

NEW VARIETIES AND GENETIC STOCKS

Co 0124 (Karan 5): A MIDLATE VARIETY FOR NORTH WESTERN ZONE OF INDIA

Co 0124 is a selection from the progeny of the cross Co 89003 GC. This clone was identified from the seedling ratoon nursery (seedling no. K97-86) raised during 1998-99 at the Sugarcane Breeding Institute, Regional Centre, Karnal. In the station trial at Karnal, this clone was tested for one year each under preliminary trial and Pre-Zonal Varietal Trial (PZVT). In the PZVT conducted during 2001-02, Co 0124 manifested higher commercial cane sugar yield (15.05 t/ha) than the midlate standards CoS 767 (1.25 t/ha) and Co 1148 (12.85 t/ha).

Co 0124 was evaluated under the All India Coordinated Research Project on Sugarcane (AICRPS) in the North Western Zone. The average cane yield, sugar yield and sucrose % (mean of two plant crop trials and 1 ratoon trial in a location) of Co 0124 recorded across seven locations in the zone were 75.71 t/ha of cane yield, 9.68 t/ha of CCS and 18.22% sucrose. These values were higher than those of the standards. In the zonal trial, Co 0124 ranked second for sugar yield, and third for cane yield and sucrose % in juice. In comparison to the midlate standard CoS 767, the new variety Co 0124 showed 8.03% improvement in cane yield, 12.69% improvement in sugar yield and 3.52% improvement in sucrose %.

Co 0124 was tested against red rot through nodal and plug methods. The variety has shown moderately resistant reaction to the prevalent races of red rot pathogen.

The variety Co 0124 is characterized by medium thick yellowish canes with cylindrical internodes, rhomboid buds, lanceolate auricle and shallow bud grooves. Internodes are tightly covered with leaf sheath. The variety is free from splits and pith. The fibre content of the variety is 12.65%. The jaggery is of A-2 quality with light yellow colour.

Co 0124 (Karan 5) has been released by the Central Sub-Committee on Crop Standards, Notification and Release of Varieties for Agricultural Crops during

2010 and notified *vide* Gazette notification S.O. 2137(E) dated 31.08.2010. This variety would prove as a high quality midlate maturing clone under assured irrigation areas. This could be a suitable substitute for CoS 8436.

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Co 0239 (Karan 6): AN EARLY MATURING VARIETY FOR THE WATER LOGGING SOILS OF NORTH WESTERN ZONE OF INDIA

Co 0239 is a selection from the progeny of the cross Co 93016 GC. This clone was identified from seedling ratoon nursery raised at Sugarcane Breeding Institute, Regional Centre, Karnal, and was tested under the PZVT. It was selected as an early clone as it had pol % juice higher than CoJ 64 during November, January and March. Cane and sugar yields, and sucrose % in juice of Co 0239 were higher than those of CoJ 64.

It had medium thick yellow green canes with cylindrical internodes, oval buds, lanceolate auricle, bud cushion and shallow bud groove. The clone is free from splits and pith. The fibre % is about 12.79%. The jaggery is of A₁ quality with light yellow colour. This clone is MR to the prevalent races of red rot pathogen by plug method of inoculation. However, it showed resistant reaction by nodal method of inoculation.

This clone has been evaluated under AICRP in the North Western Zone. It ranked first for sugar yield, second for cane yield and fourth for sucrose % in juice in the zone. Average cane and sugar yields, and sucrose % recorded in two plant and one ratoon crops at seven research stations in the zone were 79.23 t/ha, 10.37 t/ha and 18.58 %, respectively. In comparison to the major check CoJ 64, it showed about 17.22%, 20.72% and 3.8% improvement in cane yield, sugar yield and sucrose % in juice, respectively.

Co 0239 was evaluated under water stress and water logging conditions at DSCL Sugars, Ajbapur, and under water logging conditions at Simbhaoli Sugar Mills Ltd., Simbhaoli. There was significant improvement in cane yield and pol % during December of Co 0239 over the standard CoJ 64 at Simbhaoli. At DSCL, Ajbapur, Co 0239 was better for pol % in cane than all the standards under normal and abiotic stresses.

