it can operate without attention for many hours. This apparatus can supply about 5 gal of water in a 24-hr period. It should be added, however, that the use of the still herein described does not free the distillate from volatile substances such as carbon dioxide and ammonia.

Application of Probits to Sweet Corn Earliness Data

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Two widely used measurements for estimating earliness in maize are date of first tassel appearance and date when half the population have silked. Measurements are more liable to error when first tassel date is used than with the half-silking date, for in a normal population the earliest plants to flower are few compared with half the popu-

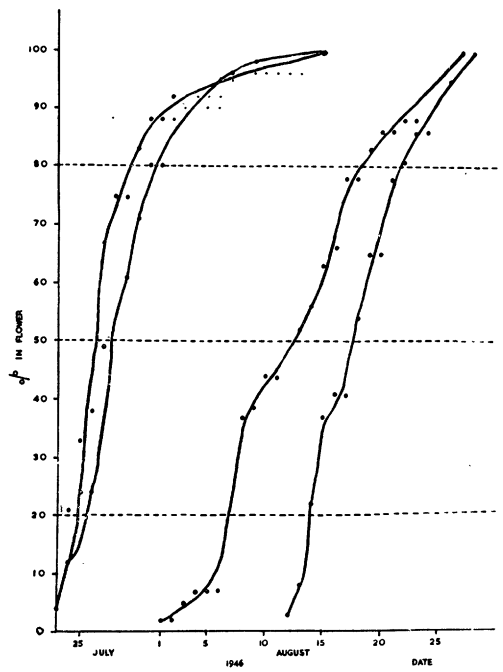

FIG. 1. Flowering (tassel) time for sweet corn variety *Dependogold* sown at 28-day intervals. Percentages plotted against actual date.

lation in flower. Similarly, stragglers may flower very late, or not at all, and upset measurements of flowering spread used to indicate uniformity.

In England, where for breeding purposes it is important to get very early plants of sweet corn varieties, date of first tassel appearance has been used to measure earliness; this helps selection of the earliest plants. Unfortunately, earliest plants may be impeded by fruit fly damage and flower later than they are potentially capable of doing, thus increasing error.

Data for variety *Dependogold* were taken from an experiment to determine the best time for sowing sweet corn in England, four sowings having been made at 28-day intervals from the 1st of March 1946. Tassel date of each plant was recorded; and the percentage of plants in flower at a particular date for each sowing time was calculated and plotted (Fig. 1). Although irregular, the curves to some extent resemble the sigmoid curve characteristic of growth. Percentages were transformed to probits and plotted against logarithm of flowering date. Such transformed data of true sigmoid curves are expressed as straight lines drawn along the best fitting position, as shown by Finney (*1*). The transformed data for flowering times for the four sowing dates are given in Fig. 2. Here the dots lie reasonably close to the best

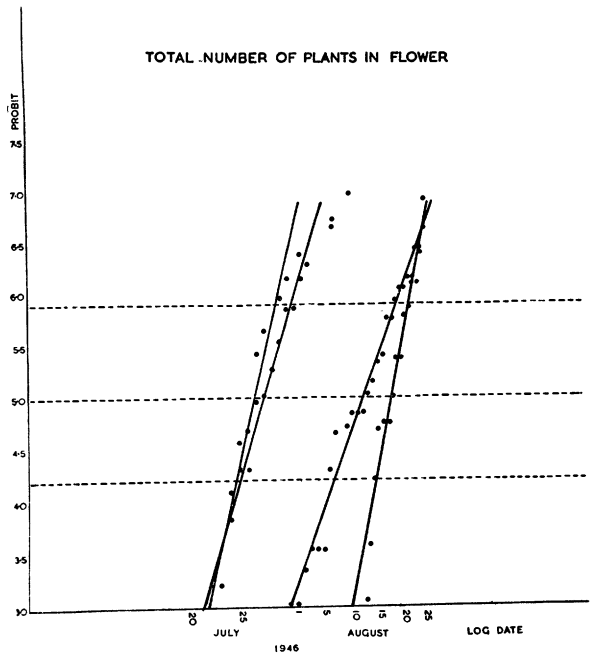

FIG. 2. Data from Fig. 1 transformed. Probits plotted against logarithm of flowering date.

fitting straight lines, although there is slight discrepancy for the earliest sowing which was based on few surviving plants.

The 5.0 probit value on any line gives the theoretical date for half the population in flower and is an index of earliness, like the 50% in flower of untransformed data. Angles of the slopes of the various lines indicate, too, how rapidly a variety flowers when sown at different times. Hence, for different varieties sown at the same time, this method would give an easy visual method of determining uniformity, the larger the angle the greater the uniformity.

The value of applying probits to plant breeding data in general should, therefore, not be overlooked.

Reference

1. FINNEY, D. J. *Probit analysis.* Cambridge: 1947.