



# OFFICE OF INDIANA STATE CHEMIST & SEED COMMISSIONER ANNUAL SEED REGULATORY REPORT

# 2018

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Donald B. Robison, MBA - Seed Administrator

2018  
Indiana Seed Regulatory Program  
Annual Report



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## Indiana Seed Control 2018 Annual Report

Presented here within is the 2018 annual report of the Office of Indiana State Seed Commissioner. It represents a summary of official inspectional activities related to seed control in Indiana, as well as laboratory analyses performed on official samples collected under the authority of Indiana Seed Law for agricultural and vegetable seeds distributed in Indiana.



The activities of our seed regulatory program revolve around our mission statement:

***“Provide education and service to consumers of seed and the seed industry and assure a quality product is available in the marketplace and truthfully represented.”***

The Indiana Seed Law is a “truth-in-labeling” law requiring basic quality factors to be expressed to represent a level of quality to potential purchasers and consumers. The purpose of the law is to provide the consumers with adequate information, through fair and consistent labeling, to make intelligent purchases of agricultural and vegetable seed products.

The inspection staff of the Indiana State Chemist and Seed Commissioner provides marketplace surveillance throughout the state through inspectional visits to all retail sales outlets offering seed products for sale. These products routinely consist of various agricultural crop seeds, forage seeds, lawn and turf seeds, and vegetable seed kinds. Samples are obtained through official sampling methods and are analyzed in the Indiana State Seed Laboratory to determine compliance with labeled guarantees.

Our office is a charter member of the Association of American Seed Control Officials (AASCO) and the Association of Official Seed Analysts (AOSA) and we abide by the rules and protocols established by those associations. This report accurately reflects the dedication to our statutory responsibilities to enforce the Indiana Seed Law and provide consumer protection to Indiana farmers, consumers and seedsmen.

Prepared and Submitted By:

A handwritten signature in blue ink, appearing to read 'Donald B. Robison'.

Donald B Robison, MBA  
Seed Administrator



# ENFORCEMENT ACTIONS ...

***Providing education, service and protection to Indiana consumers and industry to assure quality seed products of the highest integrity are truthfully represented and available in the marketplace***

- OUR PURPOSE**

The Indiana Seed Law (IC 15-15-1) is administered by the Office of Indiana State Chemist & Seed Commissioner. The purpose of the law is twofold: First, to give the purchaser sufficient information to enable them to buy good seed, and second, to protect the honest and reliable seedsman and the farmer from unscrupulous dealers. Our field, laboratory and office staffs strive to carry out our mission in administration and enforcement of the Act.

- ENFORCEMENT ACTION TAKEN IN 2018**

Enforcement action initiated in 2017 was dictated by the seriousness of the violations found as a result of either laboratory analysis or inspectional observations discovered during facility inspections.

Official Samples Tested in 2018:	1,271	
Official Samples Correctly Labeled:	1,098	(86.4%)
Samples Incorrectly Labeled:	173	(13.6%)
Samples Voided and/or Cancelled:	0	
Total Tests Completed on Samples:	5,635	

Breakdown of 2018 Violations:

Minor Violations Based on Product Analysis: (Relabeling Orders):	85	(46.2%)
Serious Violations Based on Product Analysis: (Stop Sale Orders):	58	(31.5%)
Technical Violations Based on Product Analysis:	41	(22.3%)

Inspector-Issued Stop Sale Orders (Number of Seed Lot's Involved): 26

Laboratory analysis done to verify label claims of "mechanical purity" (included Pure Seed %, other crop seed %, inert matter %, weed seed %, noxious weed seed), seed count, and "viability" (germination, hard seed and dormancy). Additional claims evaluated included genetic trait verification for glyphosate tolerance (by lateral flow immunoassay) and BT traits including Cry1Ab, Cry3Bb, and Cry34, MCry3A, and Cry1F (utilizing lateral flow immunoassay test kits).

\* Relabeling orders issued against seed lots classified as "minor" violations as a result of laboratory analysis

\*\* Stop sale action taken against seed lots classified as "serious" violations as a result of laboratory analysis

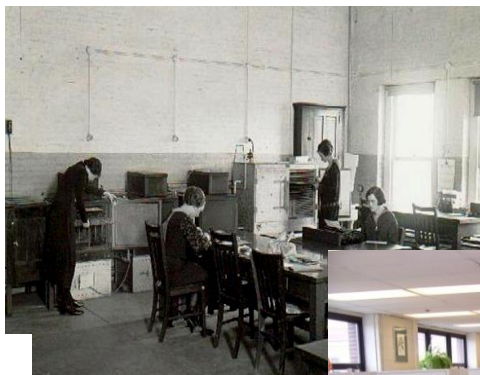
- USDA FEDERAL SEED ACT ENFORCEMENT**

Samples were collected and shipped to USDA, Gastonia NC for Trueness To Variety Testing (TTV). 15 lots of Kentucky 31 Tall Fescue seed were involved in this TTV testing and 4 varieties were found to not be correctly packaged and labeled.

Sixty-six samples were sent to the Federal Lab for apparent violations of the Federal Seed Act. 91 percent were found to be Federal Violations with a warning letter sent.

## OUR PRESENCE IN INDIANA ...

The Indiana Seed Commissioner was established in 1921 with the passage of House Bill No. 99 which was signed into law on February 24, 1921 to create the Indiana Seed Law, a “truth-in-labeling” law.



Seed testing facilities were established at Purdue University following passage of that first law to provide support to enforcement activities conducted under the authority of the law. Testing services were also provided for residents and consumers of the state to assess seed quality on seed purchased and grown by farmers.



*State Seed Laboratory, Today*

The Office of Indiana State Chemist and Seed Commissioner (OISC) is located on the campus of Purdue University and housed in the Biochemistry Building in the College of Agriculture. This proximity to faculty, researchers and extension staff in the various agricultural sciences is beneficial in providing information on new technologies constantly emerging in the regulated industries OISC comes in contact with.



