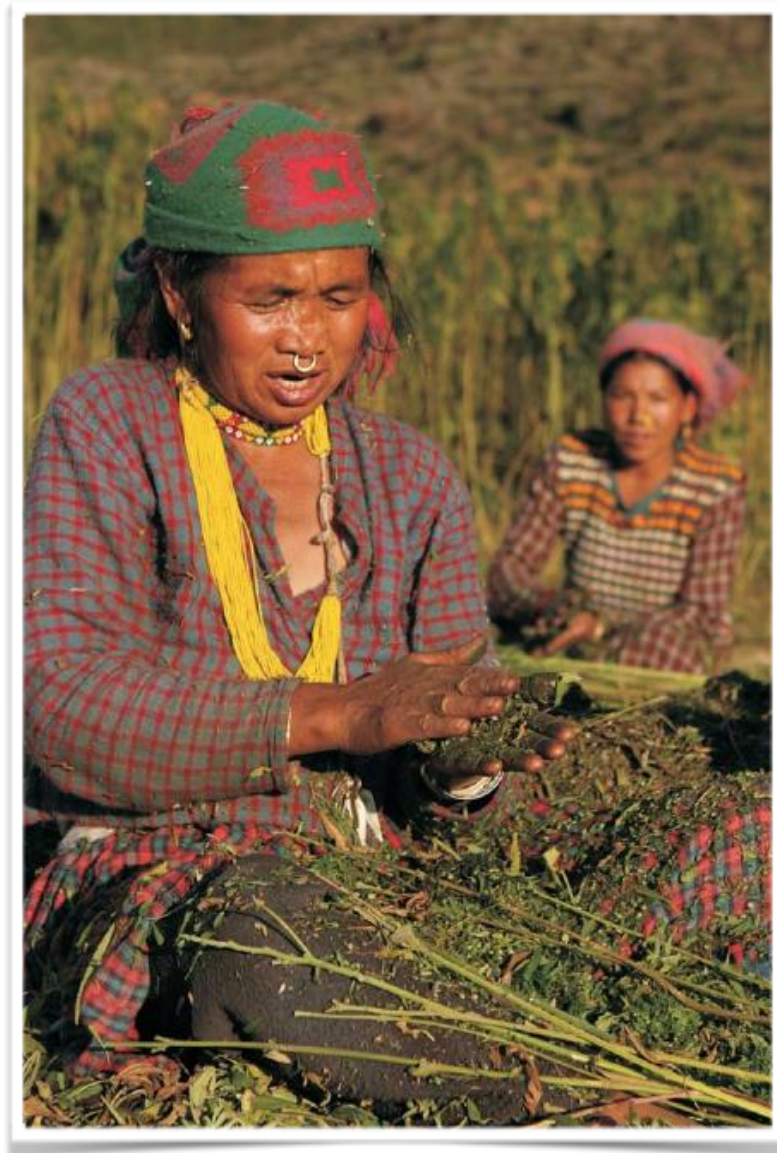

Nepalese Hemp Seed

Professor Manish N. Raizada & TA Jen Wilker

Kayla Desormeaux - November 18, 2014



Introduction

Hemp, or *Ganja* in Nepali, is a variety of the *Cannabis sativa* plant, and is most often grown for the purpose of its seeds and fibre. The hemp plant originated in the Yunnan Province of China, and has spread progressively throughout the world (Bouloc, 2013). Today hemp seeds are considered to be one of the most nutritious seeds on earth, due to its high concentration of protein, essential fats, vitamins as well as enzymes.

Growing of the Hemp Plant and Seed

The ability for farmers to grow hemp has remained legal in approximately thirty countries in Europe, Asia, as well as North and South America (Bouloc, 2013). The hemp seed is considered a 'super food'. Hemp can grow easily on a wide variety of soils although, loam soil with a pH level above 6.0 is recommended for cultivation (McPartland & Clarke, 2000). It is reported that hemp has the ability to bring exhausted soil back to the correct pH level (Chen, Lui & Gratton, 2004). Due to the hemp's extensive root system, the plant can tolerate dry conditions if necessary, although it does not thrive in these conditions. For substantial growth, hemp plants require approximately 970 mm of rain per year, at temperatures ranging from 5.6 to 27.5 °C (McPartland & Clarke, 2000). As well, the hemp plant produces substantial, natural weed control, due to the plant's ability to block weeds from sunlight. Free weed suppression is extremely important for poor farmers in rural agriculture, due to the lack of dependence on herbicides, making the harvesting of the hemp plant less

costly. Negatively, the hemp plant is susceptible to approximately fifty pests, bacteria, fungi, and viruses. Although this is worrisome for producers of hemp, the plant is often able to outgrow these attacks due to its rapid growth ability. Finally, harvesting of the hemp seed is conducted once the plant's flowers have ripened and are full of seeds. Nepalese farmers often sit around in order to pluck off the plants flower heads, which contain a high number of seeds. Each handful of seed is rubbed between the palms of farmers' hands for roughly ten minutes, then thrown aside to make room for the next handful (Clarke, 2008). Labor consisting of rubbing the hemp seeds, is beneficial for Nepalese farmers due to the decrease in labor compared to spinning or weaving hemp fibres. As well, the lack of machinery helps sustain local biodiversity, keep labor low, and costs minimal. Growing hemp in a country such as Nepal is effective as it can grow on steep, hillside lands where irrigation is often not possible, therefore raising crops and incomes for farmers (Bouloc, 2013). The hemp plant is grown at upper-middle altitudes in several districts of the Western region of Nepal (Clarke, 2008). The majority of hemp cultivation occurs within remote regions, at roughly 3000 meters of elevation, benefiting Nepalese hillside farmers (Clarke, 2008).

