

SUGARCANE RESEARCH STATION: ASSAM AGRICULTURAL UNIVERSITY
BURALIKSON: P.O. BARUABAMUNGAON- 785618: GOLAGHAT: ASSAM

No. SRS/AAU /(T-2)/2012-13/

Dtd. 8th June, 2012

To

Dr. V.P. Singh,
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Sub : Technical Report (2011-12) of Crop Production , SRS, Buralikson.

Sir,

Please find enclosed herewith the Technical Report of Crop Production,
AICRP on Sugarcane in duplicate for the period 2011-12 along with a CD in
MS- word of Sugarcane Research Station , Buralikson for your needful.

Yours Faithfully,

Sd/-B,C.Bordoloi

Chief Scientist,
Sugarcane Research Station,
Buralikson

**ALL INDIA COORDINATED RESEARCH PROJECT
ON SUGARCANE**



**TECHNICAL REPORT
(2011-12)**

**CROP PRODUCTION
(Agronomy and Soil Science)**

**Sugarcane Research Station
Assam Agricultural University
Buralikson-785618**

Project No. AS 42**Title : Agronomic Evaluation of Promising Sugarcane Genotypes.**

The experiment was conducted to work out agronomy of Sugarcane genotypes of advanced varietal trial (AVT) with the following genotypes:

- | | |
|-------------------------|----------------------------|
| 1) CoBln 04172 (17/99) | |
| 2) CoBln 05501 (185/00) | Early matured genotypes |
| 3) CoBln04174 (12/99) | |
| 4) CoBln05502 (11/00) | Mid late matured genotypes |

In the experiment, there were three levels fertilizers viz.-

- 75% of the recommended dose of N
- 100% of the recommended dose of N
- 125% of the recommended dose of N

The genotypes were planted on 30th March ,2011 and harvested on 14th March,2012. The experimental field was clay loam in texture, poor in organic carbon (0.35%), low in available P (16.26 kg P₂O₅/ha) and in medium in available K (175 kg K₂O/ha) with ph 4.6.

AS 42.01 : Effect of genotypes and fertilizer levels on performance of Sugarcane

Treatments	Germination (%)	No. of shoots (000/ha)	NMC (000/ha)	Cane length (m)	Cane diameter (cm)	Sucrose (%)	Cane yield (t/ha)	CCS (%)
Genotypes								
CoBln 04172 (17/99)	63.02	101.98	88.18	2.65	2.41	17.92	60.46	12.96
CoBln 05501 (185/00)	65.12	103.95	85.83	2.57	2.37	18.34	56.56	13.28
CoBln04174 (12/99)	57.69	95.19	80.97	2.50	2.34	17.61	56.41	12.73
CoBln05502 (11/00)	56.89	93.11	77.69	2.50	2.41	17.68	57.95	12.78
CD at 5%	2.32	3.69	4.98	0.11	NS	NS	2.95	NS
Fertility Levels								
F ₁ (75% of Recommended)	58.24	95.02	80.71	2.45	2.30	17.73	51.59	12.82
F ₂ (100% of Recommended)	62.65	102.31	87.10	2.65	2.47	17.80	63.94	12.88
F ₃ (125% of Recommended)	61.15	98.35	81.69	2.57	2.38	18.13	58.01	13.12
CD at 5%	2.01	3.20	4.31	0.09	0.12	NS	2.56	NS

Both the group of genotype (Table AS 42.01) early and mid late recorded differences on germination percentage, numbers of shoots, NMC, cane length, cane diameter and cane yield . In the early matured group, genotype CoBln 04172 (17/99) recorded superior cane yield (60.46 t/ha) than genotype CoBln 05501 (185/00) which recorded cane yield (56.56 t/ha).However, observation showed minimum differences in sucrose and CCS percentage . In case of mid late group, genotype CoBln04174 (12/99) showed better performances on all the parameters than the genotype CoBln05502 (11/00). However, no significant differences were found in cane yield 56.41 t/ha of genotype CoBln04174 (12/99) and cane yield (57.95 t/ha) of genotype CoBln05502 (11/00) .

