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Tasmania

Mr Charles Casimaty
Secretary
Standing Committee on Environment, Resources and Development
House of Assembly
Parliament House
HOBART TAS 7000

Dear Mr Casimaty

Tasmanian Hemp Industry Inquiry

Please find attached a whole-of-Government submission addressing the Terms of Reference of the Tasmanian Hemp Industry Inquiry being undertaken by the Standing Committee on Environment, Resources and Development.

The submission is the result of a collaborative effort by the Departments of Primary Industries, Parks, Water and Environment, Health and Human Services, Police and Emergency Management, and Economic Development, Tourism and the Arts. Each Agency has addressed issues pertinent to its area of responsibility in relation to industrial hemp.

The submission reflects the Tasmanian Government's support for the development of a commercial hemp industry in the State, and removal of the current National prohibition on the production, processing and selling of hemp seed products for human consumption.

Should the Standing Committee wish to discuss any matters contained in the submission, please contact Ms Cheryle Hislop on telephone 6233 6555 or email cheryle.hislop@dpipwe.tas.gov.au and she will direct you to the State Government Agency officer best placed to respond to the query.

Yours sincerely

Kim Evans
SECRETARY

3 May 2012

Department of Primary Industries, Parks, Water and Environment

SUBMISSION TO THE STANDING COMMITTEE ON ENVIRONMENT, RESOURCES AND DEVELOPMENT INQUIRY INTO THE TASMANIAN HEMP INDUSTRY

INDEX

INTRODUCTION AND OVERVIEW OF SUBMISSION

The Tasmanian Government fully supports the advancement of agricultural industries in our State, including industrial hemp (*Cannabis sativa*). *Cannabis sativa* includes plants which have low levels of the psychoactive substance, tetrahyrocannabinol (THC). It has been identified as a potential crop in the Tasmanian Government's *Wealth from Water* program, and an enterprise profile and gross margin analysis is available on the Department of Primary Industries, Parks, Water and Environment (DPIPWE) website.

The hemp enterprise profile prepared by Macquarie Franklin concluded that a viable Tasmanian hemp industry would most likely need to focus on the potential high value human consumption segment of the market. The economies of scale achievable in Tasmania are likely to be too low to support a hemp industry focussed on low-value products such as fibre or oil for cosmetics. Without access to a domestic human consumption market, the Tasmanian industry is unlikely to realise any significant commercial expansion.

Our licensing system for hemp is not onerous in comparison to other Australian jurisdictions, and it costs considerably less to obtain a licence here than in other States and Territories.

The Tasmanian Government is eager to see the National ban on hemp products for human consumption lifted and looks forward to the completion of the Food Standards Australia New Zealand (FSANZ) review into this matter in October 2012.

The following submission represents a whole of Government view of issues impacting upon the production and value adding of industrial hemp in Tasmania, and the commercial and regulatory opportunities and impediments to the establishment, development and maintenance of a wider hemp industry.

TERMS OF REFERENCE

a) Matters impacting upon the production and value adding of industrial hemp in Tasmania

International and Domestic Instruments

There are a number of United Nations treaties in place relating to international drug control, including plants of the genus *Cannabis.*

Human consumption of all cannabis products is prohibited under the Australia New Zealand *Food Safety Code.*

Schedule 9 (Prohibited Substances) of the National Standard for the Uniform Scheduling of Medicines and Poisons allows an exemption from scheduling for "processed hemp fibre containing 0.1 per cent or less of THC and products manufactured from such fibre". In addition Schedule 9 of the Standard provides that hemp seed oil containing 50mg/kg or less is exempted.

All States, aside from South Australia, allow the cultivation and or processing of industrial hemp either through issuance of a licence or authority.

Appendix 2 provides further details.

Review of the *Food Safety Code.*

Australia currently imports hemp seed oil for use in cosmetics. Hemp seed oil is composed of 45 per cent oil, 35 per cent protein and 10 per cent carbohydrates and fibre. Internationally, hemp seed oil is used in a range of cosmetics, pharmaceuticals and food for animals and humans.

Australia is the only OECD country prohibiting the use of hemp seed products for human consumption.

An application to permit the sale of food derived from hemp with low THC content is currently under consideration by FSANZ.

FSANZ will provide its report and recommendations to the Australian Parliament in October 2012. (See Appendix 3 for more detail on the current FSANZ review.)

Industrial Hemp in Tasmania: Current Environment

Tasmanian Legislation

In Tasmania, there are two key Acts: (i) the *Poisons Act 1971*, which enables the production and processing of industrial hemp; and (ii) the *Misuse of Drugs Act* 2001, which gives police the ability to prosecute those cultivating Cannabis without the appropriate licences.

The Poisons Act 1971 (Tas)

The *Poisons Act 1971* defines 'Indian Hemp' (described as including any plant or part of a plant of the genus *Cannabis*) as a "prohibited" plant. The growing of a prohibited plant is not permitted except in accordance with a licence granted by the Minister responsible for the Act.

Section 52 of the *Poisons Act* allows the Minister to grant a license to grow or cultivate a prohibited plant.

The listing of Indian Hemp Seed in Schedule 8 of the Tasmanian *Poisons List* allows licences to be issued to obtain seed, to grow crops and for the harvested seed to be held by licensed manufacturers or wholesalers. The licensee can then grow and trade hemp seed and products.

The seed, once it is subject to a process that causes its denaturisation, is no longer restricted under the *Poisons Act and Regulations*. Similarly, the oil[1] once it is below the required 50mg/kg THC content in the Standard for Uniform Scheduling of Medicines and Poisons (SUSMP) is also exempt.

