

Industrial Hemp Variety Trial 2017

WCFA, Brazeau County, UofA Breton Plots

Background

Brazeau County, WCFA, and the University of Alberta Breton Plots collaborated and began an applied research trial on industrial hemp in 2017. WCFA's plot was established at NW 14-049-09-W5M and this report pertains to this particular location. Since the plant has typically been coming out of the eastern United States, there were some doubts about viability in the West-Central region of Alberta, with our gray wooded soil type and short growing season. Producers within Brazeau County showed a vast interest in growing industrial hemp with their attendance at the three part series: "Harvesting Hemp: From Seed to Sale". Brazeau County strongly encouraged this research trial to better assist their producers and industry in the area.

Application for Industrial Hemp Plots

Hemp is classified taxonomically as *Cannabis sativa* and therefore Canada's hemp production is regulated by Health Canada. WCFA, including our producers and any manufacturers who want to work with hemp must obtain licenses from Health Canada in Ottawa. WCFA applied for a license through Health Canada and only utilized certified hemp seed in the trial. Currently, Canada is the only country in North America where the cultivation of industrial hemp is legal.

Why Grow Hemp?

Fibre

There is great interest nationally in fibre uses. Potential markets include nonwovens, composites, building materials, animal bedding, and pulp and paper products. A rising demand for alternatives to wood and synthetic fibres, as well as high costs of petroleum products, encourages the future of hemp.

Each hemp plant is made up of approximately 30% bast fibre, 60% hurd, and 10% chaff, and as such hemp fibre production produces unique and challenging processes. Some of the processes involved in producing hemp fibre include: retting, decortication/fibre separation, standards, logistics, and which fibre is best?—bast or core. Depending on the quality of the fibre, the value can range anywhere from \$50/ton to upwards of \$500/ton.

Seed

Harvested hemp seed is referred to as "grain" to differentiate from Certified Seed (for planting) and consumer ready processed seed. Under Canadian regulations, finished food products must contain less than 10 parts per million of THC. This is held as a safe and generally undetectable amount. However, market considerations may require even more strenuous reductions in THC content. Prices for grain fluctuate, as of summer 2016 conventional hemp seed was selling for between 0.37–0.45 cents a lb/FOB cleaner. Certified Organic seed was selling for 0.85 cents a lb/FOB cleaner. In recent years, Canadian plant breeding programs have developed a number of high yielding cultivars that are suitable and adapted to a wide range of growing conditions.

Hemp Market

As a new crop, hemp markets are under constant development. It is reasonable to assume that any new crop can take 15–50 years for a market to develop. Typically, the hemp market is for hemp seed. Hemp seed attracts commercial interest because of the high protein content and excellent essential fatty acid content. Most hemp seed whether in seed, oil, flour/powder or and in finished foods goes into the health food and nutraceutical sectors. Cosmetics and body care products are also a growing market.

Objectives

The objective of this variety trial was to determine the viability of hemp as a crop to be grown within Brazeau County. It was also intended to demonstrate hemp and educate producers on the possibilities available through hemp production.

Methodology

Site Preparation

The site was initially a sod field that had previously been used for grazing livestock, and as a winter feeding site. In early May the producer who had donated the land to WCFA for use as a research site worked up three blocks. Soil samples were taken on each of the blocks on May 5, 2017, and fertilizer application rates were based off of these results. On May 8, 2017 the site was further rototilled in preparation for seeding. Once the sites were prepared, they were measured and flagged to facilitate the small plot seeding.

Seeding

An initial attempt to seed was made on June 15, 2017, but due to excessive moisture we were not able to move the seeder through the plots, and thus this attempt failed. The industrial hemp variety trial was finally seeded on June 19, 2017. The trial was seeded with a small plot Fabro Disc Seeder in 5 rows with 22.5 cm spacing (9m by 1.14m plot area). 40lbs of N was applied at seeding. Soil temperature at the time of seeding was 16.1 C, and it should be noted that there was still fairly significant amounts of soil moisture.

Seeding was conducted using two methods, disc drill or broadcast. The disc drill treatments were placed with the drill and seeded at a depth of 1”, and applied at a rate of 30lbs/acre. The broadcast treatments were obtained by pulling the hoses on the seeder and allowing the seed to fall in place on the soil surface, and were applied at a rate of 60lbs/acre.

Spraying

Two chemical treatments were applied to the trial: MCPA600 AMINE was applied on June 26, 2017 at a rate of 0.940 L/acre. Assure II + Merge was applied on July 26, 2017 at a rate of 0.32 L/acre + 0.294 L/acre, respectively. There was still significant amounts of weed pressure following these applications and the plots were subsequently hand-weeded in mid-August.

