

Action taken Report on Recommendation in Evaluation Report of KEA

1. **Title of the project:** Evaluation of RKVY project on establishment of jaggery Park in southern Karnataka by the department of Agriculture (period 2008-09 to 2012-13) (2017-18)
2. **Department:** Agriculture Department
3. **Consultant Organization:** M/s. Hyderabad Karnataka Centre for Advanced Learning – Gulbarga

Sl. No.	Recommendation	Action taken report	Action to be taken / Remarks
01	Development of sugar rich cane varieties, agro techniques, effective marketable sugarcane based cropping system with different maturity duration in order to meet the cane requirement for jaggery industry throughout the year under changed climate condition and crop diversification.	Developed and released sugar rich varieties viz VCF 0517 Cove 16061 Cove 16062 with different maturity group to meet the cane requirement for jaggery industry throughout the year. Wide row planting is advocated for better cane quality for jaggery preparation. Inter cropping system of pulses viz, vegetable bean, Soybean, Green gram, black gram and short duration crops have been recommended for better cane yield and quality and which help in accrual of income in the initial stage of cane cultivation Drip fertigation has been recommended for sugarcane cultivation which results in better cane yield, cane and juice quality with higher nutrient and water use efficiency	Developing & identification of new sugar rich varieties under different maturity group for jaggery preparation
02	Strengthening of seed production for sugar rich varieties suitable for jaggery production.	Seed production programme was taken up for newly released varieties at ZARS V. C. Farm	strengthen the seed production of sugar rich varieties by tissue culture and breeder seed product under

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03	Development of suitable technology for preparation of jaggery from immature aged cane for changed	<p>Immature cane will have more of reducing sugars than sucrose. As a sign of maturity of sugarcane it should attain higher percentage (75-82%) of sucrose for jaggery preparation. Lower sucrose and higher reducing sugars sucrose & fructose) leads to further inversion and deterioration of jaggery prepared from such cane.</p> <p>In over aged cane the sucrose will be subjected to inversion and thus hastens the determination of quality of jaggery. In either of the canes it is hot advisable to prepare chemical free jaggery. However, with addition of chemicals (Hydrose, safolite, washing & baking soda) jaggery can be prepared with minimum shelf life and poor quality.</p>	revolving fund.
04	Training quality cane and jaggery processing at regional levels.	<p>Training programme (3) have been organized at jaggery park covering 141 jaggery unit owners on quality sugarcane production and chemical free jaggery preparation. Further 25 training programmes to lead sugarcane farmers of NSL sugars, Koppa have been organized to impart training on quality sugarcane production for sugar and jaggery in with about 750 farmers have been benefitted.</p>	Need to train the owner of jaggery units further to cover an the jaggery unit of Mandya district
05	To develop organic clarificants ready to use	Many organic clarificants have been	Some more herbal clarificants for

	vegetable clarificants for quality jaggery to use vegetable clarificants for quality jaggery to meet consumer's demand of niche metro and international markets.	tried at jaggery Park, i.e., Groundnut seed extract, soybean seed extract, Aloe Vera extract, castor seed extract, Bhenidi steam mucilage, vegetable Bhenidi fruit mucilage, hibiscus mucilage. Among them, Bhenidi steam mucilage, Groundnut seed extract, soybean seed extract & castor seed extract with given attractive colour (golden yellow colour) to jaggery. From the point of view of cost of herbal clarificants, Bhenidi steam mucilage is recorded for jaggery making compared to clarificants, castor will have factor and here it is hot recorded. Though, it given food colour to jaggery. The dosage of use of there clarificants variety from 800 to 1 kg for every 600 liters of cane juice.	juice clarification will be attempted
06	Jaggery processing unit must address with HACCP norms for hygiene and quality of processed products.	HACCP, hazard analysis and critical control points. Jaggery processing plant at jaggery park has been Set up with all equipments fabricated from stainless steel SS 304 for hygiene and quality. As chemical free jaggery is being prepare at jaggery park since its inception, hazardous chemicals that are going to have health impact on human is a nonissue.	
07	Automation and development of efficient sugarcane crushing, juice storage and transportation system.	Partial automation of juice extraction, conveyance of bagasse through bagasse conveyor belt, filtration of juice and	Sections like cane feeding, scum removal, drying unit of bagasse as to be automated in future

