

## **Benefits and barriers to incorporating alfalfa into Iowa's corn and soybean rotations**

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Since 1950, Iowa agriculture has increasingly focused on intensive corn and soybean production; corn and soybean yields increased two- and four-fold, respectively, between 1950 and 2004. During the same period of time the number of farms in Iowa decreased by more than 50% and crop prices plummeted. The environmental implications of intensive corn and soybean production are cause for concern both as nonpoint sources of contamination of surface and groundwater bodies with sediment, nutrients and pesticides as well as by contributing to the creation of an hypoxic zone in the Gulf of Mexico. Alfalfa offers agronomic, ecological and environmental benefits that could help Iowa farmers mitigate the negative environmental impacts caused by corn and soybean production and could provide a lucrative source of income not dependent on government subsidization. Alfalfa can increase successive corn yields at least 33% more than soybeans (Hesterman et. al, 1986). It also has a positive effect on weed suppression in successive corn and soybean crops, and in some studies has been shown to be as effective in weed suppression as herbicides without yield losses (Caporali and Onnis, 1992). Alfalfa can fix up to 9 times more nitrogen than soybeans and improves soil quality (Francis et al., 1990; Angers, 1992). Alfalfa offers economic benefits to farmers as well. In an economic comparison of a simulated Iowa farm, we found that a crop rotation including 3 years of alfalfa following a year each of corn and soybeans was 43% more profitable than a rotation of corn and soybeans alone, even when government program payments are considered. Despite the clear benefits of adding alfalfa to corn and soybean rotations, relatively few farmers in Iowa or other Midwestern states choose to grow the crop. Several factors affect this decision, including U.S. agricultural policies that subsidize a narrow set of commodities including corn and soybeans and excluding forages such as alfalfa, cultural factors such as perceptions of increased labor and equipment for alfalfa crops, and the low cost of synthetic nitrogen fertilizers and other petroleum-based inputs. Despite hesitancy by farmers to incorporate alfalfa into their cropping systems, outside factors could encourage the practice in coming years. Alfalfa yield improvements that make the crop even more economically appealing to farmers, rising consumer interest in pasture-raised meat, and the potential of alfalfa as a bioenergy source all could result in increased demand for and production of alfalfa in the near future.

### **References**

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