Effectiveness of a university hybrid corn program in providing hybrid performance information to producers

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ABSTRACT

Agricultural experiment stations traditionally conduct variety performance trials, but producer acceptance and utilization of such data have not been adequately measured. To assess the usefulness of hybrid corn performance testing to southeastern Wyoming producers, questionnaires were sent to 551 commercial producers in Goshen County. Two hundred eighty-five surveys were completed and returned for a return rate of 52.0%. One hundred forty-nine respondents were currently producing corn (Zea mays L.). Results indicated that growers rely heavily on sources outside the university for information concerning the choice of hybrid corn varieties. Growers rated personal experience (58.4%) and seed dealers (19.5%) as their most important sources of corn performance information. Only 7.7% considered the University of Wyoming as their most important source. Possible reasons for the low utilization of university information are discussed. The survey indicated producers believed the university could better serve their needs by concentrating on other agronomic research activities.

Additional index words: Corn performance, Hybrid testing.

State agricultural experiment stations traditionally conduct hybrid corn (Zea mays L.) performance trials. The University of Wyoming is no exception. While an active corn genetics program does not exist at the University, hybrid corn performance testing is conducted on an annual basis as a service to producers. This program provides performance information via research and extension circulars and has probably played an important role in developing the state's corn industry by providing producers with information on new hybrids. To assess current effectiveness, a review of the hybrid corn performance program was initiated in 1984.

To adequately evaluate the program, grower input was deemed necessary. Research by Jackson and Taylor (3) indicated that variety testing was of considerable importance to Wyoming producers. These findings were based on crops in general and did not specifically address the usefulness of the hybrid corn performance program. Consequently, a new study was initiated to assess the usefulness of hybrid corn performance testing to southeastern Wyoming producers. The objectives of the project were to determine (i) what information growers used when selecting corn hybrids, (ii) the relative value of the various sources of information, (iii) how often growers use information on corn performance evaluations, and (iv) how important producers thought performance testing was, compared to other agronomic research activities.

APPROACH

In 1983, 16,400 ha of corn were grown in Goshen County (6). This represented 80% of the corn acreage in southeastern Wyoming. Therefore, producers in this county were used as the sample population. A mailing list of 551 commercial producers was compiled from addresses provided by county soil conservation districts and the county extension office. The 1982 Census of Agriculture indicated there were 581 producers in the study area with gross sales of $10,000 or more (7). Allowing for some attrition over time, a comparison of these numbers suggests that almost all commercial producers in the area were included in the sample.

Questionnaires were mailed in a stamped envelope with a personally addressed letter explaining the survey. A stamped return envelope was also enclosed. One week after the initial mailing, a postcard was sent thanking each grower and reminding them to send in the questionnaire. Two weeks later an additional letter explaining the importance of the survey and another questionnaire were sent to those who had not responded.

The questionnaire was designed to obtain source of performance data on corn and other crops grown within the county. A total of 39 short questions were asked, in a booklet format, with a space provided for additional comments (1). There were seven questions pertaining to corn (Table 1). These same questions were asked for alfalfa (Medicago sativa L.), small grains, and dry beans. Responses to questions on other crops will be presented here only as they relate to corn performance information. In addition, the remaining two questions in Table 1 were asked at the end of the survey and concerned variety testing in general. To increase the response rate, survey questions were made concise and often provided choices.

RESULTS AND DISCUSSION

Two hundred eighty-five questionnaires were completed and returned. This represented an overall return rate of 52.0%. One hundred forty-nine of these producers were growing corn.

In response to the second question (No. 2; Table 1), which asked for the name(s) of varieties presently grown, 98 different varieties were reported. We found this large number surprising. It would take a considerable commitment of time and resources to adequately test all these hybrids.
9. In conclusion, please indicate if you feel that the Torrington
8. Currently, variety testing is sustained through contributions from
7. Other cultural practices More Same Less Not sure
6. Disease-insect management More Same Less Not sure
5. Irrigation management More Same Less Not sure
4. Variety selection More Same Less Not sure
3. Conservation tillage More Same Less Not sure
2. Weed control More Same Less Not sure
1. Fertilizer practices More Same Less Not sure
Comments—Thank you for answering our questions. Any additional
The large number of hybrids reported suggests a high degree of genetic similarity between the various types grown in the area. If hybrids raised in Goshen County were that genetically different, aside from differences between silage and grain types, it would seem fewer hybrids would be grown. In fact, the most frequently reported hybrid was grown by only 24.8% of
survey respondents. This number compares to 52.8, 52.7, and 47.4% for winter wheat (Triticum aestivum L.), oats (Avena sativa L.), and alfalfa. Hybrids grown in Goshen County may be following a national trend in which cultivars within adaptation zones have a high degree of pedigree to each other (2). Previous corn yield data compiled at the University of Wyoming Research and Extension Center (REC), located in Goshen County, tends to confirm this suspicion of genetic similarity. Of the 44 grain hybrids tested in 1983, 20 were high performers and were not significantly different at the 5% level of probability; again, this may indicate a high degree of genetic similarity (4). This situation raises questions about continuing the current performance testing program due to the large number of hybrids involved.

Response to the remaining questions helped provide information concerning the hybrid selection process. On average, growers changed to a new type of hybrid every 1.96 yr. This indicates most producers were either responding to changes in hybrid technology or to company marketing techniques.