The remaining products (fibre and stalk) of a low THC crop are not subject to any restrictions or scheduling once the seed is removed and can be used for any products that the grower wishes.

The substance *Cannabis sativa* is what is scheduled and the fact that a plant grown from seed may result in low THC content cannot be determined without appropriate testing. Of the four crops grown last season in Tasmania, two recorded a level of THC which, despite being below the 0.35 per cent maximum threshold identified in Tasmania's standard production

[1] It should be noted that there is no THC in the seed itself, however, the it is found in the bract that surrounds the seed (Wirtshafter, D (1997), "Nutritional value of hem seed and hempseed oil", In *Cannabis in Medical Practice,* M.L. Mathre (ed) McFarland and Company Inc: North Caroline 181-191.

licence, were still detectable. There is no way to guarantee that certified seed planted for industrial hemp will on every occasion grow a 100 per cent low THC crop (i.e. below 0.35 per cent).

Misuse of Drugs Act 2001 (Tas)

The *Misuse of Drugs Act 2001* provides for the control of substances and plants identified in the Act and imposes significant penalties for the trafficking of Controlled Plants. *Cannabis sativa* is listed as a Controlled Plant as follows: Cannabis (other than as separated resin, oil or individual plants) trafficable quantity not less than one kilogram; Cannabis (as individual plants) not less than 20 plants; Cannabis (in individual packages) not less than 20 packages; Cannabis oil not less than 25 grams; and Cannabis resin not less than 25 grams. Criminal penalties apply under the Act.

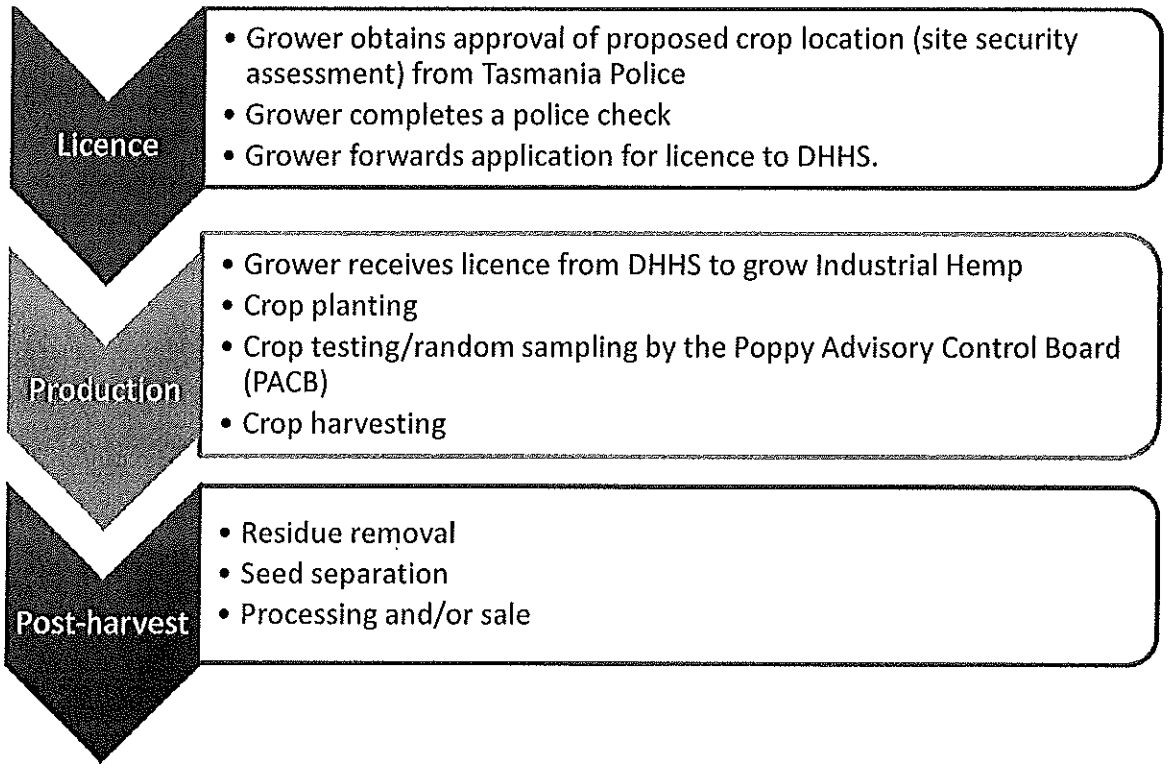
Cannabis sativa comprises both high and low THC varieties. As they are not able to be visually distinguished, it is not appropriate that high and low THC varieties be differentiated under the Act because to do so would require significant police resources. The licensing of low THC production under the *Poisons Act 1971* assists in the policing of Cannabis.

The *Misuse of Drugs Act 2001* does not affect any provisions made by or under the *Poisons Act 1971* or renders unlawful anything done in accordance with any such provision (section 4).

Tasmania's Regulatory Framework and Licensing Process

Licences to import, grow, manufacture and process hemp are granted by the Department of Health and Human Services (DHHS) under Ministerial delegation with the cooperation of Tasmania Police and the Department of Justice, and in accordance with the provisions of the *Poisons Act 1971.*

The conceptual framework for grower licensing is as follows:



To date, all legitimate applicants in Tasmania have been granted licences. The existing regulatory and licensing structure does not limit the growth of scheduled plant product industries, as has been demonstrated by the continued growth of the poppy industry in the State.

