

SUGARCANE VARIETIES IDENTIFIED BY AICRP(S) IN INDIA

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ALL INDIA COORDINATED RESEARCH PROJECT ON SUGARCANE
ICAR-Indian Institute of Sugarcane Research

POST-DILKUSHA, RAEBARELI ROAD, LUCKNOW 226002 (U.P.)

the same time, the *Journal of the American Medical Association* (JAMA) has been the most widely read journal in the United States.

There are many reasons why the JAMA is so popular. One reason is that it is the only journal that publishes research in all areas of medicine.

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AICRP(S) Technical Publication-II

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उप महानिदेशक (बागवानी एवं फसल विज्ञान)

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Deputy Director General (HS & CS)

भारतीय कृषि अनुसंधान परिषद्

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FOREWORD

The challenges to meet the diverse sweeteners, demands of growing population, natural resource degradation, climate change, new parasites and increasing farmers' income demand a paradigm shift in formulating and implementing the agricultural research programmes. The emerging scenario necessitates to be focused to translate into increased farmers' income through increased productivity and value addition. In this endeavor, sugarcane supports one of the largest agro-processing industries 'the sugar industry' while more than 6 million farmers are engaged in its cultivation. Besides, about half a million skilled and semi-skilled workers, mostly from rural areas are also engaged in the sugar industry. According to the estimates, India will require nearly 33 million tonnes of white sugar by 2030 AD and production of alcohol for partial replacement of fossil fuel in future will further increase the demand of sugarcane. With an average sugar recovery of 10.75 per cent, about 520 million tonnes of sugarcane will have to be produced, this will entail an increase in sugarcane productivity to the tune of 100 to 110 tonnes/ha, as area may stabilise around 5 million hectares.

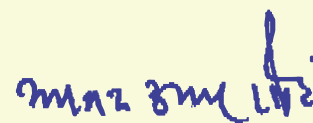
The varietal development programme of AICRP on Sugarcane has enhanced sugarcane productivity in the country and has geared itself to address new challenges to ensure sustainable sugarcane production in future as well. It is expected that the analytical approach and forward looking concepts will be useful for the researchers and stakeholders to ensure sufficient sweeteners' supply and economic prosperity of the farmers. Sugar production has been affected by acreage, yield, sugarcane availability, recovery percentage and duration of crushing. Of these, area is the highest in Uttar Pradesh followed by Maharashtra, yield is the highest in Tamil Nadu and average recovery is the highest in Maharashtra. Average duration of crushing is almost equal in Maharashtra, Gujarat and Tamil Nadu (about 150 days) while in Uttar Pradesh it is about 100 days only. Maharashtra has been the largest producer of sugar in the country. Recently, with the introduction of high yielding and high sugar varieties developed under AICRP on Sugarcane like Co 0238, CoLk 94184, CoPK 5191 etc., Uttar Pradesh has recorded the highest sugar production (85.72 lakh tonnes) during 2016-17. Together, these two states account for over 60% of the total sugar production in the country.

The impact of the sugarcane varieties resulted into 2.7 times increased sugarcane production from 130 m t to nearly 349.5 m t since the AICRP on Sugarcane came in existence in 1970-71. The improved varieties of sugarcane suited to the different agro-climatic conditions have triggered the sugar

production in the country from 3.89 m t during 1970-74 to 25.71 m t during 2010-15. The increase in sugarcane and sugar production has been achieved due to improved varieties than area expansion under sugarcane cultivation during the same period indicating that the varieties developed under AICRP on sugarcane have been adopted by the sugarcane growers on merit. The increasing trend of sugar recovery (from 9.72 to 10.21%) over the period was also obtained which contributed significantly in increasing sugar production and making the country not only self sufficient but also capable of exporting sugar to the tune of 2.49 m t (2015).

Sugarcane, being cash crop is more pertinent in the present context of increasing farmers' income. The higher net income in sugarcane based production system relies on an improved variety compatible with high value short duration intercrops and its stability. Working on Varietal Improvement Programme, 20 varieties have been developed and identified for release during the last five years. In 2016-17, two sugarcane varieties – such as Co 09004, an early maturing, cane yield 109.85 t/ha and pole in juice 18.94% for Peninsular region and Co 09022 a mid-late variety with 83.94 t/ha cane yield and 17.49% pole in juice for North-West Zone have been released.

The impact of an improved variety is boosted-up with timely cultural operations, introduction of cost saving production and protection technologies. I appreciate the efforts made to bring out a publication in the form of a book for being informative to the researchers, students and others associated with sugarcane and sugar industry.



(A.K. Singh)

Date : 12.2.2018



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Assistant Director General (Commercial Crops)
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MESSAGE

It gives me immense pleasure to know that Project Coordination Unit has compiled the information of all the sugarcane varieties released through All India Coordinated Research Project on Sugarcane system since its inception in the form of a book on “*Sugarcane Varieties Identified by AICRP(S) in India*”. Sugarcane is a multi-product crop used as a basic raw material like sugar, gur, khandsari, ethanol, electricity, paper and boards besides a host of ancillary products. The sugar and ethanol requirement in India is increasing gradually and potential of ethanol as a bio-fuel is seriously debated. In order to meet the growing demand of sugar, ethanol and baggase, there is a need to develop high yielding as well as high biomass producing sugarcane varieties. The AICRP on Sugarcane is playing a pivotal role in developing the new sugarcane varieties. I am sure that the book “Sugarcane Varieties Identified by AICRP(S) in India” will be useful for R & D personnels involved in sugarcane and sugar sector.

I appreciate the efforts of Project Coordination Unit at ICAR-IISR, Lucknow and all the concerned scientists, centre's In-charges in providing the historical information and making document for its further use.

Dated:12.2.2018

(R.K. Singh)



भारतीय गन्ना अनुसंधान संस्थान

निदेशक

Dr Ashwini Datt Pathak

Director



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MESSAGE

It is a matter of great pleasure that the All India Coordinated Research Project on Sugarcane has developed a compendium on **“Sugarcane Varieties Identified by AICRP (S) in India”**. Sugarcane crop occupies a very prominent share in the agricultural sector of India covering large areas in sub-tropical as well as tropical regions. It is the safe raw material for the largest agro-processing industry in the rural sector, involving about 6 million cane growers. Besides, the sugar industry, it also provides an employment to half a million skilled, semi-skilled and non-skilled workers in the rural areas.

The major sources of ethanol production in the country have been through sugarcane-sugar-molasses route. Production of ethanol is one of the substitutions of fossil fuel and use of baggase in co-generation of electricity has great potential in future and thus, the demand of cane will increase further. About 116 sugarcane prominent varieties have been developed under All India Coordinated Research Project on Sugarcane since 1970. I hope that the book “Sugarcane Varieties Identified by AICRP (S) in India” will be of immense use for sugarcane research scientists, sugar industry and development personnel and policy makers across the country.

I appreciate the efforts of Project Coordination Unit for making this useful publication.

Dated: 12.2.2018

(A.D. Pathak)

ACKNOWLEDGEMENTS

Sugarcane is one of the important commercial crop of tropical and sub-tropical regions. It has a direct effect on production of sugar, jaggery (gur), baggase, molasses and other co-products. Productivity of sugarcane depends on variety of factors and adoption of new promising genotypes is one of the key factors in production. Ethanol production and co-generation of electricity in sugar factories are yet other utilities that enhance the importance of sugarcane in national economy.

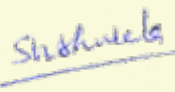
Since inception of AICRP on Sugarcane, 116 sugarcane varieties have been identified and out of these, 55 sugarcane varieties have been released and notified for cultivation in different parts of the country. Few sugarcane varieties have been widely adopted and occupied larger share in sugarcane area viz., Co 86032 (70%) in Peninsular Zone, Co 0238 (55%) in North Western and North Central Zones, CoLk 94184 (28.25%) in North Central Zone, CoM 0265 (18%) in Karnataka, CoOr 03151 (18%) in Odisha state & Co 06030 (18%) in East Coast Zone.

Thus, a need was felt to compile the information available on sugarcane varieties developed through AICRP(S) network in the country. In this connection, present publication “Sugarcane Varieties Identified by AICRP(S) in India” has been brought out which may be useful for sugarcane researchers, development personnel, scientists and policy makers as well. We express our heartfelt gratitude to Dr T. Mohapatra, Secretary (DARE) & Director General, Indian Council of Agricultural Research, New Delhi for providing all kinds of support to AICRP on Sugarcane. We profusely thank Dr J.S. Sandhu, Ex-Deputy Director General (Crop Science) and Dr A.K. Singh, Deputy Director General (CS & HS), ICAR, New Delhi for providing necessary guidance and support at the Council level. We thank Dr R.K. Singh, Assistant Director General (CC), ICAR, New Delhi for continuous encouragement and guidance.

We are highly grateful to Dr A.D. Pathak, Director, ICAR-IISR, Lucknow, Dr Bakshi Ram, Director, ICAR-SBI, Coimbatore and all the Principal Investigators of various disciplines.

Efforts made by the Station In-charges and Scientist associated with the Coordinated projects at regular as well as voluntary centres in providing information are gratefully acknowledged. I thank my colleagues in coordination unit and at IISR, Lucknow viz., Dr V.K. Gupta, Principal Scientist (Plant Breeding), Dr Lalan Sharma, Scientist (Plant Pathology), Dr S.K. Yadav, Scientist (Agronomy), Dr Sanjeev Kumar, Principal Scientist (Plant Breeding), Dr J. Singh, Principal Scientist (Plant Breeding), Dr G.K. Singh, Chief Technical Officer and Dr B. B. Joshi, Farm Manager for helping in various ways. I am also thankful to Shri Vipin Dhawan, CTO for photography and Shri Ambrish Kumar Sahu for assisting in Computer work.

Date : 12.2.2018

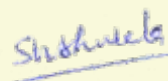

(S.K. Shukla)
Project Coordinator
(Sugarcane)

Significant progress has been made through breeding programme under AICRP (S) which brought us at this stage. The remarkable improvements in yield, quality and ecological aspects have been achieved by crossing the cultivated species with wild relatives and making inter-genetic crosses with bamboo, sorghum and maize. Thus new sugarcane varieties have been identified and released time to time. Till now, 116 sugarcane varieties have been identified for release under AICRP programme. Out of these, 55 varieties have also been registered and notified for cultivation in different parts of the country. The development of sugarcane varieties like Co 0118, Co 0232, Co 0237, Co 0238, Co 0239, CoSe 01421, Co 05009, CoPK 05191, Co 89029, CoLk 94184 and CoS 95255 has resulted in to increased sugar production in subtropical zone mainly in Uttar Pradesh, which has the highest area under sugarcane. The total value of additional sugarcane and sugar in UP due to a single early maturing variety (Co 0238) comes to around Rs. 3044.98 crore. The Impact analysis of Co 86032 indicated that the cane yield level was maintained about 100 t/ha throughout the period with the cultivation of Co 86032 in Tamil Nadu (Tropical zone). The variety spread in almost all the states of Tropical India including Tamil Nadu, Karnataka, Maharashtra, Gujarat, unified Andhra Pradesh and Kerala.

I appreciate the efforts of scientists involved in various programmes at different cooperating centres. I also thank Deputy Director General (Crop Sciences), Assistant Director General (Commercial Crops), Director, ICAR-SBI, Coimbatore and Director, ICAR-IISR, Lucknow for their continuous support and guidance provided at different levels.

Till now, documentation of varieties developed through AICRP(S) network is not available at one place. Many varieties developed and ruled in various states for decades and now those are out of cultivation. So the need was felt to compile all the information of the varieties developed under AICRP(S) network. The present book is a treasure of sugarcane varieties developed through AICRP(S) network in the country. Besides, details of prominent sugarcane varieties occupied larger share in different states have also been provided. I think the present publication will be useful for sugarcane scientists as well as state cane officials, researchers and policy makers in knowing historical background developing understanding and making future road map for sugarcane and sugar sector.

Date : 12.2.2018


(S.K. Shukla)
Project Coordinator
(Sugarcane)

ABOUT THE BOOK

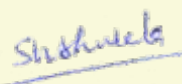
All India Coordinated Research Project on Sugarcane has been established by the Indian Council of Agricultural Research, New Delhi to coordinate and monitor research programmes at the national level being carried out at various Institutes, Sugarcane Research Stations of SAUs and State Deptt. There are five sugarcane growing zones viz.- North West, North Central and North Eastern, East Coast and Peninsular zones in the country. A total number of 116 promising sugarcane varieties through AICRP(S) have been developed for different sugarcane growing zones in the country till now. Sugarcane varieties are developed, identified and released for cultivation in different zones. Normally a particular sugarcane variety is released for a specific zone comprising various states. However, few varieties performed better in other zones also. Out of these, 55 varieties have been released and notified by the Central Sub Committee on Crop Standards Notification & Release of Varieties for Agricultural Crops (Govt. of India).

In this book, the rare information related to all the varieties developed under AICRP(S) network have been compiled and presented. Activities of AICRP(S) and its mandate, centre-wise slot numbers allotted to various sugarcane entries, identification of promising crosses, promising parents of *Saccharum spp.*, historical information regarding identified, released and notified sugarcane varieties under AICRP(S), zone-wise prominent sugarcane varieties suitable for abiotic/biotic stress conditions and sugarcane varieties suitable of for jaggery (Gur) making are documented.

The information has been received from different AICRP(s) centres, State Cane Department, ICAR Institutes on Sugarcane, varietal proposals of different varieties submitted for identification, UPCR, Shahjahanpur, recommendations of CVRC, New Delhi, reports of PPV & FRA New Delhi and Annual Reports of AICRP(S) & ICAR-IISR, Lucknow.

I hope that the information in this book about the Sugarcane varieties developed through AICRP(S) network would help the sugarcane scientists, researchers and policy makers in the Country.

Date : 12.2.2018


(S.K. Shukla)

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SUGARCANE VARIETIES IDENTIFIED BY AICRP(S) IN INDIA

Introduction

All India Coordinated Research Project on Sugarcane is working in the Country since 1970 through a network of Sugarcane Research Station of AICRP on Sugarcane, State Agricultural Universities (SAUs), State Government Departments and Non-Government Organizations. The project aims at pooling the research resources of the Country in a National grid for addressing the regional and national issues for improving the sugarcane production. At present, there are 22 regular centres and 14 voluntary centres across the country in five agro-climatic zones viz., Peninsular Zone, North West Zone, East Coast Zone, North Central Zone and North Eastern Zone for conducting research and multi-location testing of technology for wider adoption.

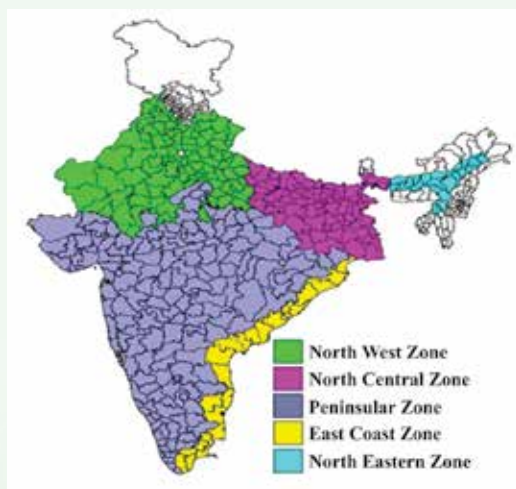


Fig. 1 : Zones for Varietal evaluation under AICRP on Sugarcane



Fig. 2 : Regular centres of AICRP on Sugarcane



Fig. 3 : Voluntary centres of AICRP on Sugarcane

Mandate of AICRP on Sugarcane

1. Evaluation of locally adapted sugarcane varieties with improved yield and quality as well as resistance to biotic and abiotic stresses
2. Development of package of practices for higher cane sugar production
3. Development of low cost technologies for sugarcane production
4. Intensifying and extending the networking facility and information generation for transfer of technology to the farmers and sugar industry

As per the mandate, the main emphasis is laid on the development of improved varieties. After establishment of AICRP on Sugarcane in 1970, it was decided to supply fluff to the AICRP centres under “Fluff Supply Programme”. Since the hybridization programme involved use of large number of parents, a National Hybridization Garden (NHG) facility was established in 1972 at ICAR-SBI, Coimbatore developed National Distant Hybridization Facility (NDHF) also at Agali distt. Palakkad (Kerala) where different species of *saccharum* complex are maintained for hybridization work. These two national facilities are availed by the breeders of AICRP(S) centres for carrying out hybridization programme of their need based choice by effecting crossing NHG and / or NDHF every year. The fluff supply programme is an important component

AICRP on Sugarcane

of Crop Improvement discipline as wider spectrum of genetic material is made available to the breeders. Every year, fluff of different crosses effected by the Breeders is supplied by ICAR-SBI, Coimbatore to the centres for raising of seedlings and selection of elite clones.



Flowering in sugarcane at the National Hybridization Garden Coimbatore

The selected elite clones are proposed in the Workshop/Group Meeting of AICRP on Sugarcane for inclusion in zonal varietal trial (ZVT). The clones accepted for ZVT are assigned denomination by the Principal Investigator (Crop Improvement). The varietal denomination comprises abbreviated location where crossing is effected e.g., 'Co' for Coimbatore followed by abbreviated location where elite seedling is selected, e.g., 'Lk' for Lucknow, year of inclusion in ZVT e.g., '09' for 2009 and the slot number allotted to the AICRP centre where clonal selection is carried out.

Centre-wise slot numbers allotted to sugarcane entries proposed for evaluation in AICRP on Sugarcane

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	CoTI
8	VSI, Pune	121 – 130	CoVSI
9	EID Parry, Pugalur	131 – 140	PI
10	Sirugamani	141 – 145	CoSi

S.No	Centre	Slot number	Centre Code
North West Zone			
11	Faridkot	181 – 190	CoPb
12	Kota	191 – 200	CoPK
13	Lucknow	201 – 210	CoLk
14	Kapurthala	211 – 220	CoPb
15	Pantnagar	221 – 230	CoPant
16	Shahjahanpur	231 – 250	CoS
17	Sriganganagar	251 – 260	CoSg
18	Uchani	261 – 270	CoH
East Coast Zone			
19	Anakapalle	321 – 335	CoA
20	Cuddalore	336 – 345	CoC
21	Nayagarh	346 – 355	CoOr
22	Vuyyuru	356 – 365	CoV
23	Perumallapalle	366- 375	CoT
24	EID Parry, Nellikuppam	376 – 385	PI
North Central Zone			
25	Bethuadahari	426 – 435	CoB
26	Pusa	436 – 450	CoP
27	Seorahi	451 – 465	CoSe
28	Motipur (IISR)	466 – 475	CoLk
North East Zone			
29	Buralikson	501 – 510	CoBlN

Identification of promising crosses: For conducting zonal varietal trials, decision in first Workshop of AICRP on Sugarcane held at the Indian Institute of Sugarcane Research, Lucknow, 1970 was taken. The project on Zonal Varietal Trial (ZVT) was started by pooling the released varieties of each state in a particular zone with a view to evaluating them under varying conditions of the entire zone, so that proven varieties could be released by the other states also for commercial cultivation. The five zones identified in the country and the states included in each zone are given below-

North West Zone: Punjab, Haryana, Rajasthan, Uttar Pradesh (western & central) and Uttarakhand.

North Central Zone: Uttar Pradesh (eastern), Bihar and West Bengal.

North East Zone: Assam

East Coast Zone: Odisha, coastal Andhra Pradesh and coastal Tamil Nadu

Peninsular Zone : Gujarat, Madhya Pradesh, Chattisgarh, Maharashtra, Karnataka, interior plains

Sugarcane Varieties Identified by AICRP(S) in India

of Andhra Pradesh, Telangana interior plains of Tamil Nadu and Kerala.

The Promising parents of *Saccharum spp.*, identified in different zones of the country

Sr. No.	Zone	Crosses (parents)
1	North West	CoJ 64 x Co1148; Co 740 x Co 1148; Co 740 x Co 6806; Co 7717 x Co 1148; Co 775 x Co 6806; Co 1148 x Co 1336
2	North Central	BO 91 x Co 775
3	East Coast	CoC 8201 x Co 775; Co 6806 x CoA 7602; Co 7508 x Co 6304, Co 8201 x CoA 7602; CoA 7602 x CoC 672
4	Peninsular	Co 740 x Co 775; Co 740 x Co 6304; Co 7318 x CoC 671; Co 740 x Co 6806; Co 740 x Co 7318

The performance of elite varieties in zonal varietal trials is discussed in the next Workshop/Group Meeting. The top ranking clones are proposed by the concerned breeder for identification of variety. In meeting of Varietal Identification Committee constituted by the ICAR, New Delhi, sugarcane clones are identified for release and further notification. The identified clones are subsequently proposed by the concerned breeder for release and notification by Central Sub-Committee on Crop Standards Notification & Release of Varieties for Agricultural Crops (Govt. of India). A total of 116 varieties have been identified since 1982 till now in different agro-climatic zones of the country. These varieties are being given in the following table.

Zone-wise and year-wise sugarcane varieties identified, released & notified since 1982 to 2017 under AICRP on Sugarcane

Year of Identification	Maturity group	Name of identified variety	Total no. of varieties identified	Name of released & notified variety	Year of release & notification	Total no. of varieties released & notified
Peninsular Zone						
1982	Early	Co 6907, CoC 671 & MS 7455	3	-	-	-
	Mid-late	Co 7219, Co 7318, Co 62175, CoM 7125, Co 1295 & MS 7110	6	-	-	-
1983	Mid-late	-	-	-	-	-
1984	Early	CoJN 86141	1	-	-	-
	Mid-late	Co 7527 & Co 8021	2	-	-	-
1990	Mid-late	-	-	-	-	-
1991	Early	Co 85004	1	Co 85004	2000	1
1994	Early	-	-	-	-	-
	Mid-late	Co 87044, Co 86032 & Co 87025	3	Co 87044, Co 86032 & Co 87025	2000 2000 2000	3
1997	Early	-	-	-	-	-
	Mid-late	CoM 88121 & Co 8371	2	CoM 88121 & Co 8371	2000 2000	2
1999	Mid-late	Co 91010	1	Co 91010	2000	1
2002	Early	Co 94008	1	Co 94008	2004	1
	Mid-late	-	-	-	-	-
2006	Mid-late	Co 99004 & Co99006	2	Co 99004	2007	1
				-	-	-
2008	Mid-late	Co 2001-13 & Co 2001-15	2	Co 2001-13 & Co 2001-15	2009 2009	2
2009	Early	Co 0314	1	-	-	-
	Mid-late	Co 0218 & CoM 0265	2	1.Co 0218	2010	1
				-	-	-

AICRP on Sugarcane

Year of Identification	Maturity group	Name of identified variety	Total no. of varieties identified	Name of released & notified variety	Year of release & notification	Total no. of varieties released & notified
2010	Early	Co 0403	1	Co 0403	2012	1
2011	Early	CoSnk 05103	1	CoSnk 05103	2014	1
	Mid-late	CoSnk 05104	1	CoSnk 05104	2014	1
2012	Early	Co 06022 & CoN 05071	2	-	-	-
	Mid-late	Co 06027	1	Co 06027	2013	1
2014	Early	PI 07131	1	-	-	-
2017	Early	Co 09004	1	Co 09004	2017	1
Total:			35			17
North West Zone						
1982	Early	Co 7717, CoJ 64 & CoJ 75	3	-	-	-
	Mid-late	Co 6304, CoLk 7701, CoS 771, CoS 802 & CoS767	5	-	-	-
1987	Early	CoLk 7901	1	-	-	-
	Mid-late	CoLk 8001	1	-	-	-
1990	Mid-late	CoLk 8102 & CoPant 84211	2	-	-	-
1997	Mid-late	CoPant 90223	1	CoPant 90223	2000	1
1999	Early	CoH 92201	1	CoH 92201	2001	1
	Mid-late	CoS 91230	1	CoS 91230	2000	1
2002	Early	CoS 95255	1	CoS 95255	2004	1
	Mid-late	CoPant 93227	1	-	-	-
2003	Mid-late	CoS 94270	1	CoS 94270	2005	1
2005	Mid-late	CoPant 97222	1	CoPant 97222	2007	1
2006	Early	CoS 96268 & Co 98014	2	CoS 96268 & Co 98014	2007 2007	2
	Mid-late	CoH 119, CoJ 20193 & CoS 96275	3	CoH 119, CoJ 20193 & CoS 96275	2007 2007 2007	3
2008	Early	Co 0118 & Co 0238	2	Co 0118 & Co 0238	2009 2009	2
2009	Early	Co 0239	1	Co 0239	2010	1
	Mid-late	Co 0124	1	Co 0124	2010	1
2010	Early	Co 0237	1	Co 0237	2012	1
	Mid-late	CoH 128	1	CoH 128	2012	1
2011	Early	CoPK 05191	1	CoPK 05191	2013	1
	Mid-late	Co 05011	1	Co 05011	2012	1
2012	Early	Co 05009	1	Co 05009	2013	1
	Mid-late	CoPant 05224	1	-	-	-
2013	Early	CoLk 07201	1	-	-	-
	Mid-late	Co 06034	1	-	-	-
2016	Early	CoPb 08212	1	-	-	-
2017	Mid-late	C0 09022, CoLk 9204, CoLk 11206 & CoLk 11203	4	C0 09022	2017	1
Total:			41			21
North Central Zone						
1982	Early	BO 90	1	-	-	-
	Mid-late	BO 100	1	-	-	-
1983	Mid-late	BO 91	1	-	-	-

Sugarcane Varieties Identified by AICRP(S) in India

Year of Identification	Maturity group	Name of identified variety	Total no. of varieties identified	Name of released & notified variety	Year of release & notification	Total no. of varieties released & notified
1985	Mid-late	BO 109 & CoS 7918	2	-	-	-
1994	Early	Co 87263 & Co 87268	2	Co 87263 & Co 87268	2000 2000	2
1997	Early	BO 120	1	-	-	-
1999	Mid-late	CoP 9103 & BO 128	2	BO 128	2001	1
2001	Early	Co 89029 & CoSe 95422	2	Co 89029 & CoSe 95422	2001 2001	2
	Mid-late	CoSe 92423	1	CoSe 92423	2001	1
2002	Early	CoSe 96234	1	CoSe 96234	2004	1
	Mid-late	CoSe 96436	1	CoSe 96436	2004	1
2007	Early	CoLk 94184	1	CoLk 94184	2008	1
2008	Early	Co 0232	1	Co 0232	2009	1
	Mid-late	Co 0233	1	Co 0233	2009	1
2009	Early	CoSe 01421	1	CoSe 01421	2013	1
	Mid-late	BO 146	1	-	-	-
2012	Early	CoSe 05451	1	-	-	-
2013	Mid-late	CoP 06436	1	CoP 06436	2014	1
2016	Mid-late	CoP 09437	1	-	-	-
2017	Early	UP 09453	1	-	-	-
Total :			24			13
North East Zone						
1982	Early	Co7201 & S101/72	2	-	-	-
1997	Early-Mid	CoBln 9605	1	-	-	-
2012	Mid-late	CoBln 04174	1	-	-	-
Total :			4	-	-	-
East Coast Zone						
1982	Early	Co 7508 & CoC 771	2	-	-	-
1997	Mid-late	Co 86249	1	Co 86249	2000	1
2005	Early	CoC 01061	1	CoC 01061	2006	1
2009	Early	CoOr 03151 & CoA 03081	2	CoOr 03151	2011	1
2010	Mid-late	CoA 05322	1	-	-	-
2011	Mid-late	CoA 05323	1	-	-	-
2012	Mid-late	Co 06030	1	Co 06030	2013	1
2013	Early	CoA 08323 & CoC 08336	2	-	-	-
2017	Early	CoA 11321	1			
Total :			12			4
Grant Total			116			55

After inclusion of sugarcane crop in seed Act, 55 varieties have been released & notified during 2000 to 2017 by the Central Sub-Committee on Crop Standards

Notification & Release of Varieties for Agricultural Crops (Govt. of India).

