

SCIENTIFIC PRODUCTION OF JAGGERY AND KHANDSARI FROM SUGARCANE AND VALUE ADDITION

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Sugarcane is used for the production of sugar, khandsari and jaggery in India. About 70 percent of the total sugarcane produced in the country is used for sugar production, 20 percent for khandsari and jaggery production and 5-8 percent for sowing and sucking. Presently, the production of sugar in the country is 260

lakh tones and the production of jaggery and khandsari is 80-90 lakh tonnes. Due to the changing environment and lifestyle, per capita use of jaggery in the country has reduced sharply in the last decades, but still 5 -6 kg of jaggery is used in a year per person and the use of jaggery is still prevalent in rural areas.

JAGGERY IS HEALTHIER SUBSTITUTE THAN SUGAR:

With the cost of production of jaggery being lower than sugar, the use of jaggery is also considered to be healthy. During the health care time, sending jaggery to foreign countries brings foreign exchange to India, so jaggery has export potential. Farmers can get more benefit by producing best quality jaggery. Jaggery is rich in mineral elements like iron, manganese etc. It has also been seen to have beneficial effects on the metabolic processes of human body. Thus jaggery production is an integral part of our life. And for this, adequate knowledge of the beneficial sugarcane cultivation techniques is also necessary so that the supply of sugarcane required for making jaggery is ensured and the jaggery is more abundant, so that both farmers and jaggery growers can get proper benefits.

JAGGERY QUALITY:

It is a dense substance made from partially cleaned and thickened sugarcane juice. The best jaggery is golden colored, granular and sweet, and it can be kept for more days. The quality of jaggery has various parameters. The criteria for the quality of jaggery by the Food Safety and Standards Authority of India (FSSAI) are given in the table below, which are as follows:

S.No.	Quality Criteria	Permissible Limits (%)
1.	Sucrose (sugar) %, minimum	70.0
2.	Reducing Sugar %, maximum	20.0
3.	Moisture %, maximum	7.0
4.	Total Sugars %, minimum	90.0
5.	Extraneous matter and Water insoluble matter %, maximum	2.0
6.	Sulfate ash %, maximum	4.0
7.	Ash insoluble in dil. hydrochloric acid %, maximum	0.5

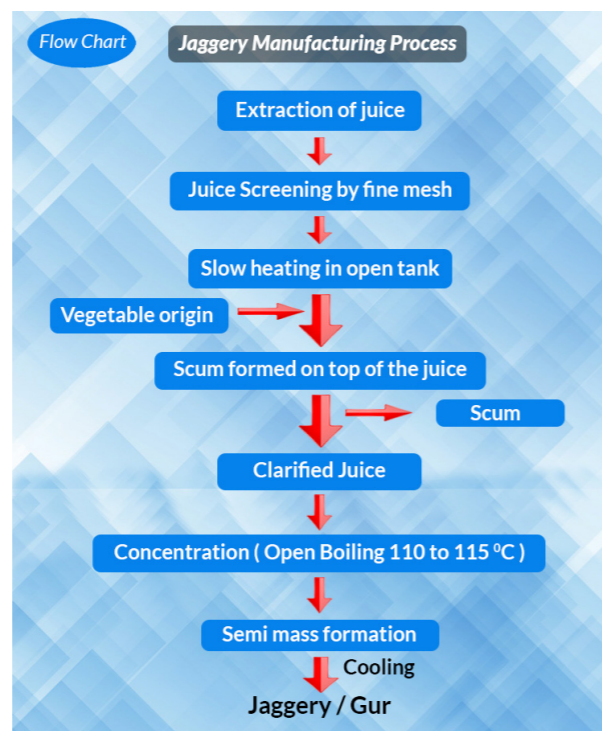
JAGGERY INDUSTRY:

Jaggery industry is a major cottage industry in India. The juice is heated on the kilns while making jaggery. Jaggery-making kilns are prevalent in rural areas. Their structure is different at different places. Fuel consumption is high in these kilns, keeping in mind the needs of farmers, two sugarcane and three cauldron kilns have been developed at the Indian Sugarcane Research Institute, Lucknow, and in other areas new modern method of jaggery production such as vacuum evaporation are also used. Through which pure, clean and good quality jaggery can be prepared.



SUITABLE METHODS OF MAKING JAGGERY

To make good quality jaggery, cleaning of sugarcane juice is necessary. Sugar cane juice is cleaned in many ways in which botanical juice purifiers (okra, phalsa, semal etc.) and chemical juice purifiers (hydros, chunas, alum etc.) are used. After collecting the juice in the drum, keep it to be stable so that the larger particles sit in the bottom of the drum and the top juice comes out. It is necessary to boil the juice as soon as it is removed so that the enzyme water decomposition can be reduced in it and ensure that the pH of the juice is 6.5 -7.0. The juice should be heated rapidly so that the color and brightness of the jaggery can be improved. The color of jaggery is affected due to colloidal substances, so the jaggery should be cleaned properly.



SUITABLE PACKAGING AND MARKETING OF JAGGERY:

Gur packaging has basically two benefits, firstly to increase the income of jaggery manufacturer and secondly to improve its quality. The jaggery packaging material should be such that air and water do not reach the jaggery so that its color, smell, shape and aroma can be protected. In many institutes, jaggery packaging material like polythene bags, plastic films, butter paper, hessian cloth, aluminum leaf, wax box paper, etc. has been used. It has been found by the users that the quality of jaggery is maintained to a large extent by keeping it in a plastic film.



JAGGERY VALUE ADDITION:

Jaggery has been used for a long time in making various value-added foods. Among them, Revdi, Gajak, Chikki Patti etc. are the main ones. In jaggery season and now in almost every season, all these are seen almost everywhere. Ramdana, Channa, Peanuts, Sesame, etc. make a good combination with jaggery. The grains of sugarcane, peanuts, sesame seeds, etc. can be whole or broken. After mixing jaggery with wheat flour in a certain proportion and removing it from the extruder, cooked Sev can be produced. In this way, Sev can also be made with gram flour and soybean flour. Jaggery can also be made with chutney, chocolate and other snacks.

Jaggery and Khandsari industries are domestic industries in disorganized sector which can be made good by using modern technology. In this, the industry can be expanded by changing the way of extraction of juice and using the modern process instead of the traditional process of jaggery and khandsari. Many researchers have researched and invented new ways which farmers can not only increase their income by adopting as well as increase the quality of the product and earn more value. Several schemes and steps are also being taken by the government to promote these small scale industries.

