CHTA ACCC
Canadian Hemp Trade Alliance
Alliance Commerciale Canadienne du Chanvre

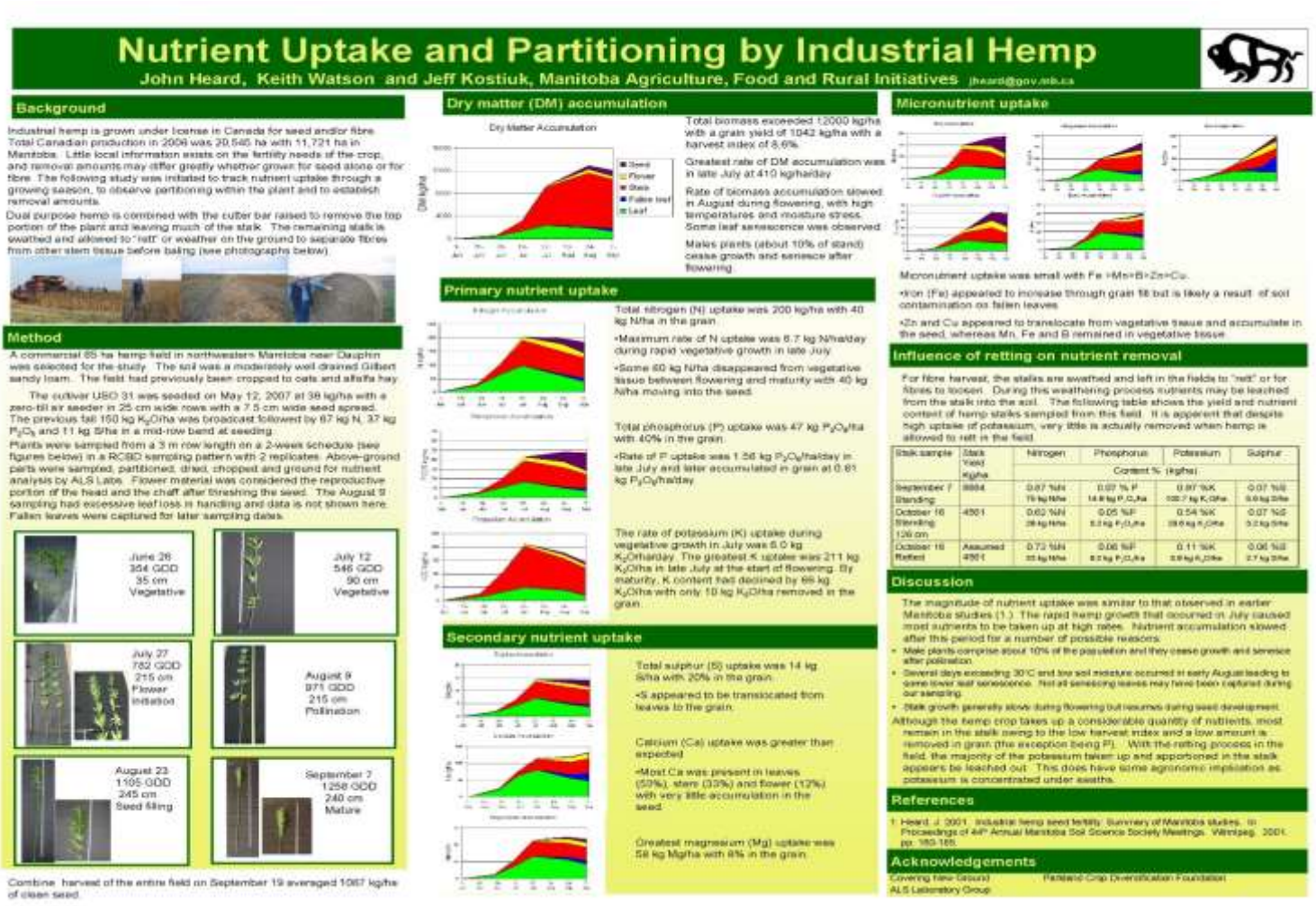
Nutrient Use

Nitrogen

Hemp removes or uses a total of 178 actual lbs./A of nitrogen; 35 lbs./A is removed in the seed and 142 lbs./A in the stalk. If the hemp is grown for both grain and fibre production, there will be a large amount of nitrogen removed from the field and growers need to be cognizant of nitrogen requirements for the next production year.

The retting process of the straw allows nutrients like nitrogen and potassium to be leached out and accumulate in the soil under the swaths. Of all the nutrients, phosphorus has the highest percentage stored in the seed. The other nutrients are more inclined to be stored in the stalks.

Depending on the variety, hemp will grow 2.75 to 4 inches a day during its vegetative stage in July to early August. During this development stage, the maximum rate of nitrogen uptake is about 6.0 lbs. N/A/day. Phosphorus uptake is about 1.39 lbs. P_2O_5/A/day.



Hemp seed, as with other crops, will be sensitive to seed-placed nitrogen fertilizer. It is recommended that nitrogen be broadcast, side-banded, mid-row-banded or banded in a separate operation.

Phosphate

Hemp is a high user of phosphate and it is essential to have phosphate in an available form early in crop establishment and during the growing season. Phosphate is immobile in the soil so close association to hemp roots is essential. Phosphate management trials in the past have shown that hemp does have some tolerance to seed placed P_2O_5. Soil type, soil moisture and seed opener spread all have an effect on seed placed phosphate, so caution should be used to find a rate that is suitable with your conditions and equipment.

Some limited research has been conducted on phosphate fertility in hemp (PCDF).Two years of trials indicate a reasonable tolerance to seed placed phosphate. Under ideal growing conditions, plant population and grain yield was not affected by increasing the rates of P_2O_5 up to 50 pounds actual per acre. At the suggested rate of 31 to 40 pounds/acre and good growing conditions, damage is not expected to hemp seedlings in a clay loam soil with an offset disc opener.

Seed placed phosphate can cause loss of germination if there is less than ideal conditions such as cool soils, dry or wet compacted soils. Seed placed fertilizer could cause extra stress on the young plants and increase the plant mortality under diverse conditions. More research is required to understand phosphate placement and hemp production.

Micronutrients

Micronutrients are nutrients required in extremely small quantities (less than 100 ppm in plant dry weight). The basic functions of micronutrients are less understood than macronutrients. Micronutrient deficiencies in hemp are less common than macronutrient deficiencies and part of this may be due to the lack of documentation and reporting. More research and documentation of micronutrient identification, deficiencies and yield effects is required.

Application Rates

General rates for the total amount of each nutrient to target in dryland production (actual):

- Nitrogen 80 to 120 lbs.A
- Phosphorus 40 lbs.A
- Potassium 54 lbs.A
- Sulfur 13 lbs.A

*These rates include soil supplied nutrients plus applied.

Factors that affect nutrient uptake and removal include:

- environmental and growing conditions
- seeding date
- soil pH and salinity
- excess soil moisture and soil compaction restricting the aerobic ability of the soil
- varietal differences

Nutrient Uptake and Removal of Field Crops lbs.A					
	Total Plant lbs.A		Grain lbs.A		Uptake
Nutrient	**Hemp***	**Canola****	**Hemp***	**Canola***	**Hemp/day****
N	178	107	35	58	6
P	42	45	17	31	1.39
K	188	67	9	15	5.35
S	13	18	2.7	11	
*Source Canola: Canadian Fertilizer Institute					
**Source Hemp: MAFRD					