

Maturity type of maize for cool summers in Southern Australia

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The maize breeding program for cool summer areas (1) involves a decision on the most appropriate maturity type for the slower growing conditions. The place of maize (2, 3) in the farming rotation also depends on whether it can be harvested by early autumn to permit the sowing of the next crop. Commercial varieties can aid this decision if they are used to measure the effect of the lower temperature on development rate and yield potential.

Methods

In the 1983/84 season, a range of varieties were included with the crossbred selection plots at two similar cool sites in the Central Highlands of Victoria at Dungaree (464m) and Toolangi (603m) and grown with adequate soil fertility and water. Two varieties were also sown at the same time at Kyabram in the warmer northern environment. The observations included dates of tassel initiation, anthesis, silking and stages of grain development, also leaf-stage counts and dry weight samples at intervals.

Results and Discussion

The lower temperature at Toolangi compared with Kyabram (November to March, mean monthly temperature °C 14.9 compared with 19.4) strongly retarded both the hybrid varieties XL66 and XL 77, sown late November 1983. Rate of leaf appearance was reduced by about 40%, being the major factor in the longer time from sowing to flowering (anthesis 103 days against 72). Reproductive stages were increasingly delayed, from about 10 days for tassel initiation to 24 days for silking and over 30 days for the milky grain stage for sweet corn. The dough stage for silage was only reached by early winter.

In contrast, earlier flowering varieties had the phenotype needed for use by early autumn, with tassel initiation at 3 to 4 leaf stage, flowering by early February, the sweet corn stage by mid-March (Miracle and Terrific) and the dough stage by late March (the forage variety ME15).

1. Aitken, y. 1982. Proc. 2nd Aust. Agron. Conf., Wagga Wagga, p. 3115.
2. Bunting, E.S. 1978. Forage Maize A.R.C. London.
3. Cockroft, B. 1982. Report on Study Tour No. 84.