

WHO'S LOOKING AT THE BIG PICTURE?

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As the nation pushes to produce more biofuels, we must step back and look at the bigger picture of how increased ethanol production can be accomplished in ways that don't impact negatively on the environment and farm profit. Corn is the "king" of ethanol production. However, corn grain alone cannot meet the U.S. government's goal of replacing 30 percent of gasoline use by 2030. Furthermore, corn production requires fairly heavy nitrogen (N) fertilizer applications that can lead to N leaching and degradation of water resources. And intensive soil tillage practices can lead to soil erosion and associated environmental impacts. So while corn production clearly represents a significant energy source, its environmental impacts raise concerns about the long-term sustainability of continuous corn systems for bioenergy generation.

Reducing the N fertilizer pollution and soil erosion of corn production would make it a much more sustainable feedstock. This can be accomplished by rotating a perennial legume like alfalfa into a continuous corn cropping system. And for marginal cropland, switchgrass is a widely considered feedstock option for future cellulosic ethanol production.

So how do these crops compare in the big picture? An economic analysis conducted at the U.S. Dairy Forage Research Center takes a look by comparing 1) continuous corn, 2) an alfalfa/corn rotation, and 3) switchgrass in terms of farm profit, energy use and efficiency, soil and water conservation and quality, and more. Results show clearly that different crop systems will have both advantages and disadvantages. Production of one system over another will likely depend on a variety of factors.

It is thus likely, and perhaps most desirable, that cellulosic ethanol feedstock production will consist of a variety of crop systems that meet the needs and abilities of different regions and individual producers within those regions. In the big picture, one size does not fit all.

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