

2017

2017 INDUSTRIAL GRAIN HEMP VARIETY TRIAL

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Hemp is a non-psychoactive variety of *cannabis sativa L.* The crop is one of historical importance in the U.S. and reemerging in worldwide importance as manufacturers seek hemp as a renewable and sustainable resource for a wide variety of consumer and industrial products. The crop produces a valuable oilseed, rich in Omega-3 and other essential fatty acids that are often absent in western diets. When the oil is extracted from the seed, what remains is a marketable meal co-product, which is used for human and animal consumption. The fiber has high tensile strength and can be used to create cloth, rope, building materials, and even a form of plastic. For twenty years, U.S. entrepreneurs have been importing hemp from China, Eastern Europe and Canada to manufacture travel gear, apparel and accessories, body care and cosmetics, foods like bread, beer, and salad oils, paper products, building materials and animal bedding, textiles, auto parts, housewares, and sporting equipment. Industrial hemp is poised to be a “new” cash crop and market opportunity for Vermont farms that is nutritious, versatile, and suitable for rotation with other small grains and grasses.

To help farmers succeed, agronomic research on hemp is needed, as much of the

Table 2. Hemp grain varieties evaluated in the hemp trial 2017, Alburgh, VT.

| Variety | Seed company | Days to maturity |
|----------------|----------------------------------|-------------------------|
| CFX-2 | Hemp Genetics International | 100-110 |
| CRS-1 | Hemp Genetics International | 100-110 |
| Grandi | Hemp Genetics International | 100-110 |
| Katani | Hemp Genetics International | 100-110 |
| Canda | Parkland Industrial Hemp Growers | 100-120 |
| Delores | Parkland Industrial Hemp Growers | 100-120 |
| Fedora 17 | Schiavi Seeds | 120 |
| Helena | Schiavi Seeds | 150 |
| Tygra | Schiavi Seeds | |

compared to historical averages (Table 4). Temperatures in May-August were cooler normal by an average of 1° F per month. September was unseas

Table 6. The impact of variety on disease and arthropod presence in industrial hemp at female flower development (12-Jul), Alburgh, VT, 2017.

| Variety | Sclerotinia infection | Aphids | Tarnished plant bug | Physical damage |
|------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | % of plants | # plant ⁻¹ | # plant ⁻¹ | # plant ⁻¹ |
| Anka | 0.000 | 0.350* | 0.150 | 0.550 |
| Canda | 0.000 | 1.40 | 0.100 | 0.300 |
| CFX-2 | 0.000 | 0.500* | 0.100 | 0.200 |
| CRS-1 | 0.000 | 0.450* | 0.200 | 0.300 |
| Delores | 0.000 | 1.00 | 0.200 | 0.100 |
| Fedora 17 | 0.000 | 0.550* | 0.100 | 0.450 |
| Full sun | 0.000 | 0.450* | 0.000 | 0.350 |
| Grandi | 0.044 | 0.500* | 0.150 | 0.050 |
| Helena | 0.000 | 0.650* | 0.100 | 0.250 |
| Katani | 0.054 | 0.650* | 0.150 | 0.300 |
| Tygra | 0.000 | 0.250* | 0.050 | 0.200 |
| USO-31 | 0.000 | 0.150* | 0.000 | 0.500 |
| LSD (0.10) | NS | 0.596 | NS | NS |
| Trial mean | 0.008 | 0.296 | 3.73 | 0.071 |

†Physical damage from insect pests was recorded as the average number of damaged leaves per plant.

*Treatments marked with an asterisk did not perform statistically worse than the top performing treatment (p=0.10) shown in **bold**.

NS – There was no statistical difference between treatments in a particular column (p=0.10).

At the female flower development stage, pest pressure was minimal (Table 6). Aphids and tarnished plant bugs were present in very low populations. Ten of the twelve varieties had comparable levels of aphid infestation, however, Canda and Delores had significantly higher populations. Insect pest physical damage *Sclerotinia sclerotiorum* infection (Image 1) was also very low and not significantly different between varieties. No leafhoppers were recorded.

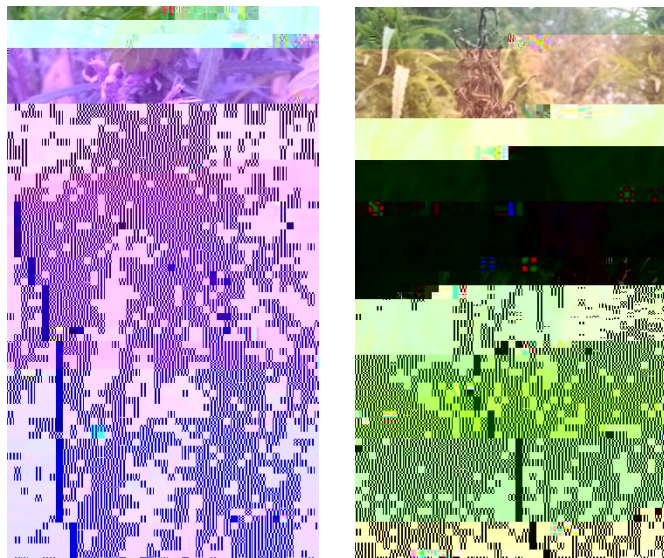


Image 1. *Sclerotinia sclerotium* infection on industrial hemp, Alburgh, VT, 2016.

Table 7. The impact of variety on disease and arthropod presence in industrial hemp at harvest (12-Sep), Alburgh, VT, 2017.

| Variety | Sclerotinia infection | Aphids | Leafhopper |
|----------------|------------------------------|-----------------------------|-----------------------------|
| | % of plants | # plant⁻¹ | # plant⁻¹ |

within 4 hours as it otherwise will heat up. Seed should be dried to 8-10% moisture for long term storage. Ideally, hemp is harvested in the 12-15% range.

Average yield across all twelve varieties was 582 lbs ac

It is important to remember that these data represent only one year of research, and in only one location. More data should be considered before making agronomic management decisions. It was clear that due to unseasonably cool, wet, early season conditions, all varieties underperformed. Additional research needs to be conducted to evaluate varieties under more growing conditions.

ACKNOWLEDGEMENTS

The UVM Extension Northwest Crops and Soils Program would like to thank the United Natural Foods Incorporated (UNFI) grant program and Dr. Bronner's company for funding this research. Special thanks