

SCAB RESISTANCE RATINGS IN THE KENTUCKY VARIETY TRIAL, 2013 – 2016

Dave Van Sanford, Anthony Clark, Carl Bradley and Bill Bruening
University of Kentucky, Lexington and Princeton, KY 40546
PH: (859) 257-5020 Ext. 80770; Email: dvs@uky.edu

Fusarium head blight, or head scab, is one of the most problematic diseases faced by Kentucky's wheat growers. Best management practices for this disease include choosing resistant varieties and using effective, well-timed fungicides when conditions warrant. To help growers select resistant varieties, the wheat breeding program screens thousands of varieties and breeding lines each year in a screening nursery in which a scab epidemic has been created. The varieties and breeding lines tested in the nursery include those in the Kentucky wheat variety trial. The scab nursery is planted in October and normal production practices are used through Feeke's growth stage 6 (jointing). Shortly after jointing, we spread scabby corn on the ground between rows and begin a process of mist irrigation several times a day. Our goal is to have a high concentration of scab spores that can infect the wheat varieties when they reach flowering. We take flowering notes in the nursery and rate scab symptoms approximately 21 days after flowering. In Table 1 data on three traits are reported: 1) Scab Rating, scored on a zero to 9 scale where zero = no scab symptoms and 9 = greater than 90% of the plants in the row are symptomatic. 2) Scabby Seed - this trait is rated on a percentage basis and reflects the ratio of scabby kernels to normal, healthy kernels on a weight basis, after a seed sample has been separated by density. 3) DON (deoxynivalenol) or vomitoxin, the toxin that is produced when the scab fungus invades the wheat head, expressed in parts per

million (ppm). The FDA advisory limit is 2 ppm in grain and 1 ppm in flour. In the scab nursery we see much higher levels of DON because of the intense disease pressure. When looking at the DON data in Table 1, you should "calibrate" the data by looking at the DON values for varieties known to be resistant, like Truman and Pioneer Brand 25R32. Secondly, it is important to note that the average of several years' data will be more informative than a single year's data. Finally, note that the years 2013-2016 vary considerably. For example, the average DON value ranges from 6.7 to 20.5 ppm over the four years.

Table 1. Kentucky Wheat Variety Trial Ratings for Three Scab Traits†, 2013-2016.

†Scab Rating, scored on a 0 - 9 scale where 0 = no scab symptoms and 9 = greater than 90% of the plants in the row are symptomatic. Scabby Seed is rated on a percentage basis and reflects the ratio of scabby kernels to normal, healthy kernels on a weight basis, after a seed sample has been separated by density. DON (deoxynivalenol) or vomitoxin, expressed in parts per million (ppm). In the scab nursery we see much higher levels of DON because of the intense disease pressure. **How to use this data:** “calibrate” the data by looking at the DON values for varieties known to be resistant, like Truman and Pioneer Brand 25R32. Secondly, it is important to note that the average of several years’ data will be more informative than a single year’s data. Finally, note that 2013-2016 vary considerably – for example, the average DON value ranges from 6.3 (2015) to 20.6 (2016) ppm over the four years.

