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EDITOR'S NOTE

I am happy to forward the thirty three and thirty four volume of the Bangladesh Journal of Sugarcane. The volume contains problem oriented and need based research results and recommendations to overcome constrains of sugarcane cultivation in the country as well as elsewhere in the world. The contributors of this volume are mostly from this institute.

On behalf of the editorial board, I thank the contribitors of 33 and 34th volume of the Bangladesh Journal of Sugarcane for their interest and continued support to the journal. I strongly believe that Bangladesh Journal of Sugarcane is an ideal journal for young scientists working on sugarcane and other ancillary sugar crops. It is our expectation that in the future submission of articles will go up and help in bringing out next volume in time.

It may be noted that we are interested in bringing out some changes to accommodate quality review papers and research results on allied sugar crops.

I believe that the articles of this volume would help in minimizing field orinted sugarcane production and management related problems. This is inevitable to find out ways and means of ensuring our research output ready to face the new economic challenges and climatic change. This will benefit the farmers, students, extension workers, teachers, scientists, NGOs and interested persons in increasing the yield of cane and sugar that will enhance the productivity in achieving self sufficiency in sugar and goor production in Bangladesh.

Dr. Kamal Humayun Kabir
Director General
&
Editor

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An Overview of Sugarcane Research in Bangladesh

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Key words : History of sugarcane research in Bangladesh, present status, future prospects

Dr. K. H. Kabir

Sugarcane research started in this subcontinent with the establishment of the Sugarcane Breeding Station (SBS) at Coimbatore (India) in 1912 and in Bangladesh in 1933. The history of sugarcane research in Bangladesh is briefly mentioned here:

Sugarcane Seedling Testing Laboratory (SSTL): 1933-1947

This laboratory was established at Monipuri farm, Dhaka in 1933 to conduct trials with sugarcane fuzz from Coimbatore for the purpose of selecting improved varieties suitable for this region. It was financed by the Royal Imperial Council of Agriculture and it was functioned upto 1947. A few good varieties like Co 419, Co 527 etc. were selected by this laboratory are still cultivating in different parts of Bangladesh.

Sugarcane Research Station (SRS): 1951-1971

The Ministry of Agriculture erstwhile Government of East Pakistan established the Sugarcane Research Station (SRS) at the present site of Ishurdi, Pabna in 1951. The station started functioning with only 17 scientists and support staffs and very poor logistic support. Research was then limited to breeding and selection. This station successfully developed and released nine varieties of which Isd 1/53 and Isd 2/54 are still in cultivation in different parts of the country. Food and Agricultural Council of the then Pakistan placed it under the control of the Central Government. But they returned it back to the Ministry of Agriculture of the Provincial Government in 1965 without any significant development. The research activities continued with limited manpower and logistic support. The station was almost destroyed during the War of liberation in 1971.

Sugarcane Research Institute (SRI): 1971-1979

After independence, SRS was handed over to the Bangladesh Sugar Mills Corporation (BSMC) (present BSFIC) under the Ministry of Industry in 1973. Realising the importance of sugar industry in the country, the ECNEC approved the Sugar Research Institute (SRI) scheme during the First Five Year Plan. Under this scheme, SRS was upgraded and renamed as Sugarcane Research Institute (SRI) with the provision of a regional station at Thakurgaon.

Sugarcane Research and Training Institute (SRTI): 1980-1988

During Second Five Year Plan (1980-85), Bangladesh Sugar and Food Industries Corporation submitted a scheme for Staff Training Centre (STC) at Ishurdi and Thakurgaon. ECNEC approved a revised scheme merging Staff Training Centre with Sugarcane Research Institute and renamed it as Sugarcane Research and Training Institute (SRTI) during 1980-1981.

Bangladesh Sugarcane Research Institute (BSRI):

As a follow-up of a Cabinet decision taken in April, 1987, Government transferred SRTI from BSFIC (Ministry of Industry) to the Ministry of Agriculture to upgrade it a national institute. In 1996, the Honorable President of the People's Republic of Bangladesh promulgated the BSRI Ordinance (Ordinance No. 23, of the 18th June, 1996). Through this ordinance, the Government terminated "Sugarcane Research and Training Institute" and established an autonomous national Institute named "Bangladesh Sugarcane Research Institute" with a broader mandate to conduct research on sugarcane and other ancillary sugar crops all over the country. This act was finally amended [BSRI (amendment) Act, 21, September, 2002] to give the institute a common management structure similar to that of the other institute under the National Agricultural Research System (NARS).

