

CROP IMPROVEMENT

Technical programme for the year 2017-2018

North Central & Eastern Zones

B. II - Zonal Varietal Trial

Centres (6) : Bethuadahari, Buralikson, Gorakhpur, Motipur, Pusa and Seorahi

1. Initial Varietal Trial (Early)

Entries (8)	:	CoBln14501, CoLk 14206, CoLk 14207, CoP 14436, CoP 14437, CoSe 14451, CoSe 14453 and CoSe 14454
Standard (3)	:	CoLk 94184, CoSe 95422 and CoSe 01421
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/meter
Date of planting	:	February-March
Crop duration	:	10 months
Data to be recorded	:	As per Annexure I.

2. Advanced Varietal Trial (Early) - I Plant

Entries (3)	:	CoP 13437, CoSe 13451 and CoSe 13452
Standard (3)	:	CoLk 94184 , CoSe 95422 and CoSe 01421
Design	:	Randomized Block Design
Replications	:	Four
Plot Size	:	Gross : 6m x 8r x 0.75m; Net : 5m x 6r x 0.75 m
Seed rate	:	12 buds per meter
Date of planting	:	February-March
Crop duration	:	10 months
Data to be recorded	:	As per Annexure I

3. Advanced Varietal Trial (Early) – II Plant

Entries (3)	:	CoLk 12207, CoP 12436 and CoSe 12451
Standard (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

4. Advanced Varietal Trial (Early) – Ratoon

Entries (3)	:	CoLk 12207, CoP 12436 and CoSe 12451
Standard (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	:	February- March
Crop duration	:	9 months
Data to be recorded	:	As per Annexure II

5. Initial Varietal Trial (Midlate)

Entries (9)	:	CoBln 14502, CoLk 14208, CoLk 14209, CoLk 14210, CoP14438, CoP14439, CoSe 14452, CoSe 14455 and CoSe 14456
Standard (3)	:	BO91, CoP 9301, CoP 06436
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/meter
Date of planting	:	February-March
Crop duration	:	12 months
Data to be recorded	:	As per Annexure III

6. Advanced Varietal Trial (Midlate) – II Plant

Entries (4)	:	CoLk 09204, CoLk 12209, CoP 12438 and CoSe 12453
Standard (2)	:	BO 91 and CoP 9301
Design	:	Randomized Block Design
Replications	:	Four
Plot size	:	Gross : 6m x 8r x 0.90 m Net : 5m x 6r x 0.90 m
Seed rate	:	12 buds per meter
Date of planting	:	February- March
Crop duration	:	12 months
Data to be recorded	:	As per Annexure III

7. Advanced Varietal Trial (Midlate) – Ratoon

Entries (4)	:	CoLk 09204, CoLk 12209, CoP 12438 and CoSe 12453
Standard (2)	:	BO 91 and CoP 9301
Design	:	Randomized Block Design
Replications	:	Four
Plot size	:	Gross : 6m x 8r x 0.90 m Net : 5m x 6r x 0.90 m
Date of ratooning	:	After harvest of I Plant crop
Crop duration	:	11 months
Data to be recorded	:	As per Annexure IV

9. SEED MULTIPLICATION

(i) Multiplication of pre-zonal entries for seed lifting

The following entries accepted during the Group Meeting of AICRP(S) held at the Rajendra Agricultural University, Pusa, Distt. Samastipur in 2015 are under multiplication at SRI, Pusa. On prior intimation, the coordinating centres should depute their staff to SRI, Pusa and lift the seed material for one year multiplication at their centres.

Early (9) : CoBln 15501, CoLk 15466, CoLk 15467, CoP 15436, CoP 15437, CoSe 15451, CoSe 15452, CoSe 15455 and CoSe 15456.

Midlate (10) : CoBln 15502, CoLk 15468, CoLk 15469, CoP 15438, CoP 15439, CoP 15440, CoP 15441, CoSe 15453, CoSe 15454 and CoSe 15457.

(ii) New entries accepted:

The following entries were accepted during the 31st Biennial workshop of AICRP(S) held at VSI, Pune in 2016. The concerned breeders are requested to supply seed material of their entries for one-year multiplication at S.R.I., Pusa multiplication centre.

