot	Very Good	*	Good	Excellent	Good	Very Good
Kota	Very Good	*	Very Good	Very Good	-	Very Good

(* - To be compiled & submitted)

(C) Plant Pathology

In North West Zone six centres viz., Lucknow, Shahjahanpur, Pantnagar, Uchani, Karnal and Kapurthala conducted plant pathology projects. The detail of plant pathology projects are as under:

PP 14	Identification of pathotypes of red rot pathogen
PP 14 (a)	Maintenance of isolates of red rot pathogen
PP 17 (a)	Evaluation of zonal varieties for resistance to red rot
PP 17 (b)	Evaluation of zonal varieties for resistance to smut
PP 17 (c)	Evaluation of zonal varieties for resistance to wilt
PP 17 (d)	Evaluation of zonal varieties for resistance to YLD
PP 17 (f)	Evaluation of zonal varieties for resistance to pokkah boeng
PP 22	Survey of sugarcane diseases naturally occurring in the area on important sugarcane varieties
PP 23	Assessment of elite and ISH genotypes for resistance to red rot
PP 31	Screening, epidemiology and management of <i>pokkah boeng</i> in sugarcane
PP 33	Management of yellow leaf disease through meristem culture combined with molecular diagnostics
PP 34	Efficient delivery of fungicides and other agro inputs to manage major fungal diseases in sugarcane

Concise summary of plant pathology projects allotted and conducted at various centres

The plant pathology projects under AICRP (S) allotted and conducted during 2021-22 by various research centres of North Western Zone. The observations made by each centre are depicted below.

Sl. No.	Centres	Plant Pathology Projects												
		PP 14	PP 14 (A)	PP 17					PP 22	PP 23	PP 31	PP 33	PP 34	
				A	B	C	D	F						
1.	IISR, Lucknow	C	C	C	C	C	C	C	NC	C	C	NA	NC	NC
2.	SRI, Shahjahanpur	C	C	C	C	C	C	C	C	C	C	C	C	C
3.	GBPUAT Pantnagar	NA	NA	C	C	NA	C	C	C	C	NA	NA	NC	NA
4.	HAU Uchani	C	C	C	C	NA	C	C	C	C	C	C	C	C
5.	SBI-RC Karnal	C	C	C	NA	NA	C	C	C	C	C	NA	NA	C
6.	PAU, RRS Kapurthala	C	C	C	C	C	C	C	C	C	C	C	NA	C

C = Conducted, NC= Not conducted, NA= Not allotted

1. ICAR-Indian Institute of Sugarcane Research, Lucknow (UP)

Monitoring team visited all the trials on 16 November, 2021. The experimental trials have been monitored thoroughly at field with concerning scientists. Experiment was found not labelled. Progress of trials has been examined accordingly.

PP 14: Identification of pathotypes of red rot pathogen

This experiment was conducted with 20 host differentials namely CoS 767, CoS 8436, CoSe 95422, BO 91, Co 62399, Co 7805, Co 7717, Co 86002, Co 997, Co 86032, Co 1148, CoJ 64, CoV 92102, Co 419, Co 975, CoC 671, Co0 0238, Khakai, Baragua and SES 594. These host differentials was planted in field number E-45 during 18 to 20 Feb, 2021 in 0.4 ha for the testing of the pathogenic variability on host differentials against 10 local isolates excluding CF 07, CF 08, CF 09 and CF 13. The study of CF 01, CF 02, CF 03 and CF 11 were not included in this experiment. Plug method of inoculation was done in the month of August. Experiment was not harvested during the visit. One host differential Co 86032 was found impure in trial. This would be replaced by original differentials in next year as stated by concerning scientist. Entire trial was not labelled. Various differentials were found infected by wilt.

PP 14 (A): Maintenance of isolates of red rot pathogen

Red rot cultures of designated standard pathotypes and local isolates have been maintained properly on suitable medium in *in-vitro* condition.

PP 17 (A): Evaluation of zonal varieties for resistance to red rot

This experiment was planted from 01 to 04 March 2021 in 0.2 ha in field number E-46 for the testing of red rot. The thirty eight entries of 5 trials along with check varieties were planted accordingly and were not labelled during visit. Inoculation was done with two pathotypes CF 08 and CF 13 by plug and nodal methods separately. Evaluation data was not taken till the visit. A range of entries were found affected by wilt in red rot inoculated field.

PP 17 (B): Evaluation of zonal varieties for resistance to smut

Thirty eight entries of 5 trials along with check varieties were planted accordingly on 01 to 04 March 2021. Various entries *viz*; CoS 17232, CoPb 18181, CoLk 17205, Co 0238 were found affected by smut during visit.

PP 17 (C): Evaluation of zonal varieties for resistance to wilt

Zonal entries of various trials were not planted separately in sick field for the evaluation of wilt. Various entries namely Co 15023, Co 15025, Co 16181, CoPb 18211, CoPb 18181, CoPb 17215, Co 17018, CoPant 17223, CoS 17236, Co 18021, Co 18022, CoPant 18222 were found affected by wilt in this red rot experimental field. Whereas incidence of wilt were noticed on various entries in red rot inoculated field. Various entries in ratoon trial were found affected by wilt naturally.

PP 17 (D): Evaluation of zonal varieties for resistance to YLD

YLD data will be recorded in the month of December 2021. Severity of YLD was noticed in breeding trials.

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

Survey of various sugar factory areas of UP and Bihar were conducted to record the incidence of major and minor diseases by concerning scientist. The incidence of red rot was reported in Co 0238 which ranged from 50 to 70 per cent. Various diseases such as smut, GSD, leaf scald, YLD and pokkah boeng were also reported by concerning scientist. Data compilation works are being in progress.

PP 23: Assessment of elite and ISH Genotypes for resistance to red rot of sugarcane

Eighteen ISH/IGH genotypes were planted from 21 to 23 Feb, 2021 in 0.2 ha for the testing of red rot. Inoculation was done with two pathotypes CF 08 and CF 13 by plug method. Data was not taken till the visit. Trial condition was found good but no any genotype was found labelled during the visit.

PP 33: Management of YLD through meristem culture

This experiment was allotted as per technical programme but not conducted.

PP 34: Efficient delivery of fungicides and other agro inputs to manage major fungal diseases in sugarcane

This experiment was allotted as per technical programme but not conducted.

General observations:

- *Field condition was observed well in condition. Entries were not labelled.*
- *Experimental fields became dried due to lack of irrigation. Proper care should be taken to maintain the congenial environment for red rot disease development.*
- *Sick plot should be maintained individually to evaluate the wilt data.*
- *One differential found impure in PP 14 experiments during visit.*
- *Severe wilt condition observed in red rot inoculated plot, screening of red rot will be tough in wilt infected entries.*
- *Various diseases such as mosaic, leaf fleck (Sugarcane bacilliform virus), yellow leaf disease, grassy shoot disease and leaf spot were observed during the visit at Lucknow.*

2. Sugarcane Research Institute (UPCSR), Shahjahanpur (UP)

Monitoring team visited farm of SRI, Shahjahanpur (UP) on 17 November, 2021. All the assigned experiments were conducted properly as per AICRP (S) norms and field was found clean and well labelled.

PP 14: Identification of pathotypes/races in red rot pathogen

This experiment was planted on 2 March, 2021 with 20 host differentials as per AICRP norms. Red rot were evaluated in all differentials with seven existing pathotypes (CF 01, CF 02, CF 03, CF 07, CF 08, CF 09, CF 11) along with eighteen local isolates (Cf 05191, Cf 181/17, Cf 08279, Cf 98014, 2 of Cf 0118 and 12 of Cf 0238) by plug method of inoculation in the second week of August, 2021. Experiment was harvested and data had already been taken for their pathogenic variability after two months of inoculation and data compilation work is being in progress.

PP 14 (A): Maintenance of isolates of red rot pathogen

A total of fifty various isolates of Co 0238, CoPk 05191, CoS 08279, Co 98014, Co 0118 and S.181/17 were collected from different areas and maintained in *in vitro* condition for further identification.

PP 17 (A): Evaluation of zonal varieties for resistance to red rot

The experiment was conducted as per AICRP (S) norms with thirty nine zonal entries. These entries were planted on 03.03.2021 and inoculation was carried out with CF 08 and CF 13 pathotypes during 09.08.2021 to 10.08.2021 by plug and nodal method of inoculation separately. Early and mid late checks were also planted and inoculated for study. The varieties CoJ 64 and Co 0238 were used as a red rot susceptible. Data were evaluated in the month of October. One entry CoPb 18212 of IVT (Early) was reported susceptible against red rot by plug and nodal method of inoculation. Trials were observed well labelled and weed free during the team visit. Data compilation work is being in progress.

PP 17 (B): Evaluation of genotypes/varieties against smut disease

Thirty nine entries of five trials were planted in two replications on 03.03.2021 for smut evaluation as AICRP (S) norm and it was found weed free. Variety Co 1158 was used as smut susceptible check. Smut incidence at fortnightly intervals was recorded up to November during visit. Incidence of the smut was reported in Smut was observed on some entries viz; Co 18021, Co 18233, CoLk 16202, CoLk 18202, CoLk 14201, CoS 17232, CoS 17234, CoPb 18213, CoPb 17215, CoPb 18181 and CoPant 17223 during monitoring. Data compilation work is being in progress.

PP 17 (C): Evaluation of varieties/genotypes against wilt

The incidence of wilt was taken in thirty nine entries of five trials and various entries found affected by this disease. Data compilation works are being in progress.

PP 17 (D): Evaluation of varieties/genotypes against yellow leaf disease

The incidence of yellow leaf disease was taken in breeding trial and various entries found affected by this disease. Data compilation works are being in progress.

PP 17 (F): Evaluation of varieties/genotypes against pokkah boeng

Pokkah boeng incidence had been already taken in the month of July to September some varieties were found affected from pokkah boeng disease as; Co 15025, Co 18021, Co 16030, CoLk 16203, CoLk 16201, CoLk 18201, CoLk 18202, CoS 17234, CoS 18231, CoPb 18214, CoPb 16181, CoPb 17215 and CoPant 18222. Data compile work is in progress.

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

Extensive survey were conducted in twenty sugar factories zone of central UP during pre and post monsoon period. Severe incidence of red rot on Co 0238 was succumbed up to dried out (up to 100%) condition in Lakhimpur Kheri and Hardoi district of central Uttar Pradesh (UP). Mix infection of red rot and wilt also observed in Co 0238. Smut disease reported on Co 0238. Grassy shoot disease observedon Co 0238 with other varieties in almost all sugar factory mill zones.The severe incidence of pokkah boeng disease recordedon Co

0238 indifferent factories zones. Other minor diseases namely top rot (Bacteria), SCMV, YLD and leaf binding, Leaf fleck were also recorded in different sugar factories zones from central UP. Data compile work are in progress.

PP 23: Assessment of elite and ISH genotypes for resistance to red rot

Total of thirty two ISH/IGH genotypes including near commercial cultivars were planted on 03.03.2021 and it was found weed free during visit. These ISH/IGH genotypes were tested for red rot resistance against CF 08 and CF 13 pathotypes in second week of August by plug. Two varieties CoJ 64 and Co 0238 were used as a red rot susceptible. Data was evaluated in the month of October. Data compilation work is being going on.

PP 31: Screening, epidemiology and management of *pokkah boeng* in sugarcane

Twenty three varieties/genotypes were planted on 04 March, 2021 for study in natural condition as concerning scientist. Trial was found weed free, well labelled and lay out was examined as per AICRP (S) norm. Natural incidence data of *pokkah boeng* was recorded in July to September during high rainfall and humidity. Twenty three varieties/genotypes were taken under study in natural condition. The variety Co 0238 was used as susceptible standard. Some varieties were found affected from *pokkah boeng* disease such as; CoLk 16204, CoLk 15207, CoS 18233, CoS 19235, SL. 146/10 and Seo. 1860/15.

The efficacy of carbendazim fungicide for management of *pokkah boeng* was also tested on two popular varieties Co 0238 and CoS 08279. Experiment was conducted with 3 treatment viz, T₁ (Carbendazim treatment with STD), T₂ (Foliar spray with carbendazim), T₃ (T₁ + foliar spray with carbendazim) in three replications. Still T₃ (T₁ + foliar spray with carbendazim) the treatment found most effective to control *pokkah boeng* disease during the monsoon season followed by in both varieties. Data is being completed after harvesting.

PP 33: Management of yellow leaf disease through meristem culture combined with molecular diagnostics

The experiment conducted properly in field number H5. Different varieties such as CoS 13235, CoS 08272, Co 0118 and Co 0238 were raised for the production of YLD free seed nursery through meristem culture. Molecular testing is in progress.

PP 34: Efficient delivery of fungicides and other agro inputs to manage major fungal diseases in sugarcane (Through Sett Treatment Device)

The experiment conducted properly in pathological block and planted on 06 March, 2021 for the management of red rot. The variety was taken Co 0238 with CF 13 with sorgum culture for the induction of primary infection of red rot. There are four treatment in this experiment. Of these treatment, T₂ treatment (STD with fungicide + soil drenching by 45 & 90 days) gave better result against red rot. Visually this treatment exhibited almost similar result to T₄ (Healthy setts). In settling vigour experiment, treatment of single budded setts with STD using mixture of Urea – 0.5g /L + ZnSO₄– 0.5g/L + FeSO₄ – 0.5g/L+ carbendazim-0.5g/L+ Imidachloprid -0.5ml/L and Urea – 0.5g /L + ZnSO₄– 0.5g/L + FeSO₄ – 0.5g/L+ Provex 200-0.5g/L+ Imidachloprid -0.5ml/L has conducted properly in glass house with sugarcane variety CoS 13235 compared to untreated setts. The result found more

impressive particularly in the case of settling vigour and germination. Another hormone was also used for the validation of STD.

General observations: Overall crop growth was excellent and fields were found weed free. Smut, wilt, pokkah boeng, knife cut, mosaic, leaf fleck (Sugarcane bacilliform virus), YLD observed during visit in natural condition.

3. G.B. Pant University of Agriculture & Technology, Pantnagar (Uttarakhand)

Monitoring team visited farm of Pantnagar, (Uttarakhand) on 18 November, 2021. All the experiments except PP 33 were conducted properly as per AICRP (S) norms. Concerning scientist was not available during visit. Crop condition was found poor and entire crop lodged during visit.

PP 17 (A, B, C, D, F): Evaluation of zonal varieties for resistance to red rot, smut, wilt, YLD

The experiment was planted on March, 2021 with zonal entries along with checks of five trials. Experiment condition was found poor and lodged condition during visit. Inoculation was done in August 2021 with CF 08 and CF 13 pathotypes by plug and nodal method of inoculation. Smut, Wilt, pokkah boeng and YLD were not demonstrated during visit.

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

Survey works were conducted during the schedule time and red rot, smut were reported in various sugar factory areas. Data was not compiled.

PP 33: Management of YLD through meristem culture

Experiment was allotted and not conducted during the season.

General observations: All experimental field sanitation was found poor in condition. One experiment was not conducted.

4. Sugarcane Research Station (UPCSR), Muzaffarnagar (U.P.)

Monitoring team visited Muzaffarnagar farm on 19 December, 2021. No any experiments of Plant Pathology were allotted by AICPR (S) at SRS, Muzaffarnagar. General observation was recorded in IVT and AVT entries of all zonal trials. Natural incidence of smut, pokkah boeng, GSD, SCMV, SCBV, YLD were noticed on various entries such as CoS 17234, CoPant 7223, CoLk 17204, CoS 17233, Co 16030, CoS 16232, Co 18021 (Wilt), Co 16029 (Wilt), Co 15025 (Wilt).

5. C.C.S. Haryana Agricultural University Regional Research Station, Uchani, Karnal (Haryana)

Monitoring team visited farm of RRS, Uchani, Karnal (Haryana) on 20 November, 2021. All the assigned experiments were conducted properly as per AICRP (S) norms in field no. 67 and 85 and field sanitation was found excellent in condition.

PP 14: Identification of pathotypes of red rot pathogen

PP 14 (A): Maintenance of isolates of red rot pathogen

Twenty recommended differentials were planted on March 12, 2021 (Ten rows of each differentials) and inoculated with designated isolates (CF 01, CF 02, CF 03, CF 07, CF 08, CF 09, CF 11 and CF 13). Experiment condition was found good and weed free. Newly collected six isolates (RR 49- RR 57) of red rot collected from different sugar mill zone area of Haryana, inoculated in the last week of August 2021 by plug method as stated by concerning scientist. Observation was not taken during visit. Data compilation works are being in progress.

PP 17 (A): Evaluation of zonal varieties for resistance to red rot

All the entries (IVT& AVT) along with six checks were planted on Feb 28 to March 2, 2021 as per AICRP norm. Experiment condition was found good, labelled and weed free. All entries were inoculated by plug and nodal cotton swab methods with CF 08 and CF 13 in the last week of August 2021. Experiment was not harvested during visit.

PP 17 (B): Evaluation of zonal varieties for resistance to smut

All genotypes (IVT & AVT) along with six checks were planted on March 06-08, 2021 with two replications. Data was recorded as AICRP (S) norms fortnightly. Smut was observed in several varieties which includes CoPb 18181, CoLk 14201 Co 18021, Co 18022, CoS18233, CoS 17234, CoPb 17215, CoLk 19202, CoPb 19181 , CoS 19235, Co 0238 and CoPant 97222. Overall expression of disease was very good and experiment is good in condition.

PP 17 (D): Evaluation of varieties against yellow leaf disease

Yellow leaf disease severity data was taken one time in all entries of five trials (IVT & AVT). Yellow leaf disease was noticed in several varieties ranging from traces to severe incidence till date. Some of them are CoPb 18211, Co 15025, Co Pant 18221, CoS 18231, Co17018, CoLk 17204, CoPb 17215, Co Pant 17233, CoS 767, CoH 17262, CoS 16232, CoPb16181 CoJ 64, Co 18021. Overall experiment and expression of disease was in excellent condition.

PP 17 (F): Evaluation of zonal varieties for resistance to pokkha boeng

Experiment of pokkah boeng conducted properly as per AICRP norms. Pokkha boeng incidence was recorded timely as AICRP. Pokkah boeng disease was observed in several entries from traces to severe form. Some of them includes CoS 17232, Co 15025, CoJ 64, Co 0238, Co 18022, Co Pant 97222, CoLk 16201, CoLk 18203, CoPb 18213, CoPb 18214, CoS 18231, CoS 18232, CoLk 17204, CoS 17234, CoS 17235, CoPant 17233.

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

Survey was conducted in various mill zones of Haryana during pre and monsoon seasons. Red rot was reported on varieties Co 0238, Co 89009 and CoJ 85 in different sugar mill zone Top rot was also reported on CoH 152, CoJ 85, CoH 160, CoH 119 and Co 0238 in

various sugar mill zone. Severe incidence of smut was reported on Co 0238, Co 0239, Co 89003, CoH 167, CoH 160, Co 0118 and CoH 119 also affected by this disease. Wilt was reported in Co 05011, Co 89003, Co 15023 in four sugar mills zone. Other minor diseases like GSD, pokkah boeng, eye spot and SCMV were reported on various varieties from almost all the sugar mill zone of Haryana. Several disease problems were also observed through whatsapp and video messages sent by farmers during Covid pandemic and lockdown from different sugar mills will also be compiled. Observations are still going on and yet to be compiled.

PP 23: Assessment of elite and ISH genotypes for resistance to red rot

Twenty four ISH/IGH genotypes were planted on March 10, 2021 and were inoculated with CF 08 and CF 13 by plug method in the last week of August 2021. Experiment found in excellent condition during visit. Data compilation works are being in progress.

PP 31: Screening, epidemiology and management of *pokkah boeng* in sugarcane

Pokkah boeng was reported in Co 0238, CoH 119 were taken for study as stated by concerning scientist. This disease was correlated with climate conditions. Management experiment was planted on March 31, 2021 with 3 replications. Overnight cane soaking with carbendazim and foliar sprays with carbendazim was reported better for controlling *pokkah boeng* and also increase germination.

PP 33: Management of YLD through meristem culture

This experiment was conducted in collaboration with CPB/BMB, CCSHAU Hisar as told by concerning scientist. Varieties CoH 160, Co 0118, CoH 119 and Co 15023 were raised through meristem culture. These varieties were planted in the field at CCS, RRS Karnal in February 2021. Observations are being in progress.

PP 34: Efficient delivery of fungicides and other agro inputs to manage major fungal diseases in sugarcane

This experiment for the management of red rot, smut, wilt and also settling growth has been conducted with prescribes treatments of AICRP (S) on 31.03.2021. Mechanize sett treatment of canes was done at SBI Regional Station Karnal. The varieties such as CoJ 64, Co 0238 and Co 05011 were selected for red rot, smut and wilt experimentation, respectively. Uchani center has also procured set treatment device (STD). Experiment found in good condition

General observations: Smut was observed on various entries in ratoon of breeding trial during visit. Wilt, mosaic and YLD were also observed during visit.

6. ICAR- Sugarcane Breeding Institute, Regional Centre, Karnal (Haryana)

Monitoring team visited farm of SBI-RC, Karnal (Haryana) on 20 November, 2021. All the allotted experiments were conducted properly as AICRP (S) norms and field sanitation was found good in condition.

PP 14: Identification of pathotypes of red rot pathogen**PP 14 (A): Maintenance of isolates of red rot pathogen**

Twenty host differentials were planted on 25 February, 2021 as per AICRP norm and inoculation was done with 8 existing pathotypes and 7 new isolates on 10 August, 2021 by plug method. All the isolates and pathotypes were maintained properly. Data evaluation was done on 11.10.2021. Data compilation work is being in progress.

PP 17 (A): Evaluation of zonal varieties for resistance to red rot

Experiment was planted on 26 February, 2021 with thirty nine zonal entries with eight checks. Inoculation was done on 11-12 August, 2021 by using CF 08 and CF 13 pathotypes by plug and nodal method of inoculation. All entries were harvested for data evaluation on 12.10.2021. The entries such as CoPb 18211, CoPb 18212, CoPant 18221 and CoPb 16181 reported susceptible to CF 08. The other entries such as CoPb 18212, CoH 17262 and CoPant 18221 were noticed susceptible to CF 13 by both plug and nodal cotton swab method of inoculation. Trial condition found good. Data compilation work is being in progress.

PP 17 (D&F): Evaluation of varieties/genotypes against yellow leaf disease and pokkah boeng

The incidence of Yellow leaf disease and pokkah boeng was done in zonal trials. Data compilation work is being in progress.

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

Survey works were conducted in various sugar mill zones of Haryana, and UP states. Data compilation work is being in progress.

