

# NO-TILL AND RIDGE TILL CASE STUDIES

## COOPERATORS: SAM AND ROSS LANGMAN

### OPERATION

<b>Location:</b>	Elmvale, Simcoe County, Ontario
<b>Enterprise:</b>	<ul style="list-style-type: none"> <li>• dairy (65 cows), dry manure</li> <li>• field crops (2,500 acres) – corn, soybeans, wheat, canola, hay</li> </ul>
<b>Climate:</b>	2600 Corn Heat Units
<b>Soils:</b>	Alliston sandy loam to Simcoe clay
<b>No-till Experience:</b>	since 1989
<b>Proportion No-tilled:</b>	100% in 1990
<b>Crops that are Easiest:</b>	wheat after spring canola; spring canola after corn

### TRANSITION

- talked to an experienced no-till farmer
- did not get good alfalfa stand in first year
- bought Great Plains No-till Drill with harrows in first year
- acquired Yetter dry fertilizer coulters/ opener combination, and notched blade row cleaners for a Case IH 800 corn planter in Year 2; had second poor alfalfa stand
- in Year 7, bought a John Deere 7200 corn planter with a combination coulters/row cleaner mounted on the front of the seed unit, with Yetter dry fertilizer units 4" to the side of the seed row



**Early planting is a must. Even planting through snow achieved an acceptable canola stand.**

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### TROUBLESHOOTING TIPS

PROBLEM	BEST MANAGEMENT PRACTICES
POOR ALFALFA STAND	<ul style="list-style-type: none"> <li>• ensures effective burndown</li> <li>• plants seed shallow</li> <li>• drops seed just ahead of press wheel</li> <li>• plants with nurse crop after soybeans</li> </ul>
CORN AFTER WHEAT	<ul style="list-style-type: none"> <li>• uses chaff spreader on combine</li> <li>• bales wheat straw – may disk manure into stubble</li> <li>• uses fertilizer units on planter to apply 25 lb./ac. MAP</li> <li>• plants early as possible – best results when corn planted in damp soil</li> </ul>
DRILL PLUGGING WITH CORN STALKS	<ul style="list-style-type: none"> <li>• on loose soils, drill is adjusted to run shallower</li> </ul>
CROP ROTATION PROBLEMS	<ul style="list-style-type: none"> <li>• crop is changed each year: corn – spring canola – winter wheat – soybeans – alfalfa with spring cereal nurse crop</li> </ul>
SLUGS IN SOYBEANS AFTER WHEAT	<ul style="list-style-type: none"> <li>• removes <u>all</u> straw after wheat harvest</li> <li>• disks stubble to reduce residue</li> </ul>

### CHALLENGES

- the fear of starting – taking the plunge
- working manure and hay into the rotation

### BENEFITS

- saves time – three people farm twice as many acres with smaller tractors, less fuel and less machinery maintenance



Before starting out in no-till, talk to experienced no-tillers with similar soils and conditions. The system that you develop must be suited to your own conditions. Then, you need to overcome the old mindsets – no-till is now a proven system.

Sam Langman, Simcoe County

## NO-TILL AND RIDGE TILL CASE STUDIES

### COOPERATOR: BOB MCINTOSH

#### OPERATION

<b>Location:</b>	St. Mary's, Perth County, Ontario
<b>Enterprise:</b>	cash crop, pedigreed seed (uses local livestock manure)
<b>Climate:</b>	2750 Corn Heat Units
<b>Soils:</b>	Perth silt loam
<b>No-till Experience:</b>	since 1987
<b>Proportion No-tilled:</b>	100% in 1992 (swaps land with his brother to improve rotation opportunities)
<b>Crops that are Most Successful:</b>	wheat after soybeans; soybeans after corn; corn after soybeans
<b>Crops that are Least Successful:</b>	corn after wheat

#### TRANSITION

- ▶ first tried no-till wheat after soybeans – used a 3-point hitch coulters toolbar ahead of a conventional seed drill to plant the wheat
- ▶ then tried soybeans after corn – found that a heavier drill was needed to plant soybeans into corn stalks, so purchased a Case IH no-till drill/coulters caddy unit equipped with tillage coulters
- ▶ for corn after soybeans – equipped his standard JD 7000 planter with tillage coulters, then upgraded planter tillage by adding a Kearney tillage toolbar with 3 coulters/row
- ▶ for white beans after corn, soybeans or wheat – purchased a Kearney row splitter to plant beans with his planter in 15" rows
- ▶ equipped his combine with a chaff spreader to improve crop residue distribution



Bob's no-till planter.

