

# Evaluation of Soybean Varieties in the Northern Regional Soybean Cyst Nematode Test

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### Introduction

The Northern Regional Soybean Cyst Nematode (SCN) Test is used to evaluate soybean varieties produced by several public breeding programs in the northern portion of the United States and Canada. In 2018, six public breeding programs participated in the Northern Regional Soybean Cyst Nematode Test (Uniform Test 1). Public breeders can enter varieties into the SCN Uniform Test in exchange for growing locations for the test. Material entered into the SCN Uniform Test is generally in advanced stages of a breeding program. The test is an efficient method for soybean breeders to get multiple location data, in contrast with each individual program growing all of their own locations. It also produces useful information by comparing soybean lines from multiple programs and identifies lines from other states that produce well in Iowa. Results from these tests are used by soybean breeders to select varieties with superior yield and/or disease resistance to continue advancement toward variety release. These results also are used to demonstrate positive characteristics to growers and other interested parties.

### Materials and Methods

Plots were four 17-ft-long rows spaced 30 in. apart and planted at a rate of 10 seeds/foot, with two replications/variety. A variety was considered mature when

95 percent of the pods had turned brown. For each location, the center two rows of each four-row plot were harvested with a plot combine, total seed weight/plot and moisture were determined, and total plot seed weights subsequently were converted to bushels/acre. Protein and oil information was provided by the USDA-ARS National Center for Agricultural Utilization Research in Peoria, Illinois, and based on analysis of a 25-gram sample from each plot.

### Results and Discussion

The Boone location, the Iowa State University Bruner Farm, was one of 10 locations where the Uniform Test 1 was grown. Mason City, Iowa, was another location. Table 1 is a summary of data from all locations. Additional data should be used when making variety selections. The complete 2018 Northern Regional Soybean Cyst Nematode Test report, including nematode reproduction data, is available online at <https://cropsciences.illinois.edu/research/scn-tests/2018/>. The “AR” lines (entries 5 through 10) entered in this test are from Silvia Cianzio’s Disease Resistant Soybean Breeding Program at Iowa State University.

### Acknowledgements

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**Table 1. Agronomic performance and seed composition data for soybean varieties grown in SCN infested soils in the Northern Regional Soybean Cyst Nematode Test 1 in 2018.**

Entry	Yield					Maturity date	Lodging score <sup>‡</sup>	Height in.	Seed			
	All bu/a	rank	Infested bu/a	rank	quality score <sup>§</sup>				weight g/100	protein @13%	oil @13%	
Locations	10		10		8	9	9	9	9	9	9	
<b>1 MN1410</b>	<b>48.9</b>	<b>19</b>	48.9	19	9/11	1.8	33	1.3	16.6	36.5	18.2	
<b>2 IA1022 (SCN)</b>	<b>58.5</b>	<b>7</b>	58.5	7	7	1.9	32	1.5	16.4	33.4	19.8	
<b>3 ND Stutman</b>	<b>40.5</b>	<b>24</b>	40.5	24	-4	1.6	28	2.5	16.5	35.3	19.1	
<b>4 U11-917032</b>	<b>56.9</b>	<b>10</b>	56.9	10	8	2.0	31	1.7	16.6	33.7	19.4	
<b>5 AR15-158072</b>	<b>61.2</b>	<b>2</b>	61.2	2	7	1.5	31	1.3	18.8	35.2	19.0	
<b>6 AR16-162109</b>	<b>50.9</b>	<b>18</b>	50.9	18	3	1.6	31	1.3	17.6	35.7	18.6	
<b>7 AR17-179006</b>	<b>56.5</b>	<b>11</b>	56.5	11	7	1.5	33	1.1	19.9	34.7	18.5	
<b>8 AR17-179015</b>	<b>61.1</b>	<b>5</b>	61.1	5	8	1.6	31	1.1	17.4	34.9	18.3	
<b>9 AR17-279008</b>	<b>59.6</b>	<b>6</b>	59.6	6	10	1.7	32	1.4	17.4	35.6	17.9	
<b>10 AR17-279009</b>	<b>61.2</b>	<b>2</b>	61.2	2	12	1.8	33	1.3	16.9	34.9	17.8	
<b>11 EI5338</b>	<b>61.2</b>	<b>2</b>	61.2	2	6	1.8	35	1.4	17.2	34.2	18.2	
<b>12 EI6346</b>	<b>53.8</b>	<b>14</b>	53.8	14	8	1.5	31	1.2	13.8	33.2	18.8	
<b>13 LD14-4098a</b>	<b>62.8</b>	<b>1</b>	62.8	1	9	1.7	33	1.2	19.5	35.8	18.1	
<b>14 M12-373033</b>	<b>57.2</b>	<b>9</b>	57.2	9	4	1.7	33	1.6	17.1	33.5	19.9	
<b>15 M12-373060</b>	<b>58.4</b>	<b>8</b>	58.4	8	5	1.7	33	1.4	17.4	33.4	19.7	
<b>16 M12-386029</b>	<b>47.5</b>	<b>21</b>	47.5	21	-2	1.7	32	2.0	17.8	37.8	18.3	
<b>17 MCH13-104087</b>	<b>55.1</b>	<b>13</b>	55.1	13	1	1.6	35	1.7	16.3	35.0	18.5	
<b>18 MCH13-104091</b>	<b>55.6</b>	<b>12</b>	55.6	12	2	1.5	35	1.7	18.4	35.5	19.4	
<b>19 MCH13-104132</b>	<b>47.5</b>	<b>21</b>	47.5	21	-1	1.4	32	2.3	16.7	35.5	18.5	
<b>20 MCH13-108027</b>	<b>47.2</b>	<b>23</b>	47.2	23	0	2.0	35	1.3	16.0	36.3	19.0	
<b>21 MCH13-110029</b>	<b>48.4</b>	<b>20</b>	48.4	20	-1	1.7	31	1.9	18.1	35.2	19.0	
<b>22 ORC 4217N</b>	<b>51.7</b>	<b>17</b>	51.7	17	-2	1.7	30	1.3	17.2	36.5	18.1	
<b>23 U15-934067</b>	<b>52.2</b>	<b>16</b>	52.2	16	7	1.5	30	1.1	15.2	35.0	18.0	
<b>24 U16-918018</b>	<b>52.4</b>	<b>15</b>	52.4	15	8	1.5	34	1.2	17.5	34.3	19.1	
Mean	<b>54.4</b>		54.4		15.6	1.7	32.2	1.5	17.2	35.0	18.7	
LSD(.05)	<b>3.3</b>		3.3		1.2	0.2	1.6					
C.V. %	<b>12.1</b>		12.1		13.7	20.8	9.2					
Replications	<b>27</b>		27		22	24	24					

<sup>‡</sup>Lodging score: 1 = almost all plants erect; 2 = all plants leaning slightly or a few plants down; 3 = all plants leaning moderately (45 degrees), or 25% to 50% of the plants down; 4 = all plants leaning considerably, or 50% to 80% of the plants down; 5 = almost all plants down.

<sup>§</sup>Seed quality was rated according to the following scores considering the amount and degree of wrinkling, defective seed coat (growth cracks), greenishness, and moldy or rotten seeds. Threshing or handling damage was not included, nor was mottling or other pigment. 1 = very good, 2 = good, 3 = fair, 4 = poor, 5 = very poor.

Note: Table 1 is reprinted with permission from the creator, Troy Cary, and is an excerpt from the “2018 Northern Regional Soybean Cyst Nematode Tests” report.