PP 23: Assessment of elite and ISH genotypes for resistance to red rot

Total of thirty two clones were planted on 27.02.2021 for red rot resistance. Inoculation was done on 10.08.2021 by using CF 08 and CF 13 by plug method of inoculation. Data evaluation was done on 13.10.2021. Data compilation work is being going on.

PP 34: Efficient delivery of fungicides and other agro inputs to manage major fungal diseases in sugarcane

This experiment for red rot management was allotted and conducted properly as AICRP (S) norms at center. Variety Co 0238 was planted on 13.03.2021 with four replications. Data compilation work is being going on.

7. Punjab Agricultural University, Regional Research Station, Kapurthala (Punjab)

Monitoring team visited farm of PAU, RRS, Kapurthala (Punjab) on 21 November, 2021. All the allotted experiments were conducted properly as AICRP (S) norms. Field observed weed free condition during visit.

PP 14: Identification of pathotypes/races in red rot pathogen**PP 14 (A): Maintenance of isolates of red rot pathogen**

All twenty differentials were planted in February, 2021 as AICRP norm. Inoculation was done on 18 August, 2021 with five designated isolates such as CF 01, CF 07, CF 08, CF 09 and CF 13 and ten newly collected isolates from CoJ 85, CoJ 88, Co 89003 and Co 0238

as stated by concerning scientist. Experimental crop and lay out condition was found good and weed free. Observation had been taken and compilation works are being in progress.

PP 17 (A): Evaluation of zonal varieties for resistance to red rot

Total forty entries were planted in February, 2021 and inoculation was done on 23 August, 2021 with CF 08 and CF 13 pathotypes individually by plug and nodal method of inoculation. Observation had been taken and data compilation work is being in progress.

PP 17 (B): Evaluation of varieties against smut disease

Forty entries of six trials were planted in February, 2021 for smut testing and it was weed free. Data for smut was recorded fortnightly, as stated by concerning scientist. Smut was reported in CoLk 18203, CoPb 18213, CoS 18233, CoPb 18181, CoLk 17204, CoS 17232, CoLk 14201, Co 16030, CoPant 97222, CoS 767, CoJ 64 and Co 0238 by concerning scientist. Data compilation work is in progress.

PP 17 (C, D, F): Evaluation of varieties against wilt, YLD, pokkah boeng

Total forty entries were planted in February, 2021 in respective field. Germination data was recorded after 45 days. The incidence of Yellow leaf disease, pokkah boeng was done in all forty zonal entries. Various entries were found affected by YLD and pokkah boeng as reported by concerning scientist. Data compilation of all three diseases is being in progress.

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

Survey works were conducted in sixteen sugar mill zones. Red rot was reported on variety CoJ 64, CoJ 85, CoJ 88, Co 89003 and Co 0238 from various sugar factory zones. Smut was reported in plant and ratoon crop of Co 0238. Wilt was reported on Co 89003 from various sugar mill areas. *Pokkah boeng* were also reported on Co 0238, Co 0118, Co 89003, CoPb 92 and CoPb 93 at stated by concerning scientist. Red stripe reported on CoJ 85 and CoPb 93. Data compilation works are in progress.

PP 23: Assessment of elite and ISH genotypes for resistance to red rot

Total of forty three clones including near commercial hybrids, ISH, IGH, water logging tolerant clones were planted in March, 2021 and inoculated on 27 August, 2021 with CF 08 and CF 13 by plug method of inoculation. Data compilation work is going on.

PP 31: Screening, epidemiology and management of *pokkah boeng* in sugarcane

All the zonal entries along with checks were screened for pokkah boeng. Weather parameters had been taken for experimentation. The trial on management of *pokkah boeng* was planted on March, 2021 with four replications as AICRP norm. Data was not compiled.

PP 34: Efficient delivery of fungicides and other agro inputs to manage major fungal diseases in sugarcane

The experimental trials of management of red rot, smut, wilt and effect of delivery of agro inputs to improve settling vigour were planted in March, 2021 as AICRP (S) norms. Data recorded regularly and compilation work is in progress.

General observations: Natural incidence of smut was noticed. Minor diseases i.e. YLD, leaf fleck (*Sugarcane bacilliform virus*), mosaic were also notice at Kapurthala (Pb).

8. Punjab Agricultural University, Regional Research Station, Gurdaspur (Pb)

Monitoring team visited farm of Gurdaspur on 22 November, 2021. Plant Pathology experiment was not assigned at RRS, Gurdaspur. General observation was recorded in IVT and AVT entries of all zonal trials. Natural incidence of smut, wilt, YLD, pokkah boeng, SCMV was observed on various entries. Trial condition found good and weed free condition.

9. Punjab Agricultural University, Regional Research Station, Faridkot - 151 203 (Pb)

Monitoring team visited farm of Faridkot on 23 November, 2021. Plant Pathology experiment was not assigned by AICRP (S) at RRS, Faridkot. General observation was recorded in IVT and AVT entries of all zonal trials. Natural incidence of smut, wilt, YLD, pokkah boeng, SCMV, GSD, knife cut, was observed on various entries at Faridkot. Trial condition found good and weed free condition.

10. Agricultural Research Station (SKRAU, Rajasthan), Sri Ganganagar–335001 (Raj)

Date of monitoring: 23 November, 2021 (Tuesday)

Monitoring team visited Sri Ganganagar farm on 23 November, 2021. Plant Pathology experiment was not allotted by AICRP (S) at this centre. General observation was recorded in IVT and AVT entries. Natural incidence of smut, wilt, pokkah boeng, GSD, SCMV, YLD, leaf fleck (*Sugarcane bacilliform virus*), knife cut were also noticed at Sri Ganganagar.

11. Agricultural Research Station (AU, Kota), Ummedganj, Kota–324001 (Rajasthan)

Date of monitoring: 24 November, 2021 (Wednesday)

Monitoring team visited farm of ARS, Kota on 24 November, 2021. Plant Pathology experiment was not allotted by AICRP (S) at this centre. General observation was recorded in IVT and AVT entries. Severe incidence of smut and GSD were notice at this centre in zonal trials during visit. Natural incidence of smut, wilt, leaf fleck (*Sugarcane bacilliform virus*), YLD, mosaic, GSD, pokkah boeng, knife cut and mosaic were also notice on most of the entries at Kota.

Note: All the allotted trials were conducted by the **Shahjahanpur, Uchani, Kapurthala** and **Karnal** centres as per the Technical program of AICRP (S) and found excellent maintenance with proper layout and weed-free condition.

(D) Entomology

Allotment and conduct of Entomology trials at different centers in North West Zone

Trial	Lucknow	Shahjahanpur	Pantnagar	M. nagar	Karnal	Uchani	Kapurthala	Faridkot/Gurdaspur	Sriganganagar	Kota
E. 4.1	A/C	A/C	NA	NA	A/C	NA	NA	NA	NA	NA
E. 28	A/C	A/C	NA	NA	A/C	NA	NA	NA	NA	NA
E. 30	A/C	A/C	NA	NA	A/C	NA	NA	NA	NA	NA

E. 34	A/C	NA	NA	NA	NA	NA	NA	NA	NA	NA
E. 41	A/C	A/C	NA	NA	A/C	NA	NA	NA	NA	NA

A/C: Allotted and conducted;

NA: Not Allotted

Sr. No.	Name of the centre & Date of Visit	Expt. No.	Description	Remarks
1	ICAR-IISR, Lucknow, UP 16.11.2021	E 4.1	Evaluation of zonal varieties/genotypes for their reaction against major insect-pest. Date of planting- 15.03.2019 No of Genotypes -33 Replication -3 Design- RBD Plot size- 5.4 m x 5 m =27.0 m ² Date planting: 03.0.2021	<ul style="list-style-type: none"> Experiments conducted nicely as per technical programme. Crop maintenance was good.
		E 28	Survey and surveillance of sugarcane insect-pest.	Surveyed insect pests conducted.
		E 30	Monitoring of insect-pests and bio-agents in sugarcane agro-ecosystem. Plot size: 0.02 acre Variety- Co 0238, CoLk 11203 and CoLk 11206 Date planting: 13.10.2020	<ul style="list-style-type: none"> Experiments conducted nicely as per technical programme. Crop maintenance was good.
		E 34	Standardization of simple and cost effective techniques for mass multiplication of sugarcane bio-agents.	<ul style="list-style-type: none"> <i>Development of simple and cost effective mass-multiplication techniques of promising bio-agents; Tetrastichus howardi, Trichogramma chilonis. T.japonicum, Cotesia flavipes is under progress.</i>
		E 41	Assessment of yield losses caused by borer pests of sugarcane under changing climate scenario. Date of planting- 13.10.2021 Variety- CoLk 94184 Plot size – 0.25 acre Treatment -2	<ul style="list-style-type: none"> Experiments conducted nicely as per technical programme. Crop maintenance was good.

2	Shahjahanpur, UP U.P. Council of Sugarcane Research, Shahjahanpur– 242001 17.11.2021	E 4.1	Evaluation of zonal varieties/genotypes for their reaction against major insect-pest. Date of planting- 28.02.2021/02.03.2021 No of Genotypes -35 Replication -3 Design- RBD Plot size- 6.0m X0.8 m X 4 R	<ul style="list-style-type: none"> Experiments conducted nicely as per technical programme. Crop maintenance was good.
		E 28	Survey and surveillance of sugarcane insect-pest.	Surveyed insect pests of sugarcane (as reported).
		E 30	Monitoring of insect-pests and bio-agents in sugarcane agro-ecosystem. Variety- UP 05125 Plot size: 0.02 acre	<ul style="list-style-type: none"> Experiments conducted nicely as per technical programme. Crop maintenance was good.
3	ICAR-SBI, RC, Karnal 20.11.2021	E 4.1	Evaluation of zonal varieties/genotypes for their reaction against major insect-pest. Date of planting- 26.02.2021 No of Genotypes -29 Replication -3 Design- RBD Plot size- 6.0m X0.8 m X 3 R	<ul style="list-style-type: none"> Experiments conducted nicely as per technical programme. Crop maintenance was good.
		E 28	Survey and surveillance of sugarcane insect-pest.	Surveyed insect pests of sugarcane (as reported).
		E 30	Monitoring of insect-pests and bio-agents in sugarcane agro-ecosystem. Variety- 15023 Plot size: 0.02 acre Date planting: 25.02.2021	<ul style="list-style-type: none"> Experiments conducted nicely as per technical programme. Crop maintenance was good.
		E 41	Assessment of yield losses caused by borer pests of sugarcane under changing climate scenario. Date of planting- 25.02.2021 Variety- Co 15023 Plot size – 0.25 acre Treatment -2	<ul style="list-style-type: none"> Experiments conducted nicely as per technical programme. Crop maintenance was good.

The monitoring team expresses sincere thanks to all the Station In charge & their team for the facilities extended during the visit. We are also thankful to Dr. A.D. Pathak, Project Coordinator, AICRP (Sugarcane), ICAR-Indian Institute of Sugarcane Research, Lucknow for constituting the team, inspiring guidance and support.

Monitoring Team Report of North Central & North Eastern Zones (Crop Season 2021-22)

The monitoring team comprising one Breeder, a Plant Pathologist, an Entomologist, & a Chief Technical Officer constituted by the Project Coordinator, AICRP on Sugarcane *vide* F.No.12-11(M)/2021-PCS, dated, 20th November 2021 for the assessment of performance of AICRP on sugarcane trials at both regular as well as voluntary centres of North West Zone with the following scientists.

Sl. No.	Name, Designation & Address of the Members	
1	Dr. K. N. Mandal Breeder Sugarcane Research Station, Bethuadahari	Team Leader
2	Dr. Md. Minnatullah Plant Pathologist SRI, Pusa	Member
3	Dr. Vinay Mishra Entomologist GSSBRI, Seorahi	Member
4	Shri Adil Zubair Chief Technical Officer Coordination Unit ICAR-IISR, Lucknow	Facilitator

The team assembled at GSSBRI, Seorahi on December 02, 2021 and subsequently visited and monitored the AICRP (Sugarcane) regular as well as voluntary centres i.e, Seorahi, Motipur, Pusa, Bethuadahari and Buralikson from 02.12.2021 to 10.12.2021.

1. **G.S. Sugarcane Breeding & Research Institute, Seorahi, Kushinagar (U.P):** The Centre has laid out all the trials allotted to the Centre which includes Breeding, Agronomy, Entomology and Plant Pathology. Overall the trails were very good. However, little more attention is required for weed management and maintenance of plant population.
2. **ICAR-IISR Regional Centre, Motipur, Muzaffarpur, Bihar:** The Centre has laid out all the trials allotted which include trials of Breeding and Plant Pathology. Overall the trials were Excellent. Fields were well maintained, weed free and the crop growth was very good with good plant population and dark green canopy.
3. **Sugarcane Research Institute (Rajendra Prasad Central Agricultural University), Pusa, Bihar:** The Centre has laid out all the trials of Breeding, Agronomy, Plant Pathology and Entomology. Overall the trails were good. Little more attention is required for management and maintenance of plant population and growth. In this research centre

in Entomology discipline all trials were planted within the month of December which is too early according to the AICRP(S) guideline. The Entomologists were suggested to plant after the finalization of entries during “Breeders and Plant Pathologists Meet”.

4. **Sugarcane Research Station, Bethuadahari, West Bengal:** This is the only Centre in West Bengal fulfil the needs of sugarcane farmers in the State. The Centre functions under Department of Agriculture, Government of West Bengal. Logistic support from the Department of Agriculture for research is nominal. Since this is the only Centre carrying out sugarcane research in the state, the Centre needs strong financial and technical support for enhancing sugarcane production and productivity in the state. The only Sugar factory (Khaitan Sugar Factory) is closed now. For this reason, sugarcane cultivation has been decreasing day by day inspite of high productivity and good quality. The Centre has laid out all the trials of plant breeding and one trial of agronomy. Overall the trails were good.
5. **Sugarcane Research Station, Buralikson, Assam:** The Centre has laid out all the trials of Breeding and two trials of Pathology. Heavy weed population in some of the trials hampers the expression of genetic potential of the genotypes. In this centre all the breeding trials were planted in 3rd to 4th week of the month of March. Plant growth was not satisfactory in some of the breeding trials. In this centre the Entomologist express her willingness to conduct entomological trials. The monitoring team suggested to provide entomological trials for this centre with technical support.

A. Crop Improvement

Specific Remarks

- Breeding trials at all locations were laid out as per the technical programmes.
- The overall comparative rating of the Centres with respect to various trials is: **Excellent** at Motipur, **Very Good** at Seorahi, Pusa and Bethuadahari, **Good** at Buralikson centre. The Monitoring Team suggested to the Buralikson centre by lifting adequate seed materials from Multiplication centre well in time.
- The rating of entries in individual trial / Centre is as follows:

1. Overall Grading of Trials

Trials/ Centre	Seorahi	Motipur	Pusa	Bethuadahari	Buralikson
IVT (Early)	Very good	Excellent	Good	Good	Very Good
AVT(Early) I Plant	Very good	Excellent	Very good	Very good	Good
AVT (Early) II Plant	Very Good	Excellent	Very good	Very good	Good
AVT (Early) Ratoon	Good	Very good	Very good	Good	Good
AVT (Midlate) I Plant	Very good	Excellent	Very good	Good	Good
AVT (Midlate) II Plant	Very good	Excellent	Very good	Good	Good
AVT (Midlate) Ratoon	Good	Very good	Very good	Good	Good
ISH/IGH(Normal)	Not allotted	Very good	Very good	Not allotted	Not allotted
ISH/IGH (Water logging)	Not allotted	Very good	Very good	Not allotted	Not allotted
Remarks / Pest and Disease	Yellow leaf disease was noticed in entries CoSe 15453, CoP 17441, CoP 16437, CoBln 16502 and CoSe 01421. While Pokkah boeng, leaf spots and mosaic diseases were observed in traces in entries var. CoSe 01421 & entry CoBln 16502	Entries CoSe 16451, CoSe 17451 and CoSe 18452 were observed affected with wilt and YLD diseases in few clumps. Entries CoSe 17451, CoP 17440, CoP 18438 and CoSe 16452 were noticed with mosaic and leaf spot diseases. Yellow leaf disease, wilt and leaf spot diseases were observed in CoBln 16502	In CoLk 94184, CoSe 95422 & CoBln 16502 YLD observed. PBD noticed at CoLk 94184 & CoSe 01421. Wilt is noticed in CoBln 16502	Leaf spot, YLD and PBD diseases were noticed in CoLk 94184 and CoSe 16454. Top borer and plassey borer were noticed in many entries.	Leaf spot disease was observed in entries CoP 16436, CoBln 16501 and CoLk 16468. The entries CoLk 16466, CoLk 94184 were also affected with YLD and leaf spot diseases.

*Scoring of the trial was based on (i) whether the trial was conducted as per the technical programme and (ii) general growth and maintenance of the trial.

2. PERFORMANCE OF ENTRIES IN EACH TRIAL

2.1 Initial Varietal Trial (Early)

Entry / Locations	Seorahi	Motipur	Pusa	Bethuadahari	Buralikson	Other information
CoP 18436	Very good	Excellent	Average	Very good	Good	
CoP 18437	Good	Excellent	Average	Good	Very good	
CoP 18438	Very good	Excellent	Good	Very good	Average	
CoSe 18451	Very good	Excellent	Average	Average	Good	Flowering at Bethuadahari centre
CoSe 18452	Very good	Very good	Poor	Very good	Good	
Standards CoLk 94184	Excellent	Excellent	Good	Very good	Good	
CoSe 95422	Very good	Excellent	Good	Average	Excellent	
CoSe 01421	Good	Excellent	Good	Very good	Good	
Overall Performance of the Experiment	Very good	Excellent	Good	Good	Good	

2. 2 AVT (Early)-I Plant

Entry / Locations	Seorahi	Motipur	Pusa	Bethuadahari	Buralikson	Other information
CoSe 16454	Good	Excellent	Very good	Very good	Good	
CoSe 17451	Very good	Excellent	Very good	Very good	Very good	
CoP 17436	Very good	Excellent	Good	Very good	Good	
CoP 17437	Very good	Excellent	Very good	Very good	Very good	
CoP 17438	Good	Excellent	Very good	Very good	Good	
CoP 17440	Good	Excellent	Excellent	Very good	Good	
CoP 17441	Good	Excellent	Good	Very good	Good	
Standards CoLk 94184	Excellent	Excellent	Very good	Very good	Good	
CoSe 95422	Very good	Excellent	Very good	Poor	Very good	
CoSe 01421	Very good	Excellent	Good	Very good	Average	
Overall Performance of the Experiment	Very good	Excellent	Very good	Very good	Good	

2.3 AVT (Early)-II Plant

Entry / Locations	Seorahi	Motipur	Pusa	Bethuadahari	Buralikson	Other information
CoP 16437	Very good	Excellent	Very good	Very Good	Very Good	Thick cane
CoP 16438	Average	Excellent	Very good	Very good	Good	Lodging
CoLk 16466	Excellent	Excellent	Very good	Very good	Average	Dwarf at Buralikson centre
CoLk 16468	Good	Very good	Very good	Good	Good	
CoSe 16451	Good	Excellent	Good	Very good	Average	Poor plant population at Pusa centre
Standards CoLk 94184	Excellent	Excellent	Very good	Very good	Average	
CoSe 95422	Very good	Excellent	Very good	Poor	Very good	
CoSe 01421	Good	Excellent	Very good	Very good	Good	
Overall Performance of the Experiment	Very Good	Excellent	Very good	Very good	Good	

2.4 AVT (Early)-Ratoon

Entry / Locations	Seorahi	Motipur	Pusa	Bethuadahari	Buralikson	Other information
CoP 16437	Good	Very good	Excellent	Good	Good	
CoP 16438	Good	Good	Very good	Very good	Good	
CoLk 16466	Very good	Very good	Very good	Very good	Good	
CoLk 16468	Good	Very good	Good	Good	Good	Poor plant population at Seorahi & Buralikson
CoSe 16451	Good	Good	Good	Very good	Poor	
Standards CoLk 94184	Excellent	Excellent	Very good	Very good	Good	
CoSe 95422	Very good	Very good	Good	Poor	Very good	
CoSe 01421	Good	Very good	Good	Good	Poor	
Overall Performance of the Experiment	Good	Very good	Very good	Good	Good	

2.5 AVT (Mid-late)-I Plant

Entry / Locations	Seorahi	Motipur	Pusa	Bethuadahari	Buralikson	Other information
CoP 17446	Very good	Excellent	Good	Good	Good	Short plant height at Buralikson centre
CoSe 16455	Very good	Excellent	Very good	Good	Very Good	Flowering at Pusa centre
CoSe 17452	Very good	Very good	Good	Good	Average	Short plant height at Buralikson centre
Standards BO 91	Very good	Excellent	Excellent	Good	Very good	Best Standard
CoP 9301	Very good	Excellent	Average	Good	Good	
CoP 06436	Excellent	Excellent	Very good	Good	Average	In water logging condition perform well at Pusa centre & plant height is very short at Buralikson centre
Overall Performance of the Experiment	Very good	Excellent	Very good	Good	Good	

2.6 AVT (Mid-late)-II plant

Entry / Locations	Seorahi	Motipur	Pusa	Bethuadahari	Buralikson	Other information
CoP 16439	Very good	Excellent	Excellent	Good	Good	
CoLk 16470	Very good	Excellent	Excellent	Good	Good	
CoSe 16452	Good	Excellent	Good	Very good	Average	Lodging at Pusa and poor plant population at Seorahi. Plant height is very short at Buralikson
CoBln 16502	Average	Good	Good	Poor	Very good	Lodging across the centres except Buralikson
Standards BO 91	Good	Excellent	Excellent	Good	Good	
CoP 9301	Very good	Excellent	Good	Good	Very good	
CoP 06436	Excellent	Excellent	Very good	Very good	Average	
Overall Performance of the Experiment	Very good	Excellent	Very good	Good	Good	

2.7 AVT (Mid-late)-Ratoon

Entry / Locations	Seorahi	Motipur	Pusa	Bethuadahari	Buralikson	Other information
CoP 16439	Good	Very good	Very good	Very good	Poor	
CoLk 16470	Good	Very good	Very good	Good	Very good	
CoSe 16452	Good	Very good	Very good	Very good	Good	
CoBln 16502	Average	Good	Average	Poor	Good	
Standards BO 91	Good	Very good	Very good	Good	Good	
CoP 9301	Good	Very good	Good	Good	Good	
CoP 06436	Very good	Excellent	Good	Very good	Average	
Overall Performance of the Experiment	Good	Very good	Very good	Good	Good	

2. 8. Evaluation and identification of climate resilient ISH & IGH genetic stocks (Normal Condition):

Clone / Locations	Motipur	Pusa	Other information
ISH 501	Excellent	Good	
ISH 502	Very good	Very good	
ISH 512	Excellent	Very good	
ISH 519	Very good	Good	Flowering at Pusa centre
ISH 524	Excellent	Very good	
ISH 534	Very good	Very good	
ISH 536	Very good	Very good	
ISH 548	Excellent	Good	Flowering at Pusa centre
ISH 567	Good	Good	Thin cane with profuse flowering at Pusa centre & lodging at Motipur
ISH 584	Good	Very good	Flowering at both the centres
ISH 585	Very good	Good	
ISH 587	Good	Very good	
ISH 590	Very good	Very good	
ISH 594	Very good	Very good	
IGH 823	Very good	Very good	Lodging at Motipur centre
IGH 829	Good	Very good	Flowering at Motipur centre
IGH 833	Good	Good	Thin cane with profuse flowering at Pusa centre
IGH 834	Very good	Very good	
BO 154		Very good	
BO 91	Good	Very good	
CoSe 95422		Average	
Overall Performance of the Experiment	Very good	Very good	

2. 9. Evaluation and identification of climate resilient ISH & IGH genetic stocks (Water logging Condition):

Clone / Locations	Motipur	Pusa	Other information
ISH 501	Good	Average	
ISH 502	Good	Very good	
ISH 512	Good	Good	
ISH 519	Good	Good	
ISH 524	Good	Average	
ISH 534	Very good	Good	
ISH 536	Good	Very good	
ISH 548	Very good	Good	Flowering at Pusa centre
ISH 567	Good	Good	Flowering at Pusa centre and lodging at Motipur centre
ISH 584	Very good	Very good	Flowering at Motipur centre
ISH 585	Poor	Poor	
ISH 587	Good	Very good	
ISH 590	Very good	Very good	
ISH 594	Good	Average	
IGH 823	Very good	Good	
IGH 829	Good	Very good	
IGH 833	Very good	Good	
IGH 834	Very good	Good	Flowering at Motipur centre
BO 154		Good	
BO 91		Very good	
CoSe 95422		Average	
Overall Performance of the Experiment	Very good	Very good	

B. Crop Production

1) Centre-wise status of trials allotted and conducted

Experiment No& Title	AS-72	AS-73	AS-74	AS-75	AS-76
Seorahi	Conducted	Not Conducted	Not Conducted	Conducted	Not Conducted
Pusa	Conducted	Not Conducted	Not Conducted	Conducted	Conducted
Bethuadahari	Not Conducted	Not Conducted	Not Conducted	Not Conducted	Conducted

2) Salient observations:

AS-72: Agronomic performance of elite sugarcane genotypes

This experiment was conducted at two centres only.