**DETAILS OF SUGARCANE VARIETIES
IDENTIFIED, RELEASED & NOTIFIED
SINCE 1982 TO 2017**

**I. Sugarcane varieties identified by AICRP(S), released
& notified by CVRC since 2000 to 2017**

1. Co 09004 (Amritha)

- Maturity group : Early
- Parentage : CoC 671 X CoT 8201
- Year of identification : 2017
- Year of release & notification : 2017
- Gazette notification no. : S.O. 2805 (E)
- Originating centre : ICAR-SBI, Coimbatore
- Name of zone : Peninsular Zone
- Name of Breeder/P.I. : Dr P. Govindaraj and Associates
- States for which recommended : Gujarat, Maharashtra, Kerala, Karnataka, interior of Tamil Nadu and Andhra Pradesh, Madhya Pradesh and Chattisgarh

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Reaction to disease & insect-pests
109.85	14.56	18.94	14.50	MR to red rot, R to smut & YLD

Special characters : Tolerant to drought and salinity.

Salient features

Co 09004, a high yielding, high quality and early maturing sugarcane variety was developed by ICAR-Sugarcane Breeding Institute, Coimbatore. Based on the superior performance in the zonal varietal trials under AICRP on Sugarcane, it was identified for release in Peninsular zone by the Varietal Identification Committee of AICRP(S) on 20th March, 2017 and later notified by the Central Sub-Committee on Crop Standards, Notification and Release of Varieties for Agricultural Crops for cultivation in Peninsular Zone comprising states of Telengana, Karnataka, Maharashtra, Gujarat, Madhya Pradesh, Chhattisgarh, Kerala and parts of Tamil Nadu and Andhra Pradesh. The variety was selected from the segregating progenies of the cross CoC 671 x CoT 8201. While the female parent CoC 671 is a high sugar variety, CoT 8201 is a high cane tonnage male parent and Co 09004 combined both the argonomically important traits.

* **MR** : Moderately Resistant ; **R**: Resistant



2. Co 09022 (Karan 12)

- Maturity group : Mid-late
- Parentage : CoLk 8102 GC
- Year of identification : 2017
- Year of release & notification : 2017
- Gazette notification no. : S.O. 2805 (E)
- Originating centre : ICAR-SBI RC, Karnal
- Name of zone : North West Zone
- Name of Breeder/P.I. : Dr Bakshi Ram
- States for which recommended : Haryana, Punjab, Rajasthan, Uttarakhand, Central and western Uttar Pradesh

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Reaction to disease & insect-pests
83.56	10.06	17.49	13.71	MR to red rot.

Special characters : Suitable for water logging condition.

Salient features

Co 09022 (Karan-12) is a mid-late variety, selected from the seedling progenies (Seedling no. K03-223) derived from open pollinated fluffs of CoLk 8102 (GC), at ICAR-Sugarcane Breeding Institute Regional Centre, Karnal (Haryana). Co 09022 is a high sugar, high quality mid-late variety with moderate cane yield. Certainly this variety will complement in realizing higher sugar recovery in North West Zone of India. It is a good substitute of CoS 767, which is deteriorated due to increased incidence of GSD and red rot.



3. CoP 06436 (CoP 2061)

- Maturity group : Midlate
- Parentage : CoLk 8102 X HR 83/65
- Year of identification : 2013
- Year of release & notification : 2015
- Gazette notification no. : S.O. 268 (E)
- Originating centre : RAU Pusa
- Name of zone : North Central Zone
- Name of Breeder/P.I. : Dr Balwant Kumar and Associates
- States for which recommended : Eastern Uttar Pradesh, Bihar, West Bengal and Jharkhand

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Reaction to disease & insect-pests
74.45	9.18	17.35	13.85	MR to red rot, smut & wilt

Special characters : Good ratooner and tolerant to lodging.

Salient features

The variety has a cardinal importance in sugarcane cultivation. It fulfilled not only the requirements of cane in the early and mid late seasons but also ensured high cane and sugar yield under varied climatic situation. Free from diseases with low insect-pest incidence of various kinds which affect yield or sugar recovery the cane adversely. Presently in Bihar, sugarcane is being grown on 2.98 lakh hectares with total production of 149 lakh tons of cane (2013-14) at an average cane yield of 50 tons per hectare. Cane and sugar yields of North Central and North Eastern Zone are lower in comparison to other zones of India due to several factors adversely affect yield. 'CoP 2061' showed consistent performance for cane and sugar yields in plant and ratoon crops across all the zonal centres over the years. This variety recorded 9.18 t/ha commercial cane sugar yield which was 24.1%, 28.3% and 24.4% higher than the checks 'BO 91'(7.40 t/ha), 'CoP 9301' (7.12 t/ha) and 'CoSe 92423' (7.38 t/ha), respectively.



4. Co 05009 (Karan-10)

- Maturity group : Early
- Parentage : Co 8353 X Co 62198
- Year of identification : 2012
- Year of release & notification : 2013
- Gazette notification no. : S.O. 2817 (E)
- Originating centre : SBI RC, Karnal (SBI, Coimbatore)
- Name of zone : North West Zone
- Name of Breeder/P.I. : Dr Bakshi Ram and Associates
- States for which recommended : Punjab, Haryana, Rajasthan, Central and western Uttar Pradesh and Uttrakhand

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Reaction to disease & insect-pests
75.89	9.16	17.44	14.25	MR to red rot

Special characters

: Tolerant to water logging and low temperature.

Salient features

A progeny of Co 8353 x Co 62198, Co 05009 is an early maturing variety suitable for planting in North West Zone of India. This variety was identified from Sugarcane Breeding Institute Regional Centre, Karnal. The variety Co 05009 was superior to standards for CCS (t/ha) and cane yield (t/ha) both in plant and ratoon crops. The mean cane yield of Co 05009 was 75.89 t/ha against 63.01 and 64.34 t/ha of CoJ 64 and CoPant 84211, respectively. The mean sugar yield of Co 05009 was 9.16 t/ha against 7.93 and 7.73 t/ha of CoJ 64 and CoPant 84211, respectively. Improvement in cane and CCS yields is higher in ratoon crop in comparison to plant crop.



5. Co 06030

- Maturity group : Mid-late
- Parentage : CoC 671 X IG 91-1100
- Year of identification : 2012
- Year of release & notification : 2013
- Gazette notification no. : S.O. 2817 (E)
- Originating centre : ICAR-SBI, Coimbatore
- Name of zone : North West Zone
- Name of Breeder/P.I. : Dr N. Vijayan Nair
- States for which recommended : Coastal Tamil Nadu & Andhra Pradesh and Odisha

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
103.33	11.21	16.60	MR to red rot.

Salient features

Co 06030 is a mid-late maturing variety selected from the cross CoC 671 x IG 91-1100. One of the parents in the cross CoC 671 is a high sugar variety and the other parent IG 91-1100 is an intergeneric hybrid between CoC 772 and *Erianthus arundinaceus* with high yield and vigour. Since the genetic base for cane and sugar yield of present cultivars and advanced breeding population is narrow, the variety is a product of genetic base broadening programme and can increase and sustain the sugarcane yield in future. The variety combined the traits of both the parents and attended high yield and quality. This variety was identified from trials conducted at Jeypore sugars, Chagallu by Sugarcane Breeding Institute, Coimbatore.



6. Co 06027

- Maturity group : Mid-late
- Parentage : CoC 671 X IG 91-1100
- Year of identification : 2012
- Year of release & notification : 2013
- Gazette notification no. : S.O. 2817 (E)
- Originating centre : ICAR-SBI, Coimbatore
- Name of zone : Peninsular Zone
- Name of Breeder/P.I. : Dr N. Vijayan Nair and Associates
- States for which recommended : Gujarat, Maharashtra, Kerala, Karnataka, interior of Tamil Nadu and Andhra Pradesh, Madhya Pradesh and Chattisgarh

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Reaction to disease & insect-pests
110.56	14.74	19.18	19.06	MR to red rot

Special characters : Tolerant to drought and salinity.

Salient features

Co 06027 is midlate maturing variety developed from the cross CoC 671 x IG 91-1100 through hybridization and selection. One of the parents of the cross is CoC 671 which is a high sugar variety and the other parent IG 91-1100 is an intergeneric hybrid between CoC 772 and *Erianthus arundinaceus* with high yield and vigour. The variety combined the traits of both the parents and achieved high yield and quality with tolerance to drought and salinity. This variety was identified from Sugarcane Breeding Institute, Coimbatore.



7. Co 05011 (Karan-9)

- Maturity group : Mid-late
- Parentage : CoS 8436 X Co 89003
- Year of identification : 2011
- Year of release & notification : 2012
- Gazette notification no. : S.O. 1708 (E)
- Originating centre : SBI RC, Karnal (SBI, Coimbatore)
- Name of zone : North West Zone
- Name of Breeder/P.I. : Dr Bakshi Ram and Associates
- States for which recommended : Punjab, Haryana, Rajasthan, Central and western Uttar Pradesh and Uttrakhand

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Fibre (%)	Reaction to disease & insect-pests
82.47	10.24	18.00	12.75	MR to red rot & wilt

Special characters : Suitable for harvesting in winter.

Salient features

Co 05011 has been notified for North Western Zone based on its better performance in the AICRP trials conducted at Ludhiana, Faridkot, Karnal, Muzaffarnagar, Pantnagar, Lucknow, Shahjahanpur, Sriganaganagar and Kota during 2009-11. A better substitute for CoS 767, Co 05011 gave 10.24 t/ha CCS, 82.47 t/ha of cane yield and 18.00% sucrose accounting to 18.24%, 13.75% and 3.99% improvement, respectively over CoC 767. The variety was rated as R or MR to red rot by plug method in 35 out of 38 trials. It is a non-lodging and non-flowering variety, performing better than standards when harvested during winter season.



8. CoPk 05191 (Pratap Ganna-1)

- Maturity group : Early
- Parentage : Co 1158 GC
- Year of identification : 2011
- Year of release & notification : 2013
- Gazette notification no. : S.O. 312 (E)
- Originating centre : ARS, Kota
- Name of zone : North West Zone
- Name of Breeder/P.I. : Dr R.B. Dubey
- States for which recommended : Punjab, Haryana, Rajasthan, Central and western Uttar Pradesh and Uttrakhand

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Fibre (%)	Reaction to disease & insect-pests
81.12	9.52	17.06	13.68	MR to red rot

Special characters : Tolerant to drought & water logging, good ratooner.

Salient features

The variety CoPk 05191 is having higher mean cane yield (81.12 t/ha) over 23 locations and ranked FIRST. The proposed variety possessed 33.09 and 28.82% high cane yield over the standards CoJ 64 (60.95 t/ha) and CoPant 84211 (62.97 t/ha), respectively. This variety is having higher commercial cane sugar (CCS) yield 9.52 t/ha mean over the locations and ranked FIRST in comparison with standards CoJ 64 (7.67 t/ha) and CoPant 84211 (7.57 t/ha), respectively. This entry recorded 24.12 and 25.76% CCS superiority over the standards CoJ 64 and CoPant 84211, respectively. This variety has exhibited good ratoonability. This variety recorded 36.74 and 32.55% cane yield superiority over the standards CoJ 64 and CoPant 84211 respectively. Further this entry exhibited 27.35% and 32.27% yield superiority over the standards CoJ 64 and CoPant 84211, respectively. The CoPk 05191 being stay green also showed tolerance to abiotic stresses viz., water logging, drought and biotic stresses like stem rot, smut and wilt.



9. CoSnk 05103

- Maturity group : Early
- Parentage : Co 740 X Co 7602
- Year of identification : 2011
- Year of release & notification : 2014
- Gazette notification no. : S.O. 1919 (E)
- Originating centre : ARS, Sankeshwar
- Name of zone : Peninsular Zone
- Name of Breeder/P.I. : Dr. Sanjay B. Patil and Associates
- States for which recommended : Gujarat, Maharashtra, Kerala, Karnataka, interior of Tamil Nadu and Andhra Pradesh, Madhya Pradesh and Chattisgarh

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
105.50	12.85	17.21	MR to red rot, smut & wilt. R to sugarcane woolly aphid

Special characters : Tolerant to moisture and salinity water logged, complex stresses. Excellent ratooning ability.

Salient features

The variety ranked no. 1 across different locations in Peninsular Zone over two plant and one ratoon crops for cane (105.50 t/ha) and sugar yields (12.85 t/ha). The variety recorded 20 per cent and 11 per cent increase in cane and sugar yield respectively over the best check CoC 671. This possesses resistance against red rot and smut diseases. This variety exhibited excellent ratooning ability. This variety is highly resistant against sugarcane woolly aphid and tolerant to moisture and salinity water log complex stresses.



10. CoSnk 05104

- Maturity group : Mid-late
- Parentage : CoC 771 PC
- Year of identification : 2011
- Year of release & notification : 2014
- Gazette notification no. : S.O. 1919 (E)
- Originating centre : ARS, Sankeshwar
- Name of zone : Peninsular Zone
- Name of Breeder/P.I. : Dr Sanjay B. Patil and Associates
- States for which recommended : Gujarat, Maharashtra, Kerala, Karnataka, interior of Tamil Nadu and Andhra Pradesh, Madhya Pradesh and Chattisgarh

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
104.80	13.04	17.52	MR to red rot & smut.

Special characters : Tolerant to woolly aphid, salinity, water logging and moisture stress.

Salient features

This variety is significantly superior in cane yield (104.80 t/ha) and exhibited 16.88 per cent increase over the best check Co 86032 (90.73 t/ha) and 25.77 per cent over another check Co 7219 (83.93 t/ha). Significantly superior in CCS (Sugar) yield (13.04 t/ha) and exhibited 8.66 per cent increase over the best check Co 86032 (12.00 t/ha) and 16.63 per cent over another check Co 7219 (11.18 t/ha). This variety possesses resistance against red rot and smut diseases. This variety has wider adaptability as it possess better tolerance against moisture and salinity waterlogging complex stresses.



11. CoH 128

- Maturity group : Mid-late
- Parentage : CoH 70 X CoS 510
- Year of identification : 2010
- Year of release & notification : 2012
- Gazette notification no. : S.O. 456 (E)
- Originating centre : RRS (Uchani), Karnal
- Name of zone : North West Zone
- Name of Breeder/P.I. : Dr A.S. Mehla and Associates
- States for which recommended : Punjab, Haryana, Rajasthan, Central and western Uttar Pradesh and Uttrakhand

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Fibre (%)	Reaction to disease & insect-pests
76.23	9.28	17.70	13.50	13.01	MR to red rot, tolerant to top & early shoot borers.

Special characters : Tolerant to water stress and water logging.

Salient features

CoH 128 has been developed from a cross of CoH 70 x CoS 510 at CCSHAU Regional Research Station, Uchani (Karnal). This variety was evaluated in different selection stages for cane yield, juice quality and insect-pests / disease tolerance against standards in plant and ratoon crop. It has an excellent ratooning capability. The variety has the potential of high tonnage for cane yield with experimental mean as 76.23 t/ha. The variety recorded 21.08, 6.30 and 09.32 per cent higher cane yield as compared to the checks CoS 8436, Co 1148 and CoS 767, respectively. Similarly the variety recorded high commercial cane sugar (9.28 t/ha) that was 21.62, 9.31 and 9.82 per cent higher as compared to the checks CoS 8436, Co 1148 and CoS 767, respectively. It recorded good sucrose percent (17.70) at 360 days which was numerically superior to the standards CoS 8436 (17.68), Co 1148 (17.22) and CoS 767 (17.64).



12. Co 0237 (Karan-8)

- Maturity group : Early
- Parentage : Co 93016 GC
- Year of identification : 2010
- Year of release & notification : 2012
- Gazette notification no. : S.O. 2125 (E)
- Originating centre : SBI RC, Karnal (SBI, Coimbatore)
- Name of zone : North West Zone
- Name of Breeder/P.I. : Dr Bakshi Ram and Associates
- States for which recommended : Punjab, Haryana, Rajasthan, Central and western Uttar Pradesh and Uttrakhand

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Fibre (%)	Reaction to disease & insect-pests
71.33	9.34	18.78	12.98	MR to red rot

Special characters

: Tolerant to water logging and good ratooner.

Salient features

This variety (Co 0237) was identified from Sugarcane Breeding Institute, Regional Centre, Karnal in 2002 and entered the Zonal Varietal Trials: 2005-06 IVT (early). The AVT I Plant was conducted during 2006-07 and AVT II Plant and ratoon crop trials were conducted during 2007-08. The recommendations for this variety were made based on a total of 21 trials conducted in 5 states in North Western India. The variety Co 0237 was superior to standards for CCS (t/ha) and cane yield (t/ha) both in plant and ratoon crops. The mean cane yield of Co 0237 was 71.33 t/ha as against 67.59 and 66.84 t/ha of CoJ 64 and CoPant 84211, respectively. The mean sugar yield of Co 0237 was 9.34 t/ha as against 8.59 and 8.28 t/ha of CoJ 64 and CoPant 84211, respectively. The mean improvement in cane yield varied from 1.08 to 16.43% whereas the improvement in sugar yield (CCS) varied from 4.76 to 21.18% over the two standards. The mean sucrose% in juice of Co 0237 was 18.78 % as against 17.90 % and 17.65 % of CoJ 64 and CoPant 84211, respectively. The mean improvement in sucrose% varied from 2.91 to 8.89% over the two standards. Co 0237 was rated as 'R' or 'MR' to red rot by nodal method of inoculation, except at Shahjahanpur. By plug method, the variety was rated as 'MR' to red rot at Karnal, Uchani, Pantnagar and Hisar whereas varied ratings were observed at Ludhiana, Shahjahanpur and Lucknow. The variety is also tolerant to water logging. The variety has medium thin greenish yellow canes with conoidal internodes and long lanceolate auricle on one side. The variety is free from spines, splits, pith, bud groove and bud cushion. Leaf tip drying is common during summer months.



13. Co 0403(Samriddhi)

- Maturity group : Early
- Parentage : Co 8371 X Co 86011
- Year of identification : 2010
- Year of release & notification : 2012
- Gazette notification no. : S.O. 2125 (E)
- Originating centre : ICAR-SBI, Coimbatore
- Name of zone : Peninsular Zone
- Name of Breeder/P.I. : Dr. U.S. Natararajan & Associates
- States for which recommended :Gujarat, Maharashtra, Kerala, Karnataka, interior of Tamil Nadu and Andhra Pradesh, Madhya Pradesh and Chattisgarh

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Fibre (%)	Reaction to disease & insect-pests
101.6	13.29	18.16	13.67	MR to red rot, R to smut.

Special characters :Tolerant to drought, good ratooner and good jaggery quality. Moderately tolerant to drought.

Salient features

Co 0403 (Sammriddhi) has been notified by Central Varietal Release Committee, and is recommended for cultivation in Peninsular zone. Co 0403 is resistant to red rot and smut. Rated as moderately tolerant to drought. Cane is tall, erect and rind colour is greenish purple. Leaf sheath has no hair and is with deltoid ligule, dentoid inner auricle and light green dewlap. Leaf is medium wide, arched and leaf sheath is semi clasping. Internode is medium thick, cylindrical, without zigzag alignment, without growth cracks, ivory marks present and with heavy waxiness. Bud is ovate with shallow bud groove and bud is cushion absent with bud tip touching the growth ring. Number of millable canes is very high.



14. CoSe 01421(Imarti)

- Maturity group : Early
- Parentage : CoS 8119 X Co 62198
- Year of identification : 2009
- Year of release & notification : 2013
- Gazette notification no. : S.O. 2817 (E)
- Originating centre : GSSBRI (UPCSR), Seorahi
- Name of zone : North Central Zone
- Name of Breeder/P.I. : Dr M.L. Sharma & Associates
- States for which recommended : Eastern Uttar Pradesh, Bihar, West Bengal and Jharkhand

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
65.87	7.93	17.36	MR to red rot, smut & wilt

Special characters : Good ratooner.

Salient features

The variety CoSe 01421 (CoS 8119 x Co 62198) is an early maturing variety developed at G.S. Sugarcane Breeding & Research Institute, Seorahi, Kushinagar. This variety is characterized by medium thick, solid and erect stalks with small ovate buds, semi drooping canopy and good growth. It is a moderately resistant (MR) to red rot, good in germination, tillering, NMC and yield. It is a good ratooner also. This is an excellent quality cane for early crushing. This variety recorded the highest level of CCS t/ha (7.93) while the standards CoSe 95422, BO 130 and CoS 687 recorded only 7.42, 6.65 and 5.82 t/ha, respectively. CoSe 01421 exhibited 19.25, 36.25 and 6.87 percent more CCS t/ha as compared to the checks BO 130, CoS 687 and CoSe 95422, respectively.

This variety CoSe 01421 recorded a mean cane yield of 65.87 t/ha as compared to BO 130 (57.42), CoS 687 (49.48) and CoSe 95422 (63.12) in two plant and one ratoon crops. Variety CoSe 01421 exhibited 14.72, 33.12 and 4.36 percent higher cane yield as compared to the checks BO 130, CoS 687 and CoSe 95422, respectively in North Central Zone. Mean sucrose percent in juice in CoSe 01421 was 17.36 (January) as compared to BO 130 (16.62), CoS 687 (16.83) and CoSe 95422 (16.78). Variety CoSe 01421 showed 4.45, 3.15 and 3.46 percent higher sucrose percent in juice over the checks BO 130, CoS 687 and CoSe 95422, respectively. This variety CoSe 01421 showed MR reaction to red rot. This variety exhibited low incidence of shoot borer, top borer and stalk borer. Due to higher cane and sugar yields (t/ha), good ratooner and moderately resistant to red rot, variety CoSe 01421 (Imarti) is popular in North Central Zone. This variety provides good cane quality for early crushing by the sugar industry.

15. Co 0124 (Karan-5)

- Maturity group : Mid-late
- Parentage : Co 89003 GC
- Year of identification : 2009
- Year of release & notification : 2010
- Gazette notification no. : S.O. 2137 (E)
- Certificate Sl. No of PPV&FRA : Certificate Sl. No. 000718
- Registration no. of PPV&FRA : 172 of 2013
- Originating centre : SBI RC, Karnal (SBI, Coimbatore)
- Name of zone : North West Zone
- Name of Breeder/P.I. : Dr Bakshi Ram and Associates
- States for which recommended : Punjab, Haryana, Rajasthan, Central and western Uttar Pradesh and Uttrakhand

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Fibre (%)	Reaction to disease & insect-pests
75.71	9.68	18.22	12.65	MR to red rot

Special characters : Tolerant to water stress & water logging.