Variety	Rating (0-9)					Scabby Seed (%)					DON (ppm)				
	2013	2014	2015	2016	Average	2013	2014	2015	2016	Average	2013	2014	2015	2016	Average
Ag 2650				2.0	2.0				10.3	10.3				37.0	37.0
Ag Alumni AgExp05247	1.0				1.0	40.0				40.0	16.3				16.3
AgExp02444		0.5	1.0		0.8		14.7	2.1		8.4		6.9	1.5		4.2
AgExp0762		0.0	1.0		0.5		11.4	1.8		6.6		9.4	1.7		5.6
AgriMAXX 412	1.0	1.5			1.3	45.0	10.3			27.7	16.3	13.7			15.0
AgriMAXX 413	1.0	1.0	4.0		2.0	65.0	9.2	9.4		27.9	15.8	11.5	9.1		12.1
AgriMAXX 415	1.5	1.0	2.0	3.5	2.0	55.0	11.2	2.8	12.3	20.3	26.6	18.2	5.3	23.8	18.4
AgriMAXX 422	1.0				1.0	35.0				35.0	15.7				15.7
AgriMAXX 438		2.5	4.5	2.5	3.2		11.8	8.8	13.1	11.2		16.4	7.3	20.4	14.7
AgriMAXX 444			3.0	3.0	3.0			6.1	8.8	7.4			8.2	22.2	15.2
AgriMAXX 446			4.5	4.0	4.3			6.8	20.4	13.6			14.1	42.5	28.3
AgriMAXX 447		2.5	3.5		3.0		8.7	7.7		8.2		15.7	7.8		11.7
AgriMAXX 452				2.0	2.0				6.6	6.6			6.6		6.6
AgriMAXX 454				3.0	3.0				9.3	9.3			17.8		17.8
AgriMAXX 490				1.5	1.5				10.8	10.8			17.1		17.1
AgriMAXX Exp 1335	1.5				1.5	40.0				40.0	20.0				20.0
AgriMAXX EXP 1335		1.5			1.5		19.3			19.3		22.1			22.1
AgriMAXX Exp 1348	0.5				0.5	25.0				25.0	10.6				10.6
AgriMAXX EXP 1444		1.5			1.5		12.9			12.9		14.5			14.5
AgriMAXX EXP 1465		3.0			3.0		13.0			13.0		17.4			17.4
AgriMAXX EXP 1555			3.0		3.0			5.1		5.1			8.3		8.3
AgriMAXX Exp. 1663				1.0	1.0				8.3	8.3				8.2	8.2

Variety	Rating (0-9)					Scabby Seed (%)					DON (ppm)				
	2013	2014	2015	2016	Average	2013	2014	2015	2016	Average	2013	2014	2015	2016	Average
AgriMAXX Exp. 1670				1.5	1.5				6.3	6.3				6.8	6.8
AgriMAXX Exp. 1674				3.5	3.5				14.2	14.2				20.5	20.5
ARMOR ARW 1513				2.5	2.5				9.0	9.0				19.2	19.2
ARMOR ARW 1516				2.5	2.5				13.6	13.6				21.7	21.7
ARMOR ARW 1521				2.0	2.0				8.2	8.2				18.8	18.8
ARMOR ARW 1551				2.0	2.0				10.1	10.1				21.5	21.5
ARMOR ARX 1107	2.0				2.0	55.0				55.0	18.8				18.8
ARMOR ARX 1204	1.0				1.0	45.0				45.0	19.6				19.6
ARMOR ARX 1206	3.5				3.5	50.0				50.0	27.0				27.0
ARMOR ARX 1270	0.5				0.5	35.0				35.0	18.5				18.5
ARMOR ARX 1313		1.5			1.5		12.4			12.4		15.1			15.1
ARMOR ARX 1325		2.5	5.0		3.8		9.6	7.5		8.6		19.5	13.6		16.6
ARMOR ARX 1327		0.5	3.0		1.8		11.0	5.7		8.3		10.3	7.9		9.1
ARMOR ARX 1329		1.0			1.0		7.4			7.4		9.5			9.5
ARMOR ARX 1332		2.0			2.0		14.2			14.2		9.8			9.8
ARMOR ARX 1412			1.5		1.5			2.5		2.5		2.5			2.5
ARMOR ARX 1413			2.0		2.0			2.7		2.7		6.3			6.3
ARMOR ARX 1418			1.5		1.5			4.0		4.0		4.1			4.1
ARMOR ARX 1433			3.0		3.0			2.8		2.8		3.0			3.0
ARMOR ARX 1441			4.5		4.5			9.2		9.2		12.2			12.2
ARMOR HAVOC		1.0	5.5		3.3		7.1	4.9		6.0		12.5	6.8		9.6
ARMOR INFERNO				3.5	3.5				18.4	18.4				41.6	41.6
ARMOR OCTANE		2.0	3.0		2.5		10.4	8.9		9.7		12.4	9.2		10.8
ARMOR RAMPAGE	1.5	2.0			1.8	65.0	11.1			38.0	21.3	13.2			17.2
ARMOR Rocket	1.0				1.0	40.0				40.0	12.3				12.3
ARMOR RUMBLE				0.5	0.5				6.3	6.3				10.7	10.7
ARMOR VANDAL		4.5			4.5		14.0			14.0		19.2			19.2
BECK 113	1.0	2.0			1.5	40.0	8.6			24.3	12.8	5.4			9.1
BECK 114				1.0	1.0				7.6	7.6				8.5	8.5
BECK 120	2.5	0.5	3.5	2.5	2.3	75.0	16.8	9.4	18.9	30.0	20.8	9.1	6.9	21.0	14.4

