

Evaluation of Soybean Germplasm Under Pennsylvania Conditions

R2013-04/OSP #164709 – Evaluation of Soybean Germplasm under PA Conditions Final Report

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In 2013, Penn State soybean evaluation trials were conducted at three locations: Blair, Centre, and Lancaster Counties.

On May 2nd at a privately owned farm near Martinsburg, in Blair County, we planted 16 entries in the Roundup Ready – Early (MG 3.0 and earlier) trial and 30 entries in the Roundup Ready - Late (MG 3.1 and later) trial. These trials were no-tilled into a field where the previous crop was corn silage. The farm where these trials were conducted had highly productive soils, with a history of dairy manure applications. The growing conditions in this area were generally dry and cooler than normal during May, followed by near normal temperatures and rain through early August. After the first week in August, the remainder of the growing season was primarily hot and very dry, which most likely reduced yields somewhat. On September 26th, we harvested the early MG trial, which averaged 54.0 bushels per acre. On September 27th, we harvested the Late MG trial which had an average of 52.3 bushels per acre. These yields were noticeably lower than the 2012 yields, especially the late MG entries, which were down by approximately 15 bushels per acre in 2013.

On May 7th at the Russell E. Larson Agricultural Research Center in Centre County, we planted 30 entries in the Roundup Ready - Late (MG 3.1 and later) trial, 19 entries in the Roundup Ready – Early (MG 3.0 and earlier) trial, and 18 entries in the non-Roundup trial. The non-RR trial included 10 experimental varieties and 4 aphid-resistant varieties from Ohio State University, 2 public varieties, and 2 commercial Roundup Ready check varieties. Growing conditions in Centre County were dryer and cooler than normal during most of May, which caused some emergence problems. These early season conditions caused some soil crusting and made it necessary for us to use a rotary hoe, which helped with emergence. June, July, and early August brought near normal temperatures on average and higher than average rainfall – especially during July, which had over five inches of rain. For the remainder of the growing season, the Centre County trials experienced conditions similar to the Blair County trials – mostly hot and dry – which almost certainly caused stress during pod fill. On October 3rd, we harvested the Early MG trial, which averaged 49.3 bushels per acre. We harvested the non-RR trial on October 4th and averaged 57.2 bushels per acre, which was calculated without the ten experimental entries or the four aphid-resistant lines. On October 10th, we harvested the Late MG trial, which averaged 58.3 bushels. Yields in all three Centre County trials were down when compared to 2012, especially the Early MG trial which was almost 12 bushels per acre lower than 2012.

On May 17th at the Southeast Agricultural Research and Extension Center in Lancaster County, we planted 59 entries in the Full Season Roundup Ready - Late (MG 3.4 and later) trial and 27 entries in the Full Season Roundup Ready – Early (MG 3.3 and earlier) trial. We also planted 26 entries in the non-Roundup Ready trial on the same day in Lancaster. Warmer than normal temperatures soon after planting helped the soybeans emerge quickly, so all of our Lancaster County trials had good stands heading into the growing season. The month of June had near normal temperature and rainfall. July conditions were mostly hot with frequent light rains until later in the month, when cooler than normal weather prevailed. August and September produced almost seven inches of rainfall and near normal temperatures. On October 21st, we harvested the Late MG trial and had an average yield of 62.7 bushels per acre. On October 22nd, the Early MG trial was harvested, with yields averaging 63.8 bushels per acre. The Non-RR trials were harvested on October 23rd and averaged 68.5 bushels per acre. These yields were up when compared to the 2012 yields, particularly the Early MG trial, which was over 10 bushels per acre higher than 2012.

We were unable to plant our doublecrop soybean trial this year, due to the fact that as of the last week in July, staff at the Landisville research farm were unable to harvest any wheat – including the field where we were scheduled to plant our doublecrop trial. We felt like there was little chance of obtaining any useful data from a soybean trial planted at such a late date, so we made the decision to drop this trial for 2013.

Results of these trials were posted on the Department of Plant Science website at:

<http://extension.psu.edu/plants/crops/grains/soybeans/soybean-variety-tests/2013-reports>

For more information, please feel free to contact Mark Antle at (814) 360-7831 or Greg Roth at (814) 863-1018.