The Effect of Split Nitrogen Application Rate on Three Varieties of Industrial Hemp in Manitoba

Project duration - May 2017 – September 2017
Objectives - To understand the effect of split verses banding nitrogen fertilizer to optimize industrial hemp grain yields.
Collaborators - Hemp Genetics, Parkland Industrial Hemp Growers, Manitoba Harvest

Results

- Despite the split nitrogen application averaging 13% greater grain yield, overall there was no statistically significant difference in grain yield when applying nitrogen in one application at seeding verses 70% at seeding and 30% at stem elongation.
- There was no significant difference in height between a split application or single application of nitrogen.

Project findings

- Applying nitrogen in a split format did not affect grain yield in industrial hemp.
- Further study is required to understand the potential benefit of split nitrogen application in industrial hemp.

Background

Current nitrogen recommendations for nitrogen are 80-120 lb/ac, with some suggesting higher rates, depending on variety and growing conditions. However, the economic risk of applying all nitrogen at planting can be high, especially if prolonged stress restricts the plants' utilization of the added nutrients. Additionally, in many cases it is not logistically possible to apply all the nutrient requirements at seeding. Split nitrogen applications have the potential to increase seeding efficiencies and allow growers to adjust rates of application according to growing conditions.

http://www.hemptrade.ca/eguide/production/nutrient-use

Materials & Methods

Locations:	Carberry, Melita (Roblin results not included due to high %CV)
Experimental Design:	Split plot design with four replications
Main plot:	Silesia (tall, fibre-type)
	CRS-1 (medium, dual purpose-type)
	Finola (short, grain-type)
Split plot:	Control – no nitrogen added
	Banded – nitrogen side-banded at seeding
	Split application – 70% nitrogen side-banded at seeding, 30% broadcast at canopy closure
Data collected:	Seeding date
	Emergence date
	Plants/m^2
	Mortality
	Vigor (1 low, 9 high)
	Height (cm)
	% Moisture

Yield (kg/ha)

Table 2: Agronomic info for all sites

ITEM	Melita	Carberry	Roblin
Legal Location	NE 27-3-27W1		NE 20-25-28 W1
Soil Series	Waskada Loam		Erikson Clay Loam
Soil Test (0-24")			
N - lbs/ac			86
P- ppm			10
K - ppm			183
S - lbs/ac			184
Burnoff Date			May 25
Product			RoundUp Transorb
Seed Date			May 24
Seed Depth			0.75”
Spring Fertilizer Application - lbs/ac			
N			49
P			10
K			0
S			0
Spring Fertilizer Date			Side-banded at seeding
In-crop Herbicides Date			N/A
Product			N/A
Fibre Harvest Date			Aug 28
Grain Harvest Date			Sept 26