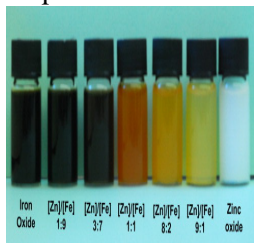
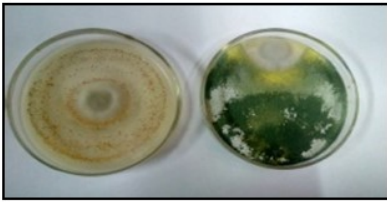
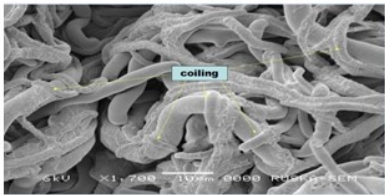
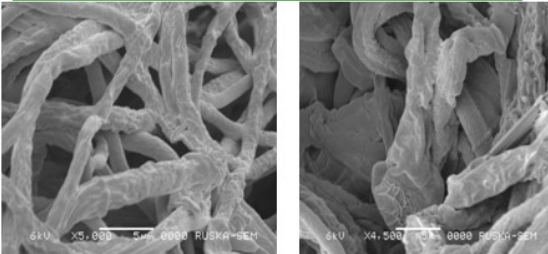


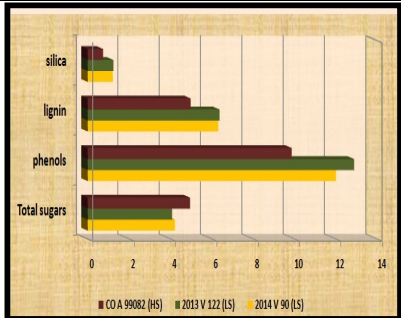
**NOTABLE ACHIEVEMENTS OF RARS/RESEARCH STATION/AICRP
SCHEMES/KVK**

S. No	Description																																		
1	Name of RARS/Research station/AICRP/KVK		Sugarcane Research Station, Vuyyuru																																
2	Year of establishment		1978																																
3	Mandate crops		Sugarcane																																
4	Notable achievements (in bullets)																																		
a	Plant Breeding																																		
Varieties released from SRS, Vuyyuru <table border="1"> <thead> <tr> <th>S.No.</th><th>Clone</th><th>Maturity Group</th><th>Year of Release</th></tr> </thead> <tbody> <tr> <td>1</td><td>Co 8013</td><td>Early</td><td>1996</td></tr> <tr> <td>2</td><td>81 V 48 (Co V 89101)</td><td>Early</td><td>1996</td></tr> <tr> <td>3</td><td>83 V 15 (Co V 92102) Kanakan Durga</td><td>Mid-late</td><td>2002</td></tr> <tr> <td>4</td><td>91 V 83 (Co V 95101) Krishna</td><td>Early</td><td>2002</td></tr> <tr> <td>5</td><td>2000 V 59 (Co V 06-356) Swathi</td><td>Early</td><td>2010</td></tr> <tr> <td>6</td><td>2003 V 46 (Co V 09-356) Bharani</td><td>Early</td><td>2010</td></tr> <tr> <td>7</td><td>2009 V 127 (Co V 15-356) Ranga</td><td>Early</td><td>2018</td></tr> </tbody> </table>  Vuyyuru seedling clones: Early(16): 81 V 48 (Co V 89101), 86 V 96 (Co V 94101), 88 V 21(Co V 94102), 91 V 83 (Co V 95101), 93 V 110, 93 V 297, 97 V 60 (Co V 03-101), 97 V 97, 98 V 95, 98 V 100, 99 V 30 (Co V 05-356), 2000 V 59 (Co V 06-356), 2000 V 160 (Co V 07-356), 2003 V 46 (Co V 09-356), 2006 V 51 (Co V 12-356), 2006 V 41 (Co V 13-356) Mid-late(4) : 82 V 12 (Co V 92101), 83 V 15 (Co V 92102), 83 V 288 (Co V 92103), 89				S.No.	Clone	Maturity Group	Year of Release	1	Co 8013	Early	1996	2	81 V 48 (Co V 89101)	Early	1996	3	83 V 15 (Co V 92102) Kanakan Durga	Mid-late	2002	4	91 V 83 (Co V 95101) Krishna	Early	2002	5	2000 V 59 (Co V 06-356) Swathi	Early	2010	6	2003 V 46 (Co V 09-356) Bharani	Early	2010	7	2009 V 127 (Co V 15-356) Ranga	Early	2018
