



Task Force

1997 Indiana Corn Composition Data

*Dirk E. Maier, Jason Reising & Jenni L. Briggs, Agricultural & Biological Engineering;
Ralph W. Gann, Indiana Agricultural Statistics Service*

This fact sheet summarizes the composition data compiled for corn samples collected in Indiana during the 1997 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. The Indiana Agricultural Statistics Service in West Lafayette conducted the sampling. 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 transmittance (NIT) whole grain analyzer (Infratech 1229) at the Grain Quality Laboratory, Purdue University.

A total of 159 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 and North West districts which were somewhat under-represented based on its total acres harvested per sample (Table 1).

Table 1. Summary of the 1997 Indiana corn acres, yields, and production.

District	Harvested Acres (1,000's)	Acres per Sample	Yield (Bu/ac)	Production (1,000 Bu)	Production (1,000 Bu) per Sample
NW	940	62,667	134	125,583	8,372
NC	780	41,053	136	106,176	5,588
NE	530	132,500	136	72,138	18,035
WC	757	36,048	111	84,384	4,018
C	1,256	24,627	130	162,672	3,190
EC	450	37,500	121	54,369	4,531
SW	774	29,769	104	80,173	3,084
SC	183	22,875	92	16,804	2,100
SE	180	60,000	96	17,251	5,750
State	5,850	36,792	123	719,550	4,525
1996	5,600	26,794	123	670,350	3,207
1995	5,400	35,762	113	598,900	3,966

Table 2. Summary of the 1997 Indiana corn composition survey (15% moisture basis).

District	Number of Samples	Protein (%)		Oil (%)		Starch (%)		Density (g/ml)	
		Avg.	Range	Avg.	Range	Avg.	Range	Avg.	Range
NW	15	7.7	6.1-9.6	3.3	2.7-3.6	62.0	60.2-64.0	1.307	1.265-1.339
NC	19	8.1	6.2-11.6	3.1	2.6-3.7	62.0	58.3-64.3	1.306	1.280-1.325
NE	4	7.4	5.4-8.3	3.4	2.9-3.6	62.1	61.1-63.7	1.286	1.252-1.305
WC	21	8.2	4.9-10.3	3.5	2.5-7.2	61.5	58.0-64.9	1.294	1.200-1.329
C	51	7.8	5.8-9.3	3.3	2.5-3.9	61.9	59.2-64.2	1.306	1.272-1.337
EC	12	6.9	4.5-10.8	3.3	3.0-3.7	62.7	59.0-64.8	1.301	1.277-1.337
SW	26	8.2	4.8-11.9	3.2	2.6-4.0	61.8	58.2-64.2	1.308	1.247-1.336
SC	8	8.1	6.1-10.7	4.3	3.1-7.1	60.4	55.3-63.4	1.289	1.235-1.312
SE	3	7.4	6.5-8.9	3.1	2.5-3.5	62.4	60.4-64.0	1.286	1.266-1.296
State	159	7.9	4.5-11.9	3.3	2.5-7.2	61.9	55.3-64.9	1.302	1.200-1.339
1996	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	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

Results

The overall state percent protein averages increased 0.1 percentage point to 7.9% (Table 2) compared to the 1996 data and 0.2% compared to 1995 data. The spread between the minimum and maximum protein content widened to 7.4 points in 1997, compared to 5.4 and 4.0 points in 1996 and 1995, respectively. Generally, protein content is negatively correlated to starch content. However, both protein and starch levels rose in 1997. Protein content increased 0.1% from last year while starch increased 0.7%. Starch ranges widened to 9.6 points in 1997, compared to 6.2 and 4.9 points in 1996 and 1995, respectively. Percent oil remained unchanged at 3.3% over the past three years although at least one high oil corn sample was included in the 1997 survey. (One sample was tested in 1996 also but was excluded in the summary of results.) Density is considered an indication of kernel hardness. From 1995 and 1996 data, kernel density had remained about the same. However, the 1997 data showed an increase of 0.032 to 1.302 g/ml. The range of points in 1997 showed that the

spread was not as wide when compared to the 1996 data. Overall, the composition data for the 1997 Indiana corn crop again reflected 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. Purdue University's Grain Quality Laboratory continues to offer composition analysis for whole corn, soybeans, and soybean meal. This service is offered at *no charge* to Indiana producers, elevators, and processors thanks to a Value-Added Grant from the office of Indiana's Commissioner of Agriculture. 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 or
visit us on the World Wide Web at
<http://pasture.ecn.purdue.edu/~grainlab>.

*Grain Quality Fact Sheets can be accessed on-line
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