Early (9) : CoP 16436, CoP 16437, CoP 16438, CoLk 16466, CoLk 16467, CoLk 16468, CoSe 16451, CoSe 16454, CoBln 16501

Midlate (11) : CoP 16439, CoP 16440, BO 156, CoLk 16469, CoLk 16470, CoLk 16471, CoSe 16452, CoSe 16453, CoSe 16455, CoSe 16456, CoBln 16502

B.III - Evaluation and identification of climate resilient ISH and IGH genetic stocks

i) Evaluation for water logging tolerance (II Plant Crop)

Centres (4): Kolhapur, Vuyyuru, Motipur and Pusa

- Entries (27) : BM 1003143, BM 1005149, BM 1009163, BM 1010168, BM 1022173, PG 9869137, SA 98-13, SA 04-454, SA 04-4792, SA 04-458, SA 04-390, SA 04-496, SA 04-409, AS 04-1689, AS 04-245, AS 04-2097, AS 04-635, AS 04-1687, MA 5/51, MA 5/5, MA 5/37, MA 5/99, MA 5/22, GU 07-3849, GU 07-3774, GU 07-2276 and CYM 07-986
- Standards (3) : Three standards (At least one sensitive and one tolerant checks) may be decided by the centres.
- Design : Alpha design (please refer layout plan annexed)
- Replications : Two
- Plot Size : 6m X 2r X 0.90 m
- Seed rate : 12 buds per meter
- Planting date : Kolhapur and Vuyyuru : 1st fortnight of February
Motipur and Pusa : 2nd fortnight of February
- Crop Duration : 12 months
- Data to be recorded : As detailed below:
- i) Germination at 30 days for tropical region and 45 days for sub-tropical region and tillering at 90 days.
 - ii) Shoot count, Single cane weight, Cane length, Cane diameter, Internode length (average of three middle internodes), number of fully emerged leaves and leaf area/plant just before of water logging, 30 and 60 days after water logging
 - iii) Juice Brix %, Juice sucrose %, Juice purity %, Extraction %, Cane fibre %, NMC, cane diameter, cane length, single cane weight at 300 and 360 days
 - iv) Cane and CCS yields at 360 days
 - v) Aerial rooting: Number of nodes with aerial roots and intensity of aerial roots (Rated as absent, low, medium and high)
 - vi) Foliage colour (green, light green, pale yellow) at 30 and 60 days after water logging

Weather data:

Rainfall (weekly rainfall), Maximum and Minimum temperature, RH

Imposition of water logging treatment:

1. In case natural water logging fails due to insufficient rains, water stagnation may be ensured (minimum 15 cm) during the grand growth phase (150 – 210 days after planting) / monsoon season.
2. Control plots must be well drained to avoid stagnation of water through out the cropping period.
3. Water level (in cm) above ground level in water logged blocks at 15 days interval after initiation of monsoon.
4. Duration of water logging.

Layout plan for Evaluation and identification of climate resilient ISH and IGH genetic stocks for water logging (Randomized Layout)

Water logging condition :

REPLICATION 1										
Block 1	22	6	9	25	18	12	14	28	2	19
Block 2	20	4	3	7	16	29	10	26	23	15
Block 3	24	1	8	11	5	30	27	13	21	17

REPLICATION 2										
Block 1	7	25	16	22	1	10	13	4	19	28
Block 2	24	12	6	18	15	3	30	9	21	27
Block 3	2	8	14	29	23	26	11	17	20	5

Normal condition (Experiment should not be conducted in low lying area):

REPLICATION 1										
Block 1	24	27	1	30	17	13	5	11	8	21
Block 2	4	16	10	20	7	29	15	3	23	26
Block 3	6	19	14	12	22	18	25	28	9	2

REPLICATION 2										
Block 1	30	9	21	24	15	3	18	6	12	27
Block 2	26	23	14	8	29	11	2	17	20	5
Block 3	10	25	19	28	22	7	13	16	4	1

Name of the clone and serial number:

