

**Annual Report of All India Coordinated Research Project on Sugarcane
(Agronomy & Soil Science) for the year 2013-14
Centre- Uchani (Karnal)**

- AS 42** : **Agronomic evaluation of promising new sugarcane genotypes.**
- Objectives** : To work out agronomy of sugarcane varieties from advanced varietal trial
- Year of start** : 2012-13 (Continued with new genotypes)
- Treatments** :
- A. Genotypes** – 8 (Four in early and four in mid-late groups in separate trials)
- i) Early : Co 7023, Co 7025, CoLk 7201 and CoH 7261
- ii) Mid-late : CoLk 7203, CoPb 7212, CoS 7234 and CoH 7263
- B. Fertility levels** - 3
- i) 75% of recommended doses of N (112.5 kg/ha)
- ii) 100% of recommended doses of N (150 kg/ha)
- iii) 125% of recommended doses of N (187.5 kg/ha)

The experiments were conducted on early and mid late sugarcane varieties as mentioned above in Factorial RBD with three replications. The crop was planted at 75 cm row spacing on March 7, 2013. The soil of the experimental field was clay loam in texture having pH 8.0, EC 0.4 dsm⁻¹, organic carbon 0.38%, available P 12.0 kg/ha and available K 168 kg/ha. Recommended doses of phosphorus (50 kg P₂O₅/ha) and potash (50 kg K₂O/ha) were applied at the time of planting whereas nitrogen as per treatments was applied in three equal splits. The crop was irrigated at 8-10 days intervals during pre-monsoon period and 20 days interval during post monsoon period. The harvesting of the experiment was done on February 20, 2014.

In early group, significantly higher germination was recorded in variety CoLk7201 (55.1%) and CoH 7261(55.1%) as compared to Co7023 (51.1%) and Co 7025 (49.9%). Variety CoLk 7201 and Co 7025 being at par produced significantly higher number of millable canes and cane yield as compared to variety Co 7023 and CoH 7261 (**Table1**). Variety CoLk 7201 (11.21 t/ha) produced highest sugar yield followed by Co 07025((10.90 t/ha), CoH 7261(10.38 t/ha) and lowest in Co 7023(10.18 t/ha). Recommended and 25 % higher doses of N being at par recorded significantly higher number of tillers, millable canes and cane and sugar yield over 75% of recommended dose of N.

The data presented in Table 2 revealed that in mid-late group, significantly higher germination was recorded in variety COS 7234 (59.0 %) and CoPb 7212(56.3%) as compared to CoH 7263 (49.1%) and CoLk 7203(42.9%). Varieties CoPb 7212 and CoS7234 being at par produced significantly higher number of millable canes as compared to CoLk 7203 and CoH 7263. Varieties CoLk 7203, CoPb 7212 and CoS7234 being at par recorded significantly higher cane yield as compared to variety CoH 7263(**Table 2**). Highest sugar yield was recorded in variety CoPb 7212 (12.25 t/ha) followed by CoLk 7203(11.92 t/ha), CoS 7234 (11.82 t/ha) and lowest in CoH 7263 (11.31 t/ha). Recommended and 25 % higher doses of N being at par recorded significantly higher number of tillers, millable canes and cane and sugar yield over 75% of recommended dose of N.

Summary: In early group Variety CoLk 7201 (91.5 t/ha) and Co 7025 (88.2 t/ha) being at par produced significantly higher cane yield as compared to variety CoH 7261 (84.5 t/ha) and Co 7023 (82.1 t/ha) Whereas in mid late group varieties CoPb 7212 (99.5 t/ha), CoLk 7203 (98.2 t/ha) and CoS7234 (96.9 t/ha) being at par produced significantly higher cane yield as compared to variety CoH 7263 (92.4 t/ha). All the varieties in both the group responded upto recommended dose of nitrogen fertilizers.

