



## Task Force

### 1996 Indiana Corn Quality Survey - Composition Data

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This fact sheet summarizes the composition data compiled for corn samples collected in Indiana during the 1996 harvest. District results are presented and composition data from the 1995 and 1996 crop years are compared.

#### Methodology

Whole ear corn samples were taken directly from the field as part of a multi-year survey conducted by the Purdue University Botany and Plant Pathology Department. Sampling was conducted by the Indiana Agricultural Statistics Service in West Lafayette. Samples were analyzed for fungal damage, and mycotoxin level was quantified. Each ear corn sample consisted of 5-10 ears, which were placed in cotton bags. After the disease analysis, each bag of ears was dried with forced air and subsequently shelled using a stationary sheller. After shelling, the whole kernels were analyzed for moisture, protein, oil, starch, and density using a near-infrared whole grain analyzer (Infratech 1229) at the Grain Quality Laboratory, Purdue University.

A total of 208 samples were available for composition analysis. The number of samples from each crop reporting district was roughly proportional to the corn acreage and production in each district with the exception of the North East district which was slightly under-represented based on its total acres harvested per sample (Table 1).

#### Results

The overall state percent protein averages increased 0.1 percentage point compared to the 1995 data to 7.8% (Table 2). The spread between the minimum and maximum protein content widened to 5.4 points in 1996

compared to 4.0 points in 1995. Generally, protein content is negatively correlated to starch content. Thus, the slight increase in protein found in the 1996 samples would be expected to result in lower starch contents compared to the 1995 data. Indeed, starch content decreased 0.5 percentage points compared to the 1995 results. Starch ranges widened to 6.2 points compared to 4.9 points in 1996 and 1995, respectively. Significantly lower starch contents were evident in numerous samples. Percent oil remained unchanged at 3.3% over the past two years. Density is considered an indication of kernel hardness. From 1995 and 1996 data, kernel density has remained about the same; however, the 1996 data showed a wider spread with both softer and harder samples compared to 1995. Overall, the composition data for the 1996 Indiana corn crop confirmed the variability in growing conditions experienced by farmers across the state last year.

The results in Table 2 only give an indication of the composition values of corn across Indiana. Conditions during the growing season, hybrid selection, and soil fertility significantly affect intrinsic values such as protein, oil, starch, and density. Producers need to have their own samples analyzed to get more precise values. The Purdue University's Grain Quality Laboratory now offers composition analysis for whole corn, soybeans, and soybean meal. During this initial year of operation, this service is offered at no charge to Indiana producers, elevators, and processors. 450 g (about 1 lb.) may be sent to:

Grain Quality Laboratory  
1146 ABE  
Purdue University  
West Lafayette, IN 47907-1146

For further information, call (765) 494-2285, or send e-mail to [grainlab@ecn.purdue.edu](mailto:grainlab@ecn.purdue.edu), or visit us on the World Wide Web at <http://pasture.ecn.purdue.edu/~grainlab>.

## High-Oil Corn

One of the 1996 state survey samples analyzed was a high oil corn hybrid, which was excluded from the data base. The composition values for this sample were 7.1% oil, 10.6% protein, and 55.7% starch. Our Grain Quality Lab has received over 25 high-oil corn samples for analysis so far. Oil contents have ranged from 6.1-7.5% oil on a 15% moisture basis (7.2-8.8% dry basis). Premiums for high-oil corn during the 1996 harvest have ranged from 15 cents/bushel for a minimum of 6.0% (dry basis) to 40 cents/bushel for a minimum of 8.5% oil (dry basis). At least 12 elevators in Indiana are contracting high-oil corn for the 1997 season. Call our lab for more information on high-oil corn analysis and a list of contracting locations.

