Evaluation of Soybean Varieties in Kentucky

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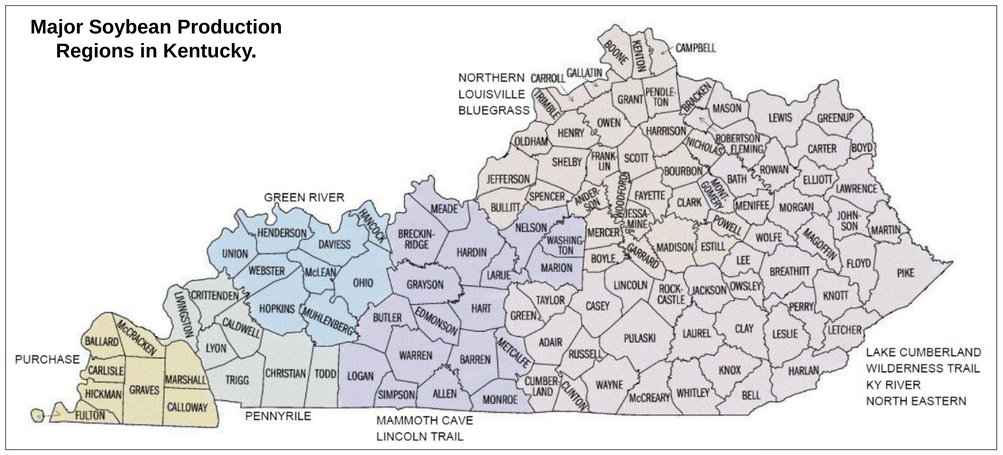
Soybean Production in Kentucky

Soybean Acreage in the United States has increased to nearly 76 million acres since the introduction of the crop as seed in the 1930s. In Kentucky, production in 2015 totaled 88.7 million bushels, produced on 1.81 million acres, representing an estimated value of US $816 million. To maintain the position of soybean as a profitable enterprise, production efficiency must be increased through higher yield per acre. This can be accomplished in part by using well adapted, superior yielding varieties. Soybean varieties are usually adapted to geographic bands no wider than 100 to 150 miles from North to South. This creates the need for soybean varieties to be evaluated in specific maturity groups at multiple locations.



The Kentucky Soybean Variety Performance Tests

Variation in soil type, day length, climactic conditions, weed populations, disease and insect infestations influence the yielding ability of soybean varieties. The source of yield variability also include genetics. Yield performance of a particular variety cannot be readily extrapolated from one environment to all other environments. Therefore to accurately evaluate varieties for a general production area such as the state of Kentucky, the overall mean from a number of tests in different years and locations within the production area is the best indication of a varietal performance. **The Kentucky Soybean Variety Performance Tests provide an unbiased and objective estimate of the relative performance of soybean varieties in Kentucky.** The varieties are evaluated in five performance tests based on their maturity groups, in test sites located in all major soybean production regions.

Methods – Yield Data Collection / Analysis

Source of Seed:

Soybean growers, commercial companies, state and federal institutions. Variety nominators can choose to treat their seeds.

Test sites:

- Research Farm sites – Calloway, Caldwell, Fayette Counties
- Farm sites – other sites (5), rotated every 3 years

Test design - Agronomic management :

- Randomized complete block design (per maturity group)
- 3 replications per variety
- No-till preferred
- 6 rows (15 inches), 16 feet long plots, 4 to 5 live seed per foot
- All plots are treated with fertilizers and herbicides before planting, and kept as weed-free as possible after planting

Data Collection and Analysis:

- 4 central rows are harvested according to maturity with a small research plot combine (Wintersteiger Delta)
- Weight and grain moisture readings for each plot are collected using an HarvestMaster HM800 GrainGage System and an field PC Allegro MX (Field Research Software - Juniper Systems). Samples are collected at three test sites and analyzed with a Perten NIR spectrophotometer for oil and protein content.
- Yields from each plot are reported in bushel per acre (60 lbs – 13% moisture)
- Data are analyzed with Agrobase GEN II statistical software (Agronomix Software Inc.)
- Harvest dates, Lodging (all location), Maturity date & Plant height for each variety (Fayette Co.)
- Disease ratings

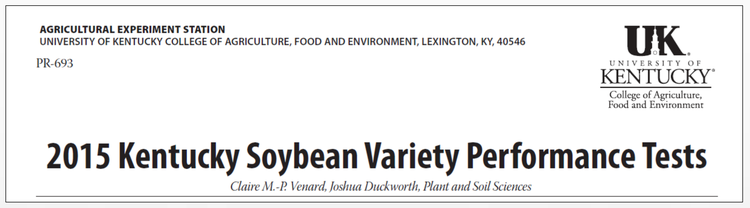
Report

Annual Publication:

- University of Kentucky Experimental Station publication services
- Publication is free
- Available as PDF or as printed version (University of Kentucky County Extension offices)
- Early December (preliminary results also released online earlier)

Content:

- **Recommended Table** – **Analysis of yield performance over three years at all test sites:** recommended information to our soybean producers
- The yield performance for each region
- Variety specifications: information provided by nominators
- Growing conditions (rain and temperature, soil type, agronomic management)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PR-693

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2015 Kentucky Soybean Variety Performance Tests

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Other projects

- The KSVPT program also supports research projects – University of Kentucky projects
- Field Days and education programs
- Custom plot research – for seed industry

Acknowledgement and funding

- Variety nominators: seed companies and institutions
- Soybean producers who host the tests
- Collaborators: Dr. Ferguson (Murray State University), Joe Williams (UKREC, Caldwell Co.), UK Extension Agents for Agriculture and Natural Resources
- University of Kentucky Agronomy Faculty members
- Farm crews (agronomy management, equipment repair)

Funding:

- Kentucky Soybean Promotion Board

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Kentucky Soybean Variety Performance Tests Website: http://pss.ca.uky.edu/extension/soybean-variety-trials
University of Kentucky Grain Crops website: http://graincrops.ca.uky.edu/, provides links to all Kentucky variety test resources and publications