



Journal of Biological Sciences

ISSN 1727-3048

science
alert

ANSI*net*
an open access publisher
<http://ansinet.com>

Ratooning Capacity in Some Promising Genotypes of Sugarcane

Khan Bahadar, Mohammad Safdar Baloch, Hamdullah Azim

Mohammad Suleman and Aminullah Khan

Agricultural Research Station, Serai Naurang Bannu, NWFP, Pakistan

Abstract: Ratooning of seven sugarcane varieties during 1996-97, 1998-99 and 1999-2000 revealed that Bannu-1, S-84-I-351 and Naurang-98 out yielded rest of the genotypes. Varieties S-84-I-351, S-86-US-422 and Naurang-98 showed higher sugar recovery over others. While, PAS-132 and COL-75 ranked poor in quantity as well as quality attributes. Varieties Bannu-1 and Naurang-98 have already been released for general cultivation while, S-84-I-351 is a candidate variety for approval.

Key words: Sugarcane, ratoon, varieties, cane yield

Introduction

Sugarcane supports 76 sugar mills in Pakistan which are working 75% of their capacity due to shortage of raw material i.e sugarcane (SAIC, 1999). The crop covers 5% of the total cropped area of the country (Nasir and Hyder, 2000). During the year 1998-99, an increase of 9.4% in area and 3.9% in production have been noted in the country due to shifting of area of other crops to sugarcane, enhancement of support price of cane, favourable weather conditions at the planting time etc (Anonymous, 2000). Sugarcane can give rise several successive ratoon crops from its subterranean parts. Thus, ratooning is the cultivation of "additional crop" from the regrowth of stubbles of previous main crop after its harvest and thereby avoiding reseedling/replanting, reducing cultivation expenses and the financial burden on the growers. In Pakistan the ratoon crop forms 50-60% of the total cane crop (Akhter *et al.*, 1998). Experiments have shown that a ratoon cane crop, if managed properly, can yield as high as the plant crop (Nazir, 1994). But usually it is considered to be a "free crop" and given no proper attention. This results 30-40% low cane yield from ratoon crop (Akhter *et al.*, 1998). Sugarcane production is mainly affected by poor or good ratooning of germ plasm having diversified genetic makeup, susceptibility to insects/diseases and drought/heat stress etc. Hence, it is imperative to evaluate ratooning capacity of different varieties before their final recommendations. Keeping in view this important issue, research activities were focussed to pick up varieties having all the desirable characteristics with maximum ratooning capacity.

Materials and Methods

Response of seven sugarcane varieties viz; Bannu-1, Naurang-98, Col-75, S-84-I-351, S-86-US-422, PAS-132 and M-93 was observed in ratoon stage during 1996-97, 1998-99 and 1999-2000 at the Agricultural Research Station Serai Naurang (Bannu). Trials were conducted in RCB design with 3 replications and plot size of 4.5 × 6 m². Fertilizer NP at 150-56 kg ha⁻¹ was applied as a basal doze. Phosphorous was applied at first hoeing stage in the month of March. Insecticide "Furadan" was applied at 20 kg ha⁻¹. All other cultural operations remained the same. Data on sugar recovery and cane yield were recorded and analyzed statistically using computer package MSTATC.

Results and Discussion

Cane yield (t ha⁻¹): Data presented in Table 1-3 depicted that cane yield was significantly affected by genotypes. However, the highest cane yield was produced by variety

Table 1: Cane yield (t ha⁻¹) and recovery (%) in sugarcane ratooning trial (1996-97)

Varieties	Cane yield (t ha ⁻¹)	Recovery %
Bannu-1	64.08 a	9.10
COL-75	58.97 ab	8.07
Naurang-98	59.46 ab	9.45
PAS-132	38.05 b	8.13

Table 2: Cane yield (t ha⁻¹) and recovery (%) in sugarcane ratooning trial (1998-1999)

Varieties	Cane yield (t ha ⁻¹)	Recovery %
Bannu-1	41.66 a	8.51
COL-75	43.32 a	7.64
Naurang-98	44.59 a	10.0
M-93	21.49 b	11.0

Table 3: Cane yield (t ha⁻¹) and recovery (%) in sugarcane ratooning trial (1999-2000)

Varieties	Cane yield (t ha ⁻¹)	Recovery %
Bannu-1	77.55 a	10.36
Naurang-98	53.59 bc	11.06
S-84-I-351	61.94 ab	11.22
S-86-US-422	48.50 c	11.21

Means having different letters are significant at 5% level of probability.

Bannu-1 during 1999-2000 and 1996-97, followed by varieties S-84-I-351 and Naurang-98, respectively. Varieties M-93 and PAS-132 were found with lower yield during the entire period of study. Potty *et al.* (1986) found variety CO. 6275 with the highest cane yield in ratoon stage. Khushk *et al.* (1993) reported lower cane yield in ratoon crop in Sindh as compared to plant crop. Anonymous (1999) found varieties S-86-US-226 and SPSG-394 with maximum cane yield in ratoon stage.

Recovery (%): Maximum recovery of cane was recorded for varieties S-84-I-351 and S-86-US-422 during 1999-2000. These were followed by variety Naurang-98 for the same quality parameter. Varieties PAS-132 and COL-75 responded poor recovery as evident from the given Tables. Anonymous (1999) observed variety M-93 with maximum recovery in ratoon stage. Bahadar *et al.* (2000) noted highest recovery for CP-51/21 and S-82-US-624 in ratoon stage.

Bahadar *et al.*: Ratooning of sugarcane genotypes

References

- Akhter, M.E., M. Akhter, M.Z. Khan, K. Bashir and S.R. Choudhry, 1998. Sugarcane. Pakistan Agriculture Research Council, Islamabad, Pakistan, pp:19.
- Anonymous, 1999. Annual Technical Report. Sugar Crops Research Institute, Mardan, Pakistan, pp: 99.
- Anonymous, 2000. Agricultural review. Agridigest J. Agric. Dev. Bank Pak., 20: 19-19.
- Bahadar, K., M. Jamal, M.S. Baloch and K. Nawab, 2000. Response of sugar cane varieties to different irrigation intensities. Pak. J. Bio. Sci., 3: 498-499.
- Khushk, A.M., A. Manzoor, M.Y. Memom and L.M. Ibrahim, 1993. Sugarcane Production and Technology Adoption in Sindh. Program Farming, UK., pp: 38-41.
- Nasir, M.S. and K.S. Hyder, 2000. Ecology of Pakistan. Education Publication, Pakistan, pp: 50.
- Nazir, M.S., 1994. Sugarcane. In: Crop Production, Bashir, E. and R. Bantel (Eds.). National Book Foundation, Islamabad, Pakistan.
- Potty, N.S., S.S. Nair, S.S. Varghere and P.K. Nair, 1986. Comparative performance of selected sugar cane varieties in Alluvial soil of Kerala. India Sugarcane Crop J., 10: 3-6.
- SAIC., 1999. Rapid Multiplication of Sugarcane Through Plant Tissue Culture Technology. In: SAIC Newsletter, Volume 9, Razzaque, M.A., M. Munir and N. Akhter (Eds.). SAARC Agricultural Information Centre, Dhaka, Bangladesh, pp: 5.