At present the institute posses 2 (two) regional stations (Thakurgaon and Gazipur) and 7 (seven) substations (Barisal, Chuadanga, Rajshahi, Sirajganj, Joypurhat, Jamalpur and Chunarughat in Hobiganj). Due to huge crop competition along with longer crop duration (12-14 months) sugarcane has been pushed to marginal lands (Low land, Charland, Low fertile land). During the last two decade the area of sugarcane has been reduced from 0.20 million hectare to 0.15 million hectare, but the demand of sugar and goor is increasing day by day and present requirement of sugar and goor in the country is about 2 million tons. Our domestic production is about 0.6 million tons (0.1 million ton sugar and 0.5 million tons goor). The shortage is being fulfilled through import. Sugar is an essential food item. Without glucose (metabolites of sugar) brain development and brain functioning is impossible. So we have no alternative to increase the production of sugar and goor in the country.

To increase the production of sugar and goor in the country we have a lot of opportunities that can be utilized:

- Development of high yielding and high sugar content variety of sugarcane.
- Introduction of tropical sugarbeet (5-6 months crop)
- Exploration of date palm, palmyra palm and Golpata.
- Cultivation of sugarcane in the charland, saline belt and hill areas. Bangladesh has about 0.2 million hectares of charland which is still under improper use. These charlands could be brought under sugarcane cultivation for their better utilization. Simultaneously saline belt and hilly areas are also not under proper utilization. These vast lands of saline belt, char and hilly areas may be properly utilized by growing sugarcane which could give an extra 0.8 million tons of sugar/goor.
- Cultivation of sugarbeet as intercrop with sugarcane can save an extra land for sugarbeet cultivation.

Sixty (60) million date palm/palmyra palms can be grown in the 20 million household and on both sides of railway and kaccha/pacca roads of the rural areas in the country. About 1.2 million tons of goor can be produced from these plants.

Developing suitable varieties and their production technologies for charland, saline belt and hilly areas require substantial research and extension which can be achieved through establishment of research stations in the respective areas. Though BSRI has about 1100 sugarcane germplasms but 60% of these germplasms do not flower. To develop high yielding and high sugar varieties these non-flowering varieties are to be bringing under hybridization programme. It has been observed that some varieties which do not flower at Ishurdi but flower at closer to sea shore and hilly areas. Enhanchment of the breeding programme would be possible if all of the germplasms are flowered. Hence BSRI needs atleast one breeding station closer to sea to obtain such goal.

Some sugarcane varieties are photo insensitive. They can be grown at any season of the year. So for continuous supply of sugarcane throughout the year, a year round sugarcane growing programme is to be undertaken particularly in the homestead where water logging problem is absent. This programme will lead the farmer in earning year round through sugarcane cultivation.

In cyclone and flood prone areas where after cyclone everything sweeps away, people suffer from food and drinking water for few days. In this case if sugarcane is grown in the homestead, after cyclone people can get instant food and drinking by chewing sugarcane until the relief materials are reached to the victim areas. So sugarcane can play a disaster mitigating crop.

Fossil fuel is not unlimited. In Brazil, India and America people are using ethanol produced from sugarcane as gasoline in their motor car. In future to mitigate the fossil fuel problem sugarcane would play a vital role in producing ethanol.

At present, sugarcane is not a priority crop in Bangladesh but time is coming when this crop will be a high priority crop for food, drink and movement of wheel. To address the mentioned challenge, strengthening sugarcane research programme is inevitable particularly in developing high yielding and high sugar content varieties having high resistant quality against different biotic and abiotic stresses and having wide adaptability at different agro ecological zones of the country. Research need to be strengthened to select suitable varieties of sugarbeet an alternative crop for sugar production. Exchange of sugarcane varieties and collaborative research work among the sugarcane research institues of Asia and Australia needs to be developed for mutual benefit of each country. This can be done through the formation of sugar crops consortium. Cultivation package need to be verified and upgraded for achieving maximum yield potential of different sugarcane varieties for their sustainability. Research on development of biofertilizers and bio-control agents is to be strengthen to exploit natural resources and to reduce the dependency on chemical fertilizer and biopesticides. Training of extension workers and farmers on sugarcane and sugarbeet production technologies is to be increased. Finally to harvest maximum benefits from sugarcane, sugarmills need to be modernized, lowering process loss, cost effective and having sugarcane by-product utilizing activities.