Table 1: Effect of different fertility levels on growth, yield and quality of early group varieties at Uchani (2013-14)

| Treatments | Germination (%) | No. of tillers (000/ha) | No. of millable canes (000/ha) | Single cane weight (g) | Cane yield (t/ha) | CCS (%) | Sugar yield (t/ha) |
|----------------------|-----------------|-------------------------|--------------------------------|------------------------|-------------------|---------|--------------------|
| Genotypes | | | | | | | |
| Co 7023 | 51.1 | 126.5 | 96.9 | 857 | 82.1 | 12.39 | 10.18 |
| Co 7025 | 49.9 | 132.6 | 100.5 | 888 | 88.2 | 12.35 | 10.90 |
| CoLk 7201 | 55.1 | 138.9 | 105.0 | 882 | 91.5 | 12.24 | 11.21 |
| CoH 7261 | 55.1 | 125.0 | 95.9 | 891 | 84.5 | 12.29 | 10.38 |
| CD at 5% | 2.7 | 5.9 | 5.7 | 17.9 | 3.6 | .09 | 0.25 |
| Nitrogen dose | | | | | | | |
| 75% of recom. | 52.7 | 122.0 | 92.1 | 852 | 77.6 | 12.29 | 9.53 |
| Recommended | 53.2 | 133.2 | 101.8 | 891 | 89.6 | 12.35 | 11.07 |
| 125% of recom. | 52.5 | 137 | 104.8 | 895 | 92.6 | 12.33 | 11.41 |
| CD at 5% | NS | 5.1 | 5.2 | 16.2 | 2.9 | NS | 0.21 |

* Recommended Nitrogen - 150 kg /ha

Table 2: Effect of different fertility levels on growth, yield and quality of mid- late group varieties at Uchani (2013-14)

| Treatments | Germination (%) | No. of tillers (000/ha) | No. of millable canes (000/ha) | Single cane weight (g) | Cane yield (t/ha) | CCS (%) | Sugar yield (t/ha) |
|----------------------|-----------------|-------------------------|--------------------------------|------------------------|-------------------|---------|--------------------|
| Genotypes | | | | | | | |
| CoLk 7203 | 42.9 | 138.9 | 106.2 | 934 | 98.2 | 12.14 | 11.92 |
| CoPb 7212 | 56.3 | 152.2 | 115.0 | 875 | 99.5 | 12.30 | 12.25 |
| CoS 7234 | 59.0 | 155.1 | 117.2 | 835 | 96.9 | 12.20 | 11.82 |
| CoH 7263 | 49.1 | 134.0 | 99.6 | 938 | 92.4 | 12.24 | 11.31 |
| CD at 5% | 3.4 | 5.4 | 4.9 | 20 | 4.2 | .07 | 0.53 |
| Nitrogen dose | | | | | | | |
| 75% of recom. | 51.8 | 136.8 | 102.3 | 849 | 85.3 | 12.18 | 10.39 |
| Recommended | 52.8 | 147.5 | 111.8 | 915 | 100.7 | 12.24 | 12.33 |
| 125% of recom. | 50.8 | 150.8 | 114.4 | 925 | 104.3 | 12.23 | 12.76 |
| CD at 5% | NS | 4.7 | 4.3 | 17 | 3.7 | NS | 0.46 |

AS-64: Response of sugarcane to different plant nutrients in varied agro ecological situations

Objective: To study differential response of sugarcane to different nutrients.

Year of start: 2011-12

Treatments:

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

Results achieved: The experiment was conducted on clay loam in texture having pH 8.6, EC 0.44 dsm^{-1} , organic carbon 0.36%, available P 10.2 kg/ha and available K 129.2 kg/ha, available S (12.2 kg/ha), available Zn (0.9 ppm) and available Fe (3.9 ppm) and available Mn (7.8 ppm). Sugarcane variety CoH 119 (Mid group) was planted on March 24, 2013 at 75 cm spacing in randomized block design with three replications. Recommended doses of phosphorus (50 kg P_2O_5 /ha), potash (50 kg K_2O /ha) and Sulphur (60 kg/ha) were applied at the time of planting whereas recommended dose of nitrogen (150 kg N/ha) was applied in three equal splits as top dressing (April, May & June). Zinc, Fe and Mn were applied thrice (April, May & June) as foliar spray. The crop was irrigated at 8-10 days intervals during pre-monsoon period and 20 days interval during post monsoon period. The plant crop was harvested on January 30, 2014.

