



European hemp industry: Cultivation, processing and product lines

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Summary

Two fibre plants are under cultivation in the European Union – flax on approximately 125,000 ha and hemp on approximately 15,500 ha in the year 2004. Seeds, hurds and especially fibres of hemp are used for further processing. The most important markets for hemp fibres produced in the EU are pulp and paper and the automotive industry. Just under 5% of the EU hemp fibres were used in the construction sector. Approximately 95% the whole production of 40,000 t of the hemp hurds are used as animal bedding and 95% of the estimated 6000 t per year hemp seeds are sold for animal feed, mainly as bird feed.

Fibre plants in the EU

Flax and hemp are the two fibre plants under cultivation in the European Union, flax on approximately 125,000 ha and hemp on approximately 15,500 ha in the year 2004 (source: EU Commission). Figures 1a and 2b show the areas under cultivation in recent years. Except for the hemp cultivation peak in Spain, the areas under flax and hemp cultivation remained fairly constant in recent years – and the hemp peak actually is not such: hemp cultivation in Spain primarily was a case of subsidy swindle. Only small parts of the straw were really harvested and processed and the subsidies have meanwhile been paid back to Bruxelles.

Poland, Latvia and the Czech Republic are members of the EU since 2004 and because of this data of flax and hemp cultivation is shown in Figures 1a and 2b.

For non-EU countries, there are only inaccurate data on hand. Hemp is cultivated in still noteworthy amounts in Romania and Serbia, however, the cultivated total area is less than 5000 ha. Before the collapse of the USSR, the areas under hemp cultivation amounted to more than 50,000 ha in East-European countries.

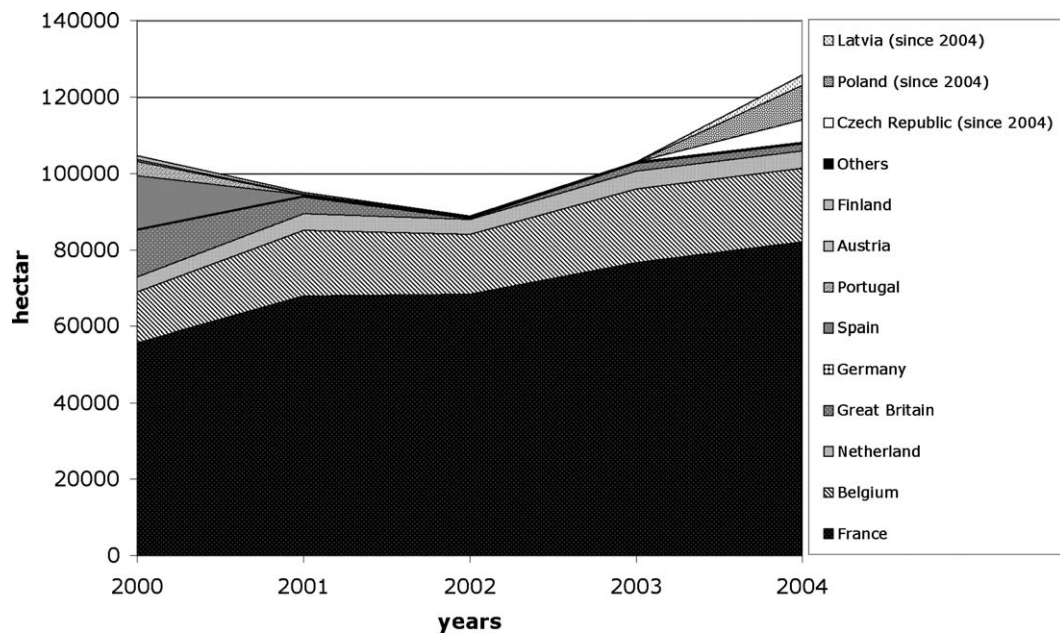
Hemp in the EU

The data presented in this paper are mainly based on market surveys conducted by the “European Industrial Hemp Association (EIHA)” between November 2001 and May 2002 as well as in the summer of 2003.

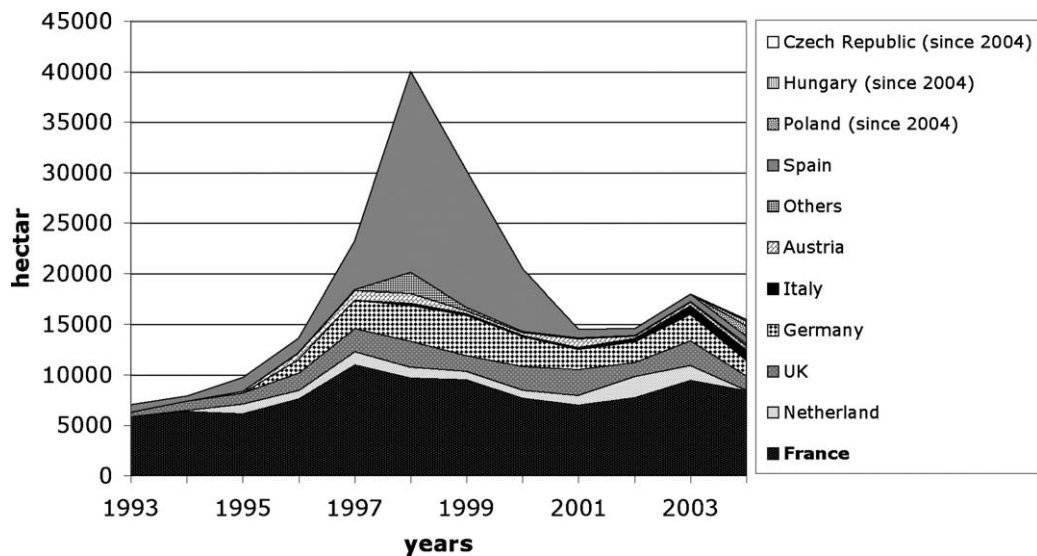
Within the European Union (EU), presently about 10 companies are engaged in the primary processing of hemp, plus another 5–10 such companies in Eastern Europe. While the traditional processing line, based on water retting and long fibre separation, also allowing for the production of spinable fibre qualities, prevails in Eastern Europe, in the EU solely field retting and whole fibre processing are practised.

