

Ag Page Article
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Productive Farming with Less Oil

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Three weeks ago, we examined how consumers might make food choices that substantially reduce the amount of petroleum used to put food on the table: Shopping at farmers markets, buying from supermarkets that purchase from local farmers, choosing organic produce or grass-finished meats. This article explores the question: Can farmers reduce fossil fuel consumption and still maintain high levels of production?

Oil has become engrained in modern farming, with agriculture now accounting for 17% of all fossil fuel use in the U.S. Petroleum use increased by more than 300% from 1945 to the present (Gianpetro and Pimental). Nearly 100 million barrels of diesel fuel are used annually, just to make nitrogen fertilizers (ibid).

Whether grains, grasses or vegetables, plants need nitrogen and many other nutrients for strong growth. How can farmers provide sufficient nutrients to grow robust crops, while reducing oil-based fertilizers?

The first and most important step is to move away from “feeding the plant” and think instead of “feeding the soil”. Utilizing legumes and other green manures, compost and barnyard manures, soil organic matter is increased, with greater nutrients available to plants, over a longer time. In a seven year study conducted at the University of Nebraska (Sawset.al.), a rotation of corn, soybeans and oats, managed organically, dramatically increased phosphorus, potassium and organic matter levels, when compared with corn-only production using chemical fertilizers and herbicides. These improvements in soil quality led to 25% higher net returns for the organic rotation vs. the corn monoculture.

Research conducted at USDA’s Beltsville, Maryland Station from 1991-1996 (Abdul-Baki and Teasdale) compared yields of tomatoes raised with nitrogen fertilizers on plastic mulch, with those grown in green manure residue, specifically hairy vetch. The results were striking: Tomatoes planted in the vetch out yielded the nitrogen fertilizer/plastic mulch crop by 28%. While this is a more management intensive system, it further illustrates the potential for reducing oil use without giving up significant productivity.

Similar results are unfolding for farmers using grass-based dairy, beef and poultry operations. A USDA-SARE funded study found that pasture-based dairy farmers in Vermont realized a per-cow profit one third higher than their conventional counterparts, owing mainly to reduced input costs, including fertilizers, electricity and veterinary bills.

Whether they’re raising dairy cows, beef cattle or produce, farmers in our region and around the country are beginning to see the benefits of farming with less oil, a trend that is good for consumers and the environment.

For more information, contact Anthony at asd@eva.org or visit our website at appsusdev.org.

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Sources:

1. Gianpetro and Pimental, quoted in Dale Allen Pfeiffer, "Eating Fossil Fuels", 2004.
2. Saws, W. et.al. "Economic and Biological Impacts of Long-term Rotations in Nebraska, USA", quoted in Diana Foguelman & Willie Lockeretz, Organic Agriculture: The Credible Solution for the XXIst Century, IFOAM, 1998.
3. Abdul-Baki, Aref and John Teasdale, "Sustainable Production of Fresh Market Tomatoes and other Vegetables with Organic Mulches", USDA/ARS, bulletin No. 2279, Aug 1997.
4. USDA Sustainable Agriculture Research and Education, "Ten Years of SARE: Animal Production", 1999.