Cannabis crops are subject to random sample testing. Those which exceed maximum allowable tolerances of 0.35 per cent THC must be destroyed. There has been no need to destroy any crop to date as all testing has indicated THC levels below the maximum level. The highest level recorded in season 20011/12 was 0.27 per cent.

The Poppy Advisory and Control Board (PACB) is the State Government authority responsible for the processing of applications for licences to grow poppies and also undertakes hemp crop sampling on behalf of the DHHS.

Applications for a licence to the DHHS must include the grower's name, property identification, location, total area of hemp to be planted, the variety and details of the wholesaler to whom the harvested seed will be supplied.

A 1:25 topographical map (or hand drawn map) must accompany the application to ensure a speedy assessment, showing:

- The property location
- Proposed production area
- Fence lines
- Roads
- Residences
- Storage facilities
- GPS coordinates for the paddocks intended for hemp production. (Hemp production sites need to be endorsed by Tasmania Police.)

If the applicant is not the owner of the property, evidence from the owner must be provided indicating consent to the use of their property for the cultivation of hemp.

Tasmania Police process National and State police checks for the purposes of hemp growing applications. These requests are generally processed within 14 working days.

In addition, Tasmania Police checks proposed growing sites. Consideration is given to site security, and Tasmania Police may recommend the planting of screening crops if a hemp crop is to be grown in a publicly prominent position. This may help protect the grower from incidents of theft.

Tasmania Police continues to maintain a role in the investigation and prosecution of any incidents of theft of plants from low THC crops.

The time taken to process the licence can vary and may be delayed if all necessary details are not provided, or if police approval and clearance has not been obtained

Wholesalers and/or manufacturers intending to process hemp must also obtain the appropriate licence and undergo a police check.

Fees

Currently DHHS does not charge for the issuing of growers' licences under Section 52 of the *Poisons Act 1971*. Other licence applications attract different fees depending on the nature

of the application. The application fee currently charged by DHHS does not represent the actual administrative and time cost of processing. Some jurisdictions charge up to $600 for the initial application for a hemp licence (see Appendix 2 for details of other jurisdictions' hemp licensing requirements). Fees are set in accordance with the *Fees Unit Act 1997* and are gazetted on 1 July each year.

Type of Licenses	Fee[1]
Grower	Nil
Wholesaler	$ 84
Manufacturer of narcotic (Schedule 8) substances	$490

All applicants are required to provide a completed police check before licences can be approved. Applications from individuals who have not previously applied for a poppy or hemp licence will be asked to provide a National Police Record Check (currently at a cost of $45). Subsequent applications will usually require only a Tasmania Police Record Check.

Crops undergo routine inspections (free of charge) by PACB field officers at least twice during the growing season. A third visit is made near flowering time to collect random samples for laboratory analysis. The cost of these analyses is borne by the crop licence holder at the commercial rate of the testing laboratory. As a guide the test usually costs about $600.

Agronomy of Hemp and Tasmanian Government Support Tools for Industrial Hemp Production

Industrial hemp will grow in a range of climates and soil conditions but performs best in well drained soils and temperate climates. As a summer crop, it is ideally sown in November and harvested in February. It requires some irrigation and nitrogen rich fertiliser.

Hemp is considered a sound rotational crop for mixed farming systems and is well suited to organic agriculture because of its ability to improve soil structure and low herbicide, fungicide and insecticide requirements.

As a rule, industrial hemp can be grown for either fibre or seed but not both, as varietal growing and harvesting requirements differ.

Tasmanian growing conditions are well suited to the production of hemp seed varieties and processing companies regard Tasmanian seed as a quality product[2]. During the last few years semi commercial scale crops around Cressy and Bishopbourne have been grown for seed stock and seed extracted products.

[2] Macquarie Franklin Pty Ltd, Enterprise Profile – Hemp 2011. Available http://www.dpiw.tas.gov.au/inter.nsf/Attachments/JBAS-8MU47J/$FILE/WfW_EnterpriseProfile_Hemp.pdf

Most of the seed produced in Tasmania is purchased by one company that uses it primarily for seed multiplication and some oil extraction.

Industry intelligence suggests that there is some interest in producing other varieties of hemp in Tasmania better suited to oil production. One company which is already producing hemp seed oil for the New Zealand market intends to trial a variety of seed (up to 60 hectares) this season in Tasmania.

In 2011, several gross margin analyses were prepared for the State Government's Wealth from Water Program on a broad range of enterprises to assist farmers and investors in determining those which offer the best return on irrigation investment. These included a gross margin analysis for hemp seed production in high rainfall areas. The information was prepared by agricultural consultants Macquarie Franklin Pty Ltd. In addition, a hemp enterprise profile was developed to provide background on market opportunities. The analysis showed that hemp seed production, returning $1,500 per hectare, is competitive with a range of crops such as cereals, canola and pasture seed production[3]. It should be noted, however, that the industry is at a semi commercial stage and margins vary according to individual production practices.

(b) Identification of commercial impediments, as well as any regulatory impediments at local, state or federal level impacting on the establishment, appropriate development and maintenance of a wider industrial hemp industry;

Production, Processing and Market issues for Tasmania's Hemp Industry

In the past industrial hemp was viewed with considerable scepticism by mainstream farmers because of overly optimistic claims, the difficulty of attracting producers, and lack of willingness and capacity to grow crops of sufficient scale to justify investment. Some industry proponents suggest that views are changing as farmers look for viable crop alternatives in their farming rotations.