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	V 74, 97 V 118(Co V 03-102), 2002 V 48, 2005 V 96 (Co V 12-357) <i>New promising clones identified and in testing and multiplication in sugar factory Liason farms of A.P., Tamilnadu, Orissa and Telangana :</i> Early: 2007 V 127 (Co V 14-356), 2009 V 127(Co V 15-356), 2012 V 123(Co V 18-356), 2012 V 67 (Co V 18-357) Mid-late: 2008 V 257(Co V 18-358), 2009 V 89(Co V 19-359), 2010 V 146 (Co V 16-357), 2013 V 46 (Co V19-358).	
b	Agronomy	
	➤ Green manure crops like sunhemp, cow pea and pilipesara were raised along with organic manures like pressmud cake and FYM before planting of the sugarcane crop and observed that with the substitution of the green manures, 25% of inorganic fertilizers can be reduced without affecting cane yield and juice quality ➤ The optimum levels of nitrogen for plant crop was 168Kg/ha 75Kg P₂O₅ /ha and 100 Kg K₂O/ha and for ratoon crop, it is 280KgN/ha, 100Kg P₂O₅ and 168Kg K₂ O/ha. Phosphorus and potash are recommended as basal where as nitrogen in two equal splits at 45th and 90th day after planting ➤ Experimental data revealed that phosphorus and potash should be applied at the time of planting in the furrows. Nitrogen is recommended through pocketing near the base of the clump or in plough furrow. This method proved superior to conventional broadcasting method in promoting higher cane production ➤ The herbicides metribuzine @ 1.0kg ai/ha (or) oxyfolfurfen @ 0.2 l/ha was effective in controlling weeds as pre emergence or early post emergence (35-40 DAP) ➤ Paired row (2'4') was found better to facilitate mechanical harvesting instead of wide row due to lodging problem in coastal areas ➤ Surface or sub-surface drip are equally effective with paired row planting with drip there was 35% yield increase and 26% water saving	 Raising Green manure crop  Paired row in sugarcane  Surface drip in sugarcane
c	Soil Science	
	Recommended NPK along with 7.5 tons of bio compost per hectare as basal gave significantly higher cane yield (118.8 t/ha) and percent juice sucrose (20.5%). Application of 5t of enriched pressmud cake enriched with <i>Trichoderma</i> along with recommended NPK recorded highest cane yield of 117.8 t/ha and juice sucrose of 18.39% over filter pressmud cake. Performance of sugarcane varieties under saline soil conditions at the early formative phase showed that the	 Biocompost