Variety	Rating (0-9)					Scabby Seed (%)					DON (ppm)				
	2013	2014	2015	2016	Average	2013	2014	2015	2016	Average	2013	2014	2015	2016	Average
BECK 123				2.5	2.5				10.3	10.3				17.2	17.2
BECK 125		1.5	3.0	2.5	2.3		9.0	6.0	13.5	9.5		10.1	11.2	25.7	15.7
BECK 128				3.5	3.5				8.9	8.9				18.8	18.8
BECK 129	1.5	4.0			2.8	40.0	19.1			29.6	12.3	9.1			10.7
BECK 135	2.5				2.5	30.0				30.0	12.8				12.8
BECK EX 5307			3.0		3.0			6.4		6.4			8.2		8.2
BECK EX 5315			1.0		1.0			2.7		2.7			3.8		3.8
BECK EX 5401			3.0		3.0			2.9		2.9			5.3		5.3
Bess	1.0	0.5			0.8	50.0	7.0			28.5	18.6	11.2			14.9
Brodbeck 202			2.5		2.5			5.1		5.1			5.7		5.7
Brodbeck 305			2.0		2.0			5.8		5.8			6.0		6.0
Clark	1.5	2.0	1.5		1.7	50.0	7.7	2.6		20.1	15.0	7.4	4.4		8.9
CROPLAN 9101				4.0	4.0				17.6	17.6				29.3	29.3
CROPLAN 9201				2.0	2.0				7.6	7.6				14.7	14.7
CROPLAN 9203				2.5	2.5				9.5	9.5				17.1	17.1
CROPLAN SRW 9415				4.0	4.0				15.4	15.4				30.6	30.6
Delta Grow 2700			3.5		3.5			7.1		7.1			5.1		5.1
Delta Grow 3200		2.5	2.5		2.5		25.8	5.4		15.6		13.3	5.9		9.6
Delta Grow 7100		3.0			3.0			9.8		9.8			11.5		11.5
Delta Grow 7200	1.5	3.0			2.3	27.5	8.7			18.1	19.2	12.0			15.6
Delta Grow 7300	2.5				2.5	65.0				65.0	21.8				21.8
Delta Grow 7500	2.5	1.5	2.5		2.2	50.0	19.7	6.4		25.4	22.9	20.0	5.2		16.0
Delta Grow 9700	1.5	1.5	4.5		2.5	55.0	8.4	8.1		23.8	13.2	11.5	4.9		9.8
Dixie DXEX 13-3		2.5	4.0		3.3		13.2	5.2		9.2		8.2	4.0		6.1
Dixie DXEX 14-1		5.5			5.5		18.3			18.3		18.4			18.4
Dixie DXEX 15-1			2.5		2.5			7.4		7.4			9.2		9.2
Dixie Extreme		2.5	4.0		3.3		10.0	9.0		9.5		12.2	6.0		9.1
Dixie Kelsey			2.5		2.5			3.3		3.3			7.2		7.2
Dixie McAlister		1.0	2.5		1.8		12.8	8.4		10.6		14.7	11.4		13.1
Dyna-Gro 9012	1.5				1.5	50.0				50.0	16.8				16.8

