

2010 Seed Count Survey

Corn, soybeans and wheat labeled by seed count for sale in Kentucky in 2010

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Introduction

In the United States, there is an increasing trend toward selling seed products based on the number of seed per container or bag, rather than on weight. An advantage for producers when buying seed based on seed count is that the seed cost per acre can be easily determined based on the unit price at the point of purchase. Because of decisions based on seed count, the accuracy of seed counts is crucial.

The primary objectives of this study were to: 1) evaluate labeling and packaging trends for corn, soybeans and wheat and 2) compare seed count guarantees with laboratory analyses for corn, soybean and wheat samples collected in 2010.

Materials and Methods

Corn (35), soybean (72) and wheat (76) seed lots were sampled according to recommended sampling procedures (AASCO, 2006) and received into the laboratory in wax-lined paper bags. Following initial purity and germination analyses, samples were held in cold storage (10 °C, 50% RH) until seed counts were conducted.

Samples were weighed using a standard laboratory balance to ensure an adequate amount was available for the procedure and then hand-mixed or mixed and divided using a standard laboratory divider (Model TR-2102, Denver Instruments, Denver, CO). Mechanical seed counts were conducted according to the AOSA Rules for Testing Seeds (2010) using an electronic seed counter (Model 850-2, The Old Mill Co., Savage, MD). Seed counts per pound were calculated using the following formula:

$$\text{Number of seeds per pound} = \frac{453.6 \text{ g/lb} \times \text{no. of seeds counted}}{\text{Weight (g) of sample analyzed}}$$

Tolerances of 2%, 4% and 3% for corn, soybeans and wheat, respectively, were applied to the label guarantee to determine the allowable difference between the claim and the laboratory analysis. If the difference between the label claim and laboratory analysis exceeded the calculated allowable amount, then the sample was considered out of tolerance.

Results and Discussion

Corn: In the 35 corn samples tested, seed counts ranged from 1266 to 2487, with an average of 1697 seed per pound. Forty-three percent (43%) of the samples were out of tolerance with the guarantees stated on the labels (Table 1).

Soybeans: Seventy-two (72) soybean samples were analyzed for seed counts (Table 1). The soybean seed counts ranged from 2198 to 4099, with an average of 2884 seed per pound. Thirty-five percent (35%) of the samples were out of tolerance with the guarantees stated on the labels.

Wheat: Wheat seed counts ranged from 11,037 to 19,586, with an average of 13,544 seed per pound. Half (50%) of the 76 samples tested were out of tolerance with the label guarantees (Table 1).

Of the 78 seed counts that were out of tolerance, nearly all exceeded the label guarantee, meaning the purchaser received at least the number of seeds that were stated on the bag. Within the corn, soybeans and wheat samples that were out of tolerance with the guarantees, 6 samples (13%, 4% and 8%, respectively) were well below the guarantee stated on the label. For these seed lots, customers would not have received the minimum number of seed per pound stated on the bag.

A range of seed counts within a seed kind can be expected because of the cultivar or genetic differences that influence seed size. Moisture content can also influence seed counts, with elevated seed moisture content resulting in lower seed counts on a per pound basis and extremely low moisture contents causing an increased seed count.

Seed size alone should not be used as a basis of seed lot selection. Cultivar characteristics such as yield and quality as well as insect and disease resistance should be carefully considered. Individual seed lot germination and purity analysis found on the tag are also important information when making purchasing decisions. Seed counts can, however, be used to adjust seeding rates. Alterations to seeding rates must be carefully considered due to potential impact on plant population. To achieve a desired plant density, seed quality, environmental conditions and site-specific concerns must also be considered.

State seed laws are intended to ensure producers and urban consumers of quality seed while promoting fair and equitable competition among seed labelers and dealers. The Kentucky Seed Program focuses on inspection and analysis of products found in the marketplace to ensure that seed labels carry all required information and that seed products distributed and offered for sale across the state are of the quality represented by the label. Although seed counts are not required information on the tag, once stated are subjected to confirmation for regulatory purposes. Because producers are making decisions based on seed counts, the accuracy of this information is crucial.

Table 1. Regulatory samples collected from Kentucky firms in 2010, including label comparison for seed count per pound.

Labeled Seed Kind	Samples Collected	Samples Labeled (% of total)	Samples Analyzed for Seed Count	Samples Out of Tolerance (% of Analyzed)	Did not meet
Barley	7	1 (14)			
Corn	274	51 (19)	35	43	13
Oat	24	1 (4)			
Soybean	125	83 (66)	72	35	4
Wheat	155	80 (52)	76	50	8
Other	936				
Total	1521	216 (14)	183		



Laboratory Seed Counter Operation - The working sample is placed into the vibrating hopper of the seed counter. Seeds move through the carousel and are directed into a chute. As seeds pass through the chute, a light beam is broken. Each disruption is recorded and the number of seed per pound is calculated from the number of seeds recorded in the sample weight.

Pure seed units are used for seed counts—no inert matter, small pieces of broken seeds or other foreign material. Seeds used for mechanical seed counts are selected at random from the submitted sample. The seed count working sample weight for corn and soybeans is 500 g and 100 g for wheat. Tolerances have been established for corn, field beans, soybeans and wheat.



Acknowledgement

Bob Hurst recorded label values and conducted seed counts.

Literature Cited

AASCO [Association of American Seed Control Officials]. 2006. AASCO Handbook on Seed Sampling. Association of American Seed Control Officials.
 AOSA [Association of Official Seed Analysts]. 2010. Rules for Testing Seeds: Vol. 1. Principles and Procedures. Association of Official Seed Analysts, Ithaca, NY.