All India Coordinated Research Project on Sugarcane

CROP IMPROVEMENT

Technical programme for the year 2010-2011

North West Zone

A. Zonal Varietal Trial

Centres (11) : Faridkot, Karnal, Kota, Lucknow, Ludhiana, Modipuram, Muzaffarnagar, Pantnagar, Shahjahanpur, Sriganganagar and Uchani

1. Advance Varietal Trial (Early) – II Plant

Entries (5)	:	Co 05009, CoH 05262, CoH 05265, CoLk 05201and CoPK 05191
Standard (2)	:	CoJ 64 and CoPant 84211
Design	:	Randomized Block Design
Replications	:	Three
Plot size	:	Gross : 6m x 8r x 0.75m
		Net : 5m x 6r x 0.75m
Seed rate	:	12 buds per meter
Date of planting	:	February- March
Crop duration	:	10 months
Data to be recorded	:	As per Annexure I

2. Advance Varietal Trial (Early) – Ratoon

Entries (5)	:	Co 05009, CoH 05262, CoH 05265, CoLk 05201and CoPK 05191
Standard (2)	:	CoJ 64 and CoPant 84211
Design	:	Randomized Block Design
Replications	:	Three
Plot size	:	Gross : 6m x 8r x 0.75m
		Net : 5m x 6r x 0.75m
Date of ratooning	:	After harvest of plant crop
Crop duration	:	9 months
Data to be recorded	:	As per Annexure II

3. Advance Varietal Trial (Midlate) – II Plant

Entries (8)	:	Co 05011, CoH 05266, CoH 05269, CoPant 05222, CoPant 05224, CoPb 05211, CoPK 05192 and UP 05233
Standard (3)	:	CoS 767, CoS 8436 and Co 1148
Design	:	Randomized Block Design
Replications	:	Three
Plot size	:	Gross : 6m x 8r x 0.90m Net : 5m x 6r x 0.90m
Seed rate	:	12 buds per meter
Date of planting	:	February- March
Crop duration	:	12 months
Data to be recorded	:	As per Annexure III

4. Advance Varietal Trial (Midlate) – Ratoon

Entries (8)	:	Co 05011, CoH 05266, CoH 05269, CoPant 05222, CoPant 05224, CoPb 05211, CoPK 05192 and UP 05233
Standard (3)	:	CoS 767, CoS 8436 and Co 1148
Design	:	Randomized Block Design
Replications	:	Three
Plot size	:	Gross : 6m x 8r x 0.90m Net : 5m x 6r x 0.90m
Date of ratoonng	:	After harvest of plant crop
Crop duration	:	11 months
Data to be recorded	:	As per Annexure IV

5. Advance Varietal Trial (Early) – I Plant

During Zonal Breeders' Meet held at AAU, Jorhat on 22. 02. 2010, only one entry Co 06032 was selected for further testing. The other four entries viz., CoPant 06221, CoH 06261, CoH 06262 and CoH 06263 have been dropped due to poor growth or susceptibility to red rot. The entry Co 06032 will be multiplied at all the centres of the zones (NC and NE Zones) and tested in AVT (Early) - I Plant of 2011 – 12.

6. Advance Varietal Trial (Midlate) – I Plant

Entries (7)	:	Co 06033, Co 06034, CoH 06265, CoH 06266, CoPant 06224, CoPb 06219 and CoS 06247.
Standard (3)	:	CoS 767, CoS 8436 and Co 1148
Design	:	Randomized Block Design
Replications	:	Three
Plot size	:	Gross : 6m x 8r x 0.90m
		Net : 5m x 6r x 0.90m
Seed rate	:	12 buds per meter
Date of planting	:	February- March
Crop duration	:	12 months
Data to be recorded	:	As per Annexure III

7. Initial Varietal Trial (Early)

Entries (10)	:	Co 07023, Co 07024, Co 07025, Co 07026, CoH 07261, CoH 07262, CoLk 07201, CoPant 07221, CoPant 07222 and CoPb 07211
Standard (2)	:	CoJ 64 and CoPant 84211
Design	:	Randomized Block Design
Replications	:	Three
Plot size	:	Gross : 6m x 6r x 0.75m
		Net : 5m x 4r x 0.75m
Seed rate	:	12 buds per meter
Date of planting	:	February- March
Crop duration	:	10 months
Data to be recorded	:	As per Annexure I

8. Initial Varietal Trial (Midlate)

Entries (17)	:	Co 07027, Co 07028, CoH 07263, CoH 07264, CoH 07265, CoLk 07202, CoLk 07203, CoPant 07223, CoPant 07224, CoPb 07212, CoPb 07213, CoPb 07214, CoS 07231, CoS 07232, CoS 07233, CoS 07234 and CoSe 01424.
Standard (3)	:	CoS 767, CoS 8436 and CoPant 97222
Design	:	Randomized Block Design
Replications	:	Three
Plot size	:	Gross : 6m x 6r x 0.90m Net : 5m x 4r x 0.90m
Seed rate	:	12 buds per meter
Date of planting	:	February- March
Crop duration	:	12 months
Data to be recorded	:	As per Annexure III

9. Seed Multiplication for ZVT

The following entries accepted at the AICRP(S) Workshop held at Andhra University, Visakhapatnam in 2008 are under multiplication at SBI Regional Centre, Karnal. On prior intimation, the coordinating centres should depute their staff to SBI Regional Centre, Karnal and lift the seed material for one year multiplication at their centres :

Early (8) : CoPant 08221, CoPant 08222, CoPb 08211, CoPb 08212, CoPb 08213, CoS 08231, CoS 08232 and CoS 08233

Midlate (11) : CoH 08261, CoH 08262, CoH 08263 CoH 08264CoLk 08201, CoPb 08214, CoPb 08215, CoPb 08216, CoPb 08217, CoS 08234 and CoS 08235

10. New entries accepted

The following entries were accepted during Group Meeting of AICRP(S) held at RAU, Pusa in 2009. The concerned breeders are requested to supply seed material of their entries for one year multiplication at Karnal multiplication centre.

Early (12) : Co 09020, CoH 09261, CoH 09262, CoH 09263, CoLk 09201, CoLk 09202, CoLk 09203, CoPb 09181, CoPb 09211, CoPb 09212, CoPb 09213 and CoS 09246

Midlate (8) : Co 09021, Co 09022, CoH 09264, CoLk 09204, CoPb 09214, CoS 09231, CoS 09232 and CoS 09240

B. Inter Zonal Varietal Trial

Centre (1): Lucknow

1. Inter Zonal Varietal Trial – Early I Plant

Entries (18)	:	Co 0301, Co 0302, Co 0303, Co 0305, Co 0306, Co 0308, Co 0312, Co 0314, Co 0315, PI 96-0843, CoA 03081, CoOr 03151, CoS 03292, CoSe 03234, CoP 03181, CoBln 03171, CoBln 03172 and CoBln 03173
Standards (2)	:	CoJ 64 and CoPant 84211
Design	:	Randomised Block Design.
Replications	:	Two
Plot size	:	Gross: 6m x 8r x 0.9m Net : 5m x 6r x 0.9m
Seed rate	:	12 buds per metre
Date of planting	:	February-March
Crop duration	:	10 months
Data to be recorded	:	As per Annexure-I

CROP IMPROVEMENT

Technical programme for the year 2010-2011

North Central and North Eastern Zone

A. Zonal Varietal Trial

Centres (7): Bethudahari, Buralikson, Faizabad, Gorakhpur, Motipur, Pusa and Seorahi

1. Advance Varietal Trial (Early) – II Plant

Entries (3)	:	CoP 05436, CoSe 05451and CoBln 05501
Standards (2)	:	BO 130 and CoSe 95422
Design	:	Randomized Block Design
Replications	:	Four
Plot size	:	Gross : 6m x 8r x 0.75m Net : 5m x 6r x 0.75m
Seed rate	:	12 buds per meter
Date of planting	:	February/March
Crop duration	:	10 months
Data to be recorded	:	As per Annexure – I

2. Advance Varietal Trial (Early) – Ratoon

Entries (3)	:	CoP 05436, CoSe 05451and CoBln 05501
Standards (2)	:	BO 130 and CoSe 95422
Design	:	Randomized Block Design
Replications	:	Four
Plot size	:	Gross : 6m x 8r x 0.75m Net : 5m x 6r x 0.75m
Date of ratooning	:	After harvest of plant crop
Crop duration	:	9 months
Data to be recorded	:	As per Annexure – II

3. Advance Varietal Trial (Midlate) – II Plant

Entries (7)	:	Co 05018, Co 05019, Co 05020, CoP 05437, CoSe 05452, CoBln 05502 and CoBln 04174
Standards (3)	:	BO 91, CoP 9301 and CoSe 92423
Design	:	Randomized Block Design
Replications	:	Three
Plot size	:	Gross : 6m x 8r x 0.90m Net : 5m x 6r x 0.90m
Seed rate	:	12 buds per meter
Date of planting	:	February/March
Crop duration	:	12 months
Data to be recorded	:	As per Annexure – III

4. Advance Varietal Trial (Midlate) – Ratoon

Entries (7)	:	Co 05018, Co 05019, Co 05020, CoP 05437, CoSe 05452, CoBln 05502 and CoBln 04174
Standards (3)	:	BO 91, CoP 9301 and CoSe 92423
Design	:	Randomized Block Design
Replications	:	Three
Plot size	:	Gross : 6m x 8r x 0.90m Net : 5m x 6r x 0.90m
Date of ratooning	:	After harvest of plant crop
Crop duration	:	11 months
Data to be recorded	:	As per Annexure – IV

5. Advance Varietal Trial (Midlate) – I Plant

Entries (4)	:	CoP 06436, CoP 06437, CoSe 06456 and CoSe 07451*
Standards (3)	:	BO 91, CoP 9301 and CoSe 92423
Design	:	Randomized Block Design
Replications	:	Three
Plot size	:	Gross : 6m x 8r x 0.90m Net : 5m x 6r x 0.90m
Seed rate	:	12 buds per meter
Date of planting	:	February/March
Crop duration	:	12 months
Data to be recorded	:	As per Annexure – III

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* This entry (CoSe 07451) was to be tested in IVT (Midlate) in 2010 – 11. Since seed of only this entry is available at all the centres of the Zones, it was decided to be included in AVT (Midlate) – I Plant of 2010 - 11 during Zonal Breeders' Meet held at AAU, Jorhat on 22. 02. 2010.