Trial plantings of industrial hemp in the early 1990's in Tasmania focused on the potential of hemp fibre as a paper pulp alternative. Information from these trials led to the conclusion that the scale of production required to make the harvesting, transporting and processing of hemp fibre economically viable was unlikely to be achievable in Tasmania[4], primarily because:

a) the significant costs in relation to transporting hemp considering its very low weight per unit of volume. Anecdotal evidence suggests that as a general rule, milling facilities need to be within 50 kms of the crops;

b) processing of hemp for fibre is technically complex and requires significant investment in infrastructure, including processing and storage facilities and purpose built harvesting equipment;

c) processing also requires a large volume of dry hemp material as bast fibre is recovered at a rate of 35-40 per cent of the stem[5]. Anecdotal evidence suggested the

[3] The gross margin analysis did not include cost of field testing to monitor THC levels.
[4] Macquarie Franklin Pty Ltd Enterprise Profile – Hemp 2011.
[5] Industrial Hemp a new crop for NSW DPI NSW 2008. Available

minimum scale is about 2,500 hectares. Australia's only hemp fibre processing mill was recently built in the Hunter Valley in NSW[6]; and

d) to achieve a viable gross margin, evidence suggests that production needs to be on a broad acre basis similar to other crops such as cotton, soybean and sorghum[7].

For these reasons, the opportunities for industrial hemp in Tasmania relate to seed rather than fibre production. Hemp seed can be harvested using standard equipment, and transport is less costly because of the lower bulk-to-value ratio. Harvest waste can be used as mulch but is usually burnt or dug in to improve soil quality.

In addition, research suggests that growing hemp for seed and seed oil products offers greater market potential and requires significantly less investment in infrastructure[8]. Hemp seed oil extraction involves cold pressing seed; a process similar to that used for olive oil. Hemp seed oil and shelled hemp seeds require certain storage conditions. Hemp seed oil is highly unsaturated and becomes rancid if exposed to air, light or heat so it must be stored in dark-coloured, refrigerated containers, similar to the requirements of some essential oils. While hemp seeds are less sensitive, they still require storage in sealed, opaque bags and must be refrigerated once the seal is broken. Hemp seeds and seed oil have shelf lives of approximately 12 months unless frozen.

Unlike the poppy industry which developed in Tasmania because of strong global demand, the hemp sector is still driven by producers looking for a market. For the sector to reach a viable commercial scale there would need to be considerable investment in the development of markets and distribution channels. However, issues regarding cost competitiveness in relation to other regions remain.

The global market for hemp fibre is dominated by countries such as China, North Korea, Chile, Romania and Russia which have low labour costs and or high levels of subsidisation. These countries have been producing hemp fibre for many decades and have well established infrastructure and technical capability[9].

Canada is now one of the world's leading hemp seed oil producers and exporters. According to a leading Canadian hemp trade group (the Canadian Hemp Trade Alliance (CHTA)), the harvesting, shelling and processing technologies for conventional oil seed crops in Canada are suitable for handling hemp grown for seed, enabling acreage to expand as soon as markets are found. A favourable court decision in 2004 re-opened the United States (US) market, allowing for substantial and rapid gains in US exports. Information on the history of

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http://www.dpi.nsw.gov.au/_data/assets/pdf_file/0020/232823/industrial-hemp-a-new-crop-for-nsw.pdf

[6] Macquarie Franklin Pty Ltd enterprise profile - hemp 2011.

[7] [7] Industrial Hemp a new crop for NSW DPI NSW 2008

[8] Industrial Hemp and Its potential for New Zealand 1999.

[9] In 2010 the Food and Agriculture Organization of United Nations (FAO) reported production of industrial hemp tow was approximately 70,000 tonnes. Despite increases in global production since the late 1990's, current production is well below levels of the 1970's in which in-excess of 200,000 tonnes was produced. The decline over the last 80 years has resulted primarily from prohibition (1930's) and increased competition from other products. There has been a more recent increase as a result of the re-legalisation of hemp-growing in most western countries. China currently contributes 63 per cent of the world's production of industrial hemp (fibre) followed by North Korea 18.5 per cent, Chile 6.2 per cent and Europe 11.8 per cent - Romania, Russia, Italy, France and Ukraine. China also produces the majority of hemp seed (46,000 tonnes).

hemp and production trends in Canada is available on the Government of Alberta's website.[10]

The world's ageing population, increasing social affluence and greater scientific evidence linking nutrition with health has resulted in expanding markets for functional food and health products. As a result there is growing interest in products like hemp seed oil. These markets are, however, very small and although industry intelligence suggests that markets are growing and prices are reasonably stable, they are subject to the impact of large scale producers.

Many industry proponents believe that changes to the FSANZ Code to allow industrial hemp extract to be used in food products for human consumption in Australia will open up a range of higher value niche market opportunities for seed producers. Industrial hemp, like any other enterprise, needs to be competitive with other similar crop options before growers will commit to production. Although there is evidence to suggest there is growing global demand for natural fibres and health food products, this has yet to result in any significant commercial success for Australian producers.

CONCLUDING REMARKS

The growing of low THC crops has long been supported by successive Tasmanian Governments and industrial hemp crops have been grown in the State since 1991. The existing ability to licence low THC hemp under the *Poisons Act 1971* **allows** farmers to grow this crop, subject to meeting licensing and growing conditions. The material derived from low THC hemp crops can then be used for a variety of commercial purposes. No matter what the THC level, *Cannabis sativa* remains a prohibited plant across Australia.

Whilst production licences contain conditions, including the need for secure fencing, police clearances and that growers not publicise the location of crops, these conditions are not likely to inhibit the growth of the industry. To date, all legitimate applicants have been granted licences and there is no charge for issuing licences.