- At Seorahi centre, among different early maturing genotypes CoSe 16451 performed best followed by CoLk 16466, CoP 16437, CoLk 16468 and CoP 16438. Similarly, among **mid-late group** CoLk 16470, CoSe 16452 performed better followed by CoP 16439 and CoBln 16502.
- The performance of different genotypes improved with use of 125% RDF in comparison to 100% RDF in both the maturing group of genotypes.
- At Pusa centre, among **early maturing genotype** CoP16438 performed best followed by CoP 16437, CoSe 16451 and CoSe 95422. In case of fertility level in early genotypes, 125% RDF was observed better than 100% fertility level. Similarly, among **mid-late group**, CoLk 16470 performed best followed by CoBln 16502 and CoSe 16452. Among fertility level, 125% RDF was better than 100% fertility level

AS-75: Precision nutrient management through rescheduling time of application for widely spaced sugarcane plant- ratoon system

This experiment was conducted at two centres only.

- At Pusa centre, Band placement of fertilizer performing better. RDN + RDK in seven splits (Basal 10% remaining at 45, 75, 90, 120, 150 and 180 DAP in equal splits) performed better followed by RDN + RDK in six splits (Basal 10% remaining at 45, 75, 90, 120, 150 and 180 DAP in equal splits).
- At Seorahi centre, application of RDN+RDK in seven splits (Basal 10% remaining at 45, 75, 90, 120, 150 and 180 DAP in equal splits) through band placement treatment is performing best followed by application of RDN+RDK in six splits (Basal 10% remaining at 45, 75, 90, 120, 150 and 180 DAP in equal splits).
- Band placement mode of fertilizer application is performing best as compared to broad casting mode of fertilizer application in both the centres..

AS-76: Evaluating efficacy of PSAP for enhancement of sugarcane growth, yield and quality (Sponsored trial)

This experiment was conducted at two centres only.

- At Pusa centre, recommended N, 50% P and 50% K + sett soaking with 0.8% PSAP solution + foliar spray of PSAP @ 0.4, 0.65, 1.10 and 1.10% at 60, 80, 100 and 120 DAP (**T₁₀**) performed better which was followed by recommended N, 50% P and 50% K + sett soaking with 0.8% PSAP solution + foliar spray of PSAP @ 0.4, 0.65 and 1.10 % at 60, 90 and 120 DAP (**T₉**).
- Variety: CoP 16437
- At Bethuadahari centre, recommended N, 50% P and 50% K + sett soaking with 0.8% PSAP solution + foliar spray of PSAP @ 0.4, 0.65, 1.10 and 1.10% at 60, 80, 100 and 120 DAP (**T₁₀**) performed better which was followed by recommended N, 50% P and 50% K + sett soaking with 0.8% PSAP solution + foliar spray of PSAP @ 0.4, 0.65 and 0.80 % at 60, 90 and 120 DAP (**T₈**).
- Variety : CoLk 94184

Rating of the agronomy experiments conducted by the Centres of North Central and North-Eastern zones

Centres	Experiments (allotted and conducted)				
	AS-72 (Early & Mid-late)	AS-73	AS-74	AS-75	AS 76
Seorahi	Good	Not Conducted	Not Conducted	Good	Not Conducted
Pusa	Excellent	Not Conducted	Not Conducted	Good	Good
Bethuadahari	Not Conducted	Not Conducted	Not Conducted	Not Conducted	Not Conducted

C. Plant Pathology

The following trails were allotted to the centres of North Central and North Eastern Zone.

- PP 14: Identification of pathotypes of red rot pathogen.
- PP 14 (a): Maintenance of pathotypes/ isolates of red rot pathogen.
- PP 17 A: Evaluation of zonal varieties for resistance to red rot
- PP 17 B: Evaluation of zonal varieties for resistance to smut
- PP 17 C: Evaluation of zonal varieties for resistance to wilt
- PP 17 D: Evaluation of zonal varieties for resistance to YLD
- PP 17 F: Evaluation of zonal varieties for resistance to pokkah boeng diseases
- PP 22: Survey of sugarcane diseases naturally occurring in the area on important Sugarcane varieties
- PP 23: Assessment of elite and ISH genotypes for resistance to red rot.
- PP 31: Screening, epidemiology and management of pokkah boeng in sugarcane.
- PP 34: Efficient delivery of fungicides and other agro inputs to manage major fungal diseases in sugarcane.

The different trials conducted by the centres are presented in the following table:

Sl. No.	Experiments	Seorahi	Pusa	Motipur	Bethuadahri	Buralikson
1.	PP 14 PP 14 (a)	C	C	NA	NA	NA
2.	PP 17 (A)	C	C	C	NA	C
	PP 17 (B)	C	C	NA	NA	NA
	PP 17 (C)	NA	C	NA	NA	NA
	PP 17(D)	C	C	C	NA	C
	PP 17(F)	C	C	C	NA	C
3.	PP 22	C	C	C	NA	C
4.	PP 23	C	C	NA	NA	NA
5.	PP 31	C	C	NA	NA	NA
6.	PP 34	C	NC	NA	NA	NA

C= Conducted, NC= Not conducted & NA= Not allotted

Name of the centre	Experiment No.	Description
1. Seorahi	PP 14 PP 14 (a)	<p>1. (PP-14): Identification of pathotypes of red rot pathogen.</p> <ul style="list-style-type: none"> ➤ Total No. of differentials planted : 20 ➤ Date of planting : 24& 25 /02/2021 ➤ Date of inoculation : 05–09/08/2021 ➤ Reference pathotypes : CF07, CF08& CF13 ➤ Used isolates : 26 Old and new isolates ➤ Methods of inoculation : Plug <p>Progress report : Twenty canes of each differential were inoculated with each isolate of red rot pathogen.</p> <p>2. PP-14 (a): Maintenance of pathotypes/ isolates of red rot pathogen.</p> <ul style="list-style-type: none"> ➤ Maintained pathotypes (08) : CF01, CF02, CF03, CF07, CF08, CF09, CF11, CF13 ➤ Maintained isolates(42) : (32 old +10 New)R2101Seo, R2102Seo,R2103Seo, R2104Seo, R2105Seo, R2106Seo, R2107Seo, R2108Seo, R2109Seo, R2110Seo were maintained and purified for further studies.
	PP 17 (A, B, D, F)	<p>3. PP-17 (A, B, D, F): Evaluation of zonal varieties for resistance to red rot, smut, YLD and pokkahboeng diseases.</p> <p>Total number of varieties planted : 15+ 06 Standards</p> <ul style="list-style-type: none"> ➤ AVT (E) : 07 ➤ AVT (M) : 03 ➤ IVT (E) : 05

		<ul style="list-style-type: none"> ➤ IVT (M) :00 ➤ Checks (E) : 03 (CoSe 95422, CoSe 01421, CoLk 94184) ➤ Checks (M) : 03 (BO 91, CoP 9301, CoP 06436) ➤ Red rot standard: CoJ 64 ➤ Smut standard : Co 1158 ➤ Date of planting : 28-02-2021 ➤ Date of smut inoculation : 28-02-2021 ➤ Date of red rot inoculation : 09 & 10-08-2021 ➤ Used reference pathotypes: CF07, CF08, CF13(Plug & NCS)
	PP 22	<p>4. PP-22: Survey of sugarcane diseases naturally occurring in the area on important sugarcane varieties.</p> <p>The situation of sugarcane diseases is alarming in eastern Uttar Pradesh during 2021-22 red rot disease was recorded in variety Co 0238 (10 to 100%) incidence in Ramkola, Seorahi, Khadha, Dhadha (Hata) and Captanganj, sugar factory zone and the affected areas 7455ha. Root rot (02 -100%) incidence affected areas 9818 ha and wilt (01 to 100%) incidence affected areas 1758 ha only Kushinagar districts followed by other districts of eastern UP more than 20% incidence recorded in CoS 08279, CoLk 94184, CoJ 88, CoSe 92423. Smut disease was recorded up to 01 to 20% on varieties viz. CoSe 11453, CoSe 08452 and Co 0238 in the Akabarpur, Babhanan, Balarampur, SiswaBajar, Peapraich, Chhatiyaon, Manakapur, Seorahi, Ramkola, Khadha, Tulsipur, Uttaraulla and Rudhaulli sugar factory zones. GSD was reported on almost all the sugarcane cultivars its incidence varied from (01 to 10%) in different varieties CoS 08279, CoS 08272, CoSe 11453, CoSe 08452, CoS 8436, CoLk 94184 and Co 0238 in the eastern UP. PokkahBoeng disease was reported (05 to 20%) incidence varied in varieties CoS 08279 and Co 0238 in all the eastern UP and other diseases viz. Pine apple, leaf scald, stinking rot, mosaic, leaf spots and YLD were also observed up to (01 to 5%) incidence in varieties Co 0118, CoSe 11453, UP 05125, CoS 91269, CoS 767, CoS 88230, CoS 8436, Co J 88, Co 98014 and Co 0238 in the eastern Uttar Pradesh.</p>
	PP 23	<p>5. PP-23: Assessment of elite and ISH genotypes for resistance to red rot.</p> <ul style="list-style-type: none"> ➤ Total Number of genotypes: 31/33 ➤ Date of planting : 27/02/2021 : ➤ Reference pathotype used : CF 07, CF 08, CF13 ➤ Date of inoculation : 20/08/2021 (By plug method only) ➤ Results: Under progress

	PP 31	<p>6. PP-31: Epidemiology and management of pokkah boeng in sugarcane.</p> <ul style="list-style-type: none"> ➤ Date of planting : 01& 2 /03/2021 ➤ No. of Varieties : 02 (CoS 08279 and Co 0238) <p>Treatments: 04</p> <ul style="list-style-type: none"> ➤ T-1: Sett treatment in STD with fungicide ➤ T-2: Foliar spray with Carbendazim-0.05% a.i. (3 Sprays at 15 days interval from 15thMay ➤ T-3: Sett treatment (T-1) + Foliar spray with Carbendazim (T-2) ➤ T-4: Control <p>Results: Under progress</p> <p>i. Epidemiology: The maximum disease incidence of pokkah boeng was observed during 1st fortnight of June and gradually increased till July to September due to high rainfall and humidity.</p> <p>Management of pokkah boeng: The result revealed that fungicide Carbendazim was significantly better in increasing germination and to manage the disease in comparison to control.</p>
	PP 34	<p>7. PP-34: Efficient delivery of fungicides and other agro inputs to manage major fungal diseases in sugarcane.</p> <ul style="list-style-type: none"> ➤ Date of planting : 03-05/03/2021 ➤ Susceptible variety : Co 0238 ➤ Treatment: 04 (T-1, T-2, T-3, T-4) ➤ Vacuum level : 200 mmHg (Sett treatment deviceSTD) <p>Used fungicide : Thiophanate methyl (0.1%), Carbendazim (0.1%), Propiconazole 0.4ml/lit</p>
2. SRI, Pusa	PP 14	<p>1. Experiment No. PP-14</p> <p>Title-Identification of Pathotypes of Red Rot Pathogen.</p> <p>Objectives: To gather information on the major pathotypes of red rot from different areas/zones.</p> <p>Date of planting: 17/02/2021</p> <p>Number of Differentials:10</p> <p>Isolates used: 07</p> <p>Pathotyopes: CF 07, CF 08 and CF 13</p> <p>Date of Inoculation: 01/09/2021</p> <p>Method –Plug</p> <p>Progress Report-10 canes of each differential was inoculated with each isolate of red rot pathogen. 13 sugarcane differentials were planted, out of 13 sugarcane differentials three differentials (CoC 671, Co 975 and CoJ 64) failed to germinate. Rest 10 differentials were inoculated with 7 isolates and 3 pathotypes (CF 07, CF 08 and CF 13)</p>

PP 17 (A)	<p>2. Experiment No. PP-17 (A) Title- Evaluation of zonal varieties for resistance to red rot disease. Objectives: To gather information on the relative resistance to red rot of the entries in pre zonal/ zonal varietal trails of the respective zones. Progress report- Date of planting: 22/02/2021 Varieties: 34 Check: 01 (CoSe 95422) Pathotypes used: CF 07, CF 08 and CF 13 Method-Plug as well as nodal cotton swab. Date of inoculation: 02/09/2021</p>
PP 17(B)	<p>3. Experiment No. PP-17 (B) Title- Evaluation of zonal varieties for resistance to smut disease. Objectives: To gather information on the relative resistance to smut of the entries in pre zonal/ zonal varietal trails of the respective zones. Date of planting: 22/02/2021 Varieties: 34 Check: 01 (CoSe 95422) Progress Report-Setts of 34 sugarcane genotypes of different clonal generation and maturity groups were planted after dipping the setts in spore suspension of smut for 30 minutes.</p>
PP 17 (C)	<p>4. Experiment No. PP-17 (C) Title- Evaluation of zonal varieties for resistance to wilt disease. Objectives: To gather information on the relative resistance to wilt of the entries in pre zonal/ zonal varietal trails of the respective zones. Date of planting: 22/02/2021 Varieties: 34 Check: 01 (CoSe 95422) Progress Report-Setts of 34 sugarcane genotypes including one check of clonal generation and maturity groups were planted in wilt sick plot.</p>
PP 17 (D)	<p>5. Experiment No. PP-17 (D) Title- Yellow leaf disease of sugarcane (YLD) Date of planting: 25/02/2021</p>

		<p>Varieties: 34</p> <p>Progress Report- Till date Yellow leaf disease was observed in CoBln 17501 and CoSe01421 in traces.</p>																																							
PP 17 (F)	6. Experiment No. PP-17 (F) Title- Screening of Pokkah Boeng disease. Date of planting: 25/02/2021 Varieties: 34 Progress Report- 34 sugarcane genotypes of different clonal generation were evaluated. Mild infection was observed in eleven varieties whereas, rest was observed moderate reaction to Pokkah boeng disease.																																								
PP 22	7. Experiment No. PP-22 Title-Survey of sugarcane diseases naturally occurring in Bihar on important sugarcane varieties. Progress Report- An extensive survey was conducted in different cane growing areas of Bihar, and the following observations were recorded till 30 th November, 2021.	<table border="1"> <thead> <tr> <th>Varieties</th> <th>Diseases</th> <th>Locations</th> </tr> </thead> <tbody> <tr> <td>Co 0238</td> <td>Wilt (20-40%), Red rot (5-40%), PBD (T-5%)</td> <td>Sidhwalia (Shahpur, Muhammadpur, Manjhaua, Madhopur, Binupur)</td> </tr> <tr> <td>Co 0238</td> <td>Wilt (20-60%), Red rot (20-50%), PBD (5-20%), Smut (5-10%)</td> <td>Riga (Dumariya, Purnahiaya, Rebari, Gopalpur)</td> </tr> <tr> <td>CoH 160</td> <td>Wilt (10-60%), Red rot (5-40%), PBD (5-15%)</td> <td>Riga (Rebari, Gopalpur)</td> </tr> <tr> <td>CoH 167</td> <td>Wilt (10-80%), Red rot (10-60%), PBD (5-15%)</td> <td>Riga (Rebari)</td> </tr> <tr> <td>CoJ 85</td> <td>Wilt (5-20%), Red rot (5-10%), YLD (T-2%)</td> <td>Riga (Kharsan)</td> </tr> <tr> <td>Co 98014</td> <td>Wilt (5-20%), Red rot (5-10%)</td> <td>Riga (Dumariya)</td> </tr> <tr> <td>BO 141</td> <td>Wilt (5-15%), Smut (5%), PBD (T-5%)</td> <td>Riga</td> </tr> <tr> <td>PV 92</td> <td>Riga (Purnahiaya, Gopalpur)</td> <td>Riga (Purnahiaya, Gopalpur)</td> </tr> <tr> <td>Co 0238</td> <td>Harinagar (SigriMurila, chamua, Binvalia)</td> <td>Harinagar (SigriMurila, chamua, Binvalia)</td> </tr> <tr> <td>Co 0238</td> <td>Gopalganj (Sipaya)</td> <td>Gopalganj (Sipaya)</td> </tr> <tr> <td>Co 0238</td> <td>Majhaulia (Madhopur, Senwariya, Barwariya)</td> <td>Majhaulia (Madhopur, Senwariya, Barwariya)</td> </tr> <tr> <td>Co 0238</td> <td>Narkatiaganj</td> <td>Narkatiaganj</td> </tr> </tbody> </table>	Varieties	Diseases	Locations	Co 0238	Wilt (20-40%), Red rot (5-40%), PBD (T-5%)	Sidhwalia (Shahpur, Muhammadpur, Manjhaua, Madhopur, Binupur)	Co 0238	Wilt (20-60%), Red rot (20-50%), PBD (5-20%), Smut (5-10%)	Riga (Dumariya, Purnahiaya, Rebari, Gopalpur)	CoH 160	Wilt (10-60%), Red rot (5-40%), PBD (5-15%)	Riga (Rebari, Gopalpur)	CoH 167	Wilt (10-80%), Red rot (10-60%), PBD (5-15%)	Riga (Rebari)	CoJ 85	Wilt (5-20%), Red rot (5-10%), YLD (T-2%)	Riga (Kharsan)	Co 98014	Wilt (5-20%), Red rot (5-10%)	Riga (Dumariya)	BO 141	Wilt (5-15%), Smut (5%), PBD (T-5%)	Riga	PV 92	Riga (Purnahiaya, Gopalpur)	Riga (Purnahiaya, Gopalpur)	Co 0238	Harinagar (SigriMurila, chamua, Binvalia)	Harinagar (SigriMurila, chamua, Binvalia)	Co 0238	Gopalganj (Sipaya)	Gopalganj (Sipaya)	Co 0238	Majhaulia (Madhopur, Senwariya, Barwariya)	Majhaulia (Madhopur, Senwariya, Barwariya)	Co 0238	Narkatiaganj	Narkatiaganj
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Co 0238	Majhaulia (Madhopur, Senwariya, Barwariya)	Majhaulia (Madhopur, Senwariya, Barwariya)																																							
Co 0238	Narkatiaganj	Narkatiaganj																																							

		Co 0238	Sugauli	Sugauli
		Co 0238	Hasanpur	Hasanpur
	PP 23	<p>8. Experiment No. PP-23 Title- Assessment of Elite and ISH genotypes for resistance to red rot. Date of planting: 19/02/2021 Total entries: 23 Date of inoculation: 02/09/2021 Isolates used: CF 07 and CF 08 Method- Plug.</p>		
	PP 31	<p>9. Experiment No. PP-31 Title- Epidemiology and management of Pokkah Boeng disease in sugarcane. Date of planting: 22/02/2021 Varieties:CoSe 95422, CoSe 92423, CoBlN 16502, CoP 2061 &CoSe 01421 Progress Report-The disease appeared in the 2nd week of May and gradually increased till last week of June. Three sprays with Carbendazim at 15 days interval gave satisfactory reduction in disease incidence.</p>		
	PP 34	<ul style="list-style-type: none"> • Due to unavailability of sett treatments device this experiment could not be carried out. However, sett treatments device procured during 2021and the experiment will be carried out during planting season 2022-23. 		
3. Motipur	PP 17 (A)	<p>The trial was conducted with 25 entries including check and inoculated timely by plug and cotton swab methods with designated pathotypes of the zone CF 07, CF 08 and CF 13. The crop condition was very good. Date of Planting : 19/02/2021 Date of Inoculation : 17/08/2021 Number of Entries : 25</p>		
	PP 17 (D)	<p>No separate trial was conducted. However, the incidence of Yellow leaf disease has to be recorded in PP 17A trial.</p>		
	PP 17 (F)	<p>No separate trial was conducted. However, the incidence of Pokkah boeng disease has to be recorded in PP 17A trial.</p>		
	PP 22	<p>The survey work was done in various locations. YLD, Pokkah boeng, wilt and red rot diseases were observed in varieties Co 0238 whereas, Co 0118 was affected with PBD and YLD diseases in traces.</p>		
4. Bethua-dahari		<p>The centre has not been allotted any pathology trials. Sugarcane pathologist at this centre is not available however, in breeding trials pathologist from other location inoculated and evaluated the entries. In breeding trials leaf spot, YLD and PBD diseases were noticed in entries CoLk 94184 and CoSe 16454. In most of the entries were noticed infested with top borer and plassey borer. The growth of the plant is good.</p>		

5. Bura-likson	PP 17 (A)	<p>PP17 (a): Evaluation of zonal varieties for resistance against red rot disease of Sugarcane</p> <p>Date of planting-24/03/2021 No. of entries -26 Isolates used – CF 07, CF 08, CF 13 Date of inoculation -4th October, 2021 Method of inoculation - plug and nodal cotton swab</p> <p>Checks - CoLk 94184, CoSe 95422, CoSe 01421, BO 91, CoP 06436 and CoP 9301</p>
	PP 17 (D)	No separate trials was conducted. However, the incidence of YLD has to be recorded in PP17A trial
	PP 17 (F)	No separate trials was conducted. However, the incidence of PBD has to be recorded in PP17A trial
	PP 22	<p>PP 22: Survey of Sugarcane diseases naturally occurring in the area on important sugarcane varieties</p> <p>Survey has been done in different Sugarcane growing villages of Golaghat and Nagaon and Karbi Anglong district. Most of the farmers still continue to grow Co 997 and other varieties grown are CoBln 9605,CoBln 9104, CoBln 9103etc.</p> <p>Red rot and Wilt diseases were observed in traces (Co 997). Pokkah boeng was observed in CoBln 9104 in the experimental field. However, plants recovered from the disease. Leaf spot was noticed in most of the varieties.</p> <p>Top borer and Plassey borer as well as wooly aphid was observed in farmers' field as well as in the station.</p>

- **All experiments were conducted as per technical programme.**
- **Overall the crop condition was observed satisfactory in all experimental plots.**

D. Entomology

1) Centre-wise status of trials allotted and conducted

Experiment No& Title	E 4.1 Evaluation of Zonal varieties /genotypes for their reaction against major insect pests	E 28 Survey and surveillance of sugarcane insect pests	E 30 Monitoring of insect pests and bio-agents in sugarcane agro-ecosystems	E 41 Assessment of yield losses caused by borer pests of sugarcane under changing climate scenario.
Seorahi	Conducted	Conducted	Conducted	Conducted
Pusa	Conducted	Conducted	Conducted	Conducted

2) Salient observations

Seorahi: Incidence of top borer was observed in all evaluated 31 entries ranged between 2.77-5.5% in 4th brood. The incidence of cumulative shoot borer was also noticed in all entries which is ranged from 6.73-13.74%. The presence of bio-agent like *Isotima*, *Rhaconodus*, *Elasmus*, *Telenomus* were noticed in the field. Survey of insect pest in 22 sugar mill zone was carried out by the entomologist. The varieties Co 0238, Co 0118, Co 98014, CoS 08272, CoLk 94184, CoP 9301, CoS 08279, CoS 8436, UP 39, CoS 767, CoS 91269 etc. were observed with top borer and mealy bug. The overall experiment and the crop condition were good. The Centre has conducted all the trials and trials were found satisfactory.

