

plots. Silking times and tasselling times were recorded. It was found that there were no consistent differences in flowering times between the lines. Either the initial population had not been sufficiently heterozygous for flowering time, which is unlikely as an open-pollinated F_1 hybrid ear was used initially, or the differences in timing of the silks from the three regions of the ears have not been sufficient to act as a differential sieve for separating the early and late pollen grains.

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2. Studies with West Indian maize.

A series of six sowings at monthly intervals were made in 1957-58, commencing on 2 September, using nine varieties of West Indian maize supplied by the School of Tropical Agriculture, Trinidad. One hundred seeds (50 per seed-box) were sown of each. In this way it was hoped to utilize the differences in day-length over the 6 months period to find the best time for sowing the crop at Hertford for the promotion of plants with functional ears and tassels in the glasshouse, that would also give a satisfactory seed yield for further experimental investigations.

The number of non-normal seedlings from each sowing was recorded, and these included characteristics like dwarfness, and striped or narrow leaves. The majority of aberrants had pale leaves of varying degrees; there was an occasional albino. The graph of mean leaf number on 4 February, 1958, for plants originally separated as normal and aberrant seedlings, indicates that the controls always have more leaves than the aberrants. As the difference decreases with the lateness of sowing, this suggests that the difference in leaf number is a reflection of the difference in growth vigour of the two classes.

The plants of the six sowings indicated that the best results for pollination followed by seed setting were from particularly the second, third and fourth sowings, viz., on 28 September, 28 October and 23 November. Another advantage of these sowings was the over-lap in pollen shedding, which facilitated hand pollination. In the first sowing there was a shortage of pollen and the ears were somewhat shorter than those of later sowings. On the other hand, the fifth and sixth sowings gave a larger frequency of plants failing to reach tasselling and silking within a reasonable period, e.g. by 28 July (i.e. after 5 or 6 months in the glasshouse). The Early Caribbean family was the earliest throughout the range of sowings, although Coastal Tropical Flint was as early at the fifth sowing. Seed drying and shelling of the harvested ears was satisfactory under glasshouse conditions.

Intra-pollinations have been made between the more vigorous and the less vigorous plants in each family. The vigour of the various crosses remains to be compared.

It is concluded that for breeding purposes, the best times for sowing West Indian maize strains in the glasshouse in Britain must be related to the day-length. Sowings are best made when the days are shortening from 11 1/2 hours to 8 1/2 hours.

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1. Transallelic change at the C locus.

A study reported in the 1957 News Letter (p. 144) showed no invariable transallelic change of the $\overline{C^I}$ component of $\overline{C^I C}$ heterozygotes when used in a mating scheme similar to that developed by Brink. $\overline{C^I}$ alleles from $\overline{C^I C^I}$ homozygotes and $\overline{C^I}$ alleles from $\overline{C^I C}$ heterozygotes produced the same phenotype when placed on homozygous A C R pr silks in W22 inbred background.

Further studies have shown no invariable transallelic change of the \overline{C} component of these same $\overline{C^I C}$ heterozygotes. \overline{C} alleles from $\overline{C^I C}$ heterozygotes and \overline{C} alleles from \overline{CC} homozygotes produced the same phenotype within each mating whether placed on A c R Pr, Inbred AL71 (A c r Pr y) or Inbred W9 (A c r Pr Y) silks.

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2. Dark variegated.

Preliminary observations on dark variegated pericarp, a new phenotype in the mutational spectrum of the $\overline{P^{vv}}$ allele first reported last year, has indicated that the frequency of red ears in the progeny of dark variegated kernels is considerably higher than in the progeny of the parental medium variegated. This is consistent with previous observations by Brink and his students that the amount of red striping of the pericarp is related to the frequency of self-colored offspring.

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