Variety	Rating (0-9)					Scabby Seed (%)					DON (ppm)				
	2013	2014	2015	2016	Average	2013	2014	2015	2016	Average	2013	2014	2015	2016	Average
Dyna-Gro 9042	1.5	1.0			1.3	45.0	8.4			26.7	20.5	10.6			15.5
Dyna-Gro 9171	2.0	0.5	3.0		1.8	65.0	17.6	6.1		29.5	19.3	12.3	6.9		12.8
Dyna-Gro 9223		1.5	4.0	3.5	3.0		9.5	9.9	13.0	10.8		7.6	4.3	14.9	8.9
Dyna-Gro 9343	0.5	1.5			1.0	45.0	8.8			26.9	21.2	17.7			19.4
Dyna-Gro 9522			3.0	3.5	3.3			6.3	11.5	8.9			9.8	20.7	15.2
Dyna-Gro 9591			2.0	2.0	2.0			2.7	10.9	6.8			4.7	21.2	13.0
Dyna-Gro 9600				1.0	1.0				9.5	9.5				14.6	14.6
Dyna-Gro 9692				3.0	3.0				8.4	8.4				18.3	18.3
Dyna-Gro Dinah	0.0				0.0	25.0				25.0	11.6				11.6
Dyna-Gro WX13622		2.5			2.5		10.5			10.5		10.1			10.1
Dyna-Gro WX13631		1.0			1.0		7.9			7.9		12.1			12.1
Dyna-Gro WX14611			1.5		1.5			5.1		5.1			4.9		4.9
Dyna-Gro WX15712			2.5		2.5			2.9		2.9			4.0		4.0
Dyna-Gro WX15742			1.5	1.5	1.5			3.1	14.7	8.9			3.6	20.1	11.8
Dyna-Gro WX16771				1.5	1.5				8.5	8.5				21.7	21.7
Equity Brand Butler			3.5	2.5	3.0			8.3	14.7	11.5			9.5	26.9	18.2
Equity Brand Edge	1.0				1.0	30.0				30.0	13.4				13.4
Equity Brand EXP 101	1.5				1.5	30.0				30.0	24.1				24.1
Equity Brand EXP 13W34		2.0			2.0		9.6			9.6		11.6			11.6
Equity Brand Guardian		0.0	1.5		0.8		6.9	4.5		5.7		11.6	7.3		9.4
Equity Brand Quest	0.0				0.0	25.0				25.0	8.6				8.6
Equity Brand Sienna	0.5	1.0			0.8	35.0	10.6			22.8	19.0	14.2			16.6
EXP DEI 16098				3.5	3.5				11.2	11.2				17.5	17.5
EXP1052				2.0	2.0				10.6	10.6				14.8	14.8
EXP1053				2.5	2.5				9.2	9.2				11.5	11.5
EXP1060				2.5	2.5				10.0	10.0				14.7	14.7
EXP1072				1.0	1.0				12.1	12.1				14.6	14.6
EXP1074				1.5	1.5				13.6	13.6				24.1	24.1
EXP1078				2.5	2.5				10.7	10.7				16.9	16.9
EXP1081				2.0	2.0				8.7	8.7				16.7	16.7

Variety	Rating (0-9)					Scabby Seed (%)					DON (ppm)				
	2013	2014	2015	2016	Average	2013	2014	2015	2016	Average	2013	2014	2015	2016	Average
EXP1083				2.0	2.0				7.6	7.6				12.5	12.5
HILLIARD				3.5	3.5				13.2	13.2				22.7	22.7
KAS 5058	1.0	0.0	2.0		1.0	35.0	7.6	2.5		15.0	11.3	6.3	3.2		6.9
KAS ELLERY		2.0			2.0		9.9			9.9		11.7			11.7
KAS Liberty IV			4.5	3.5	4.0			5.1	17.4	11.3			6.5	24.1	15.3
KAS Lowery			2.0	2.5	2.3			7.3	12.5	9.9			8.9	21.7	15.3
KAS S1000	1.5				1.5	35.0				35.0	11.3				11.3
KAS S1100	2.0				2.0	65.0				65.0	20.0				20.0
KAS S1200	2.5	1.5	4.0	3.0	2.8	60.0	11.5	8.5	18.7	24.7	21.0	10.3	7.3	23.4	15.5
KAS S2000		0.5	2.5		1.5		12.6	4.9		8.7		9.3	5.5		7.4
KAS S2500				2.5	2.5				12.3	12.3				17.2	17.2
KWS023			2.0		2.0			7.3		7.3			6.7		6.7
KWS026			1.5		1.5			3.5		3.5			3.5		3.5
KWS028			3.5		3.5			6.2		6.2			5.6		5.6
KY03C-1195-10-8-5		3.5			3.5			9.1		9.1		13.1			13.1
KY03C-1237-05	2.0	3.5	3.0	3.5	3.0	35.0	8.5	3.5	10.2	14.3	20.9	13.9	5.6	25.1	16.4
KY03C-1237-07	2.5				2.5	35.0				35.0	11.4				11.4
KY03C-1237-10	2.5	3.5	3.0	4.0	3.3	45.0	15.5	2.6	14.4	19.4	20.2	10.3	3.3	20.9	13.6
KY03C-1237-11	2.0				2.0	45.0				45.0	21.5				21.5
KY03C-1237-12	3.0	5.0	1.5	3.0	3.1	25.0	13.2	3.3	14.1	13.9	11.1	14.1	5.4	18.9	12.3
KY03C-1237-28	2.5				2.5	35.0				35.0	17.7				17.7
KY03C-1237-39	2.0	3.5			2.8	65.0	14.5			39.7	29.0	11.5			20.2
KY04C-2004-1-1-1		2.0	2.0		2.0		6.2	1.7		4.0		9.5	2.9		6.2
KY04C-3006-33-14-3	2.0				2.0	45.0				45.0	21.8				21.8
KY05C-1051-37-18-5			1.5		1.5			2.4		2.4			5.1		5.1
KY05C-1105-43-6-1				2.0	2.0				11.5	11.5				13.8	13.8
KY05C-1126-50-12-1				3.0	3.0				12.3	12.3				20.1	20.1
KY05C-1369-14-6-3			0.5		0.5			0.7		0.7			1.6		1.6
KY05C-1600-92-9-5		3.0			3.0		8.8			8.8		12.9			12.9
KY06C-1003-139-16-5		2.0	2.0		2.0		8.3	2.7		5.5		8.6	4.1		6.3