Co 0239 was also tested at 10 sugar mills in Uttarakhand, U.P. and Bihar in trials conducted by ISMA. Its juice quality (pol % in cane) was better than respective local checks in all the regions. The pol % in cane was higher by more than 1% during February over respective standards in these states.

Co 0239 (Karan 6) has been released by the Central Sub-Committee on Crop Standards, Notification and Release of Varieties for Agricultural Crops during 2010. This variety would prove as a high quality early maturing clone under assured irrigation, water stress and water logging areas, and could be a suitable substitute for CoJ 64.

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Co 0237 (Karan 8): AN EARLY MATURING VARIETY FOR THE WATER LOGGING SOILS OF NORTH WESTERN ZONE OF INDIA

Co 0237 is an early maturing sugarcane clone selected from the seedling progeny raised from the open pollinated fluffs of Co 93016. This clone was identified from the seedling ratoon nursery (seedling number K96-326) raised at the Sugarcane Breeding Institute, Regional Centre, Karnal. The clone was tested for one year each under the preliminary trial and PZVT and for three years under the ZVT of AICRP on Sugarcane. In the PZVT, Co 0237 recorded cane yield of 101.75 t/ha and sugar yield of 13.75 t/ha which were significantly higher than the cane yield (73.26 t/ha) and sugar yield (9.45 t/ha) of early standard CoJ 64. Co 0237 has shown higher pol% in juice at eighth month (18.84%) and 10th month (19.05%) than CoPant 84211.

In the AICRP trials on sugarcane conducted at seven locations in the North Western Zone, Co 0237 ranked first for sucrose %, fourth for sugar yield and fifth for cane yield in the zone. Its average cane and sugar yields, and sucrose% recorded in two plant crop trials and one ratoon trial in the zone are 71.33 t/ha, 9.34 t/ha and 18.78 % respectively. In comparison to the early standard CoJ 64, the clone Co 0237 showed 5.53, 8.73 and 4.92% improvement in cane yield, sugar yield and sucrose % in juice, respectively.

Co 0237 bears medium thick yellow canes with cylindrical internodes, ovate buds, small lanceolate auricle. This clone possesses bud cushion and deep bud groove but is free from splits and spines on leaf sheath. Arrangement of root primordial is regular. The fibre content is about 12.98%. The jaggery is of A1 quality with light yellow colour. This variety is moderately resistant to the prevalent races of red rot.

Co 0237 is a high sugared early maturing variety, suitable for growing under water logged condition. This variety has the tendency to lodge during grand growth and maturation phase. Therefore, it is recommended to give propping twice, the first one during July-August and second propping during September.

During 2010, Co 0237 was identified by the Varietal Identification Committee of AICRP (Sugarcane) for release and in 2012 it was released by the Central Variety Release Committee for commercial cultivation in North Western Zone (Haryana, Punjab, Western and Central U.P., Uttarakhand and Rajasthan). It is recommended for growing under water logged areas in the zone.

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Co 05011 (Karan 9): A PROMISING MIDLATE VARIETY FOR NORTH WESTERN ZONE OF INDIA

Co 05011 is a selection from the progeny of the cross CoS 8436 x Co 89003. This clone was identified from the seedling ratoon nursery raised at the

Sugarcane Breeding Institute, Regional Centre, Karnal. At this Centre, this clone was tested for one year each under the preliminary trial and PZVT. In the PZVT, Co 05011 recorded 94.15 t/ha cane yield and 13.01 t/ha CCS yield as against 81.77 t/ha cane yield and 10.22 t/ha CCS yield of midlate standard CoS 767. Co 05011 showed higher CCS% at 300 days (12.44%) and 360 days (13.01%) than Co 1148 and CoS 767.

Co 05011 was evaluated at nine locations in North Western Zone under the AICRP on Sugarcane. In the AICRP(S) trial, this clone ranked second for sugar yield, third for cane yield and sucrose % in juice in the zone. The average cane yield of Co 05011 (mean of two plant crops and one ratoon over nine locations) was 82.47 t/ha, which was 32.70% and 13.75% improvement over the midlate standards CoS 8436 and CoS 767, respectively. The mean sucrose percentage of Co 05011 was 18.00%, which was 3.99% higher than the sucrose percentage of CoS 767. Hence, Co 05011 could be a better substitute for CoS 767 in North Western Zone.