6. Initial Varietal Trial (Early)

This trial has been deferred for 2011 – 12 as per decision taken during Zonal Breeders' Meet held at AAU, Jorhat on 22. 02. 2010. All the centres of NC and NE Zones must ensure to lift seed material of six entries viz., CoBln 07501, CoB 07426, CoB 07427, CoB 07428, CoB 07429 and CoB 07430 from Pusa seed multiplication centres for multiplication in 2010 – 11 and testing in IVT (Midlate) of 2011-12.

7. Initial Varietal Trial (Midlate)

This trial has been deferred for 2011 – 12 as per decision taken during Zonal Breeders' Meet held at AAU, Jorhat on 22. 02. 2010. All the centres of NC and NE Zones must ensure to lift seed material of CoBln 07502 and CoBln 07503 from Pusa seed multiplication centres for multiplication in 2010 – 11.

8. Seed Multiplication for ZVT:

The following entries accepted at AICRP(S) Workshop held at Andhra University, Visakhapatnam in 2008 are to be multiplied at coordinating centres for one year (2010-2011). On prior intimation, the centres of the zone are requested to depute their staff at S.R.I., Pusa centre and lift the material for one year multiplication at their centre as detailed below:

Early (1)	:	CoP 08436
Midlate (5)	:	CoBln 08501, CoP 08437, CoSe 08451, CoSe 08452, and CoSe 08453

9. New entries accepted:

The following entries were accepted during Group Meeting of AICRP(S) held at RAU, Pusa in 2009. The concerned breeders are requested to supply seed material of their entries for one year multiplication at S.R.I., Pusa multiplication centre.

Early (5) **:** CoP 09436, CoSe 09451, CoSe 09452, BO 153 and UP 09453

Midlate (3) **:** CoP 09437, CoSe 09454 and BO 154

B. Inter Zonal Varietal Trial

Centre (1): Seorahi

1. Inter Zonal Varietal Trial – Early I Plant

Entries (18)	**:**	Co 0301, Co 0302, Co 0303, Co 0305, Co 0306, Co 0308, Co 0312, Co 0314, Co 0315, PI 96-0843, CoA 03081, CoOr 03151, CoS 03292, CoSe 03234, CoP 03181, CoBln 03171, CoBln 03172 and CoBln 03173
Standards (2)	**:**	BO 130 and CoSe 95422
Design	**:**	Randomised Block Design.
Replications	**:**	Two
Plot size	**:**	Gross: 6m x 8r x 0.9m Net : 5m x 6r x 0.9m
Seed rate	**:**	12 buds per metre
Date of planting	**:**	March-February
Crop duration	**:**	10 months
Data to be recorded	**:**	As per Annexure-I

CROP IMPROVEMENT

Technical programme for the year 2010-2011

Peninsular Zone

A. Zonal Varietal Trial

Centres (17) : Akola, Basmathnagar, Coimbatore, Kolhapur, Mandya, Navsari, Padegaon, Perumalapalle, Powarkheda, Pravaranagar, Pune, Pugalur, Raipur, Rudrur, Sameerwadi, Sankeshwar, and Thiruvalla.

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1. Initial Varietal Trial - Early

Entries (15)	**:**	Co 07001, Co 07003, Co 07012, Co 07015, Co 07017, CoN 07071, CoN 07072, MS 07081, MS 07082, CoJN 07091, CoJN 07092, CoSnk 07101, CoSnk 07102, PI 07131 and PI 07132
Standards (3)	**:**	Co 85004, Co 94008 and CoC 671
Design	**:**	Randomised Block Design
Replications	**:**	Three
Plot size	**:**	Gross**:** 6m x 6r x 0.9m Net **:** 5m x 4r x 0.9m
Seed rate	**:**	12 buds per metre
Planting date	**:**	1st fortnight of February
Crop duration	**:**	10 months
Data to be recorded	**:**	As per Annexure - I

2. Advanced Varietal Trial – Early (I Plant)

Entries (4)	**:**	Co 06001, Co 06002, Co 06022, CoM 06082 and PI 06132
Standards (3)	**:**	Co 85004, Co 94008 and CoC 671
Design	**:**	Randomised Block Design
Replications	**:**	Three
Plot size	**:**	Gross**:** 6m x 8r x 0.9m Net **:** 5m x 6r x 0.9m
Seed rate	**:**	12 buds per metre
Planting date	**:**	1st fortnight of February
Crop duration	**:**	10 months
Data to be recorded	**:**	As per Annexure - I

3. Advanced Varietal Trial – Early (II Plant)

Entries (6)	:	Co 05001, Co 05002, CoN 05071, CoSnk 05101, CoSnk 05103 and CoM 05082
Standards (3)	:	Co 85004, Co 94008 and CoC 671
Design	:	Randomised Block Design
Replications	:	Three
Plot size	:	Gross: 6m x 8r x 0.9m Net : 5m x 6r x 0.9m
Seed rate	:	12 buds per metre
Planting date	:	1st fortnight of February
Crop duration	:	10 months
Data to be recorded	:	As per Annexure - I

4. Advanced Varietal Trial – Early (Ratoon)

Entries (6)	:	Co 05001, Co 05002, CoN 05071, CoSnk 05101, CoSnk 05103 and CoM 05082
Standards (3)	:	Co 85004, Co 94008 and CoC 671
Design	:	Randomised Block Design
Replications	:	Three
Plot size	:	Gross: 6m x 8r x 0.9m Net : 5m x 6r x 0.9m
Ratooning date	:	After harvest of AVT Plant – I
Crop duration	:	9 months
Data to be recorded	:	As Annexure-II

5. Initial Varietal Trial – Midlate

Entries (16)	:	Co 07004, Co 07005, Co 07006, Co 07007, Co 07008, Co 07009, Co 07010, Co 07020, CoVC 07061, CoN 07073, CoM 07083, CoJN 07093, CoJN 07094, CoSnk 07103, CoSnk 07104 and CoSnk 07105.
Standards (2)	:	Co 86032 and Co 99004
Design	:	Randomised Block Design
Replications	:	Three
Plot size	:	Gross : 6m x 6r x 0.9m Net : 5m x 4r x 0.9m
Seed rate	:	12 buds per metre
Planting date	:	December 20-January 20
Crop duration	:	12 months
Data to be recorded	:	As per Annexure III

6. Advanced Varietal Trial – Midlate (I Plant)

Entries (11)	:	Co 06007, Co 06010*, Co 06012, Co 06013, Co 06014, Co 06015, Co 06020, Co 06027, CoM 06082*, CoM 06084 and CoSnk 03632**
Standards (2)	:	Co 86032 and Co 99004
Design	:	Randomised Block Design
Replications	:	Three
Plot size	:	Gross : 6m x 8r x 0.9m Net : 5m x 6r x 0.9m
Seed rate	:	12 buds per metre
Planting date	:	December 20-January 20
Crop duration	:	12 months
Data to be recorded	:	As per Annexure III

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* Advanced from IVT(E) for 2008-09 as per decision of Zonal Breeders' Meet of Peninsular and East Coast Zones held on 24th Nov., 2009 at SBI, Coimbatore.

** Proposed during Group Meeting of AICRP in 2009 and accepted for inclusion in AVT during Zonal Breeders' Meet (2009).

7. Advanced Varietal Trial – Midlate (II Plant)

Entries (6)	:	Co 05007, CoSnk 05104, CoSnk 05105, CoVSI 05121, CoVSI 05122 and CoVSI 05123
Standards (2)	:	Co7219 and Co 86032
Design	:	Randomised Block Design
Replications	:	Three
Plot size	:	Gross: 6m x 8r x 0.9m Net : 5m x 6r x 0.9m
Seed rate	:	12 buds per metre
Planting date	:	December 20-January 20
Crop duration	:	12 months
Data to be recorded	:	As per Annexure III

8. Advanced Varietal Trial – Midlate (Ratoon)

Entries (6)	:	Co 05007, CoSnk 05104, CoSnk 05105, CoVSI 05121, CoVSI 05122 and CoVSI 05123
Standards (2)	:	Co7219 and Co 86032
Design	:	Randomised Block Design
Replications	:	Three
Plot size	:	Gross: 6m x 8r x 0.9m Net : 5m x 6r x 0.9m
Seed rate	:	12 buds per metre
Ratooning date	:	After harvest of AVT Plant I
Crop duration	:	11 months
Data to be recorded	:	As per Annexure IV

SEED MULTIPLICATION

The following entries accepted in the Workshop of AICRP(S) held at Visakhapatnam in 2008 are under multiplication at Sugarcane Breeding Institute, Coimbatore and Central Sugarcane Research Station, Padegaon. On prior intimation the centers should depute their staff and lift the material for one year multiplication.

S.B.I, Coimbatore (Multiplication centre):

Mandya, Perumalapalle, Powarkheda, Pugalur, Rudrur, Sameerwadi and Thiruvalla.

C S R S, Padegaon (Multiplication centre):

Akola, Basmathnagar, Kolhapur, Navsari, Pravaranagar, Pune, Raipur and Sankeshwar.

Early (5) : Co 08001, Co 08006, CoN 08071, PI 08131 and VSI 08121

Midlate (18) : Co 08007, Co 08008, Co 08009, Co 08016, Co 08018, Co 08019, Co 08020, CoJN 08091, CoM 08081, CoN 08072, CoR 08141*, CoSnk 08101, CoVC 08061, CoVC 08062, CoVC 08063, CoVC 08064, CoVSI 08122 and CoVSI 08123.

*** As per decision of Workshop, 2009, Rudrur centre will supply seed material of CoR 08141 to all the participating centres of the zone for multiplication during 2010-11.**

New Entries accepted

The following entries were accepted in the Group Meeting of AICRP(S) held at the Rajendra Agricultural University, Pusa on November 06-08, 2009. The concerned breeders are requested to supply two sets of seed material of the accepted entries; one set is to be sent to SBI, Coimbatore and the other set to CSRS, Padegaon for one year multiplication.