*Biochemistry Building  
175 S. University Street, Purdue University  
West Lafayette, IN 47907-2063*

# THE INDIANA SEED INDUSTRY

## Indiana Seed Permit\* holders number 379

(Both in-state and out-of-state distributors)

(\* distributors marketing seed under their private label)

## SEED DISTRIBUTION IN INDIANA

The table on the next page illustrates a breakdown of reported pounds of agricultural and vegetable seeds distributed in Indiana during the calendar years of 2009 to 2018. These figures and categories reported represent those specified on the quarterly reports submitted from all permit holders licensed to do business in Indiana, as required by the Indiana Seed Law.

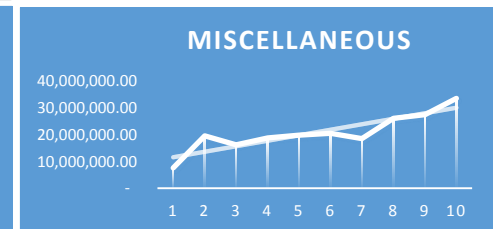
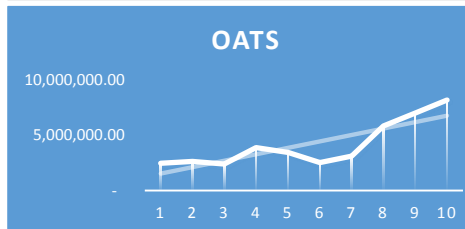
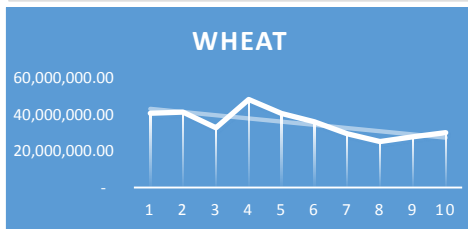
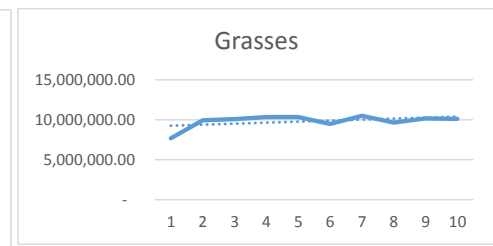
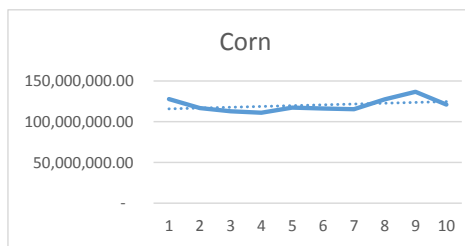
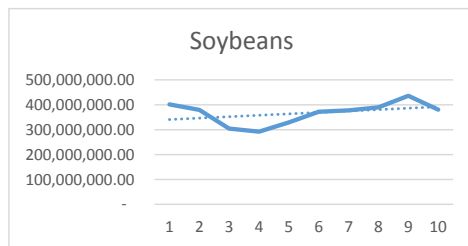
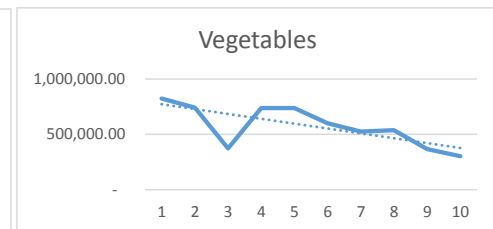
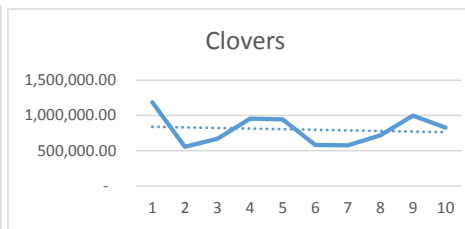
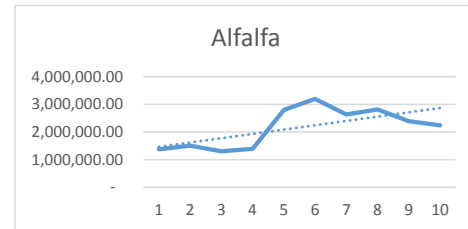
The law requires all distributors who cause seed to be distributed in the state to report total sales made. Inspection fees are assessed based on the kind and amount of seed sold. Current fees assessed on total distribution are 30 cents/100 pounds sold for alfalfas, clovers, grasses and vegetables, and 15 cents/100 pounds sold for all other seeds. \* These numbers for soybeans are being audited and will be updated after the complete audit is completed.

## SEED DISTRIBUTION IN INDIANA ...

Seed Distribution Report  
Ten Year

Seed	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Alfalfa	1,373,000.00	1,503,000.00	1,299,500.00	1,385,900.00	2,796,000.00	3,197,650.00	2,632,000.00	2,818,360.00	2,393,880.00	2,241,891.00
Clovers	1,187,300.00	556,200.00	671,100.00	954,400.00	946,100.00	582,000.00	575,400.00	718,504.00	997,884.00	828,717.00
Vegetables	824,000.00	741,700.00	373,100.00	737,500.00	737,500.00	601,000.00	526,400.00	538,153.00	367,637.00	302,704.00
Grasses	7,685,000.00	9,937,500.00	10,095,000.00	10,353,400.00	10,353,400.00	9,468,000.00	10,503,000.00	9,664,594.00	10,164,299.00	10,127,232.00
Corn	127,947,500.00	116,644,100.00	112,816,900.00	111,039,000.00	117,270,700.00	116,224,000.00	115,441,800.00	127,427,645.00	136,766,089.00	121,013,741.00
Soybeans	401,144,500.00	379,302,100.00	304,384,800.00	291,915,700.00	329,752,700.00	372,345,700.00	377,653,900.00	389,585,289.00	435,986,679.00	380,653,045.00
Wheat	40,705,000.00	41,342,800.00	32,746,100.00	48,204,100.00	40,468,300.00	36,009,100.00	29,464,400.00	25,164,329.00	27,771,000.00	30,065,481.00
Oats	2,479,000.00	2,632,600.00	2,400,700.00	3,893,300.00	3,459,800.00	2,529,800.00	3,112,300.00	5,858,697.00	7,010,392.00	8,201,253.00
Miscellaneous	7,598,000.00	19,610,000.00	16,206,000.00	18,781,100.00	19,820,900.00	20,583,500.00	18,594,500.00	26,173,506.00	27,522,255.00	33,620,832.00