Co 05011 is an erect growing, non-lodging and non-flowering clone with erect leaves with curved tip. It has medium thick stalk. The colour of unexposed internode is greenish yellow whereas internode exposed to sun would be purple. The shape of the internode is cylindrical. The internode may exhibit small corky patches and feeble ivory markings. Co 05011 possesses round buds and incipient auricle. The clone is generally free from spines on leaf sheath, pith, bud groove and bud cushion. However, few canes may exhibit sparse hairs on leaf sheath and shallow bud grooves. Leaf margin is serrated. Bud tip position is below the growth ring. Growth ring is not swollen but yellowish green band will be conspicuous without bulging. Co 05011 exhibits good sprouting during winter months as compared to CoS 8436. The fibre content in the stem is 12.75%. This variety showed resistant/moderately susceptible reaction to the prevalent races of red rot pathogen by plug/nodal methods of inoculation.

This clone has been identified in 2011 by the Varietal Identification Committee of AICRP (Sugarcane) and released by the Central Sub-Committee on Crop Standards, Notification and Release of Varieties for Agricultural Crops during 2012 for commercial

cultivation in North Western Zone (Haryana, Punjab, Western and Central Uttar Pradesh, Uttarakhand and Rajasthan). This variety could be a better substitute for CoS 767 in the zone.

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SBIEC 11001 (INGR12016) - GENETIC STOCK WITH HIGH BIOMASS POTENTIAL

SBIEC 11001 was developed from a cross between IK 76-92 (*Erianthus arundinaceus*) and 98 N1 1405 (interspecific hybrid involving *Saccharum officinarum* and *Saccharum spontaneum*) for introgressing high biomass yield and high fibre content from the former parent. The clone was selected through hybridization and clonal selection method at Sugarcane Breeding Institute, Coimbatore. The germplasm had high biomass potential and recorded harvestable biomass yield of 279.01 t/ha/year which is 92.10% higher compared to a high yielding sugarcane clone ISH 100 with 145.24 t/ha. Dry matter production of this germplasm was 101.23 t/ha and ISH 100 generated 33.90 t/ha which is 198.61% higher. Fibre % cane of SBIEC 11001 (26.38) was also more compared to ISH 100 (16.44) with an increase of 45.92%. The clone is fast growing, high tillering, amenable for multiple ratoon with medium thick cane without split. Bud is medium size and triangular shaped. Leaf sheath is green with smooth hairs and dewlap is absent. Even under suboptimal management conditions the clones can produce good biomass yield.

Development of energy cane is a viable option for the sugar factories for continuous supply of economically viable feedstock to cogeneration units for the generation of electricity even during the off season. At present there is no energy cane variety to cater the needs of this green power industry and this clone can be cultivated to cater to the off-season requirement of feedstock.

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SBIEC 11002 (INGR12017) - A DUAL PURPOSE ENERGY CANE

SBIEC 11002 was selected from a cross involving Co 1148 (sugarcane commercial hybrid) and SES 404 (*Saccharum spontaneum*) for combining juice Brix, high biomass yield and high fiber content by following hybridization and clonal selection method at Sugarcane Breeding Institute, Coimbatore. The clone recorded high harvestable biomass yield (247.53 t/ha/year) with 70.43% increase over the high yielding sugarcane clone ISH 100 (145.24 t/ha). Dry matter production of this clone (85.23 t/ha) was 151.03 % higher than ISH 100 (33.90 t/ha). Fiber % cane of this clone (22.58) was also 37.35% more than that of ISH 100 (16.44). In addition, it has 15.92 % of juice Brix which can be used for direct fermentation to produce alcohol. It is a fast growing, heavy tillering, medium thick and erect cane without any splits. Bud is of medium size and ovate

shaped. Leaf sheath is greenish yellow without spines.

Cogeneration and distillation plants in the sugar factory complex face shortage of feed stock from the sugar factories during off season. Development of energy cane offers great scope for continuous supply of feed stock even during the off season. Dual purpose varieties can simultaneously supply feedstock to cogeneration and distillation units through baggase and sugarcane juice respectively. At present there is no energy cane variety to cater to the needs of these industries. SBIEC 11002 is an energy cane that combines high fiber content and juice Brix which can be profitably exploited as a dual purpose cane for the production of energy and alcohol.

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