



## HEMP (*Cannabis Sativa*)

TILLAGE SPECIALISTS 2007

**Hemp is a high yielding annual fibre crop producing cellulose, edible proteins, and oils with over 50,000 different product applications across an array of industries. The crop may be grown for both its fibre and oil.**

### Soils

Hemp favours a deep humus soil but has been grown successfully on a wide range of soil types. It is permissible to grow hemp on set-aside land providing an industrial end-use contract is in place. Hemp production is supported in Europe by an aid payment to primary processors (known as the Fibre Processing Aid Scheme). Hemp is a relatively low input crop therefore organic production is possible.

Hemp straw is delivered to processing facilities in large round or heston bales 8 x 4 x 3. Haulage costs are likely to dictate that production remains within a reasonable delivery distance of processors.

### Hemp uses

Hemp grown in Ireland may be used to produce both fibre and seed. Fibre varieties may reach 3 m in height under Irish conditions and are selected to produce large quantities of high quality fibre. More recently, dwarf or dual purpose hemp varieties have been introduced, primarily grown for the seed oil, with small quantities of fibre also produced.



***Fibre hemp is a high biomass crop and also shows potential as a renewable energy feedstock.***

### Hemp fibre uses

Once extracted and processed, hemp fibres are mainly exported to Europe for use in the manufacture of car parts, textiles and construction materials. Major car manufacturers are already using hemp biocomposites for car components such as linings and parcel shelves.

Other uses for the fibre include insulation and horticultural matting. The remainder of the plant consisting of the hurd pith or the core can be used for horse or poultry bedding, while hemcrete is used for house exteriors and lime blocks.

### Special restrictions

Currently only cultivars with less than 0.2% tetrahydrocannabinol (THC), the narcotic component of cannabis, may be grown for fibre and seed oil production in the EU.

In Ireland, *Cannabis sativa* (hemp) is classed as a controlled drug under the Misuse of Drugs Regulations and possession of the material is an offence. To enable the development of an industry based on hemp, a licence to grow approved varieties of hemp can be obtained. The approved list of varieties is published by the Department of Health and Children. Advice on obtaining a licence is available from the 'Social Inclusion' section of the Department of Health and Children at telephone 01 6354794 or 01 6354338.

### Key Points

- Low input
- Annual, spring sown
- Both fibre and dual hemp crops can be grown using conventional farm machinery
- Licence required from Department of Health and Children/Irish Medicines Board
- Fibre production needs to be within a feasible distance of the processing factory



### Agronomy – fibre hemp

Commonly, no pesticides are used on the crop. The crop is fast growing and quickly forms a dense canopy which suppresses weeds. A pre-emergence broad spectrum herbicide will prevent competition with weeds in its early growth stages. Sowing should take place when there is no further risk of hard frost.

Fibre crops require a higher plant density than those required for seed production. Plant density has little effect on yield as self-thinning is seen at high plant densities. At low plant densities plants compensate by producing thicker stemmed plants which results in lower quality fibre. Optimal fibre yield can be achieved using a sowing rate of 180 seeds/m<sup>2</sup>.

- Sow late April onwards using conventional seed drill
- Stale seedbed approach is advantageous
- Apply 80kg – 120kg N/ha to the seedbed
- Aim for target population of 115 – 130 plants/m<sup>2</sup>
- Pesticides are not currently used

### Inputs

Fertiliser rate of 80 – 120kg N/ha is currently recommended, with little response visible at higher rates. Hemp flea beetle, *phyllotreta nemorum*, may be seen although the fast growing nature of the crop means control measures are rarely necessary. Potential fungal infections include *botrytis cinerea* and *sclerotinia sclerotiorum*, again control is seldom justified.

### Harvesting

To facilitate extraction of fibre from the woody core, following mowing in August the crop is left in the field for three to four weeks to rett. This allows fungal and bacterial breakdown of bonds between the fibre and the surrounding tissue. The crop is then rowed up and baled. It must then be stored, undercover, before delivery to the factory in order to maintain fibre quality.

### Productivity – fibre hemp

Teagasc trials at Oak Park have achieved yields of 12 t/ha during a three-year research trial from 1997 - 1999. Processors requiring year round supply may pay storage increments depending on date of delivery of the crop to the factory. Tokn Grain, Offaly, currently have contracts for 2008, offering from €150/t for delivery in September to €180/t for delivery the following August. Tokn Grain can be contacted on 087 2543025.

### Dual hemp

Dwarf or dual hemp varieties have recently been introduced in the UK, most notably the variety finola. These varieties are much shorter, reaching just 1.5m in height and are grown primarily for seed production. The small amount of straw produced may be used in certain fibre applications, such as composite manufacture for construction and automotive materials.

### Hemp oil uses

Hemp oil has both industrial uses and applications in the health supplement and personal care markets. It contains many essential fatty acids thought to be of benefit to human nutrition. Hemp oil has similar industrial uses to that of linseed oil in paints and varnishes and may also be used in printing inks and solvents.

### Agronomy – dual hemp

Sowing rates are reduced compared to those used for fibre production. A sowing rate of 25 kg/ha will generally give an adequate plant population.

- Sow late - April/May
- Nitrogen 60 – 100Kg/ha
- No herbicides or pesticides
- Direct combined
- Harvest - August/September

### Harvesting and storage

The crop is harvested using a conventional combine harvester and the straw is baled for fibre use. Seed should be dried to nine per cent moisture and cleaned to two per cent moisture admixture.

### Productivity – dual hemp

Yields of 1.5 t/ha of seed are possible, with a straw yield of 1.5 t/ha.

Contact Michael Harnett, Warringstown, Co. Down, re sale of dwarf variety seed.

Telephone: 0044 7802 276737 or email: mike@waringestate.com



#### Further information:

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