Early (8) : Co 09002, Co 09003, Co 09004, Co 09005, Co 09006, Co 09007, CoN 09071 and CoN 09072

Midlate (10) : Co 09009, Co 09010, Co 09012, Co 09013, Co 09014, Co 02040, CoN 09073, CoN 09074, CoSnk 05102 and CoVSI 09121

B. INTER ZONAL VARIETAL TRIAL

Centres (2): Coimbatore and Padegaon

1. Inter Zonal Varietal Trial – Early I Plant

Entries (18)	:	Co 0301, Co 0302, Co 0303, Co 0305, Co 0306, Co 0308, Co 0312, Co 0314, Co 0315, PI 96-0843, CoA 03081, CoOr 03151, CoS 03292, CoSe 03234, CoP 03181, CoBln 03171, CoBln 03172 and CoBln 03173
Standards (3)	:	CoC 671, Co 85004 and Co 94008
Design	:	Randomised Block Design.
Replications	:	Two
Plot size	:	Gross: 6m x 8r x 0.9m Net : 5m x 6r x 0.9m
Seed rate	:	12 buds per metre
Date of planting	:	1st fortnight of February
Crop duration	:	10 months
Data to be recorded	:	As per Annexure-I

Seed Multiplication:

Centres : Coimbatore and Padegaon

Early (17) : BO 138, Co 0114, Co 0211, Co 0309, Co 0310, Co 0313, Co 0316, CoC 03061, CoC 03062, CoJ 03192, CoM 0250, CoM 0251, CoM 0261, CoOr 03152, CoV 03101, MS 0202 and MS 0219.

Midlate (25) : BO 141, Co 0112, Co 0311, Co 0317, Co 0318, Co 0320, Co 0322, Co 0323, Co 0325, Co 0326, Co 0328, CoA 03082, CoBln 03174, CoBln 03175, CoBln 03176, CoC 03063, CoLk 9910, CoM 0265, CoM 0272, CoV 03102, CoVC 99134, CoVSI 03301, MS 0209, MS 0217 and MS 0221.

CROP IMPROVEMENT

Technical Programme the year 2010-2011

East Coast Zone

A. ZONAL VARIETAL TRIAL

Centres (5): Anakapalle, Cuddalore, Nayagarh, Nellikuppam and Vuyyuru

1. Initial Varietal Trial (Early)

Entries (5)	:	CoA 08321, CoA 08322, CoA 08323, CoC 08336, and CoC 08337
Standards (3)	:	Co 6907, CoC 01061 and CoA 92081
Design	:	Randomized Block Design
Replications	:	Three
Plot size	:	Gross : 6.0 m x 6r x 0.8 m Net : 5.0 m x 4r x 0.8 m
Seed rate	:	12 buds per meter
Date of planting	:	1st fortnight of February
Crop duration	:	10 months
Data to be recorded	:	As per Annexure-I

2. Advanced Varietal Trial (Early) – I Plant

Entries (3)	:	**CoA 07321, CoC 07336, and CoV 07356**
Standards (3)	:	Co 6907, CoC 01061 and CoA 92081
Design	:	Randomized Block Design
Replications	:	Four
Plot size	:	Gross : 6.0 m x 8r x 0.8 m Net : 5.0 m x 6r x 0.8 m
Seed rate	:	12 buds per meter
Date of planting	:	1st fortnight of February
Crop duration	:	10 months
Data to be recorded	:	As per Annexure-I

3. Advanced Varietal Trial (Early) – II Plant

Entries (4)	:	**CoA 06321,CoV 06356, PI 06376 and PI 06377**
Standards (3)	:	Co 6907, CoC 01061 and CoA 92081
Design	:	Randomized Block Design
Replications	:	Three
Plot size	:	Gross : 6.0 m x 8r x 0.8 m Net : 5.0 m x 6r x 0.8 m
Seed rate	:	12 buds per meter
Date of planting	:	1st fortnight of February
Crop duration	:	10 months
Data to be recorded	:	As per Annexure-I

4. Advanced Varietal Trial (Early) - Ratoon

Entries (4)	:	**CoA 06321, CoV 06356, PI 06376 and PI 06377**
Standards (3)	:	Co 6907, Co C 01061 and CoA 92081
Design	:	Randomized Block Design
Replications	:	Three
Plot size	:	Gross : 6.0 m x 8r x 0.8 m Net : 5.0 m x 6r x 0.8m
Date of Ratooning	:	After harvest of AVT-I Plant
Crop duration	:	9 months
Data to be recorded	:	As per Annexure-II

5. Initial Varietal Trial - Midlate

Entries (5)	:	Co 06031, CoA 08324, CoC 08338, CoC 08339 and CoOr 08346
Standards (3)	:	CoV 92102, Co 7219 and Co 86249
Design	:	Randomized Block Design
Replications	:	Three
Plot size	:	Gross : 6.0 m x 6r x 0.8 m Net : 5.0 m x 4r x 0.8m
Seed rate	:	12 buds per meter
Date of planting	:	December 20 to January, 20
Crop duration	:	12 months
Data to be recorded	:	As per Annexure-III

6. Advanced Varietal Trial – Midlate (I Plant)

Entries (3)	:	Co 06030, CoA 07322 and CoC 07337
Standards (3)	:	CoV 92102, Co 7219 and Co 86249
Design	:	Randomized Block Design
Replications	:	Four
Plot size	:	Gross : 6.0 m x 8r x 0.8 m Net : 5.0 m x 6r x 0.8m
Seed rate	:	12 buds per meter
Date of planting	:	December 20 to January, 20
Crop duration	:	12 months
Data to be recorded	:	As per Annexure-III

7. New entries accepted and seed multiplication :

The following entries were accepted during Group Meeting of AICRP(S) held at the Rajendra Agricultural University, Pusa on November 6-8, 2009. The concerned breeders are requested to supply seed material to all the centres of the zone for one-year multiplication. Breeders of all the centres of the zone may please ensure that seed material of new entries is received well in time for planting.

Early (4) : CoA 09321, CoC 09336, CoV 09356 and PI 09376

Midlate (1) : CoC 09337

B. INTER ZONAL VARIETAL TRIAL

Centre (1): Anakapalle

1. Inter Zonal Varietal Trial – Early I Plant

Entries (18)	**:**	Co 0301, Co 0302, Co 0303, Co 0305, Co 0306, Co 0308, Co 0312, Co 0314, Co 0315, PI 96-0843, CoA 03081, CoOr 03151, CoS 03292, CoSe 03234, CoP 03181, CoBln 03171, CoBln 03172 and CoBln 03173
Standards (3)	**:**	Co 6907, CoA 92018, CoC 01061
Design	**:**	Randomised Block Design.
Replications	**:**	Two
Plot size	**:**	Gross: 6m x 8r x 0.9m Net : 5m x 6r x 0.9m
Seed rate	**:**	12 buds per metre
Date of planting	**:**	1st fortnight of February
Crop duration	**:**	10 months
Data to be recorded	**:**	As per Annexure-I

Seed Multiplication:

Centre	**:**	Anakapalle
Early (17)	**:**	BO 138, Co 0114, Co 0211, Co 0309, Co 0310, Co 0313, Co 0316, CoC 03061, CoC 03062, CoJ 03192, CoM 0250, CoM 0251, CoM 0261, CoOr 03152, CoV 03101, MS 0202 and MS 0219.
Midlate (25)	**:**	BO 141, Co 0112, Co 0311, Co 0317, Co 0318, Co 0320, Co 0322, Co 0323, Co 0325, Co 0326, Co 0328, CoA 03082, CoBln 03174, CoBln 03175, CoBln 03176, CoC 03063, CoLk 9910, CoM 0265, CoM 0272, CoV 03102, CoVC 99134, CoVSI 03301, MS 0209, MS 0217 and MS 0221.

Annexure-I

ALL INDIA COORDINATED RESEARCH PROJECT ON SUGARCANE

Characters on which data to be recorded in Initial Varietal Trial (IVT) and Advance Varietal Trial (AVT)

Crop : Sugarcane (Early – Plant)

1. Germination % at 30 days for tropics and 45 days for sub-tropics
2. No. of tillers (thousand/ha) at 120 days
3. No. of shoots (thousand/ha) at 240 days
4. Cane yield (t/ha) after 10 months at harvest
5. Number of millable canes (thousand/ha) after10 months at harvest
6. Stalk length (cm) after 10 months at harvest
7. Stalk diameter (cm) after 10 months at harvest
8. Single cane weight (kg) after 10 months at harvest
9. Brix % at 8 and 10 months
10. Sucrose % in juice at 8 and 10 months
11. Purity % at 8 and 10 months
12. CCS % at 8 and 10 months
13. CCS t/ha after 10 months at harvest
14. Extraction % after 10 months at harvest
15. Fibre % after 10 months at harvest
16. Jaggery quality after 10 months at harvest (if facility available)
17. Jaggery yield (t/ha) after 10 months at harvest (if facility available)

Morphological characters

1. Lodging : Erect, lodging, snapping, heavy lodging
2. Leaf sheath spines : Absent (A), present (P), medium (M), heavy (H)
3. Flowering : Absent (A), present (P)
4. Canopy structure and colour : Green, light green, yellowish green, dark green
5. Bud size : Big (B), small (S), medium (M)
6. Pithiness : Absent (A), present (P), less (L), heavy (H)
7. Internode splits : Absent (A), present (P), low (L), moderate (M), heavy (H)
8. Natural incidence of diseases and pests

Annexure-II

ALL INDIA COORDINATED RESEARCH PROJECT ON SUGARCANE

Characters on which data to be recorded in ratoon crop

Crop : Sugarcane (Early – Ratoon)

Note : 1. No gap filling should be done.

