BIZCOMMUNITY

Why the world is scrambling to grow hemp

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There is a not-so-new crop, as old as the mountains, but one that the world is nowadays scrambling to grow. It can be harvested in as little as twelve weeks from sowing, does not require chemical inputs such as pesticides, and the whole plant can be used in one way or another.

herbalhemp via pixabay

It is said that this one crop can be used to produce over 25 000 products. It offers several environmental benefits, with many people claiming it will be the saviour that helps us out of our environmental (and economic) woes – especially in South Africa. This crop is hemp.

What is hemp?

Hemp is industrial cannabis of which certain varieties are specifically bred for the materials they provide. Even though it is a variety of cannabis, it cannot get you 'high'. This is because these varieties contain only trace amounts of THC (the compound which gives cannabis its well-known kick).

The term 'hemp' is often used as a legal definition based on THC limit, referring to plants with less than 1% THC. The exact limit differs from country to country. In Canada, for example, hemp plants are not allowed to contain more than 0,3% THC.

Hemp is nothing new. It was one of the first crops cultivated by man and has played an essential role in all of history. It was used to make many of civilisation's essential items, such as ropes, clothes and paper. It also provided valuable food in the form of protein and omega-oil rich seeds.

Only for the last few decades has the plant been removed from agriculture and society, but it has been long enough for us to forget its historical importance – and long enough for us to be awestruck by its versatility as we rediscover it.

Hemp products and processing

The whole stalk can be used in the production of paper products, from the fine quality papers required for bibles and cigarettes, to newsprint and cardboard. Due to the large amount of biomass that it can produce, it is also suited to create biofuels.

Hemp straw may be fed to livestock, and German farmers feeding dairy cows hemp silage have reported drastically reducing their reliance on antibiotics.

The stalk can be decorticated to produce one of the strongest available natural fibres, which is naturally anti-microbial and extremely durable. The fibre is used to make rope, canvas, clothes, shoes and bags, as well as biocomposites.

BMW, Mercedes and Porsche all have biocomposite interior panelling, made from injection moulded hemp fibre embedded in resin. The use of biocomposites is projected to rise rapidly, and hemp is a prime candidate. It's even used as a more natural alternative to fibreglass, amicably referred to as fibregrass.

The hurd, the woody part of the stalk, can be used for building. Combined with lime, the hurd (also called shives) makes a material called hempcrete, a perfect alternative to our current unsustainable building materials. Building with hempcrete is one of the fastest growing uses for the plant – creating carbon-negative houses that are healthy for humans and the environment. The material is naturally pest and fire resistant.

Perhaps one of its best properties, however, is that the hempcrete building becomes stronger as it ages, as the material continues to soak up carbon dioxide, mineralising the woody hemp. The shives can also be used to make fibreboards, insulation and animal bedding.

Hemp for food and health

The seeds are a highly nutritious food and contain antioxidants, protein, carotene, phytosterols, phospholipids, as well as several minerals including calcium, magnesium, sulphur, potassium, iron, zinc, and phosphorus. It is a source of complete protein and contains all 20 known amino acids, including the nine essential amino acids. It also contains vitamins A, B1, B2, B3, B6, C, D and E.

Hemp seed oil contains the perfect balance of omega-3 and -6 oils necessary for humans and is one of the few vegetable sources of these essential fatty acids, which are responsible for maintaining healthy hair and skin, and to drive important cellular processes.

The plant's seeds are great animal feed. It is second to soya in terms of nutrient profile but offers more digestible proteins. Hens fed on hemp seeds will produce omega-3 eggs. The seeds are versatile and can be made into flours, cooking oils, yoghurts, milk, protein powders, cheese, bread, sweets, animal feed, cooking oil, fuel, paints, lubricants, shampoos and soaps.

Medicinal uses

As a medicinal product, THC present in cannabis could play an important role. It is in a class of compounds known as cannabinoids, which are increasingly recognised as valuable therapeutic supplements. The cannabis plant contains at least

113 different cannabinoids and even though hemp does not contain any noteworthy quantities of THC, it certainly has other cannabinoids that can benefit human and animal health, most notably cannabidiol, or CBD.

Cannabidiol is implicated in the treatment of an increasing number of ailments, including severe conditions like epilepsy and schizophrenia. It is also the most lucrative part of the plant, with pure CBD fetching up to R300,000/kg and this market showing double-digit growth.