Variety	Rating (0-9)					Scabby Seed (%)					DON (ppm)				
	2013	2014	2015	2016	Average	2013	2014	2015	2016	Average	2013	2014	2015	2016	Average
KY06C-1178-16-10-3				3.5	3.5				14.7	14.7				26.8	26.8
KY06C-1195-37-2-5				1.5	1.5				8.0	8.0				17.3	17.3
KY06C-1201-18-6-3			1.0		1.0			2.7		2.7			5.2		5.2
KY06C-2067-16-7-1				3.0	3.0				17.2	17.2				23.6	23.6
KY06C-3058-53-3-3			1.5		1.5			2.8		2.8			6.0		6.0
L-Brand 203		1.5			1.5		8.5			8.5		7.8			7.8
L-Brand 264			1.0		1.0			2.2		2.2			2.2		2.2
L-Brand 304		0.0	0.5		0.3		7.3	2.7		5.0		5.1	2.5		3.8
L-Brand 334		0.0			0.0		3.6			3.6		6.8			6.8
L-Brand 343		6.0			6.0		32.1			32.1		17.7			17.7
L-Brand 347			1.0		1.0			1.6		1.6			3.8		3.8
L-Brand 377			3.5		3.5			5.4		5.4			4.1		4.1
L-Brand 448		1.0			1.0		8.3			8.3		12.2			12.2
L-Brand 461			0.5		0.5			2.7		2.7			6.1		6.1
L11419				2.5	2.5				14.6	14.6				15.1	15.1
L11425				3.0	3.0				15.0	15.0				13.9	13.9
L19134				2.0	2.0				6.5	6.5				6.6	6.6
LCS 34969	1.5				1.5	60.0				60.0	11.5				11.5
LCS 38686	1.5				1.5	35.0				35.0	13.6				13.6
PEMBROKE 2008	2.0	2.0	2.5	2.5	2.3	30.0	18.5	3.5	11.7	15.9	19.6	12.6	5.1	22.4	14.9
PEMBROKE 2014	1.0	2.0	1.0	2.5	1.6	10.8	14.5	1.3	10.0	22.7	12.8	7.7	1.6	15.4	9.4
PEMBROKE 2016	2.0	2.0	1.5	2.5	2.0	16.8	8.9	1.7	9.1	17.4	14.9	7.1	3.0	18.5	10.9
Pioneer variety 25R32	1.0	2.0	1.5	2.0	1.6	22.5	14.1	1.9	9.0	11.9	7.3	9.7	2.4	13.5	8.2
Pioneer variety 25R40	3.5	4.0	5.0		4.2	80.0	13.0	3.5		32.2	31.0	12.8	8.5		17.4
Pioneer variety 25R46		1.0			1.0		9.5			9.5		15.2			15.2
Pioneer variety 25R56	3.0				3.0	60.0				60.0	13.4				13.4
Pioneer variety 25R78	2.0	2.0			2.0	60.0	13.2			36.6	17.0	12.8			14.9
Pioneer variety 26R10	3.0	3.5	6.0	3.0	3.9	22.2	14.9	5.6	10.5	19.0	15.7	9.7	4.1	17.1	11.6
Pioneer variety 26R20	4.0	4.0			4.0	75.0	18.7			46.8	22.0	18.5			20.3
Pioneer variety 26R22	2.0				2.0	65.0				65.0	18.4				18.4

