CORN TALK NEWS
PENNSYLVANIA MASTER CORN GROWERS ASSOC., INC.

Considerations for selecting corn hybrids

(Continued from Page 19)

from N form or timing. As a result, there appears to be little basis for selecting hybrids differently based on the N fertilization program, or for fertilizing hybrids differently.

Hybrid differences in response to population are frequently described as a hybrid's ability to "flex" its ears and produce a larger ear in response to lower populations. Prolific or double-eared hybrids have been promoted as having the ability to produce better at lower populations. Hybrids with these characteristics should be ideally suited to less productive sites, where lower populations may be used or where there may be a greater risk of poor stands. The idea behind this would be that these hybrids could produce a larger ear in response to favorable conditions or reduced populations. Studies in Iowa, Wisconsin, and Ohio, however, have indicated optimum populations do not differ greatly among commercial hybrids. These studies have also shown the best hybrids at low populations are generally the best at high populations. Based on this research, it appears that population response should not be an important factor in hybrid selection.

Another interaction which has received attention is the adaption of hybrids to high or low yield situations. The question in this issue is whether different hybrids should be selected for high yield and low yield situations. Plant breeders have documented differences among different hybrids in their yield response to different situations (yield stability), and some hybrid testing programs have confirmed these differences. This is best shown using a stability graph, such as Figure 2, where the yield of two top yielding hybrids is plotted against the average yield of all hybrids tested. In this figure, both hybrids had similar average yields, but hybrid 10 generally performed better in the low yielding sites and hybrid 1 performed better in the high yielding sites. This indicates that differences among hybrids do exist and that there is potential for these differences to be exploited by selecting some hybrids for higher yielding conditions and other hybrids for the lower

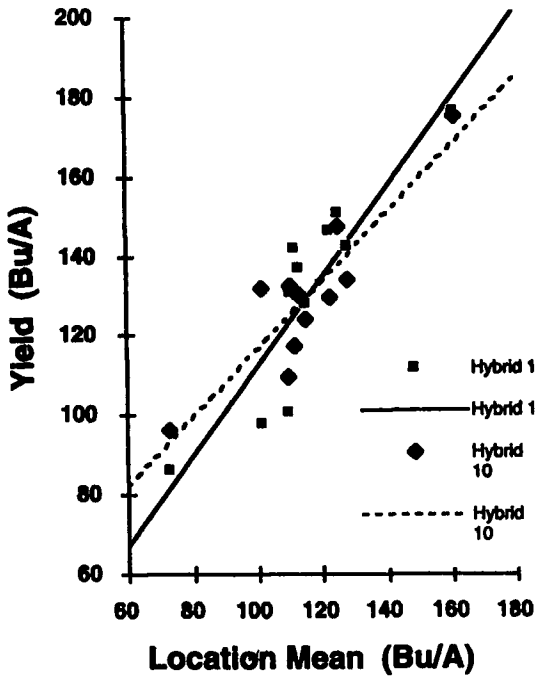

Figure 2. Stability analysis graph for two hybrids tested in the 1985 Pennsylvania Commercial Hybrid Corn Tests for Maturity Zone 1. The average yields of both hybrids across locations were similar.

yield potential situations. Based on this, there appears to be some basis for placing hybrids on the farm differently depending on the anticipated yield level of a field. In Pennsylvania, one of the main causes of low yield potential is drought stress associated with shallow soils. Thus, a consideration of the yield stability of a hybrid may be important when selecting for such high and low yield situations. Unfortunately, only limited data exist on the yield stability of available hybrids, although the seed industry is making an effort to characterize hybrids in this fashion.

SOURCES OF INFORMATION

Seed suppliers

Commercial seed companies should be able to supply much of the detailed information on hybrid characteristics. Seed suppliers who have worked with these hybrids in your area should have a basic understanding of many of the hybrid traits that are important in your crop production system. They also have access to performance data collected from their own evaluation trials conducted in the region. These data are best used for comparing hybrids within a company because competitive hybrids often are not included in these trials.

University hybrid trials

Hybrid performance trials are conducted annually by the Department of Agronomy at Penn State. In this testing program, hybrid evaluations are conducted at five sites in each of the four corn maturity zones in Pennsylvania. An average of 50 to 60 hybrids are evaluated for grain production in each zone. Data are also collected on moisture, lodging, plant height, ear height, and some diseases. The results are published in the Pennsylvania Commercial Hybrid Corn Tests Report which is available at local extension offices. These trials provide a source of independent information on hybrid performance. Hybrid testing reports are also available from most of the states surrounding Pennsylvania.

Strip trials

Many strip trials are conducted annually across Pennsylvania by seed suppliers, growers, and extension agents. Nonreplicated strip trials can provide excellent yield performance data when the results of at least several trials are combined together. The results of individual trials should be interpreted cautiously. Individual strip trials are best used to evaluate very repeatable traits of hybrids such as harvestability, height, and maturity.

Producers who grow sizeable acreages of corn should consider evaluating promising hybrids on an annual basis in a strip plot. These are particularly useful for comparing promising new hybrids to those hybrids already in use.

On-farm Records

Another valuable but often overlooked source of information for hybrid evaluation is on-farm records. Growers who are able to devise a harvest and record keeping system that

(Turn to Page 22)

Growing Degree Days

(Continued from Page 20)

reported on a given day by a morning and afternoon observer have usually occurred on different calendar days.

The refined standardization procedure is detailed in Northeast Regional Climate Center Publication RR93-1. When tested on several sites throughout the Northeast, weekly observation time bias was reduced to between 0.5 and -0.5 GDD, (producing no differences when rounded to whole GDD values) over observation hours from 6 a.m. to 9 p.m. During the other unlikely observation hours, weekly observation time bias was reduced to between 1 and 2 GDD. While the residual bias for the unlikely hours was considerably higher than that of the more common observation hours, the corrected values represent a three- to four-fold decrease in the actual observation time bias.