Pusa: The incidence of root and shoot borer was noticed between 10-15%, top borer 15-20%, stem borer 5-8%, plassey borer 25-30% whereas, mite, mealy bug, whitefly termite, grasshopper scale insect etc. were also observed in traces. Under monitoring of insect-pests and bio-agents in sugarcane agro-ecosystem *Cotesia flavipes* showed 20-25% parasitisation against stem and plassey borer. Out of 29 evaluated zonal varieties CoP 17438, CoSe 17451, CoLk 17468, CoSe 01421, CoP 17446, CoSe 17452 and CoBln 16502 showed MS against early shoot borer, varieties CoBln 17501, CoSe 16451, CoLk 94184, CoSe 17452, CoBln 17502 and CoLk 16470 showed HS against top borer whereas, stalk borer and root borer were observed in LS.

Note:-

- In breeding ratoon trials at Motipur center, minor infestation of mites, white fly and top borer were observed.
- In Entomology trials at Pusa center, all experiments are laid during the month of December, which is not a suitable period. It is suggested to plant after the finalization of entries during breeders and pathologists meet.
- In Entomology trial at Pusa center top borer, stalk borer, plassey borer, mites and white fly were observed in varieties CoP 16439 and CoSe 16455.
- In breeding trials at Pusa center mites was observed in varieties CoSe 17451, CoSe 01421 and CoP 17446. Top borer was observed in varieties CoP 18438, CoSe 17451 and CoSe 01421, whereas, plassey borer and stalk borer were observed in varieties CoSe 17441, CoP 16438, while, mealy bug was noticed in variety CoLk 16468.
- In breeding trials at Bethuadahari centers, the varieties CoLk 94184 and CoSe 16454 were affected with top borer, plassey borer and mites.
- In breeding as well as pathology trials at Buralikson centers the varieties CoP 16436, CoBln 16501, CoLk 16466 and Co 997 were observed infested with plassey borer, top borer, white fly and mites.

Monitoring Team Report of Peninsular Zone-I (Crop Season 2021-22)

Monitoring team for Peninsular Zone-I was constituted by Project Coordinator, All India Coordinated Research Project on Sugarcane (AICRP(S), Lucknow as per the letter F.No 12-11(M)/2021-PCS for assessing conductance of the AICRP (S) trials at regular as well as voluntary centers. The monitoring team consisting of Dr. A. Anna Durai, Principal Scientist (PB), ICAR- Sugarcane Breeding Institute, Coimbatore as the team leader and Dr. K.P. Salin, Principal Scientist (Entomology), ICAR-SBI, Coimbatore, and Dr. Lalan Sharma, Senior Scientist from AICRP (S), ICAR-IISR as members of the team. The team assembled at Agricultural Research Station at Perumalapalle on 07.12.2021 and monitored the experiments of AICRP on Sugarcane from 07th December 2021 to 15th December 2021 in Peninsular Zone as per the following.

Sl. No.	Name, Designation & Address of the Members	
1	Dr. A. Anna Durai Principal Scientist (PB) ICAR- Sugarcane Breeding Institute Coimbatore	Team Leader
2	Dr. K.P. Salin Principal Scientist (Entomology) ICAR- Sugarcane Breeding Institute Coimbatore	Member
3	Dr. Lalan Sharma Senior Scientist (Plant Pathology) ICAR-Indian Institute of Sugarcane Research Lucknow	Member-cum- facilitator

The visit to Thiruvalla centre was fixed on 10.12.2021. However the monitoring team skipped the Thiruvalla centre due to restriction on travel from Kerala to other states of the country especially to Karnataka and Maharashtra.

1. Crop Improvement

All the four trials of the crop improvement were allotted to 9 centers of Peninsular Zone- I. The allotted trials were conducted by all centers other than Perumalappalle and Pugalur. Only initial varietal trial (IVT) in Perumalappalle centre and IVT and Advanced variety trial – I plant crop trials in Pugalur centre were conducted by the respective centre. The two trials namely AVT II plant and ratoon trial could not be conducted in Pugalur due to severe incidence of wilt in this location. The trials allotted and those conducted by the centers of Peninsular Zone -1 are given in the Table 1.

Table 1. Allotment and conductance of crop improvement trials in the centers of Peninsular Zone

Trial	Perumalalalle	Pugalur	Coimbatore	Thiruvalla	Mandya	Belagavi	Sanke shwar	Sameerwadi	Kohlapur
IVT	C	C	C	NV	C	C	C	C	C
AVT I Plant Crop	NC	NC	C	NV	C	C	C	C	C
AVT II Plant Crop	NC	C	C	NV	C	C	C	C	C
AVT Ratoon	NC	NC	C	NV	C	C	C	C	C

C= Conducted; NC= Not conducted ; NV= Not visited by the monitoring team

The manner of conduct of the trials observed during the visit of the monitoring team is presented in Table 2.

Table 2. Rating of the experiments based on the observation made during monitoring of fields

Trial	Perumalalalle	Pugalur	Coimbatore	Thiruvalla	Mandya	Belagavi	Sankeshwar	Sameerwadi	Kohlapur*
IVT	Very good	Very good	Excellent	Not	Excellent	Very good	Good	Very good	Very good
AVT I Plant Crop	NC	NC	Excellent	visited	Excellent	Very good	Excellent	Very good	Very good
AVT II Plant Crop	NC	Very Good	Excellent	by the	Excellent	Very Good	Excellent	Very Good	Very good
AVT Ratoon	NC	NC	Excellent	monitoring team	Excellent	Very good	Excellent	Very Good	Very good

NC= Not conducted; * = Since all the entries tested in all the four trials were reported to be submerged in flood water for more than two weeks, the performance of entries in Kohlapur could not be compared with that in other locations where this was not the case. Monitoring team observed the silt deposition on the crop and death of growing tip and bud germination in almost all the entries.

1.1. AGRICULTURAL RESEARCH STATION, PERUMALAPALLE

Only IVT was conducted as per the technical programme of Peninsular Zone. The trial was conducted without much problems of weeds and cultural operations were carried out in time. The observations on crop stand with respect to individual entries in the trials are given below.

Initial varietal trial (Early): The trial was flooded during the recent flood due to breaking of nearby pond. The test entry Co 17009 was not planted in the trials since it was not received from ICAR-SBI, Coimbatore. In the IVT (Early), Co 09004 was the best standard with respect to crop

stand at 11th month of crop age. The test entry Co 18009 was found better than the best standard and other entries on par with the best standard were Co 18002, Co 18003, Co 18012, Co 18013, CoVC 18061, CoVSI 18121 and CoN 18072. Profuse flowering was observed in CoN 18071

1.2. SUGARCANE RESEARCH AND DEVELOPMENT CENTRE EID PARRY -INDIA (SRDC-EID PARRY), PUGALUR

Two trials viz., IVT and AVT- I plant crop were conducted as per the technical programme. The trials plots were maintained without weeds. The crop stands of test clones in relation to standards in each trial are presented below.

Initial varietal trial: The trial was planted with thirteen test entries and three standards in RBD with three replications. Co 86032 was the best standard with respect to crop stand at 11th month of crop age. The test entries Co 17009, Co 18009, Co 18024 and CoVSI 18121 were found better than Co 86032 and Co 18001, Co18003, Co 18012 and Co 18013 were on par with the best standard. The pest and diseases observed in this trial were wilt, top borer and pokkah boeng. Heavy lodging was observed in CoN 18072. Top borer incidence was severe in CoT 16366.

Advanced varietal trial –II Plant crop: In the AVT II plant trial, Co 86032 was the best standard. None of the entries were superior to the best standard Co 86032 with respect to crop stand at 300 days after planting. None of the entries was superior to the best standard Co 86032. The five test entries viz., Co 11015, Co 15010, PI 15131, CoN 15071 and CoSnk 15102 were on par with the best standard Co 86032 at this location.

1.3. ICAR-SUGARCANE BREEDING INSTITUTE (ICAR-SBI), COIMBATORE

All the four breeding trials were conducted as per the technical programme. The general growth and maintenance of the trial was excellent in this location where we could see the performance of entries individually since the crop was de-trashed and properly propped. The crop stand of test clones in relation to standards in each trial and the information on seed multiplication are presented below.

Initial varietal trial: The trial was planted with 13 test entries and three standards. Co 86032 was the best standard among the three standards (CoC 671, Co 86032 and Co 09004). Co 18001, Co 18009, Co 18013, Co 18024, CoVC 18061 and CoVSI 18121 were found better than Co 86032. Co 18002, Co 18003, Co 18012 and CoN 18071 were on par with Co 86032. Profuse flowering was observed in Co 18002, Co 18003, Co 18013, CoVSI 18121 and CoN 18071.

Advanced varietal trial –I Plant crop: In the AVT I plant trial, Co 09004 was the best standard. Co 16006 and Co 16010 and CoVSI 16121 were better than the best standard Co 09004 and two test entries namely Co 16018 and PI 16131 were on par with the best standard. Symptoms of wild boar damage were seen in the field.

Advanced varietal trial - II Plant crop: In the AVT II plant trial, Co 86032 was the best standard. Co 11015, Co 14005, Co 15007, Co 15010 and Co 15017 found superior to the best standard Co 86032. Three other entries viz., Co 15009, Co 15021 and PI 15131 were on par with Co 86032. Rust incidence was observed in all the entries. Flowering was profuse in Co 15006, Co 15007 and PI 15131.

Advanced varietal trial – Ratoon: In the AVT ratoon trial, Co 09004 was the best standard. Co 15010, Co 15017, CoN 15071, and PI 15131 were superior to the best standard with respect to crop stand at 300 days after ratooning. Co 11015, Co 14005, Co 15021, Co 15009 and CoSnk 15102 were found on par with the best standard.

1.4. SUGARCANE RESEARCH STATION (SRS), THIRUVALLA

The visit of the monitoring team to the Thiruvalla centre could not be executed due to restriction on travel from Kerala to other states of the country especially to Karnataka and Maharashtra. Report based on visual observation sent by the Thiruvalla is presented below.

Initial varietal trial: The crop stand was very good with good plant population, plant height, girth and single cane weight. Among the entries, best three entries were Co 18003, Co 18013 and CoVC 18061. Best standard was Co 86032.

Advanced varietal trial – I Plant crop: The crop stand was very good with good plant population, plant height, girth and single cane weight. Co 86032 was the best standard. Among the entries, best three entries were Co 16010, Co 16018 and CoVSI 16121.

Advanced varietal trial - II Plant crop: The crop stand was very good with good plant population, plant height, girth and single cane weight. Among the test entries, Co 14005, Co 15006 and Co15007 were better and Co 86032 was the best standard.

Advanced varietal trial – Ratoon: The crop stand was very good with good plant population, plant height, girth and single cane weight. Among the entries, best three entries were Co 11015, Co 14005 and Co15010. The best standard in this ratoon trial was Co 09004.

1.5 ZONAL AGRICULTURAL RESEARCH STATION (ZARS), MANDYA

All the four breeding trials, allotted to this centre were conducted as per the technical programme. The trials plots were without weeds and crop management operations were carried in time. The crop stand of test clones in relation to standards in each trial and the information on seed multiplication and seedling generation are presented below.

Initial varietal trial: The trial was planted with 13 test entries and three standards. Co 86032 was the best standard. Co 18001, Co 18009, Co 18012, Co 18024, CoVC 18061 and CoVSI 18121 were found better than Co 86032. Co 18002, CoN 18071 and CoN 18072 were on par with Co 86032. Natural incidence of white wooly aphid was seen in Co 18001. Profuse flowering was observed in CoN 18071 and CoC 671.

Advanced varietal trial – I Plant crop: In the AVT I plant trial among the three standards (CoC 671, Co 86032 and Co 09004), Co 09004 was the best standard. Co 16010 and Co 16018 were better than the best standard Co 09004 and another test entry namely CoVSI 16121 was on par with the best standard.

Advanced varietal trial - II Plant crop: In the AVT II plant trial, Co 86032 was the best standard. Co 11015, Co 14005, Co 15009, Co 15017, Co 15021 and PI 15131 were found superior to the best standard Co 86032. Two other entries viz., Co 15010 and CoSnk 15102 were on par with Co 86032.

Advanced varietal trial – Ratoon: In the AVT ratoon trial, Co 86032 was the best standard. Co 15009, Co 15010, Co 15017 and Co15021 were superior to the best standard with respect to their capacity to produce more number of millable canes. Co 11015, Co 14005, Co 15006, CoN 15071, CoSnk 15102 and PI 15131 were found on par with the best standard.

Seed multiplication: Seed multiplication of all the entries was done in enough quantity for conducting the IVT trials during 2022-23.

Fluff supply programme: Three thousand four hundred and seventy nine seedlings were in ground nursery.

1.6 S. N. NIJALINGAPPA SUGAR INSTITUTE (SNNSI), BELAGAVI

Four breeding trials were allotted to this centre and all the allotted trials were conducted as per the technical programme. The trials plots were without weeds and crop management operations were carried in time. The crop stand of test clones in relation to standards in each trial and the information on seed multiplication are presented below.

Initial varietal trial: The trial was planted with 13 test entries and three standards (CoC 671, Co 86032 and Co 09004). Co 09004 was the best standard. Co 17009, Co 18001, Co 18009, Co 18024, CoVC 18061, CoVSI 18121 and CoT 16366 were found better than Co 09004. Co 18012, Co 18013, CoN 18071 and CoN 18072 were on par with the best standard Co 09004. Diseases like Pokkah boeng in Co 18001, leaf spot in almost all the entries and rust in CoVC 18061 were observed in the trial plots.

Advanced varietal trial – I Plant crop: In the AVT I plant trial among the three standards; Co 86032 was the best standard. Co 16010 and Co 16018 were better than the best standard Co 86032 and other test entries namely Co 16006, CoVSI 16121 and PI 16131 were on par with the best standard Co 86032.

Advanced varietal trial - II Plant crop: In the AVT II plant trial, Co 86032 was the best standard. Co 14005, Co 15007, Co 15009, Co 15010 Co 15017 and PI 15131 were found superior to the best standard Co 86032. Two other entries viz., Co 11015, Co 15005, Co 15021 and CoN 15071 were on par with Co 86032. YLD and rust incidence were observed in CoSnk 15102.

Advanced varietal trial – Ratoon: In the AVT ratoon trial, Co 86032 was the best standard. Co 11015, Co 14005, Co 15009, Co 15010, Co 15017 and PI 15131 were superior to the best standard with respect to their capacity to produce more number of millable canes. Co 15021, CoN 15071 and CoSnk 15102 were found on par with the best standard.

1.7.AGRICULTURAL RESEARCH STATION (ARS), SANKESHWAR

All four allotted breeding trials were conducted at this centre. The technical programme was followed in all the trials except for IVT where only two replications were planted instead of three replication. Besides, this centre was also responsible for conducting the two experiments on “Evaluation and identification of climate resilient ISH and IGH genetic stocks and “Evaluation and identification of climate resilient near commercial clones”. The trials plots were without weeds and crop management operations were carried out in time. The trial plots were so clean that we can able to see the performance of the clones individually. The crop stand of test clones in relation to standards in each trial and the information on seed multiplication and seedlings generation are presented below.

Initial varietal trial: The trial was planted with 13 test entries and three standards (CoC 671, Co 86032 and Co 09004) in two replications. However Co 17009 was planted in only one replication due to paucity of seed materials. Co 09004 was the best standard. Co 17009, Co 18001, Co 18024, CoVC 18061 and CoVSI 18121 were found better than Co 86032. Co 18002, Co 18003, Co 18009, Co 18013 and CoN 18071 were on par with the best standard Co 09004.

Advanced varietal trial – I Plant crop: In the AVT I plant trial among the three standards, Co 86032 was the best standard. Co 16006 and Co 16018 were better than the best standard Co 86032 and two other test entries namely Co 16010, and PI 16131 were on par with Co 86032.

Advanced varietal trial - II Plant crop: In the AVT II plant trial, Co 86032 was the best standard. Co 14005, Co 15006, Co 15007, Co 15009, Co 15010, CoN 15071, CoSnk 15102 and PI 15131 were found superior to the best standard Co 86032. Two other entries viz., Co 11015 and Co 15017 were on par with Co 86032.

Advanced varietal trial – Ratoon: In the AVT ratoon trial, Co 09004 was the best standard. Co 14005, Co 15007 and Co 15010 were superior to the best standard with respect to their capacity to produce more number of millable canes. Co 15009, Co 15017, Co 15021, CoN 15071, CoSnk 15102 and PI 15131 were found on par with the best standard.

Seed multiplication: Seed multiplication of all the entries was done in enough quantity for conducting the IVT trials during 2022-23.

Fluff supply programme: Around three thousand seedlings were planted in ground nursery.

1.8.KJ SOMAIYA INSTITUTE OF APPLIED AGRICULTURAL RESEARCH (KJSIAAR), SAMEERWADI

All the four trials were conducted as per the technical programme of Peninsular Zone. All the experiments were well executed. The observations made on crop stand with respect to individual entries in the trials and the information on seed multiplication are given below.

Initial varietal trial (Early): In the IVT (Early), Co 86032 was the best among the three standards (CoC 671, Co 86032 and Co 09004) with respect to crop stand at 300 days of crop maturity. Co 18009, Co 18024, CoVC 18061 and CoVSI 18121 were superior to Co 86032 with respect to its crop stand. However six other test entries viz., Co 18001, Co 18002, Co 18003, Co 18012, Co 18013 and CoN 18071 were on par with the best standard.

Advanced varietal trial – I Plant crop: In the AVT I plant trial Co 86032 was the best standard. Co 16010 and Co 16018 were better than the best standard and PI 16131 was on par with the best standard Co 86032.

Advanced varietal trial - II Plant crop: In the AVT II plant trial, Co 86032 was the best standard. Co 15009, Co 15010, Co 15017, CoSnk 15102 and PI 15131 were found better than the best standard Co 86032. Two other entries viz., Co 14005 and Co 15006 were on par with Co 86032.

Advanced varietal trial – Ratoon: In the AVT ratoon trial, Co 09004 was the best standard. Co 15010, Co 15017, CoSnk 15102, were superior to the best standard with respect to their potential to produce more number of millable canes. Co 14005, Co 15007, Co 15021, CoN 15071 and PI 15131 were found on par with the best standard.

Seed multiplication: Seed multiplication of all the entries was done in enough quantity for conducting the IVT trials during 2022-23.

1.9 REGIONAL SUGARCANE AND JAGGERY RESEARCH STATION (RSJRS), KOHLAPUR

All the four trials were conducted as per the technical programme of Peninsular Zone. Since all entries tested in all the four trials were reported to be submerged in flood water for more than two weeks, the performance of entries in this centre cannot be compared with that in other locations where this was not the case. Monitoring team observed the silt deposition on the crop and death of growing tip and bud germination in almost all the entries. Crop stand of the test entries in relation to standards at this location are presented below.

Initial varietal trial: The trial was planted with 13 test entries and three standards (CoC 671, Co 86032 and Co 09004) in three replications. Co 86032 was the best standard. CoVC 18061 was found better than Co 86032. CoVSI 18121 was on par with the best standard Co 86032 in the trial. Co 18001, Co 18002, Co 18003, Co 18009 and Co 18013 were also found on par with Co 86032.

Advanced varietal trial – I Plant crop: In the AVT I plant trial among the three standards (Co 86032 was the best standard. Co 16010 and Co 16018 were better than the best standard Co 86032 and Co 16006 was on par.

