



BLOG

GMOS AND MONOCROPPING: TWO PEAS IN A POD

Posted on November 14, 2015

Last week, we discussed the drawbacks of GMO foods. With all the known and potential negative effects that GMOs have on people, animals, and the environment, why do so many farmers continue to grow them? One of the biggest reasons to use GMO plants is to keep monocrop farming systems at peak productivity.

THE MONOCROPPING DILEMMA

Monocropping refers to planting the same type of crop species on the same land, year after year, with no variety. Starting in the mid-20th century, most farmers eventually adopted monocropping systems in order to plant and harvest large tracts of land more cost-efficiently, with the help of fewer people and more machines. This mechanized, industrial farming system initially improved crop yields, feeding more people and the animals we raise for food. However, this increase in food production has come at a heavy price on multiple fronts.



Monocropped cornfield, São Paulo, Brazil. Photo by José Reynaldo da Fonseca, 2005.

To begin with, monocrops are especially vulnerable to diseases and pests: When an invading organism finds its way to a monocropped field, it has vast supplies of its ideal food source to enjoy, unbroken by a mixture of other plant species that it can't feed on. Once such an invader takes hold, it's difficult to extinguish it from the farmland, even with liberal herbicide and pesticide use; studies show that monocropped yields tend to drop over multiple years, as invading microorganisms gain a stronger foothold in the monocropped field over time.

To combat the hostile organisms that plague monocrops, GMOs were created to resist certain types of blight and insects, and even to withstand the harsh chemicals used to blanket farmlands in pesticides and herbicides. Unfortunately, the weeds, diseases, and pests continue to rapidly evolve immunities to these GMO plants and toxic chemical sprays, resulting in an endless arms race that ultimately exposes people and the environment to more toxic chemicals and unknown risks.



Monocropping traps farmers in an endless cycles of pesticides and GMO crops. USDA Photo by Charles O'Rear.

CROP ROTATION: SOLVING THE PROBLEMS OF MONOCROPPING

These days, more and more farmers are combatting plant diseases and pests through crop rotation, in which different types of crops are planted on one plot of land over multiple growing seasons. By rotating crops, an organism that feeds on corn, for instance, will have nothing to eat when that field is planted with a different crop species, such as soybeans, the following year.



Crop rotation and monocropped fields at the Swojec Experimental Farm, Wrocław University of Environmental and Life Sciences. In the front field, the "Norfolk" crop rotation sequence (potatoes, oats, peas, rye) is being applied. In the back field, rye has been grown for 45 years in a row. Photo by Lesław Zimny, 2008.

Just as a person can't live long on a diet of only one food without becoming malnourished, a plot of soil can't sustain plant life if only one crop species withdraws the same nutrients year after year; eventually, the soil becomes depleted. Crop rotation resolves the most significant effects of soil depletion by growing a variety of plants that each draw and release different types of nutrients into the earth. For example, as soil is replenished with more nitrogen from soybeans, corn planted there the next year will have more nitrogen available for its own growth. With more nitrogen present in the soil, that corn crop will require less industrial fertilizer, which in turn saves the water supplies of local habitats and communities from chemical runoff pollution.

Crop rotation also helps compact or loosen soil, as different types of plants grow various sizes and depths of root systems. With this in mind, alternating crop types can help farmers avoid tilling the soil when they plant their next season of crops. This preserves more nutrients and beneficial microorganisms in the soil, and also saves costs on tilling labor and equipment.

MONOCROPS AND YOU

As pesticide usage continues to rise in GMO food production, organic and even conventional farmers are turning the tide with both traditional and new crop rotation systems. To avoid heavy pesticides and GMOs in your food, avoiding monocrop farms is a good start. And for those times when you're not sure where your food comes from, our GMO test is available to help you find out.

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