2. Ratooning operation should be completed within 15 days after harvesting plant crop.

1. Number of tillers (thousand/ha) before giving full earthing up (90 days)
2. Number of cane formed tillers (thousand/ha) after 180 days
3. Number of millable canes (thousand/ha) after 270 days at harvest
4. Cane yield (t/ha) after 270 days at harvest
5. Stalk length (cm) after 270 days at harvest
6. Stalk diameter (cm) after 270 days at harvest
7. Single cane weight (kg) after 270 days at harvest
8. Brix % after 270 days at harvest
9. Sucrose % in juice after 270 days at harvest
10. Purity % after 270 days at harvest
11. CCS % after 270 days at harvest
12. CCS t/ha after 270 days at harvest
13. Extraction % after 270 days at harvest
14. Fibre % after 270 days at harvest
15. Jaggery quality after 270 days at harvest (if facility available)
16. Jaggery yield (t/ha) after 270 days at harvest (if facility available)

Annexure-III

ALL INDIA COORDINATED RESEARCH PROJECT ON SUGARCANE

Characters on which data to be recorded in Initial Varietal Trial (IVT) and Advance Varietal Trial (AVT)

Crop : Sugarcane (Midlate – Plant)

1. Germination % at 30 days for tropics and 45 days for sub-tropics
2. No. of tillers (thousand/ha) at 120 days
3. No. of shoots (thousand/ha) at 240 days
4. Cane yield (t/ha) after 12 months at harvest
5. Number of millable canes (thousand/ha) after 12 months at harvest
6. Stalk length (cm) after 12 months at harvest
7. Stalk diameter (cm) after 12 months at harvest
8. Single cane weight (kg) after 12 months at harvest
9. Brix % at 10 and 12 months
10. Sucrose % in juice at 10 and 12 months
11. Purity % at 10 and 12 months
12. CCS % at 10 and 12 months
13. CCS t/ha after 12 months at harvest
14. Extraction % after 12 months at harvest
15. Fibre % after 12 months at harvest
16. Jaggery quality after 12 months at harvest (if facility available)
17. Jaggery yield (t/ha) after 12 months at harvest (if facility available)

Morphological characters

1. Lodging : Erect, lodging, snapping, heavy lodging
2. Leaf sheath spines : Absent (A), present (P), medium (M), heavy (H)
3. Flowering : Absent (A), present (P)
4. Canopy structure and colour : Green, light green, yellowish green, dark green
5. Bud size : Big (B), small (S), medium (M)
6. Pithiness : Absent (A), present (P), less (L), heavy (H)
7. Internode splits : Absent (A), present (P), low (L), moderate (M), heavy (H)
8. Natural incidence of diseases and pests

Annexure-IV

ALL INDIA COORDINATED RESEARCH PROJECT ON SUGARCANE

Characters on which data to be recorded in ratoon crop

Crop : Sugarcane (Midlate – Ratoon)

Note : 1. No gap filling should be done.
2. Ratooning operation should be completed within 15 days after harvesting plant crop.

1. Number of tillers (thousand/ha) before giving full earthing up (90 days)
2. Number of cane formed tillers (thousand/ha) after 180 days
3. Number of millable canes (thousand/ha) after 330 days at harvest
4. Cane yield (t/ha) after 330 days at harvest
5. Stalk length (cm) after 330 days at harvest
6. Stalk diameter (cm) after 330 days at harvest
7. Single cane weight (kg) after 330 days at harvest
8. Brix % after 330 days at harvest
9. Sucrose % in juice after 330 days at harvest
10. Purity % after 330 days at harvest
11. CCS % after 330 days at harvest
12. CCS (t/ha) after 330 days at harvest
13. Extraction % after 330 days at harvest
14. Fibre % after 330 days at harvest
15. Jaggery quality after 330 days at harvest (if facility available)
16. Jaggery yield (t/ha) after 330 days at harvest (if facility available)

Annexure –V

Centre-wise slot numbers allotted to sugarcane entries proposed for evaluation in AICRP(S)

S.No	Centre	Slot number	Centre Code
Peninsular Zone			
1	Coimbatore (including Karnal)	001 - 060	Co
2	Mandya	061 – 070	CoVC
3	Navsari	071 - 080	CoN
4	Padegaon	081 - 090	CoM
5	PowarKheda	091- 100	CoJN
6	Sankeshwar	101 - 110	CoSnk
7	Thiruvalla	111 - 120	CoTl
8	VSI, Pune	121 - 130	CoVSI
9	EID Parry, Pugalur	131 - 140	PI
North West Zone			
10	Faridkot	181 - 190	CoPb
11	Kota	191 - 200	CoPK
12	Lucknow	201 - 210	CoLk
13	Ludhiana	211 - 220	CoPb
14	Pantnagar	221 - 230	CoPant
15	Shahjahanpur	231 - 250	CoS
16	Sriganganagar	251 - 260	CoSg
17	Uchani	261 - 270	CoH
East Coast Zone			
18	Anakapalle	321 - 335	CoA
19	Cuddalore	336 –345	CoC
20	Nayagarh	346 - 355	CoOr
21	Vuyyuru	356 –365	CoV
22	Perumallapalle	366- 375	CoT
23	Nellikuppam	376 –385	PI
North Central Zone			
24	Bethuadahari	426 - 435	CoB
25	Pusa	436 - 450	CoP
26	Seorahi	451 - 465	CoSe
North East Zone			
27	Buralikson	501 - 510	CoBln

Note: In each agro-climatic zone sufficient slot numbers are kept reserved for accommodating entries of centers identified in future under AICRP (S). The 3-digit slot numbers are to be prefixed by 2-digit number of the year in which entries are accepted for evaluation at AICRP (S) workshop/group meeting. Finally, a 5-digit number of a variety is to be preceded by the centre's code.

CROP PRODUCTION

Technical Programme - 2010-2011

AS 42	**:**	**Agronomic evaluation of promising sugarcane genotypes**

Objective : To work out agronomy of sugarcane genotypes of advanced varietal trial (AVT)

Year of start : 2007-2008 (with new set of genotypes of AVT)

Year of completion : Continuing

Locations :

Centers	Season of planting
Cuddalore, Padegaon, Kolhapur, Navsari, Powarkheda, Sankeshwar and Pune	Autumn and spring
Thiruvalla, Raipur, Sriganganagar, Ludhiana, Faridkot and Uchani	Spring
Mandya	June-July
Pusa, Seorahi and Faizabad	Autumn and spring
Ankapalle and Coimbatore	Spring and special season
Shahjahanpur, Lucknow, Kota, Pantnagar, Modipuram	Spring and summer

Treatments :

1. **Varieties** : Minimum of three promising genotypes (from AVT), one from each maturity group
2. **Fertilizer levels:** i) 75% of the recommended dose of N
   ii) 100% of the recommended dose of N
   iii) 125% of the recommended dose of N

Design : RBD

Replication : 3-4

Plot size : In the first year, the plot size will depend on the availability of seed, but in the second year, it will be 6 rows of at least 6 m length

Row spacing : Recommended row spacing for a particular seasons in the concerned zone

Note: 1. Seed material of the test varieties will be obtained from concerned breeder of the center.

2. Separate trials may be laid out for early and mid-late groups.

Observations to be recorded :

i) Initial soil fertility status for available NPK, soil texture, physico-chemical properties of the soil.

ii) Data on germination, tillers, millable canes, cane yield, juice quality, CCS%, CCS yield.

iii) Other specific characteristics of the genotypes.

iv) Planting and harvesting dates, name of variety, fertilizers applied, irrigations, plant protection measures, etc.

AS 58 : Improving productivity of winter initiated ratoon of sugarcane in sub-tropical India

Objective : To improve stubble sprouting in winter initiated ratoon

Year of start : 2007-2008 (plant crop)

Year of completion : 2010-2011

Centres Allotted : Faridkot, Ludhiana, Uchani, Shahjahanpur, Pantnagar, Modipuram, Sriganganagar, Kota, Lucknow, Seorahi and Pusa.

Treatment : **8**

T_1 - Recommended practices (control)

T_2 - One irrigation in plant crop 30 days before ratooning and subsequent irrigations at 15 days interval during winter (upto 1st week of February).

T_3 - Application of fresh sulphitation press mud cake (SPMC) @ 20 t/ha at ratooning.

T_4 - Application of 60 kg K_2O/ha before 30 days of ratooning.

T_5 - Intercropping of legume, Senji (*Meliolotus alba*) in ratoon crop for green manuring.

T_6 - Soil application of $ZnSO_4$ @ 25 kg/ha before 30 days of ratooning along with irrigation water.

T_7 - Application of 60 kg K_2O/ha + $ZnSO_4$ @ 25 kg/ha 30 days before ratooning along with irrigation water.

T_8 - Application of 25 kg $ZnSO_4$/ha + SPMC (fresh) @ 10 t/ha at ratooning.

Design : RBD

Replication : 4

Plot size : 6 rows of 12 m length.

Note :

1. The plant crop will be ratooned in first week of January.
2. Early maturing variety recommended for the zone including Modipuram may be taken.
3. Green manure crop (50-60 days after sowing) will be incorporated *in situ* in the last week of February.

Observations to be recorded :

1. Gaps in ratoon and number of healthy stubble/plot
2. Number of shoots at 45 & 75 days after ratoon initiation/plot
3. NMC/ha at harvest
4. Cane yield (t/ha)
5. Juice brix
6. Pol % in juice
7. CCS (t/ha)

AS 59 : Effect of sub-soiling on soil physico-chemical characteristics and sugarcane productivity

Objective : To study the effect of sub-soiling treatments on soil physico-chemical conditions and sugarcane yield.

Year of start : 2008-2009

Year of completion : 2010-2011

Centres : All centres (except Anakapalle)

Treatments :

A. Sub-soiling treatment (5) :

(i) No sub – soiling,
(ii) Sub- soiling at 1.0 m. distance,
(iii) Sub- soiling at 1.5 m. distance
(iv) Cross sub -soiling at 1.0 m. distance
(v) Cross Sub -soiling at 1.5 m. distance

B. Preparatory tillage treatment (2) :

(i) 4 harrowing (ii) 2 harrowing

Design : Strip plot

Replications : Three

Plot size : 10.0 x 4.5 m.

Variety : Recommended for the zone

Row spacing : Recommended for the zone

Fertilizer schedule : Recommended for the zone

Observations to be recorded :

Physical soil characteristics -

- Infiltration rate: Initial, mid June and after harvest of crop.
- Bulk density in 0-30 cm and 30-60 cm soil depth**:** Initial, mid June and after harvest of crop.

