Ron and Jack McCoy - Resource Efficient farmers

by Ralph Martin

The McCoy farm is situated near Richmond, Ontario about 30 km south of Ottawa. Ron and Jack McCoy are always experimenting with their diversified farm (dairy and farrow to finish). In fact, they claim that "The whole farm is one large experiment where just about everything has been tried". They keep a close eye on their crops and livestock in order to catch any errors and make improvements. According to Ron and Jack, their experiments have resulted in some notable failures which were embarrassing at the time. Now they grin and philosophically reminisce about the valuable lessons learned. Both insist that in the end, experimenting pays dividends in satisfaction and increased possibilities for achieving a sustainable farming system.

A major problem in their area is the erosion of 20 to 30 tonnes ha-' of topsoil from class 1 land in their area. Ron can show slide after slide taken within 2 miles of their farm, as evidence of wind and water erosion. "Much of that soil goes into the ditch which drains into Jock River and finally ends up in the Rideau River."

The McCoys have been dealing with the erosion problem by experimenting with minimum tillage (MT) since 1974. They realize that grasses must be controlled in corn but have found that increased tillage may result in even more weeds. Minimum tillage combined with reduced herbicide applications has appeared to be a good compromise. They observed that the weed population changed from predominantly annual grasses under conventional tillage (CT) to dandelion, burdoch and Manitoba maple seedlings under several seasons of MT. The trash between corn rows can act as a mulch to suppress grasses and this hot damp micro-environment is similar to the process of sheet composting.

Weed seeds tended not to germinate under these anaerobic mulches. The MT system which best suited their farm consists of initially turning under 2, 3 or 4 year old sod with an offset disk in July or August. Manure is usually incorporated with the offset disk at this time thus avoiding delays in the spring. To kill the sod it is cut at least twice with the offset disk. A cover crop of rye and oats is then seeded and allowed to grow until the oats die back in late fall. This cover crop ties up the nutrients and keeps the ground blanketed in winter and spring. Corn is then no-till planted into the overwintered rye in a small trench cleared by sweeps to a width of at least 15 to 20 cm. A rotary hoe pass, as the corn is emerging, sets back small weeds but hardly disturbs the mulch. Ten days later a pass with a four-row Wilridge ridgetill cultivator prevents a future weed invasion. A second

cultivation after another 10 days greatly reduces dandelion, lambs quarters or foxtail weeds.

It is possible to rotary hoe corn shoots at about 10 cm high if conditions are such that the emerging stage is missed but Jack is wary of rotary hoeing shoots between 3 to 6 cm. They also plan to build small ridges this summer before seeding the rye-oat mixture. This is to avoid placing corn rows in pool damp trenches created by the no-till planter which caused problems in the spring of 1988. "The ridge-till guys used to recommend ridges this high" said Jack, holding his hand about 40 cm off the table. "Now they're coming down and we feel that low ridges should be alright for better corn germination, emergence and early growth. Low ridges don't require very much horsepower or interfere with our hay and cereals later". The McCoy's note that conventional tillage involves moldboard plowing at depths of 20 cm or more and several secondary operations before planting. However, the most severe minimum tillage operation uses the offset disk on sod at depths of only 8 to 10 cm.

In 1988, the McCoys still banded atrazine on some com rows but saw no difference in weed growth or corn yield without the herbicide. This year no herbicides have been applied in contrast to the $48 ha-' spent in the early 1980s or the 8 kg atrazine ha-' commonly used by continuous com growers in the area About 150 kg ha-' of 7-27-12 is added to com in a split application, usually coinciding with a cultivation. This is much less expensive than the 500 or more kg fertilizer ha' used by many other com growers.

Corn is harvested as grain to be fed to the dairy herd or pigs in the farrow-to-finish operation. The stover trash is left to cover the field over the following winter. Corn is no-till planted the second spring and weed control tillage is as previously described for the first year. A barley-oat-wheat-pea mixture is planted the third spring with a cover crop of clover for the following winter. Winter rye is seeded after harvesting the small grain mixture and in the fourth spring an alfalfa-timothy mix is added as well. The rye is harvested in the fourth summer and the hay crop continues for 2 to 4 years depending on the stand and weed pressure.

Com hybrids which perform well under CT may not yield as well under MT, requiring strong brace roots, extra cold tolerance and a broader range of disease resistance. Several different hybrids at 2700 CHU are compared each year to select the best MT hybrids. The McCoys have had success with Pioneer 75A (unavailable now), Pioneer 3802, Pioneer 3953 (yields well despite smut) and Pioneer 3881 (good yield but high moisture).

Open pollinated (OP) corn is uncommon in Ontario and to their knowledge they are the only farmers who grow it under MT. Offset dishing is not unlike the shallow horse plowing of decades ago and OP corn insect resistance appears to be broader, reflecting growing conditions before insecticides were available. Their original OP seed came from Southern Ontario. Every year the McCoys pick cobs by hand from the best adapted corn plants to their Eastern Ontario farm. The cobs are hung to air dry, before shelling and testing seeds for germination. They prefer the OP varieties of Wapsey valley (resistant to

European corn borer), Golden Glow and Wisconsin 24. Now 75 to 80 % of their 40 ha of corn is OP.

They have found several advantages to OP corn. A given variety will flower within a three week period rather than within days thus reducing the risk of drought or other stresses at this critical period. Ron feels that the crop takes up more nutrients and has a longer flowering period thus avoiding a flush of nutrient requirements. Although reluctant to draw conclusions with only 5 years data, they note that OP corn yields have been as high as those of the best yielding hybrids. The moisture has generally been 10 percentage points lower in OP corn and seed protein is 1 to 12 % compared with the usual 10 % of current varieties. A final stand of 50 000 plant ha-', down from the 66 000 plants ha-' planted, has not resulted in lower yields because of the remarkable compensating capacity of OP corn. Cobs as long as 1.5 ft or 45 cm have been measured on plants isolated by gaps in the corn row. Grain yield rather than silage yield was the selection criteria. The average corn yield of the farm has been close to the provincial average. The McCoys are quick to point out that yields must be seen in the context of ongoing experimentation and less expensive inputs, a concept familiar to REAP members.

The McCoys reduced input farming system also includes the use of Belgian work horses whenever permitting. They find the beautiful beasts to be cost effective for such jobs as hay raking, drawing wood, pulling hay through feedlots. Ron and Jack even claim that one of their mares can cultivate corn, straight as a die, on her own. Now that is ultimate in resource efficiency!!!

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