If hemp seed was not included in the *Poisons List* as a Schedule 8 substance, the plant would remain prohibited and subject to controls and offence provisions under the *Misuse of Drugs Act 2001.* It is because hemp seed is a Schedule 8 substance in the Tasmanian Poisons List that the issuing of licences to trade in seed can continue.

Cannabis sativa is a prohibited plant in **all** jurisdictions and the only way to allow the growing of low THC is to license these crops. Other cannabis material remains a Prohibited Plant.

[10] http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/econ9631

Appendix One

Hemp Fibre and Seed Uses and Products

Hemp Fibre Products

Hemp products are derived from the stem and seeds of the plant. A cross section of a hemp stem reveals green bark containing very long, strong fibres. These are the *bast* fibres that have been used for centuries to make clothing, rope, twine and paper. The white core, called *hurd*, is very light and corky and contains very short fibres.

A process called retting helps separate the bast and hurd fibres by breaking down the bond that binds them. Traditionally, retting is accomplished by letting the stalks lay in the field for several weeks depending on weather conditions (dew retting) before baling. After retting, the stalks are mechanically decorticated, a process where long fibres are separated from the hurds. Without retting, decortication can result in fibres with relatively high hurd content, or result in increases in the cost of decortication.[11] It has been suggested that the relatively long dry nature of the Tasmanian growing season is well suited to a harvesting system where the straw is dried naturally in the field.[12]

Bast, or primary fibre, is among the strongest and most durable of natural fibres, with high tensile strength, wet strength, and numerous other characteristics ideal for industrial products. Bast fibres have low lignin content (the natural polymer that binds plant cells), which allows it to be bleached without the use of chlorine.

Hemp bast fibre is used for cordage (rope, twine etc), clothing fabrics, specialty papers, biocomposites and industrial textiles such as carpeting and geotextiles. Its strength and durability also make it ideal for moulded car parts and fibreboard for construction. The United Kingdom (UK) company, Hemcore, is currently providing all BMW Series 5 cars with hemp door panels. Hemp is also used for internal components in Mercedes Benz A and S class vehicles.

Hemp hurd makes up approximately 75 per cent of the hemp stalk and is composed of cellulose-rich short fibres that are soft and absorbent, making hurd ideal for animal bedding and industrial absorbents. Hurds are also used to make low quality paper. More recently, hemp has been used to produce a concrete-like substance known as hempcrete for use in building applications, insulation and fibreboard.

A UK manufacturer of hempcrete claims that its product absorbs carbon dioxide during the manufacturing phase, is highly insulating, has thermal inertia (changes temperature much more slowly than traditional building materials) and creates a breathable walling system for healthy living.[13]

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[11] Manitoba Agriculture, Food and Agriculture Initiatives: "Fibre production". Available: http://www.gov.mb.ca/agriculture/crops/hemp/bko05s12.html Date of access 1 July 2009

[12] Lisson, S. (1998): *Hemp and Flax as Sources of Fibre for Newsprint Production.* PhD thesis, University of Tasmania, 62-63.

[13] www.limetechnology.co.uk/pages/hemcrete.php Date of access 25 June 2009

The entire hemp stalk can be used to produce various biofuels such as bio-oil, ethanol, synthetic gas and methane. The low lignin content makes it ideal for ethanol production. The bast fibre can also be removed first for use in high value fibre applications, and the remaining hurd processed into biofuel. Other valuable chemicals and bi-products may also be produced during biofuel processing.

Value-adding

Hemp has outstanding value-adding potential. For example, the UK hemp producer, Hemcore Ltd, has adopted a zero waste processing philosophy and manufactures the following products using most of the plant and all of the waste:

- Animal bedding
- Biomats (fully biodegradable hemp fibre fabric for landscaping, tree planting, mulching, erosion control and horticulture)
- Hemp logs (greater heat generation than seasoned timber and carbon neutral during burning)
- Hemp insulation
- Hemp and lime construction
- Hemp fibres
- Hemp *shiv* (an absorbent, low-density cellulosic material that comes from the core of the hemp plant) and *fines* (cellulosic dust from the hemp plant that is graded and cleaned to remove the mineral component to be used as a filler in plastics, in lime render, compressed into logs for use as a fuel, or as a soil improver)
- Hemp seeds[14]

Hemp Seed Products

Derived from seed, hemp oil is highly nutritious and is used in animal and human foods, health products and skin care products. It is also suitable for use in industrial products such as lubricants, varnishes, paints and inks and can be used to produce biodiesel.

It is considered superior to flax oil in terms of yield, taste, nutrition and production ecology. Fresh raw hemp seeds have a pleasant nutty flavour that can be modified to taste which, with added flavouring, are sold (although not in Australia) as nutritionally sound snack foods, as well as being ground down to seed meal to include in muesli bars, ice creams and other food products. Hemp seed oil can be used as a substitute for vegetable oils because of its superior nutritional qualities. Fresh hemp seed oil is green because of the chlorophyll found in the seed, or nut, as it technically is. Like flax oil, it must never be used for frying, as this causes a 'molecular twist' that results in a product dangerous to human health.[15]

Research indicates that few other food oils come close to the exceptional fatty acid profile found in hempseed oil. It contains very high amounts of the two fatty acids that are essential to human health; lineolic acid (LA) and alpha-lineolic acid (ALA). Hemp seed also has

[14] Hemcore Ltd. Available: http://www.hemcore.co.uk/ Date of access: 2 July 2009
[15] Callaway, J. C (2002), "Hemp as Food at High Latitudes", *Journal of Industrial Hemp* v7 no.1, 105-117)

excellent protein qualities and is considered a 'complete' food in the sense that all essential amino acids are available in nutritionally significant amounts and are easily digestible.[16]