Advanced varietal trial - II Plant crop: In the AVT II plant trial, Co 86032 was the best standard. Co 14005 was found better than the best standard Co 86032. Four other test entries viz., Co 15009, Co 15010, Co 15017 and PI 15131 were found on par with Co 86032.

Advanced varietal trial – Ratoon: In the AVT ratoon trial, Co 86032 was the best standard. Co 14005, CoSnk 15102 and PI 15131 were superior to the best standard with respect to their capacity to produce more number of millable canes under prolonged submerged condition. Co 15010 and CoN 15071 were found on par with the best standard.

Seed multiplication: Seed multiplication of all the entries was done in enough quantity for conducting the IVT trials during 2022-23.

Summary of observation on the breeding trials conducted at eight different locations of Peninsular Zone-I is presented in Table 3 to 6.

Table 3. Performance of test entries in relation to standard in Initial Varietal Trial

S. No.	Entries	Perumalpal	Pugalur	Coimbatore	Thiruvalla	Mandya	Belagavi	Sankeshwar	Sameerwadi	Kohlapur
1	Co 17009	*	Better	On par		Poor	Better	Better	Poor	Poor
2	Co 18001	Poor	On par	Better		Better	Better	Better	On par	On par
3	Co 18002	On par	Poor	On par	N	On par	Poor	On par	On par	On par
4	Co 18003	On par	On par	On par	O	Poor	Poor	On par	On par	On par
5	Co 18009	Better	Better	Better	T	Better	Better	On par	Better	On par
6	Co 18012	On par	On par	On par		Better	On par	poor	On par	Poor
7	Co 18013	On par	On par	Better	V	Poor	On par	On par	On par	On par
8	Co 18024	Poor	Better	Better	I	Better	Better	Better	Better	Poor
9	CoVC 18061	On par	Poor	Better	S	Better	Better	Better	Better	Better
10	CoVSI 18121	On par	Better	Better	I	Better	Better	Better	Better	On par
11	CoN 18071	Poor	Poor	On par	T	On par	On par	On par	On par	Poor
12	CoN 18072	On par	Poor	Poor	E	On par	On par	Poor	Poor	Poor
13	CoT 16366	Poor	Poor	poor	D	Poor	Better	Poor	Poor	Poor
	Standards									
1	CoC 671									
2	Co 86032		Best	Best		Best				Best
3	Co 09004	Best					Best	Best	Best	

*Not included in the trial

Table 4. Performance of test entries in relation to standard in Advanced Varietal Trial - I Plant

S. No.	Entries	Perumalapalle	Pugalur	Coimbatore	Thiruvalla	Mandya	Belagavi	Sankeshwar	Sameerwadi	Kohlapur
1	Co 16006	-	-	Better		Poor	On par	Better	Poor	On par
2	Co 16010	-	-	Better	N	Better	Better	On par	Better	Better
3	Co 16018	-	-	On par	O	Better	Better	Better	Better	Better
4	CoVSI 16121	-	-	Better	T	On par	On par	Poor	Poor	Poor
5	PI 16131	-	-	On par		poor	On par	On par	On par	Poor
	Standards				S					
1	CoC 671	-	-		E					
2	Co 86032	-	-		E		Best	Best	Best	Best
3	Co 09004	-	-	Best	N	Best				

Table 5: Performance of test entries in relation to standard in Advanced Varietal Trial – II plant

S. No.	Entries	Perumalapalle	Pugalur	Coimbatore	Thiruvalla	Mandya	Belagavi	Sankeshwar	Sameerwadi	Kohlapur
1	Co 11015	-	On par	Better		Better	On par	On par	Poor	Poor
2	Co 14005	-	Poor	Better		Better	Better	Better	On par	Better
3	Co 15005	-	Poor	Poor	N	Poor	On par	Poor	Poor	Poor
4	Co 15006	-	Poor	Poor	O	Poor	Poor	Better	On par	Poor
5	Co 15007	-	Poor	Bettr	T	Poor	Better	Better	Poor	Poor
6	Co 15009	-	Poor	On par		Better	Better	Better	Better	On par
7	Co 15010	-	On par	Better	V	On par	Better	Better	Better	On par
8	Co 15017	-	Poor	Better	I	Better	Better	On par	Better	On par
9	Co 15021	-	Poor	On par	S	Better	On par	Poor	Poor	Poor
10	CoN 15071	-	On par	Poor	I	Poor	On par	Better	Poor	Poor
11	CoSnk 15102	-	On par	Poor	T	On par	Poor	Better	Better	Poor
12	PI 15131	-	On par	On par	E	Better	Better	Better	Better	On par
	Standards				D					
1	CoC 671	-								
2	Co 86032	-	Best	Best		Best	Best	Best	Best	Best
	Co 09004	-								

Table 6. Performance of test entries in relation to standard in Advanced Varietal Trial–Ratoon

S. No.	Entries	Perumalapalle	Pugalur	Coimbatore	Thiruvalla	Mandya	Belagavi	Sankeshwar	Sameerwadi	Kohlapur
1	Co 11015	-	-	On par		On par	Better	Poor	Poor	Poor
2	Co 14005	-	-	On par		On par	Better	Better	On par	Better
3	Co 15005	-	-	Poor	N	Poor	Poor	Poor	Poor	Poor
4	Co 15006	-	-	Poor	O	On par	Poor	Poor	Poor	Poor
5	Co 15007	-	-	Poor	T	Poor	Poor	Better	On par	Poor
6	Co 15009	-	-	On par		Better	Better	On par	Poor	Poor

7	Co 15010	-	-	Better	V	Better	Better	Better	Better	On par
8	Co 15017	-	-	Better	I	Better	Better	On par	Better	poor
9	Co 15021	-	-	On par	S	Better	On par	On par	On par	Poor
10	CoN 15071	-	-	Better	I	On par	On par	On par	On par	On par
11	CoSnk 15102	-	-	On par	T	On par	On par	On par	Better	Better
12	PI 15131	-	-	Better	E	On par	Better	On par	On par	Better
	Standards				D					
1	CoC 671	-	-							
2	Co 86032	-	-			Best	Best		Best	Best
	Co 09004	-	-	Best				Best		

2. Crop Production

In Peninsular Zone-I, out of nine AICRP (S) centres, four centres viz., viz., Coimbatore, Belagavi, Sankeshwar and Kolhapur conducted the Agronomy trials. Perumalappalle, Pugalur, Mandya, Sameerwadi did not conduct any agronomic experiments. Observations recorded in the agronomy trials in the allotted centres are given below.

Details of experiments allotted & conducted at in AICRP(S) centers in Peninsular Zone-I

Experiment No& Title	AS 72 Agronomic performance of elite sugarcane genotypes	AS 73 Assessment of climate change impact on sugarcane productivity	AS 74 Evaluation of sugarcane varieties for drought tolerance	AS 75 Precision nutrient management through rescheduling time of application for widely spaced sugarcane plant - ratoon system	AS 76. Evaluating efficacy of PSAP for enhancement of sugarcane growth, yield and quality
Perumallappalle	-	-	-	-	-
E.I.D Parry, Pugalur	-	-	-	-	-
ICAR-SBI, Coimbatore	Conducted	Conducted			Conducted
Thiruvalla	Trials were not visited by the monitoring team				
ZARS, Mandya	-	-	-	-	-
SNSI Belagavi	-	-	-	-	-
ARS, Sankeswar	Conducted	Conducted	Conducted	Conducted	Conducted
KJSIAAR, Sameerwadi					
RSJRS, Kolhapur	Conducted	Conducted	-	Conducted	Conducted

2.1. ICAR-SBI, COIMBATORE

AS 72: The experiment was laid out with given genotypes as per technical programme. Co 15005 and Co 15009 were best among entries. There was variation in growth among different genotypes. Crop condition was good and experiment was very good. Co 86032 was best standard whereas in respect of test entries Co 15005 had higher number of millables canes than the standard. Co 11015 was found to be fertilizer responsive which showed better expression under 125 % RDF. Co 15021 had increased cane thickness under 100 % RDF.

AS 73: Data on climatic factors as mentioned in the technical programme were reported to be sent to PC.

AS76: The experiment was conducted in Randomized Block Design with three replications involving 12 treatments. The variety used in this study was Co 86032. Sugarcane crop was planted during March, 2021. Crop growth was good. The variety Co 86032 showed better response to the treatment 10 (Recommended dose N, 50 % P and 50 % k + sett soaking with 0.8 % PSAP solution + Foliar spray of PSAP @ 0.4, 0.65, 1.10, and 1.10 at 60, 80, 100 and 120 days after planting). Overall, it was observed that split application PSAP gave better results than other treatments.

2.2. ARS, SANKESHWAR

AS 72: The trial was conducted involving 12 test entries and three standard varieties. The experiment was conducted in Randomized Block Design with three replications. Crop was very good and experiment was well maintained in weed free situation. Experiment was very good. The clones CoN 15071 and PI 15131 were responding better to the increased doses of fertilizers. Co 15006 showed its potential at 100 % RDF. Other entries which were found better in this trial were Co 15009, Co 15010 and Co 15007.

AS 73: Data on climatic factors as mentioned in the technical programme were reported to be sent to PC.

AS 74: The experiment was conducted in strip plot design with three replications including two irrigation treatments and four test entries; two each in early (SNK 13436 and SNK 13374) and mid-late groups (SNK 13095 and SNK 152883). The standards are Co 09004 for early and CoSnk 15104 (SNK 09227) for midlate groups. Among the test entries, SNK 13436 in mid-late group and SNK 152883 in early group were found to drought tolerant. SNK 13436 was found sparse flowering and no incidence of rust was observed.

AS 75: Experiment was very laid out in very good manner. It was conducted in split plot design with three replications. The main plots were broad casting and band placements and sub plots were made according to the technical programme. The variety taken for this experiment was CoSnk 15104 (SNK 09227). Band placements along with RDN +RDK either in six splits or seven splits (10 % basal remaining at 45, 75, 90, 120, 150, and 180 days after planting) were found better wider spacing of 5.0 feet

AS 76: The experiment was conducted in Randomized Block Design with three replications. The variety used in this study was CoSnk 15104 (SNK 092257). Sugarcane crop was planted on 23.12.2020. Crop growth was good. The variety CoSnk 15104 showed better response to the application of 75% N, 50 % recommended P and K + sett soaking with 0.8% PSAP solution and RDF + sett soaking with 0.8 % PSAP solution and foliar spray of PSAP spray @ 0.4, 0.65 and 0.80% at 60 90 and 120 days after planting.

2.3. SNNSI, BELAGAVI

Belagavi centre was not allotted any agronomic experiment during the current year. However, the centre conducted the AS 76. The variety used in the experiment was Co 86032 and responded well to the treatment, RDF + sett soaking with 0.8 % PSAP solution and foliar spray of PSAP spray @ 0.4, 0.65 and 0.80% at 60 90 and 120 days after planting.

2.4. KOLHAPUR

AS 72: Experiment was laid out as per technical programme with 12 genotypes along with the check variety Co 86032 in Randomized Block Design with 120 cm spacing and fertilizers levels of 100% and 125 % RDF (250:115:115 NPK kg/ha). Among the test entries Co 14005 was responding better under 125 % RDF. Other varieties performed better were Co 11015, Co 15005 and PI 15131.

AS 73: Data on climatic factors as mentioned in the technical programme were reported to be sent to PC.

AS 75: The experiment was conducted as per the technical programme involving four agronomic treatments. Variety taken for this study was Co 86032. Best treatment observed in this trial was band placement coupled with RDN + RDK in seven splits (Basal 10% remaining at 45, 75, 90,120,150 and 180 DAP in equal splits).

AS 76: Experiment was laid out as per technical programme in Randomized Block Design with 1.2 m spacing. The variety Co 86032 was included in this trial. The variety Co 86032 showed better response to the treatment 9 (Recommended N, 50 % P and 50 % K, + sett soaking with 0.8 % PSAP solution + foliar spray of PSAP @ 0.4, 0.65, and 1.10 % at 60, 90, 120 days after planting). Other treatments leading to better response was T8 (Recommended N, 50 % P and 50 % K, + sett soaking with 0.8 % PSAP solution + foliar spray of PSAP @ 0.4, 0.65, 0.80 % at 60, 90, 120 days after planting).

3. Plant Pathology

Technical Programme (2021-2022):

- 1. PP 14 & 14A:** Identification of pathotypes of red rot pathogen and maintenance of red rot pathotypes
- 2. PP 17A:** Evaluation of zonal varieties for resistance to red rot
- 3. PP 17B:** Evaluation of zonal varieties for resistance to smut

4. **PP 17C:** Evaluation of zonal varieties for resistance to wilt
5. **PP 17D:** Evaluation of zonal varieties for resistance to yellow leaf disease (YLD)
6. **PP17E:** Evaluation of zonal varieties for resistance to Brown rust
7. **PP17F:** Evaluation of zonal varieties for resistance to Pokkah Boeng
8. **PP 22:** Survey of sugarcane diseases naturally occurring in the mill area on important sugarcane varieties
9. **PP 23:** Assessment of elite and ISH genotypes for resistance to red rot
10. **PP 31:** Epidemiology and management of Pokkah Boeng disease in sugarcane
11. **PP 32:** Management of Brown spot disease of sugarcane
12. **PP 33:** Management of yellow leaf disease through meristem culture
13. **PP 34:** Efficient delivery of fungicides and other agro inputs to manage major fungal diseases in sugarcane

Project allotted and conducted at different AICRP (S) centres of the Peninsular Zone – 1

Sr. No.	Centre	PP 14, PP 14 A	PP 17A	PP 17B	PP 17C	PP 17D	PP 17E	PP 17F	PP 22	PP 23	PP 31	PP 32	PP 33	PP 34
1.	Coimbatore	A/C	A/C	A/C	NA	A/C	A/C	A/C	OR	OR	NA	NA	A/C	A/C
2.	Thiruvalla	A/C	A/C	NA	NA	A/C	NA	A/C	OR	NA	NA	NA	NA	NA
3	Sankeshwar	NA	NA	A/C	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

A/C = Allotted and Conducted; NA = Not Allotted; OR = Observations Recorded

Overall rating of the plant pathology trials in each AICRP(S) centre of PZ-I (2021-22)

Sl. N.	Trail	Coimbatore	Thiruvalla	Sankeshwar
1	PP 14 & 14 A	Very Good	Not Rated	-
2	PP 17A	Very Good	Not Rated	-
3	PP 17B	Very Good	-	Very Good
4	PP 17C	-	-	-
5	PP 17D	Very Good	Not Rated	-
6	PP 17E	Very Good	-	-
7	PP 17F	Very Good	Not Rated	-
8	PP 22	-	-	-
9	PP 23	Very Good	-	-
12	PP 33	Very Good	-	-
13	PP 34	Very Good	-	-

Detail report of plant pathology trials 2021-22 of Peninsular Zone I

3.1.1. ARS, Perumallapalle

This centre was not assigned for any plant pathological trials under AICRP on Sugarcane. However, during the field observations natural incidence of foliar diseases like YLD, Pokkah Boeng, rust, mosaic were noticed on some IVT entries – CoN 18072, CoT 16366. The Yellow Leaf Disease was observed in most of the testing entries under IVT.

3.1.2. SR&DC, EID Parry, Pugalur

This centre was not allotted for any plant pathological trials of AICRP on sugarcane for the current period. However, natural incidence of diseases was observed in the IVT trial. AVT – I plant and AVT ratoon trials were conducted by this centre. *Pokkah* boeng was recorded on CoT 16366, CoN 18072.

3.1.3. ICAR-SBI, Coimbatore

Coimbatore centre was allotted for PP 14, PP 14A, PP 17A, PP 17B, PP 17D, PP 17E, PP 17F, PP 22, PP 33, and PP 34 plant pathological trials of AICRP on sugarcane for the current period. Project wise detailed information is provided below –

PP 14: Identification of pathotypes of red rot pathogen - Nineteen host differential varieties viz. *Baragua, khakai, SES 594, CoS 767, BO 91, CoC 671, Co7717, Co 997, CoJ 64, Co 1148, Co 419, Co 62399, Co 975, CoS 8436, Co 7805, Co 86002, Co 86032, CoV 92102, CoSe 95422* were planted for identification of pathotypes/races in red rot pathogens. Inoculations of two designated red rot pathotypes (Cf 06 and Cf 12) along with 5 isolates of red rot was undertaken by this centre by plug method and evaluation was completed after 60 day of inoculation.

PP 17(A): Evaluation of zonal varieties for resistance to red rot - All the IVT and AVT zonal varieties along with standards were planted for evaluation against red rot pathotypes. Inoculation was undertaken during last week of August by plug and cotton swab methods by CF 06 and CF 12. Only inoculated canes exhibited red rot symptoms and no disease symptoms were observed under natural conditions. An observation of zonal entries / clones for red resistance was undertaken during the first week of November. Reactions were recorded and observations completed.

PP 17(B): Evaluation of zonal varieties for resistance to smut - All IVT and AVT zonal varieties along with standards (one resistant and two susceptible) were also planted (one row per clone) in two replications for evaluation against smut. Inoculations were done at the time of planting. The method of inoculation involves steeping of two budded setts in freshly prepared smut spore suspension (> 90% spore viability and with a spore load of 10^6 spores per ml) for thirty minutes during planting time by the centre. Smut symptoms are being recorded on the standards along with the susceptible (Co 96007 and Co 97009) and resistant (Co 6806) genotypes at fortnightly intervals.

PP 17D: Evaluation of zonal varieties for resistance to yellow leaf disease (YLD) - All AVT zonal varieties along with respective standards were also planted (four rows three meter each) for evaluation against YLD. Severe YLD symptoms was observed in CoVSI 16121 entries. Severe YLD symptoms were noticed in CoN 15071 in AVT trial Plant I.

PP 17E: Evaluation of zonal varieties for resistance to Brown Rust - All AVT zonal varieties along with respective standards were also planted for evaluation against Brown Rust. Natural brown rust incidence was noticed in Co 16006, CoVSI 16121, PI 16131.

PP 17F: Evaluation of zonal varieties for resistance to Pokkah Boeng - All AVT zonal varieties along with respective standards were also planted (four rows three meter each) for evaluation against Pokkah Boeng. Pokkah Boeng was noticed on CoN 18072 and CoT 16366.

PP 22: Survey of sugarcane diseases naturally occurring in the mill area on important sugarcane varieties - Periodical Survey and surveillance for sugarcane diseases naturally occurring in the region is being undertaken on a regular basis by the centre.

PP 23: Assessment of elite and ISH genotypes for resistance to red rot – Twenty seven elite and ISH genotypes were planted for evaluation against red rot. Inoculation was undertaken during last week of October (29.10.2022 and 30.10.2022) by plug method of red rot pathotypes - CF06 and CF12. Reactions with red rot pathotypes are to be recorded.

PP 33: Management of yellow leaf disease through meristem culture – Sugarcane variety - Co 86032 (tissue culture derived material) was planted for management of yellow leaf disease through meristem culture in 25 rows of three meter. The TC planted material was free from YLD symptoms.

PP 34: Efficient delivery of fungicides and other agro-inputs to manage major fungal diseases in sugarcane – To demonstrate efficient delivery of plant protection chemicals or agro-inputs or microbes through Sett Treatment Device for the management of fungal diseases – red rot, smut and wilt. Different treatment combinations were made using fungicides. Co 86032 cane setts were treated using STD, and planted for management of red rot, smut and wilt. It was noticed that treated plots were free from red rot, smut and wilt. The YLD symptom was noticed in treated plots.

3.1.4. SRS, Thiruvalla

At Thiruvalla centre, following plant pathological trials - PP 14, PP 17A, PP17D, PP 17F and PP 22 were allotted. All the trials were conducted as per report provided by the centre. Monitoring team of this zone could not visit ARS Thiruvalla centre, Kerala due to Covid – 19 state government guidelines. The telephonic discussion was made with concern scientist, and observations provided. The same has been incorporated in this report.

PP 14: Identification of pathotypes of red rot pathogen - In PP14 experiment, planting was done in 14th January, 2021. Plant growth was satisfactory and red rot pathogen inoculation with 10 isolates was done during 1st week of October, 2021. Observations were recorded on 1st week of December, 2021.

PP 17: Evaluation of zonal varieties for resistance to red rot, smut, wilt, YLD, brown rust and pokkah boeng - In PP17A experiment, IVT, AVT I and AVT II planting were done in January, 2021 and red rot inoculation was done with CF06 and CF12 isolates by plug method and nodal method during 1st week of October, 2021 and observations were recorded during December 1st

week, 2021 i.e at 60th day of inoculation. In PP17D, observations were recorded from AVT plots, and no YLD was observed. In PP17F, Pokkah boeng disease incidence was observed in few varieties with mild to moderate intensity in AVT trials.

PP 22: Survey of sugarcane diseases naturally occurring in the area on important sugarcane varieties - In PP22, survey has been conducted in the sugarcane growing areas of Pathanamthitta and Alappuzha district as per technical programme. Leaf spot diseases were common in all the commercial cultivated crops.

3.1.5. ZARS, Mandya

The ZARS Mandya centre was not assigned with any trial of AICRP on sugarcane under Plant Pathology discipline. The current season received copious rains and the overall crop stand is very good. Incidence of ring spot and rust was observed in most of the IVT and AVT early & mid-late entries. Severe YLD was recorded on CoVSI 16121 and PI 16131 in AVT trials. There was an overall profuse flowering observed in the breeding trials except Co 14005 and CoSnk 15102.

3.1.6. SNNSI, Belagavi

This centre was not assigned for any plant pathological trials of AICRP on sugarcane. Observations were made in zonal varietal trials. There was an overall profuse flowering observed in the fields. Natural incidence of brown spot and brown rust was observed in all the entries. Pokkah Boeng symptom was recorded in Co 18001. YLD symptom was noticed in Co 18009, Co 15006, Co 15005, and smut incidence was noticed on Co 15007.

3.1.7. ARS, Sankeshwar

This centre was not assigned for any plant pathological trials of AICRP on sugarcane. However, only one trial - PP 17B was conducted. The trial was conducted as per approved technical programme. General growth and maintenance of trials was very good. Periodical smut whip count is being undertaken at the centre and cumulative disease score is recorded as part of evaluation of the AICRP clones for smut resistance program. Natural incidence of diseases namely YLD, Brown Leaf spots, and rust was observed in the Breeding trial experiments. Severe YLD symptoms were noticed in CoVSI 16121, Co 15006, Co 18012, Co 18001, Co CoVSI 18121, CoN 18072, CoT, 16366. Severe rust incidence was noticed in Co 15017. The smut incidence was noticed in Co 18013, Co 18024, CoN 18072, Co 17009.

