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FIELD TEST RESULTS
CANOLA

2014

CHI LIQUID CARBON INCREASED CROP PRODUCTION OF CANOLA

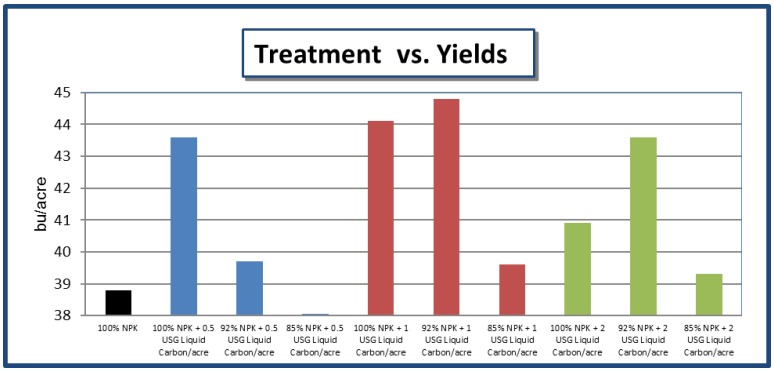
- **Objective:** To use humic acids to increase the yield of canola
- **Collaborator:** Battle River Research Group, Camrose, Alberta, CANADA
- **Financial support:** Canada Revenue Agency (Scientific Research & Experimental Development)
- **Period:** May to September, 2014
- **Tested product:** CHI Liquid Carbon (source of humic acids)
- **Tested crop:** Canola of "6060RR" variety
- **Location:** Camrose, Alberta, CANADA
- **Soil:** Loam, solonetzic clay underneath, OM = 8.3%, pH = 5.8, EC = 0.3 dS/m
- **Test plot:** 4.5 x 22 ft2 (1.4 x 6.6 m2) Design of Experiment

DESIGN OF EXPERIMENTS

- One plot represented one treatment (including control)
- Each treatment was replicated 3 times, i.e. 3 test plots per treatment
- All plots were seeded with canola at 6 lbs/acre in May 2014
- Macronutrients and organic matters were applied in May 2014
    - **Control:** 60.0 lbs N + 20.0 lbs P2O5 + 0.3 lbs K2O/acre
    - **Treatment 1:** 60.0 lbs N + 20.0 lbs P2O5 + 0.3 lbs K2O + 0.5 USG Liquid Carbon/acre
    - **Treatment 2:** 60.0 lbs N + 20.0 lbs P2O5 + 0.3 lbs K2O + 1 USG Liquid Carbon/acre
    - **Treatment 3:** 60.0 lbs N + 20.0 lbs P2O5 + 0.3 lbs K2O + 2 USG Liquid Carbon/acre
    - **Treatment 4:** 55.0 lbs N + 18.6 lbs P2O5 + 0.3 lbs K2O + 0.5 USG Liquid Carbon/acre
    - **Treatment 5:** 55.0 lbs N + 18.6 lbs P2O5 + 0.3 lbs K2O + 1 USG Liquid Carbon/acre
    - **Treatment 6:** 55.0 lbs N + 18.6 lbs P2O5 + 0.3 lbs K2O + 2 USG Liquid Carbon/acre
    - **Treatment 7:** 51.0 lbs N + 17.0 lbs P2O5 + 0.2 lbs K2O + 0.5 USG Liquid Carbon/acre
    - **Treatment 8:** 51.0 lbs N + 17.0 lbs P2O5 + 0.2 lbs K2O + 1 USG Liquid Carbon/acre
    - **Treatment 9:** 51.0 lbs N + 17.0 lbs P2O5 + 0.2 lbs K2O + 2 USG Liquid Carbon/acre
- CHI Liquid Carbon contained 12.0% humic acids
    - Also contained 0.7% N, 1.8% K2O, and negligible amounts of other nutrients
    - N and K2O in product were compensated within nutrient (NPK) inputs for each plot
- Harvest was completed in September 2014
    - Yield for each plot was measured

- Results from 3 plots of same treatment were averaged
- 0
- Yields were presented as bu/acre (1 bushel = 50 lbs)

RESULTS



CHI Liquid Carbon increased yields of canola, suggesting that humic acids made nutrients more available to plants. CHI Liquid Carbon at 1 USG/acre was found to be optimum with the highest yield increase at 15% over control. Even at 85% NPK, 2% increase was still observed. 0.5 USG/acre performed well with 100% NPK, but deteriorated with reduced nutrient inputs. 2 USG/acre was too much with100% NPK, good with 92% NPK, and satisfactory with 85% NPK.

CONCLUSIONS

CHI Liquid Carbon at 1 USG/acre increased the yield of canola by up to 15%. The yield was maintained even when the nutrient (NPK) input was reduced to 85%.