Variety	Rating (0-9)					Scabby Seed (%)					DON (ppm)				
	2013	2014	2015	2016	Average	2013	2014	2015	2016	Average	2013	2014	2015	2016	Average
Pioneer variety 26R41	2.5	2.0	4.0	3.5	3.0	65.0	14.1	6.1	18.0	25.8	23.8	15.3	7.3	38.2	21.2
Pioneer variety 26R53	3.0	3.5	4.5	5.0	4.0	55.0	13.0	4.4	17.4	22.4	27.2	16.0	7.1	28.1	19.6
Pioneer variety 26R59				3.0	3.0				12.8	12.8				14.6	14.6
Pioneer variety XW11G	3.0				3.0	45.0				45.0	20.4				20.4
Pioneer variety XW12J		1.1			1.1		16.8			16.8		10.5			10.5
Pioneer variety XW12K		6.5			6.5		17.6			17.6		6.5			6.5
Pioneer variety XW13T			4.5		4.5			4.2		4.2			3.9		3.9
Pioneer variety XW13W			2.5	2.5	2.5			3.0	9.1	6.1			6.3	20.6	13.5
Progeny 125	6.5				6.5	70.0				70.0	24.1				24.1
Progeny 185	1.0				1.0	50.0				50.0	13.4				13.4
Progeny 357	2.5				2.5	45.0				45.0	16.7				16.7
Progeny 870	2.0				2.0	70.0				70.0	20.1				20.1
PROGENY P 115	0.7				0.7	27.2				27.2	9.0				9.0
PROGENY P 116	1.3				1.3	52.8				52.8	12.5				12.5
PROGENY P 117		0.0	2.5		1.3		8.1	3.6		5.8		8.0	7.2		7.6
PROGENY P 185		0.5			0.5		12.4			12.4		11.4			11.4
PROGENY P 243				2.0	2.0				10.2	10.2				17.8	17.8
Progeny P 308	1.5				1.5	35.0				35.0	11.7				11.7
PROGENY P 357		4.5	4.0	4.0	4.2		14.0	5.6	14.6	11.4		12.4	6.8	25.2	14.8
PROGENY P 410			3.0		3.0			5.1		5.1			5.9		5.9
PROGENY P 870		2.0	4.5	3.0	3.2		21.2	8.0	22.7	17.3		14.1	9.3	33.2	18.8
Progeny PGX 12-10	2.5				2.5	55.0				55.0	14.5				14.5
Progeny PGX 12-3	2.0				2.0	55.0				55.0	14.1				14.1
PROGENY PGX 13-1		3.0			3.0		8.8			8.8		12.9			12.9
PROGENY PGX 13-2		3.5			3.5		20.7			20.7		8.3			8.3
PROGENY PGX 13-4		3.0			3.0		9.4			9.4		18.3			18.3
PROGENY PGX 13-6		2.0	3.0		2.5		13.1	4.5		8.8		12.6	8.4		10.5
PROGENY PGX 14-3			2.0		2.0			4.4		4.4			3.6		3.6
PROGENY PGX 14-5			0.5		0.5			2.4		2.4			4.1		4.1
PROGENY PGX 15-10				2.5	2.5				7.2	7.2				17.7	17.7