3.1.8. KJIAAR, Sameerwadi

In this centre, no pathology experiments were allotted for the period under report. Natural incidence of diseases was observed in the breeding trials. Moderate incidence of YLD, *Pokkah boeng*, GSD, mosaic, rust and other foliar disease viz. Leaf spots were observed in all most all entries in plant breeding trials.

3.1.9. RS JRS, Kolhapur

No plant pathology trial was allocated to this centre. All the breeding trials were conducted as per the Technical program and the crop condition was in the recovery stage from the recent heavy floods at this centre. An overall observation in the trial plots for natural incidence of diseases indicated moderate levels of YLD, Leaf spots, rust and few incidences of smut symptoms in selected clones was noticed.

4. Entomology

Centre-wise status of trials allotted and conducted

Experiment No& Title	E4.1- Evaluation of Zonal varieties /genotypes for their reaction against major insect pests	E28: Survey and surveillance of sugarcane insect pests	E30: Monitoring of insect pests and bioagents in sugarcane agro-ecosystems	E34: Standardization of simple and cost effective techniques for mass multiplication of sugarcane bio-agents	E40: Integrated approach to manage white grubs in sugarcane	E.41: Assessment of yield losses caused by borer pests of sugarcane under changing climate scenario
ICAR-SBI, Coimbatore	Allotted-Conducted	Allotted-Conducted	Allotted-Conducted	Allotted-Conducted	Allotted-Conducted	Allotted-Conducted
SRS, Thiruvalla	Not Visited					
ZARS, Mandya	Allotted-Conducted	Allotted-Conducted	Allotted-Conducted	Allotted-Conducted	Allotted-Conducted	Allotted-Conducted
SNSI Belagavi	Allotted-Conducted	Allotted-Conducted	Allotted-Conducted	Not Allotted	Not Allotted	Not Allotted

Salient observations taken during the monitoring of the trials are presented below

4.1.1. ICAR-SBI, Coimbatore

All the trials allotted to the Centre are being carried out. Under E4.1: Evaluation of Zonal varieties / genotypes for their reaction against major pests, observations on shoot borer incidence was recorded on 30th, 60th and 90th day after planting in a separate insecticide free trial. For E30: Monitoring of insect pests and bio-agents in sugarcane ecosystem, 300 rows of Co 86032 is being maintained and observations are recorded periodically as per the technical programme. Under E28: Survey and surveillance of sugarcane pests, entomologists record the incidence of the pests in the sugar factory areas periodically. To economize the mass production of bioagents under E 31, different economically viable substitutes are being tried and a new medium has been developed to mass culture a virulent strain of *M. anisopliae* against white grub. Overall, major pest incidence in the centre is low to moderate.

4.1.2. ZARS, Mandya

All the trials allotted to the Centre are being carried out. Under E4.1: Evaluation of Zonal varieties / genotypes for their reaction against major pests, observations on shoot borer incidence was recorded as per the technical programme in a separate insecticide free trial. For E30: Monitoring of insect pests and bioagents in sugarcane ecosystem, 300 rows of Co 18062 is being maintained and observations are recorded periodically as per the technical programme. Under E28: Survey and surveillance of sugarcane pests, entomologists record the incidence of the pests in jiggery and sugar factory areas periodically. Major pests include shoot borer and internode borer. Patches of woolly aphid incidence also could be seen which was kept under check by the predator *Diphaaphidivora* and *Micromus*.

4.1.3. SRS, Thiruvalla

Monitoring team could not visit the Centre due to Covid 19 threat. However, the Centre has given in brief as follow. During the period 2021-22, as per the technical programme under AICRP on sugarcane, E-28: Survey and Surveillance of Sugarcane insect pests and E-30: Monitoring of insect pests and bioagents in sugarcane agroecosystem were assigned to Thiruvalla centre and hence studies were carried out under these projects, under the discipline of Entomology. The details are as follows:

E-28: Survey and Surveillance of Sugarcane insect pests.

Survey was conducted for the insect pests of sugarcane at monthly intervals, as per the AICRP technical programme, in Pathanamthitta and Alappuzha Districts viz, Nedumpuram, Pandalam and Thiruvanmandur villages. In most of the sugarcane fields in these villages Co 86032 and Madhuri varieties were grown.

In Pathanamthitta district, survey was conducted in Nedumpuram village, and the major pests encountered were ESB, INB, Mealy bug and the new invasive pest, Sugarcane Red Bug *Phaenacanthabicolor*. The incidence of pink mealy bug was observed during June- Sept, with peak incidence during Sept month. The attack was kept under check by natural enemies including coccinellid beetles. Incidence of INB was noticed during Aug-Dec with peak incidence during Nov- Dec. ESB was observed at low level during March-May. The new invasive pest, *Phaenacanthabicolor* was recorded in sugarcane to the tune of moderate to high levels, at all the growth stages of the crop, with peak incidence during July-Sept. Yellowing of the cane leaves were observed in all the varieties grown in the field. Whereas, other pests viz, derbid plant hopper, grasshoppers, showed their population in very low levels during the vegetative growth phase of sugarcane.

Survey conducted in Pandalam village of Pathaanmathitta district revealed that the level of incidence of ESB and INB ranged between low to moderate intensities. Peak incidence of ESB was observed during Nov 2021, ratoon crop of Co 86032. The incidence of INB was noticed during Sept-Dec with peak incidence during November month. The new pest, Sugarcane

red bug was also observed in moderate to high intensities in all the varieties grown, irrespective of the stage of crop growth. Incidence of mealy bug and woolly aphid were found to be at low intensities.

In Thiruvananthapuram village of Alappuzha district, during the survey ESB, INB and mealy bugs were recorded. The incidence of INB and mealy bugs were at low to moderate intensities. ESB was observed at low levels. Termite attack was observed in some areas and it was restricted to few clumps. Red bugs were found in very small numbers.

E-30: Monitoring of insect pests and bioagents in sugarcane agroecosystem:

Experiment on monitoring of insect pests of sugarcane was carried out in 0.2 ha area field where Madhuri variety was grown, at Thiruvalla farm. The population of ESB, INB, Mealy bug, Red bug and their natural enemies were recorded at monthly intervals during the cropping season of 2021-22. The data on monitoring of insect pests revealed that the incidence of INB, Mealy bug and Red bug were at varying intensities. ESB was observed at low levels. Derbid plant hoppers appeared in very small numbers. The bioagents of ESB and INB were not observed during the cropping season of 2021-22, while predation of mealy bugs by coccinellids were recorded, with peak period of parasitisation observed during the month of Sept-Oct. Generalist predators like lady bird beetles, spiders and earwigs were recorded from sugarcane plants.

General Remarks on the Entomological trials

- Moderate incidence of shoot and internode borers were noticed at different centres of the Zone. No major incidence of pests was reported in any of the centres.
- Crop stand in all the centres visited was very good, except Kolhapur where the station experienced a severe flood situation in the month of July.

CONCLUSION

Over all, the trials conducted across the 8 AICRP(S) centres of the Peninsular Zone - 1 were very good condition except Kolhapur centre. The breeding trials at Kolhapur centre was in very poor condition due heavy rainfall and waterlogged condition. The trials across the centres are conducted as per the technical programme. All the centres cooperated and facilitated monitoring team for smooth conduct of monitoring work for which the team is very much thankful and their help during the visit is gratefully acknowledged.

Monitoring Team Report of Peninsular Zone-II (Crop Season 2021-22)

The team constituted by Project Coordinator, AICRP on Sugarcane (Ref.: F.No.12-11(M)/2021-PCS dated: September 15, 2021 of P.C(S), IISR, Lucknow) executed the monitoring work of Peninsular zone-II centers as per following details and schedule.

Sl. No.	Name, Designation & Address of the Members	
1	Dr. Sanjay. B. Patil, Principal Scientist (GPB) & Head ARS, Sankeshwar	Team Leader
2	Shri B.H. Pawar Senior Scientist (Plant Pathology) VSI, Pune	Member
3	Dr. V.K. Biradar Assistant Professor (Entomology) SRS, Tharsa (PDKV, Akola)	Member
4	Dr. Mona Nagargade Scientist (Agronomy) ICAR-IISR, Lucknow	Member
5	Dr G.K. Singh Chief Technical Officer Coordination Unit ICAR-IISR, Lucknow	Facilitator

The team assembled at VSI, Pune on November 12, 2021 and subsequently visited and monitored the AICRP (Sugarcane) regular as well as voluntary centres i.e, Padegaon, Pune, Pravaranagar, Navsari, Powarkheda, Kawardha, Basmathnagar and Rudrur from 12.11.2021, 13.11.2021, 15.11.2021, 16.11.2021, 18.11.2021, 20.11.2021, 22.11.2021 and 23.11.2021.

A. Crop Improvement

The detailed report of Crop Improvement technical programmes (2021-22) implemented by the centers of Peninsular zone-II as per format circulated by P.I. (crop improvement) and Director, SBI, Coimbatore is as follows.

1. Overall grading of trials:

Trials	Padegaon	Pune	Pravarnagar	Navsari	Powarkheda	Kawardha	Basmathnagar	Rudrur
IVT (E & M)	Excellent	Excellent	Good	Excellent	Good	Excellent	Good	Excellent
AVT (E & M) I Plant	Excellent	Excellent	Average	Excellent	Average	Excellent	Good	Excellent
AVT (E & M) II Plant	Excellent	Excellent	Average	Excellent	Average	Excellent	Good	Very good
AVT (E & M) Ratoon	Very good	Very good	Poor	Very good	Vitiated	Good	Average	Good
B III (a) ISH IGH drought PC I	NA	Very good	NA	NA	NA	NA	NA	NA
B III (b) NC Clones drought PC I	NA	NC	NA	NA	NA	NA	NA	NA
Multiplication new IVT entries (E&M)	Sufficient	Sufficient	Sufficient	Sufficient	Sufficient	Sufficient	Sufficient	Sufficient
Overall remarks across all trials	Moisture stress because of canal closure	-	Moisture stress because of canal closure	-	Severe moisture stress and wild animal damage	Good crop stand but lacking facility for juice analysis	Heavy crop lodging	Moderate crop stand except IVT because of late planting

Each trial may be rated in five scales

Sl.No	Score (%) obtained	Rating	Assessment of the trial should be based on 1. Whether conducted as per the technical programme 2. General growth and maintenance of the trial 3. If the trial is unfit for evaluation Grade POOR may be given. 4. When the trial is not conducted, it may be indicated as Not Conducted
1	81-100	Excellent	
2	61-80	Very good	
3	41-60	Good	
4	21-40	Average	
5	0-20	Poor	

1. Evaluation of entries in trials

Performance of entries in:

IVT (Early & Midlate)

Entries	Padegaon DOP:07.01.21	Pune DOP:30.12.20	Pravarnagar DOP:23.01.21	Navsari DOP:29.01.21	Powarkheda DOP:16.02.21	Kawardha DOP:07.01.21	Basmathnagar DOP:19.01.21	Rudrur DOP: 22.12.20
1.Co 18001	On par	On par	Poor	On par	On par	On par	Poor	Poor
2.Co 18002	On par	On par	Poor	On par	Poor	On par	Poor	Poor
3.Co 18003	On par	Poor	Poor	On par	Poor	On par	On par	On par
4.Co 18009	On par	On par	Poor	On par	Better	On par	Poor	On par
5. Co 18012	On par	Poor	Poor	On par	Poor	On par	Poor	Poor
6. Co 18013	Poor	Poor	On par	On par	Poor	On par	Poor	Poor
7.Co 18024	Poor	Poor	Poor	On par	On par	On par	Poor	Poor
8. CoVc 18061	On par	On par	On par	On par	Poor	On par	Poor (smut)	Poor
9.CoN 18071	Poor	Poor	Poor	Poor	Poor	On par	Poor	Poor
10. CoN 18072	Poor	Poor	Poor	On par	Better	Poor	Poor	On par
11.CoVSI 18121	Poor	On par	Poor	On par	Poor	On par	Poor	Poor
12. Co 17009	Poor (wilt)	Poor	Poor	-	Poor	Poor	-	Poor
13. CoT 16366	Poor	Poor	Poor	Poor	Poor (seed shortage)	On par	Poor	Poor
Standards								
14.Co 86032	Yellowing and drying		Best	Best	Best	Best		GSD
15. CoC 671				Lodged				GSD
16.Co 09004	Best	Best	YLD, low NMC	Lodged			Best	Best

a) Among the standards the best should be indicated b) The entries should be compared with the best standard based on cane characters and field stand and rated as 1.Better, 2. On par, 3.Poor

* Other specific information if any like incidence of pest and diseases, cane traits like thickness, splits, spines, flowering, lodging, tillering, incidence of pests and diseases in specific centres can be given in the column or as separate foot notes.

Note:1. Co 17009 : Poor stand , stunted growth, drying, pokkah boeng were noticed in almost all centers

2. Co 86032 : YLD was noticed at Padegaon and Pune

3. Co 09004: correct seed material of standard Co 09004 needs to be replaced in all trials at Powarkheda and Kawardha

2. Evaluation of entries in trials:

Performance of entries in :

AVT (Early & Midlate) I plant

Entries	Padegaon DOP:01.02.21	Pune DOP:29.12.20	Pravarnagar DOP:18.01.21	Navsari DOP:09.01.21	Powarkheda DOP:14.02.21	Kawardha DOP:07.01.21	Basmathnagar DOP:20.01.21	Rudrur DOP: 28.12.20
1.Co 16006	On par	On par	Poor	On par	Poor	On par	Better	Poor
2. Co 16010	Poor	On par	Poor	On par	Poor	On par	On par	Poor
3.Co 16018	Poor	On par	Poor	On par	Poor	On par	On par	Poor
4. CoVSI 16121	Poor	Poor	Poor	Poor	Poor (seed shortage)	On par	Better	Poor
5. PI 16131	Poor	Poor	Poor	On par	Poor (seed shortage)	Poor	Better	Poor
Standards								
6.Co 86032		YLD	Best	Best		Best		
7. CoC 671			Low NMC					
8.Co 09004	Best	Best	Low NMC		Best		Best	Best

Powarkheda : 1st replication severely damaged by wild animals

3. Evaluation of entries in trials:

Performance of entries in:

AVT (Early & Midlate) II plant

Entries	Padegaon DOP:07.01.21	Pune DOP:01.01.21	Pravarnagar DOP:20.01.21	Navsari DOP:	Powarkheda DOP:05.02.21	Kawardha DOP:11.01.21	Basmathnagar DOP:21.01.21	Rudrur DOP: 16.01.21
1. Co 11015	Poor	Poor	Poor	Poor	Poor	On par	Poor	Poor
2. Co 14005	On par	On par	On par	Poor	Poor	Poor	Poor	On par
3. Co 15005	Poor	Poor	On par	Poor	Poor	On par	Poor	Poor
4. Co 15006	On par	Poor	Poor	On par	Poor	Poor	Poor	Poor
5. Co 15007	On par	Poor	Poor	On par	Poor	On par	On par	Poor
6. Co 15009	On par	On par	On par	Poor	Poor	On par	Poor	On par
7. Co 15010	Poor	On par	Poor	Poor	Poor	On par	Poor	Poor
8. Co. 15017	On par	On par	On par	Poor	On par	On par	On par	Poor
9. Co 15021	Poor	Poor	On par	Poor	Poor	On par	Poor	Poor
10. CoN 15071	On par	On par	Poor	On par	Poor	On par	Poor	Poor
11. CoSnk 15102	On par	On par	(?) On par	Poor	On par	Better	On par	Poor

12. PI 15131	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor
Standards								
13.Co 86032	YLD	YLD				Best		
14. CoC 671							Best	
15.Co 09004	Best	Best	Best	Best	Best (?)	?	-	Best

Pravarnagar: Unknown wrong entries were included in place of Co 14005 and CoSnk 15102

Powarkheda: Assessing entries was difficult on account of varied levels of wild animal damage (5-90%) and low plant population because of seed shortage

Kawardha: Wrong entry included as standard Co 09004 and **Rudrur:** Smut clumps observed in Co 14005 & Co 15007

4. Evaluation of entries in trials:

Performance of entries in:

AVT (Early & Midlate) Ratoon

Entries	Padegaon DOR:15.02.21	Pune DOR:08.02.21	Pravarnagar DOR:20.01.21	Navsari DOR:30.03.21	Powarkheda DOR:-	Kawardha DOR: 23.02.21	Basmathnagar DOR:10.04.21	Rudrur DOR: 11.02.21
1. Co 11015	Poor	Poor	Poor	Poor	Vitiated	Poor	Poor	Better
2. Co 14005	On par	Poor	?	Better		On par	On par	Better
3. Co 15005	Poor	Poor	On par	Better		On par	Poor	Poor
4. Co 15006	Poor	Poor	Poor	Better		Poor	Poor	Better
5. Co 15007	On par (Smut)	On par	Poor	On par		Poor	Poor	On par (Smut)
6. Co 15009	On par	On par	Poor	On par		On par	Poor	Better
7. Co 15010	Poor	Poor	Poor	Better		Poor	Poor	Poor
8. Co. 15017	Poor	On par	On par	On par		Poor	Poor	Poor
9. Co 15021	Poor	Better	On par	On par		Poor	Poor	Better
10. CoN 15071	Poor	Better	Poor	On par		Poor	On par	On par
11. CoSnk 15102	Better	On par	?	Better		Poor	On par	Poor
12. PI 15131	On par	On par	Poor	On par		Poor	Poor	Poor
Standards								
13.Co 86032			Best	Best	Best		Best	
14. CoC 671								
1.Co 09004	Best	Best				Best		

Pravarnagar: Unknown wrong entries were included in place of Co 14005 and CoSnk 15102

Kawardha: Wrong entry included as standard Co 09004.

5. B.III (a)-Evaluation and identification of climate resilient ISH and IGH genetic stocks

Evaluation for drought tolerance (I Plant Crop)

Performance of entries

Entries	VSI, Pune DOP:15.01.2021	
	Stress	Normal irrigated
1. ISH 501	Poor	Poor
2. ISH 502	On par	Poor
3. ISH 512	On par	Poor
4. ISH 519	Poor	Poor
5. ISH 524	Poor	Poor
6. ISH 534	On par	Poor
7. ISH 536	On par	Poor
8. ISH 548	On par	Poor
9. ISH 567	On par	Poor
10. ISH 584	On par	Poor
11. ISH 585	On par	Poor
12. ISH 587	On par	Poor
13. ISH 590	On par	Poor
14. ISH 594	On par	On par
15. IGH 823	On par	Poor
16. IGH 829	On par	On par
17. IGH 833	On par	Poor
18. IGH 834	On par	Poor
Standards		
19. Com 88121 (C)		
20. CoM 265 (C)	Best	Best
21. VSI 12121 (C)		

6. B.III (b) Evaluation and identification of climate resilient near commercial clones

Evaluation for drought tolerance (I Plant Crop)

- Not conducted

General observations made by the team on the conduct of the trials for few centers

(Suggestions for the improvement were also conveyed by the team to the concerned).

1. Dr.V.K.Patil, SSK, Ltd., Pravaranagar

- Maintenance of the trials is average to poor as crop experienced severe moisture stress with other poor management practices (no proper earthing-up and weed management).
- Overall plant population / stand was moderate to poor in some entries, some entries were missing (AVT PC II).

- No experienced scientific staff on regular basis for the conduct of trials
- Ratoon trial was very poorly managed

2. ZARS, Powarkheda

- Late planting caused poor population and moisture stress in almost all trials.
- Trials lacked better earthing-up and weed management
- Crop damage by wild animals is observed in almost all AICRP (S) trials
- Ratoon trial was vitiating.
- Insufficient seed material caused moderate to poor crop stand in many entries

3. ARS, Kawardha

- Trials were maintained excellently but lack support for timely juice analysis as they are depending on nearby sugar factory.

4. RSRS, Basmathnagar

- Generally crop growth was normal but population / stand was affected in many entries
- No sampling for juice analysis till 10th month. Even it is difficult to draw correct samples at 12th month because of heavy lodging no clear path between blocks/ replications
- No proper earthing-up, weed management and no propping, hence team could not visit all replications properly.

B. Crop Production

1. Vasantdada Sugar Institute, Pune

AS 72 (Plant Crop): Agronomic performance of elite Sugarcane Genotypes.

The trial was conducted as per the technical program. The maintenance of the trial was very good. All the observation was taken as per the technical program. The trial was conducted with 15 varieties under 100% RDF and 125% RDF in 3 replications. The genotypes Co 15006, Co 15009 and PI 15131 showed the better performance in terms of germination %, however Co 14005 Co 15006 and PI 15131 showed better tillers count and NMC. In general, the performance of trial was excellent.

AS 74 (IIIrd Plant): Evaluation of Sugarcane Varieties for drought tolerance.

The trial was conducted as per the technical programme. The germination %, tillering count and NMC were recorded. All the agronomic package of practices was adopted as per the schedule. The performance of trial was excellent. In I₁ and I₂ irrigation regimes, Varieties CoM 0265, VSI 08005 and CoVSI 18121 have good performance in respect of germination, Tillering count and NMC than rest of the varieties.

AS 75: Precision nutrient management through rescheduling time of application for widely spaced sugarcane plant-ratoon system

The trial was conducted as per the technical program. The maintenance of the trial was very good. All the observation was taken as per the technical program. Band application of nutrient recorded more germination %, tiller count and NMC than the broadcasting method. RDN+ RDK in six splits treatment showed better growth and NMC of sugarcane plant crop as compared to other treatments.

AS 76: Evaluation of PSAP on AICRP in Sugarcane at given varieties in different agro-climatic zones

The trial was conducted as per the technical program. The maintenance of the trial was very good. All the observation was taken as per the technical program. Treatment T₃ and T₆ showed better germination % , however T₅ and T₁₀ showed better tillering as compared to other treatments.

2. Zonal Agricultural Research Station, Powarkheda

AS 72: Agronomic performance of elite Sugarcane Genotypes.

The trial was conducted as per the technical program but maintenance of trial was not good. Among the genotype CoC 671 and Co15021 performed better growth as compared to other genotype. Genotype Co 15071 was damaged by wild boar and damage was upto 90 %. Between the two fertility levels, 125% of the recommended dose of NPK showed better growth of sugarcane plant crop as compared to the 100% of the recommended dose of NPK.

AS 74: Evaluation of Sugarcane Varieties for drought tolerance.

Trial fails due to wild boar damage

AS 75: Precision nutrient management through rescheduling time of application for widely spaced sugarcane plant-ratoon system

The trial was conducted as per the technical program. Band application of nutrient recorded more germination %, tiller count and NMC than the broadcasting method. RDN+ RDK in six splits treatment showed better growth and NMC of sugarcane plant crop as compared to other treatments.