Soil chemical characteristics and nutrient status –

Organic carbon, available N, P, K, pH, EC at initial stage and after harvest of crop

Crop observations –

- Germination % : 30 and 45 DAP.
- Shoot population: 120,150,180 DAP
- Root biomass up to 45 cm depth at maximum tillering stage (mid June)
- Number of millable canes
- Cane length (m)
- Cane yield (t/ha)
- CCS yield (t/ha)

AS 60 : Studies on seed cane economy in sugarcane cultivation

Objective : To economize use of seed cane through sett size and sett treatment

Year of start : 2008-2009

Year of completion : 2010-2011

Centre : All centres

Treatments :

A- Sett size (no.of buds/sett) – 3 :

i) Three-bud setts ii) Two-bud setts iii) Single-bud sett

B- Seed rate (no.of buds/ha) – 2 :

i) 100% of recommended ii) 75% of recommended

C- Sett treatment – 2 :

i) Dipping of setts in fungicide, carbendazim (0.1%) for 15 min.
ii) Dipping of setts in fungicide, carbendazim (0.1%) + gibberellic acid (100 ppm) for 15 min.

Design : Factorial RBD

Replication : Three

Plot size : 6.0 m x 4.5 m

Variety : Recommended for the zone

Row spacing : Recommended for the zone

Fertilizer schedule : Recommended for the zone

Observations to be recorded :

- Initial soil fertility status
- Germination % : 30, 45 and 60 DAP
- Number of tillers : 120,150 and 180 DAP
- Number of millable canes
- Cane yield (t/ha)

- CCS yield (t/ha)

AS 61 :	Optimising irrigation schedule in sugarcane under different planting methods

Objective : To enhance water and crop productivity in sugarcane

Year of start : 2009-2010

Year of completion : 2012-2013

Locations : **Sub tropical region :** Bethuadahari, Faizabad, Faridkot, Karnal (SBI), Kota, Lucknow, Ludhiana, Modipuram, Pantnagar, Pusa, Seorahi, Shahjahanpur, Sriganganagar and Uchani

Tropical region : Akola, Cuddalore, Kolhapur, Mandya, Navsari, Nayagarh, Padegaon, Powarkheda, Pune, Raipur, Sankeshwar and Thiruvalla

Treatments :

A. For subtropical region

(i) Planting method : 3

1. Conventional planting (at 75 cm row spacing)
2. Paired row planting (at 30:120 cm row spacing)
3. FIRB method (75 cm row spacing)

(ii) Irrigation schedule (IW/CPE ratio) : 3

1. 0.50
2. 0.75
3. 1.00

Note : IW = 8.0 cm

B. For tropical region :

(i) Panting method : 3

1. Conventional planting (at 90 cm row spacing)
2. Paired row planting (at 30:150 cm row spacing)
3. Paired cum trench planting (at 30:150 cm row spacing)

(ii) Irrigation schedule (IW/CPE ratio) : 3

i. 0.6
ii. 0.9
iii. 1.2

Note : IW = 8.0 cm

Design : RBD (Factorial)

Replication : 3

Plot size : 8 rows of 10 metre length

Planting season : **Subtropics** : Spring (Feb-March)
Tropics : Spring (*Suru*)

Observations to be recorded :

1. **Initial soil studies :** Available NPK, soil texture, B.D, infiltration rate, FC, PWP.
2. **Crop observations :** Germination count, tillers, millable cane, cane yield, CCS yield, yield attributes and juice quality.
3. **Observations on water application :** Number of irrigations, total water applied, Irrigation water use efficiency (cane yield/unit water applied).
4. **Others :** Planting date, harvesting date, weather data and name of variety.

AS 62 : Management of binding weeds in sugarcane

Objective : To control binding weeds/creepers in sugarcane

Year of start : 2009-10

Year of completion : After 3 years

Centres : All the centres (except Faridkot)

Treatments : 10

T_1 - Control (weedy check)

T_2 – Hoeing at 30, 60 and 90 DAP

T_3 – Atrazine @ 2 kg a.i./ha (PE) followed by 2,4-D (1 kg a.i./ha) at 60 DAP

T_4 – Atrazine @ 2 kg a.i./ha after 1st irrigation and hoeing followed by 2,4-D @ 1 kg a.i./ha at 75 DAP

T_5 – Metribuzine @ 1.25 kg a.i./ha (PE) followed by 2,4-D @ 1.0 kg a.i./ha at 75 DAP

T_6 – Atrazine @ 2.0 kg a.i./ha (PE) + Almix* 20 g/ha at 75 DAP

T_7 – Metribuzine @ 1.25 kg a.i./ha (PE) + Almix 20 g/ha at 75 DAP

T_8 – Atrazine @ 2.0 kg a.i./ha (PE) + Ethoxysulfuron 50 g a.i. at 75 DAP

T_9 – Atrazine @ 2.0 kg a.i./ha (PE) + Dicamba 350 g a.i./ha at 75 DAP

T_{10} – Metribuzine @ 1.25 kg a.i./ha (PE) + Dicamba 350 g a.i./ha at 75 DAP

*** Almix is a mixture of chlorimuron ethyl and metsulfuron methyl**

Design : RBD

Replication : 3

Variety : Predominant and recommended variety of the region

Observations to be recorded :

1. Germination per cent and shoot population
2. Weed density (species composition and number/sq. meter) before spraying and of 120 days after spraying (DAS)
3. Weed dry weight/sq meter at 120 DAP
4. No. of millable canes/ha
5. Cane yield (t/ha)
6. Pol % in cane
7. CCS (t/ha)
8. Weed control efficiency
9. Economics of treatments

PLANT PATHOLOGY

Technical Programme – 2010-2011

PP 14 & : Identification of pathotypes of red rot pathogen

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

Objective : To gather information on the major pathotypes of red rot from the different areas/zones.

Year of start : 1983-84 (Continuing project)

Location :

North West Zone	:	Lucknow, Shahjahanpur, Ludhiana, Uchani and Karnal (SBI)
North Central Zone	:	Pusa and Seorahi
East Coast Zone	:	Anakapalle and Cuddalore
Peninsular Zone	:	Navsari, Coimbatore and Thiruvalla

Working isolates showing pathogenic variability from the previously reported pathotypes at different centers will be confirmed at the following centers : Lucknow and Uchani (North-West zone), Anakapalle (East-Coast zone) and S.B.I., Coimbatore (Peninsular zone). The participating centers will deposit such working isolates at the above mentioned centers latest by June 15 of each year. The zonal centers will also maintain the type cultures.

Sugarcane Differentials (14 Nos.) : 1. *Baragua* (*S. officinarum*); 2. *Khakai* (*S. sinense*); 3. SES 594 (*S. spontaneum*); 4. CoS 767; 5. BO 91; 6. CoC 671; 7. Co 7717; 8. Co 997; 9. CoJ 64; 10. Co 1148; 11. Co 419; 12. Co 62399; 13. Co 975; 14. CoS 8436

No. of isolates : Virulent isolates collected from red rot affected canes of commercially cultivated varieties in the zone.

Method of inoculation : Plug method of inoculation is to be used (Details vide PP.17). Inoculations with each isolate to be done on all the differentials with freshly prepared spore suspension. All inoculations to be completed in 2 days by last week of August.

Observation : One observation at 60th day of inoculation.

Evaluation : The canes are to be split open longitudinally. Inoculated canes free from borer infestation and other damages are taken for evaluation. Based on parameters viz., nodal transgression, lesion width, white spots, top yellowing/drying, rind infection and sporulation over the rind, the host reaction is categorized into three groups viz., Resistant (R), Susceptible (S) and Intermediate (X) as follows –

R : Lesion width laterally restricted; nodal transgression up to 2 nodes; white spots, rind infection, sporulation over the rind and yellowing/drying of tops absent.

S : Lesion width laterally spreading, nodal transgression more than 2 nodes; white spots progressive or restricted; in case of progressive white spots, rind infection, sporulation over the rind and yellowing/drying of tops absent or present.

X : Lesion width laterally restricted or spreading; nodal transgression more than 2 nodes; white spots absent or present (restricted type), rind infection, sporulation over the rind and yellowing/drying of tops absent.

PP 17 : Evaluation of zonal varieties for resistance to red rot, smut and wilt

Objective : To gather information on the relative resistance to red rot, smut and wilt of the entries in zonal varietal trial of the respective zones.

A. RED ROT

Locations :

North West Zone	:	Lucknow, Ludhiana, Uchani, Shahjahanpur, Pantnagar and Karnal (SBI)
North Central Zone	:	Pusa, Motipur, Seorahi and Bethuadahari
North East Zone	:	Buralikson
East Coast Zone	:	Anakapalle and Cuddalore
Peninsular Zone	:	Thiruvalla, Navsari and Coimbatore

Year of Start : 1986-87 (Continuing project)

Varieties : All the centres will test all the entries of early and midlate groups under IVT and AVT (2008-09) of the respective zones. Entries of Inter zonal varietal trial (IZVT) are also to be tested, if listed. The seed material for this programme is to be obtained from the respective breeders of the centres. One, six metre row of at least 20 clumps for inoculation with each pathotype by plug/nodal method. Any red rot susceptibility variety of the same maturity group may be used as standard (check).

Inoculum (Pathotypes to be used) :

North West Zone	:	Cf 08 & Cf 09 (To be inoculated separately as well as their mixture*)
North Central Zone	:	Cf 07 & Cf 08 (To be inoculated separately as well as their mixture*)
East Coast Zone	:	Cf 04 & Cf 06 (To be inoculated separately as well as their mixture*)
Other zones	:	Two widely occurring isolates on commercial varieties in the area

(Note: If pathotypes are not available, Cf 07, Cf 08 and Cf 09 may be obtained from IISR, Lucknow and Cf 04 & Cf 06 from RARS, Anakapalle.)

* Mixture of pathotypes will be additionally used for inoculation in 2009-2010 & 2010-2011 only as per decision taken during AICRP Workshop 2008.

Freshly sporulating, 7-day-old, culture, in Petri-dishes will be taken. The spore mass will be washed with 100 ml of sterile water and collected in a flask. Conidial suspension at a spore concentration of one million spores per ml will be prepared for inoculation. Fresh inoculum should always be used for inoculation.

Method of inoculation

1. Nodal Method : Two canes in each of 20 clumps to be inoculated by pouring 1 ml of suspension in between the sheath and the stem of two opposite buds. Inoculation to be done with the onset of pre-monsoon under high humidity conditions. The inoculum to be introduced into the axil of the 4th and 5th nodes from the top after slightly pulling the leaf sheath.

2. Plug Method : Two canes in each of the 20 clumps to be inoculated. Inoculation is to be done in the middle of the 3rd exposed internode from bottom and two drops of the spore suspension is to be injected with a large syringe in each cane and sealed with plastic clay (plasticine) or modeling clay.

