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TOOLS FOR VALUE-ADDED GRAIN MARKETING

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Grain producers face many decisions each year concerning the practices they will engage in and the products they will use. Markets for grains in the United States and the world over are changing. Due to the availability of affordable and reliable testing, the value of intrinsic characteristics like oil and protein can be realized at receiving points. Once identified and preserved, value-added grains can be directed to the best end use. Soybean processors are measuring protein and oil levels as reflected in higher value of oil and meal. As demand for value-added commodities increases in the United States, seed companies contribute by providing new products for specific uses in both new and traditional markets. Data concerning the performance of specific genetics over time and geographic location have several applications to assist seed companies, producers, and processors in their decision making. This "Locational Database" has been made accessible for public use.

The Iowa State University Grain Quality Laboratory has been testing grains for 20 years and has been involved with the evolution of Near-Infrared (NIR) analysis. Over the years, thousands of corn and soybean samples have been tested from all over the United States. The Locational Database is an accumulation of data for the last five years for all samples meeting selection criteria. This database is made available via the Internet and can be downloaded for individual applications. The Internet address is: <http://www.exnet.iastate.edu/Pages/grain/Qualdata.html>.

Locational Database

Major sources of data include the Iowa State Fair, seed company submissions, Iowa Gold Program Trials, county test plots, and the American Soybean Association national quality survey. This year, we will be including results from a national corn survey. Only samples with the following minimum identity criteria were included: seed company, hybrid or variety, oil, protein, and location by county or city and state. All samples are labeled with the grain type, harvest year, and source of data. When available, sample records include specialty characteristics, moisture level, yield, test weight, fiber/starch, density, and amino acids (obtained by an external laboratory). It should be noted, however, that quality and yield information represent only individual observations, and were not collected as part of controlled comparison studies.

The corn spreadsheets have been additionally enhanced with feed value predictions from two different sources using oil and protein values at 0% and 15% moisture content. The SPROC program (Soybean PROCessing) was run and included on all soybean spreadsheets. The inputs used for SPROC include the oil and protein in conjunction with average prices and industry standards. A summary of the data is in Table 1 and Table 2.

Applications

Once down-loaded, these spreadsheets can serve a variety of tasks for different users. A seed company may try to target higher yielding varieties in different regions. Weather patterns or annual precipitation for a specific location might be correlated with quality traits. Grain producers may use this information to determine economic yield from different varieties grown. Processors might supplement market research to target regions with historically higher oil or protein production.

Iowa State University and the University of Illinois are currently working with industry to encourage soybean pricing based on protein and oil content. The Locational Database was searched for quality data found in specific locations surrounding two participating soybean processors. Using the SPROC program, yield, oil, and protein data was calculated to estimate processing value in dollars per acre.

Computer Notes

1. In addition to the direct address (<http://www.exnet.iastate.edu/Pages/grain/Qualdata.html>), the Internet site can be accessed through links from Iowa State University Extension, Grain Quality Initiative.
2. The spreadsheets have been converted into a standard format using Microsoft Excel 2.1. Sort and filter operations can be used in Excel for limited searches of data.
3. If an Excel file includes more than 250 unique filtering objects, additional objects are not identified. For example, if filtering through a list of 300 seed company names, only the first 250 will be available.
4. I have also chosen the Excel file format because it can be read and saved as several other file types.
5. Microsoft Access is a database program designed to do simple and advanced filters, queries, and reports. Excel files can be imported into Access.
6. The Access program is capable of filtering large files without size limitations.

Data Summary

Table 1. Soybean^a Summary from 1992-1996

| Factor | Average | Range | n |
|---------------------|---------|-------|------|
| Yield (bu/ac) | 50.1 | 20-75 | 751 |
| Test Weight (lb/bu) | 54.1 | 49-60 | 1618 |
| Protein (%) | 35.5 | 28-41 | 9298 |
| Oil (%) | 17.9 | 13-21 | 9273 |
| Fiber (%) | 5.1 | 4-7 | 6451 |

^a Basis 13% moisture

Table 2. Corn^a Summary from 1992-1996

| Factor | Average | Range | n |
|------------------------------|---------|---------|------|
| Yield (bu/ac) | 141.9 | 52-211 | 1433 |
| Test Weight (lb/bu) | 54.5 | 39-63 | 1544 |
| Protein (%) | 7.9 | 5-12 | 5759 |
| Oil (%) | 3.6 | 2-8 | 5759 |
| Starch (%) | 60.4 | 50-64 | 5756 |
| Density (g/cm ³) | 1.27 | 1.2-1.4 | 4885 |

^a Basis 15% moisture