Salient features:

Co 0124 is a selection from the progeny of the cross Co 89003 GC. This variety was identified from seedling ratoon nursery raised at Sugarcane Breeding Institute, Regional Centre, Karnal and was tested under the Pre Zonal Varietal Trial. It was selected as a midlate variety as it had pol % juice higher than CoS 767, CoS 8436 and Co 1148 during January and March. The cane and sugar yields of Co 0124 were higher than that of standards. Medium thick yellow green canes with Concave-convex internodes, triangular-pointed buds, long lanceolate auricle and shallow bud groove. The variety is free from splits, spines on leaf sheath, pith and bud cushion. The fibre % is about 12.65 %. The jaggery is of A2 quality with light yellow colour. This variety 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 variety has been evaluated under All India Co-ordinated Research Project in the North Western Zone. It ranked 2nd for sugar yield (9.68 t/ha), 3rd for cane yield (75.7 t/ha) and sucrose % in juice (18.22%) in the zone on the basis of average cane and sugar yields, and sucrose % recorded in 2 plant and 1 ratoon crops at 7 research stations in the zone. In comparison to the major check CoS 767, it showed about 8%, 13% and 3.5% improvement in cane yield, sugar yield and sucrose % in juice, respectively. 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. This variety would prove as a high quality mid-late maturing variety under assured irrigation areas. This variety may be a suitable substitute of CoS 8436.



16. Co 0239 (Karan-6)

- Maturity group : Early
- Parentage : Co 93016 GC
- Year of identification : 2009
- Year of release & notification : 2010
- Gazette notification no. : S.O. 2137 (E)
- Originating centre : SBI RC, Karnal (SBI, Coimbatore)
- Name of zone : North West Zone
- Name of Breeder/P.I. : Dr Bakshi Ram and Associates.
- States for which recommended : Punjab, Haryana, Rajasthan, Central and western Uttar Pradesh and Uttrakhand

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Fibre (%)	Reaction to disease & insect-pests
79.23	10.37	18.58	14.22	12.79	MR to red rot

Special characters : Tolerant to water stress & water logging.

Salient features

Co 0239 is a selection from the progeny of the cross Co 93016 GC. This variety was identified from seedling ratoon nursery raised at Sugarcane Breeding Institute, Regional Centre, Karnal and was tested under the Pre Zonal Varietal Trial. 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 was higher than that of CoJ 64. It had medium thick yellow green canes with cylindrical internodes, oval buds, lanceolate auricle, bud cushion and shallow bud groove. The variety is free from splits and pith. The fibre % is about 12.79 %.



17. CoOr 03151(Sabita)

- Maturity group : Early
- Parentage : CoC 671 X Co 1148
- Year of identification : 2009
- Year of release & notification : 2011
- Gazette notification no. : S.O. 2326 (E)
- Originating centre : SRS, Nayagarh
- Name of zone : East Coast Zone
- Name of Breeder/P.I. : Dr P.K. Nayak and Associates
- States for which recommended : Coastal Tamil Nadu & Andhra Pradesh and Odisha

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
105.28	11.13	15.53	R to red rot & wilt. Tolerant to internode, top & early shoot borers and scale insect

Special characters : Tolerant to drought & water logging.

Salient features

CoOr 03151 named “Sabita” was evolved through selection from the progeny derived through hybridization of two proven parents CoC 671 and Co 1148. It is an early maturing sugarcane variety suitable for the East Coast Zone of India. The variety was tested under AICRP(S) in Initial Varietal Trials in 6 locations along with 5 entries and two standard varieties during 2006-07. It has superior performance than all the clones tested and was top ranking variety in 3 locations and among top three at five locations for cane yield. With respect to CCS (t/ha), it was top ranking variety in two locations and among top three at four locations. For sucrose %, it was among top three at three locations of the zones. The variety performed well at Nayagarh, Anakapalle, Vuyyuru, Nellikuppam and Cuddalore centres. The performance of the variety in AICRP trials gave clear indication that it had the potential to improve cane productivity in the zone including drought and red rot prone areas.



18. Co 0218 (Shreyas)

- Maturity group : Mid-late
- Parentage : Co 8353 X Co 8611
- Year of identification : 2009
- Year of release & notification : 2010
- Gazette notification no. : S.O. 2137 (E)
- Certificate Sl. No of PPV&FRA : Certificate Sl. No. 000717
- Registration no. of PPV&FRA : 171 of 2013
- Originating centre : ICAR-SBI, Coimbatore
- Name of zone : Peninsular Zone
- Name of Breeder/P.I. : Dr U.S. Natarajan
- States for which recommended : Gujarat, Maharashtra, Kerala, Karnataka, interior of Tamil Nadu and Andhra Pradesh, Madhya Pradesh and Chattisgarh

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Fibre (%)	Reaction to disease & insect-pests
103.77	15.17	20.79	15.41	14.70	MR to red rot R to smut



Sl. No. : 000717

Application No: E35 S435 12 370
Date of filing: July 25, 2012.

FORM CR-2
(New rules 26 and 27)
GOVERNMENT OF INDIA, PLANT VARIETIES REGISTRY
CERTIFICATE OF REGISTRATION

Registration No. 171 of 2013

Dr. Whoseen, Indian Council of Agricultural Research, Kailash-Dharam, Rajendra Place, New Delhi, has declared that he has developed Co 0218 of sugarcane (*Baccharis L.*) as a plant variety / essentially derived plant variety and that he is the true breeder thereof (or the legal representative or assignee of the true breeder) and that he is entitled to a plant variety right on the said variety, having regard to the provisions of the Protection of Plant Varieties and Farmers' Rights Act, 2001 and that there is no objection to the registration of plant variety in favour of him.

And whereas he has, by an application, requested that registration of plant variety / essentially derived plant variety may be allowed to him for the said plant variety.

And whereas he has, by and in his application, particularly described the various distinctive features and mentioned the denomination of the said plant variety.

Now, these presents, that the above said applicant (including his legal representatives and assignees or any of them) shall, subject to the provisions of the Protection of Plant Varieties and Farmers' Rights Act, 2001 and the conditions specified in section 47 of the said Act, and to the conditions and provisions specified by any other law for the time being in force, have the exclusive right to produce, sell, market, distribute, import or export the variety for a term of ten years / six years / five years / four years from the date of October 20, 2013 and of authorizing any other person to do so, subject to the conditions that the validity of this registration is not guaranteed and that the fee prescribed for the continuance of this registration is duly paid.

OS² witness that the Registrar has caused this registration to be sealed as of the day of October 20, 13

Seal and Signature of the Registrar,
Plant Varieties Registry
Date of issue: OS-13-2013

19. Co 0232 (Kamal)

- Maturity group : Early
- Parentage : CoLk 8102 X Co 87267
- Year of identification : 2008
- Year of release & notification : 2009
- Gazette notification no. : S.O. 454 (E)
- Certificate Sl. No of PPV&FRA : Certificate Sl. No. 000709
- Registration no. of PPV&FRA : 163 of 2013
- Originating centre : ICAR-SBI, Coimbatore
- Name of zone : North Central & North East Zones
- Name of Breeder/P.I. : Dr P. Govindaraj
- States for which recommended : Eastern Uttar Pradesh, Bihar, West Bengal, Jharkhand and Assam

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
67.82	7.83	16.51	MR to red rot

Special characters

:Tolerant to top borer, water logging & early drought.

Salient features

An early maturing, water logging tolerant and red rot resistant. This variety is suitable for cultivation in the North Central and North East zones comprising of Eastern Uttar Pradesh, Bihar, West Bengal and North Eastern states. This variety was identified from Sugarcane Breeding Institute, Research Centre, Motipur (presently under IISR, Lucknow) during 2002. Under water logging conditions, Co 0232 performed better over the best standard CoSe 95422 with 7.63 % higher cane yield, 11.55 % higher CCS t/ha and 0.77 % higher sucrose content. It is also tolerant to early drought and top borer. Erect canes with medium height and reddish orange rind colour. Sparse leaf sheath hairiness, incipient inner auricle, green dewlap, conoidal internode shape, heavy internode waxiness, ovate bud and bud tip not touching growth ring.



20. Co 0233 (Kosi)

- Maturity group : Mid-late
- Parentage : CoLk 8102 X Co 775
- Year of identification : 2008
- Year of release & notification : 2009
- Gazette notification no. : S.O. 454 (E)
- Certificate Sl. No of PPV&FRA : Certificate Sl. No. 000841
- Registration no. of PPV&FRA : 295 of 2013
- Originating centre : ICAR-SBI, Coimbatore
- Name of zone : North Central Zone
- Name of Breeder/P.I. : Dr P. Govindaraj
- States for which recommended : Eastern Uttar Pradesh, Bihar, West Bengal, Jharkhand and Assam

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
67.77	8.25	17.54	MR to red rot

Special characters : Tolerant to top borer, water logging & early drought.

Salient features

A midlate maturing variety for North Eastern and North central Zone. This variety was identified from Sugarcane Breeding Institute, Research Centre, Motipur (presently under IISR, Lucknow). It is a selection from the cross CoLk 8102 x Co 775 and is suitable for cultivation in the North Central and North East zones. The cane and sugar yields of Co 0233 was 21.11 % and 24.62% higher over the best standard CoSe 92423. This variety is high yielding, tolerant to early drought, water logging and top borer and resistant to red rot. Plant is erect. Leaf sheath has sparse hairs, crescent ligule, dentoid auricle, dark green dew lap, arched, medium wide leaf blade and leaf sheath is weak. The internode colour is purplish green. Internode thickness is medium, cylindrical, with smooth rind and medium waxiness. Bud is round of medium size, bud groove and bud cushion absent and bud tip touching the growth ring.



21. Co 0118 (Karan-2)

- Maturity group : Early
- Parentage : Co 8347 X Co 86011
- Year of identification : 2008
- Year of release & notification : 2009
- Gazette notification no. : S.O. 449 (E)
- Originating centre : SBI RC, Karnal (SBI, Coimbatore)
- Name of zone : North West Zone
- Name of Breeder/P.I. : Dr Bakshi Ram and Associates
- States for which recommended : Punjab, Haryana, Rajasthan, Central and western Uttar Pradesh and Uttrakhand

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Fibre (%)	Reaction to disease & insect-pests
78.2	9.88	18.45	12.78	MR to red rot

Special characters : Tolerant to water stress & water logging.

Salient features

It is non-flowering early maturing variety for subtropical region. Co 0118 is a selection from the progeny of the cross Co 8347 x Co 86011. This variety was identified from seedling ratoon nursery raised at Sugarcane Breeding Institute, Regional Centre, Karnal and was tested under the Pre Zonal Varietals Trial. Co 0118 is a medium thick, green yellow canes with obconoidal internodes, rectangular buds, lanceolate auricle on both sides (generally long on one side), shallow bud groove and weak spines on leaf sheath. The variety is free from splits, pith and bud cushion. The fibre % is about 12.78 %. The jaggery is of A1 quality with light yellow colour. This variety is moderately resistant (MR) to the prevalent races of red rot pathogen by plug method of inoculation.



22. Co 0238 (Karan-4)

- Maturity group : Early
- Parentage : CoLk 8102 X Co 775
- Year of identification : 2008
- Year of release & notification : 2009
- Gazette notification no. : S.O. 454 (E)
- Originating centre : SBI RC, Karnal (SBI, Coimbatore)
- Name of zone : North West Zone
- Name of Breeder/P.I. : Dr Bakshi Ram & Associates
- States for which recommended : Punjab, Haryana, Rajasthan, Central and western Uttar Pradesh and Uttarakhand

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Fibre (%)	Reaction to disease & insect-pests
81.08	9.95	17.99	14.74	13.05	MR to red rot

Special characters : Tolerant to water stress & water logging, good ratoonability in winter season.

Salient features

The variety Co 0238 was developed at the ICAR-Sugarcane Breeding Institute Research Centre, Karnal. Co 0238 (early maturing) is a selection from the progeny of the cross CoLk 8102 x Co 775. It was identified in 2008 and released & notified in 2009 for cultivation in North West Zone (Punjab, Haryana, Rajasthan, Uttar Pradesh (western & central) and Uttarakhand). In the zonal varietal trials conducted across eight centres of North West Zone, it recorded 81.08 t/ha of cane yield, 9.95 % of CCS t/ha and 17.99 % of sucrose. There was 19.96, 15.83 and 0.50 per cent improvement over the best check CoJ 64.



23. Co 2001-13 (Sulabh)

- Maturity group : Mid-late
- Parentage : Co 7806 PC
- Year of identification : 2008
- Year of release & notification : 2009
- Gazette notification no. : S.O. 454 (E)
- Certificate Sl. No of PPV&FRA : Certificate Sl. No. 000711
- Registration no. of PPV&FRA : 165 of 2013
- Originating centre : ICAR-SBI, Coimbatore
- Name of zone : Peninsular Zone
- Name of Breeder/P.I. : Dr S. Alarmelu and Associates.
- States for which recommended : Gujarat, Maharashtra, Kerala, Karnataka, interior of Tamil Nadu and Andhra Pradesh, Madhya Pradesh and Chattisgarh

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Fibre (%)	Reaction to disease & insect-pests
108.6	14.73	19.03	13.43	R to red rot & MR to smut

Special characters : Tolerant to drought and salinity, good ratooner and good jaggery quality.

Salient features

Co 2001-13 named as “Sulabh” was evolved from Co 7806 PC through hybridization and selection. It was identified as midlate maturing Co cane in 2001 from Sugarcane Breeding Institute, Coimabtoe suitable for Peninsular Zone. The variety was tested under IVT (2004-2005) on 12 centres of Peninsular Zone and showed superior performance for CCS t/ha, cane yield and CCS %.



24. Co 2001-15 (Mangal)

- Maturity group : Mid-late
- Parentage : Co 85002 X Co 775
- Year of identification : 2008
- Year of release & notification : 2009
- Gazette notification no. : S.O. 821 (E)
- Certificate Sl. No of PPV&FRA : Certificate Sl. No. 000708
- Registration no. of PPV&FRA : 162 of 2013
- Originating centre : ICAR-SBI, Coimbatore
- Name of zone : Peninsular Zone
- Name of Breeder/P.I. : Dr S. Alarmelu and Associates.
- States for which recommended : Gujarat, Maharashtra, Kerala, Karnataka, interior of Tamil Nadu and Andhra Pradesh, Madhya Pradesh and Chattisgarh

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Fibre (%)	Reaction to disease & insect-pests
113.0	15.65	19.37	14.70	MR to red rot and smut,

Special characters : Tolerant to drought and salinity, good ratooner and good jaggery quality

Salient features

Co 2001-15 named as ‘Mangal’ was evolved through hybridization and selection involving two high yielding and high quality proven parents viz., Co 85002 x Co 775. It is a midlate maturing variety identified as Co cane in 2001 from Sugarcane Breeding Institute, Coimbatore suitable for Peninsular Zone. The variety was tested in IVT (2004-05) on 12 centres of Peninsular Zone and due to its superior performance for CCS t/ha, cane yield and sucrose % in juice.



25. CoLk 94184 (Birendra)

- Maturity group : Early
- Parentage : CoLk 8001 self
- Year of identification : 2007
- Year of release & notification : 2008
- Gazette notification no. : S.O. 2458 (E)
- Certificate Sl. No of PPV&FRA : Certificate Sl. No. 000729
- Registration no. of PPV&FRA : 183 of 2013
- Originating centre : IISR, Lucknow
- Name of zone : North Central Zone
- Name of Breeder/P.I. : Dr (Late) B.L. Srivastava
- States for which recommended : Eastern Uttar Pradesh, Bihar, West Bengal and Jharkhand

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (% in juice)	Reaction to disease & insect-pests
76.00	9.28	18.00	MR to red rot

Special characters : Tolerant to drought & water logging. Good ratooner.

Salient features

CoLk 94184 has been evaluated at 15 sugar mills in Uttar Pradesh and Bihar under Indian Sugar Mills Association Trials. Many sugar mills are multiplying this variety in their command area. Medium thick yellowish green canes, growth habit erect, leaf curvature erect, Ivory mark present, bobbin shaped internodes, ovate buds, incipient auricle, deltoid ligule, Bud groove absent, spines on leaf sheath absent, and bud cushion present. High sugar early maturity variety being performed by sugar milles and farmers both.



26. CoJ 20193 (CoJ 89)

- Maturity group : Mid-late
- Parentage : LG 72115 X CoJ 82315
- Year of identification : 2006
- Year of release & notification : 2007
- Gazette notification no. : S.O. 1178 (E)
- Certificate Sl. No of PPV&FRA : Certificate Sl. No. 000703
- Registration no. of PPV&FRA : 157 of 2013
- Originating centre : PAU RRS, Kapurthala
- Name of zone : North West Zone
- Name of Breeder/P.I. : Dr G.S. Sidhu
- States for which recommended : Punjab, Haryana, Rajasthan, Central and western Uttar Pradesh and Uttrakhand

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Fibre (%)	Reaction to disease & insect-pests
75.90	9.31	17.90	13.25	MR to red rot

Special characters : Suitable for late crushing and co-generation, good jaggery quality.

Salient features

This variety is an effective replacement of popular mid-late varieties viz., CoS 8436, CoS 767 and Co 1148. It is excellent in juice quality possessing the highest sucrose (%) juice levels among all the mid-late genotypes tested during 2003-04 to 2004-05 across the North West Zone. It is resistant to red rot by nodal method and moderately resistant by plug method to the prevalent isolates namely, Cf03 and Cf08 tested over locations in the North West Zone, whereas, the checks Co 1148 and CoS 767 were highly susceptible. There are also reports about the susceptibility of CoS 8436 to red rot in certain parts of U.P. state. Hence, on the basis of its superiority for red rot tolerance as well as better quality, in the present scenario, CoJ 20193 will be a fit alternative in the mid-late maturity group in the North West Zone. When tested over locations in the zone for cane yield (t/ha), CoJ 20193 yielded 6.93, 5.81 and 2.1 per cent higher than the checks CoS 8436, CoS 767 and Co 1148, respectively.

Late planting of sugarcane is a common practice in a substantial area in the North West Zone. Agronomic trials were conducted at different locations in Punjab for testing the suitability of CoJ 20193 for the planting conditions (after wheat harvest). In these trials, it yielded 22% higher than Co 1148. It is also fit for Co generation, as it possesses

adequate fibre content of 13.25% as compared to 11.24% in Co 1148. In adaptive varietal trials (on farmers' fields conducted by district extension specialist's) at 21 different locations in Punjab, CoJ 20193 out yielded Co 1148, the other late maturing variety and has been released and notified by CVRC for general cultivation in the North West zone.



27. CoS 96275 (Sweety)

- Maturity group : Mid-late
- Parentage : CoS 8119 X Co 62198
- Year of identification : 2006
- Year of release & notification : 2007
- Gazette notification no. : S.O. 1178 (E)
- Certificate Sl. No of PPV&FRA : Certificate Sl. No. 000719
- Registration no. of PPV&FRA : 173 of 2013
- Originating centre : UPCR, Shahjahanpur
- Name of zone : North West Zone
- Name of Breeder/P.I. : Dr S.B. Singh
- States for which recommended : Punjab, Haryana, Rajasthan, Central and western Uttar Pradesh and Uttrakhand

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
80.75	9.52	17.30	MR to red rot

Special characters : Good ratooner.

Salient features

This variety CoS 96275 (CoS 8119 x Co 62198) is a mid-late maturing variety evolved at Sugarcane Research Institute, Shahjahanpur. It has been released by State Varietal Release Committee (SVRC) in 2003 for general cultivation in Uttar Pradesh. This variety is characterized by medium, solid, soft and erect stalks with medium round buds, open droopy high green tops and early growth vigour. It is moderately resistant (MR) to red rot. It has a good ratoon also. This variety performed well in 26 zonal varietal trails of North West Zone during 2004-05 and 2005-06 under AICRP on Sugarcane. This variety recorded a mean cane yield of 80.75 t/ha as compared to CoS 767 (70.92), Co 1148 (74.64 t/ha) and CoS 8436 (62.74 t/ha) in two plants and one ratoon crop. It registered higher cane yield in 19 trials out of 26 trials conducted in North West Zone. Variety CoS 96275 exhibited moderately resistant reaction to red rot at all the tested locations except Ludhiana.



28. CoH 119 (Haryana Ganna - 119)

- Maturity group : Mid-late
- Parentage : Co 7704 GC
- Year of identification : 2006
- Year of release & notification : 2007
- Gazette notification no. : S.O. 1566 (E)
- Certificate Sl. No of PPV&FRA : Certificate Sl. No. 000712
- Registration no. of PPV&FRA : 166 of 2013
- Originating centre : RRS (Uchani), Karnal
- Name of zone : North West Zone
- Name of Breeder/P.I. : Dr B.S. Chaudhary and Associates
- States for which recommended : Punjab, Haryana, Rajasthan, Central and western Uttar Pradesh and Uttrakhand

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Fibre (%)	Reaction to disease & insect-pests
82.81	9.86	17.51	12.62	13.41	MR to red rot, resistant to GSD & smut, tolerant to top borer & moderately tolerant to shoot borer.

Special characters : Tolerant to moisture stress and sodicity.

Salient features

Sugarcane variety CoH 119 was selected from the seedlings raised from the fluff of a general cross Co 7704. The seedlings were raised at the research farm of CCS Haryana Agricultural University, Regional Research Station, Karnal. Variety CoH 119 recorded 82.81 t/ha cane yield which was 16.62, 11.35 and 15.40 per cent higher over the standards CoS 8436, Co 1148 and CoS 767, respectively. The variety CoH 119 over the years and locations has 9.86 t/ha commercial cane sugar recording 14.12, 12.56 and 16.14 per cent higher over standards CoS 8436, Co 1148 and CoS 767, respectively. It registered 17.51 per cent sucrose at 360 days which is at par with the checks CoS 8436 (17.81), Co 118 (17.18) and CoS 767 (17.46). The average disease score of CoH 119 for red rot, smut and grassy shoot disease showed its tolerance against major diseases of sugarcane.



29. Co 98014 (Karan-1)

- Maturity group : Early
- Parentage : Co 8316 X Co 8213
- Year of identification : 2006
- Year of release & notification : 2007
- Gazette notification no. : S.O. 122 (E)
- Certificate Sl. No of PPV&FRA : Certificate Sl. No. 000710
- Registration no. of PPV&FRA : 164 of 2013
- Originating centre : SBI-RC, Karnal
- Name of zone : North West Zone
- Name of Breeder/P.I. : Dr Bakshi Ram and Associates
- States for which recommended : Punjab, Haryana, Rajasthan, Central and western Uttar Pradesh and
Uttarakhand

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Fibre (%)	Reaction to disease & insect-pests
76.30	9.26	17.60	14.00	MR to red rot

Special characters

:Tolerant to drought and water logging, suitable for co-generation.

Salient features

Co 98014 was evaluated under waterlogging and water stress conditions at the Centre and at sugar mills. It showed improvement in cane yield by 3.65 % over CoJ 64, which was included as the standard only under normal condition. The improvement in cane yield was 9.99% and 28.14% over CoS 767 and CoS 97261, respectively. For pol % in cane at harvest, Co 98014 showed improvement from 3.86% over CoS 767 to 6.11% over CoS 97261. However, Co 98014 showed 0.5% less pol in cane compared to the CoJ 64 .





Sl. No. : 000710

Application No: E25 5425 22 350

Date of Filing: July 25, 2012

FORM-C2
(For entries 16 and 17)
GOVERNMENT OF INDIA, PLANT VARIETIES REGISTRY
CERTIFICATE OF REGISTRATION

Registration No. 164 of 2013

Dr. Bakshi Ram, Council of Agricultural Research, Karnal, Uttar Pradesh, India, as Breeder of the variety KARAN-1 (Co 98014) of Sugarcane (Saccharum sp.) as per entry 16 of the Schedule of the Act, 1993 and that there is no objection to the registration of plant variety in favour of him.

And whereas he has, by and in his application, requested that registration of plant variety / essentially distinct plant variety may be allowed to him for 15-year plant variety.

And whereas he has, by and in his application, particularly described the various distinctive features and mentioned the denomination of the said plant variety.

Now, these provisions that the above said applicant (including his legal representatives and assigns or any of them) shall, subject to the provisions of the Protection of Plant Varieties and Farmers Rights Act, 1993 and the conditions specified in section 17 of the said Act, and in the conditions and provisions specified by any other law for the time being in force, have the exclusive right to produce, sell, market, distribute, import or export the variety by a name identical therewith to that of the said variety, the said variety shall be deemed to be a new variety for the purposes of section 17 of the said Act and of subsection (1) of section 15 of the said Act, subject to the condition that the validity of this registration is not guaranteed and that the fee prescribed for the maintenance of this registration is duly paid.

It is whereupon the Registrar has caused this registration to be notified as of the 05th day of October, 2013.



Head and Registrar of the Registrar,
Plant Varieties Registry
Date of Issue: 05.10.2013

Note: - The fee for maintenance of this registration, if it is to be maintained, will be Rs. 07th day of October, 14 and on the same date in every year thereafter.

30. CoS 96268 (Mithas)

- Maturity group : Early
- Parentage : Co 1158 X Co 62198
- Year of identification : 2006
- Year of release & notification : 2007
- Gazette notification no. : S.O. 1178 (E)
- Certificate Sl. No of PPV&FRA : Certificate Sl. No. 000705
- Registration no. of PPV&FRA : 159 of 2013
- Originating centre : UPCR, Shahjahanpur
- Name of zone : North West Zone
- Name of Breeder/P.I. : Dr S.B. Singh
- States for which recommended : Punjab, Haryana, Rajasthan, Central and western Uttar Pradesh and Uttrakhand

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Reaction to disease & insect-pests
91.90	11.20	17.90	14.47	MR to red rot

Special characters : Good ratooner.