Treatment T₁₁- NPK+Zn+S+Fe+Mn gave highest number of millable canes (86.9 thousands/ha), cane yield(84.5 t/ha) , sucrose (16.96 %), purity(86.40%) and CCS (11.97 %). The application of N over control, NP over N alone, NPK over NP, and NPKS over NPK significantly increased cane yield of plant crop (Table 3). The application of individual micronutrient (Fe, Mn and Zn) in combination NPK did not

significantly increased cane yield over NPK alone. However, the combined application of these micro nutrients significantly increased the cane yield over NPK alone.

Summary: The application of individual micronutrient (Fe, Mn and Zn) in combination NPK did not significantly increase cane yield over NPK. However, the combined application of these micro nutrients significantly increased cane yield over NPK alone. The application of N over control, NP over N alone, NPK over NP, and NPKS over NPK significantly increased cane yield.

Table 3: Effect of different treatments on sugarcane growth and yield of plant crop at Uchani (2013-14).

| | NMC (000/ha) | Cane height (cm) | Cane girth (cm) | Cane yield (t/ha) | Sucrose (%) | Purity (%) | CCS (%) |
|--|-------------------------|---------------------------------|--------------------------------|----------------------------------|------------------------|-----------------------|--------------------|
| T ₁ : Control (No fertilizer) | 72.8 | 145.0 | 2.18 | 45.61 | 13.62 | 76.63 | 9.33 |
| T ₂ : N | 76.3 | 160.2 | 2.33 | 62.83 | 14.39 | 81.01 | 9.88 |
| T ₃ : NP | 78.4 | 166.1 | 2.53 | 69.97 | 14.66 | 84.76 | 10.02 |
| T ₄ : NPK | 81.7 | 171.6 | 2.68 | 75.16 | 15.26 | 87.85 | 10.61 |
| T ₅ : NPK + S | 83.1 | 176.6 | 2.73 | 78.93 | 15.99 | 90.11 | 10.92 |
| T ₆ : NPK + Zn | 82.0 | 172.0 | 2.69 | 76.26 | 15.28 | 89.46 | 10.63 |
| T ₇ : NPK + Fe | 82.3 | 171.8 | 2.70 | 76.57 | 15.31 | 89.30 | 10.64 |
| T ₈ : NPK + Mn | 82.3 | 171.7 | 2.72 | 75.47 | 15.34 | 89.15 | 10.66 |
| T ₉ : NPK + S + Zn | 83.7 | 177.3 | 2.78 | 79.20 | 16.07 | 90.41 | 11.23 |
| T ₁₀ : NPK + S + Zn + Fe | 85.8 | 183.0 | 2.84 | 82.97 | 16.48 | 92.43 | 11.71 |
| T ₁₁ : NPK + S + Zn + Fe + Mn | 86.9 | 188.4 | 2.89 | 84.48 | 16.96 | 92.92 | 11.97 |
| T ₁₂ : Soil test based fertilizer application | 81.3 | 170.67 | 2.69 | 75.10 | 15.27 | 86.40 | 10.62 |
| CD at 5% | 2.1 | 4.78 | 0.05 | 3.20 | 0.36 | 3.07 | 0.31 |

AS-65 : Enhancing sugarcane productivity and profitability under wheat sugarcane cropping system

Objective : To enhance the productivity of sugarcane under wheat- sugarcane cropping system

Year of start : 2011 (autumn)

Treatments:

T₁: Autumn planted sugarcane

T₂: T₁ + Wheat (1:2)

T₃: T₁ + Wheat (1:3)

T₄: Wheat sown on 15th Nov. followed by sugarcane planting after wheat harvest

T₅: Wheat sown on 15th Dec. followed by sugarcane planting after wheat harvest

T₆: FIRB sowing of wheat 15th Nov. + Sugarcane in furrows in 3rd week of February

T₇: FIRB sowing of wheat 15th Nov. + Sugarcane in furrows in 3rd week of March

T₈: FIRB sowing of wheat 15th Dec. + Sugarcane in furrows in 3rd week of February

T₉: FIRB sowing of wheat 15th Dec. + Sugarcane in furrows in 3rd week of March

Results achieved:

