

Effect of Nitrogen and Furadan 3G on the Production of Sugarcane

M.J. Islam, M.H. Rahman and M.Y. Ali

Sugarcane Research & Training Institute,
Ishurdi, Pabna, Bangladesh.

The Old Himalayan Piedmont Plain is one of the major soil units of sugarcane belt of Bangladesh having poor nutrient status. To increase the cane yield, higher N fertilization is needed under the soil conditions (Anon., 1985; Chowdhury and Rahman, 1984). However, expected cane yield is not obtained even at higher levels of nitrogen application due to acute problem of pest in this region mainly nematode, white grub and borer (Anon., 1986/87). It was reported that application of Furadan 3G decreased the pest infestation and increased cane yield (Biswas *et al.*, 1986). It was also reported that application of Furadan 3G encourages better root development resulting higher yield of sugarcane through efficient uptake of nutrients (Anon., 1984, Singram and Manickam, 1979; Venugopal and Litsinger, 1985). In Bangladesh, a few research works on nitrogen along with Furadan 3G have been carried out. Therefore, an attempts was undertaken to study the effect of nitrogen and Furadan 3G on sugarcane yield.

The field experiment was carried out in the Old Himalayan Piedmont Plain of non-calcarious brown flood plain soils of Jamalpur farm in the district of Thakurgaon during 1985-86 cropping season. Plot size of the experiment was 8 x 7m and the treatments were arranged in RCB design with 4 replications. The variety Isd-2/54 was used in this experiment. The soil of the experimental plot was collected before cane plantation and analysed. Physical and chemical properties of soil are shown in the Table 1.

Table 1. Physical and chemical properties of initial soil of the experimental plot.

Texture	Organic carbon (%)	pH	Total-N (%)	Available P (ppm)	Exchangable K (meq/100g)	Available S (ppm)
Loamy sand	1.04	5.3	0.073	36.5	0.09	10.63

Four levels of N fertilizer in the form of urea as 0, 80 120 and 160 kg N/ha and 3 levels of Furadan 3G such as F_0 -0, F_1 -66.5 kg Furadan 3G/ha as basal+66.5 kg Furadan 3G/ha in April; and F_2 -66.5 kg Furadan 3G/ha in January+66.5 kg Furadan 3G/ha in April. At the rate of 280 kg TSP/ha and 280 kg MP/ha were applied in all the plots. The data on germination, millable cane and yield of cane were collected and statistically analysed.

Application of Nitrogen and Furadan 3G showed no significant effect on germination (Table 2). Similarly, no conclusive result in respect of millable cane was obtained due to application of Nitrogen and Furadan 3G (Table 3). Highest number of millable cane was produced where 160 kg N/ha was applied along with 66.5 kg/ha Furadan 3G at planting

and another 66.5 kg/ha in April. Table 4 shows that Nitrogen and Furadan 3G did not produce any significant effect on cane yield compared to control as well as among different levels of Nitrogen and Furadan 3G. However, there are some positive effects of combination of N x Furadan. Significantly higher cane yield was obtained when 160 kg N/ha was applied along with 133 kg/ha Furadan 3G in two splits, 50% at planting and rest 50% in April compared to the treatment where no Nitrogen and Furadan 3G were applied. Probable reasons for the higher yield in this treatment are decrease of pest infestation and increase in root development. Results of the experiment partially agree with the previous reports (Miah *et al.*, 1984; Singaram and Manickam, 1978; SRTI Annual Report, 1984).

It can be revealed from the results that application of Nitrogenous fertilizer without pest and nematode control by pesticide like Furadan 3G would not give expected yield under the present soil condition in Thakurgaon area. However, the results of the experiment sought for further study to findout the economic feasibility of the application of higher doses of Nitrogen as well as Furadan 3G in Old Himalayan Piedmont Plain soils.

Table 2. Effect of Nitrogen and Furadan 3G on % germination.

	N ₀	N ₈₀	N ₁₂₀	N ₁₆₀	Mean
F ₀	30.3ab	32.0ab	34.3a	34.8a	33.0a
F ₁	32.9ab	29.7ab	33.2ab	31.8ab	31.9a
F ₂	31.5ab	29.1b	33.2ab	34.5a	32.1a
Mean	31.6ab	30.3b	33.7a	33.7a	

Table 3. Effect of Nitrogen and Furadan 3G on millable cane/ha (Fig. in thousand).

	N ₀	N ₈₀	N ₁₂₀	N ₁₆₀	Mean
F ₀	72.8 cde	66.7e	71.1de	77.2bcde	72.0c
F ₁	83.6abcd	87.4 abc	83.0abcd	92.8a	86.7a
F ₂	66.7e	79.0 abcde	84.2abcd	86.6ab	79.1b
Mean	74.3b	77.7b	79.5b	85.6a	

Table 4. Effect of Nitrogen and Furadan 3G on yield of cane (t/ha).

	N ₀	N ₈₀	N ₁₂₀	N ₁₆₀	Mean
F ₀	51.5b	58.8ab	56.8ab	57.8 ab	56.2a
F ₁	59.2ab	63.0ab	60.7ab	70.4a	63.3a
F ₂	47.1b	54.9ab	60.5ab	68.4ab	57.7a
Mean	52.6b	58.9ab	59.3ab	65.6ab	

Figures followed by same letters in column do not differ significantly at 5% level of probability as per DNMR test.

REFERENCES

- Biswas, M.M. ; Miah, M.A.H. and Mannan, A. 1986. Role of Furadan 3G in sugarcane production in greater Dinajpur district. Proc. 11th Annual Bang. Sci. Conf.
- Chowdury, M.K.A. and Rahman, M.H., 1984. Effect of different fertilizers on the yield and sucrose content of sugarcane. Proc. of the Inter Cong. Meeting of Commission IV. BARC and Soil Sci. Soc. of Bangladesh.
- FSR Annual Report, 1986-87. Farming System Research Project, Thakurgaon site. p. 30.
- Miah, M.A.S. ; Sarkar, M.A.A. ; Rahman, A.B.M.M. and Saha, S.C.1984. Studies on the impact of soil factors on the root growth of sugarcane in Rhizotrons. *Bangladesh J. Sugarcane*, **6**: 27-31.
- Parthasarathy, S.V. 1972. Sugarcane in India. The K.C.P. Ltd. Madras. pp. 326—382.
- Rahman, M.H. and Khalequzzaman, C., 1981. Studies on Nitrogen requirement of sugarcane at Sugarcane Research Institute farm. *Bangladesh J. Sugarcane*, **3**: 5—8.
- Singaram, P. and Manickam, T.S. 1978. Study on the influence of some pesticide application on the uptake of nitrogen and phosphorus. *Madras Agric. J.*, **65**: 25-27.
- SRTI Annual Report, 1984. Sugarcane Research & Training Institute, Ishurdi, Pabna, Bangladesh. p. 71.
- SRTI Annual Report, 1985. Sugarcane Research & Training Institute, Ishurdi, Pabna, Bangladesh. p. 25.
- Venugopal, M.S. and Litsingar, J.A., 1980. 11th National Conference on pest control. Council of the Philippines.