Salient features

CoS 96268 (Co 1158×Co 62198), an early maturing, high yielding and sustainable rich sugar elite variety of sugarcane with moderate resistance to red-rot and smut was evolved and released for general cultivation in eastern, central and western parts of Uttar Pradesh. It was also tested during the spring planting season of 1998-99 at zonal centres of different factory zones of central western and eastern tracts of Uttar Pradesh along with several other early genotypes using CoS 687 and CoJ 64 standards. CoS 96268 recorded the highest mean value across the locations for pol per cent in cane at 210 days (October 10.63%) and 300 days (January 14.47%). It is characterized by medium thick (2.3 cm), erect, solid, yellowish green and uniform stalks with prominent bud groove. CoS 96268 was superior to the

standard varieties CoS 687 and CoJ 64 in millable canes, stalk height and girth, cane weight, CCS% (Jan.), pol per cent in cane and significantly superior in cane (91.9 t/ha) and sugar yield (11.2 t/ha). It was also significantly superior to CoJ 64 in ratooning ability and gave cane yield of 79.6 t/ha and sugar yield of 9.16 t/ha in ratoon. The quality characters of CoS 96268 were also superior to CoJ 64 in ratoon crop.



31. Co 99004 (Damodar)

- Maturity group : Mid-late
- Parentage : Co 62175 X Co 86250
- Year of identification : 2006
- Year of release & notification : 2007
- Gazette notification no. : S.O. 122 (E)
- Certificate Sl. No of PPV&FRA : Certificate Sl. No. 000691
- Registration no. of PPV&FRA : 145 of 2013
- Originating centre : ICAR-SBI, Coimbatore
- Name of zone : Peninsular Zone
- Name of Breeder/P.I. : Dr K.V Bhagyalakshmi and Associates
- States for which recommended : Gujarat, Maharashtra, Kerala, Karnataka, interior of Tamil Nadu and Andhra Pradesh, Madhya Pradesh and Chattisgarh

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Fibre (%)	Reaction to disease & insect-pests
116.7	16.83	18.8	14.0	MR to red rot & wilt

Special characters : Tolerant to drought and salinity, tolerant to internode borer, good jaggery quality.

Salient features

This variety has early vigorous growth, shy flowering, tall, erect canes and without spines on leaf sheath. Resistant to red rot and tolerant to wilt and internode borer, tolerant to drought and salinity, midlate maturing variety with high cane yield. Recommended for cultivation in the Peninsular Zone- Gujarat, Maharashtra, Madhya Pradesh, Karnataka, Interior Andhra Pradesh, Tamil Nadu and Kerala.



32. CoPant 97222

- Maturity group : Mid-late
- Parentage : CoPant 84212 GC
- Year of identification : 2005
- Year of release & notification : 2007
- Gazette notification no. : S.O. 122 (E)
- Certificate Sl. No of PPV&FRA : Certificate Sl. No. 001000
- Registration no. of PPV&FRA : 150 of 2014
- Originating centre : GBPUA&T, Pantnagar
- Name of zone : North West Zone
- Name of Breeder/P.I. : Dr A.Q. Khan & Associates
- States for which recommended : Punjab, Haryana, Rajasthan, Central and western Uttar Pradesh and
Uttarakhand

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Fibre (%)	Reaction to disease & insect-pests
88.16	11.14	18.19	12.57	MR to red rot

Special characters

: Tolerant to drought, water logging & salinity.

Salient features

CoPant 97222 is a mid season maturing variety. It has been developed from general cross under open pollination on popular high sugar yielding variety CoPant 84212. This variety recorded 21-26 percent higher commercial cane sugar (CCS) yield (11.14 t/ha) than checks, CoS 767, CoS 8436 and Co 1148 (8.88-9.23 t/ha). It gave 12-24 percent higher cane yield (88.16 t/ha) than checks CoS 8436, CoS 767 and Co 1148 (71.33-78.27 t/ha). This variety ranked on top for commercial cane sugar and cane yields in 22 out of 25 trials/locations in North West Zone and thus consistently exhibited higher sugar and cane yield potential among test varieties and checks. It has 0.05 – 1.07 units higher sucrose percent juice (18.19%) than the checks. It was found moderately resistant to moderately susceptible under plug method and resistant to moderately resistant under nodal method of inoculation to red rot disease. This variety has been identified and notified for release in North West Zone by the Central Varietal Release Committee in 2007.



33. CoC 01061 (CoC (SC) 23)

- Maturity group : Early
- Parentage : 69A591 GC
- Year of identification : 2005
- Year of release & notification : 2006
- Gazette notification no. : S.O. 1572 (E)
- Certificate Sl. No of PPV&FRA : Certificate Sl. No. 000816
- Registration no. of PPV&FRA : 270 of 2013
- Originating centre : SRS, Cuddalore
- Name of zone : East Coast Zone
- Name of Breeder/P.I. : Dr R.S. Purushothaman and Associates
- States for which recommended : Coastal Tamil Nadu & Andhra Pradesh and Odisha

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Fibre (%)	Reaction to disease & insect-pests
111.00	14.18	17.40	14.10	MR to red rot

Special characters : Tolerant to drought.

Salient features

CoC 01061 is an early maturing, high yielding and high sugar variety developed at Sugarcane Research Station (TNAU), Cuddalore. CoC 01061 is derived as general cross from the pistil parent 69A591. The variety CoC 01061 recorded a mean cane yield of 111 tonnes /hectare (maximum : 142.85 t/ha) as compared to the checks viz., Co 6907 (105 t/ha) and Co 7508 (100 t/ha) in two plant and one ratoon crop. This variety has recorded an average increase of 5.07% and 10.89% of cane yield over the checks Co 6907 and Co 7508 respectively. Regarding the sugar yield, the variety CoC 01061 recorded a mean of 14.18 t/ha (maximum: 17.26 t/ha) which was 8.08% higher over the best check Co 6907 (13.12 t/ha) and 14.26% higher over the check Co 7508 (12.41 t/ha). The variety characterized by medium, tall growing, erect stalks with cylindrical internode, ovate shape medium size bud with flanges.



34. CoS 94270 (Sweta)

- Maturity group : Mid-late
- Parentage : Co 7704 X MS 6847
- Year of identification : 2003
- Year of release & notification : 2005
- Gazette notification no. : S.O. 122 (E)
- Certificate Sl. No of PPV&FRA : Certificate Sl. No. 000702
- Registration no. of PPV&FRA : 156 of 2013
- Originating centre : UPCSR, Shahjahanpur
- Name of zone : North West Zone
- Name of Breeder/P.I. : Dr S.B. Singh
- States for which recommended : Punjab, Haryana, Rajasthan, Central and western Uttar Pradesh and Uttrakhand

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
81.07	9.63	17.21	MR to red rot

Special characters : Excellent ratooner.

Salient features

CoS 94270 (Co 7704 x MS 6847) is a mid-late maturing variety evolved at Sugarcane Research Institute, Shahjahanpur. It has been released and notified by Central Varietal Release Committee in 2005 for general cultivation in North West Zone. This variety is characterized by medium, thick, solid, erect stalks with triangular buds, compact top and good growth. It possesses tolerance to red rot disease. It is excellent ratooner also. CoS 94270 performed well in Zonal Varietal Trails of North West Zone conducted under AICRP on Sugarcane. The variety recorded a mean cane yield of 81.07 t/ha as compared to CoS 767 (68.70) and Co 1148 (75.10 t/ha) in two plant and one ratoon crop. The sucrose % in juice in CoS 94270 was 17.21 (March) as compared to CoS 767 (17.98) and Co 1148 (17.42). CoS 94270 recorded the highest level of CCS t/ha (9.63) while the standards CoS 767 and Co 1148 could record only 8.51 and 8.98 t/ha, respectively. Due to higher cane and sugar yields (t/ha), excellent ratooner and moderately resistant to red rot, this variety has been popular in North West Zone.



35. CoSe 96234 (Rashmi)

- Maturity group : Early
- Parentage : CP 44-101 X Co 1148
- Year of identification : 2002
- Year of release & notification : 2004
- Gazette notification no. : S.O. 642 (E)
- Originating centre : SRS (UPCSR), Gorakhpur
- Name of zone : North Central Zone
- Name of Breeder/P.I. : Dr S.B. Singh and Associates
- States for which recommended : Eastern Uttar Pradesh, Bihar, West Bengal and Jharkhand

Key features

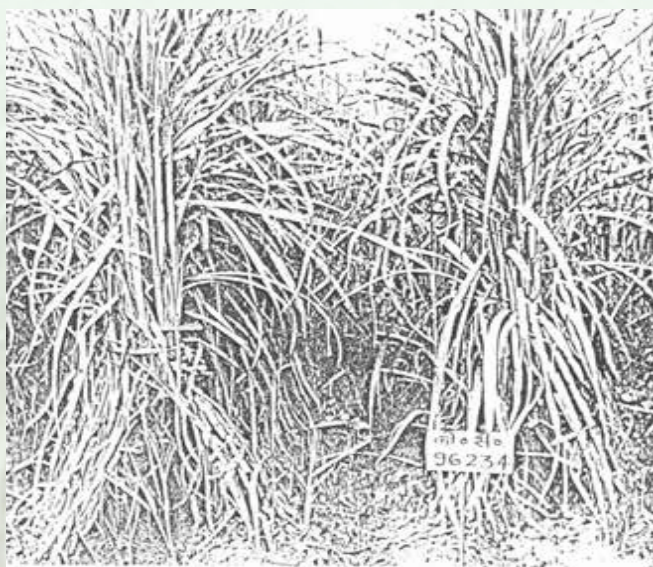
Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
64.10	8.04	17.90	MR to red rot , tolerant to major insect-pests.

Special characters

:Non-lodging, suitable for autumn, spring, early and late sown conditions.

Salient features

CoSe 96234 (CP 101 x Co 1148) is an early maturing high sugar variety evolved at Sugarcane Research Station, Gorakhpur. It has been released and notified by Central Varietal Release Committee in 2004 for North Central Zone. The variety is characterized by medium thick, erect stalks with round buds, open droopy top, early growth vigour and fast growing in nature. CoSe 96234 performed well in zonal varietal trails of North Central Zone conducted under the AICRP on Sugarcane. CoSe 96234 recorded 39.58%, 24.65% and 36.50% higher CCS t/ha as compared to the checks BO 99, BO 120 and CoS 687, respectively. It recorded also higher cane yield than the checks viz., BO 99 (34.38%), BO 120 (16.16%) and CoS 687 (36.34%). CoSe 96234 showed distinct superiority in sucrose per cent in juice over the checks BO 99 (3.82%), BO 120 (5.90%) and CoS 687 (2.75%) in two plant and one ratoon crop over the locations. Due to higher cane and sugar yields (t/ha), sucrose per cent in juice and broad spectrum high level of tolerance to red rot disease, this variety may replace BO 99, BO 120 and CoS 687 in North Central Zone.



36. CoSe 96436 (Jalpari)

- Maturity group : Midlate
- Parentage : BO 91 X Co 62198
- Year of identification : 2002
- Year of release & notification : 2004
- Gazette notification no. : S.O. 642 (E)
- Certificate Sl. No of PPV&FRA : Certificate Sl. No. 000720
- Registration no. of PPV&FRA : 174 of 2013
- Originating centre : GSSBRI (UPCSR), Seorahi
- Name of zone : North Central Zone
- Name of Breeder/P.I. : Dr S.B. Singh & Associates
- States for which recommended : Eastern Uttar Pradesh, Bihar, West Bengal and Jharkhand

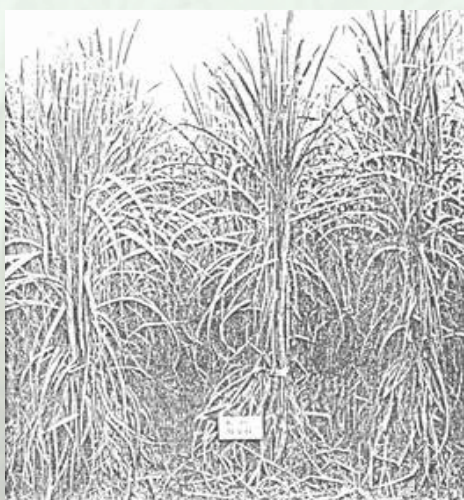
Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
67.12	8.29	17.73	MR to red rot

Special characters : Tolerant to water logging.

Salient features

CoSe 96436 (BO 91 x Co 62198) is a midlate maturing variety evolved at GSSBRI, Seorahi. It is released and notified by Central Varietal Release Committee in 2004 for general cultivation under water logged conditions in North Central zone. The variety is characterized by medium thick, erect stalks with oval buds, open droopy top, early growth viour and fast growing in nature. It is moderately resistant to red rot. Under natural conditions, it is tolerant to top and shoot borers. CoSe 96436 performed well in zonal varietal trials of North Central zone conducted under the AICRP on Sugarcane. A total number of 12 trials (9 plant + 3 ratoon) were conducted with elite sugarcane genotypes along with two checks viz., CoS 767 and BO 91 at Seorahi, Gorakhpur, Motipur, Pusa and Jeetpur in North Central Zone during 1999-2000. The variety recorded a mean cane yield of 67.12 t/ha as compared to the standards viz., CoS 767 (42.30 t/ha) and BO 91 (57.18 t/ha) in two plant and one ratoon crop. The sucrose per cent in juice in CoSe 96436 was 17.73 in the month of March as compared to the standards viz., CoS 767 (17.46) and BO 91 (18.25). CoSe 96436 recorded the highest level of CCS t/ha (8.29) while the standards CoS 767 and BO 91 could record only 5.16 and 7.13 t/ha, respectively. Due to higher cane and sugar yields (t/ha) and moderately resistance to red rot, this variety may replace CoS 767 and BO 91 in North Central Zone.



37. CoSe 95255 (Rachna)

- Maturity group : Early
- Parentage : Co 1158 X Co 62198
- Year of identification : 2002
- Year of release & notification : 2004..
- Gazette notification no. : S.O. 642 (E)
- Certificate Sl. No of PPV&FRA : Certificate Sl. No. 000701
- Registration no. of PPV&FRA : 155 of 2013
- Originating centre : UPCSR, Shahjahanpur
- Name of zone : North West Zone
- Name of Breeder/P.I. : Dr S.B. Singh
- States for which recommended : Punjab, Haryana, Rajasthan, Central and western Uttar Pradesh and Utrakhand

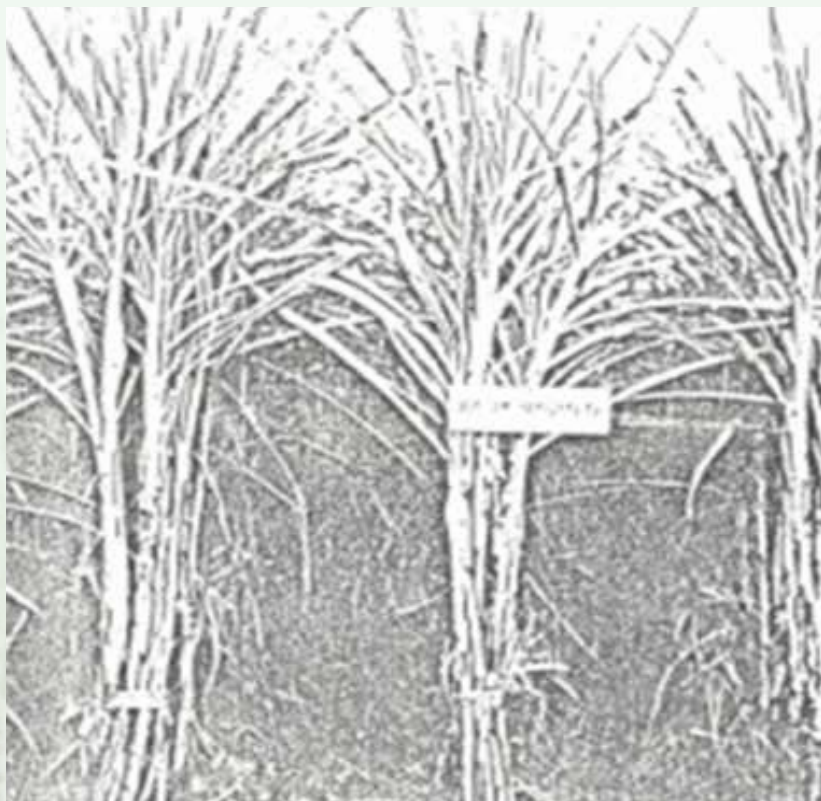
Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
70.5	8.45	17.5	MR to red rot

Special characters : Excellent ratooner.

Salient features

This is an early maturing variety, suitable for cultivation in the North West zone. The variety has given 13.69 per cent higher cane yield than the best check (CoPant 84211) and 11.18 per cent high CCS (t/ha) over the best check (CoJ 64). Rachna was found resistant and moderately resistant against red rot at 5 locations each.





Sl. No. : 000701

Application No. E19 34.13 12.354

Date of Filing: July 25, 2012

FORM-G2
(See rules 36 and 37)

GOVERNMENT OF INDIA, PLANT VARIETIES REGISTRY
CERTIFICATE OF REGISTRATION

Registration No. 155 of 2013

Whereas Indian Council of Agricultural Research, Kashi
Prayagraj, Uttar Pradesh, India has
has declared that he has developed CoSe 95255 (Rachna)
of Sugarcane (Saccharum S.) as check
plant variety / essentially distinct plant variety and that he is the true breeder thereof for the legal
representative or assignee of the true breeder and that he is entitled to a plant variety right on the said
variety, having regard to the provisions of the Protection of Plant Varieties and Farmers' Rights Act,
2001 and that there is no objection to the registration of plant variety in favour of him:

And whereas he has, by an application, requested that registration of plant variety / essentially
distinct plant variety may be allowed in his favor / said plant variety:

And whereas he has, by and in his application, particularly described the various distinctive
features and mentioned the dissemination of the said plant variety:

Now, these provisions that the above said applicant (including his legal representatives and assignees
or any of them) shall, subject to the provisions of the Protection of Plant Varieties and
Farmers' Rights Act, 2001 and the conditions specified in section 27 of the said Act, and to the
conditions and provisions specified by any other law for the time being in force, have the exclusive
right to produce, sell, market, distribute, import or export the variety for a term of 23 years
7 months & 23 days commencing from the 25 day of October,
2013, and of authorizing any other person to do so, subject to the conditions that the validity of this
registration is not guaranteed and that the fee prescribed for the continuance of this registration are duly paid.

In witness thereof, the Registrar has caused this registration to be sealed as of the
day of October, 2013


 Seal and Signature of the Registrar,
 Plant Varieties Registry
 Date of Grant: 07.10.2013

Note: The fee for maintenance of this registration, if it is to be maintained, will fall due
on 6 day of October, 2014 and on the same day in every year thereafter.

38. Co 94008 (Shyama)

- Maturity group : Early
- Parentage : Co 7201 X Co 775
- Year of identification : 2002
- Year of release & notification : 2004
- Gazette notification no. : S.O. 161 (E)
- Certificate Sl. No of PPV&FRA : Certificate Sl. No. 000506
- Registration no. of PPV&FRA : 172 of 2012
- Originating centre : ICAR-SBI, Coimbatore
- Name of zone : Peninsular Zone
- Name of Breeder/P.I. : Dr K.V Bhagyalakshmi and Associates
- States for which recommended : Gujarat, Maharashtra, Kerala, Karnataka, interior of Tamil Nadu and Andhra Pradesh, Madhya Pradesh and Chattisgarh

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Fibre (%)	Reaction to disease & insect-pests
120.00	15.51	18.02	13.58	14.00	MR to red rot, R to smut

Special characters :Tolerant to drought and salinity, good jaggery quality but high fibre content.

Summary

Co 94008 christened as “Shyama” was developed through selection from the progeny derived through hybridization of two proven parents viz., Co 7201 and Co 775. This variety was under Initial Varietal Trial of AICRP(S) of 1997-98 and under Advanced Varietal Trial during 1999-2001. This variety has recorded a mean cane yield of 120 t/ha compared to 101 t/ha in CoC 671 and 98 t/ha in Co 85004 recording 5 to 49% improvement over Co 85004 and 18 to 39% over CoC 671. Its quality was on par with the standard. The merit of this variety is mainly its adaptability to stress situations. It is MR to red rot and smut, MR to drought and tolerant to salinity. The variety has excellent field habits with erect, non-lodging, self detrashing, attractive, dark purple canes with broad dark green leaves without sheath spines. This variety recorded A1 quality jaggery and 14% fibre.



39. CoSe 95422 (Rasbhari)

- Maturity group : Early
- Parentage : BO 91 X Co 453
- Year of identification : 2001
- Year of release & notification : 2001
- Gazette notification no. : S.O. 1134 (E)
- Certificate Sl. No of PPV&FRA : Certificate Sl. No. 000714
- Registration no. of PPV&FRA : 168 of 2013
- Originating centre : GSSBRI (UPCSR), Seorahi
- Name of zone : North Central Zone
- Name of Breeder/P.I. : Dr S.B. Singh & Associates
- States for which recommended : Eastern Uttar Pradesh, Bihar, West Bengal and Jharkhand

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
67.80	8.29	17.66	MR to red rot

Special characters : Suitable for normal irrigation condition

Salient features

CoSe 95422 (BO 91 x Co 453) an early maturing and high sugar variety developed at GSSBRI, Seorahi. It has been released and notified by Central Varietal Release Committee in 2001 for general cultivation in North Central Zone. The variety is characterized by medium thick, solid, erect stalks with small oval buds. It is moderately resistant to red rot. Under natural condition, it is resistant to top and shoot borers. This variety performed well in zonal varietal trials of the North Central Zone conducted under the AICRP on Sugarcane. A total number of 15 trials (11 plant + 4 ratoons) were conducted with elite sugarcane genotype along with three checks viz., BO 99, BO 102 and CoS 687 at Gorakhpur, Seorahi, Pusa, Motipur, Bethuadahari and Jeetpur in the North Central Zone during 1998-2000. The sucrose % in juice in CoS 95422 was 17.66 as compared to BO 99(17.41), BO 102 (17.27) and CoS 687 (17.57). CoSe 95422 recorded the highest level of CCS t/ha (8.29) while the standards BO 99, BO 102 and CoS 687 could record only 5.53, 5.36 and 5.39 t/ha, respectively. On the basis of overall superiority, this variety was identified for release for general cultivation in North Central zone by Central Varietal Release Committee. Due to higher cane & sugar yield (t/ha) and moderate resistance to red rot, this variety may replace BO 99, BO 102 and CoS 687 in North Central Zone.



40. CoSe 92423 (Rajbhog)

- Maturity group : Mid-late
- Parentage : BO 91 X Co 453
- Year of identification : 2001
- Year of release & notification : 2001
- Gazette notification no. : S.O. 1134 (E)
- Certificate Sl. No of PPV&FRA : Certificate Sl. No. 000704
- Registration no. of PPV&FRA : 158 of 2013
- Originating centre : GSSBRI (UPCSR), Seorahi
- Name of zone : North Central Zone
- Name of Breeder/P.I. : Dr S.B. Singh & Associates
- States for which recommended : Eastern Uttar Pradesh, Bihar, West Bengal and Jharkhand

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
70.10	8.37	17.50	MR to red rot

Special characters : Excellent ratooner.

Salient features

CoSe 92423, a hybrid involving two cultivars viz., BO 91 x Co 453 has been developed through an inter-variety hybridization and selection programme at GSSBRI, Seorahi. It proved a good replacement of CoS 767 and BO 91 in Uttar Pradesh. The variety captured cane area 30-40% in many sugar factories which increased cane and sugar yield as well as sugar recovery in east U.P. as a whole in 1999-2000 crushing season. This variety has an excellent field habit of early growth vigour, fast growing and non-lodging nature. It has medium thick, splitless erect stalks with medium triangular eyes/buds. It is an excellent ratooner. This variety possesses broad spectrum and high level of resistance to red rot disease and tolerance to top and shoot borers also. Realizing its better performance as high yielding, midlate maturing variety over locations in North Central zone and moderately resistant to red rot, the variety is released for U.P. Bihar and West Bengal.



41. Co 89029 (Gandak)

- Maturity group : Early
- Parentage : BO 91 GC
- Year of identification : 2001
- Year of release & notification : 2001
- Gazette notification no. : S.O. 1134 (E)
- Certificate Sl. No of PPV&FRA : Certificate Sl. No. 000505
- Registration no. of PPV&FRA : 171 of 2012
- Originating centre : SBI, R.C Motipur (Bihar)
- Name of zone : North Central Zone
- Name of Breeder/P.I. : Dr B.K. Sahi and Associates
- States for which recommended : Eastern Uttar Pradesh, Bihar, West Bengal and Jharkhand

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
71.08	7.85	17.13	MR to red rot. Tolerant to top borer and shoot borer,

Special characters

: Tolerant to drought & water logging.

Salient features

A progeny of BO 91GC, Co 89029 is an early maturing variety suitable for planting in February-March (spring) as well as in September-October (autumn) in North Central Zone of India. This variety was developed at Sugarcane Breeding Institute Research Centre, Motipur in 1989. The variety Co 89029 was superior to standards for CCS (t/ha) and cane yield (t/ha) both in plant and ratoon crops. The mean cane yield of Co 89029 was 71.08 t/ha against 47.83, 51.43 and 51.81 t/ha of BO 99, BO 102 and CoS 687, respectively. The mean improvement in cane yield varies from 47.73 to 60.84% whereas the improvement in sugar yield (CCS) varies from 41.2 to 65.33% over 3 standards. The mean sucrose % in juice of Co 89029 was 17.13% against 16.94%, 16.78% and 17.53% of BO 99, BO 102 and CoS 687, respectively. The variety Co 89029 was superior to BO 99 (2.42%) and BO 102 (4.26%) for sucrose % in juice. Realizing its better performance as an early variety over locations in the North Central Zone and R/MR reaction to red rot. This variety has been identified & Notified for release in North Central Zone especially North Bihar in 2001 by Central Varietal Release Committee.