varieties, 81 V 48, Co 8013, Co 8021, Co 7805, 83 V 15, 89V 74 and 99 V 30 proved superior to other varieties by maintaining higher percent germination as well as highest shoot number Evaluation of liquid bio-fertilizers on yield and quality of sugarcane inferred that the highest yield was observed in the treatment where in 100% RDF + LBF as basal & at 45 DAP was applied along with FYM @ 10t ha⁻¹ (Liquid biofertilisers includes Azatobactor @ 2.5 L ha⁻¹ + Phosphobacteria @ 2.5 L ha⁻¹ + Potassium solubilising bacteria (KSB) @ 2.5 L ha⁻¹) Substitution of 25% of inorganic fertilizers (NPK) with organic manures like sugarcane trash, press mud cake and farm yard manure recorded the cane yields on par with 100% inorganic fertilizers (126.90 t/ha) Effect of nanoscale oxides of zinc and iron on the productivity of sugarcane inferred that the highest yield was observed in the treatment T₁₀ - RDF + Application of Nano Iron Oxide @ 300 ppm at 45 & 90 DAP (82.12 t ha⁻¹) followed by T₇: RDF + Application of nano ZnO @ @ 150 ppm lit at 45 & 90 DAP On farm trial on Revisiting of fertilizer recommendations to sugarcane in Krishna Zone (Plant-I) stated that application of 252-75-100-25-12.5-2.5 kg ha⁻¹ of N-P₂O₅-K₂O-S-Zn-B (T₁) recorded higher yield (95.5 t ha⁻¹) over application of 168-75-100 kg N-P₂O₅-K₂O (T₂) (92.1 t ha⁻¹) indicating that the superiority of application of 150% N over 100% N Experiment on “Organic farming research in sugarcane” was started during 2010-11 and this is the seventh year of conducting experiment. Available nitrogen and potassium are reduced from initial value of 390 kg/ha of nitrogen and 599 kg K₂O/ha and the reduction is more in inorganic plot for nitrogen and in organic plot for potassium. Build up of phosphorus and organic carbon is noticed from initial value of 91.6 kg P₂O₅/ha to 168.9 kg P₂O₅/ha and 0.52 % to 0.65 % of organic carbon and the buildup is more in organic plot	 Liquid biofertilizers  Nanooxides  Organic farming trial
d Plant Pathology Sugarcane genotypes developed in breeding discipline were evaluated every year for red rot and smut resistance. The varieties Co 8013, 81 V 48, 83 V 15, 83 V 288, 86 V 96, 91 V 83, 89 V 74, 2000 V 59, 2003 V 46, 2002 V 48, 2007 V 127, 2009 V 127, 2008 V 257 were found resistant to red rot. The varieties 91 V 83, 89 V 74, 92 V 221, 93 V 110, 98 V 95 98 V 20, 98 V 100 were spotted out for resistant to smut and recommended for commercial cultivation	 Plug method

	Native entophytic bacteria was isolated from internal stalk tissue of sugarcane identified as <i>Pseudomonas Sp</i> (Report received from CSIR – Institute of Microbial Technology Chandigarh) dt 26-06-2020. Native potential antagonistic organisms were identified from Rhizosphere of sugarcane identified as different species of <i>Trichoderma</i>. Report received from IARI, New Delhi, dt 01-07-2020
	Invitro antagonism of <i>Trichoderma asperellum</i> against red rot pathogen  Colling of <i>C. falcatum</i> hyphae by <i>Trichoderma asperellum</i>  IN VITRO ANTAGONISM OF <i>Pseudomonas Sp</i> AGAINST <i>C. FALCATUM</i>  Dissolution and disintegration of <i>C. falcatum</i> mycelium by <i>Pseudomonas Sp</i> 
	Under field conditions, these native antagonistic organisms were found effective in reducing the disease intensity. Soil application at the time of planting was most effective method and also found improvement in quantitative and qualitative parameters. Integrated disease management module was developed in reduction of red rot disease intensity by exploitation of native potential biocontrol agents with need based foliar spray of suitable fungicides at crucial stage i.e. 7th, 8th month stage in combination of recommended cultural and agronomical strategies to ward off red rot pathogen For smut disease management – sett dip with Propiconazole 0.1 % and Hexaconazole 0.2 % was recommended in plant crop and spraying at 20-25 days after planting. Whereas in ratoon crop – thorough spraying of Hexaconazole 0.2 % or Propiconazole 0.1 % on stubbles immediately after ratooning and 20-25 days after rationing was found effective in reduction of the disease incidence Population density of <i>Trichoderma asperellum</i> in different substrates was studied. Population in all the substrates i.e. FYM, Pressmud Cake, Neem cake, blackgram husk was more or less similar Population dynamics of applied biofertilizer and biopesticides were investigated. Application of biofertilizer and biopesticide at the time of planting was significantly effective, they were sustained and multiplied maximum population and improved cane yield. Impact of application of pre emergence weedicide (Atrazine) on establishment of organisms pertaining to biopesticides which are applied at the time of planting was studied. There was no deleterious effect on establishment of organism in the soil

