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### There's a New Biofuel Crop in Town

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# There's a New Biofuel Crop in Town

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Work by Agricultural Research Service scientists in Florence, South Carolina, suggests that farmers in the Southeast could use the tropical legume sunn hemp (*Crotalaria juncea*) in their crop rotations by harvesting the fast-growing annual for biofuel.

Agricultural engineer Keri Cantrell, agronomist Philip Bauer, and environmental engineer Kyoung Ro all work at the ARS Coastal Plains Soil, Water, and Plant Research Center in Florence. They compared the energy content of sunn hemp with cowpea (*Vigna unguiculata*)—another common regional summer cover crop—in 2004 and 2006.

The crops were grown in experimental plots near Florence, and both were harvested on the same day, three times in each study year. The last harvest in both years was conducted right after the first killing freeze of the season.

The scientists measured potential thermal energy production of both feedstocks via direct combustion. This provided the feedstocks' "higher heating value," which indicates how much energy is released via combustion.

In 2004, when there was ample rainfall, the resulting sunn hemp biomass yield exceeded 4.5 tons per acre. This is equivalent to 82.4 gigajoules of energy per acre—close to the energy contained in 620 gallons of gasoline and well in the ballpark of other bioenergy crops, which have yields of anywhere from 30 to 150 gigajoules per acre.

The higher heating value of sunn hemp biomass exceeded that of switchgrass, Bermuda grass, reed canarygrass, and alfalfa. And although reduced rainfall resulted in lower hemp biomass yields in 2006, sunn hemp's higher heating value for both study years was 4 to 5 percent greater than that of cowpea.

Growing sunn hemp as a cover crop could one day help U.S. farmers meet growing demands for environmentally sustainable biofuel feedstocks. But more research is needed, particularly in regard to managing sunn hemp's content of minerals known to affect biofuel production.—By **Ann Perry, ARS.**

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