42. BO 128 (Pramod)

- Maturity group : Mid-late
- Parentage : BO 85 X BO 43
- Year of identification : 1999
- Year of release & notification : 2001
- Gazette notification no. : S.O. 92 (E)
- Certificate Sl. No of PPV&FRA : Certificate Sl. No. 000713
- Registration no. of PPV&FRA : 167 of 2013
- Originating centre : SRI (RAU), Pusa
- Name of zone : North Central Zone
- Name of Breeder/P.I. : Dr J.R.P. Singh and Dr S.S. Pandey
- States for which recommended : Eastern Uttar Pradesh, Bihar, West Bengal and Jharkhand

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Fibre (%)	Reaction to disease & insect-pests
69.64	8.58	17.60	14.22	14.20	Moderately Resistant to Red Rot, Wilt ,Smut and has low incidence of insect-pests

Special characters : Tolerant to water logging & salinity.

Salient features

This variety is similar to BO 91 in yield and quality and is moderately resistant to red rot. This variety is specifically identified for its suitability for water logged conditions. Hence, recommended for north central zone under midlate group for Bihar, Eastern U.P. and west Bengal. This variety has been replacement for BO 91, CoS 767 and Co 1148. The variety BO 91 was released in 1978 and served the growers for two decades. It has started showing degeneration. CoS 767 is not tolerant to water logging and saline soil conditions. Co 1148 has already become susceptible to red rot disease. In North Central Zone, about 30 per cent of the sugarcane area remains water logged during rainy season. Saline sodic soils are also available in Bihar. There was need to introduce sugarcane varieties tolerant to these abiotic stress conditions. BO 128 is suitable for both the situations. It is moderately resistant to red rot also.



43. CoS 91230 (Raseeli)

- Maturity group : Mid-late
- Parentage : Co 775 X Co 1148
- Year of identification : 1999
- Year of release & notification : 2000
- Gazette notification no. : S.O. 821(E)
- Certificate Sl. No of PPV&FRA : Certificate Sl. No. 000716
- Registration no. of PPV&FRA : 170 of 2013
- Originating centre : UPCSR, Shahjahanpur
- Name of zone : North West Zone
- Name of Breeder/P.I. : Dr R.S. Singh
- States for which recommended : Punjab, Haryana, Rajasthan, Central and western Uttar Pradesh and Uttrakhand

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
68.20	8.66	18.80	MR to red rot

Special characters

: Tolerant to top shoot and stalk borer.

Salient features

The variety is identified due to its improvement in quality over the check and its moderately resistant reaction to red rot. Hence, recommended for North West zone under mid-late group for Punjab, Haryana and western U.P. This variety CoS 91230 recorded the highest commercial cane sugar as compared to all the three standards viz., Co 1148, CoLk 8102 and CoS 767 across the locations and higher cane yields than the standard CoS 767 (3.47) over the locations. This variety exhibited the highest sucrose per cent in juice at 360 days as compared to all the checks i.e. Co 1148 (7.36), CoLk 8102 (7.30) and CoS 767 (5.17) over the locations.

Sl. No. 000716

Application No. ES-5434-12-369

Date of Filing: July 25, 2012

FORM-02
(New Entry to and In)

GOVERNMENT OF INDIA, PLANT VARIETIES REGISTRY
CERTIFICATE OF REGISTRATION

Registration No. 170 of 2013

Registered by: Indian Council of Agricultural Research, Patna
District: Patna, Bihar, India
Variety Name: Raseeli (CoS 91230)
Origin: U.P. (Central)

And whereas he has, by an application, requested that registration of plant variety / essentially derived plant variety may be allowed to him for the said plant variety;

And whereas he has, by and in his application, particularly directed the various distinctive characters and features of the said plant variety;

And, where possible, that the above said applicant (including his legal representatives and assigns) or any of them shall, subject to the provisions of the Protection of Plant Varieties and Farmers' Rights Act, 2001 and the conditions specified in section 27 of the said Act, and to the conditions and provisions specified by any other law for the time being in force, have the exclusive right to produce, sell, market, distribute, import or export the variety for a term of 18 months & 64 days from the date of 15th October 2012 and of authorizing any other person in this respect on the condition that the validity of this registration shall be maintained and that the provisions for the maintenance of this registration are duly paid.

And whereas the Registrar has issued this registration to be valid on the date of 15th October 2013

Registrar of the Registry
Plant Varieties Registry
Date of Grant: 08.10.2013

Note: The date for maintenance of this registration, if it is to be maintained, will fall on the 07th July 14, October 14 and on the same day in every year thereafter.

44. CoH 92201(Haryana-92)

- Maturity group : Early
- Parentage : Co 7704 GC
- Year of identification : 1999
- Year of release & notification : 2001
- Gazette notification no. : S.O. 92 (E)
- Certificate Sl. No of PPV&FRA : Certificate Sl. No. 000706
- Registration no. of PPV&FRA : 160 of 2013
- Originating centre : RRS (Uchani), Karnal
- Name of zone : North West Zone
- Name of Breeder/P.I. : Dr B.S. Chaudhary and Associates
- States for which recommended : Punjab, Haryana, Rajasthan, Central and western Uttar Pradesh and Utrakhand

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
70.00	8.56	18.20	MR to red rot, tolerant to GSD & smut

Special characters : Tolerant to drought condition.

Salient features

Sugarcane variety CoH 92201 was selected from the seedlings raised from the fluff of Co 7704 G.C. This variety was duly assessed for cane yield and quality at CCSHAU Regional Research Station, Karnal. The variety has been assessed for cane yield, quality and resistance to insect-pests and disease at seven locations i.e. Lucknow, Shahjahanpur, Pantnagar, Muzzafarnagar, SBI-RC Karnal, Uchani and Jalandhar under North West Zone. The variety is tall growing with thick solid cane and is resistant to red rot. Based on the data on cane yield and quality over the years and locations, the variety has emerged as superior one against standards and thus is a better substitute of CoJ 64, CoPant 84211 and CoS 687. The variety may fulfill the long awaited demand of the industry and the farmers as an early high sugared variety. It has already been released in Haryana State as Haryana-92 in early maturing group during July, 1999.



45. Co 91010 (Dhanush)

- Maturity group : Mid-late
- Parentage : Co 312 X Co 775
- Year of identification : 1999
- Year of release & notification : 2000
- Gazette notification no. : S.O. 821 (E)
- Certificate Sl. No of PPV&FRA : Certificate Sl. No. 000496
- Registration no. of PPV&FRA : 162 of 2012
- Originating centre : ICAR-SBI, Coimbatore
- Name of zone : Peninsular Zone
- Name of Breeder/P.I. : Dr K.V Bhagyalakshmi and Associates.
- States for which recommended : Gujarat, Maharashtra, Kerala, Karnataka, interior of Tamil Nadu and Andhra Pradesh, Madhya Pradesh and Chattisgarh

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Fibre (%)	Reaction to disease & insect-pests
116.00	15.46	19.10	12.10	MS to red rot, R to smut and rust, tolerant to major pests.

Special characters : Tolerant to drought.

Salient features

Co 91010 is an improved variety tested under AICRP(S) Peninsular Zone varietal trials. This was tested under IET during 1994-95 and under FET during 1996-1998. After considering the trials conducted at Coimbatore (Tamil Nadu), Sankeshwar (Karnataka), Padegaon, Kolhapur, Pravaranagar (Maharashtra) and Navsari (Gujarat), this variety was recommended for release in Peninsular Zone especially for northern Karnataka and Maharashtra. The variety is suitable for spring planting in the Peninsular Zone. Due to its higher cane and sugar yields (t/ha), this may be supplement to Co 740 and Co 7219 in Maharashtra, and Co 6304 in red rot free zones of Tamil Nadu.



46. CoPant 90223 (Pant 90223)

- Maturity group : Mid-late
- Parentage : BO 91 GC
- Year of identification : 1997
- Year of release & notification : 2000
- Gazette notification no. : S.O. 821(E)
- Certificate Sl. No of PPV&FRA : Certificate Sl. No. 000715
- Registration no. of PPV&FRA : 169 of 2013
- Originating centre : GBPUA&T, Pantnagar
- Name of zone : North West Zone
- Name of Breeder/P.I. : Dr A.Q. Khan & Associates
- States for which recommended : Punjab, Haryana, Rajasthan, Central and western Uttar Pradesh and Uttrakhand

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Reaction to disease & insect-pests
85.0	9.20	19.00	18.76	MR to red rot.

Special characters : Tolerant to water logging,

Salient features

CoPant 90223 was developed from open pollinated cross of cultivar BO 91 made at SBI, Coimbatore during 1982-83. It was selected from F1 progenies of the cross raised and evaluated at Pantnagar and proposed for multi-location testing under AICRP on Sugarcane in 1990. It was tested in zonal varietal trails in North West Zone during 1993-94, 1995-96 and 1996-97. CoPant 90223 recorded higher commercial cane sugar yield than checks, Co 1148, CoS 767 and CoLk 8102 on an average by 14.71, 10.84 and 10.84 percent, respectively over different trials in the North West Zone. This variety registered higher sugar recovery than checks on an average by 0.38 to 0.45 units at 11-12 month age. It is MR to Red rot disease under inoculated condition. Its canopy is green with broad leaves. It performs well under normal and stress conditions like, cold, drought and water logging. This variety was identified, released and notified for North Western zone.



47. Co 86249 (Bhavani)

- Maturity group : Mid-late
- Parentage : CoJ 64 X CoA 7601
- Year of identification : 1997
- Year of release & notification : 2000
- Gazette notification no. : S.O. 821 (E)
- Certificate Sl. No of PPV&FRA : Certificate Sl. No. 000501
- Registration no. of PPV&FRA : 167 of 2012
- Originating centre : ICAR-SBI, Coimbatore
- Name of zone : East Coast Zone
- Name of Breeder/P.I. : Dr B.V. Natarajan
- States for which recommended : Coastal Tamil Nadu & Andhra Pradesh and Odisha

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
104.20	12.85	18.70	MR to red rot & smut.

Special characters : Tolerant to water logging, and good ratooner.

Salient features

This variety was developed at the Sugarcane Breeding Institute Regional Centre, Kavvuru in 1997. Co 86249 (Midlate maturing) is a selection from the progeny of the cross CoJ 64 x CoA 7601. It was identified in 1997 and notified for release in year 2000 for cultivation in East Coast Zone comprising Coastal Tamil Nadu, Coastal Andhra Pradesh and Odisha. It recorded 104.20 t/ha of cane yield, 12.85 t/ha of commercial cane sugar (CCS) and 18.70% of sucrose. There was 2.87, 4.46 and 1.96% improvement respectively over the best check Co 6304. This variety was resistant to red rot, smut and rust and tolerant to all the major insect-pests. This variety is spreading fast in red rot prone areas due to its wider adoptability.



48. Co 8371 (Bhima)

- Maturity group : Mid-late
- Parentage : Co 740 X Co 6806
- Year of identification : 1997
- Year of release & notification : 2000
- Gazette notification no. : S.O. 821 (E)
- Certificate Sl. No of PPV&FRA : Certificate Sl. No. 000499
- Registration no. of PPV&FRA : 165 of 2012
- Originating centre : ICAR-SBI, Coimbatore
- Name of zone : Peninsular Zone
- Name of Breeder/P.I. : Dr K.V. Bhagyalakshmi and Associates
- States for which recommended : Gujarat, Maharashtra, Kerala, Karnataka, interior of Tamil Nadu and Andhra Pradesh, Madhya Pradesh and Chattisgarh

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
117.71	15.16	18.62	R to smut

Special characters : Tolerant to water logging and flooding.

Salient features

The variety Co 8371 (Bhima) is a midlate maturing variety. A hybrid involving to cultivars viz., Co 740 x Co 6806 has been developed at ICAR-SBI, Coimbatore. It was identified under AICRP(S) in 1997 and notified for release in year 2000 for cultivation in Peninsular Zone comprising the Gujarat, Maharashtra, Kerala, Karnataka, interior of Tamil Nadu and Andhra Pradesh, Madhya Pradesh and Chattisgarh. It was recorded 170.71 t/ha of cane yield, 15.16 t/ha of commercial cane sugar (CCS) and 18.62% of sucrose. This variety was resistant to smut and tolerant to water logging & flooding.



49. CoM 88121 (Krishna)

- Maturity group : Mid-late
- Parentage : Co 740 X Co 6806
- Year of identification : 1997
- Year of release & notification : 2000
- Gazette notification no. : S.O. 821 (E)
- Originating centre : CSRS, Padegaon
- Name of zone : Peninsular Zone
- Name of Breeder/P.I. : Dr S.B. Jadhav and Associates
- States for which recommended : Gujarat, Maharashtra, Kerala, Karnataka, interior of Tamil Nadu and Andhra Pradesh, Madhya Pradesh and Chattisgarh

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Fibre (%)	Reaction to disease & insect-pests
91.56	12.08	19.40	12.38	R to smut, susceptible early shoot borer and scale insects.

Special characters : Tolerant to drought and excellent jaggery quality.

Salient features

This is a midlate maturing variety selected from the cross Co 740 x Co 6806 at Central Sugarcane Research Station (MPKV), Padegaon. This variety was identified under All India Coordinated Research Project on Sugarcane in 1997 and notified for release in year 2000 for cultivation in Peninsular Zone comprising the Gujarat, Maharashtra, Kerala, Karnataka, interior of Tamil Nadu and Andhra Pradesh, Madhya Pradesh and Chattisgarh. This variety is well accepted by the sugarcane grower for its high yield, tolerant to drought and excellent jaggery quality.

The variety is rich in sucrose % (19.40) and having millable canes (107860/ha) which is higher by 10% than Co 740. Suitable for all the seasons and accepted by farmers & sugar factories. The variety is suitable for planting in three seasons i.e. suru, pre-season and adsali. Due to midlate maturing and hence having good sugar retaining capacity, which helps the sugar industry to increase sugar production by improving recovery during later part of crushing season. In ratoon, it gives higher cane yield with CCS yield and moderately resistant to smut. Since sparse flowering, it retains sugar for longer period like Co 740. Therefore, it is supplementary and good substitute of Co 740 and Co 7219, respectively.

50. Co 87263 (Sarayu)

- Maturity group : Early
- Parentage : Co 313 X Co 6806
- Year of identification : 1994
- Year of release & notification : 2000
- Gazette notification no. : S.O. 821 (E)
- Certificate Sl. No of PPV&FRA : Certificate Sl. No. 000503
- Registration no. of PPV&FRA : 169 of 2012
- Originating centre : SBI, Coimbatore
- Name of zone : North Central Zone
- Name of Breeder/P.I. : Dr B.K. Sahi
- States for which recommended : Eastern Uttar Pradesh, Bihar, West Bengal and Jharkhand

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
66.32	8.04	17.40	MR to red rot & smut

Special characters : Tolerant to shoot borer, drought & water logging.

Salient features

This is an early maturing variety selected from the cross Co 312 x Co 6806. The variety Co 87263 is a well adopted for North Central Zone comprising of Eastern U.P. and Bihar. This variety comes under high sugar category. Co 87263 recorded 66.32 t/ha cane yield which was 13.00% higher over the best check CoS 687. It also recorded 8.04 t/ha of commercial cane sugar (CCS) which was 14.53 percent higher and sucrose percent in juice at 300 DAP was 17.40 which was 1.04 percent higher over the best check BO 102. This variety is resistant to red rot and smut and early shoot borer. It is suitable in areas with early drought and late water logging. It is higher suitable for rainfed conditions and water logged situation and also for low input situations. This variety is medium thick, purple canes with green tinge, no splits, bud grooves present big buds, many soft spines on green leaf sheath, ligular process present. Co 87263 has been identified and notified for release by Central Varietal Release Committee (CVRC) during 2000 for general cultivation in North Central Zone. This variety has been widely adopted by the cane growers due to being tolerant to drought and water logging.



51. Co 87268 (Moti)

- Maturity group : Early
- Parentage : BO 91 X Co 62399
- Year of identification : 1994
- Year of release & notification : 2000
- Gazette notification no. : S.O. 821 (E)
- Certificate Sl. No of PPV&FRA : Certificate Sl. No. 000500
- Registration no. of PPV&FRA : 166 of 2012
- Originating centre : SBI, R.C. Motipur (Bihar)
- Name of zone : North Central Zone
- Name of Breeder/P.I. : Dr B.K. Sahi and Associates
- States for which recommended : Eastern Uttar Pradesh, Bihar, West Bengal and Jharkhand

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
85.00	7.92	17.51	MR to red rot R to smut & rust. Tolerant to all major insect-pests.

Special characters : Suitable for drought & water logged areas.

Salient features

This variety was identified under early maturity group and is selected from the cross of BO 91 x Co 62399. This variety recorded 85.00 t/ha cane yield which was 18.55 percent higher, 7.92 t/ha of commercial cane sugar (CCS) which was 12.82 percent higher and sucrose percent in juice at 300 DAP was 17.51 which was 1.68 percent higher, over the best check CoS 687. This variety is moderately resistant to red rot, resistant to smut and tolerant to all major insect-pests. Its juice quality is very good. This variety is suitable for drought and water logging areas. This variety has greenish yellow canes, small buds, bud cushion and bud groove present few hard spines on the leaf sheath, ligular process present. The variety Co 87268 has been identified in 1994 and notified for release in North Central Zone by Central Varietal Release Committee in North Central Zone in year 2000 for general cultivation. This variety has been widely accepted and liked by the sugarcane farmers due to its high yield and quality.



52. Co 86032 (Nayana)

- Maturity group : Mid-late
- Parentage : Co 62198 X CoC 671
- Year of identification : 1994
- Year of release & notification : 2000
- Gazette notification no. : S.O. 821 (E)
- Certificate Sl. No of PPV&FRA : Certificate Sl. No. 000498
- Registration no. of PPV&FRA : 164 of 2012
- Originating centre : ICAR-SBI, Coimbatore
- Name of zone : Peninsular Zone
- Name of Breeder/P.I. : Dr K.V Bhagyalakshmi & Associates
- States for which recommended : Gujarat, Maharashtra, Kerala, Karnataka, interior of Tamil Nadu and Andhra Pradesh, Madhya Pradesh and Chattisgarh

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
102.00	14.44	20.10	R to smut, field tolerant to red rot. MR to wilt

Special characters : Tolerant to drought





TR No. : 000498
 Application No: E3 SA 12 27
 Date of Filing: 10th February, 2012.

FORM O-2
 (See rules 36 and 37)
 GOVERNMENT OF INDIA, PLANT VARIETIES REGISTRY
 CERTIFICATE OF REGISTRATION

Registration No. 164 of 2012

Whereas, Indian Council of Agricultural Research, Krishi Bhawan, Dr. Rajendra Prasad Road, New Delhi - 110016, India has developed Nayana (Co 86032) of Sugarcane (Bambusa L.) of Peninsular plant variety / essentially-distinct plant variety, and that he is the true breeder thereof (or the legal representative or assignee of the true breeder) and that he is entitled to a plant variety right on the said variety, having regard to the provisions of the Protection of Plant Varieties and Farmers' Rights Act, 2001 and that there is no objection to the registration of plant variety in favour of him.

And whereas he has, by an application, requested that registration of plant variety / essentially-distinct plant variety may be allowed to him for the said plant variety;

And whereas he has, by and in his application, particularly described the various distinctive features and mentioned the dissemination of the said plant variety;

Now, these presents that the above said applicant (including his legal representative and assignee or any of them) shall, subject to the provisions of the Protection of Plant Varieties and Farmers' Rights Act, 2001 and the conditions specified in section 87 of the said Act, and to the conditions and provisions specified by any other law for the time being in force, have the exclusive right to produce, sell, market, distribute, import or export the variety for a term of 02 years from the 10th day of October, 2012, and of authorising any other person to do so, subject to the conditions that the validity of this registration is not guaranteed and that the fee prescribed for the continuance of this registration is duly paid.

In witness thereof, the Registrar has caused this registration to be sealed as of the 16th day of October, 2012.


 Seal and Signature of the Registrar,
 Plant Varieties Registry
 Date of Grant: 16-10-2012

Note: The fee for maintenance of this registration, if it is to be maintained, will fall due on 15th day of October, 2013 and on the same day in every year thereafter.

53. Co 87025 (Kalyani)

- Maturity group : Mid-late
- Parentage : Co 7704 X Co 62198
- Year of identification : 1994
- Year of release & notification : 2000
- Gazette notification no. : S.O. 821 (E)
- Certificate Sl. No of PPV&FRA : Certificate Sl. No. 000497
- Registration no. of PPV&FRA : 163 of 2012
- Originating centre : ICAR-SBI, Coimbatore
- Name of zone : Peninsular Zone
- Name of Breeder/P.I. : Dr K.V Bhagyalakshmi and Associates
- States for which recommended : Gujarat, Maharashtra, Kerala, Karnataka, interior of Tamil Nadu and Andhra Pradesh, Madhya Pradesh and Chattisgarh

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
78.20	12.80	18.30	R to smut, field tolerant to red rot

Special characters : Tolerant to drought and water logging.

Salient features

A mid-late maturing high yielding, high sugar, erect variety developed at Sugarcane Breeding Institute, Coimbatore. This variety is a selection from the cross Co 7704 x Co 62198. It was identified in 1994 and notified for release in year 2000 by the CVRC for Peninsular Zone comprising of Tamil Nadu, Maharashtra, Gujarat and Karnataka. In areas, where lodging is a problem, this variety suits well under mechanized harvesting of cane. This variety is erect, suitable for water logged areas and normal irrigated condition. This has very erect, tall cane, non-lodging suitable for spring planting, sparse to nil flowering. It has initial fast growth. This midlate variety has 78.20 t/ha cane yield, 12.80 t/ha commercial cane sugar (CCS) and 18.30% sucrose. This variety is resistant to smut and field resistant to red rot disease. This variety is accepted by sugarcane farmers for its non lodging habit, excellent field habits and its resistance to abiotic stresses.



54. Co 87044 (Uttara)

- Maturity group : Mid-late
- Parentage : Co 62198 X CoC 671
- Year of identification : 1994
- Year of release & notification : 2000
- Gazette notification no. : S.O. 821 (E)
- Certificate Sl. No of PPV&FRA : Certificate Sl. No. 000502
- Registration no. of PPV&FRA : 168 of 2012
- Originating centre : ICAR-SBI, Coimbatore
- Name of zone : Peninsular Zone
- Name of Breeder/P.I. : Dr K.V Bhagyalakshmi and Associates
- States for which recommended : Gujarat, Maharashtra, Kerala, Karnataka, interior of Tamil Nadu and Andhra Pradesh, Madhya Pradesh and Chattisgarh

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
101.00	13.54	18.30	MS to red rot, MR to smut, R to rust, tolerant to major pests.

Special characters : Moderately resistant to drought.

Salient features

This variety was developed at Sugarcane Breeding Institute, Coimbatore from the progenies of Co 62198 x CoC 671 and identified in year 1994. It was notified for release in year 2000 for Peninsular Zone. It is high yielding, high sugared mid-late variety. It has thick, heavy, greenish yellow canes, cylindrical zig-zag internodes and small buds. It is moderately susceptible to red rot. It is moderately resistant to drought. This variety yielded about 101.00 t/ha and 13.54 t/ha of cane yield and commercial cane sugar respectively. The mean sucrose content was 18.30%. This variety is very suitable for black and red soils under irrigated condition. This variety has been widely adopted by the cane growers due to high yield and also liked by the sugar factories in Gujarat and Tamil Nadu.



55. Co 85004 (Prabha)

- Maturity group : Early
- Parentage : Co 6304 X Co 740
- Year of identification : 1991
- Year of release & notification : 2000
- Gazette notification no. : S.O. 821 (E)
- Certificate Sl. No of PPV&FRA : Certificate Sl. No. 000504
- Registration no. of PPV&FRA : 170 of 2012
- Originating centre : ICAR-SBI, Coimbatore
- Name of zone : Peninsular Zone
- Name of Breeder/P.I. : Dr K.V Bhagyalakshmi and Associates
- States for which recommended : Gujarat, Maharashtra, Kerala, Karnataka, interior of Tamil Nadu and Andhra Pradesh, Madhya Pradesh and Chattisgarh

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
90.50	12.59	19.50	MR to smut

Special characters : Good ratooner

Salient features

In Co 85004 (Prabha), commercial cane sugar was higher in Co 85004 as compared to the checks Co 6415, Co 7219 and CoC 671. Overall increase was 15.7%, 11.2% and 0.6% compared to the checks Co 6415, Co 7219 and CoC 671, respectively. Ratoon sugar yield of Co 85004 was much better than the plant crop. Co 85004 had higher yield compared to the check varieties. The increase was 9.3% over Co 6415, 4.6% over Co 7219 and 1.8% over CoC 671. Compared to the checks, ratoon yield was very good in Co 85004. It was 11 tonnes higher than Co 6415, 8 tonnes higher than Co 7219 and 5 tonnes higher than CoC 671. Between plant and ratoon crops, the yield difference was quite narrow. Co 85004 recorded good quality, 1.3 units higher than Co 6415 and 0.87 units higher than Co 7219. However, the sucrose content (%) decreased by 0.35 unit compared to CoC 671. In the ratoon, the trend remained the same with better quality than Co 6415 and Co 7219 and comparable to CoC 671. But in the 2nd Plant, Co 85004 showed higher sucrose content (%) than all the 3 checks.