Grain Quality Fact Sheets can be accessed on-line through:

### World Wide Web:

<http://hermes.ecn.purdue.edu:8001/server/purdue/acspub.html>

(select) Grain Quality

### Almanac:

send e-mail to: [almanac@ecn.purdue.edu](mailto:almanac@ecn.purdue.edu)  
message: send grain guide

or send grain catalog

or send grain factsheet#12 (for example)

or send acsonline GQ-12

| Table 1. Summary of the 1996 Indiana corn acres, yields, and production. |                             |                      |                  |                         |  |
|--|-----------------------------|----------------------|------------------|-------------------------|--|
| District   | Harvested Acres<br>(1000's) | Acres per<br>Samples | Yield<br>(bu/ac) | Production<br>(1000 bu) | Production (in<br>1000 bu) per<br>Sample |
| NW   | 975                         | 39,000               | 127              | 124,215                 | 4,969                                    |
| NC   | 725                         | 25,000               | 126              | 91,508                  | 3,155                                    |
| NE   | 365                         | 60,833               | 114              | 41,610                  | 6,935                                    |
| WC   | 720                         | 45,000               | 124              | 89,222                  | 5,576                                    |
| C  | 1,175                       | 17,537               | 124              | 145,755                 | 2,175                                    |
| EC   | 370                         | 16,818               | 110              | 40,750                  | 1,852                                    |
| SW   | 760                         | 29,231               | 127              | 96,265                  | 3,702                                    |
| SC   | 190                         | 19,000               | 117              | 22,239                  | 2,224                                    |
| SE   | 170                         | 21,250               | 111              | 18,786                  | 2,348                                    |
| State  | 5,600                       | 26,794               | 123              | 670,350                 | 3,207                                    |
| 1995 State   | 5,400                       | 35,762               | 113              | 598,900                 | 3,966                                    |

Table 2. Summary of the 1996 Indiana corn composition survey (15% moisture basis).

| District   | Samples | Protein (%) |          | Oil (%) |         | Starch (%) |           | Density (g/ml) |           |
|------------|---------|-------------|----------|---------|---------|------------|-----------|----------------|-----------|
|            |         | Avg.        | Range    | Avg.    | Range   | Avg.       | Range     | Avg.           | Range     |
| NW         | 25      | 7.5         | 5.9-10.7 | 3.4     | 2.7-4.6 | 61.2       | 57.3-63.0 | 1.27           | 1.22-1.31 |
| NC         | 29      | 7.9         | 6.7-9.0  | 3.4     | 2.9-4.1 | 61.0       | 59.5-62.8 | 1.27           | 1.22-1.32 |
| NE         | 6       | 6.6         | 6.1-7.2  | 3.2     | 3.0-3.4 | 62.2       | 61.5-62.9 | 1.26           | 1.23-1.28 |
| WC         | 16      | 8.2         | 6.2-10.3 | 3.3     | 2.6-4.3 | 60.9       | 58.5-62.9 | 1.28           | 1.24-1.32 |
| C          | 66      | 8.0         | 5.5-10.8 | 3.3     | 2.5-4.2 | 61.2       | 58.8-63.5 | 1.27           | 1.18-1.33 |
| EC         | 22      | 7.8         | 6.0-9.6  | 3.3     | 3.0-4.0 | 61.2       | 59.0-62.8 | 1.28           | 1.24-1.32 |
| SW         | 26      | 7.9         | 5.7-10.2 | 3.4     | 2.8-4.0 | 61.1       | 59.4-62.9 | 1.28           | 1.17-1.32 |
| SC         | 10      | 7.6         | 6.2-9.8  | 3.4     | 3.0-3.7 | 61.5       | 60.2-62.6 | 1.28           | 1.24-1.32 |
| SE         | 8       | 6.6         | 5.4-8.3  | 3.4     | 3.0-4.0 | 61.7       | 59.9-62.9 | 1.25           | 1.20-1.30 |
| State      | 209     | 7.8         | 5.4-10.8 | 3.3     | 2.5-4.6 | 61.2       | 57.3-63.5 | 1.27           | 1.17-1.33 |
| 1995 State | 151     | 7.7         | 5.7-9.7  | 3.3     | 2.6-4.9 | 61.7       | 59.9-64.8 | 1.26           | 1.20-1.31 |