## NO-TILL AND RIDGE TILL CASE STUDIES

### TROUBLESHOOTING TIPS

PROBLEM	BEST MANAGEMENT PRACTICES
WEED CONTROL	<ul style="list-style-type: none"> <li>• uses regular burndowns with Roundup</li> <li>• now finds weed control easier in no-till</li> </ul>
CORN AFTER WHEAT	<ul style="list-style-type: none"> <li>• changed rotation so that corn follows soybeans</li> <li>• when corn must follow wheat, uses chaff spreader</li> <li>• shallow disks wheat stubble after manure application</li> </ul>
<b>Beans into Corn</b> NITROGEN DEFICIENCY IN BEANS	<ul style="list-style-type: none"> <li>• uses 15" splitter bar for the planter, so that he can plant without knocking down corn stalks</li> </ul>
NO-TILL CORN	<ul style="list-style-type: none"> <li>• does spring burndowns</li> <li>• does not plant into wheat (see corn after wheat above)</li> <li>• applies dry fertilizer forms of phosphorus and potassium in row at planting</li> <li>• continues to sidedress with anhydrous but also applies 30 lbs. of nitrogen with band at planting</li> </ul>

### CHALLENGES

- duplication of equipment during transition – it's an extra cost
- looking beyond tillage as the only cause when dealing with problems
- getting beyond comparisons with conventional systems and focussing on making no-till system work
- convincing oneself that it will work

### BENEFITS

- more time for family
- improved soil quality
- more consistent yields on poorer land



Talk to other experienced no-tillers and LISTEN. You don't have to spend large amounts of money on equipment to start no-till.

**Bob MacIntosh, Perth County**

# NO-TILL AND RIDGE TILL CASE STUDIES

## COOPERATORS: SHAWN AND RON MCRAE

### OPERATION

**Location:** Bainsville, Ontario – north shore of St. Lawrence River, 4 miles west of Quebec border

**Enterprise:** corn and soybeans (425 acres) in ridge till; half of the acreage is in narrow strips – alternating 6 rows of corn and 6 rows of beans

**Climate:** 2700-2800 CHU

**Soils:** Bainsville silt loam and Allendale sandy loam with elevated deposits of Eamer loam

#### Tillage/Cropping System History:

1970-1983	• conventional tillage – monoculture corn production
1983-1988	• reduced tillage (chisel plow) – corn/soybean rotation
1988-1990	• no-till (zone tillage with planter using 2" wavy coulters) – corn/soybean rotation
1990-present	• ridge till – corn/soybean rotation (strip cropping 50% since 1992)

**Proportion of Crops in Ridge Till:** • 100%

### TRANSITION

- soil structure/tilth hit a low point in early 1980's, due to excess tillage with monoculture corn
- tried chisel plowing (100%) with high residue cultivator – impossible to create a good seedbed
- tried no-till (100%) and found marked improvement in soil structure and resistance to erosion – however, despite excellent results with soybeans, corn performed poorly due to cold, wet seedbed (no spring tillage to interrupt capillary movement of moisture to surface of silt loam soil)
- switched to ridge tillage to obtain a better seedbed for corn and reduce herbicide dependence

## NO-TILL AND RIDGE TILL CASE STUDIES

### EQUIPMENT

- ▶ spring glyphosate burnoff with homemade sprayer designed to travel in established wheel traffic lanes, and with three 15-ft. boom sections to operate in narrow strips
- ▶ Hiniker planter is designed for ridge tillage with horizontal disk ridge skimmers (adjusted for minimum soil displacement)
- ▶ Hiniker cultivator is designed for high residue conditions and equipped to sidedress nitrogen (UAN) 7" either side of the corn row while reforming the ridges
- ▶ John Deere row crop bean header is used for combining soybeans – notable benefits are gentler pickup, increased effectiveness in lodged conditions, independent knife heights, and stone guards

### TROUBLESHOOTING TIPS

PROBLEM	BEST MANAGEMENT PRACTICES
NO-TILL EARLY CORN VIGOUR	<ul style="list-style-type: none"> <li>• switched to ridge till for drier, warmer seedbed, resulting in quicker emergence, more vigorous early growth and lower seedling mortality</li> </ul>
RESTRICTED ROTATION	<ul style="list-style-type: none"> <li>• ridge till generally restricts the producer to row crop production, although narrow row small grains, etc., can be seeded and harvested on ridges</li> </ul>
COMBINING SOYBEANS	<ul style="list-style-type: none"> <li>• a conventional flex head can be used to combine soybeans, but a row crop bean header is probably better for picking up lodged or low-lying plants</li> </ul>
PRODUCTION/ INPUT COSTS	<ul style="list-style-type: none"> <li>• although a glyphosate burndown is broadcast, pre- or post-emergent herbicide can be banded over the row, while inter-row cultivation controls weeds between rows, thus reducing herbicide expenses</li> <li>• to combat nutrient stratification, fertility should be maintained in the ridge by banding fertilizer at relatively low rates (compared to broadcasting)</li> <li>• relative to conventional tillage systems, ridge till equipment requires less power to operate, reducing fuel consumption and equipment repairs</li> </ul>



Strips of corn and soybean residue prior to planting.