Sugarcane variety CoH 150 and wheat variety HD 2967 were planted as per treatment in different dates of planting in randomized block design with three replications. The soil of the experimental field was clay loam in texture having pH 8.0, EC 0.4 dsm⁻¹, organic carbon 0.38%, available P 12.0 kg/ha and available K 173 kg/ha. Recommended doses of phosphorus (50 kg P₂O₅/ha) and potash (50 kg K₂O/ha) were applied at the time of planting whereas nitrogen (150 kg N/ha) was applied in three equal splits in case of sugarcane crop Whereas in wheat crop full dose of phosphorus (60 kg/ha) and potash (60 kg/ha) were applied at the time of planting and nitrogen (150 kg/ha) was applied in two equal splits (21 and 42 days after sowing). Crops were irrigated as per the requirement of wheat crop upto harvesting of wheat and later on sugarcane was irrigated at 8-10 days intervals during pre-monsoon period and 20 days interval during post monsoon period. Wheat crop was harvested on April 18, 2013. Planting of sugarcane (after wheat harvest) in treatment T₄ and T₅ was done on April 26, 2013.

| Tr. No. | Planting of sugarcane | Harvesting of sugarcane |
|---------|-----------------------|-------------------------|
| 1 | 24-10-2012 | 15-01-2014 |
| 2 | 24-10-2012 | 15-01-2014 |
| 3 | 24-10-2012 | 15-01-2014 |
| 4 | 26-04-2013 | 27-03-2014 |

| | | |
|---|------------|------------|
| 5 | 26-04-2013 | 27-03-2014 |
| 6 | 22-02-2013 | 20-3-2014 |
| 7 | 21-3-2013 | 20-3-2014 |
| 8 | 22-2-2013 | 20-3-2014 |
| 9 | 21-3-2013 | 20-3-2014 |

Wheat crop:

Data presented in **table 4** revealed that wheat sown with autumn cane on Oct. 24, 2012 in 1:2 and 1:3 ratio and 15th November on bed or by conventional method produced higher grain yield of (56.6-58.2 q/ha) as compared to wheat sown on 15th December (49.4-50.6 q/ha).

Sugarcane

Autumn planted cane recorded significantly higher germination, tillers, millable canes and cane yield as compared to spring and late planting. Lowest germination was recorded in late planting of sugarcane after wheat harvest. Treatments T₁, T₂ and T₃ being at par recorded significantly higher number of tillers, millable canes, cane weight ,cane yield and sugar yield as compared to rest of the treatments (**Table 4 & Table 5**). FIRB sowing of wheat on 15th November + planting of sugarcane in standing crop of wheat in February or March (T₆, T₇) and FIRB sowing of wheat on 15th December + planting of sugarcane in standing crop of wheat in February or March (T₈, T₉) being at par produced significantly higher number of tillers, NMC, cane weight, cane yield and sugar yield as compared to late planting of sugarcane after wheat harvesting (T₄ and T₅). There was a yield reduction of 40.3 % with late planting of sugarcane after wheat harvesting as compared to planting of sugarcane in February or March in standing crop of wheat (**Table 5**). Maximum cane equivalent yield was recorded in autumn sugarcane + wheat intercropping system of 1:2 (128.8 t/ha) and 1:3 ratio (127.5 t/ha) and closely followed by FIRB sowing of wheat on 15th November or 15th December + sugarcane in furrows in 3rd week of February or March (106.1- 108.8 t/ha) and lowest in case of late planting of sugarcane after wheat harvesting (72.5-75.8 t/ha).

Summary: Wheat sown with autumn cane on Oct. 24, 2012 in 1:2 and 1:3 ratio and 15th November on bed or by conventional method produced higher grain yield of (56.6-58.2 q/ha) as compared to wheat sown on 15th December (49.4-50.6 q/ha). Autumn planted cane as sole or intercropped with wheat in 1:2 and 1:3 ratio recorded significantly cane yield as compared to spring and late planting. Lowest germination was recorded in late planting of sugarcane after wheat harvest. There was a yield reduction

of 40.3% with late planting of sugarcane after wheat harvesting as compared to planting of sugarcane in February or March in standing crop of wheat. Maximum cane equivalent yield was recorded in autumn sugarcane + wheat intercropping system of 1:2 (128.8 t/ha)and 1:3 ratio (127.5 t/ha) and closely followed by FIRB sowing of wheat on 15th November or 15th December + sugarcane in furrows in 3rd week of February or March (106.1- 108.8 t/ha) and lowest in T₄ and T₅ treatments.