Nutritional Benefits of Consuming Hemp Seeds

For centuries, Nepalese people have been consuming hemp seeds for their own benefits. Hemp seeds contain nutrients such as protein, Omega 3 and 6, antioxidants, amino acids, fibre, iron, zinc, carotene, Vitamins B1, B2, D, E, calcium, magnesium,

sulphur, potassium, and enzymes (Da Porto, Voinnovich, Decorti & Natolino, 2012). The seed can also be consumed whole, ground up and used in soups, cereals or other foods. Seeds are the most important part of the hemp plant, due to their large contribution to limited Nepalese hillside diets. Hemp seeds are easily digested by the body and are deemed as one of the most nutritious foods available, benefiting local Nepalese people, with potential to add nutrition to importing nations. Most common lifestyle benefits include weight loss, increased energy, rapid recovery of disease or injury, lowered cholesterol and blood pressure, immune system improvement, as well as blood sugar control (Grotenhermen, 2003).

Other Benefits to Nepal

Hemp has multiple other benefits for the people of Nepal. The production of hemp has been present within Nepalese communities for centuries and is a well-known crop for many farmers, with substantial associated indigenous knowledge. Furthermore, Nepalese people use their abundance of hemp for clothing, ropes, and mats for themselves (Da Porto, Voinnovich, Decorti & Natolino, 2012). Although, negatively, many of the clothes produced from hemp fibre are often too rough, and many villagers will not wear hemp-made products.

Export Potential to Canada

Due to the seeds' reputation as being a 'super food', its consumption is growing amongst many Canadians. There has begun to be an increase in hemp seeds on the shelves of health food stores in Canada. Hemp seeds do not require refrigeration and can be flown easily overseas without worry.

Whole Foods is a growing grocery store in the Canadian market. Whole Foods is known for its large organic, eco-friendly, and health food selections. When attempting to become a potential supplier for Whole Foods you must contact them at the regional level. Ontario is considered part of the Midwest along with other American states and can be contacted at (312) 799-5600. Due to the large number of potential suppliers one must first fill out a vendor form before going through with any other contact with the company. The vendor form consists of the type of product, product name, ingredients, if it is certified as organic, the story of your product that makes it unique, and many other questions, must be answered. In order to supply to Whole Foods it is important that the product has a 'green' aspect, such as having the hemp seed produced by Nepalese rural farmers rather than a large Canadian farming corporation.

A second business holding potential as a Canadian buyer is Terra 20. Terra 20 aims to encourage a healthier, more sustainable lifestyle through providing the largest selection of eco-friendly products under one roof. On top of supplying green, eco-friendly products, Terra 20 also supplies various healthy foods. As well, for Terra 20 one must first fill out a vendor application form, and afterwards the Terra 20 head office will be in contact. If questions arise you may contact the Terra 20 head office in Ottawa at, (613) 837-7220.

Conclusion

The hemp plant, and therefore its seeds, is increasingly beneficial to Nepalese citizens. Its seeds are rich in nutrients and contain numerous health benefits for hillside farmers. The hemp plant is easy to grow in areas of high altitude, and commit to small costs of labor. The export potential to Canada is large due to the increased

interest of Canadians of the hemp seed. There are low transportation costs as the seed does not need to be kept cold, and does not spoil quickly. Additionally, there is potential for uniqueness to the Nepalese hemp seed as farmers could be not only using the seeds for export, but could create the packaging from hemp fibres. This makes the product largely more unique for its consumers, adding to the willingness for them to buy Nepalese hemp seeds. Nepalese hemp seeds have a large potential for export and success within the Canadian market.

Bibliography

- Bouloc, P. (2013). CH 2: Requirements for Growth. In *Hemp: Industrial production and uses*. Wallingford, Oxfordshire, UK: CABI.
- Chen, Y., Liu, J., & Gratton, J. (2004). Engineering Perspectives of the Hemp Plant, Harvesting and Processing. *Journal of Industrial Hemp*, 23-39. Retrieved November 1, 2014
- C. Clarke, R. (2008). Traditional Cannabis Cultivation in Darchula District, Nepal—Seed, Resin and Textiles. *Journal of Industrial Hemp*, 12(2), 19-42. Retrieved November 3, 2014, from http://www.tandfonline.com/doi/abs/10.1300/J237v12n02_03#.VGpHGUvoZhA
- Da Porto, C., Voinovich, D., Decorti, D., & Natolino, A. (2012). Response surface optimization of hemp seed (*cannabis sativa* L.) oil yield and oxidation stability by supercritical carbon dioxide extraction. *The Journal of Supercritical Fluids*, 68, 45-51. doi:10.1016/j.supflu.2012.04.008
- Grotenhermen, F. (2003). Clinical Pharmacokinetics of Cannabinoids. *Journal of Cannabis Therapeutics*, 411-413. Retrieved November 3, 2014, from [http://books.google.ca/books?hl=en&lr=&id=XfW3AAAAQBAJ&oi=fnd&pg=PA411&dq=hemp seed in nepal&ots=hF7k3D23SO&sig=DJSLJg9zmHoXFNi4T00izxhCH04#v=onepage&q&f=false](http://books.google.ca/books?hl=en&lr=&id=XfW3AAAAQBAJ&oi=fnd&pg=PA411&dq=hemp+seed+in+nepal&ots=hF7k3D23SO&sig=DJSLJg9zmHoXFNi4T00izxhCH04#v=onepage&q&f=false)
- McPartland, J., & Clarke, R. (2000). *Hemp Diseases and Pests Management and Biological Control : An Advanced Treatise*. Wallingford, Oxon: CABI Pub.