

# **Ridge tillage: sustainable strategy brings economic success**

Innovative cropping strategies based on sound management is what constitutes a sustainable approach to farming. For farmers looking to improve their efficiency there are always several options. Having the courage to get started and finding which option to choose first is a difficult task. Identifying and adapting to the problems and opportunities that arise once you have begun seeking out more efficient farming practices is an even greater challenge.

Cash crop farmer Doug Smith took up that challenge in the spring of 1984 when he abandoned his continuous corn cropping system using a mouldboard plow and jumped into growing corn and soybeans on ridges. Today, he farms all 800 acres on ridges and continuously investigates ways to increase the overall efficiency of the farm operation.

Smith's strategy has not been to sacrifice productivity while reducing tillage and chemical inputs, but rather to find new ways to increase productivity through more resource efficient techniques such as strip cropping. And he's been successful; in 1989 he had corn and soybean yields of 190 and 50 bushel per acre respectively and believes results will be better in 1990.

Some of the major changes he has made since switching to planting on ridges include: reducing herbicide use by two-thirds, changing tractor horsepower requirements from 250 to 95 and no longer works up fields in traditional ways, instead alternating 15-foot strips of corn, soybeans, and wheat. Even with all of these changes, Smith still feels that his system is not efficient as it could be. "When I can grow this corn without any purchased inputs, except the seed, then maybe I'll consider myself efficient" he says.

## **Ridging critical**

Ridge tillage is critical to the success of the entire farming system he is developing. Smith identifies several early season advantages to growing crops on ridges. The seedbed is raised 6 to 8 inches allowing greater soil exposure to sunlight for faster soil warming and drying. This provides an opportunity for earlier spring planting and prevents flooding of crops on the clay loam soil. There is no tillage prior to planting, eliminating soil moisture loss which is crucial for seed germination. "I know my seed is going to germinate, I don't have to rely on rain like the guy who's worked his soil 2 or 3 times."

Ridge tillage also has definite benefits in reducing herbicide use compared to other conservation tillage systems. Most of the weed control in row crops is completed as part

of the conservation tillage process. For in-row weed control, Smith bands a 10-inch spray at planting. During inter-row cultivation, he directs a narrower 4-inch band on either side of the plant if required. Rotary hoe wheels are used instead of rolling shields on the first ridge till cultivation to protect the young plants. Smith has observed that grass weed pressure has been reduced since his switch to ridge till and he believes 1990 will probably be the last year he will have to use a grass herbicide.

Smith is looking forward to refining his weed control program even more. He is contemplating installing an electronic guidance system for precision guidance of a pull-type cultivator as opposed to his present 3-point hitch model using mirrors as a guide. "Maybe I can even reduce that herbicide band by another couple of inches" he muses.

Ridging has also facilitated the opportunity to move into a strip cropping system. Initially started by alternating six rows of corn and soybeans, when Smith increased the corn population on the outside rows to approximately 40,000 plants per acre, the corn yields jumped by approximately 30 bushels per acre. However, the soybean yields were suppressed by an estimated 3-5 bushels per acre by corn shading on the bordering soybean rows. Wheat was added to the rotation in the fall of 1988 in an attempt to reduce the shading effects on the soybeans and to improve the rotation into a three year system consisting of corn, soybeans and wheat. Smith believes that the wheat is not shaded appreciably by the corn and that it reduces the shading effect on the soybeans.

The results appear encouraging and Smith no-tilled 200 acres of winter wheat into soybean stubble in the fall of 1989. He is currently experimenting with planting soybeans in double rows, 6 inches apart on top of the ridge to further improve his soybean yields, and hopes that the earlier canopy closure can further improve weed control and increase bean yields by up to 10 bu/ act

In the middle of his sixth season under a system that has seen many modifications, Smith is already planning his next move. "I haven't even tapped the cover crop part of ridge cropping yet" he explains. In the past, he has inter-seeded red clover into the winter wheat to try and generate a nitrogen source but hasn't been satisfied with the mediocre establishment and growth. An August-seeded hairy vetch winter cover crop will be field tested for the first time this year as part of a new on-farm research cooperator project with REAP-Canada. The aim is to boost corn yields while reducing fertilizer use. Currently, 3 gallons per acre of liquid starter fertilizer are applied with the corn seed at planting along with 150 lbs per acre of dry starter, set off the row approximately 3 ". Anhydrous is then applied at 175 lbs per acre prior to the final ridging operation. Smith is optimistic that hairy vetch is just the cover crop he is looking for as he knows other ridge till farmers in the U.S that are using it successfully.

Smith has come a long way in developing a more sustainable cash crop farming system that has much to offer cash croppers throughout the Great Lakes and Midwest regions. He is also proving that a progressive move to sustainable farming is also the new route to successful farming.

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