Evaluation of Industrial Hemp Varieties for Kentucky Farmers
D.W. Williams, J. Patrick Perry and Tom Keene

Support for 2017 industrial hemp variety evaluations at UK has been provided by the Kentucky Tobacco Research and Development Center (KTRDC). There will be no charges to owners of varieties to enter the 2017 trials. Additionally, all trials will be conducted at two locations and will include three planting dates at both locations.

Unbiased, science-based data on varietal performance in Kentucky is imperative for farmers to make informed decisions leading to optimized yields from hemp crops. This work will be a direct collaborative effort between the UK Department of Plant and Soil Sciences and the KTRDC field research unit. Trials will commence in May 2017 and will conclude at various times in autumn. All trials will be conducted at two locations concurrently: the UK Agricultural Experiment Station in Lexington, Fayette County, KY (Spindletop Farm) and the UK Agricultural Sub-Station at Quicksand, Breathitt County, KY. Each variety will be planted on three separate dates: 1 May, 1 June, and 1 July (+/- 5d at either location). This will allow for examination of variety x planting date interactions. Plot size will be 8’x20’. All varieties will replicated four times within each planting date and location. Fertility will be 60 lbs. N/A for fiber-only production and 100 lbs. N/A for grain-only or dual-purpose production applied during pre-plant cultivation. Weeds will be controlled by roguing when necessary. Seeding rates will be 60 pounds pure live seed (PLS)/A for fiber-only trials and 30 pounds PLS/A for grain-only and dual-purpose trials. Plots will be seeded following conventional tillage using a customized plot drill on 8” centers (rows).

Harvest dates for individual varieties will be determined based on visual observations of physiological maturity for the harvestable component of interest. More specifically, harvests for fiber-only will commence when a mean visual evaluation of 20% flowering occurs averaged across the 4 replications of a variety within planting dates and locations. Grain harvests will commence when a mean visual estimation of 75% seed maturity (bracts are open) occurs across the 4 replications of a variety within planting dates and locations. These harvest parameters are subject to a margin of error based on environmental conditions and locations. Fiber and grain harvests will be conducted manually. Harvests for data collection will consist of 2 randomly selected 1m² subsamples from each plot avoiding plot borders. Fiber will be evaluated as dry matter yields of total dry matter (tons per acre), bast fiber (tons per acre), and hurd fiber (tons per acre) from both fiber-only and dual-purpose crops. Dew retting will be used to separate fibers. Grain will be evaluated as dry grain yield (pounds per acre) after thorough cleaning.

Additional parameters to be measured in all trials include mean number of days after planting to physiological maturity (DTM), mean plant density (PD), mean stem length (SL) and mean stem diameters (SD). In all trials where flowering occurs, all entries will be analyzed for Δ9 THC content by a KTRDC laboratory according to the UN protocol (Recommended methods for the identification and analysis of cannabis and cannabis products, 2009) modified to laboratory-specific parameters.
Data from each trial (fiber-only, grain-only, and dual-purpose) and planting dates will be analyzed separately using PROC GLM of SAS. Data among locations will be reported separately. Means will be separated by F-protected LSD at α=0.10. All data from these trials will be published via the UK Extension Service and will be posted on the UK Industrial Hemp Research Program website: [http://hemp.ca.uky.edu/](http://hemp.ca.uky.edu/).

**IMPORTANT NOTICE:**

Receiving seed early enough to accommodate standard planting dates as well as standard germination testing prior to planting has been an extremely serious issue for UK variety trials in both 2015 and 2016. Late seed deliveries have impacted previous trials in highly significant and negative manners; essentially making the trials non-useful. **We will not be able to include entries in any standard variety trial if the seed is received by UK any later than 1 April 2017.** This will allow for germination testing and accurate calculations of PLS which will also allow for fair comparisons among varieties. **Unfortunately, there can be no exceptions to this deadline.**

Varieties may be entered into more than one trial. For example, Variety ‘X’ may be entered into both the grain-only and dual-purpose trials; or any combination of the three trials (fiber-only, grain-only, or dual-purpose). This must be denoted on the registration form.

Seed already located in Kentucky and held by an Industrial Hemp Research Pilot Program participant can be provided to D.W. Williams. Pick-up of seed by UK personnel can be arranged within Kentucky if necessary.

Seed imported from outside Kentucky must be shipped to the KDA after approval from KDA through the use of the *International Seed Acquisition Request* form or the *Domestic Seed/Propagule Acquisition Request* form. Please see instructions below.

*Please complete the registration sheet below and submit by email (preferred: david.williams@uky.edu) or by U.S. mail to:*

D.W. Williams  
UK Robinson Center  
176 Robinson Road  
Jackson, KY 41339
UK 2017 Industrial Hemp Variety Evaluation Registration Sheet

**Sponsor Name**

Company or individual name:

Company representative’s name (if not an individual):

**Physical address**

Street:

City, State, Zip:

**Contact information**

Email address:

Telephone number:

Please provide a minimum of 6 pounds of seed per entry for fiber-only trials and/or 3 pounds of seed per entry for grain-only/dual-purpose trials. This assumes a minimum germination percentage of 80%. Please be sure to accommodate pounds of seed for varieties entered into multiple trials.

<table>
<thead>
<tr>
<th>Variety name or designation</th>
<th>Commodity purpose (fiber, grain, dual-purpose)</th>
<th>Pounds of seed supplied</th>
<th>Germination percentage (if known)</th>
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Seeds to be imported will require an *International Seed Acquisition Request* submission to the Kentucky Department of Agriculture in order to arrange for a DEA import permit.

Imports must be shipped to: Kentucky Department of Agriculture
Industrial Hemp Program
ATTN: UK Variety Trial
105A Corporate Drive
Frankfort, KY 40601
502-782-4113

Questions: Contact D.W. Williams
Email: david.williams@uky.edu