

# Estimating ethanol yields from CRP croplands

March 19 2010

---

The scramble to find sufficient land for biofuel production has experts eyeing marginal croplands that have been placed in the Conservation Reserve Program (CRP). Now a study by Agricultural Research Service (ARS) scientists indicates that plant species diversity and composition are key factors in potential energy yield per acre from biomass harvested from CRP land.

Agronomist Paul Adler, who works at the ARS Pasture Systems and Watershed Management Research Unit in University Park, Pa., led this research. Collaborators included University Park agronomist Matt Sanderson; microbiologist Paul Weimer, who works at the ARS U.S. Dairy Forage Research Center in Madison, Wis.; and [plant geneticist](#) Kenneth Vogel, who works at the ARS Grain, Forage and Bioenergy Research Unit in Lincoln, Neb.

The team studied [plant species](#) composition, species diversity, aboveground biomass, plant chemical composition and potential ethanol yield at 34 warm-season grassland sites across the major ecological regions of the northeastern United States. The sites were a mix of CRP holdings, wildlife refuges, state parks and other public and private lands. The researchers identified 285 plant species, most of them native, on the study sites. Switchgrass, big bluestem and indiangrass, which are all tall native prairie grasses, dominated the vegetation mix. There was an average of 34 different plant species per quarter-acre.

CRP grasslands with the highest number of species had the lowest

potential ethanol yields per acre. But sites dominated by a small number of native tall prairie [grass](#) species, such as switchgrass, big bluestem, and indiangrass, had the highest yields.

The results from this study demonstrated that the species composition of plant mixtures used in low-input, high-diversity systems affects both biomass production and chemical composition of the resulting feedstock. Including a large number of species with undesirable fermentation characteristics could reduce ethanol yields.

This extensive study also shows that CRP lands in the northeastern United States with a high proportion of tall native prairie grasses have the potential to produce more than 600 gallons of ethanol per acre. This energy can be produced while maintaining the ecological benefits of CRP grasslands.

Results from this study were published in the journal *Ecological Applications*.

Provided by United States Department of Agriculture

Citation: Estimating ethanol yields from CRP croplands (2010, March 19) retrieved 26 April 2024 from <https://phys.org/news/2010-03-ethanol-yields-crp-croplands.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--