Table 4: Effect of different treatments on wheat crop and growth parameters of sugarcane crop at Uchani (2013-14).

| Sr. No. | Treatments | Wheat Grain yield (q/ha) | S. cane germi. (%) | Tillers (000/ha) | NMC (000/ha) | Cane wt.(g) |
|----------------|---|--------------------------|--------------------|------------------|--------------|-------------|
| T ₁ | Autumn planted sugarcane | --- | 52.4 | 142.9 | 108.8 | 982 |
| T ₂ | T ₁ + Wheat (1:2) | 58.2 | 49.5 | 139.7 | 105.0 | 977 |
| T ₃ | T ₁ + Wheat (1:3) | 57.8 | 48.4 | 139.3 | 104.2 | 974 |
| T ₄ | Wheat sown on 15 th Nov. followed by sugarcane planting after wheat harvest | 56.6 | 39.4 | 76.3 | 74.6 | 668 |
| T ₅ | Wheat sown on 15 th Dec. followed by sugarcane planting after wheat harvest | 49.4 | 39.4 | 75.0 | 75.0 | 665 |
| T ₆ | FIRB sowing of wheat 15 th Nov. + Sugarcane in furrows in 3 rd week of February | 57.1 | 46.2 | 127.6 | 99.7 | 832 |
| T ₇ | FIRB sowing of wheat 15 th Nov. + Sugarcane in furrows in 3 rd week of March | 56.8 | 47.5 | 128.1 | 100.1 | 832 |
| T ₈ | FIRB sowing of wheat 15 th Dec. + Sugarcane in furrows in 3 rd week of February | 50.3 | 47.8 | 130.2 | 100.2 | 833 |
| T ₉ | FIRB sowing of wheat 15 th Dec. + Sugarcane in furrows in 3 rd week of March | 50.6 | 48.0 | 130.8 | 101.4 | 830 |
| CD at 5% | | 1.7 | 2.6 | 5.7 | 6.2 | 20 |

Table 5: Effect of different treatments on cane yield, CCS (%) and sugar yield at Uchani (2013-14).

| Sr. No. | Treatments | Cane yield (t/ha) | Equivalent yield (t/ha) | Total cane yield (t/ha) | CCS (%) | Sugar yield (t/ha) |
|----------------|---|-------------------|-------------------------|-------------------------|---------|--------------------|
| T ₁ | Autumn planted sugarcane | 105.9 | --- | 105.9 | 12.42 | 13.15 |
| T ₂ | T ₁ + Wheat (1:2) | 101.7 | 27.1 | 128.8 | 12.46 | 12.67 |
| T ₃ | T ₁ + Wheat (1:3) | 100.6 | 26.9 | 127.5 | 12.43 | 12.51 |
| T ₄ | Wheat sown on 15 th Nov. followed by sugarcane planting after wheat harvest | 49.4 | 26.3 | 75.8 | 11.22 | 5.54 |
| T ₅ | Wheat sown on 15 th Dec. followed by sugarcane planting after wheat harvest | 49.5 | 23.0 | 72.5 | 11.26 | 5.57 |
| T ₆ | FIRB sowing of wheat 15 th Nov. + Sugarcane in furrows in 3 rd week of February | 82.2 | 26.6 | 108.8 | 12.02 | 9.89 |
| T ₇ | FIRB sowing of wheat 15 th Nov. + Sugarcane in furrows in 3 rd week of March | 82.5 | 26.4 | 109.0 | 12.08 | 9.97 |
| T ₈ | FIRB sowing of wheat 15 th Dec. + Sugarcane in furrows in 3 rd week of February | 82.7 | 23.4 | 106.1 | 12.05 | 9.97 |
| T ₉ | FIRB sowing of wheat 15 th Dec. + Sugarcane in furrows in 3 rd week of March | 83.5 | 23.6 | 107.0 | 12.04 | 10.05 |
| CD at 5% | | 5.6 | -- | --- | 0.16 | 0.65 |

AS-66: Priming of cane node for accelerating germination.**Objectives:**

1. To find out suitable cane node priming technique.
2. To assess the effect of cane node priming technique on acceleration of germination.