	Plant extracts of Pongamea, Tobacco, Eucalyptus, Garlic, Turmeric, Neem, Ginger and Tulasi, were tested against <i>Colletotrichum falcatum</i> by poisoned food technique <i>in vitro</i>. Among which Eucalyptus leaf extract was shown 100 % inhibition at 20 % concentration. Tobacco extract inhibited the mycelial growth up to 89.04 percent at 25 % concentration followed by pongamea (88.09 %) Turnimc (71.42 %) and ginger (49.28 %) @ 25 % concentration	
e	Entomology	
	Sowing of intercrops like cowpea, cluster bean, green gram, black gram, soya bean, ground nut and sunnhemp resulted in reduction in percent incidence of Early shoot borer and Internode borer (below ETL) compared to sole crop of sugarcane	 Intercropping in sugarcane
	Field release of egg parasitoid <i>Trichogramma chilonis</i> @ 50,000/ha at weekly intervals from 4th week after planting up to 90th day at weekly intervals reduced shoot borer incidence (below ETL) compared to field release at fortnight intervals	 Field release of <i>T.chilonis</i>
	The bio chemical analysis of sugarcane genotypes revealed that total sugars content had exerted significant positive correlation with per cent dead hearts whereas, the total phenol content, lignin and silica per cent had exhibited non significant negative correlation with per cent dead hearts by early shoot borer	 Biochemical analysis
	The survey in farmer's fields of Krishna district (destructive sampling) revealed that the ESB incidence ranged between 5.20 to 38.50 per cent dead hearts with peak incidence in II fortnight of April. The INB and scale incidence ranged from 38.50 to 85.00 and 75.00 to 90.00 per cent, respectively during II fortnight of August and I fortnight of January, respectively. Delayed monsoons increased the incidence of yellow mite (21.50) and peak incidence was observed during I fortnight of June. The peak incidence of pyrilla and rodents were noticed during II fortnight of September and II fortnight of May with 19.50 per cent incidence and 38.0 live burrows per acre, respectively	 Destructive sampling

	The studies on bio intensive pest management (BIPM) components in sugarcane inferred that, the field release of <i>Trichogramma chilonis</i> @ 50,000 ha⁻¹ at 30 DAP and two times after node formation at an interval of 7 days in combination with installation of pheromone traps @ 20 ha⁻¹ for mass trapping at 30 DAP till harvest had registered comparatively less infestation of sugarcane borers with 35-40 and 55-65 per cent reduction of early shoot borer and internode borer incidence (On farm trials)	 On farm trial-BIPM
	Among various biopesticides evaluated, <i>Metarhizium anisopliae</i> had recorded highest per cent suppression of termite infestation with respect to per cent mean number of setts infested and per cent portion of setts infested with 59.41 -64.5 per cent reduction over control	 Termite infestation
	Scale insect management : without destrashing the lower leaves the chemical application of imidacloprid @ 0.25 ml/l and clothionidin @ 0.25g/l were found effective in suppressing scale insect with 83.7 and 81.0 per cent reduction over control, respectively. However, destrashing the lower leaves followed by spraying with imidacloprid @ 0.25 ml/l and clothionidin @ 0.25g/l had registered 91.8 and 89.7 per cent reduction of scale insect incidence over control, respectively.	 Scale infestation in sugarcane
	Among various insecticides, imidacloprid @ 0.25 ml/l had registered significant superiority with respect to per cent mortality of egg massess and nymph+adult of pyrilla infesting sugarcane. However, the potentiality of parasitism by <i>Epiricania melanoleuca</i> had varied and influenced by application of insecticides and highest per cent parasitism was recorded in control plots.	 Pyrilla in sugarcane

**Sugarcane Variety 2009 V 127 (Co V 15-356) released as 'RANGA' in 2018
from S.R.S., Vuyyuru**



2009 V 127 (Co V 15-356)- RANGA

1	Crop	Sugarcane
2	Variety	2009 V 127 (Co V 15-356)- RANGA
3	Parentage	87 A 298 (Co A 92081) GC
4	Breeding Method	Bi-parental mating followed by selection
5	Year of release	2018
6	Release through CVRC/ SVRC	SVRC
7	Crop duration	Early (10 months)
8	Season	Kharif/Rabi
9	Potential yield	Cane yield 120-13 t/ha, Juice sucrose 19.5 -20% CCS yield : 17.5 t/ha
10	Area Suitability	Suitable for irrigated and waterlogged conditions and also in areas with saline irrigation water
11	Salient features	High yielding, sucrose rich, early maturing, red rot resistant variety with thick canes and good ratoonability .



