



Hemp Agronomy 101

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Plant Description

Industrial hemp (*cannabis sativa*) is a versatile oilseed crop grown for both its grain and fiber. Hempseed is a highly valued food product, containing a rich blend of polyunsaturated oils, a complete and easily digestible protein, carbohydrates, and vitamins and minerals. Hemp fiber is among the strongest natural fibers, used for a variety of industrial and commercial applications from textiles to automobile manufacture.

Industrial hemp varieties are grown for grain (i.e. Finola & Crag), or dual purpose both grain and fiber (i.e. USO 14, USO 31) and only fiber (i.e. Carmen). Hemp can be monoecious or dioecious (separate male and female plants). In dioecious varieties the male plants will die off after shedding their pollen and the females will continue to grow and set seed.

Hemp plants will vary in height from 3 to 7 feet for grain only varieties, and 5 to 9 feet dual-purpose varieties. Hemp's growth period is ~ 100+ days for grain varieties and ~ 110+ days for dual purpose varieties. A hemp bushel weights 44 lbs.

Field Selection

Sow hemp on fertile soil, rich in organic matter and with high nutrient availability, and high biological activity to support hems vigorous growth habit. A light to medium textured soil is preferable, with a pH of 6.0 to 7.5. The seedbed should be fine, uniform, moist, warm and weed free.

Hemp is best preceded by perennial alfalfa / grass breaking, green manure plow downs, legumes, barley, potatoes, and soybeans. Corn, oilseeds, and wheat can be vectors for disease and aren't recommended are forecrops. Spice crops are also not recommended as they can impart their flavor into hemp oil during pressing.

Seeding

Seed hemp as shallow as possible (0.5 ~ 1.0 inches), but into moisture, after soil temperature has reached 8 ~ 10C+, with May 25 as an optimum date. Expect

germination in 2 to 4 days and emergence within 4 to 7 days. Seeding target rates are 100 plants / m² for grain production (20 to 30 lbs / acre). Producers are required to use pedigreed seed and seed cost remains a major input cost, (ie \$30 to \$60 / acre.) Hemp seedlings are frost tolerant to about - 4C.

Fertilizer

Under optimum moisture conditions, hemp will grow vigorously and requires high nutrient availability. Conventional NPKS producers are recommended to fertilize hemp fields to the same levels as required to grow 13.5% wheat, and or similar to canola. Hemp yield is most responsive to N & P fertilizer, and optimum yield and returns are often realized at about 75 to 100 lbs / acre actual N. Phosphate should be applied at about 50 ~ 70 lbs / acre actual. Hemp will tolerate some seed placed N and P (~15lbs / acre). Apply additional K and S where soils are deficient.

Organic producers are recommended to precede a hemp crop with a perennial alfalfa breaking or green manure plow down, to increase nutrient availability and reduce weed pressure. Proper nutrient levels are essential for successful organic hemp production. It is best to consider hemp as a two year crop within an organic production system and use the previous year to control weeds and improve soil fertility.

Under typical field conditions dryland organic hemp yields from 5 ~ 25+ bu / acre, dryland conventional hemp 10 ~ 30 bu / acre, and irrigated (organic and conventional) 35 to 45 bu / acre.

Weed Management

Given a good start, hemp can be an effective weed suppressant – especially the taller dual purpose and fiber varieties. Quick even emergence is the key to enable the hemp plants to effectively compete by creating an dense plant canopy. However, producers are recommended to minimize weed pressure by fall or spring tillage or burn off, or through the use of perennial forages or green manure plow downs. Problem weeds include buckwheat, wild oats, canola, pigweed, volunteer wheat, coriander and other spice crops.

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Disease and Pest Management

Hemp has very few disease and pest problems. The most important disease issue is sclerotinia stem rot (in wetter conditions). Another diseases to note is botrytis (gray mold / head blight) Grasshoppers, gophers, bertha armyworm, hemp borer and lygus plant bugs have been known to attack hemp. Note there are no pesticides registered for use on hemp.

Harvest

Combine hemp while it is still “green/ immature” to minimize fiber wrapping and fiber strength. Finola can be swathed at 85% maturity, cut at 6 ~12 inches and combined at ~10% seed moisture (dry). Preferably, Finola can also be straight combined at about 12 to 15% seed moisture. Taller, and dual-purpose varieties like Crag, and USO 14 & 31 should be straight combined (cut at about 3 feet) at about ~15 to 20+% seed moisture (depends on crop yield, combine modifications & capacity of aeration system). Aerate grain immediately off the combine down to < 9% moisture – this is critical to preventing heating and to preserve seed quality. Cut or haybine remaining 3 foot stubble within a few days and bale. Reduce cylinder, rotor and unloading auger speeds to prevent seed damage while harvesting. Watch for fiber wrapping around shafts, particularly the drive shaft and sprockets of the feeder chain, or front beater, and front drum for the feeder chain. While producers use all types of harvesters, CIH rotaries, JD & NH conventional harvesters with draper headers seem to work best. There are some combine modifications that limit fiber wrapping and speed up harvesting.

Storage

Ensure hemp grain is fully dry (< 9% moisture) and properly aerated and turned if necessary to preserve freshness. Hemp grain at higher than 17% moisture will need to be turned in the bin to prevent spoilage alongside the bin walls.

Licensing

Industrial hemp producers are required by law to be licensed with Health Canada. Licenses are valid for one calendar year.

Producers require the following:

- Industrial Hemp License Application
- Schedule 1 License to Cultivate
- Schedule 5 License to Distribute / Sell

- Schedule 6 Information on Partners / Directors (if a Corp or partnership)
- Schedule 9 License to Possess
- GPS co-ordinates for field
- Map of field including recognizable landmarks i.e. roads
- Criminal record check
- Mid-season THC field sample reported to Health Canada (USO varieties except)
 - Cost for sample ~ \$260 / field

Hemp cultivation must be a minimum of 10 acres, and not within 1 km of a public area frequented by young people under 18. Refer to Health Canada’s website for additional licensing information:

http://www.hc-sc.gc.ca/dhp-mps/substancontrol/hemp-chanvre/comm-licen/applic-demande/index_e.html

Health Canada TEL (613) 954-6524
Health Canada FAX (613) 941-5360
Email: Hemp_BdsTpd@hc-sc.gc.ca

Producers are recommended to contract their hemp grain production with a reputable company.

In business since 1998, Hemp Oil Canada Inc is North America’s largest processor and bulk reseller of hemp grain products. We have production contracts for both conventional and organic grain production in 2006. We offer producers a turn-key production program, including a detailed production and licensing guide, mid-season field inspections, pedigree seed sourcing and up to date agronomic advise on all aspects of production.

Contact:

Kevin Friesen
Seed Production Manager
Hemp Oil Canada Inc.
TEL 604 882 4936 FAX 604 882 7406
CELL 604 607 4953 kevin@hempoilcan.com

Hemp Oil Canada Inc.

Shaun Crew - President
Head Office: (near Winnipeg)
PO Box 188, 225 Pembina Trail
Ste Agathe, MB R0G 1Y0
TEL 204 882 2480 OR 1 800 BUY HEMP
info@hempoilcan.com www.hempoilcan.com