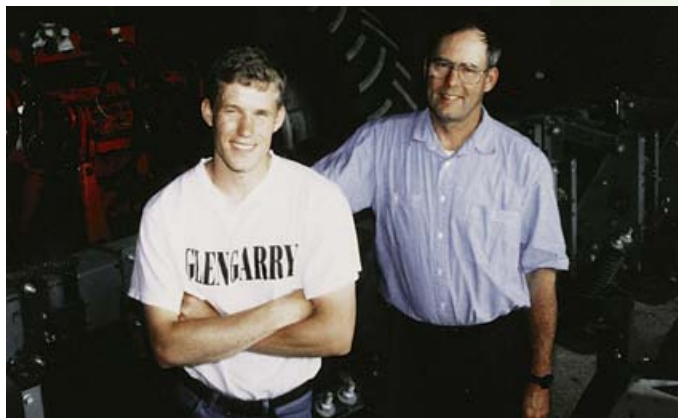
# NO-TILL AND RIDGE TILL CASE STUDIES

## CHALLENGES

- ▶ limited applicable research
- ▶ balancing economic with environmental concerns
- ▶ grower must be prepared to make modifications to equipment and management
- ▶ finding workable multi-crop rotation

## BENEFITS

- ▶ lower input costs
- ▶ more efficient use of applied fertilizer
- ▶ controlled traffic – overall reduction in compaction while providing firm traction
- ▶ reduced soil and residue mixing builds soil organic matter and structure, thus providing increased resistance to soil erosion and better precipitation infiltration
- ▶ spreads workload more effectively than conventional tillage



**Some ridge tillers claim that cultivation does it all in ridge till. Don't believe it! Burndowns are every bit as important in ridge till!**

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**Shawn and Ron McRae**

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## Acknowledgements

The Best Management Practices project is funded by Agriculture and Agri-Food Canada through Green Plan, managed by the Ontario Federation of Agriculture, and supported by the Ontario Ministry of Agriculture, Food and Rural Affairs.

Additional funding for this publication was generously provided by Novartis Crop Protection Inc.

*Contributing Writers:* Ontario Ministry of Agriculture, Food and Rural Affairs – Chris Brown, Adam Hayes, Gabrielle Ferguson, Peter Johnson, Art Schaafsma, Jim Shaw, Peter Sikkema, Ted Taylor; Ag-Relations Inc. – Keri-Sue Lang, Don Lobb

*Task Team:* Ontario Ministry of Agriculture, Food and Rural Affairs – Adam Hayes (Chair); Randy Molzan; Nick Stokman; Paul Sullivan; Jim Shaw; Monsanto – Bill Norman; University of Guelph – Tony Vyn

*Steering Committee:* Ontario Federation of Agriculture – Cecil Bradley; Agriculture and Agri-Food Canada – Mike Hicknell; Ontario Ministry of Agriculture, Food and Rural Affairs – Len Senyshyn

*Technical Coordinator:* Ontario Ministry of Agriculture, Food and Rural Affairs – Ted Taylor

*Manuscript Coordinator:* Ontario Ministry of Agriculture, Food and Rural Affairs – Mary Sinclair

*Editor:* Alison Lane

*Graphic Design:* Neglia Design Inc.

*Illustrator:* Ontario Ministry of Agriculture, Food and Rural Affairs – David Rouleau

*Photographers:* In addition to the authors, the following organizations and individuals provided photographs: Ontario Ministry of Agriculture, Food and Rural Affairs – Don Hilborn, Donna Speranzini, Albert Tenuta, Anne Verhallen; Agriculture and Agri-Food Canada – Al Hamill; Sam Langman; Ron McEwen; Bob McIntosh; Ron McRae; John Miller; Randy Molzan; Bruce Shillinglaw; Bill Stevens; Laurence Taylor; Becker Farm Equipment; Cyanamid Canada Inc.; Kearney Planters; Middlesex Soil and Crop Improvement Association; Monsanto Canada Inc.

The following staff of the Ontario Ministry of Agriculture, Food and Rural Affairs are Crop Advisors or Specialists: Field Crops – Scott Banks, Marilyn Bidgood, Chris Brown, Gabrielle Ferguson, Brian Hall, Adam Hayes, Richard Hendry, Peter Johnson, Jack Kyle, Hugh Martin, Joan McKinlay, Neil Moore, Michael Payne, Gilles Quesnel, Keith Reid, Rob Templeman, Albert Tenuta; Horticulture Crops – Maribeth Fitts, Anne Verhallen.

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Printed 1997

ISBN 0-7778-6145-3

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