CBD is being incorporated into a variety of products, from skincare and cosmetics to food supplements, nutraceuticals and pharmaceuticals. The German government has already indicated CBD for the treatment of 80 conditions, whilst Switzerland is offering Nobacco, a hemp cigarette without the high of other cannabis varieties and without most of the harms of tobacco, but with the benefits of CBD.

Who is growing hemp?

As mentioned previously, it seems that the whole world is scrambling to grow this miracle crop. Many countries already have maturing hemp sectors, whilst others, like South Africa, are still reliant on imports to meet local demand.

The Chinese are the world leaders in hemp production, currently producing 20% of all hemp. In the 2016 season, China grew over 400,000ha, with their government pledging to grow over one million hectares. Europe grew 33,000ha in the 2016 season, and have been steadily rekindling their own industry, which is growing rapidly due to a strong European Union (EU) incentive and the growing interest in green materials.

In America, 32 states have cannabis legislation of one kind or another, and Canada is rapidly positioning itself as the world leader in hemp seed production, with over 60,000ha planted in the 2017 season, about 90% which is planted for grain. Many countries are looking at growing hemp in one way or another.

Countries such as India, Japan, Australia, Malawi, Chile, as well as South Africa, are rapidly advancing. Underlying this massive growth is, of course, the massive economic potential of the crop. The projected market for hemp products in the United States alone is $1,85bn by 2020.

Cultivation of hemp

Hemp is a hardy, adaptable crop, growing from 90cm to over 4m in length, depending on the variety and growing conditions. Ideal soils for hemp are well-draining, loamy soils, rich in nitrogen. It will not do well in waterlogged soils. Average temperatures between 15-25°C in the growing season are ideal.

The plant requires consistent moisture in the early stages of growth, especially during germination and seedling establishment, but then becomes relatively water wise as the crop establishes itself and the long taproot can reach underground reserves. To produce hemp successfully, an annual rainfall of at least 400mm is required.

A crucial factor in variety selection is photoperiod, as hemp growth and flowering are greatly dependent on the day/night regime of where it is native to, or has been developed in. Many European varieties will not grow in South Africa due to our vastly different light cycle.

Sowing and growing

Seed is sown at a density of anything from 15-100kg/ha and is largely determined by the end-use of the crop. High planting density is used in fibre crops to ensure that the plants stretch, and produce longer (more valuable) fibres. Planting hemp for seed is done at lower densities, to encourage some branching and an increase in seed yield.

Hemp can easily be grown organically, without the need for pesticides or herbicides. It is renowned for being pest-free, with little bothering the crop. It can even be planted around other crops to protect them against pests. Of course, there are

a few pests that will attack hemp – the biggest dangers come from fungal attacks, most important of which is Botrytis, called grey mould. Though insects generally avoid the plants, cotton bollworm has been seen causing damage to hemp buds in South Africa.

Hemp can be used in crop rotation to eliminate or reduce the need for herbicides. When it is planted dense enough, its fast growth overwhelms weeds, clearing the soil ready for the next crop. Hemp also conditions the soil and has been successfully used in soil remediation. As it is a bio-accumulator, it can be used to absorb heavy metals and other contaminants from soils (these specific crops are obviously unsuited for food use).

Hemp in South Africa

South Africa started performing trials in 1996, with the support of the Agricultural Research Council (ARC). This project, despite millions of rands worth of funding, has produced little tangible results.

A few private companies have successfully trialled hemp, including Hemporium, who had small but promising trials in the Western Cape, and other farmers and companies who trialled it in KwaZulu-Natal and the Eastern Cape. These trials were all done under the auspices of an exclusive cultivation permit handed to House of Hemp. This permit expired earlier this year.

A participatory research permitting system has been proposed in September, under an incubator programme referred to as i-Africanna-inc. This incubator is backed by amongst others the ARC, the CSIR and House of Hemp, and is set to guide and assist permitting. The proposed permits and suggested guidelines heavily favour indigenous knowledge systems and they have reiterated that it would firstly aim to benefit indigenous communities, with a strong BEE component.

South Africa is also ready for its first-ever hemp association, which would give a voice to the local stakeholders, though perhaps still lacking in experienced agronomists and other key industry representatives.

All these efforts are a step in the right direction for hemp in South Africa, a crop with unlimited potential in the country and the continent. There is still a lot of work to be done – choosing the right varieties for our country, setting up proper processing facilities and awakening the many industries this one crop can feed into. All of this represents an opportunity for our people and our economy, as we rediscover this plant, and make this ancient crop new.

ABOUT THE AUTHOR

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