\*White Charts represent decreases in seed pounds sold in Indiana from the previous year. Blue Charts represent increases in seed pounds sold in Indiana from the previous year.





## PROFESSIONAL AFFILIATIONS ...

The Office of the Indiana Seed Commissioner maintains membership in national seed organizations and associations and agreements with federal agencies.

**AASCO (Association of American Seed Control Officials)** The Seed Commissioner's office participates as an active member of AASCO. The Association of American Seed Control Officials is an organization of seed regulatory officials from the United States and Canada. The Association was organized in 1949, from an outgrowth of regional meetings held in various parts of the United States. The members meet annually to discuss mutual concerns of seed law enforcement, to be updated on new developments in the seed industry, and to update the Recommended Uniform State Seed Law (RUSSEL) which the organization developed and maintains as a "model" law for states and federal programs.

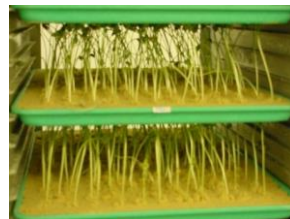
**AOSA (Association of Official Seed Analysts, Inc.)** The State Seed Laboratory is a member of the Association of Official Seed Analysts, Inc., (AOSA) a national body responsible for development of uniform testing rules utilized in the U.S. and Canada and recognized internationally. AOSA was formed in 1908 in response to initial attempts by individual states to develop seed laws. This was the beginning of regulated seed commerce in the United States. Initial priorities included, as was defined in the constitution, an attempt to seek uniformity and accuracy in methods, results, and reports. It set as its objective an effort to perfect and make publicly known, through publication, uniform rules for seed testing. Primary functions include:

- Establish the AOSA Rules for Testing Seeds which are generally adopted by most states as the rules for testing seeds in their respective states
- Contribute to the refinement and modification of the rules and procedures for seed testing
- Ensure that testing procedures are standardized between analysts and between laboratories
- Influence and assist in enforcement of appropriate seed legislation at state and federal levels

**USDA Seed Regulatory & Testing Branch** - The Indiana Seed Commissioner's Office maintains Cooperative Agreement #12-25-A-3330 with the USDA Seed Regulatory and Testing Branch for mutual assistance and cooperation in regulatory matters pertaining to seed shipped into the state from out-of-state vendors. The federal agency authorizes the State Seed Commissioner to sample seed and inspect records pertaining to seed shipments made into Indiana subject to the Federal Seed Act. The Federal Seed Act, by virtue of its basic similarity to the Indiana Seed Law, supplements the State Law.

## ANALYSIS & TESTING METHODS

The Indiana State Seed Laboratory is an active member of the Association of Official Seed Analysts (AOSA) and the methods used for sample preparation and analysis are those approved by the Association. Under such “Rules for Testing Seeds” a standard analysis has been developed in conjunction with the enforcement of labeling laws that furnishes information as to the



composition of the seed sample and the ability of the

seed to produce plants. The rules, which are routinely followed, summarize and make available the accumulated experience of seed analysts.

The laboratory also offers a service testing program available to the general public. Individuals and/or companies requesting analysis information may submit samples to the laboratory for testing and specify the type of test or tests desired (purity, germination, noxious weed seed exam). Testing fees are \$6 per sample for individual purity, germination and/or identification tests, and \$10 per sample for complete tests (purity, germination, noxious weed exam). Detailed reports of analysis are furnished to the sender at the completion of the testing.

The laboratory also offers immunoassay strip testing for traits in soybeans, corn and alfalfa. This testing is first level testing and can show the presence or absence of these traits. It is accurate to within roughly five percent. If a more detailed test is required we partner with a lab that conducts PCR DNA testing and can quote those tests.

## OUR PEOPLE...

### Teresa Thompson – Laboratory Technician VII

Teresa began her Purdue career in 2004 working in the Department of Horticulture as a lab technician. She was hired by the Seed Laboratory in January 2011 as a secretary to the Seed Laboratory and Seed Administrator. In her role she is responsible for data entry of sample information and service seed reports. Teresa has a BS in Agriculture from Purdue University. She assists with visitors, those who send in samples or phone in with questions. She also is trained to help with germination testing and supervising student workers.

### Jessica McVay – Laboratory Coordinator/Feed Microscopist/Registered Seed Technologist

Jessica was hired in August 2012 in the laboratory as a Seed Analyst/Feed Microscopist. She holds a BS in Interdisciplinary Biology with a minor in Forensic Science and Sociology from Purdue University. Her Role in the laboratory is to help direct the lab staff in both purity and germination and provide microscopic analysis on animal feed and bird feed products. Her new role of Laboratory Coordinator in June 2016 has her providing leadership to the lab staff and helping direct the workflow.

### Emily Morrison- Registered Seed Analyst

Emily was hired January 2016 as a Seed Analyst. Her primary role in the lab is to perform physical purity and germination. In 2016, Emily obtained certification in germination testing through AOSA and is continuing her education to pursue certification in physical purity, passing her Purity exam in 2018. Before starting in the seed lab she has had previous experience in seed quality testing with Dow AgroScience. She graduated from Purdue University with a BS in Natural Resources and Environmental Science.

