B-13: Performance of plant populations raised from different seed types of maize (*Zea mays* L.) cobs

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In Sri Lanka, maize (*Zea mays* L.) is the second most important cereal crop, next to rice and its cultivation is primarily confined to the dry and intermediate zones as a monocrop or in a mixed cropping system. The unavailability of good quality seeds of the suitable type is found to be a major constraint in maize production. Good seed is the basic requirement in any crop production to maximize yields. The objective of this investigation was to evaluate the performance of plant populations raised from seed of apical, middle and bottom of maize cobs and based on this to identify the suitable type of planting seeds for maize production to achieve maximum yield.

The experiment, in a randomized complete block design, was conducted during the period April- August 1993 at the Agricultural Farm of the Eastern University, Vantharumoolai which is situated in the Batticaloa district. The cobs harvested from 100 randomly selected maize plants were utilized to obtain seeds for the experiment. The cobs were equally divided into 3 portions, namely, apical, middle and bottom portions, and seeds were collected separately and composited. The 3 treatments apical, middle and bottom seeds were arranged in a randomized complete block design with 7 replicates, giving a total of 21 plots. The different types of seed were planted in their respective plots and the management practices applied in the experiment were according to the recommendations of the Department of Agriculture.

Data collection commenced from seedling emergence and the measurements were recorded on plant height at 2 weeks intervals, 100% days to tasseling and silking, 1000 seed weight, length of cobs and seed yield. Analysis of variance, using general linear model, was applied to all the data collected and the significant models were further compared, using Duncan's Multiple Range Test.

There were no significant differences in plant height at tasseling (155.4$\pm$1.2 cm) and at silking (162.7+0.4 cm) among 3 types of seeds which means that the seed types did not show any difference in early plant growth which is a potential indicator of seed vigour. Similarly, days to 100% tasseling (58) and 100% silking (65) were almost the same in the 3 types of seeds. The length of a cob produced by plants from apical seeds was 14.1 cm and it was 18.6 and 19.1 cm for bottem and middle seeds, respectively. The cobs produced by plants of middle seeds showed a significant difference in length over the cobs of apical seeds at the 5% level, It was found that the difference in 1000 seed weight among treatments were also significant ($p = 0.05$). The seeds of plants from middle seeds were the biggest and significantly bigger (281.6 g)than the seeds produced by plants of apical (230.4g) and bottom seeds (272.1 g)

The seed yield estimates for plant populations raised from apical, bottom and middle seeds were 2980.4, 3242.5 and 3787.0 kg ha^{-1}, respectively. The plant population of middle seeds produced a significantly higher yield than those of apical and bottom seeds.

The seeds from the middle portion of the maize cobs are the most appropriate to use as planting seeds which may produce plant population that has the potential for high yields, longer cobs and bigger seeds.