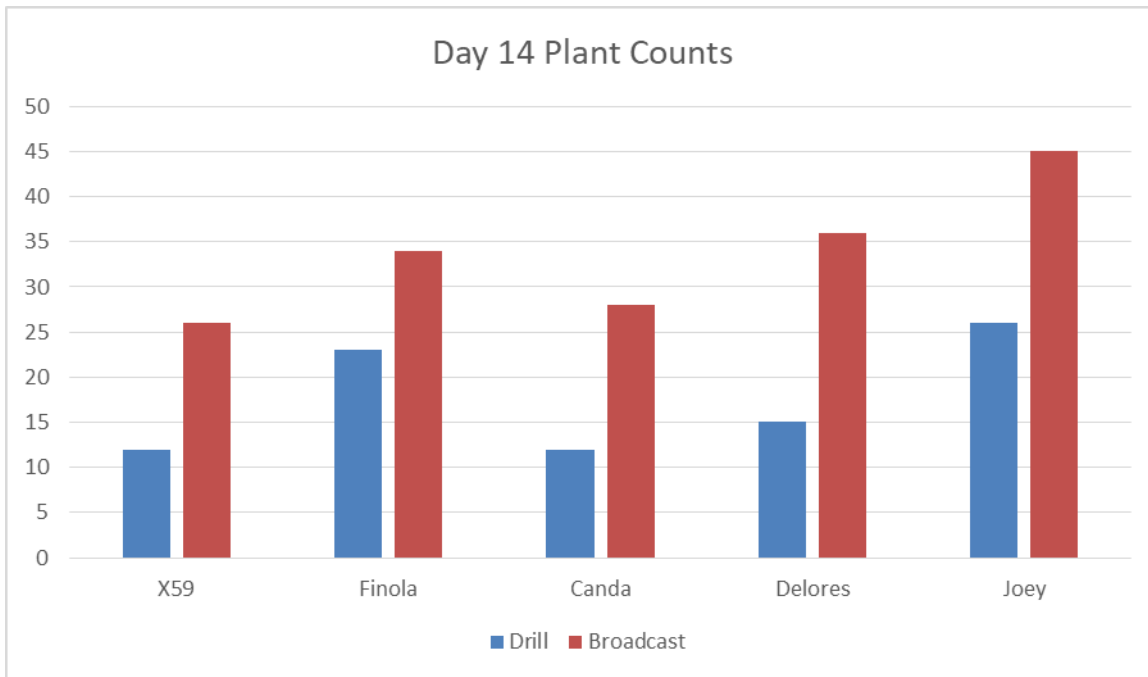


Seed bed preparation in the Spring of 2017.

| Company | Variety | Treatment | Rate (Lbs/ac) |
|----------------|---------|------------|---------------|
| TerraMax | X59 | Disc Drill | 30 |
| Marcer Seeds | Finola | Disc Drill | 30 |
| Parkland Seeds | Canda | Disc Drill | 30 |
| Parkland Seeds | Delores | Disc Drill | 30 |
| Parkland Seeds | Joey | Disc Drill | 30 |
| TerraMax | X59 | Broadcast | 60 |
| Marcer Seeds | Finola | Broadcast | 60 |
| Parkland Seeds | Canda | Broadcast | 60 |
| Parkland Seeds | Delores | Broadcast | 60 |
| Parkland Seeds | Joey | Broadcast | 60 |

Table 1. Industrial hemp varieties seed in the trial, Brazeau County, AB.