### Scottie Brittsan – Laboratory Technician VI

Scottie was hired in June of 2017 as a Seed Analyst. Her primary role in the lab is to work with official samples in both data entry, sample entry and official seed reports. Scottie is continuing her education for germination and training with physical purity. She holds a BS in Entomology and Minors in Plant Sciences and History from Purdue University. Before starting in the seed lab she worked in the Purdue Nematode Lab and for the USDA as a Biological Science Aid performing Northern Uniform Soybean Tests.

## **DETAILED ANNUAL REPORT ON FOLLOWING PAGES...**

**Table I**

Classification of samples by kind and numbers of tests involved.

<b>Number of Samples</b>	<b>Kinds</b>	<b>Purity</b>	<b>Noxious Weed Examinations</b>	<b>Germinations*</b>
540	Vegetable	4	4	563
1,871	Agricultural	1,147	1,201	1,962
451	Flower	5	5	458
0	Tree	0	0	0
27	Feed	0	0	27
0	Health Food	0	0	0
22	Pasture Mix	24	22	23
0	Flower Mix	0	0	0
0	Vegetable Mix	0	0	0
0	Conservation Mix	0	0	0
0	Vegetable Kit	0	0	0
0	Lawn Mix	0	0	0
6	Unidentified	0	0	0
<b>2,917</b>	<b>Totals</b>	<b>1,180</b>	<b>1,232</b>	<b>3,033</b>

<b>Other Tests</b>	
Interstate Noxious Weed Test	0
Treated Germination Test	0
Cold Test	0
Sand Test	0
Roundup® Ready Test	0
Tetrazolium Test	0
Endophyte Test	0
Ryegrass Fluorescence Test	0
Oats Fluorescence Test	0
Identification Test	6
Miscellaneous Test	0
400 Seed Count Test	0
Seed Count Test	62
Canada Noxious Weed Test	0
Mechanical Seed Count Test	122
<b>Total Tests</b>	<b>5,635</b>

\* Includes preliminary and final seedling counts.

## SEED ACT ENFORCEMENT

In the enforcement of the Seed Act, Plant Industry Inspectors visit wholesale and retail firms to inspect seed labeling and obtain samples for testing. The inspectors collected 1,271 seed samples. A total of 163 or 12.82 % of these samples were found to be in violation of the Act. The inspectors also placed 55 lots of seed (12,917 containers) under 'Stop Sale' at 41 locations. These 'Stop Sales' are released when the owner or custodian of the seed follows the recommended procedure to have it relabeled in compliance with the law or otherwise disposed.

The tables on the following pages summarize the Seed Act Activities.

Table II is a comparison of the percentage of all violations for the past three years for all classes of seeds.

Table III summarizes the kinds of agriculture, vegetable and flower seeds tested with the number and percentage violation of each.

Table IV summarizes the inspection record of individual wholesale distributors giving total samples and number correctly labeled or in violation.

Table V represents a summary of crops, varieties and acres inspected by the seed certification program.

**Table II**

A comparison of violations of seed samples taken by seed inspectors.

Kinds	Number of Samples*	% Violations		
		1/1/2018 - 12/31/2018	1/1/2017 - 12/31/2017	1/1/2016 - 12/31/2016
Vegetable	177	7.91 %	10.79 %	5.26 %
Agricultural	1,072	13.43 %	8.01 %	3.40 %
Flower	0	0.00 %	0.00 %	0.00 %
Tree	0	0.00 %	0.00 %	0.00 %
Feed	0	0.00 %	0.00 %	0.00 %
Health Food	0	0.00 %	0.00 %	0.00 %
Pasture Mix	22	22.73 %	0.00 %	33.33 %
Vegetable Mix	0	0.00 %	0.00 %	0.00 %
Conservation Mix	0	0.00 %	0.00 %	0.00 %
Vegetable Kit	0	0.00 %	0.00 %	0.00 %
Lawn Mix	0	0.00 %	13.89 %	12.90 %
<b>Totals</b>	<b>1,271</b>	<b>12.82 %</b>	<b>8.44 %</b>	<b>4.51 %</b>

\* Samples collected by seed inspectors 1/1/2018 - 12/31/2018

## Explanation of abbreviations used in tables.

- CL – Correctly labeled.  
 SV – Serious violation, discrepancy exceeds double the tolerance.  
 MV – Minor violation, discrepancy exceeds regular tolerance.  
 TV – Technical violation, label does not bear all required information.  
 #VIOL – Number of violations.  
 %VIOL – Percentage of violations.

**Table III**

Total of each kind tested, number and percentage of violations.

Seed Kind Tested	Vegetable Seeds						
	Total	CL	SV	TV	MV	#VIOL	%VIOL
Arugula, Rocketsald, Roquette	3	3	0	0	0	0	0.00 %
Basil, Sweet	1	0	0	1	0	1	100.00 %
Bean, Garden	18	17	1	0	0	1	5.56 %
Bean, Lima	2	2	0	0	0	0	0.00 %
Bean, Pinto	1	0	0	0	1	1	100.00 %
Beets	4	4	0	0	0	0	0.00 %
Broccoli	6	6	0	0	0	0	0.00 %
Cabbage	3	3	0	0	0	0	0.00 %
Cantaloupe, Muskmelon	1	1	0	0	0	0	0.00 %
Carrot	13	12	1	0	0	1	7.69 %
Cauliflower	2	2	0	0	0	0	0.00 %
Celery and Celeriac	3	3	0	0	0	0	0.00 %
Chives	1	0	0	1	0	1	100.00 %
Collards	3	3	0	0	0	0	0.00 %
Coriander, Cilantro	1	0	0	1	0	1	100.00 %
Corn, Hybrid Field	1	1	0	0	0	0	0.00 %
Corn, Sweet	20	18	1	0	1	2	10.00 %
Cucumber	4	4	0	0	0	0	0.00 %
Eggplant	1	1	0	0	0	0	0.00 %
Endive	1	1	0	0	0	0	0.00 %
European Cornsalad	1	1	0	0	0	0	0.00 %
Fescue, Tall	4	4	0	0	0	0	0.00 %
Kale	7	7	0	0	0	0	0.00 %
Kohlrabi	4	4	0	0	0	0	0.00 %
Lettuce	12	11	0	0	1	1	8.33 %
Mustard	4	2	1	0	1	2	50.00 %
Mustard, Leaf	1	1	0	0	0	0	0.00 %
Mustard, Spinach	1	1	0	0	0	0	0.00 %
Okra	1	0	1	0	0	1	100.00 %
Onion	6	4	2	0	0	2	33.33 %
Oregano	1	0	0	1	0	1	100.00 %

