

## **Feasibility of organic soybean production following CRP land McNay Memorial Research Farm, 1998.**

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### ***Introduction***

Organic farming has increased to a \$4.2 billion industry in the U.S. and continues to expand approximately 20% annually (OTA 1998). In Iowa alone organic acreage for all crops has increased from 13,000 in 1995 to 120,000 in 1998. Organic soybean production in 1997 was reported at 60,000 acres (IDALS 1998). International demand for organic products, particularly from the Japanese and European markets, is also on the rise. Organic products garner a 20-300% price premium in the marketplace, with organic clear-hilum soybeans averaging two to three times the price of their conventionally raised soybeans in 1998 (Boes 1999). In 1998 there were 1,406,835 acres enrolled in the CRP program with approximately 263,000 acres being released that year (FSA CRP information, 1998). Because of the nature of the CRP program, many of the acres coming out of enrollment may be put immediately into certified organic production.

The experiments at the McNay Farm have been initiated to evaluate the use of four different tillage methods in combination with two different planting methods for organic soybean production following CRP.

### ***Materials and Methods***

The McNay Memorial Research Farm dedicated approximately two acres of an existing forage field for this study. The soils were sampled on this site in November 1997 in order to characterize the beginning soil conditions as shown in Table 1.

**Table 1. Soil characteristics at the McNay Research and Demonstration Farm soybean following CRP site, 1997.**

<b>Soil Characteristics</b>	<b>Amount</b>
Organic Matter	5.4%
pH	7.1
P	7.7 ppm
K	116 ppm

### ***Experimental Design***

Plots were laid out in a randomized complete block arrangement with eight treatments and four replications on September 30 and October 7, 1998. The treatments will consist of four tillage treatments and two planting treatments. The tillage treatments will be as follows: fall moldboard plow followed by spring disking and harrowing to finish the seedbed; fall plowing with a Kverneland® plow with a field cultivator for spring tillage; fall tillage with a Howard Rotovator® with minimal spring tillage; spring plowing with a

moldboard plow and standard disking and harrowing for secondary tillage. The planting treatments will be the use of a no-till planter and the use of a Buffalo® ridge-till planter. Each of the planting treatments will be represented in each of the tillage treatments.

### ***Tillage & planting***

All fall tillage was accomplished on October 14, 1998. Winter rye was broadcast with a three-point mounted spreader on October 15, 1998 at a rate of one bushel per acre. This rye planting will be mowed and disked as soon as it is feasible to do so in the spring. Planting will follow a stale seedbed approach to minimize weed control problems.

### ***Sampling***

Soil samples were taken from each plot on October 7, 1998. Tissue samples were taken on October 10 and 11, 1998. Photographs were taken of soil inversion following tillage operations on October 14, 1998, and November 21, 1998. Sampling for plant performance, weeds, insects and nematodes will follow methods developed for the Neely-Kinyon LTAR site (see other report).

### ***Future Work***

Planting, tillage (for weed control) and harvesting will follow methods developed for the Neely-Kinyon LTAR site (see other report).