In case of application of different fertilizer levels, a significantly increasing trend of germination percentage, shoot numbers, NMC, cane length, cane diameter and cane yield were observed in 100% of recommended N over 75% of recommended N. The cane yield in 100% of recommended N recorded 63.94 t/ha, which is significantly superior than 75% of recommended N which recorded cane yield 51.59 t/ha. But no further positive responses on different parameters have recorded in increasing of 125% of recommended dose of N .

Project No. AS.62.**Title: Management of binding weeds in sugarcane.**

The experiment was undertaken with the following treatments with an objective to control binding weeds in sugarcane.

The experimental crop Borak (Co Bln 9103) was planted on 11th March, 2011 and was harvested on 17th March, 2012. The experimental soil was clay loam in texture, poor in organic carbon (0.50%) and in available P (20.23 Kg P₂O₅ /ha) and medium in available K (172 Kg K₂O/ha) with pH 5.1 .

The experimental field was infested with predominant weeds species such as *Borreria articularis* (L.F) will, *Ageratum houstonianum* L., *Seteria palmifolia*, *colocasia* Spp., *Dicanthium annalntum* ,*Melochia corchorifolia* L., *Anoxopus compresus.*, *Convolvulus arvensis* L., *Sida rhombifolia*, *Brachiaria remosa*, *Cyperus pilosus* L. , *Commelina* Spp and *Mimosa invisa*.

The treatments were:

T₁ - Control (weedy check)

T₂ - Hoeing at 30,60,and 90 DAP

T₃ - Atrazine @ 2 kg. a.i.(PE) followed by 2,4- D (1 kg. a.i./ha) at 60 DAP

T₄ - Atrazine @ 2 kg. a.i. after 1st irrigation and hoeing followed by 2,4- D (1 kg. a.i./ha) at 75 DAP

T₅ - Metribuzine @ 1.25 kg a.i./ha (PE) followed by 2,4- D (1 kg. a.i./ha) at 75 DAP

T₆ - Atrazine @ 2 kg. a.i.(PE) + Almix 20 g/ha at 75 DAP

T₇ - Metribuzine @ 1.25 kg a.i./ha (PE) + Almix 20 g/ha at 75 DAP

T₈ - Atrazine @ 2 kg. a.i.(PE) + Ethoxysulfuron 50 g a.i. at 75 DAP

T₉ - Atrazine @ 2 kg. a.i.(PE) + Dicamba 350 g a.i./ha at 75 DAP

T₁₀- Metribuzine @ 1.25 kg a.i./ha (PE) + Dicamba 350 g a.i./ha at 75 DAP

Table :AS.62.01: Effect of weed control treatments on weed growth at 90 days in Sugarcane

Treatments	Weed density (No./ m ²)	Weed dry weight (g/ m ²)	Weed control efficiency (%)
T ₁	264	44	-
T ₂	165	32	27.27
T ₃	101	30	31.82
T ₄	121	36	18.18
T ₅	162	39	11.36
T ₆	199	27	38.64
T ₇	132	25	43.18
T ₈	66	13	70.45
T ₉	62	25	43.18
T ₁₀	27	12	72.73
SEm (±)	40.98	3.15	-
CD at 5%	NS	9.4	-

All the weed control measures lead to significant reduction in weed density and weed dry matter recorded at 90 days stage. Data (Table AS.62.01) shows the highest weed control efficiency was recorded at treatment T₁₀ i.e. Metribuzine @ 1.25 kg a.i./ha (PE) + Dicamba 350 g a.i./ha at 75 DAP (72.73%) followed by treatment T₈ i.e. Atrazine @ 2 kg. a.i.(PE) + Ethoxysulfuron 50 g a.i. at 75 DAP (70.45%).

Table :AS.62.02: Effect of weed control treatments on growth and yield of Sugarcane

Weed control (Table- AS.62.02) treatments performed better results in all the parameters viz.