Seed Kind Tested	Vegetable Seeds						
	Total	CL	SV	TV	MV	#VIOL	%VIOL
Parsley	1	0	0	1	0	1	100.00 %
Parsnip	2	1	0	0	1	1	50.00 %
Pea, Garden	8	8	0	0	0	0	0.00 %
Pepper	3	3	0	0	0	0	0.00 %
Pepper, Hot	1	1	0	0	0	0	0.00 %
Popcorn	1	1	0	0	0	0	0.00 %
Pumpkin	1	1	0	0	0	0	0.00 %
Radish	7	7	0	0	0	0	0.00 %
Rape, Turnip; Rape, Bird	3	3	0	0	0	0	0.00 %
Roquette	1	1	0	0	0	0	0.00 %
Rutabaga	2	2	0	0	0	0	0.00 %
Spinach	2	2	0	0	0	0	0.00 %
Squash	1	1	0	0	0	0	0.00 %
Squash, Autum-Winter	1	0	1	0	0	1	100.00 %
Sweet Corn	3	3	0	0	0	0	0.00 %
Tomato	6	6	0	0	0	0	0.00 %
Watermelon	3	3	0	0	0	0	0.00 %
<b>Total</b>	<b>177</b>	<b>159</b>	<b>8</b>	<b>5</b>	<b>5</b>	<b>18</b>	<b>10.17 %</b>

Seed Kind Tested	Agricultural Seeds						
	Total	CL	SV	TV	MV	#VIOL	%VIOL
Agrostis Spp.	1	0	0	0	1	1	100.00 %
Alfalfa	9	8	0	0	1	1	11.11 %
Alkaligrass, Weeping	3	2	0	0	1	1	33.33 %
Annual Rape and Winter Rape	9	6	1	0	2	3	33.33 %
Barley	5	4	1	0	0	1	20.00 %
Bean, Garden	1	1	0	0	0	0	0.00 %
Beet, Sugar	1	0	0	0	1	1	100.00 %
Bluegrass, Kentucky	59	38	11	2	8	21	35.59 %
Bluegrass, Rough	1	1	0	0	0	0	0.00 %
Brassica VNS	4	1	2	1	0	3	75.00 %
Brome, Smooth	2	0	2	0	0	2	100.00 %
Brussels-Sprouts	1	1	0	0	0	0	0.00 %
Buckwheat	2	2	0	0	0	0	0.00 %
Cabbage	1	1	0	0	0	0	0.00 %
Canarygrass, Reed	1	1	0	0	0	0	0.00 %
Chicory	6	2	4	0	0	4	66.67 %
Chicory	1	1	0	0	0	0	0.00 %
Clover, Alsike	3	3	0	0	0	0	0.00 %



Seed Kind Tested	Agricultural Seeds						
	Total	CL	SV	TV	MV	#VIOL	%VIOL
Clover, Arrowleaf	2	0	2	0	0	2	100.00 %
Clover, Berseem	1	1	0	0	0	0	0.00 %
Clover, Crimson	10	5	2	2	1	5	50.00 %
Clover, Ladino and White	6	1	3	0	2	5	83.33 %
Clover, Ladino White	2	1	0	0	1	1	50.00 %
Clover, Red	14	9	3	0	2	5	35.71 %
Collards	1	1	0	0	0	0	0.00 %
Corn, Hybrid Field	163	162	0	1	0	1	0.61 %
Corn, Sweet	4	3	0	0	1	1	25.00 %
Crownvetch	1	1	0	0	0	0	0.00 %
Fescue, Chewings	4	2	1	0	1	2	50.00 %
Fescue, Creeping Red	31	20	6	0	5	11	35.48 %
Fescue, Meadow	1	1	0	0	0	0	0.00 %
Fescue, Tall	148	117	11	2	18	31	20.95 %
Fine Fescue	13	9	4	0	0	4	30.77 %
Fine Fescues	1	0	1	0	0	1	100.00 %
Fowl Bluegrass	1	0	0	0	1	1	100.00 %
Kohlrabi	1	1	0	0	0	0	0.00 %
Lespedeza, Korean	3	2	0	1	0	1	33.33 %
Lettuce	2	2	0	0	0	0	0.00 %
Mannagras, Fowl	1	0	0	0	1	1	100.00 %
Millet, Pearl	2	2	0	0	0	0	0.00 %
Oat and red oat	35	29	4	0	2	6	17.14 %
Okra	1	1	0	0	0	0	0.00 %
Orchardgrass	10	7	3	0	0	3	30.00 %
Pea, Field	6	3	0	1	2	3	50.00 %
Pea, Partridge	1	0	1	0	0	1	100.00 %
Pepper, Hot	2	2	0	0	0	0	0.00 %
Popcorn	6	6	0	0	0	0	0.00 %
Radish	13	9	3	1	0	4	30.77 %
Radish, Forage	5	4	0	0	1	1	20.00 %
Rape, Turnip; Rape, Bird	2	2	0	0	0	0	0.00 %
Rice Cutgrass	1	0	0	0	1	1	100.00 %
Rush, Soft	1	0	0	0	1	1	100.00 %
Rye	57	40	6	5	6	17	29.82 %
Ryegrass	2	1	1	0	0	1	50.00 %
Ryegrass (mixes)	36	23	7	0	6	13	36.11 %
Ryegrass, Annual; Ryegrass, Italian	25	18	3	2	2	7	28.00 %
Ryegrass, Intermediate	2	2	0	0	0	0	0.00 %
Ryegrass, Italian	1	0	1	0	0	1	100.00 %
Ryegrass, Perennial	42	32	5	0	5	10	23.81 %

