

EXPANDING HEMP PRODUCTION IN NZ

Industrial hemp is probably the world's most recognisable, notorious and controversial plant. Legalisation of hemp cultivation in New Zealand in 2018 has led to the number of hectares grown increasing. However, in order for hemp to provide a viable alternative land use for NZ farmers, there are a number of key challenges that need to be addressed.

This summary document covers the key, high-level findings of "Potentially hemp. An analysis into the opportunity for the commercial expansion of hemp production in New Zealand", one of a series of reports prepared for the New Zealand Agricultural Greenhouse Gas Research Centre (NZAGRC).

These reports examine potentially viable diverse land uses in New Zealand that could provide alternatives to the largely monoculture and ruminant-dominated pastoral agriculture systems across our landscapes at a more expansive farm systems perspective.

A brief history of hemp in New Zealand

Industrial hemp (*Cannabis sativa* L.), one of the oldest crop plants known to humans, has been in decline since the first decades of the 19th century. This decline was due to competition from substitute crops grown in Asia and its relationship with marijuana, which caused industrial hemp in 1927 to be listed in New Zealand's Dangerous Drugs and Poisons Act. This prohibited all cannabis cultivation.

Many European, North American and ex-European colonial countries also banned industrial hemp cultivation for the best part of a century due to its relationship with marijuana. This significantly reduced the size of global industrial hemp industry until the 1990s when the global hemp industry started to make a comeback as the differentiation between industrial hemp and marijuana became better understood.

Since then, most countries have now legalised the production of hemp under regulation and license, a decision that is often controversial to many people involved in the industry.

New Zealand was slow relative to many other jurisdictions to allow hemp cultivation to become legalised, with hemp seed products being allowed to be sold as food from November 2018. This has led to the number of hectares grown increasing from 259 hectares in 2018 to approximately 1,200 hectares grown in 2020.

There are currently no hemp seed or fibre exports from New Zealand. However key opportunities for target markets are in the United States and wider North America. The USA is the most promising market for demand in hemp products, where 26% of new hemp products globally being launched in the USA between 2012 and 2018.

Key uses of hemp primary products

Hemp has three key products being seed, fibre and hurd.

Seeds have end uses in nutraceuticals, cosmetics, and health food ingredients. The nutritional content of the seeds gives it a health star rating of 4 under the NZ classification, being high in protein and unsaturated fats.

Hemp fibre is also growing in popularity as a textile fibre for upholstery, clothing and carpets.

Hemp hurd is the highly cellulosic component of hemp, of which can be used for industrial applications (e.g., hempcrete) or further processed into biofuels etc, through the process of cellulolysis.

The current value of the hemp industry is \$4 million in New Zealand with expected growth to reach \$30 million by 2030. There is further potential to be unlocked, however without regulatory change this will not be realised.

Currently, it is illegal to import or manufacture supplements or wellness products that contain cannabinoids. Any product containing more than a trace level of tetrahydrocannabinol (THC) and cannabidiol (CBD) are considered a prescription medicine or controlled drug. Therefore, the current industry is unable to tap into the high value global nutraceuticals market.

Current lack of commercial viability

The primary products of hemp are not all treated the same, and do not achieve the same revenue. A grower needs to decide if they intend upon developing hemp for seed or fibre and hurd production.

Analysis in the 'Potentially Hemp' report found that the financial returns at a gross margin level for hemp seed were higher than hemp fibre. Further financial analysis results showed internal rates of return for growers were 4.1% and 6.7% for seed and fibre base on 50 hectare crops. The higher level of capital required to grow, harvest and store hemp seed was the main reason for hemp seed having a lower internal rate of return compared to hemp fibre.

Hemp's inability to compete with the financial returns achieved by dairy farms in New Zealand would seem to be a significant driver as to why it is not considered to be a commercially viable alternate land use for these farm systems. It was identified that returns from hemp could provide another cash cropping option for sheep and beef farms that had land suitable for arable cropping in their businesses. However, these opportunities are limited given the small number of sheep and beef farms that sit in this category.

No secondary markets for hemp seed

Hulled hemp seeds are the only way hemp seed can currently be sold legally in New Zealand. The hulls themselves, the hemp seed cake or meal produced from hemp seed oil production, and the stubble left behind after harvest currently have next to no market.

These so-called waste products are considered a valuable stock feed but are unable to be fed in New Zealand because hemp or hemp products used as animal feed are regulated under the ACVM Act 1997 and it is an offence to use any ACVM regulated feed for this purpose. This extends to its use in food for companion animals. Furthermore, any traces of THC in lines of export meat could also result in the product being rejected.

Currently growers are at high risk of not receiving any revenue for seed crops that fail or for seed that doesn't meet food processing standards. This risk is too great for pastoral farmers considering hemp as an alternative land use option.

Establishing a domestic hemp market

There is no doubt that export markets provide a huge opportunity for the New Zealand hemp industry however it was concluded that establishing a solid domestic market was the best way for the industry to grow initially.

This would enable a well-functioning supply chain to be established and streamlining of the regulatory process involved in growing hemp and ultimately increasing demand so financial returns increase to levels that can start to be competitive with land uses currently on land suitable for hemp cultivation, primarily dairy farming.

Potential solutions for the industry

Several solutions for the hemp industry to consider, to become a viable land use alternative to pastoral farming systems in New Zealand include:

- Establish a solid domestic market.
- Research on the effects of feeding hemp products to companion animals to enable a potential secondary market. This will significantly reduce risk throughout the supply chain but particularly for growers.
- Improve hemp plant genetics so ensure that low THC cultivars do not produce higher than regulated levels.
- Further research on hemp economics especially beyond the farm gate and around incorporating hemp into sheep and beef farm systems.
- The strategic location of hemp processing facilities, particularly for fibre, to limit transport costs from farm to processor.

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