Note: Ratoon trials were managed poorly and field is mostly infested by weeds.

C. Plant Pathology

Status of the AICRP (S) trials conducted under Plant Pathology Discipline:

Sr. No	Research Station	PP14	PP17 A	PP17 B	PP17 C	PP17 D	PP17 E	PP17 F	PP22	PP23	PP31	PP32	PP33	PP34
1	Central Sugarcane Research Station, P.O. Padegaon Farm, Satara (M.S.)	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NA	NA
2	Vasantdada Sugar Institute, Manjari (BK), Pune (M.S.)	NA	NA	C	NA	C	C	C	C	NA	C	C	C	C
3	Padmashri Dr. Vitthalrao Vikhe Patil SSK, Pravaranagar, (M.S.)	NA	NA	NA	NA	NA	NC	NA	NC	NA	NC	NA	NA	NA
4	Main Sugarcane Research Station, NAU, Navsari, Gujarat	C	C	C	C	C	C	C	C	C	NA	NA	C	C
5	Zonal Agricultural Research Station, Powarkheda, Hoshangabad (M.P.)	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NA	NA
6	S.K.College of Agriculture and Research Station, Kawardha(C.G.)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
7	Regional Sugarcane Research Station, Basmathnagar, (M.S.)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
8	Regional Sugarcane and Rice Research Station, Rudrur, (T.S.)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9	Sugarcane Research Centre, Dr. PDKV, Akola (M.S.). , Tharsa		Not visited.											

NA: Not allotted, C: Conducted, NC: Not conducted

Details of the station-wise observations are as under:

- 1. Central Sugarcane Research Station, P.O. Padegaon Farm, Satara (M.S.):** The programme was not allotted to this centre.

Disease status in ZVT's

- a. Grassy shoot** noted on Co17009, CoVc18061, Co14005, Co15021, CoSnk15101, CoC671 and Co86032.
- b. Pokkah boeng** noted on Co18001, Co18009, Co18024, CoN18071, Co15017, Co15021, CoSnk15101, Co16006, Co16010, PI16131, Co86032 and CoC671.
- c. Brown rust** noted on CoVc18061, CoN18071, Co14005, Co15009, Co15007, Co15010, CoSnk15102, CoC671 and Co09004.
- d. Yellow leaf disease** noted on PI16131, Co18001, Co15007, Co15010, Co15004, Co11015, Co15006 (severe), Co18002, Co18003, Co86032, CoC671 and Co09004.

- 2. Vasantdada Sugar Institute, Manjari (BK), Pune (M.S.):** All allotted 8 experiments viz., PP17B, PP17D, PP17E, PP17F, PP22, PP31, PP32, PP33 and PP34 were conducted as per the technical programme. All the trials are maintained properly.

- a.** In PP17 (B), 18 genotypes are under testing, of which, till date, 06 genotypes are free from smut.
- b.** In PP17D, out of 5 genotypes, till date YLD noted on Co16010 only.
- c.** In PP17E, out of 5 genotypes, till date brown rust noted on Co16006, Co16010 and PI 16131.
- d.** In PP17 F, out of 5 genotypes, till date pokkah boeng noted on Co16006 only.
- e.** The crop under PP31 is free from brown spot disease and therefore the treatments were not imposed so far.
- f.** In PP33, YLD noted in control plot of VSI08005.
- g.** In PP35, smut was noted in control plot where setts were not treated with Sett Treatment Device.

Disease status in ZVT's

- a. Grassy shoot** noted on CoC671, CoVc18061, Co11015, Co14005, Co15021, CoSnk15101, Co17009, Co16006, PI16131 and Co86032
- b. Pokkah boeng** noted on Co15005, Co15017, Co15021, CoSnk15101, Co16006, Co16010, PI16131, Co15009, Co15010, CoT16366, Co18001, Co18009, Co18024, CoN18071, Co86032 and CoC671.
- c. Brown rust** noted on Co14005, Co15009, Co15007, Co15010, CoSnk15102, PI15131, Co18001, Co18002, CoN18071 (severe), CoC671 and Co09004
- d. Yellow leaf disease** noted on PI16131, Co18001, Co15007, Co15010, Co15004, Co11015, Co15006 (severe), CoN15071, CoSnk15102, CoVSI16121, Co18002, Co18003, Co86032, CoC671 and Co09004.
- e. Brown spot** noted on CoN18072, while Mosaic noted on few genotypes in minor state.

e. The ISH and IGH genetic stock was almost free from the diseases under natural condition.

3. Padmashri Dr. Vitthalrao Vikhe Patil SSK, Pravaranagar, (M.S.) Three experiments viz., PP 17E, PP22 & PP31 were allotted but not conducted.

Disease status in ZVT's: YLD was observed in many genotypes viz., Co18001, Co86032, Co09004, Co11015, CoN15071, Co15017 and CoC671. The incidence of brown spot was severe in many genotypes viz., Co18003, Co86032, Co15009, Co15010, Co15021, Co15006 and PII6131. Pokkah boeng and rust diseases were also noted in some of the genotypes.

4. Main Sugarcane Research Station, NAU, Navsari, Gujarat: All allotted 11 experiments viz., PP14, PP17A, PP17B, PP17C, PP17D, PP17E, PP17F, PP22, PP23, PP33 and PP34 were conducted as per the technical programme. All the trials are maintained properly.

PP14 & PP14 (A): No. of differentials: 20, Date of inoculation: 13.09.2021, Plug method, Pathotypes used: CF06 & CF12 and different local isolates. Observations are awaited. Maintenance of pathotypes is in progress

PP-17 (A): No. of varieties: Total: 29 + 6 checks= 35, Date of inoculation: 20.08.2021, Method of inoculation: Plug method and cotton swab method, Pathotypes used: CF06 & CF12

After 60 days of inoculation CoVC18061, CoT16366 & PII6131 showed MS reaction to red rot

PP-17 (B): No. of varieties: 35 (29 + 6 checks). Date of inoculation: 06.01.2021. Out of 35 (including check) 14 varieties were found infected with whip smut disease.

PP- 17 (C): Out of 22 AVT entries, till date 9 varieties were found infected with wilt fungus.

PP- 17 (D): Out of 22 AVT entries, 6 varieties were found infected with YLD.

PP- 17 (E): Till date, all the 22 AVT entries are free from brown rust.

PP- 17 (F): Till date, out of the 22 AVT entries, pokkah boeng noted on 2 varieties.

PP-23: No. of varieties: Total: 36, Date of inoculation: 02.09.2021. Observation will start soon

PP-33: They have developed 1000 tissue culture plants for planting of this experiment.

PP 34: For next year, it was suggested to use setts from red rot, smut and wilt disease infected clumps, only.

Disease status in ZVT's

a. Grassy shoot noted on CoT16366, CoVSI16121, CoSnk15101, CoC671 and Co86032.

b. Pokkah boeng noted on Co18001, Co18009, Co18024, Co15017, Co15021, CoSnk15101, PII6131, Co86032 and CoC671.

- c. **Yellow leaf disease** noted on Co18009, Co18012, CoC671, Co86032, CoVSI 16121, Co15006, Co15010, CoSnk15102, Co86032
- d. **Wilt** noted on Co18013, CoC671, Co86032 and CoVSI16121
- e. **Red rot and smut** incidence under natural condition was not noted so far.

5. **Zonal Agricultural Research Station, Powarkheda, Hoshangabad M.P.:** The programme was not allotted to this centre.

Disease status in ZVT's: Due to the poor maintenance of the trials/ crop the incidence of the diseases was more. GSD, YLD, brown rust, wilt, pokkah boeng and brown spot were noted singly or in combination. Wilt was noted prominently in stools infested with root borer. YLD was noted prominently in many genotypes under testing. Genotypes viz., PI16131, Co18001, Co15007, Co15010, Co15004, Co11015, Co15006 (severe), CoN15071, CoSnk15102, Co18002, Co18003, Co86032, CoC671 and Co09004 found succumb to YLD.

6. **S.K. College of Agriculture and Research Station, Kawardha (C.G.):** The programme was not allotted to this centre.

Disease status in ZVT's: Due to good maintenance and healthy crop stand, the incidence of foliar diseases was low. Pokkah boeng was noted on Co18001, Co18002, Co15010, CoC671 and Co86032. GSD was noted on CoC671, CoVc18061, Co09004, Co14005 and Co86032. Eye spot noted on Co18007, Co17009 and Co86032. The incidence of YLD was very low and noted on Co16018, Co11015 and Co86032. All the genotypes were free from smut, wilt and red rot.

7. **Regional Sugarcane Research Station, Basmathnagar, (M.S.):** The programme was not allotted to this centre.

Disease status in ZVT's: Due to the poor crop management the incidence of the diseases was more. GSD, YLD, brown rust, wilt, pokkah boeng and brown spot were noted. GSD noted on Co18024, CoVc18061 (Severe), Co18001, CoC671, Co86032, Co16018, PI16131, CoVSI16121Co15021, Co15007 and CoSnk15102. YLD noted on CoN18072, Co18009, Co18002, Co15010 (severe), CoSnk15102, Co11015, CoC671, Co86032, Co15009, Co15006 and PI15131. Brown rust noted on CoN18071, Co18009, Co15005, Co15007 and CoC671.

8. **Regional Sugarcane and Rice Research Station, Rudrur, (T.S.) :** The programme was not allotted to this centre.

Disease status in ZVT's:

a.GSD noted on many genotypes under testing viz., Co18009, CoVc18061, CoN18072, CoVSI18121, Co18024 (severe), Co18003, Co09004, Co18002, Co14005, CoC671, Co15005, Co86032, Co15007 (severe), CoN15071, Co15009, CoSnk15102, Co15021, Co15005, Co15010, Co16010, Co16018, PI16131, Co11015 and Co15006,

b. YLD noted on Co18009, CoVc18061, CoN18071, Co11015, CoVSI16121, PI16131, Co15007 (severe), Co15009 (severe), Co15010, Co15017, PI15131, CoSnk15102, CoN15071, Co86032 and CoC671.

c. Brown rust noted on Co18003 and CoN18071.

d. Eye spot noted on few genotypes viz., Co18009, CoVSI18121, Co18011, and Co18013

e. Smut noted on Co14005 and Co15007

f. Pokkah boeng incidence was very meager & noted on Co18024
No natural incidence of red rot on any genotypes.

D. Entomology

1. Central Sugarcane Research Station, P.O. Padegaon Farm, Satara (M.S.)

Allotted Experiments: 6

Conducted Experiments: 6

- 1.E.4.1: Evaluation of zonal varieties / genotypes for their reaction against major insect pests.
- 2.E.28: Survey and surveillance of sugarcane insect-pests.
- 3.E.30: Monitoring of insect-pests and bio-agents in sugarcane agro-ecosystem.
- 4.E 34: Standardization of simple and cost-effective techniques for mass multiplication of sugarcane bio agents
- 5.E 40: Integrated approach to manage white grubs in sugarcane
- 6.E 41: Assessment of yield losses caused by borer pests of sugarcane under changing climate scenario

The Centre has planted separate trial for screening of genotypes against major pests free of insecticide application as per the technical programme.

Meagre infestation of white grubs due to low population in control plots.

General observation: The major pests noticed were internode borer and woolly aphid. Patches of woolly aphid could be noticed in the trial plots. Predators such as *Dipha aphidivora* and *Micromus igorotus* were found to be active and prevented further spread of the pest without the need for insecticidal intervention. Less incidence of white grubs

2. Vasantdada Sugar Institute, Pune

Allotted Experiments: 6

Conducted Experiments : 6

As a voluntary Centre, the following experiments have been conducted:

- 1.E.4.1: Evaluation of zonal varieties / genotypes for their reaction against major insect pests.
- 2.E.28: Survey and surveillance of sugarcane insect-pests.
- 3.E.30: Monitoring of insect-pests and bio-agents in sugarcane agro-ecosystem.
- 4.E 34: Standardization of simple and cost-effective techniques for mass multiplication of sugarcane bio agents
- 5.E 40: Integrated approach to manage white grubs in sugarcane

6.E 41: Assessment of yield losses caused by borer pests of sugarcane under changing climate scenario

Separate Entomology trial was laid-out for screening of genotypes to major pests without insecticide application. Low plant stand was observed in AVT (Early) Ratoon screening trial

Meagre infestation of white grubs due to low population in control plots.

General observation: Pest incidence was low in trial plots which were planted on 31.12.2017. Patches of woolly aphid population could be seen in many plots, but there was serious incidence of the pest as predators such as *Dipha aphidivora* and *Micromus igorotus* were very active preventing further spread of the pest.

3. Padmashri Dr. Vitthalrao Vikhe Patil SSK, Pravaranagar, (M.S.)

No Entomology trial has been conducted at this voluntary Centre.

General observation: Observations made in the breeders' trial plot indicated that internode borer and woolly aphid are the major pests, however, incidence level of these pests were very low (<5%). Few patches of woolly aphid noticed in the trial plots which had the activity of *Dipha aphidivora* and *Encarsia flavoscutellum*.

Also, team visited to the Biological control laboratory of ICAR-IISR, Lucknow at Pravaranagar. The lab presently with limited facilities multiplies *Trichogramma chilonis* and entomophilic nematodes, *Steinernema* and *Heterorhabditis*.

4. Main Sugarcane Research Station, Navsari

No Entomology trial has been conducted at this Centre.

General observation: Low incidence of mealy bug, internode borer and top borer was observed in the breeding trial entries.

5. Zonal Agricultural Research Station, Powarkheda

No Entomology trial has been conducted at this Centre.

General observation: Observations in the breeders' trial plots indicated the incidence of internode borer and mealybugs as major pests. Wild boar incidence was noticed in many plots and much damage has been done to the genotypes in the trial plots.

6. S.K. College of Agriculture and Research Station, Kawardha (C.G.)

No Entomology trial has been conducted at this voluntary Centre.

General observation: Low incidence of mealy bug, internode borer and woolly aphids was observed in the breeding trial entries.

7. Regional Sugarcane Research Station, Basmathnagar, (M.S.)

No Entomology trial has been conducted at this Centre.

General observation: Observations in the breeders' trial plots indicated the incidence of internode borer and mealybugs as major pests. Damage sugarcane trials due to Wild boar and monkey was observed in many plots and much damage has been done to the genotypes in the trial plots.

8. Regional Sugarcane and Rice Research Station, Rudrur, (T.S.)

No Entomology trial has been conducted at this voluntary Centre.

General observation: Low incidence of mealy bug, internode borer, root borer and wooly aphids was observed in the breeding trial entries.

Monitoring Team Report of East Coast Zone (Crop Season 2021-22)

Monitoring team constituted by the Director and Project Coordinator, AICRP (Sugarcane), ICAR-IISR-Lucknow vide letter no. F No. 12-11 (M)/2021-PCS dated September 15, 2021 for assessment of performance of the AICRP trials at regular as well as voluntary centres of East Coast Zone with the following scientists.

Sl. No.	Name, Designation & address of Members	
1	Dr. P.K. Nayak Sugarcane Breeder & OIC, Sugarcane Research Station, Nayagarh-752070 (Odisha.)	Team Leader
2	Dr. P. Kishore Varma, Plant Pathologist, Regional Agricultural Research Station (ANGRAU), Anakapalle-531001 (A.P)	Member
3	Dr. Arun Baitha Principal Scientist (Entomology), ICAR-Indian Institute of Sugarcane Research Lucknow-226002 (U.P)	Member
4	Dr. S.K. Yadav, Senior Scientist (Agronomy) ICAR-Indian Institute of Sugarcane Research Lucknow-226002 (U.P)	Member-cum- facilitator

The team assembled at Parry Sugarcane Research and Development Centre, EID Parry (India) Ltd., Nellikuppam on 2nd December, 2021 and visited and monitored the AICRP(sugarcane) regular as well as voluntary centres viz., Nellikuppam, SRS, Cuddalore, SRS, Vuyyuru, RARS, Anakapalle and SRS, Nayagarh from 3rd to 8th December, 2021. The discipline-wise observations made during the visit of different Research Stations and recommendations are reported here under.

General Observations:

1. The crop condition is very good at all the centres of the Zone.
2. There is standing water in the field in SRS, Cuddalore centre due to heavy cyclonic rain.
3. There is excess of 230mm of rainfall in whole of Tamil Nādu especially the area surrounding Nellikuppam and Cuddalore during November month.

4. Most of the clones at SRS, Vuyyuru are lodged due to cyclonic rain during month of Flowering was noticed in CoC 19338 and CoC 19339 at Anakapalle.
5. The entry CoV 18356 in AVT (E) I PC was severely affected with Red Rot in all the replications at Nellikuppam Centre. Therefore the Centre has uprooted the entire clones in all the replications.
6. The flowering was noticed in clone CoC 19338 and CoC 19339 in the IVT (ML) trial at RARS, Anakapalle and SRS, Nayagarh
7. The incidence of YLD syndrome was observed in AP and Odisha.

A. Crop Improvement

1. Parrys Sugarcane Research & Development Centre, EID Parry (India) Ltd., Nellikuppam (T.N.)

This is a voluntary centre of the AICRP(Sugarcane). The centre has conducted 4 (four) trials viz., IVT(E), AVT (E) I PC, AVT (E) II PC and IVT(ML) as per the technical programme. The AVT (E) Ratoon was not conducted. In general, conductance of the trials was very good. Performance of the entries at ten months of age for field stand, tillering and cane traits compared to the best standards are given in Table 1-5. There is trash mulching in alternate rows in all trials. The centre has uprooted the clone CoV 18356 in trial AVT(E) I PC in all the replications due to heavy infestation of Red Rot. The seed multiplication of 09 Early and 07 Midlate entries accepted during the Group Meeting of AICRP(Sugarcane) held at ICAR-IISR, Lucknow in 2020 was carried out as per the technical Programme

2. Sugarcane Research Station, Cuddalore, (T.N.)

The centre has conducted all the 5 trials as per the technical programme. All the trials were very good in establishment and were maintained very well. Performance of the entries at nine months age for field stand, tillering and cane traits compared to the best standards are given in Table 1-5. There is stagnation of water in all the trials due to heavy rain in cyclone in the month of November'2021. Some of the clones are lodged. There is TT propping in the trials. The seed multiplication of 09 Early and 07 Midlate entries accepted during the Group Meeting of AICRP(Sugarcane) held at ICAR-IISR, Lucknow in 2020 was taken up.

3. Sugarcane Research Station, Vuyyuru (A.P.)

This is a voluntary centre of the AICRP(S). The centre has conducted all the 5 trials as per the technical programme. In general conductance of trials was very good. Performance of the entries at ten months of age for field stand, tillering and cane traits compared to the best standards are given in Table 1-5. Most of the clones lodged in the trials due heavy rain in cyclone weather in the month of November'2021. The seed multiplication of 09 Early and 07 Midlate entries accepted during the Group Meeting of AICRP(Sugarcane) held at ICAR-IISR, Lucknow in 2020 are carried out as per the technical Programme.

4. Regional Agricultural Research Station, Anakapalle (A.P.)

The centre has conducted all the 5 trials as per the technical programme . All the trials were good in establishment and were maintained very well. Performance of the entries at ten months age for field stand, tillering and cane traits compared to the best standards are given in Table 1-5. Incidence of Yellow Leaf disease (YLD) was also observed in some clones. There was TT propping in the trails. The centre has conducted the trial on evaluation and identification of climate resilient ISH and IGH genetic stocks for drought tolerance (I- Plant Crop).The seed multiplication of 09 Early and 07 Midlate entries accepted during the Group Meeting of AICRP(Sugarcane) held at ICAR-IISR, Lucknow in 2020 are carried out as per the technical Programme.

5. Sugarcane Research Station, Nayagarh (Odisha)

The centre has conducted all five trials of Crop Improvement as per the technical programme of AICRP (Sugarcane). The trials were excellent in establishment. Performance of the entries at ten months of age for field stand, tillering and cane traits compared to the best standards are given in Table 1-5. There is flowering in Clone CoV 19357 in IVT (E) Some of the clones lodged in the trials due to cyclonic weather during month of November'2021. There is flowering in clone CoC 19339 in IVT (ML) trial. The seed multiplication of 09 Early and 07 Midlate entries accepted during the Group Meeting of AICRP(Sugarcane) held at ICAR-IISR, Lucknow in 2020 are carried out as per the technical Programme.