2003 V 46 (Co V 09-356)- BHARANI

1	Crop	Sugarcane
2	Variety	2003 V 46 (Co V 09-356)- BHARANI
3	Parentage	86 A 146 (Co A 92082) X 83 V 15 (Co V 92102)
4	Breeding Method	Bi-parental mating followed by selection
5	Year of release	2010
6	Release through CVRC/ SVRC	SVRC
7	Crop duration	Early (10 months)
8	Season	Kharif/Rabi
9	Potential yield	Cane yield 130-140 t/ha, Juice sucrose 19.5 -20% CCS yield : 20 t/ha
10	Area Suitability	Occupied large area in East-Coast zone of India. Highly suitable for waterlogging. Suitable for irrigated and waterlogged conditions and also in areas with saline irrigation water
11	Salient features	High yielding, sucrose rich, early maturing, red rot resistant variety with suitability for multi ratooning, high quality jaggery and mechanical harvesting. So far occupied 40% area in A.P. and also in cultivation in Tamilnadu and Orissa.



2000 V 59 (Co V 06-356)- SWATHI

1	Crop	Sugarcane
2	Variety	2000 V 59 (Co V 06-356)- SWATHI
3	Parentage	MS 6847 X Co 8213
4	Breeding Method	Bi-parental mating followed by selection
5	Year of release	2010
6	Release through CVRC/ SVRC	SVRC
7	Crop duration	Early (10 months)
8	Season	Kharif/Rabi
9	Potential yield	Cane yield 125-130 t/ha, Juice sucrose: 19%
10	Area Suitability	Suitable for irrigated conditions and uplands.
11	Salient features	High yielding clone possessing early vogour. Resistant to red rot and moderately susceptible to smut. Retains yield and quality upto 11 months.



83 V 15(Co V 92102)- KANAKA DURGA

1	Crop	Sugarcane
2	Variety	83 V 15(Co V 92102)- KANAKA DURGA
3	Parentage	Co C 671 X Co 6806
4	Breeding Method	Bi-parental mating followed by selection
5	Year of release	2002
6	Release through CVRC/ SVRC	SVRC
7	Crop duration	Mid-late (1-12 months)
8	Season	Kharif/Rabi
9	Potential yield	Cane yield 150 t/ha, Juice sucrose: 19-20%
10	Area Suitability	Occupied considerable area in East-Coast zone of India. Suitable for rainfed, water logged conditions, problematic soils and rainfed late planting.
11	Salient features	High yielding, high tillering clone. Good ratooner. Resistant to red rot and smut. Susceptible to post harvest deterioration. Gives good quality jaggery.



91 V 83(Co V 95101)- KRISHNA

1	Crop	Sugarcane
2	Variety	91 V 83(Co V 95101)- KRISHNA
3	Parentage	Co 798 X Co 62198
4	Breeding Method	Bi-parental mating followed by selection
5	Year of release	2002
6	Release through CVRC/ SVRC	SVRC
7	Crop duration	Mid-late (11-12 months)
8	Season	Kharif/Rabi
9	Potential yield	Cane yield 130 t/ha, Juice sucrose: 19-20%
10	Area Suitability	Suitable for irrigated and water logged conditions.
11	Salient features	Opening mill cane.Erect, sucrose rich, solid cane with longer internodes.Resistant to red rot (cf 419, cf 671 and cf 997 races) and smut.Susceptible to GSD.Susceptible to post harvest deterioration.