3. Cotton Swab Method : (To be performed at Lucknow, Ludhiana, Shahjahanpur, Pantnagar, Pusa, Seorahi, Anakapalle, Navsari and Coimbatore centres only) : Two canes in each of 20 clumps will be inoculated by removing leaf sheath (lower most green leaf sheath) and immediately placing cotton swab (dipped in freshly prepared inoculum suspension) around the cane covering nodal region. The cotton swab should be held in place by wrapping parafilm over the swab.

Evaluation

1. Nodal Inoculation : One observation at the end of 60 days after inoculation. Observe for spindle infection i.e., presence of midrib lesions with or without conidia, presence of acervuli at nodes especially on leaf scar, root primordia, growth ring. Record the intensity of acervuli at node. Scrap the nodes and see if the lesions are developing into stalks. Wherever lesions are developing, evaluate 15 stalks, as per plug method of evaluation.

2. Plug Method : The canes to be split open longitudinally sixty days after inoculation along the point of inoculation. Inoculated canes free from borer infestation and other damages are taken for evaluation. This is graded on the international scale of 0-9 as follows :

Variety (genotype): ---------- Method of inoculation: ----------

No. of canes evaluated	Condition of tops*	Lesion width ** (LW)	White spot ‹ (WS)	Nodal transgression ※ (NT)	Total Score	Remarks
1.						
2. to						
15.						

* 1.Condition of top : Green (G)-0; Yellow (Y)/Dry (D)-1.

**2. Lesion width above to inoculated internode is assigned the score 1, 2 or 3

‹ 3. White spot is assigned score of 1 or 2 according to whether it is restricted or progressive.

※4. N.T. No. of nodes crossed above the inoculated internode and given the score as :

1- if one node crossed; 2-if two nodes crossed; 3. if three nodes are crossed (maximum)

Average Score = Total Score/No. of canes evaluated

Disease reaction : 0-9 scale

0.0 to 2 - R
2.1 to 4 – MR
4.1 to 6 – MS
6.1 to 8 – S
Above 8 – HS

Note : Average score is taken into account for assigning the disease reaction.

The varieties which show susceptibility by plug method, but have not shown nodal susceptibility are to be retested by nodal method. If these are not susceptible by the nodal method, they may be considered for identification/release.

3. Cotton Swab Method : Remove cotton swab and scrap the node with a knife. Record presence/absence of lesions. In case lesions are developing into stalk, evaluate disease reaction as per plug method of evaluation.

B. SMUT

Locations :

North West Zone	**:**	Lucknow, Ludhiana, Uchani, Shahjahanpur and Pantnagar
North Central Zone	**:**	Pusa, Motipur and Seorahi
East Coast Zone	**:**	Anakapalle and Cuddalore
Peninsular Zone	**:**	Coimbatore, Powarkheda, Thiruvalla, Padegaon, Navsari, Kolhapur, Sankeshwar and Pune

Year of Start : 1994-1995

Varieties : All the entries of early and midlate group under IVT, AVT and IZVT (2008-09) of the respective zones. The seed material is to be obtained from the respective breeders of the centre.

Inoculum : *Ustilago scitiminea* teliospores freshly collected from smut susceptible sugarcane varieties will serve as source of inoculum.

Storage : Freshly collected whips are air dried by keeping under shade and teliospores are collected in butter paper bags and are stored in desiccator under anhydrous calcium chloride. Spore viability is to be ensured before inoculation.

Inoculation : The method of inoculation consists of steeping of setts (three bud) for 30 minutes in a spore suspension of over 90% viability and with a spore load of one million spores per milliliter.

Plot size & Planting : The plot size is one, 3-metre row planted with 10, three-bud setts with a minimum of two replications.

Standards : Any smut susceptible and resistant variety of same maturity group may be used as standard (check).

Observations : Number of smut affected clumps per row are to be recorded. Smut incidence at fortnightly intervals has to be recorded up to harvest of the crop.

Evaluation : Evaluation is based on percentage of total clumps infected (No. of affected clumps/total clumps x100). It is required to maintain at least 15 to 20 clumps in each genotype before arriving at the percentage of infection. The following grading is to be followed for disease reaction:

0 %	**:**	Resistant
>0 to 10 %	**:**	Moderately resistant
>10 to 20 %	**:**	Moderately susceptible
>20 to 30 %	**:**	Susceptible
Above 30 %	**:**	Highly susceptible

C. WILT

Location : Ludhiana, Lucknow, Pusa, Navsari, Powarkheda, Coimbatore, Sankeshwar, Anakapalle

Year of Start : 2000-2001

Varieties : Entries of AVT of the respective zones for the year 2008-09

Plot size & Planting : Two rows of 5 m length, planted under wilt sick soils.

Standards : Any wilt susceptible and resistant variety of the zone.

Observations :
1. Germination count at 45 days after planting
2. Appearance of wilt symptoms on the standing canes (on clumps)
3. At the end of 10 months, 10 clumps are to be uprooted with roots. All the canes from the clumps will be split open longitudinally and the wilt severity index scored on a 0-4 scale.

Evaluation : 0-4 Scale of wilt severity index

Grade	**Symptoms**
0	Healthy canes and roots with no external or internal symptoms of wilt.
1	No wilting or drying of leaves, no stunting or shrinking of the stalk or rind, slight pith formation with yellow discolouration of the internal tissues in one or two lower internodes only. No cavity formation or fungal growth seen. Apparently normal and healthy roots.
2	Mild yellowing of top leaves and drying of lower leaves, mild stunting and shrinking of the stalk and rind. Yellowish discolouration of the internal tissues extending to three or four bottom internodes. Slight cavity formation of the pith, no fungal growth seen, slightly discoloured roots.
3	Mild yellowing of top leaves and drying of lower leaves, mild stunting and shrinking of the stalk and rind. Light brown discolouration of the internal tissues throughout the entire length of the cane except the top. Severe pith and cavity formation. Sparse fungal growth observed in the pith cavities.

4 Complete yellowing and death of the leaves, marked stunting, shrinking and drying of the stalk and rind, dark brown discolouration of the internal tissues extending throughout the entire length of the cane. Large pith cavities with profuse over growth of the associated fungi. Most of the roots necrotic with dark discolouration which dislodge easily from the stalks. Roots mildly discoloured and slightly necrotic.

The mean wilt severity index is worked out based on the number of canes samples.

$$\text{Mean wilt severity index} : \frac{\text{Sum of wilt indices of individual stalks}}{\text{Number of stalks samples}}$$

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

Objective : To gather information on the diseases naturally occurring in the area on varieties for compiling an all India disease status report yearly

Locations : Lucknow, Ludhiana, Uchani, Shahjahanpur, Pantnagar, Karnal (SBI), Modipuram, Pusa, Seorahi, Buralikson, Anakapalle, Cuddalore, Coimbatore, Mandya, Sankeshwar, Powarkheda, Thiruvalla, Padegaon, Kolhapur, Navsari and Pune.

Year of Start : 1989-1990

Observations : Periodic observations in June, September and December in all locations to gather information on the **per cent incidence of diseases** on all varieties of the area (General survey)

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

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

Locations : Ludhiana, Uchani, Karnal, Shahjahanpur, Lucknow, Pusa, Seorahi, Anakapalle, Cuddalore and Navsari.

No. of genotypes : Director, SBI, Coimbatore may be requested in advance for supply of seed material of the genotypes.

Plot size : One, six metre row of at least 10 clumps

No. of isolates: As indicated in PP 17 experiment.

Method of inoculation : Plug method only.

Inoculum : As per details given under PP 17 (Pathotypes to be inoculated individually only)

Method of evaluation : As per details in PP 17

PP 28 : Management of rust of sugarcane

Objective : To find out effective method of rust management

Note : Initially, fungicides will be evaluated against rust.

Locations : Pune, Padegaon and Kolhapur

Year of Start : 2004-2005

Treatment :

I. Variety : Rust susceptible variety of the area (Date of planting : July/August)

II. Fungicides

T.1	- Chlorothalonil	-	0.25 %
T.2	- Propineb	-	0.25 %
T.3	- Captan	-	0.25 %
T.4	- Triadimefon	-	0.10 %
T.5	- Mancozeb	-	0.20 %
T.6	- Control (Untreated)	-	-

III. Time of application of fungicides : To be applied just after appearance of rust pustules followed by two sprays at 15 days interval.

Plot size : 6 x 7 sq. m

Design : RBD

Replications : Three

Observations :

1. Germination %
2. Disease severity (% leaf area covered with rust pustules based on observations of 10 leaves per clump; total no. of clumps to be observed at least 10)
3. Cane yield per plot and per hectare
4. Brix, Pol %, Purity and CCS %
5. Cost-benefit ratio

Note: As per decision taken in the Group Meeting – 2009, the data should be statistically analyzed and economics of treatments should be worked out and presented in the AICRP Workshop – 2010.

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

Objective : Identification sugarcane varieties exhibiting field resistance to red rot.

Year of Start : 2010-11

Duration : 3 years

Location :

North West Zone	:	Pantnagar
North Central Zone	:	Pusa
East Coast Zone	:	Cuddalore
Peninsular Zone	:	Navsari and Coimbatore

Methodology :

Isolates/pathotypes: North West Zone - Cf 08 & Cf 09

North Central Zone - Cf 07 & Cf 08)

East Coast Zone - Cf 04 & Cf 06

Peninsular Zone - prevailing isolates

Varieties : Two moderately resistant (by plug method) checks, two field susceptible checks of the zone and 10-15 entries in IVT/AVT which are susceptible under nodal method of inoculation

Inoculum preparation: One kg of sorghum grain (partially broken grains without powdering) and sand mixture (1:3 ratio) mixed with 100 ml of distilled water. The thoroughly mixed medium is to be distributed in container either in glass bottle or 500 ml conical flask and sterilized at 15 lb pressure for 2 hr. After 2 days, each medium is inoculated with mycelia/spore suspension. After 15 days, the inoculum will be ready for application.

Method of application: 150 g of grain inoculum/ 20 ft row is applied at the time of planting. The inoculum is to be applied on the setts in the furrows and covered with soil before irrigation and it has to be mixed with equal quantity of sand to have uniform distribution.