Variety	Rating (0-9)					Scabby Seed (%)					DON (ppm)				
	2013	2014	2015	2016	Average	2013	2014	2015	2016	Average	2013	2014	2015	2016	Average
PROGENY PGX 15-12				2.5	2.5				13.5	13.5				17.2	17.2
PROGENY PGX 15-14				3.0	3.0				15.2	15.2				16.8	16.8
PROGENY PGX 15-16				2.0	2.0				12.8	12.8				21.2	21.2
SC 1302	1.0				1.0	40.0				40.0	15.1				15.1
SC 1315-15TM			2.0	2.0	2.0			1.7	13.2	7.5			5.5	19.4	12.4
SC 1321	2.5	0.5			1.5	65.0	17.5			41.2	19.2	11.8			15.5
SC 1321TM			3.5		3.5			6.5		6.5			8.2		8.2
SC 1324		1.1			1.1		10.4			10.4		11.2			11.2
SC 1325-15TM			2.5	2.5	2.5			5.7	12.3	9.0			6.6	22.8	14.7
SC 1335-15TM			3.0	2.5	2.8			7.0	13.9	10.4			10.3	26.7	18.5
SC 1341	1.5				1.5	55.0				55.0	9.6				9.6
SC 1342	2.5	3.0			2.8	50.0	11.8			30.9	11.9	9.5			10.7
SC 1342TM			4.0		4.0			7.3		7.3			4.0		4.0
SC 13S26TM				2.5	2.5				12.5	12.5				26.0	26.0
SC EXP	1.5				1.5	40.0				40.0	14.1				14.1
SC EXP DC0701		0.0			0.0		8.6			8.6		15.9			15.9
SC EXP DC2030		1.0			1.0		9.4			9.4		5.9			5.9
SC EXP102TM				1.5	1.5				8.3	8.3				18.1	18.1
SC EXP142TM				1.5	1.5				12.4	12.4				15.8	15.8
SS 8340	1.5	1.5	1.5	2.0	1.6	52.5	7.4	3.0	13.4	19.1	16.4	6.6	8.5	25.8	14.3
SS 8360		1.0	4.0	4.0	3.0		12.2	6.8	18.8	12.6		20.1	12.7	29.3	20.7
SS 8404	5.5				5.5	50.0				50.0	18.2				18.2
SS 8412		4.0			4.0		9.4			9.4		13.6			13.6
SS 8415		6.5	4.0		5.3		26.4	8.2		17.3		15.5	9.8		12.6
SS 8500	6.0				6.0	65.0				65.0	22.0				22.0
SS 8513				2.5	2.5				19.4	19.4				26.8	26.8
SS 8530				1.0	1.0				13.3	13.3				13.7	13.7
SS 8700	1.5	3.0	3.0	4.5	3.0	70.0	16.3	3.8	14.0	26.0	22.0	20.7	5.4	35.5	20.9
SS 8870		1.5			1.5		7.6			7.6		11.4			11.4
SS EXP 412	3.5				3.5	45.0				45.0	24.6				24.6

