

Establishment Of C4 Perennial Bio-Fuel Grasses (OSCIA East Central SCIA Partner Grant Project)

Purpose:

- To develop agronomic recommendations for the successful establishment of C-4 bio-fuel grasses
- To create farmer, public and key stakeholder awareness of the opportunities and economic benefits of the production and marketing of bio-energy crops in the East Central Region.

Methods:

- co-operative project - East-Central SCIA, University of Guelph & OMAFRA
- 1 X 6 meter plots replicated 4 times (also replicated at Elora).
- treatments include species (switchgrass, big bluestem), varieties (4 each), seeding rates, seed pre-treatment, nurse crop (spring wheat), P starter fertilizer, and post-emerge herbicides (Estaprop, Achieve).

Results:

Year 1 Observations:

- slight visual injury to switchgrass & big bluestem following herbicide application - reduced stand counts of switchgrass, but not big bluestem
- varietal differences among switchgrass for herbicide tolerance
- underseeding to spring wheat appears to be a viable management option - weed control was good and avoided the herbicide injury caused by Achieve
- seed pre-conditioning treatment
 - significant increase in germination & stand density for both species - equivalent to doubling the seeding rate
 - combined with the use of starter fertilizer - as effective as tripling the seeding rate
 - starter fertilizer alone had a negligible impact
- big bluestem fluffy and does not flow through drill easily – may need coating
- demonstration plot using a billion seeder at Tom Barrie's, Bowmanville, resulted in considerable volunteer red clover
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Year 2 Observations

- no major changes from Year 1
- broadleaf weeds appear to have had a significant negative effect on establishment on approximately 15% of the plot area
- overall establishment appears positive after the October harvest
- July 2011 seeded demonstration plots (on marginal land) at Frank & Julia Hoftzyer's, Hastings appear good

Summary:

- establishment of C-4 bio-fuel grasses quite feasible, but can be improved with further research

Next Steps:

- Year 3 will measure stand densities and yield
- agronomics will provide information to help in determining COP
- no-till demonstration plot will be established to reflect the use of no-till drills on marginal land

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