S. No	Clone	S.No	Clone	S. No	Clone
1	BM 1003143	11	SA 04-390	21	MA 5/37
2	BM 1005149	12	SA 04-496	22	MA 5/99
3	BM 1009163	13	SA 04-409	23	MA 5/22
4	BM 1010168	14	AS 04-1689	24	GU 07-3849
5	BM 1022173	15	AS 04-245	25	GU 07-3774
6	PG 9869137	16	AS 04-2097	26	GU 07-2276
7	SA 98-13	17	AS 04-635	27	CYM 07-986
8	SA 04-454	18	AS 04-1687	28	Check 1
9	SA 04-472	19	MA 5/51	29	Check 2
10	SA 04-458	20	MA 5/5	30	Check 3

Note : In case one or two entries are missing due to unavailability of seed material, additional checks (other than Check 1,2,3) may be taken.

ii) Evaluation for water logging tolerance (Ratoon Crop)

Centres (4): Kolhapur, Vuyyuru, Motipur and Pusa

Entries (27)	:	BM 1003143, BM 1005149, BM 1009163, BM 1010168, BM 1022173, PG 9869137, SA 98-13, SA 04-454, SA 04-4792, SA 04-458, SA 04-390, SA 04-496, SA 04-409, AS 04-1689, AS 04-245, AS 04-2097, AS 04-635, AS 04-1687, MA 5/51, MA 5/5, MA 5/37, MA 5/99, MA 5/22, GU 07-3849, GU 07-3774, GU 07-2276 and CYM 07-986
Standards (3)	:	Three standards (At least one sensitive and one tolerant checks) may be decided by the centres.
Design	:	Alpha design
Replications	:	Two
Plot Size	:	6m X 2r X 0.90 m
Ratooning date	:	Immediately after harvest of I Plant crop
Crop Duration	:	11 months
Data to be recorded	:	As detailed below:

- i) Shoot count, Single cane weight, Cane length, Cane diameter, Internode length (average of three middle internodes), number of fully emerged leaves and leaf area/plant just before of water logging, 30 and 60 days after water logging
- ii) Juice Brix %, Juice sucrose %, Juice purity %, Extraction %, Cane fibre %, NMC, cane diameter, cane length, single cane weight at 270 and 330 days
- iii) Cane and CCS yields at 330 days
- iv) Aerial rooting: Number of nodes with aerial roots and intensity of aerial roots (Rated as absent, low, medium and high)
- v) Foliage colour (green, light green, pale yellow) at 30 and 60 days after water logging

Weather data:

Rainfall (weekly rainfall), Maximum and Minimum temperature, RH

Imposition of water logging treatment:

- a. In case natural water logging fails due to insufficient rains, water stagnation may be ensured (minimum 15 cm) during the grand growth phase (150 – 210 days after ratooning) / monsoon season.
- b. Control plots must be well drained to avoid stagnation of water though out the cropping period.
- c. Water level (in cm) above ground level in water logged blocks at 15 days interval after initiation of monsoon.
- d. Duration of water logging.

ALL INDIA COORDINATED RESEARCH PROJECT ON SUGARCANE

Characters on which data to be recorded in IVT and AVT Early (Plant crops)

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) after 10 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. Pol % cane after 10 months at harvest
17. Jaggery quality after 10 months at harvest (if facility available)
18. 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

ALL INDIA COORDINATED RESEARCH PROJECT ON SUGARCANE

Characters on which data to be recorded in AVT (Early – Ratoon)

- Note :**
1. No gap filling should be done.
 2. Ratooning operation should be completed within 15 days after harvesting plant crop.
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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. Pol % cane after 270 days at harvest
 16. Jaggery quality after 270 days at harvest (if facility available)
 17. Jaggery yield (t/ha) after 270 days at harvest (if facility available)

ALL INDIA COORDINATED RESEARCH PROJECT ON SUGARCANE

Characters on which data to be recorded in IVT and AVT (Midlate –Plant crops)

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. Pol % cane after 12 months at harvest
17. Jaggery quality after 12 months at harvest (if facility available)
18. 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

ALL INDIA COORDINATED RESEARCH PROJECT ON SUGARCANE

Characters on which data to be recorded in AVT (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. Pol % cane after 330 days at harvest
 16. Jaggery quality after 330 days at harvest (if facility available)
 17. Jaggery yield (t/ha) after 330 days at harvest (if facility available)