81 V 48 (Co V 89101)

1	Crop	Sugarcane
2	Variety	81 V 48 (Co V 89101)
3	Parentage	N Co 310 X Co A 7602
4	Breeding Method	Bi-parental mating followed by selection
5	Year of release	1996
6	Release through CVRC/ SVRC	SVRC
7	Crop duration	Early (10 months)
8	Season	Kharif/Rabi
9	Potential yield	Cane yield 130 -150 t/ha, Juice sucrose: 20%
10	Area Suitability	Suitable for irrigated and water logged conditions.
11	Salient features	High yielding, sucrose rich, high tillering clone. Good ratooner. Resistant to smut. Succumbed to cf 419 race of red rot.



Co 8013

1	Crop	Sugarcane
2	Variety	Co 8013
3	Parentage	Co 740 X Co 6304
4	Breeding Method	Bi-parental mating followed by selection
5	Year of release	1996
6	Release through CVRC/ SVRC	SVRC
7	Crop duration	Early (10 months)
8	Season	Kharif/Rabi
9	Potential yield	Cane yield 125 t/ha, Juice sucrose: 18-19%
10	Area Suitability	Suitable to irrigated conditions and rainfed areas.
11	Salient features	High yielding, sucrose rich, high tillering clone. Good ratooner. Resistant to red rot and smut. With drawn from cultivation due to new better performing clones.



93 V 297

1	Crop	Sugarcane
2	Variety	93 V 297
3	Parentage	Co 6304 GC
4	Breeding Method	Bi-parental mating followed by selection
5	Year of release	-
6	Release through CVRC/ SVRC	-
7	Crop duration	Early (10 months)
8	Season	Kharif/Rabi
9	Potential yield	Cane yield 130 -140 t/ha, Juice sucrose: 20%
10	Area Suitability	Suitable to irrigated and waterlogged conditions. But, confined to uplands and borewell irrigated areas due to susceptibility to red rot.
11	Salient features	Opening mill cane.High yielding, sucrose rich clone with thick canes. Gives good quality jaggery. Tolerant to smut.Succumbed to <i>cf</i> 419 and <i>cf</i> 671 races of red rot.



86 V 96 (Co V 94101)

1	Crop	Sugarcane
2	Variety	86 V 96 (Co V 94101)
3	Parentage	Co 7704 X Co 775
4	Breeding Method	Bi-parental mating followed by selection
5	Year of release	-
6	Release through CVRC/ SVRC	-
7	Crop duration	Early (10 months)
8	Season	Kharif/Rabi
9	Potential yield	Cane yield 130 t/ha, Juice sucrose: 19-20%
10	Area Suitability	Occupied considerable area in East-Coast zone of India. Suitable for I-D conditions and garden lands.
11	Salient features	Opening mill cane.High yielding, sucrose rich clone. Resistant to red rot and smut.Gives good quality jaggery.Can not tolerate drought and waterlogging.



2002 V 48

1	Crop	Sugarcane
2	Variety	2002 V 48
3	Parentage	Co 8013 GC
4	Breeding Method	Bi-parental mating followed by selection
5	Year of release	-
6	Release through CVRC/ SVRC	-
7	Crop duration	Mid-late (11-12 months)
8	Season	Kharif/Rabi
9	Potential yield	Cane yield 140 t/ha, Juice sucrose: 18-19%
10	Area Suitability	Suitable for irrigated, waterlogged conditions and uplands.
11	Salient features	High yielding clone. Each cane weighs more than 2 kg. Erect, non-lodging clone with good tillering ability. Good ratooner. Resistant to smut and field tolerant to red rot.



98 V 95

1	Crop	Sugarcane
2	Variety	98 V 95
3	Parentage	Co 8013 GC
4	Breeding Method	Bi-parental mating followed by selection
5	Year of release	-
6	Release through CVRC/ SVRC	-
7	Crop duration	Early (10 months)
8	Season	Kharif/Rabi
9	Potential yield	Cane yield 125-130 t/ha, Juice sucrose: 19%
10	Area Suitability	Suitable for irrigated, waterlogged conditions and uplands.
11	Salient features	High yielding clone with good girth. Resistant to red rot and smut.

