

Industrial Hemp: Global Operations, Local Implications

(Abstract)

July 1998

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Industrial hemp has maintained its place in the public eye, as hemp advocates and opponents continue to spar across America. Despite general acceptance in agricultural and political communities around the world, US activists remain deeply divided over hemp legalization. Industrial hemp is repeatedly praised for its never-ending array of uses, for its harmony with the environment, as a production alternative for small farmers, and as a value-added enterprise for local businesses. Meanwhile, its twin cousin continues to muddy the water, as industrial hemp is seen as a stepping stone to the legalization of marijuana and an impediment to the war on drugs.

The legalization of industrial hemp production in the US is polarized, in part, on its purported profitability. Anti-drug activists have used the argument that low or lack of expected profitability from industrial hemp production does not compensate for the additional costs they believe would come with hemp legalization. If hemp is not profitable, why encourage a crop that would increase illicit marijuana production and drug monitoring costs? Hemp proponents counter that projected profitability has been dampened by "institutional" estimates that are static and short-sighted. They argue that industrial hemp could be profitable if the industry were allowed to fully develop as a commercial agricultural enterprise, with additional profits earned from a multitude of value-added applications.

To examine the profitability question, this paper explores the premise that "If industrial hemp is profitable, world production will be thriving and trade will be vigorous". Nearly every country in the world has legalized hemp production - the United States is a rare

exception. If the US were to legalize industrial hemp production, what type of competition would US farmers and manufacturers face from the international market?

Despite the merits of hemp fiber and oil -- superior fiber length and strength, and exceptional oil quality for a myriad of applications -- the global industrial hemp market has been on a downward trend for the last 30 years and remains negligible in magnitude. World hemp fiber production has fallen to 55,500 metric tons, one-fifth the level of the 1960s, while world hemp seed production has slipped to 33,000 metric tons.

Similarly, world exports continue to decline. Total world trade in industrial hemp fiber and seed amounted to only \$10.4 million in 1996! It appears that world trade in consumer-ready hemp products has been on the increase, although statistics are not available to support that claim. Declines in the hemp market may be signaling that hemp profits are also on the decline -- either absolutely and/or relative to other production alternatives.

Processing costs are one of the largest obstacle the global hemp industry faces. For example, typical bleached softwood pulp currently sells for about US\$800 per ton while hemp pulp sells for about US\$2100 per ton. While hemp processing technology remains antiquated, new innovative fiber separation techniques are being tested, particularly in western Europe.

In general, US hemp imports have grown significantly in percentage terms over the last few years, but remain negligible in absolute value. In 1997, the US imported a total of \$2.9 mil in hemp products, including woven fabrics

made of hemp (\$1.29 mil); raw or processed hemp (\$100,000); and yarn (\$25,000). The importation of consumer-ready items with some or all hemp content appears to be growing, and appears to be around \$25 million.

One of the biggest uncertainty in projecting hemp profits is that of price volatility. An increase in the market supply of hemp would effectively lower hemp prices. While farmers could sell more hemp at a lower price, the larger question is "Would the reduction in hemp prices be outweighed by the increase in hemp sales?". The hemp seed market is a good example of such price volatility.

From 1986-88, China significantly increased hemp seed production, and from 1986-91 China's share of the hemp seed market exploded from zero to controlling nearly three-quarters of world trade. During this period, world hemp seed exports increased from around 5,000 mt to 18,000 mt and hemp seed prices fell 43% (from an average of 26.5 cents to 15 cents per pound) during the late 1980s and early '90s. In 1992, China abruptly reduced production, exports fell back to 7,000 mt and prices recovered to 23 cents.

Economists use the concept of elasticity to determine the effect of changes in price, resulting in changes in demand, thus revenue to the producer. Using actual hemp market data over the last 36 years, hemp seed has a price elasticity of demand of approximately -1.3 for price decreases, -.67 for price increases and an overall own-price elasticity of -0.99. This means that, for example, a 10% decrease in hemp seed prices will result in a 13% increase in hemp seed demand, while a 10% increase in hemp seed prices would result in a 6.7% decrease in hemp seed demand. Thus, the market is much more responsive to decreases in the price of hemp.

While hemp fiber prices have been much more stable, recent small increases in world production have caused fiber prices to fall in half in 1996. Again, the small volume of the hemp fiber export market -- only 1.9 mt in 1996!

-- is minuscule compared to world cotton exports (approximately 27 million 480-pound bales last year) and wood paper pulp trade. While the bulkiness of hemp fiber encourages value-added hemp trade (rather than raw product), it is easy to see how small increases in hemp exports could dramatically lower world prices.

It is the combination of projected hemp demand uncertainty, coupled with a low volume market, that makes hemp prices volatile and profit estimations adventurous. Despite the current fad for products made from hemp, legalized hemp production in the US would very likely depress US hemp prices, particularly in the short-run, and may even have a dampening effect on world prices, given the current state of world hemp processing technology and capacity. Of course, lower hemp prices would make hemp more price-competitive with other substitutes. But, at current world prices it does not appear that hemp can compete on a large scale and may be confined to a niche or specialty market until processing technology improves.

None of the large multinationals has openly supported the legalization of hemp in the US. Why? Is it disregard for our natural resource base? Is it concern over the confusion with marijuana? Or is it simply that they don't care? Corporate America is not waiting for the US to legalize hemp and has the capacity to invest in production and processing facilities all around the world. They have access to plenty of raw material and low labor costs (China and Eastern Europe), and a stable economic and political environment where hemp production is legal (the European Union). Why bother with the convoluted politics of America?

A good illustration of the lack of investment in the hemp industry is found in the hemp pulp market. Currently, there are about 20 paper mills worldwide that use hemp as a fiber source (along with flax, cotton, bagasse, sisal, abaca, and other annuals). This compares to thousands of other non-wood paper mills in the world. World hemp pulp production is estimated to be about 120,000 tons per year, or about 0.05% of

the world's annual paper production volume. About half of these mills are located in China and India (the leading producers of industrial hemp (*cannabis sativa l.* and sunn hemp respectively)). The remaining mills are located in the western world. Further, these small mills have difficulty in meeting western environmental regulations and are beginning to migrate to countries with more permissive environmental standards.

Again, it must be emphasized that hemp production is not the problem. It is the challenge of improving hemp processing that will open the doors of cost competitiveness. At the risk of being repetitive, the large multinational paper, textile and oil companies are not stupid. Nor are they short-sighted. They also have research and development budgets that would dwarf that of public universities. If they can't make hemp work in the marketplace, what type of costs and return differential might small farmers and businesses work towards? That is the crux of the great hemp debate.

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