**Agricultural Science**

**Optimizing Hemp Production through Cultivar Selection and Soil Management Practices** ROSE JOHNSON1\***,** KIRK W. POMPER1, GEORGE ANTONIOUS1, STEVEN BORST2, JEREMIAH LOWE1, SHERI CRABTREE1, and SHAWN LUCAS1, 1College of Agriculture, Food Science, and Sustainable Systems, Environmental Education and Research Center, Kentucky State University, Frankfort, KY 40601. 2Alltech Crop Science, Catnip Hill Pike, Nicholasville, KY 40356.

**Abstract**

Industrial hemp is a fiber, oil and seed crop with great potential as a new crop for Kentucky’s organic and conventional farmers. A recent Kentucky KRS § 260.850-.869 bill was passed to allow industrial hemp production in Kentucky. The objectives of this hemp research project were to: 1) compare yield of various hemp varieties, 2) investigate the impact of Soil-SetTM and Crop-Set™ on hemp yield, and 3) monitor enzyme activity as affected by Soil-SetTM and Crop-Set™ on field application. There were three trials conducted in 2015 and 2016. Trial 1 was 18 plots (4 by 16 foot each) using a randomized complete block design with four blocks. The treatments were: 1) variety (Finola or Futura 75); 2) control (untreated); 3) Soil-Set® applied at 16 oz per acre at seeding; 4) Grain-Set® applied at 8 oz per acre at vegetative stage 1006-1010 (3rd to 5th leaf pair/5 to 9 leaflets); 5) Soil-Set® and Grain-Set® applied as in treatments 3 and 4, and 6) Soil-Set® applied at 32 oz per acre at seeding. Soil samples were collected from the top 15 cm of each replicate before treatment (six samples total) to establish baseline data. Post-treatment soil samples were collected from every plot every other month between seeding and harvest There was a trend for hemp treated with Soil-Set® and Soil-Set® + Grain-Set® to produce more biomass. Trends seems to indicate that, despite weed pressure Soil-Set® + Grain-Set® treatment have increased grain and biomass yields.