Observations: Disease development is to be recorded at monthly intervals till maturity of crop. Disease development is indicated by death of settlings, yellowing and drying of leaves, mid rib lesions in the whorl and production of dead hearts, which can not be pulled out easily as in early shoot borer. From affected settling/plant part, the pathogen should be re-isolated for confirming the presence of *C. falcatum*. The information generated should be presented in tabular form giving details of symptoms observed after planting date as exemplified below:

Table : Assessment of field resistance of sugarcane varieties to red rot

S.No.	Variety	Resistance Level (MR / S)	Symptoms observed followed by no. of days after planting	*C. falcatum* recovered (Yes / No)	Any other information
1.	CoJ 64	Field S	SY (65), SM (90), CR (150), LY (160), CD (180)	Yes	In all five clumps were affected
2.					
3					
4.					
5.					
6.					

Symptom code: Yellowing of leaves in settling (SY); Drying of leaves in settling (SD); Settling mortality (SM); Rotting in intermodal tissue of cane (CR); Yellowing of spindle leaves (LY); Drying of spindle leaves (LD); Whole clump drying (CD).

For North West Zone

PP 14: Pathogenic behaviour of isolates of *C. falcatum* on a set of differentials

Sl. No	Pathotype /Isolate	Source	Reaction of host differentials													
			Co 419	Co 975	Co 997	Co 1148	Co 7717	Co 62399	CoC 671	CoJ 64	CoS 767	CoS 8436	BO 91	*Bara-gua*	*Kakhai*	SES 595
1.	Cf 01	Co 1148														
2.	Cf 02	Co 7717														
3.	Cf 03	CoJ 64														
4.	Cf 07	CoJ 64														
5.	Cf 08	CoJ 64														
6.	Cf 09	CoS 767														
7.	Cf 11	CoJ 64														
8.	New isolate/s															

The order of the differentials to be maintained and if additional differentials are added they may be given at the end.

For North Central Zone

PP 14: Pathogenic behaviour of isolates of *C. falcatum* on a set of differentials

Sl. No	Pathotype /Isolate	Source	Reaction of host differentials													
			Co 419	Co 975	Co 997	Co 1148	Co 7717	Co 62399	CoC 671	CoJ 64	CoS 767	CoS 8436	BO 91	*Bara-gua*	*Kakhai*	SES 595
1.	Cf 07	Co 1148														
2.	Cf 08	Co 7717														
3.	New isolate/s															

The order of the differentials to be maintained and if additional differentials are added they may be given at the end.

For East Coast Zone

PP 14: Pathogenic behaviour of isolates of *C. falcatum* on a set of differentials

Sl. No	Pathotype /Isolate	Source	Reaction of host differentials													
			Co 419	Co 975	Co 997	Co 1148	Co 7717	Co 62399	CoC 671	CoJ 64	CoS 767	CoS 8436	BO 91	Baragua	Kakhai	SES 595
1.	Cf 04	Co 419														
2.	Cf 05	Co 997														
3.	Cf 06	CoC 671														
4.	Cf 10															
5.	New isolate/s															

The order of the differentials to be maintained and if additional differentials are added they may be given at the end.

For Peninsular Zone

PP 14: Pathogenic behaviour of isolates of *C. falcatum* on a set of differentials

Sl. No	Pathotype /Isolate	Source	Reaction of host differentials													
			Co 419	Co 975	Co 997	Co 1148	Co 7717	Co 62399	CoC 671	CoJ 64	CoS 767	CoS 8436	BO 91	Baragua	Kakhai	SES 595
1.	Cf 06	CoC 671														
2.	New isolate/s															

The order of the differentials to be maintained and if additional differentials are added they may be given at the end.

PP 22: Survey of naturally occurring sugarcane diseases

Sl.No.	Disease	Name of area* surveyed	% Disease incidence (clump basis)	Varieties affected	Crop stage when observed	Any other information
1	Red rot					
2	Smut					
3	Wilt					
4	RSD					
5	SYLD					
6	GSD					
7	Foliar Diseases (Specify)					
8	Other disease problems specific to the location					

* Mention name of district also

ENTOMOLOGY

Technical Programme – 2010-2011

Project E.4.1	**:**	**Evaluation of zonal varieties/genotypes for their reaction against major insect pests**

Objective : To grade the entries in the zonal varietal trials for their behaviour towards damage by key pests in the area.

Year of Start : 1985-86 (continuing)

Locations : Ludhiana, Uchani, Karnal (SBI), Lucknow, Shahjahanpur, Pusa, Seorahi, Bethuadahari, Buralikson, Anakapalle, Navsari, Padegaon, Pune, Powarkheda, Kolhapur, Mandya, and Akola.

No. of replications : Three

Plot size : A minimum of 3, six metre, rows/variety per replication

Methodology : The experiment should be conducted separately without insecticidal application. The seed material is to be obtained from the breeders of the respective centres. The susceptible check variety for each major insect pest is to be included.

Observations to be recorded:

For shoot borer : i) Per cent incidence (based on dead-hearts)
ii) No. of bored plants/ha

Observations to be recorded in post-germination phase at 30 days interval up to 120 days

For top borer : Per cent incidence during the 3rd and 4th broods (July, August and September) in North West, North Central and North East Zones and during 5^{th} & 7^{th} months and at harvest in Peninsular and East Coast Zones

For stalk and internode borers : (i) At harvest both per cent incidence and per cent intensity (25 canes per replication) may be recorded. The infestation index may also be computed as follows:

$$\text{Infestation index} = \frac{\text{Per cent incidence x per cent intensity}}{100}$$

(ii) The yield and quality parameters are also to be recorded in both healthy and bored canes and CCS/plot calculated separately.

For pyrilla **:** Population of nymph, adult and egg masses be recorded from a unit of 10 canes (20 leaves) and average per leaf sheath be reported.

For white fly **:** Population of nymph and puparia be recorded from a unit of 10 canes (20 leaves), from proximal, middle and distal region. Average population cm^2 be reported.

For white grub **:** Grub as well as adult population be recorded by digging 1 square meter area at 5 sites in the field. Population per ha be calculated and reported.

Observations also to be recorded on termites, thrips and mite infestation and broad categorisation be made as less susceptible, susceptible and highly susceptible.

Note :

1. In the first year, the entomologists will record observations in the breeder's trial (IVT) and from second year onwards they should take separate experiment with entries of AVT (plant and ratoon). A susceptible check be included in the trial.

2. A minimum of three years data are needed to grade the variety.

3. Grading of infestation level should be done as per following table:

Grades of insect pests infestation

Pest	LS	MS	HS
Early shoot borer (%)	Below 15.0	15.1-30.0	Above 30.0
Internode borer (%)	Below 20.0	20.1-40.0	Above 40.0
Scale insect	Below 10.0	10.1-35.0	Above 35.0
Mealy bug/spittle bug	Below 5.0	5.1-30.0	Above 30.0
Root borer	Below 15.0	15.1-30.0	Above 30.0
Top borer (%)	Below 10.0	10.1-20.0	Above 20.0
Stalk borer (infestation index)	Below 2.0	2.1-5.0	Above 5.0
Pyrilla (Nymph + Adult per leaf)	Below 5.0	5.1-20.0	Above 20.0
White fly (per square inch)	Below 2.0	2.1-5.0	Above 5.0
Woolly aphid	0 (Resistant) –Free 1 (Moderately resistant)– Less than 25% leaf area covered 2 (Moderately susceptible)– 25% leaf area covered 3 (Susceptible)– 25-50% leaf area covered 4 (Highly susceptible)– More than 50% leaf area covered		

Project E.27	**:**	**Mass multiplication of potential bio-agents of sugarcane insect pests**

Objective **:** To develop an economical mass-multiplication techniques of promising bio-agents of the area.

Duration **:** Three years

Year of start **:** 2003-2004

Location and bio-agents to be multiplied :

Lucknow	-	*Cotesia flavipes, Metarhizium anisopliae* and *Beauveria bassiana*
Anakapalle, Shahjahanpur, Uchani	-	*Trichogramma* sp.
Pune, Padegaon and Mandya	-	*Dipha aphidivora, Micromus igorotus* and *Chrysoperla carnae*
Modipuram	-	*Trichogramma* sp., *Chrysoperla* sp.

Methodology :

1. Suitable host insect/media for multiplication of parasitoid/predator and insect pathogen be tried and multiplication done as per technique in practice.

2. Mass multiplication *D. aphidivora* and *M. igorotus* should be followed as per details given below :

   i) Green colour shade nets are to be used for rearing of *D. aphidivora* and *M. igorotus*. The shade nets can be fixed on standing crop (6-7 months old) with SWA infestation.

   ii) If aphid population is low, artificial release of aphids may be done. Urea may be applied sufficiently to make leaves succulent and thereby high aphid population. *Dipha Micromus* larvae may be released @ one larva/leaf by stapling the leaf bit containing predator's larvae.

Note: For mass multiplication of entomopathogenic fungi, plant pathologist at the centre may be requested to jointly work.

Project E. 28	**:**	**Survey and surveillance of sugarcane insect pests**

Objective : To identify key insect pests of sugarcane in the area

Duration : Long term

Year of start : 2003-2004

Locations : All Centres where entomologists are available

Methodology & observations to be recorded :

i) Roving survey of sugarcane fields at 5-8 Km distance be recorded.

ii) Report containing information on location, variety, date of planting, spacing, fertilizer doses and inter crops, if any

iii) Observations on incidence of borers be recorded by examining 100 canes at five places (four corners and in the middle), sucking pests by examining 20 canes and others as mentioned in technical programme of E 4.1.

Project E. 30	**:**	**Monitoring of insect pests and bioagents in sugarcane agro-ecosystem**

Objective : To monitor the key insect pests and natural enemies in the area

Locations : Ludhiana, Uchani, Karnal (SBI), Lucknow, Shahjahanpur, Modipuram, Pusa, Seorahi, Bethuadahari, Buralikson, Anakapalle, Navsari, Padegaon, Pune, Powarkheda, Kolhapur, Mandya and Akola.

Year of start : 2006-2007

Duration : Long term

Methodology :

1. Planting of sugarcane variety recommended for the region in 0.2 ha area.
2. All recommended practices to be followed except application of insecticide.

Observations to be recorded :

1. Observations on incidence of borers be recorded by examining 100 canes at five places (four corners and in the middle), sucking pests by examining 20 canes and others as mentioned in technical programme of E 4.1.