II. Identified Sugarcane Varieties under AICRP on Sugarcane

56. CoLk 09204 (Ikshu-3)

- Maturity group : Mid-late
- Parentage : CoLk 8102 X CoJ 64
- Year of identification : 2017
- Originating centre : ICAR-IISR, Lucknow
- Name of zone : North West Zone
- Name of Breeder/P.I. : Dr J. Singh
- States for which recommended : Haryana, Punjab, Rajasthan, Uttarakhand, Central and western Uttar Pradesh

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Reaction to disease & insect-pests
82.80	9.30	17.00	13.20	R-MR to red rot & smut and LS to major insect-pests.

Special characters : Excellent performance under water logged condition.

Salient features

CoLk 09204 has given excellent performance in the AICRP(S) Varietal Trials (averaged over 8-9 locations in the North West Zone) with commercial cane sugar and cane yields of 9.30 and 82.80 t/ha, respectively. The variety has shown an improvement of 19.83%, 13.11% and 9.96% for cane yield over the standard varieties CoS 8436, CoPant 97222 and CoS 767, respectively. It has shown an improvement of 11.51%, 5.32% and 5.20% for CCS yield over the standard varieties CoS 8436, CoS 767 and CoPant 97222, respectively. For sucrose% in juice at harvest (360 days), CoLk 09204 recorded an average value of 17.00% for two plant and one ratoon crop across 8 locations in the North West Zone which is comparable and on par to the best adopted standard CoS 767 (17.10%). For Pol% cane, a character which accounts for fibre content and sucrose%, CoLk 09204 showed an average value of 13.20% which is comparable and on par to the best adopted standard CoS 767 (13.40%). The variety CoLk 09204 is lodging tolerant and suitable for multiple ratooning with lush green top at maturity. This provides additional benefit in the form of green fodder to the farmers.



57. UP 09453

- Maturity group : Early
- Parentage : Gr1 28/29 X CoSe 92423
- Year of identification : 2017
- Originating centre : SRS, Gorakhpur (UPCSR, Shahjahanpur)
- Name of zone : North Central & North Eastern Zones
- Name of Breeder/P.I. : Dr Rana D.P. Singh
- States for which recommended : Eastern Uttar Pradesh, Bihar, West Bengal, Jharkhand and Assam

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Reaction to disease & insect-pests
74.74	8.76	17.90	13.23	MR to major diseases and LS to major pests.

Special characters : Better suited for water logged condition

Salient features

The early sugarcane variety UP 09453 was developed by cross of Gr1 28-92 x CoSe 92423 through raising of seedlings at Sugarcane Research Station, Gorakhpur. The early sugarcane variety UP 09453 was on top for CCS (8.76 t/ha) in pooled mean of four locations/centres viz., Gorakhpur, Seorahi, Pusa and Bethuadahari. The pooled mean data of all the locations/centres revealed that the performance of early sugarcane variety UP 09453 was on top for CCS(11.80%) in the zone. The sugarcane variety UP 09453 was on top for sucrose (17.90%) in pooled mean of all six locations/centres viz., Gorakhpur, Seorahi, Pusa, Motipur, Bethuadahari and Buralikson.



58. CoLk 11206 (Ikshu-4)

- Maturity group : Mid-late
- Parentage : CoPant 90223 x Co 60198
- Year of identification : 2017
- Originating centre : ICAR-IISR, Lucknow
- Name of zone : North West Zone
- Name of Breeder/P.I. : Dr J. Singh & Associates
- States for which recommended : Punjab, Haryana, Uttarakhand, Rajasthan, Central & Western parts of Uttar Pradesh

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Reaction to disease & insect-pests
91.50	11.20	17.65	13.42	R to MR for red rot and smut. LS to major insect-pests.

Special characters : Non-lodging, non-flowering, better ratooning and nutrient responsive. Good performance under moisture stress condition.

Salient features

CoLk 11206 (Ikshu-4), a mid-late variety, selected from the progeny of the bi-parental cross (CoPant 90223 x Co 62198) and subsequently evaluated in clonal generations. CoLk 11206 was proposed and accepted as mid-late maturing variety for multi-location testing in the North West Zone of the AICRP on Sugarcane during 2011. CoLk 11206 has given excellent performance in the AICRP(S) Varietal Trails with commercial cane sugar (CCS) and cane yields of 11.20 and 91.50 t/ha, respectively. For sucrose % in juice at harvest (360 days), CoLk 11206 recorded an mean value of 17.65% for two plant crops and one ratoon crop across 8 locations in the North West Zone which was better and on par to the best adopted standard CoS 767 (17.34%). For Pol% cane, a character which account for fibre content and sucrose%, CoLk 11206 showed an mean value of 13.42% which was comparable and on par to the best adopted standard CoS 767 (13.28%). With respect to resistance for red rot, CoLk 11206 recorded resistant to moderately resistant reaction against the two prevailing races Cf08 and Cf 09. It recorded less susceptibility (LS) reaction to major insect-pests of the subtropical zone.

LS : least susceptible



59. CoLk 11203 (Ikshu-5)

- Maturity group : Early
- Parentage : CoLk 8102 x Co 1148
- Year of identification : 2017
- Originating centre : ICAR-IISR, Lucknow
- Name of zone : North West Zone
- Name of Breeder/P.I. : Dr Raman Kapur & Associates
- States for which recommended : Punjab, Haryana, Uttarakhand, Rajasthan, Central & Western parts of Uttar Pradesh

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Reaction to disease & insect-pests
81.97	10.52	18.41	13.44	Resistant to red rot & smut. LS to main insect-pests.

Special characters

: Non-lodging, non-flowering, better ratooning and nutrient responsive.

Salient features

Early maturing variety CoLk 11203 is the result of concerted efforts towards breeding for high yielding and high sugar early maturing sugarcane varieties. It has an improved IISR variety ‘CoLk 8102’ as its female parent and ‘Co 1148’, as its male parent. It has been selected from the progeny of the bi-parental cross (CoLk 8102 x Co 1148) and subsequently evaluated in clonal generations. The variety showed an increase of 17.94% for CCS t/ha over the standard variety CoJ 64. This variety exhibited an improvement of 15.39% for cane yield over the standard variety CoJ 64. For sucrose% in juice at harvest, CoLk 11203 recorded an average value of 18.41%. For Pol% cane, a character which account for fibre content and sucrose % CoLk 11203 showed an average value of 13.44% which was comparable and on par to the standards CoJ 64 (13.48%) and Co 02138 (13.47%). The variety CoLk 11203 is a good ratooner with the ratoon crop giving approximately 26% increase in cane yield over the standard CoJ 64. This variety is an early maturing, high sugar and red rot resistant, suitable for cultivation in the North West Zone.



60. CoA 11321

- Maturity group : Early
- Parentage : 80R 41 GC
- Year of identification : 2017
- Originating centre : RARS, Anakapalle
- Name of zone : East Coast Zone
- Name of Breeder/P.I. : Dr M. Charumathi & Associates
- States for which recommended : Coastal Tamil Nadu & Andhra Pradesh and Odisha

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Reaction to disease & insect-pests
111.31	13.59	17.16	13.73	Resistant to red rot, susceptible to smut & wilt. Least susceptible to early shoot borer scale insect and HS to inter nodal borer.

Special characters : Suitable for assured irrigated, limited irrigated, late planted rainfed and water logged conditions.

Salient features

The variety CoA 11321 was developed from 80R 41GC. It is a thick yellowish green cane with black encrustation, cylindrical internodes with straight alignment. Medium size bud, round in shape, bud cushion and bud groove absent. Medium leaf length and leaf width, green in colour with open tip drooping. Leaf sheath is green with purple blotches and easily trashable in nature. The variety CoA 11321 recorded a mean cane yield of 111.31 t/ha when tested in two plant crops and one ratoon crop (2014-15 to 2015-16) compared to the zonal standards Co 6907 (92.41), CoC 01061 (99.42 t/ha) and CoA 92081 (99.01 t/ha). The per cent increase in cane yield in CoA 11321 was 20.87 (Co 6907), 12.03 (CoC 01061) and 12.49 (CoA 92081) over the standards when tested in East Coast Zone in fifteen trials conducted in plant and ratoon crops. The variety recorded 1st rank in 11 trials and 2nd rank in four trials.



61. CoPb 08212 (CoPb 92)

- Maturity group : Early
- Parentage : Co 89003 PC
- Year of identification : 2016
- Originating centre : PAU RRS, Kapurthala
- Name of zone : North West Zone
- Name of Breeder/P.I. : Dr K.S. Thind & Associates
- States for which recommended : Haryana, Punjab, Rajasthan, Uttarakhand, Central and western Uttar Pradesh

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Reaction to disease & insect-pests
79.07	9.84	18.03	13.86	MR to red rot and smut and R to wilt

Special characters : Good juice quality and tolerant to lodging.

Salient features

CoPb 08212 is a clonal selection from the PC population of Co 89003. Mean cane yield of CoPb 08212 was 17.17 % and 10.83% higher than zonal and local check CoJ 64 in Plant I and Plant II crops, respectively. For ratoon crop yields, it has an advantage of 9.61% over standard CoJ 64. The overall mean (weighted) cane yield of CoPb 08212 was 12.67% higher than the standard CoJ 64 in 24 research trials. The overall mean (weighted) CCS(t/ha) of CoPb 08212 was 14.15% higher than the standard CoJ 64 in 24 research trials. CoPb 08212 matures in 270-280 days and has 1.81% higher sucrose (weighted mean) over the standard CoJ 64.



62. CoP 09437

- Maturity group : Mid-late
- Parentage : BO 55 x BO 43
- Year of identification : 2016
- Originating centre : SRI, Pusa, Bihar
- Name of zone : North Central & North Eastern Zones
- Name of Breeder/P.I. : Dr Balwant Kumar and Associates
- States for which recommended : Eastern Uttar Pradesh, Bihar, West Bengal, Jharkhand and Assam

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Fibre (%)	Reaction to disease & insect-pests
77.68	9.41	17.60	13.13	13.28	Resistant to red rot, smut & wilt

Special characters : Tolerant to lodging.

Salient features

A high yielding midlate maturing sugarcane variety CoP 09437 was developed from BO 91 GC at Sugarcane Research Institute, DRPCAUI, Pusa. The genotype was initially selected from seedling population and evaluated for field and quality parameters in different clonal generations. The variety was accepted for multilocation testing under AICRP(S) trials of North Central and North Eastern Zones of India. The variety CoP 09437 exhibited an average cane yield of 77.68 t/ha which was 15.37% and 17.66% higher than the standard varieties CoP 9301 and BO 91, respectively. This variety was identified for commercial cultivation in North Central and North Eastern Zones. This variety is medium thick, zig-zag alignment, cylindrical green internodes with ivory marks and swollen wax band, triangular ovate bud groove on internode, light bud cushion, whitish green node, medium broad leaf green leaf sheath, medium width leaves and ascending carriage. It is tolerant to water logging as well as drought condition and suitable for all types of soils of North Central & North Eastern Zones.



63. CoC 08336

- Maturity group : Early
- Parentage : C 81129 GC
- Year of identification : 2014
- Originating centre : SRS, Cuddalore
- Name of zone : East Coast Zone
- Name of Breeder/P.I. : Dr R. Latha & Associates
- States for which recommended : Coastal Tamil Nadu & Andhra Pradesh and Odisha

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Fibre (%)	Reaction to disease & insect-pests
110.40	13.12	17.44	13.83	13.16	MR to red rot and less susceptible to borers

Special characters : High quality cane, high tillering variety, good ratooner and suitable for mechanical harvesting.

Salient features

The sugarcane variety CoC 08336 was selected from the seedlings of the general collection of C 81129 which was the clonal selection of Co 6304 GC. The pedigree showed that the sugarcane varieties with high cane yield and quality viz., Co 419, Co 605 and Co 453 were some of its progenitors. The pooled mean of all the three trials across locations was found to be the maximum in CoC 08336 for cane yield (110.40 t/ha) and CCS (13.12 t/ha). The percent increase over the best standard CoA 92081 for cane yield and CCS t/ha was 5.14 and 8.61, respectively. The sucrose per cent in juice and pol% cane of CoC 08336 was 17.44 and 13.83, respectively with an increase of 3.07% and 2.60% over the best standard CoA 92081. The variety had excellent agronomic characteristics of high tillering, tall, thick and erect canes, non flowering, easy detashing and leaf sheath is non spiny. This variety is moderately resistant to red rot disease. It has fibre content of 13.16% and hence amenable for cogeneration of power.



64. PI 07131

- Maturity group : Early
- Parentage : Co 86032 x PI 97-3028
- Year of identification : 2014
- Originating centre : SRDC, EID Parry, Pugalur
- Name of zone : Peninsular Zone
- Name of Breeder/P.I. : Dr. S. Rajeswari & Associates
- States for which recommended : Gujarat, Maharashtra, Kerala, Karnataka, interior of Tamil Nadu and Andhra Pradesh, Madhya Pradesh and Chattisgarh

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Fibre (%)	Reaction to disease & insect-pests
102.05	13.51	18.61	14.66	13.14	R to red rot

Special characters : Non-flowering and good ratooner.

Salient features

The variety is high yielding, high sugar variety performed well in agro-climatic conditions of Peninsular zone. It has performed well at most of the centres in Peninsular zone. It has shown top performance for cane yield at Coimbatore, Pugalur, Pune, Padegaon, Thiruvalla, Navsari and Pravaranagar. PI 07131 has ideal field characters like long internodes, thick canes in attractive purple colour, vigorous growth with dark green foliage. It is moderately resistant to red rot and smut diseases. The canes are self detraching in nature with deciduous spines.



65. CoA 08323 (Buddhi)

- Maturity group : Early
- Parentage : Co 8371 x Co T 8201
- Year of identification : 2013
- Originating centre : RARS, Anakapalle
- Name of zone : East Coast Zone
- Name of Breeder/P.I. : Dr. M. Charumathi & Associates
- States for which recommended : Coastal Tamil Nadu & Andhra Pradesh and Odisha

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Fibre (%)	Reaction to disease & insect-pests
106.30	11.76	16.41	13.25	15.29	R to red rot & HS to smut.

Special characters

:Suitable for irrigated, limited irrigated and rainfed situations. Good ratooner and non lodging clone.

Salient features

The promising variety CoA 08323 was developed from Co 8371 x CoT 8201 at Regional Agricultural Research Station, Anakapalle. The variety recorded mean cane yield (106.30 t/ha) compared to standards Co 6907 (94.80 t/ha), CoC 01061 (103.19 t/ha) and CoA 92081 (105.00 t/ha). The percent increase of cane yield in CoA 08323 was 12.13, 3.01 and 1.24 over Co 6907, CoC 01061 and CoA 92081, respectively. The variety recorded CCS yield of 11.76 t/ha and found to be superior over popular standard Co 6907 (10.53 t/ha). Pol percent cane recorded by the variety CoA 08323 was 13.25 where as the standards recorded higher pol per cent cane. The promising variety recorded higher jaggery yield when compared to the standards. Erect growth habit and self detrashing characters of the variety was indicative for its suitability to mechanical harvesting.



66. CoLk 07201 (Ikshu-1)

- Maturity group : Early
- Parentage : CoLk 8102 x CoS 96260
- Year of identification : 2013
- Originating centre : ICAR-IISR, Lucknow
- Name of zone : North West Zone
- Name of Breeder/P.I. : Dr A.D. Pathak and Associates
- States for which recommended : Punjab, Haryana, Rajasthan, Central and Western Uttar Pradesh and Uttrakhand

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Reaction to disease & insect-pests
84.27	8.72	16.34	12.32	R – MR to red rot, tolerant to top borer

Special characters : Good ratooning ability.

Salient features

This variety is an early maturing genotype with excellent ratooning ability, a rare combination of the two desirable attributes as high sugar yield and red rot resistance. It is tolerant to top borer. This variety is high yielding with cane yield of 84.27 t/ha in plant crop and 67.73 t/ha in ratoon crop. Overall yield improvement was 18.78 percent over CoJ 64 and 11.8 percent over CoPant 84211. In plant crop, yield improvement was 17.80% to 21.68% over the checks, while yield improvement in ratoon was 15.39% and 16.68% over CoJ 64 and CoPant 84211, respectively. This variety exhibited improvement in commercial cane sugar yield in plant in ratoon crops with an overall improvement of 9.27% and 9.83% over CoJ 64 and CoPant 84211, respectively. In plant crop the improvement was higher to the tune of 16.05%.



67. Co 06034 (Karan-11)

- Maturity group : Mid-late
- Parentage : Co 8371 x Co 8347
- Year of identification : 2013
- Originating centre : ICAR-SBI, Coimbatore
- Name of zone : North West Zone
- Name of Breeder/P.I. : Dr. Bakshi Ram and Associates
- States for which recommended : Punjab, Haryana, Rajasthan, Central and Western Uttar Pradesh and Uttrakhand

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Reaction to disease & insect-pests
75.41	9.59	18.45	14.79	R to red rot and smut

Special characters : Non-lodging and non-flowering variety. Suitable for growing under medium and high fertile soil in North West Zone under irrigated condition.

Salient features

Co 06034 is a midlate maturing sugarcane variety. It recorded higher cane and sugar yields than the standard varieties in North Western Zone of India. On the basis of superiority of Co 06034 for yield and quality, it is identified for release in North West Zone comprising the states of Haryana, Punjab, Rajasthan, Western and Central Uttar Pradesh and Uttarakhand. If grown on large scale, cane growers in the region will get higher cane yield and sugar factories will get higher sugar yield. Co 06034 is a good substitute for the replacement of old midlate varieties like CoS 8436 and CoS 767 etc. in the zone.



68. CoN 05071 (Gujarat Sugarcane 5)

- Maturity group : Early
- Parentage : CoJn 86310 x Co 86249
- Year of identification : 2012
- Originating centre : MSRS, Navsari
- Name of zone : Peninsular Zone
- Name of Breeder/P.I. : Dr D.U. Patel & Associates
- States for which recommended : Gujarat, Maharashtra, Kerala, Karnataka, interior of Tamil Nadu and Andhra Pradesh, Madhya Pradesh and Chattisgarh

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Fibre (%)	Reaction to disease & insect-pests
151.78	19.87	18.76	13.93	15.75	MR to wilt & red rot, tolerant to shoot borer & top borer, LS to inter-node borer, susceptible to red rot & scale insect.

Special characters : Better ratoonability and excellent tillering ability.

Salient features

The variety CoN 05071 is an early maturing, tolerant to waterlogged and water stress conditions. It is moderately resistant to red rot and wilt. It is a selection of the cross CoJn 86310 x Co 86249 through hybridization and clonal selection. This variety is suitable for peninsular zone comprising of Gujarat, Madhya Pradesh, Maharashtra, Andhra Pradesh, Karnataka, Kerala and Tamil Nadu. CoJn 86310, one of the parents of this variety, is an early maturing, high sugared and wilt resistant variety while the other parent Co 86249 is medium maturing with high cane yield, good ratooning ability and having red rot resistance.



69. Co 06022

- Maturity group : Early
- Parentage : GU 92275 X Co 86249
- Year of identification : 2012
- Originating centre : ICAR-SBI, Coimbatore
- Name of zone : Peninsular Zone
- Name of Breeder/P.I. : Dr. N. Vijayan Nair and Associates
- States for which recommended : Gujarat, Maharashtra, Kerala, Karnataka, interior of Tamil Nadu and Andhra Pradesh, Madhya Pradesh and Chattisgarh

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
105.23	13.76	18.88	R to red rot

Special characters : Tolerant to drought.

Salient features

Co 06022 is an early maturing variety selected from the cross GU 92275 x Co 86249. One of the parents in the cross is GU 92275, is a distant hybrid between IND 90-776 and Co 775 with high yield and vigour. The variety combined the traits of both the parents, promises high yield and quality with tolerance to salinity. This variety was identified from Sugarcane Breeding Institute, Coimbatore for cultivation as an early variety in the states of Tamil Nadu, Karnataka, Andhra Pradesh, Kerala, Maharashtra, Gujarat and Madhya Pradesh of the Peninsular Zone.



70. CoPant 05224

- Maturity group : Mid-late
- Parentage : CoPant 82212 PC
- Year of identification : 2012
- Originating centre : G.B. Pant University of Agriculture and Technology, Pant Nagar.
- Name of zone : North West Zone
- Name of Breeder/P.I. : Dr. S.P. Singh & Associates
- States for which recommended : Punjab, Haryana, Rajasthan, Central and western Uttar Pradesh and Uttrakhand

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Fibre (%)	Reaction to disease & insect-pests
82.46	9.57	17.47	19.47	13.15	R-MR to red rot and wilt

Special characters : Good ratooner, soft chewable cane.

Salient features

CoPant 05224 is a mid-late maturing sugarcane variety which was developed from the cross CoPant 84212 PC made at N.H.G., Coimbatore and evaluated at G.B. Pant University of Agriculture & Technology, Pantnagar. It has inherited good quality and yield characteristics from its parent which is a mid-late maturing variety from Uttarakhand in North Western Zone. It was tested in initial Varietal Trial (IVT) during 2008-09, Advanced Varietal Trial (AVT-I) Plant Crop during 2009-10, Advanced Varietal Trial (AVT-II) Plan and Ratoon Crops during 2010-11 in North Western Zone (NWZ) under AICRP on Sugarcane. CoPant 05224 had higher sugar and cane yields per hectare with at par sugar content than the checks Co 1148, CoS 767 and CoS 8436. CoPant 05224 was also having moderate resistance against red rot and wilt as evident from disease resistance rating.



71. CoBln 9605 (Dhansiri)

- Maturity group : Early-mid
- Parentage : Co740 x Co6304
- Year of identification : 1997
- Originating centre : SRS, Buralikson (AAU)
- Name of zone : North Central & North Eastern Zones
- Name of Breeder/P.I. : Dr S.N. Singh and Associates
- States for which recommended : Eastern Uttar Pradesh, Bihar, West Bengal, Jharkhand and Assam

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Reaction to disease & insect-pests
80-100	8-10	18-19	20.02	MR to red rot and MR to insect pest

Special characters : Good ratooner and tolerant to drought.

Salient features

The variety CoBln 9605 is early-mid maturing. It is a selection of the cross Co 740 x Co 6304 through hybridization and clonal selection. This variety is suitable for North Central and North Eastern Zones comprising of Eastern Uttar Pradesh, Bihar, West Bengal, Jharkhand and Assam. CoBln 9605 has been widely accepted by the cane growers due to high yield and good ratooning. It is also liked by the Industry due to high sucrose and high sugar recovery.



72. CoBln 04174 (12/99)

- Maturity group : Mid-late
- Parentage : Co 740 x C 79180
- Year of identification : 2012
- Originating centre : SRS (AAU) Buraliksan
- Name of zone : North Central & North Eastern Zones
- Name of Breeder/P.I. : Dr P.K. Goswami
- States for which recommended : Eastern Uttar Pradesh, Bihar, West Bengal, Jharkhand and Assam

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
64.13	7.42	16.74	MS to red rot, R to Smut

Special characters : Good ratooner.

Salient features

The variety CoBln 04174 (12/99) belongs to mid-late maturing group and developed from the cross Co 740 x Co 79180 through hybridization and clonal selection. This variety was identified for North Central & North Eastern Zones under normal production conditions. It is good ratooner and moderately susceptible to red rot and resistant to smut. CoBln 04174 (12/99) has been widely accepted by the cane growers and also liked by the cane industry due to high sucrose and high sugar recovery.



73. CoA 05323 (Revathi)

- Maturity group : Mid-late
- Parentage : Co 85002 PC
- Year of identification : 2011
- Originating centre : RARS, Anakapalle
- Name of zone : East Coast Zone
- Name of Breeder/P.I. : Dr. M. Charumathi & Associates
- States for which recommended : Coastal Tamil Nadu & Andhra Pradesh and Odisha

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Fibre (%)	Reaction to disease & insect-pests
103.18	11.18	16.74	15.72	14.40	MR to red rot & MS to Smut

Special characters

:Tolerant to moisture stress. Suitable for normal irrigated, limited irrigated and rainfed situations in Andhra Pradesh. Very good ratooner and non lodging cane.

Salient features

The promising midlate variety CoA 05323 was developed from Co 85002 at Regional Agricultural Research Station, Anakapalle. It was tested in station yield trials from 2004-05 to 2006-07 and entered in AICRP yield trials from 2007-08 to 2009-10. It is a medium, thick cylindrical cane with erect growing habit and non lodging nature. The variety recorded a mean cane and CCS yields of 103.18 t/ha and 11.18 t/ha compared to the standards CoV 92102 (97.82 t/ha and 11.77 t/ha), Co 7219 (95.44 t/ha and 10.67 t/ha) and Co 86249 (92.32 t/ha and 10.35 t/ha). The percent increase for cane yield and CCS yields in CoA 05323 was 5.48 and 0.34 (CoV 92102), 8.11 and 10.68 (Co 7219), 11.76 and 14.11 (Co 86249) respectively. The variety recorded maximum sucrose percent juice (16.74) and CCS per cent (11.32) compared to the standard Co 86249 (16.34% and 10.45%). However, it was on par with the best standard CoV 92102 (17.43% and 11.83%) and popular standard Co 7219 (17.02% and 11.46%, respectively) over two plants and one ratoon crop. The test entry recorded 14.40 per cent fibre and pol per cent of cane in CoA 05323 was 15.72.

The tolerance of the variety to moisture stress conditions enabled the cultivation of CoA 05323 under limited irrigated and drought prone areas. It is resistant to all the races of red rot under natural and artificial conditions and moderately resistant to smut when tested in artificially inoculated conditions.



