25 Million Acres of Corn with Nowhere to Go

By JIM LANE, Editor & Publisher, Biofuels Digest [1]

Buried inside the USDA's Biofuels Strategic Production Report is a startling prediction from both EPA and USDA: If the Renewable Fuel Standard targets are to be met by 2022, there will be a wholesale change in U.S. crop usage.

However, doomsayers who have been predicting an inevitable conflict between food and fuel appear to have been completely off the mark.

Rather than a shortage of food, the increased pace of biotechnology innovation associated with bioenergy is set to usher in a period of food abundance so intense that U.S. food policy may have to move back towards crop subsidies, because there will be far more food available than the world will know what to do with.

The EPA and the USDA are differing on their projections for the feedstock mix that will support the RFS2 targets, but using EPA figures, which include projections for tallow, algae and municipal solid waste, the U.S. is expected to cap its use of corn- and soy-based biofuels at 16.34 billion gallons.

Of this, roughly 16 billion will come from current uses of corn and soy. (Corn stover will form a key source for ethanol moving forward, and corn oil for biodiesel, but this is incremental production using the same corn crop.)

The EPA projections are:

- Switchgrass (perennial grass): 7.9 Bgy
- Soy biodiesel and corn oil: 1.34 Bgy

- Crop residues (corn stover, includes bagasse): 5.5 Bgy
- Woody biomass (forestry residue): 0.1 Bgy
- Corn ethanol: 15.0 Bgy
- Other (municipal solid waste): 2.6 Bgy
- Animal fats and yellow grease: 0.38 Bgy
- Algae: 0.1 Bgy
- Imports: 2.2 Bgy

The EPA and USDA differ materially on switchgrass and other energy grasses (the USDA projecting 13.4 Bgy from this source), and both groups have not considered the use of short-term wood biomass crops, such as poplar.

Why is this news? Monsanto has projected that corn yields will reach an average of 300 bushels per acre by 2030, and Ceres CEO Richard Hamilton has stated that he is comfortable with a range of 12 tons per acre for switchgrass yields by 2022, based on current trends.

In the U.S., 2020 corn acreage is estimated at 87.9 million acres, and if this acreage holds, by 2030 the U.S. can be expected to produce, according to Monsanto projections, up to 26.37 billion bushels of corn, or roughly 13.1 billion bushels more than today. Monsanto’s increased yield vision does not necessarily involve a freakish level of nitrogen juicing of the Midwest, but rather a series of genetic enhancements through breeding that may, in fact, reduce overall fertilizer despite the boon in production.

How much of that will go to biofuels? Today, corn ethanol soaks up around 33 percent of the corn harvest.

But let’s put that in perspective because quoting crop percentages tends to cause panic when there’s no need for it. In 2002, the U.S. produced 9.0 billion bushels of corn with 1.1 billion of those used for ethanol.

Overall, that was 7.9 billion bushels available for other uses.

In 2009, the U.S. produced 13.2 billion bushels, and after subtracting 4.3 billion bushels for ethanol production, there was 8.9 billion bushels for other uses. Or, a 15 percent increase in food and feed availability. Not to mention the 1.4 billion bushels returned in the form of dried distillers grains. Adding those, that’s nearly a 30 percent increase in food and feed in a 7-year period during a period in which the world population increased less than 5 percent.

What’s the future outlook? We can expect over time that ethanol production across the U.S. will reach 3.0 gallons per bushel (as already achieved by POET) as companies develop or license technology to be competitive on cost with POET and other leaders.

In total, around 5 billion bushels of corn to produce 15 billion gallons of ethanol, which will leave 21.3 billion bushels available for food and feed, just 20 years hence.

There’s no market for that kind of output at any price that would be profitable for U.S. farmers, leaving four distinct possibilities:

1. Land use changes for other forms of energy production, such as switchgrass.
2. Land use change for conservation purposes.
3. Further development of non-food and feed uses from corn, such as bioplastics and chemicals.
4. Land use change in conversion to urban land for homes and communities.

Of the 6 million acres that fell out of farm production in the past few years — alas, it was option #4 that soaked up the bulk of acreage.

We can't expect much help from option #1 — energy grasses, because they are specifically designed to be grown in marginal areas and, at any rate, are expected to come in at around 1,100 gallons per acre, according to the USDA. Even if every acre of switchgrass needed for the RFS2 was taken from corn acreage (which will not happen), it would only offset around 7 million acres, or around 2.1 billion bushels of corn.

Farm policy makers see a long-term horizon in which no more than around 12 billion bushels can be taken up by food and feed — unless the U.S. or China goes on a massive, gut-busting, artery-clogging change in dietary habits to more and more meat.

With no more than 5 billion bushels from ethanol, that's 9 billion bushels, or around 30 million acres up for grains in the long term. With switchgrass offering no more than around a 7 million-acre offset — and likely, far less, with switchgrass coming less from the Corn Belt and more from marginal corn areas like the Southeast — there are likely to be 25 million acres or more up for grabs.

That could be a debacle for price stability (should massive oversupply compete for buyers), or for rural development (if the acreage is abandoned without a program to transition use to compensated conservation).

In short, there's the possibility of a 25 million-acre above-ground, living carbon reserve — enough to retire a massive section of lost U.S. prairie — or opportunities for a renaissance in U.S. exports through byproducts. Policymakers will have to craft a long-term vision sooner rather than later, and environmental groups that want a restored U.S. prairie might want to "seize the day" and get behind the potentials that increased productivity can bring.

For more information, please visit www.biofuelsdigest.com *[2].*

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