Variety	Rating (0-9)					Scabby Seed (%)					DON (ppm)				
	2013	2014	2015	2016	Average	2013	2014	2015	2016	Average	2013	2014	2015	2016	Average
SS EXP 8350	3.5				3.5	60.0				60.0	29.1				29.1
SS EXP 8513			2.0		2.0			6.5		6.5			6.4		6.4
SS EXP 8530			1.5		1.5			3.3		3.3			5.1		5.1
STEYER DOWELL	1.0				1.0	50.0				50.0	12.1				12.1
STEYER EVANS				3.0	3.0				12.5	12.5				17.9	17.9
STEYER HEILMAN	1.0				1.0	30.0				30.0	9.5				9.5
STEYER HUNKER	2.0	2.5			2.3	45.0	10.6			27.8	9.9	11.4			10.6
STEYER MORRIN			3.5	2.0	2.8			8.1	13.3	10.7			8.3	25.4	16.8
STEYER PIERSON	1.0	0.5			0.8	17.5	8.6			13.0	19.6	10.7			15.1
STEYER STex141				3.5	3.5				7.9	7.9				20.1	20.1
STEYER STex142			0.5	1.5	1.0			3.4	13.0	8.2			5.3	14.6	10.0
STEYER STex145			3.0		3.0			5.8		5.8			7.9		7.9
STEYER STex155				2.5	2.5				10.2	10.2				20.4	20.4
SYNGENTA BRANSON			2.0	2.5	2.3			7.0	13.8	10.4			7.5	19.4	13.4
SYNGENTA HARRISON	2.0				2.0	75.0				75.0	26.3				26.3
SYNGENTA M09L-9547		1.5			1.5		11.0			11.0		10.0			10.0
SYNGENTA MA08*8007#	1.0				1.0	50.0				50.0	12.2				12.2
SYNGENTA OAKES	1.5				1.5	40.0				40.0	17.4				17.4
SYNGENTA SY 007		0.5	2.5	2.0	1.7		12.8	6.7	16.4	12.0		7.3	7.8	18.0	11.0
SYNGENTA SY 1526	1.0				1.0	40.0				40.0	14.6				14.6
SYNGENTA SY 474		2.5	2.0		2.3		10.4	4.9		7.7		13.6	7.1		10.3
SYNGENTA SY 483	2.0	2.0	5.0	2.5	2.9	65.0	14.2	10.0	19.4	27.2	23.4	17.2	12.7	39.1	23.1
SYNGENTA SY 547			1.5	2.0	1.8			4.6	13.8	9.2			7.1	23.5	15.3
SYNGENTA SY 9978	2.5				2.5	80.0				80.0	24.0				24.0
SYNGENTA SY HARRISON				4.0	4.0				17.6	17.6				26.2	26.2
SYNGENTA VIPER				2.5	2.5				11.7	11.7				18.7	18.7
SYNGENTA W1104	2.0				2.0	52.5				52.5	15.1				15.1
Terral TV8525	2.5	1.0			1.8	35.0	11.4			23.2	17.4	12.2			14.8
Terral TV8535	2.0	2.0			2.0	70.0	22.1			46.0	15.6	17.3			16.5

Variety	Rating (0-9)					Scabby Seed (%)					DON (ppm)				
	2013	2014	2015	2016	Average	2013	2014	2015	2016	Average	2013	2014	2015	2016	Average
Terral TV8848	1.5	1.5	3.0		2.0	55.0	6.3	5.2		22.2	16.4	9.9	6.9		11.0
Terral TV8861	2.5	5.0	4.0		3.8	55.0	16.5	7.1		26.2	20.8	25.9	10.9		19.2
TN1102				3.5	3.5				24.2	24.2				32.2	32.2
Truman	2.0	3.0	0.5	1.0	1.6	17.5	7.7	2.1	6.3	8.4	8.7	15.4	3.2	10.2	9.3
USG 3013		3.0	4.0	3.0	3.3		13.7	9.2	15.6	12.8		14.6	7.3	18.3	13.4
USG 3197				2.0	2.0				12.4	12.4				15.7	15.7
USG 3251	2.0	1.5			1.8	35.0	8.6			21.8	10.1	11.6			10.8
USG 3404		1.0	2.5	2.5	2.0		12.0	5.8	11.6	9.8		10.7	6.6	22.6	13.3
USG 3438	2.0	1.0	4.5		2.5	70.0	24.7	7.8		34.2	16.1	13.9	7.8		12.6
USG 3612	2.0	0.5			1.3	50.0	11.6			30.8	16.6	12.0			14.3
USG 3756			0.5		0.5			2.4		2.4			4.4		4.4
USG 3833		1.5			1.5		10.5			10.5		15.3			15.3
USG 3895				3.0	3.0				15.4	15.4				21.5	21.5
USG 3993	1.0	0.5			0.8	30.0	9.4			19.7	21.2	10.6			15.9
VA 09W-73	2.5				2.5	45.0				45.0	16.5				16.5
VA 10W-123		2.0			2.0		11.6			11.6		8.9			8.9
VA 10W-21		2.5	2.5		2.5		12.2	3.1		7.7		7.7	7.4		7.5
VA 12W-72				1.5	1.5				15.7	15.7				26.9	26.9
VA11W-108			3.5		3.5			6.1		6.1			8.5		8.5
VA11W-230			3.0		3.0			4.0		4.0			5.1		5.1
Average	1.9	2.0	2.7	2.6		48.3	12.2	5.0	12.5		17.3	12.3	6.3	20.6	