Treatments	Germi nation (%)	No.of shoots ('000/ha)	NMC ('000/ha)	Cane Length (m)	Cane Diameter (cm)	Yield (t/ha)	Sucrose (%)	CCS (%)
T ₁	34.6	60.4	55.6	2.2	2.3	17.6	17.2	12.7
T ₂	37.9	64.3	57.7	2.3	2.2	22.6	17.0	12.3
T ₃	42.1	72.8	68.4	2.5	2.3	33.7	16.2	11.9
T ₄	44.4	73.6	69.4	2.6	2.4	35.4	17.2	12.6
T ₅	44.0	74.7	70.0	2.4	2.5	41.1	17.0	12.5
T ₆	45.4	78.1	74.3	2.7	2.7	44.0	17.1	12.5
T ₇	47.0	78.8	74.6	2.6	2.6	44.0	17.1	12.5
T ₈	45.6	76.2	71.6	2.7	2.6	50.8	17.0	12.4
T ₉	45.2	84.8	79.6	2.7	2.8	44.3	16.9	12.2
T ₁₀	49.2	83.7	80.3	2.8	2.0	52.9	16.8	12.2
SEM(±)	2.03	3.26	3.23	0.05	0.28	2.93	0.39	0.31
CD(5%)	6.02	9.67	9.59	0.16	NS	8.71	NS	NS

germination, no. of shoots, NMC, cane length and yield of sugarcane. However, no significant variations found on cane diameter, sucrose and CCS. Highest yield (52.9 t/ha) was recorded in the treatment T₁₀ - - Metribuzine @ 1.25 kg a.i./ha (PE) + Dicamba 350 g a.i./ha at 75 DAP which was significantly varied over other treatments.

Project No.AS.64.

Title : Response of sugarcane crop to different plant nutrients in varied agro ecological situations

The experiment was laid out with the objective of study differential response of sugarcane crop to different nutrients. The experimental crop Borak (Co Bln 9103) was planted on 17th March, 2011 and harvested on 24th January, 2012. The experimental field was clay loam in texture, poor in organic carbon (0.45%), low in available P (20.26 kg P₂O₅/ha) and in medium in available K (170 kg K₂O/ha with pH 4.2. The available Fe, Mn and Zn in experimental plot were 69.8 ppm, 6.0 ppm and 0.80 ppm respectively.

The treatments for the experiments were as follows:

1. Control (No Fertilizer)
2. N
3. NP
4. NPK
5. NPK+S
6. NPK+Zn
7. NPK+Fe
8. NPK+Mn
9. NPK+S+Zn
10. NPK+S+Zn+Fe
11. NPK+S+Zn+Fe+Mn
12. Soil test based fertilizer application

The FYM was applied @ 10t/ha as common to all treatments . The content of N, P₂O₅ and K₂O in FYM were 0.2% , 0.2 % and 0.5 % respectively.

Table. AS.64.01. Effect of different nutrients on growth and yield of sugarcane

Treatments	Germination (%)	No.of shoots ('000/ha)	NMC ('000/ha)	Cane Length (m)	Cane Diameter (cm)	Yield (t/ha)	Sucrose (%)	CCS (%)
T ₁	44.3	76.2	60.1	1.8	1.9	26.6	19.6	14.2
T ₂	44.8	75.4	58.2	1.7	2.0	32.9	19.6	14.2
T ₃	42.0	74.4	56.9	2.0	2.1	38.4	19.7	14.3
T ₄	43.0	72.3	63.5	2.3	2.3	46.5	19.4	14.0
T ₅	46.7	79.6	73.3	2.4	2.5	62.7	19.1	13.9
T ₆	44.0	80.9	74.6	2.5	2.5	58.0	19.4	14.0
T ₇	49.8	83.6	71.3	2.5	2.4	58.8	19.7	14.2
T ₈	44.5	77.4	69.4	2.5	2.4	53.0	19.4	14.1
T ₉	48.8	83.1	72.8	2.5	2.5	56.5	18.7	13.5

