

## Montra Crop Science Hemp

**Project duration:** May 2020 – October 2020

**Objectives:** To evaluate the effect of organic acid products applied to hemp crops

**Collaborators:** Kevin Shale, Montra Crop Science

### Background

Montra Crop Science provides organic plant and soil amendments. The current project is designed to examine effect of Montra products, BR-X and VX-8, on hemp yield and cannabinoid content. Find out more about [Montra Crop Science](#) here.

### Results

The yield results for hemp grain are shown in Figure 1.

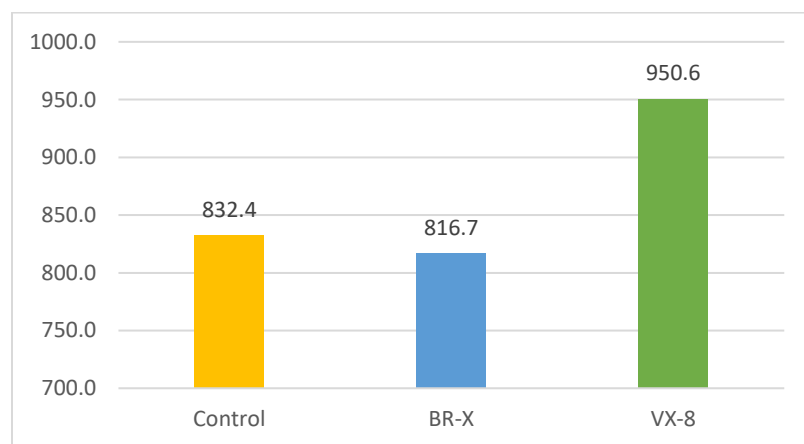


Figure 1: Grain yield (lb/ac).

CBDA content is shown in Figure 2. Cannabinoid analysis was done with an [Orange Photonics](#) Legacy LightLab cannabis analyzer, which uses chromatography and spectroscopy to determine the content for six major cannabinoids. Table 1 describes the cannabinoids measured by the LightLab unit. The tests for this trial were calibrated to provide cannabinoid results above a 0.3% threshold. This means that any cannabinoids below 0.3% may have been present, but were not detected by the cannabis analyzer.

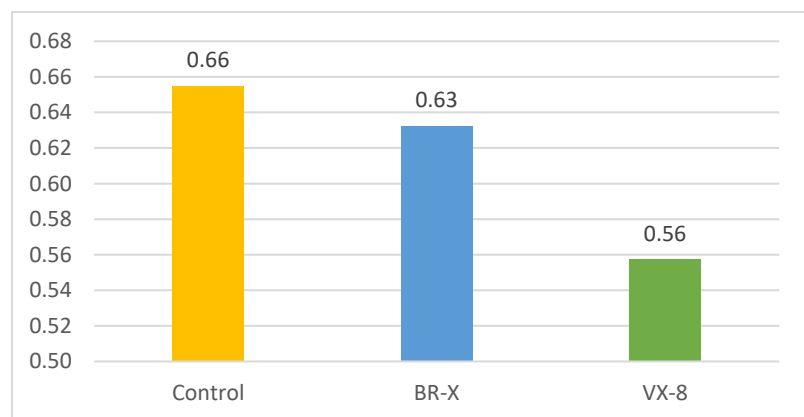


Figure 2: CBDA content by treatment (%)

Table 1: Description of cannabinoids measured by the Orange Photonics Legacy LightLab\*

Cannabinoid Short name	Cannabinoid Full name	Description	Note
THCA	Tetrahydrocannabinolic Acid	The acidic form of THC	By Canadian law, THC content for hemp must be below 0.3 %
Delta-9 THC	Delta-9 Tetrahydrocannabinol	The psychoactive, neutral form of THC	
Total Potential Delta-9 THC		Total potential Delta-9 THC if the sample is completely decarboxylated	
Total THC		The sum of THCA and Delta-9 THC	
CBDA	Cannabidiolic Acid	The acidic form of CBD.	
CBD	Cannabidiol	The neutral form of CBDA	Formed by the decarboxylation of CBDA; CBD is non-psychoactive
CBN	Cannabinol	Formed from the breakdown of Delta-9 THC	
CBGa	Cannabigerolic acid	Precursor molecule that is transformed by enzymatic processes into THCA and CBDA	

\* Descriptions for cannabinoids are adapted from the Orange Photonics manual

Grain yield and CBDA content do not differ statistically by treatment (Table 2). The percent CV for both grain yield and CBDA are high, but less than 20%, which is the threshold used by the Canadian Hemp Trade Alliance to accept or reject trial results.

Table 2: Summary of statistical information for grain and CBDA yield

Entry	Grain yield (lb/ac)	CBDA content (%)	Statistical significance: Grain yield and CBDA content*
Control	832.4	0.66	A
BR-X	816.7	0.63	A
VX-8	950.6	0.56	A
CV (%)	20.2	38.5	

\* Treatments not marked with the same letter are statistically different from other treatments.

## Materials & Methods

Experimental Design: Random Complete Block Design  
 Variety: Katani  
 Entries: 3 treatments x 4 replications  
 Seeding: Jun 4  
 Harvest: Sep 17

Table 3: Treatments

<b>Treatment</b>	<b>At seeding</b>	<b>At Herbicide Application</b>
1	Control	No product
2	Montra BR-X (wet) Soil-applied at 2 L/ac	Montra MX-3 Foliar applied
3	Montra VX-8 (dry) Soil-applied at 13.2 lb/ac	Montra MX-3 Foliar applied

Data collected	Date collected
Emergence:	Jun 11-12
Plant Counts:	Jul 1
Vigor:	Aug 5
Disease:	Aug 5
CBD Sampling:	Aug 28
Yield:	Oct 1
Moisture:	Dec 1

## Agronomic info

Previous year's crop:	Barley Silage
Soil Type:	Erickson Loam Clay
Landscape:	Rolling with trees to the east
Seedbed preparation:	Heavy harrowed

Table 4: Fertility Information

	<b>Available</b>	<b>Added</b>	<b>Type</b>
N	58 lb/ac	131 lb/ac*	46-0-0
P	71 ppm	15 lb/ac**	11-52-0-0
K	513 ppm		

\* Side-banded

\*\* In-row

Table 5: Herbicide Application

<b>Crop stage</b>	<b>Date</b>	<b>Product</b>	<b>Rate</b>
Pre-emerge	Jun 8	RoundUp	0.64 L/ac
In-crop	Jun 24	Brotex	0.40 L/ac
		Centurion	0.15 L/ac
		Decis	0.15 L/ac
		Montra MX-3	1.00 L/ac