Hemp seed oil is vulnerable to light and oxygen and exposure can result in peroxides that are toxic when consumed over long periods of time. Extreme care must be taken to produce high quality foods from hemp seed, which must be pressed under nitrogen with added antioxidants and stored in a cold dark place until use. It should be noted that there is no THC in the seed itself, although it is found in the bract that surrounds the seed.[17]

Asian cultures have been using Cannabis seed as a food and medicine for millennia. Toasted seeds are still sold in the markets of China and raw seeds are exported as birdseed. In Eastern Europe, hemp 'butter' is considered a delicacy.[18]

[16] Wirtshafter, D. (1997), "Nutritional value of hemp seed and hempseed oil". In *Cannabis in Medical Practice*, M.L. Mathre (ed), McFarland & Company Inc: North Carolina), 181-191.
[17] Callaway, p. 115.
[18] Callaway, p. 107

Appendix 2

International Instruments and Domestic Regulatory Framework for *Cannabis Sativa*

International treaties

Australia is a party to the following three United Nations treaties which directly refer to international drug controls:

- Single Convention on Narcotic Drugs, 1961
- Convention on Psychotropic Substances, 1971
- United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances, 1988

Commonwealth legislation

The Australian Government undertakes import controls of Cannabis under the *Customs Act 1901 (Cth)*. The National Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) includes the genus *Cannabis* as a 'Prohibited Substance', except as processed hemp fibre containing 0.1 per cent or less of THC and products manufactured from such fibre. All Australian jurisdictions adopt the SUSMP into their respective legislation.

Human consumption of all cannabis products is prohibited under the Australia New Zealand *Food Safety Code.* An application to permit the sale of food derived from hemp with low THC content is currently under consideration by FSANZ. The Australia New Zealand Food Safety Code under Schedule 1 of Standard 1.4.4 prohibits the addition of hemp and hemp products to food.

Schedule 9 (Prohibited Substances) of the National SUSMP allows an exemption from scheduling for "processed hemp fibre containing 0.1 per cent or less of THC and products manufactured from such fibre". Tasmania allows the growing of plant material containing up to 0.35 per cent THC (dry weight) under its licensing conditions.

The substance THC is also captured by Schedule 9 of the SUSMP; hemp seed oil containing 50mg/kg or less is exempted. The oil may be used in Australia for topical use but is prohibited for human consumption by FSANZ through the Food Safety Code Standard 1.4.4. This is a Commonwealth requirement. FSANZ is currently reviewing this prohibition and will provide recommendations to the Australian Government in October 2012 (see FSANZ website). The Tasmanian Government supports the use of low THC hemp product in food.

Australian Capital Territory

The *Hemp Fibre Industry Facilitation Act 2004* allows for the processing and marketing of, and trade in, industrial hemp fibre and fibre products, and seed and seed products, as long as seed and seed products are not for administration, consumption or smoking. Industrial hemp must not exceed one per cent THC in the leaves and flowering heads, and may be cultivated under licence from certified hemp seed. Certified hemp seed must be seed harvested from a plant with a THC concentration in its leaves and flowering heads of not more than 0.5 per cent. The difference recognises that the leaves and flowering heads of

plants grown using certified hemp seed may have more than 0.5 per cent THC because of environmental conditions beyond the grower's control.

New South Wales

The *Hemp Industry Act 2008* authorises and regulates the cultivation and supply of low-THC hemp in New South Wales, along with the *Hemp Industry Regulation 2008*. Low-THC hemp, being hemp with no more than one per cent THC in the leaves and flowering heads of the plant, may be cultivated under licence. Seed must be supplied on the basis that it will produce hemp with no more than 0.5 per cent THC in the leaves and flowering heads, and a licensee must not supply hemp that exceeds one per cent THC.

Northern Territory

The *Misuse of Drugs Act 2010* has exemptions for processed fibre hemp products, processed products made from hemp seeds as long as they are not whole, and hemp seed oil for external use containing less than 0.005 per cent THC. *Cannabis* is defined as any plant of the genus *Cannabis*, and no further exemptions allowing for the legal sale and/or cultivation of low THC varieties of hemp in the Northern Territory are made.

Queensland

In Queensland, Part 5B *Commercial production of industrial Cannabis* of the *Drugs Misuse Act 1986*, and Part 4 *Commercial production of industrial Cannabis*, of the *Drugs Misuse Regulation 1987* allow for the processing and marketing of, and trade in, industrial *Cannabis* fibre and fibre products; and the processing and marketing of, and trade in, industrial Cannabis seed and seed products, other than for the purpose, directly or indirectly, of producing anything for administration to, or consumption or smoking by, a person. Industrial Cannabis may be grown under licence. Commercial industrial Cannabis plants grown for seed or fibre must not exceed one per cent THC under the Act, and may only be grown from seed certified to produce plants with no more than 0.5 per cent THC. The difference allows for variations in THC concentrations in the leaves and flowering heads of the plant due to environmental conditions beyond the grower's control.

South Australia

Low trial yields have been demonstrated in South Australian research into the cultivation of hemp[19], and at present there is no legislation in place in South Australia to allow for its commercial cultivation. The *Controlled Substances (General) Regulations 2000* covers controlled drugs (including Cannabis) and controlled plants (including Cannabis plants). An exemption is made under the *Controlled Substances (General) Regulations 2000* to allow for the sale of hemp seed oil for external use containing no more than 50 mg/kg THC for external use.

