1000 tonnes of Dutch hemp produced by Hemp-Flax B.V. F.P. de Vries, M.J.F. Hendriks, A.B. Dronkers, and E. Dronkers Hemp-Flax B.V., Stationsweg 22, 6684 DG Ressen, The Netherlands. Phone. +3188181794, Fax +3188182463

The Dutch hemp-for-paper project

In February 1994, the final report of the Dutch hemp research programme was presented. It took Dfl 17 million to evaluate several alternatives for a hemp paper production sequence from seed to final product. The most viable sequence was transformed into a business concept (Van Berlo 1993). The developed methods should have provoked a major breakthrough in large-scale hemp processing in the Netherlands. However, the paper industry was not interested in risking an investment in a pilot plant.

Hemp-Flax, a new initiative

Contrary to the paper industry, some people believe that the time is ripe for reintroduction of hemp for fibre. In early 1994, one of the authors (E.D.) founded Hemp-Flax B.V. for the production and processing of hemp and flax. These annual fibre crops may provide a solution to problems in agriculture and industry (and thus the economy). A modern flax processing factory in Nagele, the Netherlands, was purchased and in this facility a new hemp processing line is being installed next to the existing one for flax, which will remain operational.

Hemp cultivation

Several farmers were contracted to cultivate 140 hectares (ha) of hemp in the Veenkoloniën (N.E. Netherlands) during the summer of 1994. This was the largest hemp cultivation area in the Netherlands in sixty years. The objective of this first season was to explore the agronomy, the logistics, and Dutch markets for hemp. Paper-based products and textile markets were not primary targets for strategic reasons.

The farmers did the soil preparation and sowing according to their own views. Seed from the French monoecious hemp varieties Fédora, Félina, Fibrimon, and Fédrina were supplied by Hemp-Flax. The crop was harvested by Hemp-Flax in cooperation with the farmers. This way, the farmers gained experience and developed various practical methods. The influence of soil structure and water regime on hemp growth were surveyed. Furthermore, liquid manure was demonstrated to be a good fertilizer. The farmers applied for a larger hemp growing area for 1995 because they were enthusiastic about hemp's effect on the soil structure, its cultivation, and its performance. Local youths, who had taken some plants, were probably less enthusiastic about its performance.

Hemp harvesting

Although fungicides or pesticides were not used, the losses from Botrytis cinerea and other pathogens were insignificant. Self-thinning, as described by van der Werf (1994), was observed, but the level was unclear. Plant numbers of 50-200 per m2 have been counted with a sowing density of 30-90 kg/ha. The harvested yield was 6-9 tonnes/ha of air-dried matter. The yield was not expected to be optimal, since farmers had no previous experience with hemp cultivation and harvesting. Several harvesting methods were tested and the most practical method proved to be swath mowing, followed by dew retting and turning of the swath. The air-dried crop was pressed in large bales and transported to a storage place. This harvesting method resulted in clean fibre during the dry period in August and a nicely retted fibre after the wet periods in September, 1994.

Hemp processing

In the factory, hemp bast fibres are separated from the core by a special process developed by Hemp-Flax. Several applications of the bast and core have been optimized. These products include a planting substrate, a building material, non-wovens, bio-filters and adsorbants. Industries that want to explore applications with hemp are welcome to contact Hemp-Flax for consultation and sample material.

Future developments

Hemp is a strong natural fibre with great endurance. The agronomic advantages of hemp over other fibre crops include: a high yield, reduction of agro-chemical requirements, soil improvement and weed control. Hemp fibre can replace other natural fibres, wood, asbestos, glass fibre, steel, polypropylene and polyethylene (Brouwer 1991). Prices of current artificial and mineral fibres have increased, which makes substitution by natural fibres possible. So, sooner or later, hemp will become more attractive as a sustainable source of fibre produced in the western world. Governmental and agricultural organizations can help to bring about regula-