		hydraulic system for transportation of syrup from pan to cooling pit is envisaged at jaggery.	
08	To develop high combustion and efficient heat furnaces for optimal fuel (pellets / brickets) uses and device surplus bagasse for pulp and paper production.	Furnaces are designed in collaboration with IISc, Bangalore, which are efficient its heat utilization.	Devices for bagasse drying & pelleting are to be installed for more fuel efficiency.
09	The R & D work should be initiated to develop quality parameters for export promotion of traditional sweetener products in niche area market.	Quality standards have been set for grading jaggery based on Net Rendament Value (NRV) and ISI standards	Shelf life studies have to be done to increase the longevity of jaggery storage
10	Develop technology for alternative uses of scum for value added products and diversified uses	Scum is used in biogas plant and for organic manure preparation because of its high load of microbes for decomposition of organic matter	Alternative diversified uses are to be explored
11	Develop efficient cane crushing system for 65-70% juice extraction efficiency.	The present crushers are efficient in extraction with 60-65 per cent juice efficiency	For higher juice efficiency mill tandem has to be established
12	Automation of juice handling and transportation to boiling pans for maintaining products hygiene and quality of jaggery. The vegetative and eco- friendly clarificants should be used to minimize harmful effect of chemicals.	-	Automation of juice handling is to be installed
13	Solar and bagasse co-power generation system needs research.	-	Research need to be done on solar and bagasse cogeneration system
14	Develop high combustion, vacuum-cum – open pan hybrid furnaces for optimal fuel efficiency and divert surplus bagasse for pulp and paper production.	Steam based jaggery preparation unit has been established at jaggery park, V.C. Farm, Mandya for higher fuel me efficiency of sugarcane bagasse	

15	Effort should be made to develop semi-automatic, mobile jaggery processing units on pilot basis in rural areas.	-	Instead of mobile units the existing defunct units came be rejuvenated and operated seasonally
16	Research work should be initiated to develop quality parameters, protocols matching FSSAI, AGMARK and ISO 22000:2005 for export promotion of jaggery products for niche market.	Jaggery grading standards have been established for AGMARK and ISO standards keeping in view the export potential of jaggery	
Administrative Issues			
17	Encourage co-operative processing, storage packing and e marketing infrastructure for jaggery in potential area.	-	Administrative issues to be taken up by the concerned establishments
18	Strict enforcement of existing sugarcane area regulations by government agency under each sugar mill jurisdiction.	-	
19	Regulatory authority / body to govern the hygiene of jaggery processing premises.	-	
20	Chemical free jaggery does not have a niche market. Awareness to be created among the producers and consumers alike on ill effect of chemical jaggery and health benefits of chemical free jaggery.	-	
21	Soft loan for establishment and modernizing standard jaggery processing units in the cane production zone.	-	
Policy Issue			
22	Banning of chemically processed jaggery by using <u>Sodium formaldehyde sulphoxylate</u> ((Decolite and safolite))	-	Practices issues to be taken up by the concerned departments / agencies

23	Jaggery as a tool in public distribution system (PDS) for improvement of the health of school children and people of rural areas besides pregnant women.		
24	Establishment of farmer's produce promotion society (FARPO): a model to Rejuvenate rural economy and self employment opportunities for rural youth in jaggery processing (Punjab Model)		
25	Convert unorganized sector into organized sector by forming jaggery manufacturers association at national and regional levels. SHG's / co-operatives should be formed to protect the interest of cane producers and jaggery processors.		
26	Pilot small scale units of pulp and paper making from bagasse and other wastage material should be integrated with economically viable jaggery units in rural areas.		