Victoria

The *Drugs, Poisons and Controlled Substances Act 1981* and the *Drugs, Poisons and Controlled Substances (Industrial Hemp) Regulations 2008* allow for the cultivation and processing of low THC plants under authority in Victoria for commercial or research purposes relating to non-therapeutic use. Cannabis may be cultivated from seed harvested from low-THC cannabis, and may be sold or supplied when substantially free of flowering

[19] from *An Information Paper on Industrial Hemp (Industrial Cannabis)*, accessed 7 July 2010 from http://www.agric.wa.gov.au/objtwr/imported_assets/aboutus/as/information_paper_2008.pdf

heads and leaves and containing no more than 0.1 per cent THC. Low THC Cannabis is defined as containing no more than 0.35 per cent THC in the leaves and flowering heads.

Under the *Poisons and Controlled Substances Act 1981*, processed fibre products may contain a maximum of 0.1 per cent THC, must not contain whole Cannabis seeds, and must not be in a form suitable for ingestion, smoking or inhalation. Processed seed products may contain no more than 0.001 per centTHC and must not contain whole seeds.

Western Australia

Western Australia's Industrial Hemp Scheme is administered by the Department of Agriculture and Food under the *Industrial Hemp Act 2004* and the *Industrial Hemp Regulations 2005*. Suitable companies or individuals may obtain a licence to cultivate, harvest and/or process industrial hemp. Industrial hemp is defined as *Cannabis* containing no more than 0.35 per cent THC in the leaves and flowering heads. Industrial hemp seed is that which is certified as having been produced from industrial hemp or that which will produce industrial hemp when cultivated. Crops must be grown from approved seed sources, and seed harvested and intended for further crop production must be cleaned at a Registered Seed Works, and officially sampled, tested and labelled by the Western Australian Department of Agriculture and Food.

Imports

The *Customs (Prohibited Imports) Regulations 1956* prohibit the import into Australia of a Schedule 4 (of the Regulations) controlled substance unless the person importing the drug holds a licence or permission to import that substance (licenses and permissions are granted by the Secretary of the Department of Health). Cannabis, Cannabis resin, and tetrahydrocannabinols, including all alkyl homologues of tetrahydrocannabinols, are all listed in Schedule 4 as controlled substances. There is no distinction in the Regulations between Cannabis and low THC hemp. Cannabis products intended for human consumption cannot be imported into Australia under the Regulations.

New Zealand

The *Misuse of Drugs (Industrial Hemp) Regulations 2006* enables the cultivation and distribution of industrial hemp under a licensing regime that ensures other forms of Cannabis are not cultivated and distributed under the guise of industrial hemp.

Industrial hemp is defined as hemp in the form of:

(a) plants with a THC content that is generally below 0.35 per cent and not above 0.5 per cent; or

(b) seeds harvested from plants of that kind.

A licence is required to cultivate industrial hemp. The licence is issued for one year but can be extended up to a maximum of three years. The licence details the exact activities which can be undertaken, by whom and where. Each individual along the supply chain needs to be named on the licence. In addition the licence lists which cultivars can be grown.

The licence requires various records to be kept including source, type and amount of seed, how much is planted, how much is harvested and an explanation for any discrepancy between numbers planted and yield.

Only hemp seed oil is permitted for human consumption as a food in New Zealand, providing it is derived from Cannabis seed from plants that are grown under a licence issued by the Director-General of the Ministry of Health. Imported hemp seed oil must first be tested by in a laboratory approved under the provisions of the *Misuse of Drugs Act 1975* before it can be authorised for sale and use.

As hemp seeds can only be supplied under licence to another individual who has a valid licence, controls on the viability of hemp seeds has not been addressed under New Zealand legislation.

The New Zealand Ministry of Health has issued guidelines for the sampling of industrial hemp for testing. The objective is to ensure hemp plants have a THC content of less than 0.35 per cent. Transport of samples for testing to an authorised laboratory is at the discretion of the grower/licence holder but needs to be fast and secure.

Under the *Misuse of Drugs (Industrial Hemp) Regulations 2006*, any reference to psychoactive activity must not appear in any advertisement associated with hemp products, including oils.

Appendix 3

Food Standards Australia New Zealand (FSANZ): Application A1039 Low THC Hemp as a Food

FSANZ received an application in December 2009 seeking approval for the use of seed and seed products of *Cannabis sativa* with low levels of THC as food. Standard 1.4.4 – Prohibited and Restricted Plants and Fungi in the *Australia New Zealand Food Standards Code* currently prohibits all species of Cannabis from being added to food or sold as food in Australia.

A previous application to FSANZ, Application A360, also sought approval for human consumption of hemp foods. During the assessment, FSANZ did not identify any safety concerns arising from the potential consumption of hemp products and recommended the removal of the prohibition and introduction of maximum levels of THC in specified hemp foods.

In May 2002, however, the then Australia New Zealand Food Standards Council (ANZFSC) rejected the FSANZ recommendation. The Council was concerned that the use of hemp in food might send a confused message to consumers about the safety and acceptability of Cannabis, and difficulty for law enforcement agencies in distinguishing between low and high THC varieties of Cannabis. It was agreed that the prohibition should remain.

The FSANZ food safety assessment confirms that low THC hemp foods are safe to eat and may provide a useful alternative dietary source of many nutrients and polyunsaturated fatty acids, particularly omega-3 fatty acids.

The Tasmanian Government's preference on the sale of hemp for human consumption in *Australia New Zealand Food Standards Code* to be lifted is well known to FSANZ.