74. CoA 05322 (Uttara)

- Maturity group : Mid-late
- Parentage : Co 7706 x Co 6904
- Year of identification : 2010
- Originating centre : RARS Anakapalle
- Name of zone : East Coast Zone
- Name of Breeder/P.I. : Dr. M. Charumathi & Associates
- States for which recommended : Coastal Tamil Nadu & Andhra Pradesh and Odisha

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Fibre (%)	Reaction to disease & insect-pests
105.77	12.25	17.32	17.30	14.36	MR to red rot & MS to Smut

Special characters : Tolerant to moisture stress, suitable for limited irrigated and water logged situations and good ratooner.

Salient features

The variety CoA 05322 (98A163) belongs to mid-late maturing group. It is an erect growing variety with non lodging habit. Erect growth habit and self detrachsing characters of the variety indicated its suitability to mechanical harvesting. Lodging of crop due to heavy rains and cyclones during North East monsoon in East Coast Zone is a common phenomenon. Non-lodging nature aids in reducing cost on trash twist propping. Moisture stress is a major abiotic production constraint of sugarcane in East Coast Zone. The tolerance of the variety to moisture stress conditions enabled the cultivation of CoA 05322 under limited irrigated conditions. Among biotic constraints red rot, smut, grassy shoot diseases, early shoot borer and internode borer are important in East Coast Zone. CoA 05322 is resistant to all the races of red rot under natural as well artificial conditions and moderately resistant to smut.



75. CoA 03081(Visakha)

- Maturity group : Early
- Parentage : Co 8212 GC
- Year of identification : 2009
- Originating centre : RARS, Anakaplae
- Name of zone : East Coast Zone
- Name of Breeder/P.I. : Dr. K. Prasada Rao & Associates
- States for which recommended : Coastal Tamil Nadu & Andhra Pradesh and Odisha

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Fibre (%)	Reaction to disease & insect-pests
120.00	11.33	16.38	15.31	15.04	R to red rot & MS to smut

Special characters

: Variety is suitable for normal irrigated conditions, rainfed early and late planted situations and limited irrigated and water logged situation. Good ratooner and non-lodging clone.

Salient features

CoA 03081 (97 A 85) is an early maturing variety. It is an erect growing with non-lodging habit. Erect growth habit and self detrachasing characters of the variety are indicative for its suitability under mechanical harvesting. Lodging of crop due to heavy rains and cyclones during North East monsoon in East Coast Zone is a common phenomenon. Non-lodging nature aids in reducing the cost on trash twist propping. Moisture stress and water lodging conditions are the twin abiotic constrains of sugarcane production in East Coast Zone. The tolerance of the variety to moisture stress and water logging conditions enabled the cultivation of CoA 03081 under limited irrigated, rainfed and water logged conditions. Among biotic constraints i.e. red rot, smut, GSD, early shoot and internode borers are important in East Coast Zone. CoA 03081 is resistant to red rot and moderately susceptible to smut while the popular standard Co 6907 is having only field tolerance to red rot and highly susceptible to smut. CoA 03081 recorded cane and sugar yields on par with 93 A 145.



76. Co 0314 (Shyamala)

- Maturity group : Early
- Parentage : Co 7201 x Co 86011
- Year of identification : 2009
- Originating centre : ICAR-SBI, Coimbatore
- Name of zone : Peninsular Zone
- Name of Breeder/P.I. : Dr U.S. Natrajan and Associates
- States for which recommended : Gujarat, Maharashtra, Kerala, Karnataka, interior of Tamil Nadu and Andhra Pradesh, Madhya Pradesh and Chattisgarh

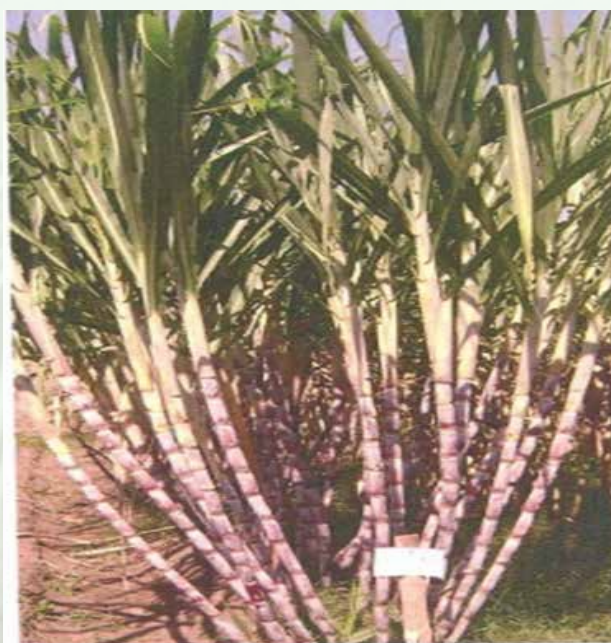
Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Fibre (%)	Reaction to disease & insect-pests
106.28	14.35	19.08	15.85	13.93	MR to Smut, red rot, wilt

Special characters : Tolerant to water stress, water logging and salinity.

Salient features

Co 0314 named as Shyamala has been developed through hybridization and selection involving two high yielding and high quality proven parents viz., Co 7201 x Co 86011. It is an early maturing variety identified as Co cane in 2003 from Sugarcane Breeding Institute, Coimbatore suitable for Peninsular Zone. The variety Co 0314 was superior to all the standards (CoC 671, Co 85004 and Co 94008) for cane yield and CCS t/ha and comparable with CoC 671 and superior to the other standards for juice quality. The sugar rich early variety CoC 671 was popular during eighties and nineties in the zone but its cultivation was restricted during the past few years because it succumbed to red rot leaving a big vacuum in the varietal spectrum. Since there was an urgent need for early sugar varieties in the zone suitable for early season crushing to maintain high recovery. The variety Co 0314 with excellent high yielding potential combining red rot, smut, resistance and tolerance to drought and salinity at different centres of the Peninsular Zone was identified.



77. CoM 0265 (Phule 265)

- Maturity group : Midlate
- Parentage : Co 87044 GC
- Year of identification : 2009
- Originating centre : CSRS, Padegoon
- Name of zone : Peninsular Zone
- Name of Breeder/P.I. : Dr R.C. Patil and Associates
- States for which recommended : Gujarat, Maharashtra, Kerala, Karnataka, interior of Tamil Nadu and Andhra Pradesh, Madhya Pradesh and Chattisgarh

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
199.80	21.79	19.33	MS to red rot, wilt, R to Smut

Special characters : Tolerant to drought and salinity and good ratooner.

Salient features

The variety CoM 0265 showed the highest cane yield (199.85 t/ha) with 16.88% higher over the standard Co 86032 (170.98 t/ha) and it showed its superiority in pre-season (164.40 t/ha) and suru (149.60 t/ha) season over the standard Co 86032. The mean CCS yield (21.79 t/ha) was recorded by the variety CoM 0265 was 18.74% higher as compared to the standard Co 86032 (18.37 t/ha). The mean sucrose per cent (19.33) was recorded by the variety CoM 0265. However, it was reduced by 0.19 unit (-0.97%) than the standard Co 86032 (19.52%).



78. BO 146

- Maturity group : Mid-late
- Parentage : BO 128 x BO 109
- Year of identification : 2009
- Originating centre : SRI Pusa
- Name of zone : North Central & North Eastern Zones
- Name of Breeder/P.I. : Dr S.S Pandey and Dr D.N. Kamat
- States for which recommended : Eastern Uttar Pradesh, Bihar, West Bengal, Jharkhand and Assam

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Fibre (%)	Reaction to disease & insect-pests
68.75	8.29	17.20	13.85	14.50	MR to red rot, wilt & smut and has low incidence of insect-pests

Special characters : Tolerant to limited water logging and drought.

Salient features

This variety was developed at Sugarcane Research Institute, Pusa (Bihar) by the biparental crossing BO 128 x BO 109 followed by clonal selection. This variety recorded 68.75 t/ha cane yield, 8.29 t/ha commercial cane sugar (CCS) and 17.20% sucrose which was 23.86%, 3.02% and 1.22% higher respectively, than the standard variety CoSe 92423. This variety was identified for commercial cultivation in North Central & North Eastern Zones in year 2009. This variety is moderately resistant to red rot, wilt and smut. The variety is tolerant to water logging and drought. This variety replaced the widely adopted BO 91 and BO 110 in mid-late maturing group.



79. CoSe 05451 (Narayani)

- Maturity group : Early
- Parentage : CoPant 90223 GC
- Year of identification : 2012
- Originating centre : GSSBRI, Seorahi
- Name of zone : North Central & North Eastern Zones
- Name of Breeder/P.I. : Dr O.S. Joshiya and Associates
- States for which recommended : Eastern Uttar Pradesh, Bihar, West Bengal, Jharkhand and Assam

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
67.57	8.42	17.89	MS to red rot smut and wilt

Special characters : Early maturing sugarcane variety.

80. CoPant 93227

- Maturity group : Mid-late
- Parentage : Tissue Culture derivative of CoS 8118
- Year of identification : 2002
- Originating centre : GBPUA&T, Pantnagar
- Name of zone : North West Zone
- Name of Breeder/P.I. : Dr A.Q. Khan and Associates
- States for which recommended : Punjab, Haryana, Rajasthan, Central and western Uttar Pradesh and Uttarakhand

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
75.38	8.97	17.30	MR to red rot.

Special characters : Tolerant to drought, water logging and salinity.

Salient features

This variety was derived from tissue culture of variety, CoS 8118 and selected among soma varieties at G.B. Pant University of Agriculture & Technology, Pantnagar. It recorded numerically higher commercial cane sugar (CCS) yield (8.97 t/ha) than the checks, Co 1148 (8.65 t/ha), CoS 767 (8.03 t/ha) and CoLk 8102 (8.48 t/ha) and also registered average higher cane yield (75.38 t/ha) than the checks, Co 1148 (72.0 t/ha), CoS 767 (66.63 t/ha) and CoLk 8102 (70.60 t/ha). Similarly, sucrose per cent juice at 10 and 12 months in CoPant 93227 (16.00 and 17.30) were at par with Co 1148 (15.66 and 17.41), Co 576 (16.30 and 17.57) and CoLk 8102 (15.87). CoPant 93227 was moderately resistant to red rot disease under inoculated conditions. This variety was especially suited for low input or sub optimal environment because of formation of higher number of millable canes. Hence, this variety was identified for release in North West Zone comprising, Haryana, Punjab, Rajasthan, Uttar Pradesh and Uttarakhand.

81. Co 99006(Neeraj)

- Maturity group : Midlate
- Parentage : (BO 91 x Co 62175) x Co775
- Year of identification : 2006
- Originating centre : SBI, Coimbatore
- Name of zone : Peninsular Zone
- Name of Breeder/P.I. : Dr M.N. Premchandran and Associates
- States for which recommended : Gujarat, Maharashtra, Kerala, Karnataka, interior of Tamil Nadu and Andhra Pradesh, Madhya Pradesh and Chattisgarh

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
11.48	16.14	20.08	M R to red rot

Special characters : Tolerant to drought and water logging.

82. CoP 9103 (Ashwani)

- Maturity group : Mid-late
- Parentage : BO 91XCo775
- Year of identification : 1999
- Originating centre : S.R.I., Pusa
- Name of zone : North Central & North Eastern Zones
- Name of Breeder/P.I. :Dr J.R.P.Singh and Associates
- States for which recommended : Eastern Uttar Pradesh, Bihar, West Bengal, Jharkhand and Assam

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Fibre (%)	Reaction to disease & insect-pests
68.20	8.46	17.48	13.85	15.20	Resistant to major diseases and have low incidence of insect pests.

Special characters : Tolerant to water logging and good ratooner.

Salient features

CoP 9103 is a midlate maturing variety selected from the cross BO 91 x Co 775. BO 91 is a well adopted variety of North Central Zone which occupies more than 60% of area under sugarcane variety in sub-tropical India particularly under water logging conditions. CoP 9103 recorded 68.20 t/ha cane yield which is 7.5 percent higher over the best standard (BO 91). It also recorded 8.46 t/ha of commercial cane sugar (CCS) which is 9.4 percent higher and sucrose percent juice at 360 DAP was 17.48 which was 0.5 percent increase over the best standard (BO 91). CoP 9103 has been widely accepted by the cane growers. It is tolerant to water logging and rainfed condition. It is also liked by factory management due to high commercial cane sugar (CCS) per unit area.

83. BO 120 (Gopal)

- Maturity group : Early
- Parentage : BO 91 x BO 43
- Year of identification : 1997
- Originating centre : SRI, Pusa
- Name of zone : North Central & North Eastern Zones
- Name of Breeder/P.I. : Dr J.R.P. Singh and Associates.
- States for which recommended : Eastern Uttar Pradesh, Bihar, West Bengal, Jharkhand and Assam

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Fibre (%)	Reaction to disease & insect-pests
78.60	9.57	17.80	14.49	13.60	Moderately Resistant to Red Rot, Wilt, Smut and has low incidence of insect-pests

Special characters : Good ratooner and best for quality gur production. Tolerant to lodging.

Salient features

This variety was identified in early maturing group for commercial cultivation in North Central Zone under normal production condition because there was no other variety of this group under wide cultivation. The variety BO 120 recorded 20.79 percent increase over the best standard (CoS 687) for commercial cane sugar/ha. It recorded 18.92 percent increase in cane yield and 1.10 percent increase in sucrose percent juice over the best standard (CoS 687). BO 120 has been widely accepted by cane growers and industry due to high yield and higher sucrose percent in juice. Best quality gur of this variety is prepared by the farmers.

84. CoPant 84211

- Maturity group : Mid-late
- Parentage : Co 9806 x Co 6812
- Year of identification : 1990
- Originating centre : GBPUA&T, Pantnagar
- Name of zone : North West Zone
- Name of Breeder/P.I. : Dr A.Q. Khan & Associates
- States for which recommended : Punjab, Haryana, Rajasthan, Central and western Uttar Pradesh and Utrakhand

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Reaction to disease & insect-pests
75.00	7.88	19.00	18.76	MR to red rot.

85. CoLk 8102

- Maturity group : Mid-late
- Parentage : Co 1158 GC
- Year of identification : 1990
- Originating centre : ICAR-IISR, Lucknow
- Name of zone : North West Zone
- Name of Breeder/P.I. : Dr B.K. Tripathi and Associates
- States for which recommended : Punjab, Haryana, Rajasthan, Central and western Uttar Pradesh and Uttrakhand

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Fibre (%)	Reaction to disease & insect-pests
85.00	10.03	18.00	14.50	MR to red rot

Special characters : Tolerant to water deficit and water-logging stress.

Salient features

CoLk 8102 has been adopted and extensively grown by the sugarcane farmers in the late nineties especially under stress conditions. Special features of this variety are medium thick green yellow canes, obconoidal internodes, rectangular buds, lanceolate auricle on both sides (generally long on one side), shallow bud groove, weak spines on leaf sheath free from splits, pith and bud cushion.



86. CoLk 7901

- Maturity group : Early
- Year of identification : 1987
- Originating centre : ICAR-IISR, Lucknow
- Name of zone : North West Zone
- Name of Breeder/P.I. : Dr B.K. Tripathi and Associates
- States for which recommended : Punjab, Haryana, Rajasthan, Central and western Uttar Pradesh and Uttrakhand

Key features

Cane yield (t/ha)	CCS (t/ha)	Pol (%) in cane	Reaction to disease & insect-pests
90.00	14.11	20.05	MS to red rot

Special characters : Quick growing erect, non-lodging variety having high number of millable canes.

87. Co 7527

- Maturity group : Midlate
- Parentage : Co 62175 x Co 658
- Year of identification : 1984
- Originating centre : CSRS, Padegaon
- Name of zone : Peninsular Zone
- States for which recommended : Gujarat, Maharashtra, Kerala, Karnataka, interior of Tamil Nadu and Andhra Pradesh, Madhya Pradesh and Chattisgarh

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
116.00	14.40	17.98	R to smut and MS to wilt

Special characters : Tolerant to drought and good ratooner.

Salient features

This variety Co 7527 was identified in 1984 and is suitable for Suru planting. It is a result of crossing between Co-62175 and Co.658. The leaves are broad and drooping down. The colour of leaves is dark green. Cane is big in size and green. Internodes are long and bigger towards eye-bud. The maturity lasts longer. It is suitable for cultivation in South Satara, Sangli & Kolhapur Districts. Yield of cane is 116 t/ha and of sugar 14.40 t/ha. Mean sugar recovery of the variety was 12.4%.

88. CoLk 8001

- Maturity group : Mid-late
- Parentage : Co 62174 x Co 1148
- Year of identification : 1987
- Originating centre : ICAR-IISR, Lucknow
- Name of zone : North West Zone
- Name of Breeder/P.I. : Dr B.K. Tripathi and Associates
- States for which recommended : Punjab, Haryana, Rajasthan, Central and western Uttar Pradesh and Uttrakhand

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Fibre (%)	Reaction to disease & insect-pests
75.00	9.88	18.45	12.78	MR to red rot

Special characters : Tolerant to water deficit and water logging stress.

Salient features

CoLk 8001 was released for commercial cultivation in North West Zone of India. It was in commercial cultivation in areas of Gujarat and Madhya Pradesh also, which falls under Peninsular Zone. Medium thick green yellow canes, obconoidal internodes, rectangular buds, lanceolate auricle on both sides (generally long on one side), shallow bud groove, weak spines on leaf sheath free from splits, pith and bud cushion.



89. BO 109

- Maturity group : Mid-late
- Parentage : Co 1193 x BO 32
- Year of identification : 1985
- Originating centre : SRI, Pusa
- Name of zone : North Central & North Eastern Zones
- Name of Breeder/P.I. : Dr V.S. Bhide and Associates
- States for which recommended : Eastern Uttar Pradesh, Bihar, West Bengal, Jharkhand and Assam

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Fibre (%)	Reaction to disease & insect-pests
72.50	8.36	16.80	13.69	13.50	Resistant to red rot, wilt, smut and has low incidence of insect-pests

Special characters

:Higher quick germination even at low moisture and tolerant to water logging and drought conditions.

Salient features

The variety BO 109 is a mid-late maturing variety selected from the cross Co 1193 x BO 32. This variety was identified for commercial cultivation in North Central and North Eastern Zones under normal production conditions. Medium thick cane with straight to slightly zig-zag alignment, green colour, cylindrical to slightly bobbin shaped internode turns purple on exposure, ovate bud with shallow bud groove, medium width light green leaves with purple tinge one dentoid other lanceolate two auricles, purple leaf sheath with deciduous spines. Slightly tight clasping of leaf sheath, ascending carriage.

90. CoS 7918

- Maturity group : Mid-late
- Year of identification : 1985
- Originating centre : UPCR, Shahjahanpur
- Name of zone : North Central & North Eastern Zones
- States for which recommended : Eastern Uttar Pradesh, Bihar, West Bengal, Jharkhand and Assam

91. CoJN 86141

- Maturity group : Early
- Year of identification : 1984
- Originating centre : SRS, Sehore
- Name of zone : Peninsular Zone
- States for which recommended : Gujarat, Maharashtra, Kerala, Karnataka, interior of Tamil Nadu and Andhra Pradesh, Madhya Pradesh and Chattisgarh

Key features

Cane yield (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
118.00	22.50	R to wilt, smut and red rot and R to pyrilla and scale insect.

Special characters : Tolerant to drought.

92. BO 90

- Maturity group : Early
- Parentage : BO 47 Self
- Year of identification : 1982
- Originating centre : SRI, Pusa
- Name of zone : North Central & North Eastern Zones
- Name of Breeder/P.I. : Dr V.S. Bhide and Associates
- States for which recommended : Eastern Uttar Pradesh, Bihar, West Bengal, Jharkhand and Assam

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Fibre (%)	Reaction to disease & insect-pests
65.50	8.23	18.30	14.64	15.00	Resistant to red rot, wilt, smut and has low incidence of insect pests.

Special characters : Good ratooner and best for quality jaggery production.

93. BO 91

- Maturity group : Mid-late
- Parentage : BO 55 x BO 43
- Year of identification : 1983
- Originating centre : SRI, Pusa
- Name of zone : North Central & North Eastern Zones
- Name of Breeder/P.I. : Dr V.S. Bhide and Associates
- States for which recommended : Eastern Uttar Pradesh, Bihar, West Bengal, Jharkhand and Assam

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Fibre (%)	Reaction to disease & insect-pests
72.20	8.33	16.80	13.78	13.00	Resistant to red rot, wilt, smut and has low incidence of insect-pests.

Special characters : Good ratooner and tolerant to all types of biotic and abiotic factors.

Salient features

BO 91 belongs to midlate maturity group and selected from the cross BO 98 x BO 43. This variety was identified for commercial cultivation in North Central and North Eastern Zones under normal production condition. It is also a good ratooner and tolerant to most of the biotic and abiotic factors. This variety is high yielding with cane yield of 72.20 t/ha, 8.33 t/ha of commercial cane sugar (CCS) and 16.80% sucrose in juice. It is resistant to red rot, wilt, smut and has low incidence of insect-pests.



94. BO 100

- Maturity group : Mid-late
- Parentage : BO 17 x BO 34
- Year of identification : 1982
- Originating centre : SRI, Pusa
- Name of zone : North Central & North Eastern Zones
- Name of Breeder/P.I. : Dr V.S. Bhide and Associates
- States for which recommended : Eastern Uttar Pradesh, Bihar, West Bengal, Jharkhand and Assam

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Fibre (%)	Reaction to disease & insect-pests
67.20	8.16	17.60	14.22	14.20	MR to red rot, wilt, smut and has low incidence of insect-pests.

Special characters : Good ratooner.

95. CoC 771

- Maturity group : Early
- Parentage : Co 419 x Co 658
- Year of identification : 1982
- Originating centre : SRS, Cuddalore
- Name of zone : East Coast Zone
- States for which recommended : Coastal Tamil Nadu & Andhra Pradesh and Odisha

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice
130.00	16.97	18.35

Special characters : Suitable for all types of soil non lodging, high yielder and high quality, suitable for jaggery making.

96. Co 7219 (Sanjivani)

- Maturity group : Early
- Parentage : Co 449 x Co 658
- Year of identification : 1982
- Originating centre : CSRS, Padegaon
- Name of zone : Peninsular Zone
- States for which recommended : Gujarat, Maharashtra, Kerala, Karnataka, interior of Tamil Nadu and Andhra Pradesh, Madhya Pradesh and Chattisgarh

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
110.00	12.50	19.01	Susceptible to smut, mealy bug and borers

Salient features

This variety was identified in 1982. It is a cross between Co 449 and Co 658 at CSRS, Padegaon. The leaves are long and broad and are yellowish green. Cane is of medium size. There is depression on higher side of eye-buds. The variety matures early and is a good yielder. The cane lodges but does not break. It is good for crushing in the early part of the crushing season, pre-season and suru seasons. The yield is about 125 t/ha of cane and 17.5 t/ha of sugar. Mean sugar recovery was about 14%. It is susceptible to smut up to a certain extent.

97. Co 8021

- Maturity group : Midlate-Early
- Parentage : Co 740 x Co 6806
- Year of identification : 1984
- Originating centre : SRS, Cuddalore
- Name of zone : East Coast Zone
- States for which recommended : Gujarat, Maharashtra, Kerala, Karnataka, interior of Tamil Nadu and Andhra Pradesh, Madhya Pradesh and Chattisgarh

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
137.70	14.60	11.11	Tolerant to wilt

Special characters : High yield, non-lodging, non-flowering.

98. CoS 767

- Maturity group : Mid-late
- Parentage : Co 419 x Co 313
- Year of identification : 1982
- Originating centre : UPCSR, Shahajahanpur
- Name of zone : North West Zone
- States for which recommended : Punjab, Haryana, Rajasthan, Central and western Uttar Pradesh and Uttarakhand

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane	Reaction to disease & insect-pests
77-85	10.41	17.98	17.89	Resistant to red rot

Special characters : Very good ratooner.

Salient features

The variety was released from UPCSR, Shahjahanpur in 1979 by SVRC for cultivation in Uttar Pradesh. It was a promising variety of mid-season maturity, erect medium thick cane, resistant to red rot and other diseases of sugarcane, tolerant to insect-pest, suitable for late planting in western U.P. and performed good in adverse climate. Sucrose content was about 17.98 percent at harvest with cane yield of 77-85 t/ha. This variety gained popularity among cane growers and also liked by the sugar mills in Punjab, Haryana, Rajasthan, Uttarakhand and Uttar Pradesh.



99. CoJ 64

- Maturity group : Early
- Parentage : Co 976 x Co 617
- Year of identification : 1982
- Originating centre : PAU Regional Station, Jalandhar
- Name of zone : North West Zone
- Name of Breeder/P.I. : Dr J.S. Kanwar and Associates
- States for which recommended : Punjab, Haryana, Rajasthan, Central and western Uttar Pradesh and Uttrakhand

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
62.71	8.68	18.60	S to red rot, R to smut, susceptible to wilt disease and root borer.

Salient features

It was a high sugared early maturing variety released from Jalandhar (Punjab) in 1983. It was an erect medium thick, soft and solid cane with a good stand, good yield and best in ratooning. It was susceptible to red rot, resistant to smut, sucrose content about 16.06% and 18.60% in November and January, respectively and sugarcane yield ranged from 60-65 t/ha. CoJ 64 became popular variety for high sugar in sub-tropical region during 1999-2000.