Year of start: 2012-13**Treatments**

1. Un primed cane node
2. Treating cane node in hot water at 50°C for 2 hours.
3. Treating cane node in hot water (50°C) + urea solution (3%) for 2 hours.
4. Priming cane node with cattle dung, cattle urine and water in 1:2:5 ratio.

5. Conventional three bud sett planting.
6. Primed and sprouted cane node (incubated for 4 days after priming).

An early maturing variety CoH 160 was planted on clay loam soil in texture having pH 8.2, EC 0.44 dsm^{-1} , organic carbon 0.38%, available P 12.0 kg/ha and available K 162 kg/ha. in randomized block design with three replications. The crop was planted at 75 cm row spacing on March 9, 2013. Cane node having buds and root bands with 4-5 cm length were taken for planting. After planting cane nodes in furrows were covered with 2-3cm soil layer. Cane nodes were planted at 10 cm depth with plant to plant spacing of 30 cm. Recommended doses of phosphorus (50 kg P_2O_5 /ha) and potash (50 kg K_2O /ha) were applied at the time of planting whereas nitrogen was applied in three equal splits. The crop was irrigated at 8-10 days intervals during pre-monsoon period and 20 days interval during post monsoon period. The harvesting of the experiment was done on Feb. 22, 2014.

No germination was noticed in any treatments at 10 days after planting. Highest germination was recorded in conventional three budded sett planting and planting of primed and sprouted cane node (Incubated for four days after priming) at 20,30 and 40 days after planting. Three bud planting recorded highest number of shoots (165.5 thousands/ha), millable canes (116.0 thousands/ha), cane weight (812 g), cane yield (92.0 t/ha), CCS (12.12 %) and sugar yield (11.15 t/ha) among all the treatments (Table 6 & Table 7). Among priming treatments, planting of primed and sprouted cane node (T_6) recorded highest germination at 40 DAS (51.5%), number of shoots (90.4 thousands/ha), millable canes (88.0 thousands/ha), cane weight (700 g), cane yield (60.0 t/ha) and sugar yield (7.18 t/ha). Planting of cane node after dipping in hot water (50°C) +urea solution (3%) for 2 hours (T_3) was found second best among priming treatments. Unprimed cane node recorded lowest number of number of shoots, millable canes, cane weight, cane yield and sugar yield (Table 6 & Table 7).

Summary: Three bud planting recorded highest number of shoots (165.5 thousands/ha), millable canes (116.0 thousands/ha), cane weight (812 g), cane yield (92.0 t/ha), CCS (12.12 %) and sugar yield (11.15 t/ha) among all the treatments. Among priming treatments, planting of primed and sprouted cane node (T_6) recorded highest germination at 40 DAS (51.5%), number of shoots (90.4 thousands/ha), millable canes (88.0 thousands/ha), cane weight (700 g), cane yield (60.0 t/ha) and sugar yield (7.18 t/ha).

Table 6: Effect of different treatments on germination and no. of shoots of sugarcane at Uchani (2013-14)

| | Treatments | Germination (%) | | | No. of shoots (000/ha) |
|----------------------|--|-----------------|--------|--------|------------------------|
| | | 20 DAP | 30 DAP | 40 DAP | 120 DAP |
| T₁ | Un-primed cane node | 17.6 | 28.2 | 37.6 | 71.7 |
| T₂ | Treating cane node in hot water at 50°C for 2 hours. | 19.8 | 30.6 | 40.1 | 75.8 |
| T₃ | Treating cane node in hot water (50°C) + urea solution (3%) for 2 hours | 27.5 | 38.3 | 47.8 | 81.8 |
| T₄ | Priming cane node with cattle dung, cattle urine and water in 1:2:5 ratio. | 19.7 | 33.6 | 44.2 | 76.3 |
| T₅ | Conventional 3-bud sett planting. | 33.4 | 42.1 | 52.0 | 165.5 |
| T₆ | Primed and sprouted cane node (Incubated for four days after priming) | 30.7 | 41.5 | 51.5 | 90.4 |
| CD at 5% | | 2.8 | 3.2 | 4.0 | 9.0 |