Tasmania is a signatory to the Council of Australian Governments (COAG) Food Regulation Agreement 2008 which in essence binds us to adopting and administering food laws that are agreed to through the National food regulatory system. Whilst Tasmania could in theory ignore the Agreement and proceed unilaterally on any matter contrary to the Code, in this case the benefit would be questionable as hemp-based foods made legal in Tasmania would remain illegal in other States and Territories.

Appendix Four

Enterprise Profile - Hemp[20]

Prepared by Macquarie Franklin Pty Ltd

Hemp production in Tasmania

Industrial hemp is the name used to describe low THC hemp varieties of Cannabis which have the potential for commercial uses. THC is the drug component of illicit varieties of Cannabis. There are close to 2,000 varieties of Cannabis of which only a handful are high in THC.

Low THC Cannabis can be grown in Tasmania under a licence administered by the Department of Health and Human Services under the 1971 Poisons Act. License conditions are similar to those imposed on the growing of poppies and compliance is monitored by the Tasmanian Poppy Advisory and Control Board.

Tasmanian growing conditions are well suited to hemp production and the hemp seed produced in Tasmania is sought-after by processing companies due to its superior quality relative to that available on the mainland.

Hemp marketing opportunities

Industrial hemp has two main uses; those based on the fibre content of the plant's stem and those based the seed and oil from the seed.

The outer stem, or bast fibre, is strong and suitable for making clothing, canvas and rope. More recently bast fibre has been developed into composite materials such as car panels and building materials in Europe and Canada. The inner stem, or hurd, is suitable for coarse fibre products such as animal bedding.

Australia currently imports hemp seed oil for use in cosmetics. Food Standards Australia New Zealand (FSANZ) has not identified any public health and safety concerns associated with consuming hemp foods. However, at present, hemp cannot be used in food in Australia and New Zealand as it is prohibited in the Australia New Zealand Food Standards Code. An exception is made for hemp seed oil in New Zealand.

Whole hemp seed is composed of approximately 45 per cent oil, 35 per cent protein and 10 per cent carbohydrates and fibre. Hemp is one of only two plants that contain both essential fatty acids (Omega 3 and Omega 6) as well as Omega 6 gamma linolenic acid, which has been found to have a range of human health benefits. Internationally hemp seed oil is used in a range of cosmetic, pharmaceutical and food products for humans and animals. Food products for human consumption are generally marketed as niche products based around the natural and health food segment of the market.

Hemp industry groups have been pushing for changes to the code to bring it in line with European standards, which would permit the sale of hemp-based products for human consumption. The completion of the FSANZ assessment is scheduled for public comment in mid November – late December 2011. A final gazetted decision is not expected before mid June 2012. If successful, the changes to the code would open up a range of high-value market opportunities for hemp producers.

[20] http://www.dpiw.tas.gov.au/inter.nsf/Attachments/JBAS-8MU47J/$FILE/WfW_EnterpriseProfile_Hemp.pdf

Opportunities for hemp production in Tasmania

The first plantings of industrial hemp in Tasmania focussed on the potential to use hemp fibre as a paper pulp alternative. The investigations found that while hemp had the potential to improve the strength characteristics of paper pulp, the scale of production needed to make the harvesting transport and processing of hemp fibre economic, is unlikely to be achieved in Tasmania. Australia's first hemp fibre processing mill is currently being constructed in the Hunter Valley, New South Wales.

Opportunities for industrial hemp in Tasmania are now focused on hemp seed production. During the last five years a number of semi-commercial scale hemp crops have been grown in the Cressy to Bishopsbourne area. Hemp seed produced from these crops has mainly been used for commercial planting seed stock and seed extract products.

As a rule growers need to focus on producing either hemp fibre or hemp seed as these crops have different growing and harvesting requirements. However, the stem residue remaining after harvesting hemp seed can be harvested separately and dried. Applications include ground cover mulches in orchards and bagged products for retail nurseries. Current legislation makes it very difficult to sell hemp as mulch due to the risk of seed transfer in the mulch material.

A viable Tasmanian hemp industry would most likely need to focus on the potential high-value human consumption segment of the market. The scale economies achievable in Tasmania are likely to be too low to support a hemp seed industry that only supplies seed for low-value non-human uses. Without access the potentially high-value hemp seed for human consumption market, the Tasmanian industry is unlikely to see commercial expansion.

Economics of hemp production

As industrial hemp production in Tasmania is still in a semi-commercial stage, the figures presented are indicative only and may vary depending on individual production practices.

A range of hemp seed yields have been obtained from Tasmanian crops, the highest being around 2t/ha, with most crops reliably producing 1t/ha of clean dried seed. Current prices paid are in the order of $3.50/kg.

Table 1 presents an indicative hemp seed gross margin prepared by Macquarie Franklin. At around $1,500/ha hemp seed production would be competitive with a range of crops such as cereals, canola and pasture seed production. Improvements in crop management that resulted in average yields reaching 2t/ha would significantly improve the competiveness of this crop.

Table 1: Indicative Hemp Seed Gross Margin

Income	$/ha
Hemp Seed	3,500
Total Income	**$3,500**
Variable Costs	
Seed	60
Fertiliser/Lime	380
Sprays	100
Irrigation	110
Water Cost	0
Contract Work	120
Contract Harvest/Cartage	940
Tractor & Plant	200
Casual Labour	60
Other	30
Total Variable Costs	**$2,000**
Gross Margin	**$1,500**

Hemp can be grown on a range of soils, yet performs best in free draining soils. To produce a commercial seed crop with high quality and yield, basal fertiliser applications are necessary. At present no pre or post emergent herbicides are registered for hemp in Australia and weed control is reliant on strong, even germination, and out-competing weed species.

Disclaimer (with Hemp Enterprise Profile)

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