List of trials conducted during 2021– 2022 in East Coast Zone

Sl. No.	Trials	Nellikuppam	Cudallore	Vuyyur	Anakapalle	Nayagarh
1.	IVT(E)	Conducted	Conducted	Conducted	Conducted	Conducted
2.	AVT(E)-I PC	Conducted	Conducted	Conducted	Conducted	Conducted
3.	AVT(E)-II PC	Conducted	Conducted	Conducted	Conducted	Conducted
4.	AVT(E)-R	Not Conducted	Conducted	Conducted	Conducted	Conducted
5.	IVT(ML)	Conducted	Conducted	Conducted	Conducted	Conducted

Performance of the AICRP (S) trials at different centres in the East Coast Zone

Sl. No.	Trials	Nellikuppam	Cuddalore	Vuyyuru	Anakapalle	Nayagarh
1.	IVT(E)	Excellent	Excellent	Good	Good	Excellent
2.	AVT(E)-I PC	Excellent	Excellent	Excellent	Excellent	Excellent
3.	AVT(E)-II PC	Excellent	Excellent	Excellent	Excellent	Excellent
4.	AVT(E)-R	Not Conducted	Good	Good	Good	Good
5.	IVT(ML)	Good	Good	Excellent	Good	Excellent

EVALUATION OF ENTRIES IN TRIALS

Table 1: Initial Varietal Trials (Early)

Entries	Nellikuppam	Cuddalore	Vuyyuru	Anakapalle	Nayagarh
CoA 19321	On par	On par	On par	Better	On par
CoC 19336	On par	On par	Better	On par	On par
CoC 19337	On par	Better	On par	Better	Better
CoV 19356	On par	Better	Better	Poor	On par
CoV 19357	On par	Better	Better	Poor	Better
CoA 92081	Best	Best	Poor	Poor	Poor
CoC 01061	Poor	On par	Poor	Better	Better
CoA 11321	Better	On par	Best	Best	Best
Dt. of Planting	05.02.2021	20.03.2021	29.01.2021	11.02.2021	12.01.2021

Table 2: Advanced Varietal Trial (Early) I Plant Crop

Entries	Nellikuppam	Cuddalore	Vuyyuru	Anakapalle	Nayagarh
CoOr 18346	On par	On par	On par	On par	On par
CoV 18356	Up rooted due to Red Rot	Better	On par	Better	On par
CoV 18357	Better	On par	Better	Better	On par
CoA 92081	Better	Better	Better	Poor	Better
CoC 01061	Poor	On par	Better	Best	Better
CoA 11321	Best	Best	Best	Poor	Best
Dt. of Planting	09.02.2021	09.03.2021	19.02.2021	23.02.2021	27.01.2021

Table 3: Advanced Varietal Trial (Early) II Plant Crop

Entries	Nellikuppam	Cuddalore	Vuyyuru	Anakapalle	Nayagarh
CoA 17321	On par	On par	On par	Better	Better
CoA 17323	Better	On par	On par	Better	On par
CoC 17336	On par	Better	Better	On par	On par
CoA 92081	Better	Better	On par	On par	Better
CoC 01061	Better	Better	Better	Better	Better
CoOr 03151	Best	Best	Best	Best	Best
Dt. of Planting	11.02.2021	09.03.2021	04.02.2021	25.02.2021	12.01.2021

Table 4: Advanced Varietal Trial (Early) Ratoon

Entries	Nellikuppam	Cuddalore	Vuyyuru	Anakapalle	Nayagarh
CoA 17321	N	On par	On par	On par	On par
CoA 17323	O	Better	On par	Better	On par
CoC 17336	T	On par	On par	On par	On par
CoA 92081	C	Poor	Better	Better	Better
CoC 01061	O	Better	Better	Better	Better
CoOr 03151	N	Best	Best	Best	Best
Dt. of Ratooning	D	05.04.2021	05.03.2021	15.04.2021	20.02.2021

Table 5: Initial Varietal Trials (Midlate)

Entries	Nellikuppam	Cuddalore	Vuyyuru	Anakapalle	Nayagarh
CoV 18358	On par	On par	On par	On par	On par
CoA 19322	Better	Better	On par	On par	On par
CoC 19338	Better	On par	On par	Better	Better
CoC 19339	On par	On par	On par	On par	On par
CoV 19358	On par	On par	On par	Better	On par
CoV 19359	Better	Better	On par	Better	On par
CoV 92102	Better	Best	Best	Better	Better
Co 86249	Poor	Better	Better	Better	Poor
Co 06030	Best	Poor	Best	Best	Best
Dt. of Planting	05.02.2021	20.03.2021	29.01.2021	10.02.2021	13.01.2021

B. Crop Production

The team of four members visited five centres of East Coast Zone of All India Coordinated Research Project on Sugarcane *viz.*, Nellikuppam, Cuddalore, Vuyyuru, Anakapalle and Nayagarh from 03.12.2021 to 08.12.2021 as per the technical programme of year 2021-22. Following Crop Production experiments were finalized for multi-location trails under AICRP (Sugarcane) programme:

1. AS- 72: Agronomic performance of elite sugarcane genotypes (Early).
2. AS-73: Assessment of climate change impact on sugarcane productivity.
3. AS-74: Evaluation of sugarcane varieties for drought tolerance sugarcane.
4. AS-75: Precision nutrient management through rescheduling time of application for widely spaced sugarcane plant - ratoon system.
5. AS-76: Evaluating efficacy of PSAP for enhancement of sugarcane growth, yield and quality (Sponsored trial).

Centre-wise status of trials allotted and conducted:

Experiment No & Centre	AS-72 (Early)	AS73	AS-74	AS-75	AS-76
Nellikuppam	NA	NA	NA	NA	NA
Cuddalore	NA	NA	NA	NA	NA
Vuyyuru	NA	NA	NA	NA	NA
Anakapalle	NA	NA	NA	NA	NA
Nayagarh	Conducted	Conducted	Conducted	Conducted	Conducted

NA- Not Allotted

NC – Not Conducted

Overall grading of trials with score:

Trials	Nellikuppam	Cuddalore	Vuyyuru	Anakapalle	Nayagarh
AS-72	NA	NA	NA	NA	Excellent (93)
AS-73	NA	NA	NA	NA	Weather data submitted
AS-74	NA	NA	NA	NA	Excellent (96)
AS-75	NA	NA	NA	NA	Excellent (90)
AS-76	NA	NA	NA	NA	Excellent (96)

Rating scales with score: 1. Excellent (90-100), 2. Very good (80-89), 3. Good (70-80), 4. Average (60-70) and 5. Poor (< 60)

Salient observations (Nayagarh Centre)**AS -72: Agronomic performance of elite sugarcane genotypes (Early)**

All the treatments of each replication were properly levelled in the field as per the standard guidelines of the trials. The health and vigour of the crop is quite satisfactory. Early maturing varieties of AVT-II approved for East-Coast Zone were planted on 06/02/2021 at 120 cm spacing with two fertilizer levels *i.e.*, 100 % and 125% of the recommended dose of NPK for the zone. The overall crop condition was very good. No major disease and pest were appeared in the crop. However, there is not shown much difference between two fertiliser levels (*i.e.*, 100 % and 125%) in terms of millable tillers and cane height.

AS-73: Assessment of climate change impact on sugarcane productivity

Required weekly weather data has been submitted to concerned scientist at ICAR-Indian Institute of Sugarcane Lucknow as per the guidelines of this trial.

AS-74: Evaluation of sugarcane varieties for drought tolerance

The trial was planted on 04-01-2021 with six promising genotypes for the zone. All the treatments were properly allocated and levelled in the field as per the guidelines of the experiments. The experimental field was properly neat and clean. The overall health and vigour of the crop is superb. The crop has been attained its full maturity and ready to harvest. Among early maturing varieties, the growth of CoOr 12346 was better whereas in mid late entries, CoOr 15346 performed better with 0.3 IW/CPE initially. However due to intermittent rains, the

performance of irrigation regimes of 1.0 and 0.3 IW/CPE ratio were became more or less similar in terms cane height.

AS-75: Precision nutrient management through rescheduling time of application for widely spaced sugarcane plant - ratoon system

The all treatments with all replication were executed properly as per technical programme. The ratoon crop for this trial was initiated on 21-01-2021 with promising genotype CoOr 12346. The crop condition was very good. There was some menace of monkey was noticed in this trial under some plots. However, overall crop condition is satisfactory. The treatment A2B2 *i.e.*, band placement of fertilisers (RDN+RDK) in six splits (Basal 10% remaining at 45, 75, 90,120 and 150 DAP in equal splits) found to be performing better than other treatment combinations.

AS-76: Evaluating efficacy of PSAP for enhancement of sugarcane growth, yield and quality (Sponsored trial).

The treatments were executed as per technical programme. All the treatments within each replication were properly levelled and tagged in the field. The trial was planted on 06-01-2021with promising genotype CoOr 03151. The health and vigour of the crop in each replication were found very well in condition. The treatment T9 *i.e.*, recommended N, 50% P and 50% K along with sett soaking with 0.8% PSAP solution and foliar spray of PSAP @ 0.4, 0.65 and 1.10% at 60, 90 and 120 DAP and also T10 *i.e.*,recommended N, 50% P and 50% K along with sett soaking with 0.8% PSAP solution and foliar spray of PSAP @ 0.4, 0.65, 1.10 and 1.20% at 60, 80, 100 and 120 DAP found to be performing better than other treatment combinations. Although crop is in maturity phase with good condition free from disease and pest.

C. Plant Pathology

A brief summary of technical programme of Plant Pathology, 2021-22 of AICRP (Sugarcane) assigned and conduction of trails by the different centres under East Coast Zone are as follows:

Sr. No.	Experiments	Nelikuppam	Cuddalore	Vuyyuru	Anakapalle	Nayagarh*
1.	PP-14 & 14 (A)	NA	C	NA	C	NA
2.	PP-17 (A)	NA	C	NA	C	NA
3.	PP-17 (B)	NA	C	NA	C	NA
4.	PP-17 (C)	NA	NA	NA	C	NA
5.	PP-17 (D)	NA	C	NA	C	NA
6.	PP -17 (E)	NA	NA	NA	C	NA
7.	PP – 17 (F)	NA	C	NA	C	NA
8.	PP-22	NA	C	NA	C	NA

9.	PP-23	NA	C	NA	C	NA
10.	PP-31	NA	NA	NA	C	NA
11.	PP-33	NA	C	NA	C	NA
12.	PP- 34	NA	C	NA	C	NA

Note: C-Conducted, NA- Not Allotted, NC- Not Conducted

Detail Report of Sugarcane Plant Pathological Trial – (2021-22) East Coast Zone

Sr. No	Name of Centre and date of visit	Experiment No.	Description	Remarks
1.	EID Parry (India) Ltd. Nelikuppam 03.12.21 Pathology trials were not allotted			<p>General Observations of visited breeding trials:</p> <ul style="list-style-type: none"> All assigned experiments of Breeding discipline were well laid. Low to moderate incidence of rust, ring spot, pokkah boeng, YLD and wilt were observed in some of the sugarcane varieties/clones. INB and mealy bug incidence was also noticed in CoA 17323 Natural incidence of red rot was noticed in the variety CoC 01061. Three replications of the sugarcane clone CoV 18356 were harvested due to natural incidence of wilt and red rot. The red rot incidence in CoV 18356 couldn't be verified as the crop was harvested before monitoring to prevent further spread of red rot.
2.	SRS (TNAU), Cuddalore (TN) 04.12.2021	PP14 & PP14 (A) Identification of pathotypes & maintenance of red rot pathogen	Date of Planting: 25.03.2021 No. of differentials: 19 Date of inoculation: 07.10.2021 Method of inoculation: Plug method Pathotypes used: CF06 Seven new <i>C. falcatum</i> isolates were used for pathotyping along with standard pathotypes. Observation on red rot severity will be recorded after 60 days of inoculation <i>C. falcatum</i> isolates are being maintained for pathotype studies.	<ul style="list-style-type: none"> All experiments were conducted as per the technical programme Excess rainfall of approximately 1000mm (Actual: 2250 mm; Normal: 1200mm) was received during this year. Due to heavy rainfall, most of the experiments were partially submerged in water at the time of visit. YLD, ring spot, rust, wilt and red rot were noticed in different clones
		PP 17(A): R ed Rot Screening	No. of genotypes planted: 17 + Check varieties Date of Planting: 20.03.2021	

			Date of inoculation: 04.10.2021 (Plug method), 05.10.2021	
			(Cotton swab Nodal Method) Pathotype used: CF06 Both the methods of redrot inoculation were followed as per the technical programme	
		PP 17(B): Smut Screening	No. of genotypes planted: 17 + Check varieties Date of Planting: 20.03.2021 Inoculation: Steeped in freshly prepared Smut spore suspension for ½ hour before planting. Smut incidence was noticed in some of the test genotypes and check varieties.	
		PP 17 (D): Evaluation for YLD	No. of genotype: 17 + check varieties Observations are being recorded as per the technical programme, i.e., on 8 th , 10 th and 12 th month after planting. YLD initiation was noticed in some of the test genotypes and check varieties.	
		PP 22: Survey	Survey was conducted as per the technical programme. Till now survey was completed in Cuddalore, Kanchipuram, Thiruvallur and Villupuram districts of Tamil Nadu and Puducherry.	
		PP 23: Assessment of elite & ISH genotypes for Resistance to Red Rot	No. of genotypes: 29 + check varieties Date of Planting: 23.03.2021 Pathotype used: CF06 Method of Inoculation: Plug Method Date of inoculation: 06.10.2021	

			Data is yet to be recorded.	
		PP33: Management of YLD through meristem culture	Sugarcane variety used for Meristem tip culturing: Co 86032 Protocol used: As per technical programme Tissue culture derived plantlets were planted in the field and are being observed for YLD incidence.	
		PP34: Efficient delivery of fungicides and other agro inputs to manage major fungal diseases in sugarcane	Date of planting: 06.10.2021 Variety used: CoC 24 (red rot), CoC 22 (Smut)	
3.	Sugarcane Research Station, Vuyyuru (AP) 06.12.2021 Pathology trials were not allotted	General Observations of Visited Breeding trials <ul style="list-style-type: none"> All allotted experiments of Breeding discipline were well laid. In IVT (Early) trial, some of the entries like CoC 19336, CoOr 03151, CoA 11321 were lodged. Mild incidence of YLD was observed in CoA 19321 and CoC 01061, respectively. Ring spot, mosaic, Grassy shoot and pokkah boeng were observed with low to moderate severity. 		
4.	RARS (ANGRAU), Anakapalle (AP) 07.12.2021	PP 14 & 14(A): Identification of pathotypes & Maintenance of red rot pathogen.	Date of planting: 22.02.2021 No. of Differential: 19 Pathotype used: CF06 and nine local isolates Method of inoculation : Plug method Date of inoculation : 11.10.2021 Isolates of <i>C.falcatum</i> are being maintained at RARS, Anakapalli	<ul style="list-style-type: none"> All experiments/trials were well laid as per technical programme Lesser to moderate infestation of internode borer has been noticed in entire farm including trials of each discipline Natural incidence of wilt was noticed in CoV 18356 and stalk rot in CoC 01061.

				<ul style="list-style-type: none"> • Low to moderate incidence of sugarcane mosaic was noticed in screening trials • Severe incidence of YLD was noticed in the sugarcane varieties CoC 01061 and CoA 11321
		PP17(A): Screening for red rot	No. of genotypes planted : 17+ check varieties and standards Date of planting: 12.02.2021 Date of inoculation (1) Plug method: 21.09.2021	
			(2) Cotton Swab: 22.09.2021 Pathotypes used: CF06 Genotypes were evaluated by longitudinal splitting of canes on 26 th and 27 th November, 2021	
		PP17(B): Screening for Smut	No. of genotypes planted: 17 + check varieties and standards Date of planting: 12.02.2021 Date of inoculation: 12.02.2021 Method of inoculation: Steeped in freshly prepared Smut spore Suspension for ½ hour before planting Evaluation: Smut incidence was recorded at fortnightly intervals from 05.05.2021 till date.	
		PP17(C): Screening against wilt	No. of genotypes planted : 17 + check varieties and standards Date of planting: 12.02.2021 Date of inoculation:	

			21.09.2021 Method of inoculation: Plug method Inoculants used: Spore suspension of <i>Fusarium sacchari</i> Evaluation: Disease severity will be recorded on 21.12.2021 (90 days after inoculation)	
		PP 17(D): Evaluation for YLD	No. of genotypes planted :17 + check varieties and standards Date of planting: 12.02.2021 Disease pressure: Natural disease pressure Evaluation: Assessment is in progress.	
		PP 17 (E): Screening for Brown rust resistance	No. of genotypes planted :17 + check varieties and standards Date of planting: 12.02.2021 Dates of inoculation: 15.11.2021 Method of inoculation: leaf whorl method Inoculants used: Uredospore suspension of <i>Puccinia melanocephala</i> Evaluation: In progress	
		PP 17 (F): Screening for pokkah boeng resistance	No. of genotypes planted :17 + check varieties and standards Date of planting: 12.02.2021 Disease pressure: Natural disease pressure Evaluation: Data on pokkah boeng incidence was recorded from 25.06.2021 to till date at fortnightly intervals.	
		PP 22: Survey	In progress: Survey was conducted in operational areas of The Chodavaram co-operative sugars limited,	

			<p>Govada, Sri.Vijayarama Gajapathi Co-operative Sugars Ltd., Bhimsinghi and Regidi Amadalavalasa village of Therlam mandal of Vizianagaram district.</p> <p>In general the incidence of different diseases like smut, red rot, wilt, grassy shoot, mosaic and YLD have been recorded in varying intensities from various districts of AP</p>	
		<p>PP23: Assessment of elite & ISH genotype against red rot</p>	<p>No. of genotype planted: 13 + check varieties and standards Date of planting: 12.02.2021 Date of inoculation: 21.09.2021 Pathotypes used: CF06 Method of inoculation: Plug method</p>	
			<p>Date of evaluation: 26.11.2021</p>	
		<p>PP31: Epidemiology and Management of Pokkah Boengin sugarcane</p>	<p>Date of planting: 19.02.2021 Plot size: 6 rows of 5.0 m length for each treatment with a spacing of 0.75m</p> <p>No. of treatments: 4 No. of replications: 5 Data on top rot incidence was recorded in top rot management trial from 26.05.2021 up to 26.10.2021. Data on top rot incidence to study top rot disease epidemiology was recorded at weekly interval starting from second fortnight of May, 2021.</p>	
		<p>PP33: Management of YLD through</p>	<p>Date of planting: 15.04.2021 Plot size: 8 rows of 3.0 m length each</p>	

		meristem culture	<p>Conventional seed material and seed material of tissue culture hort crop). Variety: CoA 14321 This experiment was well laid as per technical programme. We visited the tissue culture lab and seen the progress. Tissue culture plantlets of CoA 92081, CoA 14321 and 2003V 46 were at various production stages. It was evident that the field which was transplanted with tissue culture seedlings were almost free from the disease. However, mosaic incidence was observed in first ratoon of tissue culture seedlings transplanted field. We have also visited virus indexing lab and seen the progress.</p>	
		<p>PP34: Efficient delivery of fungicides and other agro inputs to manage major fungal diseases in sugarcane</p>	<p>Wilt management trial Date of planting: 19.02.2021 Plot size: 5.0 mx4.8 m Variety: CoA 14321 Treatments: 5 Replications: 4 Red rot management trial: Date of planting: 21.02.2021 Plot size: 5.0 mx4.8 m Variety: CoV 89101 Treatments: 5 Replications: 4 Smut management trial: Date of planting: 23.02.2021 Plot size: 5.0 mx4.8 m Variety: CoA 92081 Treatments: 5 Replications: 4 Experiment was conducted as per the technical programme and evaluation is under progress</p>	

5	Sugarcane Research Station(OUAT). Nayagarh(Odisha) 08.12.2021 Pathology trials were not allotted	General Observations of Visited Breeding trials: <ul style="list-style-type: none"> • Experiments/ trials of Breeding & Agronomy discipline were laid properly • Moderate to severe incidence of yellow spot and ring spot were observed in experimental trials • Mild to moderate incidence of wilt was noticed in experiments fields. • Severe incidence of yellow spot was noticed in CoA11321 • Flowering was noticed in CoA 19321 and Co Or 18346
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D. Entomology

Centre-wise status of trials allotted and conducted

Experiment No& Title	E4.1-Evaluation of Zonal varieties /genotypes for their reaction against major insect pests	E28: Survey and surveillance of sugarcane insect pests	E30: Monitoring of insect pests and bioagents in sugarcane agro-ecosystems	E41: Assessment of yield losses due to sugarcane borers in changing pest scenario
Nellikuppam	Not Allotted			
Cuddalore	Not Allotted			
Vuyyuru	Not Allotted			
Anakapalle	Conducted	Conducted	Conducted	Conducted
Nayagarh	Not Allotted			

Salient observations

1. EID Parry, Nellikuppam (T.N)

The Centre has laid out breeding trials allotted to the Centre. Minor incidence of white fly and mealy bug was observed in breeding trials. In few clones severe incidence of internode borer observed. Overall trials were excellent.

2. Sugarcane Research Station, Cuddalore (T.N)

Heavy incidence of white fly was observed in breeding trials due to water logging.

3. Sugarcane Research Station, Vuyyuru (A.P.)

Minor incidence of white fly, scale insects and mealy bug was observed in breeding trials with one clone with heavy incidence of three insects.

4. Regional Agriculture Research Station, Anakapalle (AP)

The Centre has laid out four entomological trials (E 4.1; E.28; E 30 and E 41).

E4.1- Evaluation of Zonal varieties /genotypes for their reaction against major insect pests

AVT (early) I and II plant was conducted. Minor incidence of internode and mealy bug observed. CoA 18356 ,CoA18357 and CoA17323 were observed promising against early shoot

borer. Fields were well maintained, weed free and the crop growth was very good with good population and dark green canopy. Overall the trials were Excellent.

E28: Survey and surveillance of sugarcane insect pests

The incidence of early shoot borer (10-20%), sugarcane aphid (15-30A/leaf) and rat damage (10-15%) was observed in command area of sugarcane mill in 2005 A252,93A 145 and 2009 A 107.

E30: Monitoring of insect pests and bioagents in sugarcane agro-ecosystems

Minor incidence of white fly, internode bore and aphid was observed in 93A145 and 87 A298. The bio-agents *Trichogramma* spp and ear bug were observed.

E41: Assessment of yield losses due to sugarcane borers in changing pest scenario

The incidence of early shoot borer, internode borer, sugarcane aphid was less in treated plot than untreated plot of 93 A145 and 87 A 298.

5. Sugarcane Research Station, Nayagarh (Odisha)

Minor incidence of mealy bug and scale insects was observed in breeding trials. Overall trials were excellent.

Rating of the Entomology experiments conducted by the Centres of East Coast zone

Experiment No& Title	E4.1- Evaluation of Zonal varieties /genotypes for their reaction against major insect pests	E28: Survey and surveillance of sugarcane insect pests	E30: Monitoring of insect pests and bioagents in sugarcane agro-ecosystems	E41: Assessment of yield losses due to sugarcane borers in changing pest scenario
Nellikuppam	Not Allotted	Not Allotted	Not Allotted	Not Allotted
Cuddalore	Not Allotted	Not Allotted	Not Allotted	Not Allotted
Vuyyuru	Not Allotted	Not Allotted	Not Allotted	Not Allotted
Anakapalle	Excellent	Very good	Excellent	Excellent
Nayagarh	Not Allotted	Not Allotted	Not Allotted	Not Allotted

Suggestions

Based on the visit to different centres and discussion with the scientist working in AICRP (Sugarcane), the following suggestions are made for consideration

1. The centre RARS, Anakapalle requested for restoration of post of Junior Scientist (Agronomy). Looking to their performance the request may kindly be considered.
2. The post of Junior Scientist (Plant Pathology) may be restored at SRS, Nayagarh for evaluation of the clones to Red Rot .

3. In some centres growth of standards is not appreciable due to continuous use of same materials the seed material may be treated with MHAT / Aerated steam Therapy.
4. The centre SRS, Vuyyuru has requested to enhanced the ROC

The monitoring team expresses sincere thanks to all the station In charges & their team for the facilities extended during the visit. We are also thankful to Dr. A. D. Pathak, Director & Project Coordinator, AICRP (Sugarcane), ICAR-IISR, Lucknow for constituting the team, inspiring guidance and support.

Field Visit of Monitoring Team (North West Zone)



Field Visit of Monitoring Team (North Central & North Eastern Zones)



Field Visit of Monitoring Team (Peninsular Zone-I)



Field Visit of Monitoring Team (Peninsular Zone-II)



Field Visit of Monitoring Team (East Coast Zone)





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