

Crop Rotations
and
Moisture Conservation

Paul C Hay, Extension Educator
University of Nebraska Cooperative Extension

I collected individual field data on 2079 farmer-fields from 1994-2005. The purpose of this study was to identify the best dryland rotations for Southeast Nebraska, to seek answers to common concerns, and to quantify crop rotation responses.

<u>Crop</u>	<u>Stubble</u>	<u># fields</u>	<u>Conventional Till</u>	<u># fields</u>	<u>No-till</u>
Soybean	Corn	157	37.3	206	38.4
Soybean	Soybean	40	36.6	24	35.7
Soybean	Milo	93	33.7	80	35.2
Soybean	Wheat	25	40.5	14	41.1

<u>Crop</u>	<u>Stubble</u>	<u># fields</u>	<u>Conventional Till</u>	<u># fields</u>	<u>No-till</u>
Corn	Corn	61	83	133	85.5
Corn	Soybean	175	106.3	291	107.2
Corn	Milo	20	78.2	12	79.3
Corn	Wheat	63	109.4	69	125.4

<u>Crop</u>	<u>Stubble</u>	<u># fields</u>	<u>Conventional Till</u>	<u># fields</u>	<u>No-till</u>
Milo	Corn	16	72.1	8	101.9
Milo	Soybean	92	82.3	76	94.5
Milo	Milo	51	75.5	23	87.0
Milo	Wheat	35	89.3	41	104.2

<u>Crop</u>	<u>Stubble</u>	<u># fields</u>	<u>Conventional Till</u>	<u># fields</u>	<u>No-till</u>
Wheat	Corn	15	49.2	19	60.2
Wheat	Soybean	44	46.4	98	50.9
Wheat	Milo	9	41.2	16	49.9
Wheat	Wheat	59	47.4	8	52.4

Milo and corn are quite responsive to no-till farming methods in all rotations and especially responsive following winter wheat. This response is likely due to the amount of moisture stored and the good mulch cover. Soybeans and wheat are less affected by the decision to till or not to till. Note that the soybean response to no-till wheat stubble is only three bushels per acre versus eighteen bushels per acre for corn and ten bushels per acre for milo. August rain is a key component of soybean yield regardless of the rotational situation.

Southeast Nebraska farmers have been concerned about a yield lag of crops following milo. South Central farmers have not been as concerned. It would appear from this data set that soybeans, corn and wheat all have lower yields in tilled and no-tilled fields following milo. There are three possible explanations for this which all may play some part. Milo completes its growing season after corn and soybeans which might lead to a dryer soil condition the following spring. Milo in some cases has shown allelopathic traits. Most milo fields in Southeast Nebraska are grazed by beef cows while a lower percentage of corn and soybean fields are grazed.

Profitable rotations are possible using wheat, soybeans and milo, or wheat, soybeans and corn. Corn may be more favored in the eastern areas while milo would be more favored in the South Central milo region of Nebraska.