Only 1.3% of those responding to the survey indicated they always followed university recommendations for corn hybrid selection. (Fig. 1). One-third indicated they never used university information when selecting hybrid types, with a mean response slightly greater than seldom.

The University of Wyoming was the most important source of information on corn hybrids for only 8.7% of the respondents (Table 2). Personal experience (58.4%) rated highest, by far, followed by seed dealers (19.5%). Personal experience apparently resulted from field testing of hybrids. Many seed companies utilize local producers for strip demonstration trials and as field testing of hybrids. Many seed companies utilize local producers for strip demonstration trials and as marketing agents. This probably accounts, in part, for the fact only 17.1% of all producers would be willing to pay for corn variety information from the university.

Both seed dealers and neighbors and friends were preferred over the University of Wyoming as the second and third most important sources of information (Table 2). This also indicates low usage of university corn hybrid information.

The rating of information sources shows a similar trend. University information was not regarded as highly as personal experience, neighbors and friends, and seed dealers. The overall rating of University of Wyoming corn hybrid information was slightly better than fair (Table 2).

The high regard for personal experience, as well as neighbors and friends, is consistent with that reported previously. Jackson and Taylor (3) found personal experience and neighbors and friends were relied on most as information sources when making crop management decisions. They found the University of Wyoming was a close third as an information source. Although the surveys were conducted in two different regions of Wyoming, it appears that corn performance information is less important to producers than other

types of information on crop production provided by the university.

This is reflected in the response to question no. 9 (Table 1), which sought to prioritize crop research activities by asking for level of activity the REC should strive for in the various areas of research. While the majority of respondents felt the same or more effort should be put forth in all listed agronomic research categories, variety testing rated behind disease/insect management, weed control, conservation tillage, and fertilizer practices (Table 3). It seems that although producers value the importance of variety information (3), they have considerable confidence in corn hybrid information obtained from sources outside of the university. This suggests the University could more effectively serve producer needs by concentrating on other agronomic research and service activities.

Indications are that, in recent years, the hybrid corn performance program at the University of Wyoming has been of limited usefulness in providing growers in southeastern Wyoming with hybrid information. A review of the program over the last few years reveals several factors that could have contributed to lack of success in this regard.

The program has been funded in part on a fee testing basis: those companies that paid the fees had their materials tested. As a result, it is doubtful all locally available varieties were tested, and entries into the program changed frequently. For instance, of the 73 grain corn entries tested at the REC in 1982, only 13 had been tested for 3 yr (5). Consequently, it had been difficult to develop sound recommendations on hybrids.

Another complication has been that materials tested in the performance program were not readily available to producers. This has been true in some cases, as companies have used the corn performance program to test experimental lines.

If funding were available, a redirection to multiple-year testing of locally available varieties might be appropriate. This would alleviate some of the shortcomings of the present program. The low positive response of 17.1% to question no. 8 (Table 2) which asked growers if they would pay a reasonable fee for variety information, indicates that there would be little producer interest in such a program.

### CONCLUSION

The survey results indicate growers in southeastern Wyoming rely heavily on sources outside the university for information concerning their choice of hybrid corn varieties. While the university corn performance program may have played a major role in development of the state's corn industry by providing direct information to the producer, the importance of this function seems to have decreased in recent years.

It appears southeastern Wyoming producers would not support a redirection of this program to correct its present shortcomings. Producers feel the University of Wyoming could better serve producers by concentrating on other agronomic research activities.

### Table 3. Agronomic research needs of Goshen County, WY, producers.

<table>
<thead>
<tr>
<th>Research needs</th>
<th>Fertilizer practices</th>
<th>Weed control</th>
<th>Conservation tillage</th>
<th>Variety selection</th>
<th>Irrigation management</th>
<th>Disease-insect management</th>
<th>Other cultural practices</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>More</td>
<td>28.8</td>
<td>35.9</td>
<td>33.6</td>
<td>21.9</td>
<td>17.5</td>
<td>33.9</td>
<td>12.0</td>
<td></td>
</tr>
<tr>
<td>Same</td>
<td>21.2</td>
<td>23.7</td>
<td>19.3</td>
<td>24.5</td>
<td>24.4</td>
<td>19.7</td>
<td>25.7</td>
<td></td>
</tr>
<tr>
<td>Less</td>
<td>1.1</td>
<td>1.1</td>
<td>2.2</td>
<td>2.9</td>
<td>3.6</td>
<td>0.7</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>Not sure</td>
<td>19.0</td>
<td>14.6</td>
<td>15.0</td>
<td>17.9</td>
<td>20.1</td>
<td>15.7</td>
<td>24.4</td>
<td></td>
</tr>
<tr>
<td>No response</td>
<td>29.9</td>
<td>26.5</td>
<td>29.9</td>
<td>32.8</td>
<td>34.3</td>
<td>29.9</td>
<td>38.3</td>
<td></td>
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<tr>
<td>Avg rating†</td>
<td>2.64</td>
<td>2.57</td>
<td>2.57</td>
<td>2.59</td>
<td>2.30</td>
<td>2.61</td>
<td>2.28</td>
<td></td>
</tr>
</tbody>
</table>

† From question no. 9: more = 3; same = 2; less = 1.
REFERENCES