Results



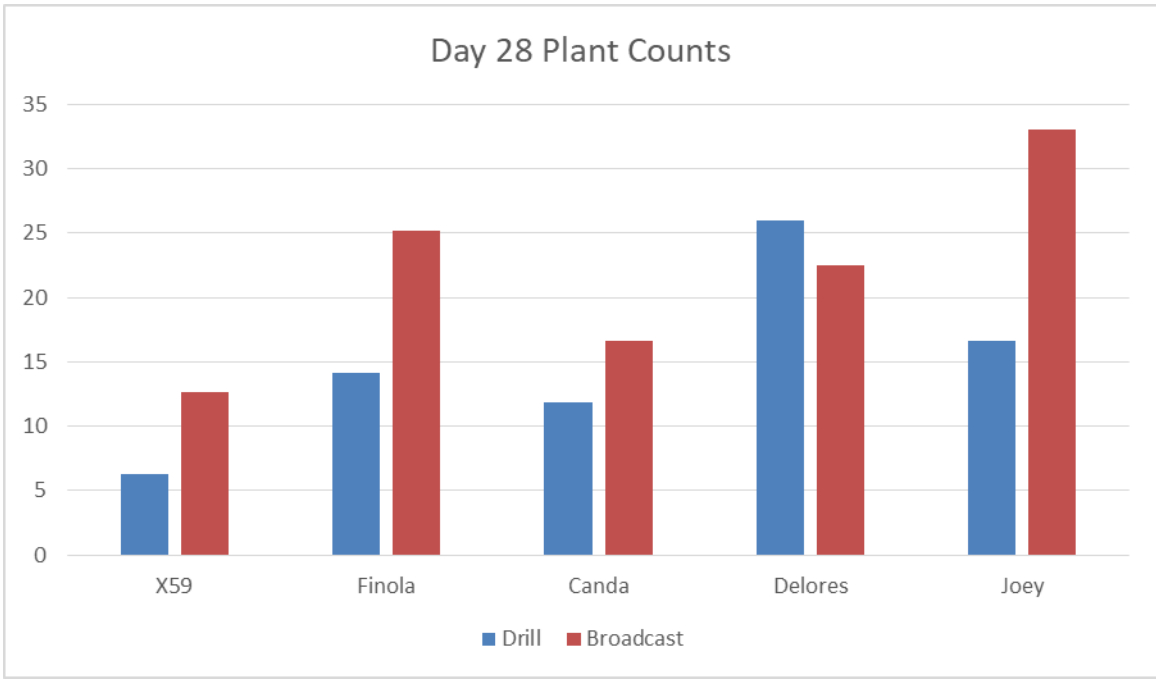
Plants after hail July 2017

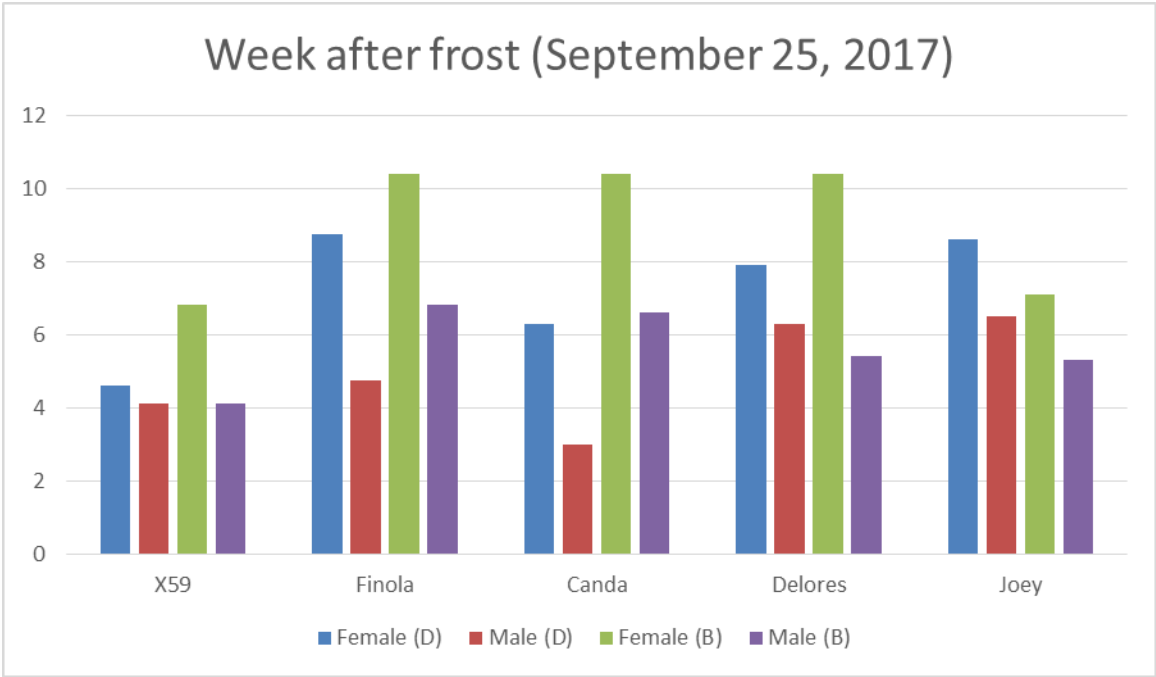


Plants after hail August 2017



The Brazeau plot was hit by hail on two different location in the growing season of 2017, once at the end of July and another two weeks later at the beginning of August. Due to the late seeding date the majority of plants where just starting to sprout and growing tender new leaves and stems.





Plant Counts following frost. D=disc drill; B=Broadcast





Some of the 2017 Rainfall at the trial site

Conclusions

This trial provided us with some learning opportunities moving forward. Some of the recommendations we will be implementing moving forward will be: seed at a shallower depth, apply more fertilizer, controlling the weed pressure more effectively. The high amounts of moisture received this year were also not conducive to growing a great hemp crop. More trials are needed to determine the viability of hemp as a crop option for producers in this region.



Photos from the Industrial Hemp Field Day hosted on August 30, 2017



Photos from the Industrial Hemp Field Day hosted on August 30, 2017



WCFA Staff Photo from Industrial Hemp Field Day August 30, 2017



Hemp plant head, August 10, 2017



Male hemp plant, August 10, 2017