Seed Kind Tested	Agricultural Seeds						
	Total	CL	SV	TV	MV	#VIOL	%VIOL
Sedge, Fox	1	0	0	0	1	1	100.00 %
Sorghum, Grain; Milo	1	0	0	1	0	1	100.00 %
Sorghum-Sudangrass Hybrid	5	4	1	0	0	1	20.00 %
Soybean	304	284	2	12	6	20	6.58 %
Spelt	3	3	0	0	0	0	0.00 %
Spinach	4	3	0	1	0	1	25.00 %
Sudangrass	1	1	0	0	0	0	0.00 %
Sweetclover, Yellow	1	0	1	0	0	1	100.00 %
Swiss Chard	1	1	0	0	0	0	0.00 %
Teff	2	1	0	0	1	1	50.00 %
Timothy	4	2	1	0	1	2	50.00 %
Total Brassica (Deer Mix)	2	2	0	0	0	0	0.00 %
Trefoil, Birdsfoot	1	1	0	0	0	0	0.00 %
Triticale	13	10	0	1	2	3	23.08 %
Vetch, Hairy	1	0	0	1	0	1	100.00 %
Virginia Wildrye	1	0	0	0	1	1	100.00 %
Wheat	95	81	6	5	3	14	14.74 %
<b>Total</b>	<b>1,210</b>	<b>984</b>	<b>99</b>	<b>39</b>	<b>88</b>	<b>226</b>	<b>18.68 %</b>

Seed Kind Tested	Pasture Mix						
	Total	CL	SV	TV	MV	#VIOL	%VIOL
Pasture Mix	22	17	1	0	4	5	22.73 %

Table IV

Vegetable Seeds Wholesale Distributors			Vegetable Seeds			
			CL	SV	TV	MV
AGRIGOLD	SAINT FRANCISVILLE	IL	1	0	0	0
BFG SUPPLY CO	HARRISONBURG	VA	2	0	0	0
BOTANICAL INTERESTS, INC	BROOMFIELD	CO	5	0	0	0
BURPEE GARDEN PRODUCTS	WARMINSTER	PA	18	0	1	0
CAUDILL SEED COMPANY	MOREHEAD	KY	5	0	0	0
CHEROKEE SEEDS	SIMPSON	NC	3	1	0	1
CROP TECH SEED COMPANY	VINCENNES	IN	5	0	0	0
DE BRUYN SEED CO INC	ZEELAND	MI	3	0	0	0
DIRECT ENTERPRISES INC	WESTFIELD	IN	8	1	0	0
DLF	HALSEY	OR	3	0	0	0
E & R SEED	MONROE	IN	9	1	0	0
FISHER'S HOME AND HARDWARE	SALEM	IN	1	0	0	0
FLINN FARMS	BEDFORD	IN	3	2	0	0
LAKE VALLEY SEED	BOULDER	CO	2	0	0	0
LEWIS SEED CO, INC	LOUISVILLE	KY	1	0	0	0
LIVINGSTON SEED COMPANY	NORTON	MA	5	0	0	0
OLDS GARDEN SEED	ST PAUL	MN	13	0	0	0
PLANTATION PRODUCTS LLC	NORTON	MA	29	1	0	1
RENEE'S GARDEN	FELTON	CA	3	0	0	0
RICHMOND'S FEED SERVICE INC	WAKARUSA	IN	2	0	0	0
RISPENS SEED INC	BEECHER	IL	1	0	0	0
RON MARTIN SEED & SUPPLY LLC	ELKHART	IN	2	0	0	0
RUPP SEEDS INC	WAUSEON	OH	1	0	0	1
SEED SAVERS EXCHANGE	DECORAH	IA	4	0	0	0
SEEDS OF CHANGE	COMPTON	CA	7	0	0	0
SEEDWAY LLC	HALL	NY	9	0	0	0
SYNGENTA SEEDS LLC	MINNEAPOLIS	MN	1	0	0	0
THE PAGE SEED COMPANY	GREENE	NY	6	0	0	0
TRACTOR SUPPLY CO.	BRENTWOOD	TN	1	0	0	0
URBAN FARMER LLC	WESTFIELD	IN	0	2	0	1
WETSEL SEED COMPANY	HARRISONBURG	VA	6	0	0	1
		<b>Total</b>	<b>159</b>	<b>8</b>	<b>1</b>	<b>5</b>

Agricultural Seeds Wholesale Distributors			Agricultural Seeds			
			CL	SV	TV	MV
1ST CHOICE SEEDS	RUSHVILLE	IN	4	0	1	0
1ST CHOICE SEEDS	MILTON	IN	6	0	2	0
ADVANCED TURF SOLUTIONS	FISHERS	IN	1	0	0	0
ADVANTA US	IRVING	TX	0	1	0	0
AG PLUS TURF CENTER	NEW HAVEN	IN	4	1	0	0