2. Meteorological data (weekly average) to be recorded on: temperature (max & min), relative humidity, no. of rainy days and total rainfall.

Project E. 31	**:**	**Management of whitefly (*Aleurolobus barodensis*) in sugarcane agro-ecosystem**

Objective **:** To find out effective strategy for the management of sugarcane whitefly and to compare the effectiveness of individual technology evaluated for the control of whitefly.

Year of start **:** 2006-07

Variety **:** Recommended variety of the location

Location Uchani, Karnal (SBI), Akola, Padegaon, Pune, Powarkheda and Navsari.

Treatments **:**

1. Destruction of puparia by removing infested leaves
2. Removal of infested leaves + Installation of cages @ 15/ha
3. Removal of infested leaves + Application of imidacloprid 0.005 % along with 2 % urea.
4. Removal of infested leaves + Application of neem based pesticide (Azadirachtin 4 g a.i./ha i.e. 0.0004 %)
5. Control

Design **:** Large plot, field trial

Replication **:** Four random observations

Plot size **:** 20 m x 20 m

Methodology **:**

1. Each treatment as above will be allocated to individual large plot/field. Four spots in each treatment will be randomly selected and marked. Three rows each of three meter length will be taken per spot and the observation on incidence of whitefly (nymph and puparia) will be recorded before treatment and 7, 15, 21 and 30 days after treatments. Total number of nymphs and puparia will be recorded per 5 x 2 cm (10 sq. cm) from 20 leaves from proximal, middle and distal regions of the leaves. The average per sp. cm will be calculated and reported. The data so obtained will be analyzed using RBD.

2. Analysis of cane juice (extracted from 10 randomly selected canes/plot/replication) will be done for extraction per cent, brix, pol %, CCS %, fibre. CCS t/ha will also be calculated.

3. Yield (t/ha) at harvest will be recorded on whole plot basis.

4. Economics will be worked out

Preparation of cage : Cages may be prepared from an empty tin of oil of 15 lit. capacity (33.0 x 22.5 x 33.0 cm). On both sides stainless steel wire net of 40 mesh size may be fitted. In these cages, heavily infested leaves bearing healthy and bigger size puparia (parasitized and unparasitized) will be kept by making small pieces of leaves. Sufficient numbers of pieces of leaves will be kept in the cage for proper aeration. The pieces of leaves will be replaced every 15 days. The emerging parasite, if any, will escape from 40 mesh wire net, while whitefly adult due to bigger size will die in the cage itself.

Note: Circular hole/s observed on the whitefly puparia is/are the indication of parasitization by *Encarsia* sp.

Cage constructed from empty oil tin (front view)

Project E.32 : Population dynamics of sugarcane borers (early shoot borer, top borer, internode borer and stalk borer) through pheromone trap

Objective : To study the population dynamics of sugarcane borers (early shoot borer, top borer, internode borer and stalk borer) through pheromone trap and influence of weather parameters on moth catches.

Year of Start : 2008-09

Variety : Recommended variety of the location

Location :

Peninsular Zone	:	Mandya, Akola, Pune, Navsari, Powarkheda and Padegaon
East Coast Zone	:	Anakapalle
North West Zone	:	Ludhiana, Uchani, Shahjahanpur and Lucknow
North Central Zone	:	Seorahi and Pusa

Treatments : Pheromone lures of sugarcane early shoot borer, top borer and stalk borer

Plot size : 1 acre

Methodology : In Peninsular and East Coast Zone, the test insect-pests will be early shoot borer, top borer and internode borer, while in north west and north central zones, early shoot borer, top borer and stalk borer. Three pheromone traps for each pest will be installed in the second fortnight of February till harvest of crop in one acre of sugarcane crop. The pheromone lure will be changed after 2 months.

Observations to be recorded : Observations on number of moths trapped will be recorded at weekly interval. The mean number of moth capture will be worked out. The correlation and regression of moth captures will be worked out with weekly meteorological parameters.

Source : Pest Control (India) Private Limited, Division : Bio-Control Research Laboratories, PO Box 6426, Yelahanka Post Office, Bangalore – 560 064, Karnataka will supply the trap and lures in the month of February. The agency has already been informed for supply of material on gratis.

List of entries for screening against major insect pests and diseases of sugarcane during 2010-2011

NORTH WEST ZONE

A. ZONAL VARIETAL TRIAL

1. Advance Varietal Trial (Early) – II Plant

Entries (5) **:** Co 05009, CoH 05262, CoH 05265, CoLk 05201and CoPK 05191

2. Advance Varietal Trial (Midlate) – II Plant

Entries (8) **:** Co 05011, CoH 05266, CoH 05269, CoPant 05222, CoPant 05224, CoPb 05211, CoPK 05192 and UP 05233

3. Advance Varietal Trial (Midlate) – I Plant

Entries (7) **:** Co 06033, Co 06034, CoH 06265, CoH 06266, CoPant 06224, CoPb 06219 and CoS 06247.

4. Initial Varietal Trial (Early)

Entries (10) **:** Co 07023, Co 07024, Co 07025, Co 07026, CoH 07261, CoH 07262, CoLk 07201, CoPant 07221, CoPant 07222 and CoPb 07211

5. Initial Varietal Trial (Midlate)

Entries (17) **:** Co 07027, Co 07028, CoH 07263, CoH 07264, CoH 07265, CoLk 07202, CoLk 07203, CoPant 07223, CoPant 07224, CoPb 07212, CoPb 07213, CoPb 07214, CoS 07231, CoS 07232, CoS 07233, CoS 07234 and CoSe 01424.

B. INTER ZONAL VARIETAL TRIAL

Centre (1): Lucknow

1. Inter Zonal Varietal Trial – Early I Plant

Entries (18) **:** Co 0301, Co 0302, Co 0303, Co 0305, Co 0306, Co 0308, Co 0312, Co 0314, Co 0315, PI 96-0843, CoA 03081, CoOr 03151, CoS 03292, CoSe 03234, CoP 03181, CoBln 03171, CoBln 03172 and CoBln 03173

NORTH CENTRAL AND NORTH EASTERN ZONE

A. ZONAL VARIETAL TRIAL

1. Advance Varietal Trial (Early) – II Plant

Entries (3) **:** CoP 05436, CoSe 05451and CoBln 05501

2. Advance Varietal Trial (Midlate) – II Plant

Entries (7) **:** Co 05018, Co 05019, Co 05020, CoP 05437, CoSe 05452, CoBln 05502 and CoBln 04174

3. Advance Varietal Trial (Midlate) – I Plant

Entries (4) **:** CoP 06436, CoP 06437, CoSe 06456 and CoSe 07451

B. INTER ZONAL VARIETAL TRIAL

Centre (1): Seorahi

1. Inter Zonal Varietal Trial – Early I Plant

Entries (18) **:** Co 0301, Co 0302, Co 0303, Co 0305, Co 0306, Co 0308, Co 0312, Co 0314, Co 0315, PI 96-0843, CoA 03081, CoOr 03151, CoS 03292, CoSe 03234, CoP 03181, CoBln 03171, CoBln 03172 and CoBln 03173

PENINSULAR ZONE

A. ZONAL VARIETAL TRIAL

1. Initial Varietal Trial - Early

Entries (15) : Co 07001, Co 07003, Co 07012, Co 07015, Co 07017, CoN 07071, CoN 07072, MS 07081, MS 07082, CoJN 07091, CoJN 07092, CoSnk 07101, CoSnk 07102, PI 07131 and PI 07132

2. Advanced Varietal Trial – Early - I Plant

Entries (4) : Co 06001, Co 06002, Co 06022, CoM 06082 and PI 06132

3. Advanced Varietal Trial – Early - II Plant

Entries (6) : Co 05001, Co 05002, CoN 05071, CoSnk 05101, CoSnk 05103 and CoM 05082

4. Initial Varietal Trial - Midlate

Entries (16) : Co 07004, Co 07005, Co 07006, Co 07007, Co 07008, Co 07009, Co 07010, Co 07020, CoVC 07061, CoN 07073, CoM 07083, CoJN 07093, CoJN 07094, CoSnk 07103, CoSnk 07104 and CoSnk 07105

5. Advanced Varietal Trial - Midlate I Plant

Entries (11) : Co 06007, Co 06010*, Co 06012, Co 06013, Co 06014, Co 06015, Co 06020, Co 06027, CoM 06082, CoM 06084 and CoSnk 03632

6. Advanced Varietal Trial - Midlate II Plant

Entries (6) : Co 05007, CoSnk 05104, CoSnk 05105, CoVSI 05121, CoVSI 05122 and CoVSI 05123

B. INTER ZONAL VARIETAL TRIAL

1. Inter Zonal Varietal Trial – Early I Plant

Entries (18) : Co 0301, Co 0302, Co 0303, Co 0305, Co 0306, Co 0308, Co 0312, Co 0314, Co 0315, PI 96-0843, CoA 03081, CoOr 03151, CoS 03292, CoSe 03234, CoP 03181, CoBln 03171, CoBln 03172 and CoBln 03173

EAST COAST ZONE

A. ZONAL VARIETAL TRIAL

1. Initial Varietal Trial (Early)

Entries (5) **:** CoA 08321, CoA 08322, CoA 08323, CoC 08336, and CoC 08337

2. Advanced Varietal Trial (Early) - I Plant

Entries (3) **:** CoA 07321, CoC 07336, and CoV 07356

3. Advanced Varietal Trial (Early) - II Plant

Entries (4) **:** CoA 06321,CoV 06356, PI 06376 and PI 06377

4. Initial Varietal Trial - Midlate

Entries (5) **:** Co 06031, CoA 08324, CoC 08338, CoC 08339 and CoOr 08346

5. Advanced Varietal Trial – Midlate (I Plant)

Entries (3) **:** Co 06030, CoA 07322 and CoC 07337

B. INTER ZONAL VARIETAL TRIAL

1. Inter Zonal Varietal Trial – Early I Plant

Entries (18) **:** Co 0301, Co 0302, Co 0303, Co 0305, Co 0306, Co 0308, Co 0312, Co 0314, Co 0315, PI 96-0843, CoA 03081, CoOr 03151, CoS 03292, CoSe 03234, CoP 03181, CoBln 03171, CoBln 03172 and CoBln 03173