T ₁₀	46.6	77.8	67.7	2,5	2.4	54.1	19.1	13.8
T ₁₁	50.0	88.4	73.7	2.6	2.6	72.8	19.6	14.2
T ₁₂	51.6	85.3	73.3	2.6	2.5	60.4	19.0	13.7
SEM(±)	2.23	2.91	4.30	0.09	0.06	5.18	0.41	0.30
CD(5%)	NS	8.53	12.60	0.25	0.18	15.19	NS	NS

Application of different plant nutrients (Table- AS.64.01) showed significant variances on no. of shoots, NMC , cane length ,cane diameter cane yield . However, no significant results found in sucrose (%) and CCS(%). The maximum yield (72.8 t/ha) recorded in the treatment T₁₁ i.e. NPK+S Zn + Fe + Mn followed by T₅- NPK + S where yield was recorded 62.7 t/ha. The treatment T12- Soil Test based fertilizer application also showed better significant results of all yield attributing parameters and yield was recorded 60.4 t/ ha.

Project No. AS-65

Title: Exploring feasibility of planting spring sugarcane as relay intercrop with skipped method grown wheat.

The experiment could not conduct at SRS , Buralikson as wheat is not commonly grown in this area .

Table: A. Meteorological data-2011-12

Month/year	Temperature		RH(%)		Rain Fall (mm)	No.of Rainy days
	Max.	Min.	Morn.	Even.		
March./11	34.0	10.2	93.10	61.22	66.9	11
April/11	34.2	10.0	87.40	75.80	68.8	12
May,11	35.0	18.0	93.00	77.20	411.0	22
June,11	34.4	21.0	93.50	85.87	257.2	23
July,11	36.0	23.4	94.70	76.03	318.1	23
August,11	35.4	21.8	95.00	81.30	217.6	18
Sptember,11	34.8	21.0	94.50	80.47	99.2	18
October,11	34.8	16.4	92.70	77.30	20.4	7
November.11	31.4	10.4	94.30	75.20	26.0	2
December,11	29.6	5.2	94.20	67.30	9.4	3
January,12	26.0	4.0	95.80	68.50	33.7	7
February,12	29.6	7.2	93.00	77.40	9.8	3

Table: B. Rainfall data(mm.) of Sugarcane Research Station, Buralikson for the years 2000-2011

Month/Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
January	009.2	009.6	008.4	009.6	006.2	047.8	-	006.4	025.4	-	007.3	023.4
February	012.4	062.4	005.4	062.4	082.4	022.0	063.0	106.5	004.0	017.0	028.4	017.5
March	031.4	022.2	016.4	022.2	088.0	470.6	017.2	029.0	099.0	045.0	122.0	066.9
April	128.2	238.1	158.6	238.1	417.6	193.4	158.2	296.9	119.2	074.0	251.2	068.1
May	200.2	161.0	212.8	114.7	161.0	195.8	185.7	197.1	215.5	086.0	362.8	411.0
June	334.3	306.0	136.8	313.7	306.0	150.6	304.4	287.4	220.2	142.0	495.9	257.2
July	300.2	321.4	312.4	399.2	381.7	423.9	486.6	272.0	292.7	356.0	481.2	318.1
August	359.9	215.6	336.8	240.2	196.6	424.2	143.7	437.0	274.5	239.0	251.5	217.6
September	363.8	158.5	132.4	222.2	117.4	151.4	098.0	298.5	187.3	320.9	152.5	099.2
October	041.8	134.0	028.6	241.4	195.6	114.6	165.8	026.8	041.8	040.4	101.1	020.9
November	028.0	008.0	044.8	041.8	004.4	-	033.2	036.0	-	009.3	15.0	026.0
December	002.8	002.6	038.1	014.6	001.6	-	009.6	009.4	-	002.3	22.8	009.4
Total	1812. 2	1639. 4	1429. 5	1920. 1	1958. 5	2194. 3	1665. 4	2003. 0	1479. 5	1331. 9	2000. 3	1535. 3