100. CoM 7125 (Sampada)

- Maturity group : Midlate
- Parentage : Co 740 x Co 775
- Year of identification : 1982
- Originating centre : CSRS, Padegaon
- Name of zone : Peninsular Zone
- Name of Breeder/P.I. : Shri L.H. Jadhav and Associates
- States for which recommended : Gujarat, Maharashtra, Kerala, Karnataka, interior of Tamil Nadu and Andhra Pradesh, Madhya Pradesh and Chattisgarh

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
110.00	13.50	18.02	Resistant to smut, grassy shoot, susceptible to early shoot borer and top borer but resistant to internode borer.

Special characters : Good ratooner.

Salient features

It was released for cultivation in 1982. It is obtained through cross between Co 740 and Co 775. The leaves are of medium size and yellowish green in colour. Cane colour is also yellowish green. It grows tall but does not lodge. It has good sugar content and is also good for jaggery making. It is suitable for ratooning. The cane and sugar yields are 110 t/ha and 13.50 t/ha, respectively. Mean sugar recovery was about 12.3%. It is tolerant to smut disease.



101. CoC 671 (Vasant-1)

- Maturity group : Early
- Parentage : Q 63 x Co 775
- Year of identification : 1982
- Originating centre : SRS, Cuddalore
- Name of zone : East Coast and T. Nadu Peninsular Zones
- Name of Breeder/P.I. : Dr Sanjeevi and Associates
- States for which recommended : Maharashtra, Kerala, Karnataka, Interior of Tamil Nadu and Andhra Pradesh and Madhya Pradesh

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
135.00	17.50	19.50	S to red rot disease

Special characters : High quality cane, suitable for jaggery making for western part of Tamil Nadu.

Salient features

Variety CoC 671 (Vasant-1) is developed by crossing Q 63 and Co 775. It was most popular among the farmers of Maharashtra and Tamil Nadu due to high yield and other qualities. It matures in 9-10 months. It is crushed in later part of the season and still gives good recovery. It was good for ratooning and ratoon yield was higher than suru crop yield. The yield potential was about 265 t/ha. It was suitable for Adjali planting in Maharashtra. CoC 671 became a standard for high sugar and early maturing variety for longer period in the tropical region.



102. Co 62175

- Maturity group : Midlate
- Parentage : Co 951 x Co 419
- Year of identification : 1982
- Originating centre : ARS, Perumallapalle
- Name of zone : Peninsular Zone
- States for which recommended : Gujarat, Maharashtra, Kerala, Karnataka, interior of Tamil Nadu and Andhra Pradesh, Madhya Pradesh and Chattisgarh

Key features

Cane yield (t/ha)	Sucrose (%) in juice
101.41	17.48

103. Co 6907

- Maturity group : Early
- Year of identification : 1982
- Name of zone : Peninsular Zone
- States for which recommended : Gujarat, Maharashtra, Kerala, Karnataka, interior of Tamil Nadu and Andhra Pradesh, Madhya Pradesh and Chattisgarh

Key features

Cane yield (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
95.00	16.00	MR to red rot.

Special characters : It is suitable for early crushing in Telangana

104. MS 7110

- Maturity group : Mid-late
- Parentage : MS 6847 x Co 1251
- Year of identification : 1982
- Originating centre : CSRS, Padegaon
- Name of zone : Peninsular Zone
- Name of Breeder/P.I. : Shri L.H. Jadhav and Associates
- States for which recommended : Gujarat, Maharashtra, Kerala, Karnataka, interior of Tamil Nadu and Andhra Pradesh, Madhya Pradesh and Chattisgarh

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice	Pol (%) in cane
108.89	13.02	14.77	13.98

Special characters : Good ratooner.

105. Co 1295

- Maturity group : Mid-late
- Year of identification : 1982
- Name of zone : Peninsular Zone
- States for which recommended : Gujarat, Maharashtra, Kerala, Karnataka, Pradesh, Madhya Pradesh and Chhattisgarh

106. MS 7455

- Maturity group : Mid-late
- Parentage : Co 1251 x Co 6407
- Year of identification : 1982
- Originating centre : CSRS, Padegaon
- Name of zone : Peninsular Zone
- Name of Breeder/P.I. : Shri L.H. Jadhav and Associates
- States for which recommended : Gujarat, Maharashtra, Kerala, Karnataka, interior of Tamil Nadu and Andhra Pradesh, Madhya Pradesh and Chattisgarh

Key features

Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) in juice
106.79	12.15	16.66

107. Co 7318

- Maturity group : Midlate
- Year of identification : 1982
- Name of zone : Peninsular Zone
- States for which recommended : Gujarat, Maharashtra, Kerala, Karnataka, interior of Tamil Nadu and Andhra Pradesh, Madhya Pradesh and Chattisgarh

108. Co 7508

- Maturity group : Early
- Year of identification : 1982
- Name of zone : East Coast Zone
- States for which recommended : Coastal Tamil Nadu & Andhra Pradesh and Odisha

109. Co 7717

- Maturity group : Early
- Parentage : Co 419 x Co 775
- Year of identification : 1982
- Name of zone : North West Zone
- States for which recommended : Punjab, Haryana, Rajasthan, Central and western Uttar Pradesh and Uttrakhand

Key features

Reaction to disease & insect-pests : MR to red rot

110. CoJ 75

- Maturity group : Early
- Year of identification : 1982
- Originating centre : PAU Regional Station, Kapurthala
- Name of zone : North West Zone
- States for which recommended : Punjab, Haryana, Rajasthan, Central and western Uttar Pradesh and Uttrakhand

Key features

Cane yield (t/ha)	Sucrose (%) in juice	Reaction to disease & insect-pests
70.00	17.86	Susceptible to red rot

Special characters : Quick growing, spines on leaf sheath.

111. Co 6304

- Maturity group : Mid-late
- Year of identification : 1982
- Name of zone : North West Zone
- States for which recommended : Punjab, Haryana, Rajasthan, Central and western Uttar Pradesh and Uttrakhand

112. CoLk 7701

- Maturity group : Mid-late
- Year of identification : 1982
- Originating centre : ICAR-IISR, Lucknow
- Name of zone : North West Zone
- Name of Breeder/P.I. : Dr B.K. Tripathi and Associates
- States for which recommended : Punjab, Haryana, Rajasthan, Central and western Uttar Pradesh and Uttrakhand

Key features

Cane yield (t/ha)	Pol (%) in cane	Reaction to disease & insect-pests
71.65	19.37	MR to red rot.

113. CoS 771

- Maturity group : Mid-late
- Year of identification : 1982
- Originating centre : UPCSR, Shahjahanpur
- Name of zone : North West Zone
- States for which recommended : Punjab, Haryana, Rajasthan, Central and western Uttar Pradesh and Uttrakhand

114. CoS 802

- Maturity group : Mid-late
- Year of identification : 1982
- Originating centre : UPCSR, Shahjahanpur
- Name of zone : North West Zone
- States for which recommended : Punjab, Haryana, Rajasthan, Central and western Uttar Pradesh and Uttrakhand

115. Co 7201

- Maturity group : Early
- Year of identification : 1982
- Name of zone : North Central & North Eastern Zones
- States for which recommended : Eastern Uttar Pradesh, Bihar, West Bengal, Jharkhand and Assam

116. S 101/72

- Maturity group : Early
- Year of identification : 1982
- Name of zone : North Central & North Eastern Zones
- States for which recommended : Eastern Uttar Pradesh, Bihar, West Bengal, Jharkhand and Assam

Zone-wise prominent sugarcane varieties

1. Peninsular zone

Co 86032 (Nayana)

The wonder variety, Co 86032 of the decade was developed at the Sugarcane Breeding Institute, Coimbatore from the progenies of Co 62198 x CoC 671 and identified in 1994 for the peninsular zone (Gujarat, Madhya Pradesh, Chattisgarh, Maharashtra, Karnataka, interior plains of Andhra Pradesh, interior plains of Tamil Nadu and Kerala). It was released and notified in the year 2000. In Tamil Nadu, it occupied up to 80% of the area and in Andhra Pradesh, Karnataka, Gujarat and Maharashtra around 40% in each state. This is a high yielding, high sucrose midlate variety with good ratooning ability. This is cultivated in wide range of soils except water logging. It yields 120 t/ha and 15.09 t/ha of cane and sugar yield, respectively. The average sucrose content is 19.19%.



This variety is resistant to smut, moderately resistant to wilt and field tolerant to red rot. This is amenable for multiple ratooning and suitable for mechanization as it performs well under wide row spacing. This can be cultivated in drought and saline affected areas. Co 86032 substituted CoC 671, a predominant variety in the early 1990s when it gradually succumbed to red rot and subsequently withdrawn from cultivation. This wonder variety of the decade is still preferred as a major variety in all the states of peninsular zone.

CoM 0265 (Phule 265)

This is a midlate maturing variety. It is a selection from the progeny of Co 87044 GC. It was identified in 2009 for release in the peninsular zone (Gujarat, Madhya Pradesh, Chattisgarh, Maharashtra, Karnataka, interior plains of Andhra Pradesh, interior plains of Tamil Nadu and Kerala). This variety is high yielding (111.45 t/ha) with good ratooning ability. It is suitable for cultivation in spring, autumn and as *adsali* (18-month duration) crop. It is moderately resistant to red rot and tolerant to drought and salinity. The *adsali* crop of this variety yielded about 200 t/ha with increase of 16.9% over existing varieties like Co 86032. In pre-season and *suru* planting also, the cane yield was higher than existing varieties. It has recorded 21.8 t/ha sugar which was 18.75% higher than existing variety Co 86032. It is most suitable for cultivation in salinity affected soils and is fast spreading in Maharashtra and other states in peninsular zone. It is now preferred by the farmers.



Co 99004 (Damodar)

This variety has early vigorous growth, shy flowering, tall, erect canes and without spines on leaf sheath. Resistant to red rot and tolerant to wilt and internode borer, tolerant to drought and salinity, midlate maturing variety with high cane yield. Recommended for cultivation in the Peninsular Zone- Gujarat, Maharashtra, Madhya Pradesh, Karnataka, Interior Andhra Pradesh, Tamil Nadu and Kerala.



Co 2001-13

This variety was notified for release in Peninsular zone during 2009. This midlate maturing variety has 14.73 t/ha CCS, 108.6 t/ha cane yield and 19.03% sucrose. The canes are medium thick, semi erect with cylindrical zigzag internodes and dark purple and wax coated canes. The variety is high tillering with good ratooning potential and is well suited for drought and saline conditions. It is resistant to red rot and smut diseases, internode borer and free from all pests under natural conditions. The variety gives A1 quality jaggery with moderate fibre (13.43%). Medium thick canes with purple colour. Leaf sheath has sparse hairs and is tightly clasping. Internode is cylindrical, zigzag and growth cracks absent, rind surface is smooth and with heavy wax. Bud cushion absent. Number of millable canes per stool is high.



Co 2001-15

This variety was notified for release in 2009 and showed superiority for cane yield, sugar yield and CCS % in AICRP trials of Peninsular zone (2006-08). This variety is suitable under normal and drought conditions at different centres. Canes are tall and medium thick with a light canopy and more partitioning towards canes. The average cane yield is 108.18 t/ha, CCS yield 14.57 and sucrose % juice is 18.90. The variety also combines

resistance to red rot and smut diseases, internode borer and tolerance to drought and salinity. Jaggery quality of this variety is A1. The fibre content in cane is 14.70%. Tall, erect, greenish purple cane with medium thickness. Cylindrical and zigzag internodes with corky patches on the rind and light wax. Bud is ovate, medium, bud groove absent, bud cushion present and bud tip below the growth ring. Leaf sheath is semi clasping with sparse hairs, deltoid ligule, calcariform auricle and yellow green dew lap. Leaf blade is arched with medium width. Green canopy with tip drooping leaves.



Co 0403

Co 0403 (Sammriddhi) has been notified by Central Varietal Release Committee, and is recommended for cultivation in Peninsular zone. It was identified by the varietal identification committee of the 28th AICRP(S) Workshop held at NAU, Navasari during October 2010. Cane is tall, erect and rind colour is greenish purple. Leaf sheath has no hairs and is with deltoid ligule, dentoid inner auricle and light green dewlap. Leaf is medium wide, arched and leaf sheath is semi clasping. Internode is medium thick, cylindrical, without zigzag alignment, without growth cracks, ivory marks present and with heavy waxiness. Bud is ovate with shallow bud



groove and bud is cushion absent with bud tip touching the growth ring. Number of millable canes is very high.

2. North West Zone

Co 0238 (Karan 4)

This variety Co 0238 was developed at the ICAR-Sugarcane Breeding Institute Research Centre, Karnal. Co 0238 (early maturing) is a selection from the progeny of the cross CoLk 8102 x Co 775. It was identified in 2008 and released & notified in 2009 for cultivation in North West Zone (Punjab, Haryana, Rajasthan, Uttar Pradesh (western & central) and Uttarakhand). In the zonal varietal trials conducted across 8 centres of North West Zone, it recorded 81.08 t/ha of cane yield, 9.95 % of CCS t/ha and 17.99 % of sucrose. There was 19.96, 15.83 and 0.50 per cent improvement over the best check (CoJ 64). The fibre (%) is around 13.05 %. Experiments conducted in Uttar Pradesh at DSCL Sugar, Ajbapur and Simbhaoli Sugar Mills Ltd., Simbhaoli indicated an improvement in cane yield under water stress and water logging conditions by more than 20 t/ha over respective standards. Co 0238 is good ratooner as the reduction in cane yield when harvested during winter was 4.66% compared to CoJ 64 which recorded 41.29 % reduction. This variety also performed well in UP, Bihar and Haryana. Sugar recovery was found to be improved by an average of 1.14 units over mill recovery of 10.83% across crushing during the months of March and April, 2008 at Shahabad Cooperative Sugar Mills Ltd., where it is a major variety occupying 45% (18,505 ha) of the total area. Due to its wider adaptability, the variety is fast spreading in Haryana, Punjab, Uttarakhand, Uttar Pradesh. Presently, more than 52.% of sugarcane area in Uttar Pradesh is occupied by Co 0238.



CoS 767

This variety was developed at UP Council of Sugarcane Research, Shahjahanpur and released by SVRC in 1979 for cultivation in Uttar Pradesh. This variety was identified under All India Coordinated Research Project on Sugarcane in 1982 for North West Zone comprising the Punjab, Haryana, Rajasthan, Central & Western Uttar Pradesh and Uttarakhand. This is midlate maturing, high sugared variety and had good yield potential and covered lion's share in Punjab and U.P and popular in other states too. Canes of this variety maintained juice quality over an extended period.



Co 0118 (Karan-2)

It is non-flowering early maturing variety for subtropical region. Co 0118 is a selection from the progeny of the cross Co 8347 x Co 86011. This variety was identified from seedling ratoon nursery raised at Sugarcane Breeding Institute, Regional Centre, Karnal and was tested under the Pre Zonal Varietals Trial. Co 0118 is a medium thick, green yellow canes with obconoidal internodes, rectangular buds, lanceolate auricle on both sides (generally long on one side), shallow bud groove and weak spines on leaf sheath. The



variety is free from splits, pith and bud cushion. The fibre % is about 12.78 %. The jaggery is of A1 quality with light yellow colour. This variety is moderately resistant (MR) to the prevalent races of red rot pathogen by plug method of inoculation.

This variety has been evaluated under All India Coordinated Research Project in the North Western Zone. Co 0118 ranked 3rd in the zone for cane yield (78.20 t/ha), sugar yield (9.88 t/ha) and sucrose in juice (18.45%) based on average of 2 plant and 1 ratoon crops at 7 research stations in the zone. Co 0118 was released by the Central Sub Committee on Crop Standards, Notification and Release of Varieties for Agricultural Crops in 2009. This variety proved as high quality early maturing varieties under assured irrigation, water stress or water logging areas.

CoH 128

CoH 128 has been developed from a cross of CoH 70 x CoS 510 at CCSHAU Regional Research Station, Uchani (Karnal). This variety was evaluated in different selection stages for cane yield, juice quality and insect-pests / disease tolerance against standards in plant and ratoon crops. It has an excellent ratooning capability. The variety has the potential of high tonnage for cane yield with experimental mean as 76.23 t/ha. The variety recorded 21.08, 6.30 and 09.32 percent higher cane yield as compared to the checks CoS 8436, Co 1148 and CoS 767, respectively. Similarly the variety recorded high commercial cane sugar (9.28 t/ha) which was 21.62, 9.31 and 9.82 per cent higher as compared to the checks CoS 8436, Co 1148 and CoS 767, respectively. It recorded good sucrose percent (17.70) at 360 days which was numerically superior than the standards CoS 8436 (17.68), Co 1148 (17.22) and CoS 767 (17.64).



3. North Central & North Eastern Zones

CoLk 94184 (Birendra)

This variety was developed at the ICAR-Indian Institute of Sugarcane Research, Lucknow. CoLk 94184 is a selection from the progeny of selfed CoLk 8001. It was identified in 2007 and released & notified in 2008 for North Central Zone (eastern U.P., Bihar and West Bengal). This is early maturing high yielding variety with a rare combination of two attributes early maturity and good ratooning ability. It gives cane yield of 75-80 t/ha in plant crop and more than 70 t/ha in ratoon crop. The variety withstands both moisture stress and water logging and therefore, is replacing the existing varieties that do not perform well under water logged conditions in eastern U. P. and Bihar. The average sugar recovery is about from 10-11% which is 1.13 to 1.23 units higher with existing varieties. In a varietal trial at Balrampur Chini Mills, Balrampur (U.P.), the sugar recovery ranged from 10.23 to 11.13% showing increase up to 1.23 units. The variety is moderately resistant to red rot and tolerant to top borer. It is fast spreading in U.P. and Bihar. It is good variety for ratooning.



Co 0232 (Kamal)

The variety is early maturing, water logging tolerant and red rot resistant. This variety is suitable for cultivation in the North Central and North East zones comprising of Eastern Uttar Pradesh, Bihar, West Bengal and North Eastern states. This variety was identified from Sugarcane Breeding Institute, Research Centre, Motipur (presently under IISR, Lucknow) during 2002. Under water logging conditions Co 0232 performed better over the best standard CoSe 95422 with 7.63 % higher cane yield, 11.55 % higher CCS t/ha and 0.77 % higher sucrose content. It is also tolerant

to early drought and top borer. Erect canes with medium height and reddish orange rind colour. Sparse leaf sheath hairiness, incipient inner auricle, green dewlap, conoidal internode shape, heavy internode waxiness, ovate bud and bud tip not touching growth ring.



Co 0233 (Kosi)

A midlate maturing variety for North Eastern and North central Zone. This variety was identified from Sugarcane Breeding Institute, Research Centre, Motipur (presently under IISR, Lucknow). It is a selection from the cross CoLk 8102 x Co 775 and is suitable for cultivation in the North Central and North East zones. The cane and sugar yield of Co 0233 was 21.11% and 24.62% higher over best standard CoSe 92423. This variety is high yielding, tolerant to early drought, water logging and top borer and resistant to red rot. Plant is erect, leaf sheath has sparse hairs, crescent ligule, dentoid auricle, dark green dew lap, arched, medium wide leaf blade and leaf sheath is weak. The internode colour is purplish green. Internode thickness is medium, cylindrical, with smooth rind and medium waxiness. Bud is round of medium size, bud groove and bud cushion absent and bud tip touching the growth ring.



CoP 06436

The Variety is of cardinal importance in sugarcane cultivation. It fulfilled not only the requirements of cane in early and mid late seasons but also ensured high cane and sugar yield under varied climatic situation, free from diseases with low insect incidences of various kinds which affected yield and sugar recovery. Presently in Bihar, sugarcane is being grown on 2.98 lakh hectares with total production of 149 lakh tons of cane (2013-14) at an average cane yield of 50 tons per hectare. Cane and sugar yield of North Central and North Eastern Zone are lower in comparison to other Zones of India due to many factors which adversely affected yield. Among them, cultivation of low yielding sugarcane varieties is a major factor. Another important factor is spreading of sugarcane varieties not recommended for this zone.

‘CoP 06436 showed consistent performance for cane and sugar yields in plant and ratoon crops across the all zonal centres over the years and trials. This variety recorded 9.18 t/ha commercial cane sugar yield which was 24.1%, 28.3% and 24.4% higher than the checks ‘BO 91’ (7.40 t/ha), ‘CoP 9301’ (7.12 t/ha) and ‘CoSe 92423’ (7.38 t/ha), respectively.



4. East Coast Zone

CoOr 03151 (Sabita)

This early maturing variety, CoOr 03151 is a selection from the progeny of CoC 671 x Co 1148. It was identified in 2009 and released & notified in 2011 for cultivation in East Coast Zone (Odisha, coastal Andhra Pradesh and coastal Tamil Nadu). This variety, on an average, yielded 105.28 t/ha of cane and 11.13 t/ha of sugar. It is moderately resistant to red rot and well suited to irrigated upland and could be grown in rice land with standing water of about 1-2 ft during rainy season. It is

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tolerant to water logging and drought. This variety has good ratooning ability and is a non-flowering. In front line demonstrations, the variety has given more than 60% higher cane yield over the existing varieties. There is growing demand of this variety and is fast spreading in Odisha.



Co 06030

The variety was notified by the Central Sub-Committee on Crop Standards, Notification and Release of Varieties for Agriculture Crops, New Delhi for cultivation in the East Coast zone comprising the coastal regions of Tamil Nadu, Andhra Pradesh and Odisha vide notification no. S.O. 2817(E) dtd 19.9.2013. It recorded a cane yield of 104.0 t/ha compared to the best standard CoV 92102 (95.11 t/ha) with an improvement in yield



of 10.59 % over Co 86249. In ratoon trials, it recorded an improvement of 15.31% over Co 86249 and 12.47% over CoV 92102. The variety Co 06030 was ranked first in the zone with a CCS yield of 11.21 t/ha as against 10.53 t/ha of the best standard CoV 92102. It recorded an improvement of 19.12% over Co 86249, 7.92% over Co 7219 and 6.52% over CoV 92102 for CCS yield. In ratoon trials, it performed well at Anakapalle and Nellikuppam recording 25.53%, 11.73% and 9.32% improvement over the zonal checks Co 86249. The

variety recorded sucrose at 12 months -16.6%, and fibre-13.6% and has A-1 Jaggery quality with golden yellow colour.

Co 86249 (Bhavani)

This variety was developed at ICAR-SBI Regional centre, Kavvuru and identified in 1997 under All India Coordinated Research Project on Sugarcane platform. This variety is high yielding, midlate variety in tropical India. Resistant to red rot, smut and rust. Tolerant to major insect-pests. Tolerant to drought. Erect cane, medium thick, good ratooner. Suitable for planting in October and January/February. This variety was notified for release in year 2000 for cultivation in East Coast Zone comprising Coastal Tamil Nadu, Andhra Pradesh, Odisha and all Zones with the problem of red rot.



Sugarcane varieties suitable under abiotic stress conditions

Zone	Tolerant to water logging	
	Early varieties	Midlate varieties
North West Zone	Co 98014, Co 0118, Co 0239, Co 0237 and CoPk 05191	CoPant 90223, CoPant 97222 and Co 0124,
North Central Zone	Co 89029 and CoLk 94184	Co 87263, Co 87268, BO 128 CoSe 96436, Co 0232 and Co 0233
East Coast Zone	CoOr 03151	Co 86249
Peninsular Zone	-	Co 87025 Co 8371 and CoSnk 05104

Varieties resistant to woolly aphid of sugarcane

During 2002-03 there was an unprecedented epidemic of woolly aphid on sugarcane crop affecting large areas in Maharashtra, Karnataka, Andhra Pradesh and Tamil Nadu. There was heavy reduction in cane yield as well as sucrose recovery in the affected crop. A few sugarcane varieties resistant to woolly aphid were found at the Agricultural Research Station, Sankeshwar (Karnataka). The sugarcane varieties were evaluated for other desired traits also. Two varieties viz., **CoSnk 05103** and **CoSnk 05104** were identified in 2011 and released

& notified in 2014 for cultivation in peninsular zone (Gujarat, Madhya Pradesh, Chattisgarh, Maharashtra, Karnataka, interior plains of Andhra Pradesh, interior plains of Tamil Nadu and Kerala). CoSnk 05103 is an early maturing variety with cane yield of 105.5 t/ha. CoSnk 05104 is a mid-late maturing with cane yield of 106.86 t/ha. Both the varieties are moderately resistant to red rot and tolerant to moisture stress. These two varieties are suitable for cultivation in regions prone to woolly aphid infestation.

Promising sugarcane varieties for Jaggery (Gur) making

Zone	Sugarcane varieties
North West Zone	CoJ 64, CoS 767, Co 6304 & Co 7717
North Cenral & North Eastern Zone	CoS 767 & BO 91
East Coast Zone	CoC 671, Co 7219 & Co 6304
Peninsular Zone	Co 62175, Co 7219, Co 86032, Co 8021, Co 6304 & Co 6907.

Recently Identified Sugarcane Varieties under AICRP on Sugarcane



CoPb 08212 developed by PAU RS, Kapurthala



CoLk 09204 (Ikshu-3) developed by ICAR-IISR, Lucknow



UP 09453 developed by SRS, Gorakhpur



CoLk 11206 (Ikshu-4) developed by ICAR-IISR, Lucknow



CoLk 11203 (Ikshu-5) developed by ICAR-IISR, Lucknow



CoA 11321 developed by RARS, Anakapalle

Recently Released and notified Sugarcane Varieties by Central Varietal Release Committee



Co 09004 (Amritha) developed by
ICAR-SBI, Coimbatore



Co Lk 09204 developed by
ICAR-IISR, Lucknow



UP 09453 developed by
SRS, Gorakhpur (UPCSR, Shahjahanpur)



Co 09022 (Karan-12) developed by
ICAR-SBI RC, Karnal

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