Agricultural Seeds Wholesale Distributors			Agricultural Seeds			
			CL	SV	TV	MV
AGRICULTURAL ALUMNI SEED IMPROVEMENT ASSOC, INC	ROMNEY	IN	3	0	0	0
AGRIGOLD	SAINT FRANCISVILLE	IL	8	0	0	0
AGRIMAXX WHEAT COMPANY, LLC	MASCOUTAH	IL	3	1	0	0
AGVENTURE, INC	JOHNSTON	IA	21	0	0	0
AMERI-TURF	ANDERSON	IN	3	0	0	0
AMTURF ENTERPRISES LLC	JEFFERSON	OR	1	0	0	0
ANDERSON SEED OF DASSEL LLC	DASSEL	MN	1	0	0	0
ANTLER KING TROPHY PRODUCTS INC	BLACK RIVER FALLS	WI	2	0	0	0
ARKANSAS COUNTY SEED CO INC	FAYETTEVILLE	AR	3	0	0	0
ASGROW SEED CO	CREVE COEUR	MO	54	0	3	1
B&A GENETICS LLC	CELINA	OH	2	0	0	0
BARENBRUG USA INC	TANGENT	OR	22	9	0	5
BAYER CROPSCIENCE	RESEARCH TRIANGLE PARK	NC	13	0	0	0
BECK'S SUPERIOR HYBRIDS, INC	ATLANTA	IN	37	0	0	0
BEHM & HAGEMANN INC	EAST PEORIA	IL	1	1	0	1
BIO GENE SEEDS	SARDINIA	OH	1	0	0	0
BIO-TOWN SEEDS INC	REYNOLDS	IN	2	0	0	1
BIOLOGIC LLC	WEST POINT	MS	1	0	0	1
BONIDE PRODUCTS INC.	ORISKANY	NY	1	0	0	0
BOTANICAL INTERESTS, INC	BROOMFIELD	CO	4	0	0	0
BRODBECK SEED INC	WABASH	IN	14	0	0	1
BURPEE GARDEN PRODUCTS	WARMINSTER	PA	0	0	1	0
BURTCH SEED CO, INC	CELINA	OH	0	0	1	0
BYRON SEEDS, LLC	ROCKVILLE	IN	37	2	2	5
C L & S INC	MONROEVILLE	IN	1	0	0	0
CAUDILL SEED & WAREHOUSE CO, INC	LOUISVILLE	KY	13	6	3	0
CENTRAL FARM SUPPLY OF KY, INC	LOUISVILLE	KY	1	0	0	2
CHANNEL BIO LLC	CREVE COEUR	MO	9	0	0	0
COLUMBIA GRAIN INT. LLC	CLARKSTON	WA	3	0	0	0
CORN GENETICS, INC	REYNOLDS	IN	1	0	0	0
COVER CROP SERVICES	SHIPSHEWANA	IN	2	0	0	1
CROP TECH SEED COMPANY	VINCENNES	IN	3	0	0	0
DAIRYLAND SEED COMPANY, INC	KEWASKUM	WI	2	0	0	0
DEER CREEK SEED, INC	ASHLAND	WI	2	1	0	2
DEKALB GENETICS CORP	CREVE COEUR	MO	15	0	0	0
DISCOUNT SEEDS, INC	WATERTOWN	SD	4	0	0	0
DLF	HALSEY	OR	41	1	0	6
DOEBLER'S PENNSYLVANIA HYBRIDS, INC	WILLIAMSPORT	PA	1	0	0	0
EBBERTS FIELD SEEDS INC	COVINGTON	OH	2	0	0	0
FEDERAL HYBRIDS INC	WEST BEND	IA	3	0	1	0

Agricultural Seeds Wholesale Distributors			Agricultural Seeds			
			CL	SV	TV	MV
FORAGE GENETICS INTERNATIONAL	NAMPA	ID	1	0	0	0
FOSTERS INC	EAST PEORIA	IL	1	1	0	0
FRENCH'S HYBRIDS INC	WAKEMAN	OH	2	0	0	0
FRONTIERSMEN INC	KENTLAND	IN	5	0	1	0
GAYLAND WARD SEED CO, INC	HEREFORD	TX	1	0	0	0
GLICK SEED SERVICE	HARTSVILLE	IN	3	1	0	0
GOHN AG & CORE LLC	ROCHESTER	IN	1	0	0	0
GREAT LAKES HYBRIDS	OVID	MI	2	0	0	0
HAAS SEED HOUSE	ALBERS	IL	1	0	0	0
HOOSIER PRIDE GENETICS, INC	VINCENNES	IN	2	0	1	1
HUBNER SEED	MONTICELLO	IN	4	0	0	1
HUBNER SEEDS CO	CREVE COEUR	MO	1	0	0	0
HUNDLEY SEED CO	CHAMPLAIN	VA	1	0	0	0
INTERLAKE FORAGE SEEDS LTD.	FISHER BRANCH	MB	1	0	0	0
IRRER SEED FARM	FOWLER	MI	0	0	1	0
J.R. SIMPLOT COMPANY	LIBERTY LAKE	WA	7	1	0	0
JONATHAN GREEN & SONS INC	HOWELL	NJ	0	1	0	1
KINGSBURY ELEVATOR INC	LA PORTE	IN	1	1	0	1
L&M GLICK SEED	COLUMBUS	IN	2	0	0	0
LA CROSSE SEED LLC	LA CROSSE	WI	30	3	1	2
LAKE VALLEY SEED	BOULDER	CO	3	0	0	0
LAND O'LAKES INC	ST PAUL	MN	1	0	0	1
LEGG SEEDS LLC	WINDFALL	IN	0	1	0	0
LESCO INC	CLEVELAND	OH	3	0	0	2
LEWIS HYBRIDS	URSA	IL	2	0	0	0
LEWIS SEED CO, INC	LOUISVILLE	KY	7	2	0	2
LG SEEDS	ELMWOOD	IL	11	0	0	0
LORD SEED FARMS	WALTON	IN	1	1	0	0
LOVELAND PRODUCTS INC	LOVELAND	CO	43	1	1	0
MALFAIT BROTHERS FARMS INC	WOODBURN	IN	2	0	0	0
MARTIN SEEDS INC	WILLIAMSPORT	IN	3	0	0	0
MASTERS CHOICE INC	ANNA	IL	2	0	0	0
MCKILLIP SEEDS INC	WABASH	IN	2	0	0	1
MERSCHMAN SEEDS INC	WEST POINT	IA	2	0	0	0
MOUNTAIN VIEW SEEDS LTD	SALEM	OR	2	0	0	0
MYCOGEN SEEDS	INDIANAPOLIS	IN	6	0	0	0
NRG AG SERVICES & SUPPLIES	NEW ROSS	IN	1	0	0	0
OLDS GARDEN SEED	ST PAUL	MN	1	0	1	0
OSBORN SEED CO	CULVER	IN	5	0	0	0
PARTNERS BRAND SEED CO. LLC	HOWE	IN	5	0	0	0
PENNINGTON SEED CO	LEBANON	OR	0	1	0	0
PENNINGTON SEED INC	GREENFIELD	MO	4	1	0	0

