

Wellington Soil and Crop Improvement Association Strip Tillage Education Tour

Wellington SCIA Major Grant

Purpose:

The purpose of this tour and demonstration plot was to inform growers on the importance of soil health and soil conservation through the use of contour strip tillage, cover crops, and minimal tillage systems. There appears to be a reduction in conservation tillage and residue cover across much of the province. Soil health and soil conservation are areas of concern for local growers especially with the increased amount of primary tillage in the county. New GPS guided strip tillage may be a technique that can boost conservation tillage adoption in corn. Strip tillage is a form of conservation tillage that combines the soil drying and warming benefits of conservation tillage with the soil protecting advantages of no-till by disturbing only the seed row area. Auto steer systems have increased adoption in recent years. Advances in technology may now make it possible to make the strips along the natural contours of the field with RTK guidance. This would significantly reduce erosion compared to conventional tillage or using strip tillage in straight lines across an undulating field. This demonstration project viewed innovative approaches to promote soil conservation through strip tillage and cover crops within an integrated cropping system.

Methods:

Wellington SCIA partnered with Pioneer Hi Bred and Greg Stewart (OMAFRA) to host a field demonstration twilight tour. Pioneer hosted the twilight meeting at Matt Coffee's farm after a tour of Jake Kraayenbrinks corn plot and a tillage demonstration trial at Matt Coffee's farm. Jake Kraayenbrink discussed various in-season manure application methods used to apply manure and cover crop seed (Figure 1).



Figure 1 Photo of Jake Kraayenbrink explaining the interseeding of cover crops into corn while applying manure.

The second stop of the twilight tour was a tillage plot set up by Greg Stewart (OMAFRA Corn Lead). Various forms of tillage were conducted in the fall of 2013 and the spring of 2014 including strip tillage. A one-pass, full fertility, and spring strip tillage system was discussed for its economic and environmental performance relative to a conventional tillage system. Figure 2 shows the strip tillage unit being operated. John Winger and Greg Stewart presented various approaches to strip tillage at the final stop. (Matt Coffee's farm) John described how he's been able to make strip tillage work on his farm.



Figure 2. Strip tillage and fertilizer application being conducted in one pass.

A few key elements of this strip tillage system that were discussed at the plot day included:

1. Evaluation of strip-till equipment which can perform well under spring soil conditions (maximize soil conservation and provide “one-pass” simplicity by creating tillage strips in spring instead of the previous fall)
2. Evaluation of the performance of applying a full fertility program (NPK), including a slow-release nitrogen component with the strip-till pass to mitigate fertilizer toxicity issues in the seed zone (provides the opportunity to address all fertility requirements, particularly N, prior to planting as currently exists with a typical broadcast and incorporate, conventional tillage systems)
3. Evaluate the feasibility of setting up and operating contour strip-tillage and contour planting operations through GPS guidance with the inclusion of implement steering in addition to tractor auto steer (further reduce the potential for erosion losses relative to non-contour cropping methods).

The final speaker of the day was Paul Raymer from Practical Precision in Tavistock. Paul discussed the Y-drop application method of in-season nitrogen application

Results:

Table 1 provides the corn yield results from the tillage plot (data from Greg Stewart).

Table 1. 2014 Corn Yield Results Strip Tillage Site Arthur On.

Tillage	Strip N	Planter N	Side N	Yield
	Lbs N/ac			(bu/ac)
Spring Strip	0	30	106	144
Fall Plow	0	30	106	141
Spring Strip	136ESN	0	0	140
Fall Strip	0	30	106	140
Fall Disc Ripper	0	30	106	138

Summary:

1. This educational event was well received by all the participants and fostered considerable conversation on the best ways to establish cover crops, apply nutrients, and make strip tillage successful.
2. In the tillage plot most of the corn yields were not statistically different. However, the spring strip tillage did yield statistically more than the disk ripper.
3. Putting all the fertilizer through the strip tiller (N was 50% urea / 50% ESN) was successful at this site and could eliminate the need to put fertilizer through the planter or side-dresser.

Acknowledgements:

We would like to thank Matt Coffee who was a co-operator for both the plot and the tour. We would also like to thank Jake Kraayenbrink who led a tour of his cover crop trial and John Winger and Paul Raymer who spoke at the meeting. The tillage portion of this project was led by Greg Stewart.

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