Industrial Hemp Research at the University of Kentucky

Dr. Nancy Cox, Dean
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Industrial Hemp Research-Legislation

• Section 7606 of the 2014 Farm Bill along with supporting state-level legislation provides for the establishment of industrial hemp pilot research programs through universities or state departments of agriculture (27 Jan 2014).

• KY Senate Bill 50 provides for the definition and administration of an industrial hemp pilot research program in Kentucky (7 Apr 2013).

• In Kentucky, the pilot project is managed by the KDA.
Industrial Hemp Research-Overview

• Research efforts have expanded at UK both in scope and scale each year.

• Includes efforts in multiple departments/units within UK:
  • Agronomy
  • Plant molecular biology
  • Biosystems and agricultural engineering
  • Horticulture
  • Agricultural economics

• Work has included collaborative efforts with 3 regional KY universities, other land-grants, and multiple corporate entities.
Industrial Hemp Research-2014

• Only two small variety trials.

• Marginally successful scientifically.

• Very successful anecdotally.
Industrial Hemp Research-2015

• Research work expanded significantly

• Investigations included work with all 3 harvestable components:
  • Basic crop production studies
  • Small grain variety trial
  • Small dual-purpose variety trial
  • Fiber production and processing
  • Cannabinoid production (mostly CBD)
Industrial Hemp Research-2015

- Cannabinoid production may be optimized with tobacco production models.
  - Transplant production in greenhouses
  - Space-planting with tobacco setters
  - Manual crop management and harvests
  - On-farm curing and first-stage processing
Industrial Hemp Research-2015

• The ultimate utility, legal status and regulation of cannabinoids has yet to be determined.
Hemp-derived activated carbons for supercapacitors

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Abstract

Activated carbons are prepared from raw hemp stem (hurd and bast) via hydrothermal processing and
Industrial Hemp Research-2016

• Variety trials for fiber, grain, and dual-purpose.
• Herbicide tolerance.
• Planting date study.
• Plant density study for fiber production.
• Culture and harvest of hemp and kenaf for bast fiber production.
• Hemp’s comparative yields and nutritive value as animal feed.
• Bioenergy capacity of hemp.
• Efficacy of pre-harvest herbicides.
• Agricultural economics of hemp.
Industrial Hemp Research-2016

• Genetics and manipulation of sex determination in hemp.
• Genetics and manipulation of hemp seed oil quantity and quality.
• Breeding hemp varieties for Kentucky.
• Engineering and construction of improved harvesting equipment.
• Hemp hurd fibers as animal bedding and construction additives.
Industrial Hemp Research-Conclusions

• UK almost certainly leads the nation in hemp-related research with broad and diverse efforts in many disciplines.

• Hemp research at UK is very well supported by the UK administration as well as local, state, and federal policy makers.

• We will endeavor to continue to lead the nation in hemp-related research.
State-level legislation

- Twenty-nine (29) states* have some level of legislation in place supporting industrial hemp research in accordance with the pilot program provision, Section 7606 of the Farm Bill:


* Among the 29 states, only 9 (Kentucky, Tennessee, Hawaii, Oregon, North Dakota, Vermont, Indiana, Minnesota, and Colorado) actively grew hemp as part of the pilot program provision in 2015.
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