Agricultural Seeds Wholesale Distributors			Agricultural Seeds			
			CL	SV	TV	MV
PERFORMANCE SEED	WAITE PARK	MN	4	0	0	1
PIONEER HI-BRED INTERNATIONAL INC	JOHNSTON	IA	62	1	0	0
PLANTATION PRODUCTS LLC	NORTON	MA	3	0	0	0
PREFERRED ALFALFA GENETICS	STORY CITY	IA	2	0	0	0
PRO HARVEST SEEDS INC	ASHKUM	IL	1	0	0	0
PURPLE RIBBON SEEDS INC	MARSHALL	IN	9	0	0	0
RACKOLOGY LLC	LOUP CITY	NE	0	1	1	0
RAGAN & MASSEY INC	PONCHATOULA	LA	1	2	0	0
ROHRER SEEDS	SMOKETOWN	PA	5	0	0	0
RON MARTIN SEED & SUPPLY LLC	ELKHART	IN	2	0	0	0
RUPP SEEDS INC	WAUSEON	OH	8	0	1	1
RURAL KING	MATTOON	IL	17	0	0	1
SADDLE BUTTE AG INC	SHEDD	OR	1	1	1	1
SCHILLINGER GENETICS	WEST DES MOINES	IA	2	0	0	0
SCHULTZ TURF & FORAGE SEED	DIETERICH	IL	1	0	0	0
SCHUMITSCH SEED INC	ANTIGO	WI	3	1	0	1
SEED CONSULTANTS INC	WASHINGTON COURT HOUSE	OH	6	0	0	0
SEEDWAY LLC	HALL	NY	1	0	0	0
SEXAUER DISCOUNT FARM SERVICE INC	BROOKINGS	SD	1	0	0	0
SMITH SEED SERVICE LLC	HALSEY	OR	0	0	1	0
SPECIALTY HYBRIDS	MONTICELLO	IN	5	0	0	1
SPECIALTY HYBRIDS	MONTICELLO	IN	2	0	0	0
STEWART SEED CO	GREENSBURG	IN	18	0	0	0
STEYER SEEDS LLC	MCCORDSVILLE	IN	4	0	2	1
STINE SEED COMPANY	ADEL	IA	17	0	0	0
STONE SEED FARMS INC	PLEASANT PLAINS	IL	2	0	0	0
SUNSTAR HYBRIDS	CULVER	IN	13	0	0	0
SUPERIOR AG RESOURCES CO-OP	HUNTINGBURG	IN	2	0	1	0
SYNGENTA	MINNEAPOLIS	MN	1	0	0	0
SYNGENTA SEEDS LLC	MINNEAPOLIS	MN	3	0	1	0
TENBARGE SEED CO, INC.	HAUBSTADT	IN	7	2	0	1
THE CISCO COMPANIES	INDIANAPOLIS	IN	57	7	0	5
THE SCOTTS COMPANY	MARYSVILLE	OH	4	0	0	0
TRI STAR SEED CO	SPRING HILL	KS	3	0	0	0
TRI-STAR SEED CO., INC.	SPRING HILL	KS	6	0	1	0
TURNER SEED INC	ANTIOCH	TN	20	0	2	3
TURNER SEED INC	ANTIOCH	TN	2	0	2	1
TURNER SEED INC OF KY	WINCHESTER	KY	1	1	0	0
WEAVER POPCORN	VAN BUREN	IN	3	0	0	0
WHITETAIL INSTITUTE OF NORTH AMERICA	PINTLALA	AL	2	0	0	0
WINFIELD SOLUTIONS LLC	NAMPA	ID	49	0	0	0

Agricultural Seeds Wholesale Distributors			Agricultural Seeds			
			CL	SV	TV	MV
WYATT SEED COMPANY	PETERSBURG	IN	3	0	1	0
WYCKOFF HYBRIDS INC	VALPARAISO	IN	15	0	0	0
WYCKOFF HYBRIDS INC	DECATUR	MI	1	0	0	0
X-SEED, LLC	BECKER	MN	0	1	0	0
YERKS SEED INC	WOODBURN	IN	5	0	0	0
		Total	898	55	34	55

Pasture Mix Wholesale Distributors			Pasture Mix			
			CL	SV	TV	MV
BARENBRUG USA INC	TANGENT	OR	3	1	0	0
BIO-TOWN SEEDS INC	REYNOLDS	IN	5	0	0	0
BYRON SEEDS, LLC	ROCKVILLE	IN	1	0	0	2
CERES SOLUTIONS LLP	TEMPLETON	IN	1	0	0	0
LEGG SEEDS LLC	WINDFALL	IN	2	0	0	0
LESCO INC	CLEVELAND	OH	1	0	0	0
MOORE SEED FARM LLC	ELSIE	MI	1	0	0	0
RON MARTIN SEED & SUPPLY LLC	ELKHART	IN	1	0	0	0
THE CISCO COMPANIES	INDIANAPOLIS	IN	2	0	0	2
		Total	17	1	0	4