

Cover Crops into Standing Corn

(Middlesex SCIA Major Grant)

Purpose:

The purpose of this trial was to evaluate different cover crop options into 6-10 leaf corn in Middlesex County. The benefits of cover crops to soil quality, increase in soil organic matter and protection from soil erosion are well known, however the inclusion of these crops into corn is a relatively new idea. Concerns if the cover crops may decrease corn yield through competition must also be addressed.

Methods:

The sites had three different treatments: annual ryegrass @ 15lbs/ac, annual ryegrass/crimson clover (80/20) @ 15 lbs /ac, and oats/crimson clover (80/20) @ 20lbs/ac. Each treatment was replicated twice. The cover crops were broadcast seeded with a Kuhn 19.1 three point hitch spreader, at the 6-12 leaf stage (leaf stage depended on location). It was recommended to co-operators to use Integrity, Dual, or Frontier as a PPI or Pre program and follow up with glyphosate (if round-up ready corn) before we seeded cover crops .These three residual herbicides were deemed “safest” to these species.

Results:

Seedlings did establish well in 16 days (pic 1) at sites with good seed to soil contact.



Pic 1

Three sites (Belton, Strathroy, Thorndale) had poor to no growth of all three treatments by October. The corn at two of the sites was in the 10-12 leaf stage at the time of seeding, and was possibly too big to allow the seeds to establish and thrive. The other poor site received a “rescue” treatment of Calisto and Ultim that adversely affected the seedlings.

Three sites (Bearcreek, Elginfield and St. Ives) had spotty stands. The annual ryegrass and annual ryegrass/ crimson clover had some growth in areas of the fields. The oats growth was minimal. A low rate of Peak greatly limited the growth of crimson clover at the Bearcreek site. Primextra also had a detrimental effect at the St. Ives site.

Four sites (Coldstream, Denfield, Lambeth and Nairn) had very good stands of annual ryegrass and annual ryegrass/crimson clover. (pic 2)



Pic 2

Again the oats crop was minimal at all 4 sites. At the Denfield site, the co-operator direct seeded oat/crimson clover between rows with a 4 row 3 point hitch corn planter and had great success (again little oat growth) Pic 3

The final stand (excellent stand in mid-summer) at the Nairn site was greatly reduced by earthworm feeding. Most of the annual ryegrass and some of the crimson clover had been pulled down into the soil by worms.

Summary:

- Oat stands were the poorest of the 3 species, most likely because it is not as shade tolerant.

- Chemical programs must be carefully matched to cover crop species.
- Larger corn at time of seeding most likely out competes (shades) cover crop seedlings there by reducing stands. Wet leaves at broadcasting (dew, rain) may also cause seeds to stick to leaves and not reach soil surface.
- Direct seeding gave an excellent stand.
- Unsure if very late maturing (and large growth) of corn crop in 2014 may have reduced growth of cover crops.
- Loose soil at seeding, either by mechanical means (sidedressing or inter row cultivation) or condition of soil surface seems to allow for better seedling establishment. 2 sites had soil that had “sealed” over from spring rains and appeared to hinder good seed to soil contact.
- Corn yields in all 10 sites were not adversely affected by cover crops.



Pic 3

Acknowledgements:

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