Table 7: Effect of different treatments on growth and cane yield of sugarcane at Uchani (2013-14)

| | Treatments | NMC (000/ha) | Cane height (cm) | Cane weight (g) | Cane yield (t/ha) | CCS (%) | Sugar yield (t/ha) |
|----------------------|--|--------------|------------------|-----------------|-------------------|---------|--------------------|
| T₁ | Un-primed cane node | 69.8 | 116 | 663 | 45.1 | 11.92 | 5.37 |
| T₂ | Treating cane node in hot water at 50°C for 2 hours. | 73.9 | 134 | 671 | 48.1 | 11.83 | 5.69 |
| T₃ | Treating cane node in hot water (50°C) + urea solution (3%) for 2 hours | 79.4 | 175 | 697 | 53.7 | 11.88 | 6.39 |
| T₄ | Priming cane node with cattle dung, cattle urine and water in 1:2:5 ratio. | 74.4 | 180 | 668 | 48.3 | 11.91 | 5.75 |
| T₅ | Conventional 3-bud sett planting. | 116.0 | 224 | 812 | 92.0 | 12.12 | 11.15 |
| T₆ | Primed and sprouted node (Incubated for four days after priming) | 88.0 | 186 | 700 | 60.0 | 11.98 | 7.18 |
| CD at 5% | | 6.5 | 17 | 24 | 4.1 | 0.12 | 0.50 |

**Summary of experiments conducted by Crop Production group (Agronomy & Soil Science) at
CCSHAU, RRS, UCHANI, KARNAL
(2013-14)**

Following experiments were allotted during 2013-14 and all the allotted experiments were conducted

AS 42: Agronomic evaluation of promising new sugarcane genotypes

In early group Variety CoLk 7201 (91.5 t/ha) and Co 7025 (88.2 t/ha) being at par produced significantly higher cane yield as compared to variety CoH 7261 (84.5 t/ha) and Co 7023 (82.1 t/ha) Whereas in mid late group varieties CoPb 7212 (99.5 t/ha), CoLk 7203 (98.2 t/ha) and CoS7234 (96.9 t/ha) being at par produced significantly higher cane yield as compared to variety CoH 7263 (92.4 t/ha). All the varieties in both the group responded upto recommended dose of nitrogen fertilizers.

AS-64: Response of sugarcane to different plant nutrients in varied agro ecological situations

The application of individual micronutrient (Fe, Mn and Zn) in combination NPK did not significantly increase cane yield over NPK. However, the combined application of these micro nutrients significantly increased cane yield over NPK alone. The application of N over control, NP over N alone, NPK over NP, and NPKS over NPK significantly increased cane yield.

AS-65 : Enhancing sugarcane productivity and profitability under wheat sugarcane cropping system

Wheat sown with autumn cane and 15th November on bed or by conventional method produced higher grain yield of (56.6-58.2 q/ha) as compared to wheat sown on 15th December (49.4-50.6 q/ha). Autumn planted cane as sole or intercropped with wheat in 1:2 and 1:3 ratio recorded significantly cane yield as compared to spring and late planting. There was a yield reduction of 40.3% with late planting of sugarcane after wheat harvesting as compared to planting of sugarcane in February or March in standing crop of wheat. Maximum cane equivalent yield was recorded in autumn sugarcane + wheat intercropping system of 1:2 (128.8 t/ha) and 1:3 ratio (127.5 t/ha) and closely followed by FIRB sowing of wheat on 15th November or 15th December + sugarcane in furrows in 3rd week of February or March (106.1- 108.8 t/ha) and lowest in case of late planting of sugarcane after wheat harvesting (72.5-75.8 t/ha).

AS-66: Priming of cane node for accelerating germination

Three bud planting recorded highest number of shoots (165.5 thousands/ha), millable canes (116.0 thousands/ha), cane weight (812 g), cane yield (92.0 t/ha), CCS (12.12 %) and sugar yield (11.15 t/ha) among all the treatments. All the characters of primed and unprimed cane node were significantly inferior to the conventional three budded sett planting. Among priming treatments planting of primed and sprouted cane node (T₆) recorded highest germination number of shoots, millable canes, cane weight, cane yield and sugar yield.