The leading primary hemp processors in Europe, most of them EIHA members, provided the survey basis for the following data on cultivation, production and product lines. These companies are: AGRO-Dienst (DE), BaFa (DE), Hemcore (UK), LCDA (FR) and HempFlax (NL). Hempron (NL) and Vernaro (DE) are taken over by HempFlax (NL) since 2003.

The aforementioned companies represent a market share of 80–90% in terms of hemp fibres produced in the EU, constituting a well representative basis for market information.



(a)



(b)

Figure 1. (a) Flax cultivation area in the EU (ha). (b) Hemp cultivation area in the EU (ha).

Cultivation and demand

In 2001, the companies mentioned had a total contract area of about 10,120 ha under hemp cultivation (=70% of the total area under hemp cultivation in the EU), in 2002 there were about 10,380 ha (=71% of the total area under hemp cultivation in the EU). In the year 2003 and 2004, the area under hemp cultivation in the EU has considerably increased (see Figure 1b).

In 2001 the area under cultivation was insufficient to meet the demand for industrial hemp fibres. The balance was supplied by the processing of hemp stalks and pre-decorticated fibres from previous years, which had been stockpiled due to insufficient demand in previous years. For the first time, the supply from the cultivation year 2003 was exceeded by demand. This was due to the increasing establishment of hemp as an industrial fibre, to the relatively high flax

fibre prices and the simultaneously decreasing EU subsidies, which made hemp cultivation less attractive for farmers than in the past.

The companies mentioned started the year 2002 with largely depleted fibre stocks. Demand and supply came into balance again in 2002. The considerable extension of the area under cultivation in 2003 shows the further increasing demand for industrial hemp fibres – and also that even under more difficult economic conditions, farmers could be found.

The average yield of dry hemp stalks by the companies mentioned was about 6 t/ha in the cultivation years 2001 and 2002.

Production

The amount of EU-produced hemp fibres has continuously increased in recent years and should amount to more than 25,000 t per year for the year 2002 (world production is estimated at about 70,000 t). Combined, the companies mentioned have produced more than 18,000 t of hemp fibres in 2001 and more than 21,000 t in 2002, representing 80–90% of total EU production. About 31,000 t of hurds and more than 5300 t of hemp seeds were produced by these seven companies as value-added by-products. Figure 2 shows the cultivation areas and production amounts of the companies mentioned in the years 2001 and 2002.

Markets and product lines

Fibres

The most important markets for hemp fibres produced in the EU are listed in Figure 3.

Specialty pulp for cigarette papers and technical applications

With a share of 70–80% of the hemp fibre market, this traditional application still represents by far the most important product line (Figure 4). In absolute terms, demand has been largely constant, except for yearly fluctuations. However, its relative share decreased noticeably (since 1994 it was more than 95%). Without any significant technical progress and/or the development of new fields of application, little economic growth of this sector is to be expected. Only a small portion of hemp fibres used for pulping is traded in the open market, the majority enters process chains, integrated from raw material to end product. France continues to be the most important country for the use of hemp fibres in the specialty pulp sector.

Automotive industry

In 2002, the market share of hemp fibres used in this sector amounted to about 15% – compared to less than 1% in 1996. The automotive demand for hemp fibres has been increasing also in absolute numbers since 1996, setting a record of 3300 t in 2002.

The use of thermoplastic and thermoset natural fibre press-moulded parts, e.g. as door panels or boot lining, has become standard for a large number of European models – typically 5–10 kg of natural fibres are used per vehicle. Approximately 25,000 t of natural fibres were used in the European automotive industry in 2002 and in 2003 (Karus et. al., 2004).

As a consequence of the establishment of new production techniques – particularly polypropylene natural fibre (PP-NF) injection moulding – this growth trend will continue in the coming years.

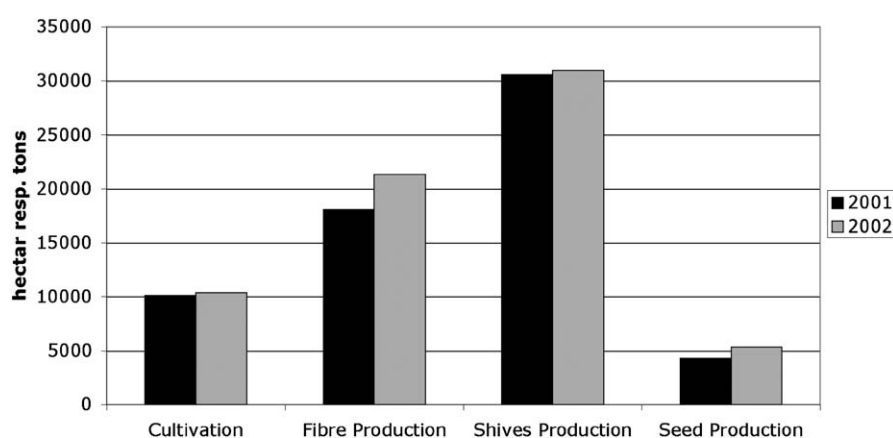


Figure 2. Hemp cultivation and products (Karus, 2003).

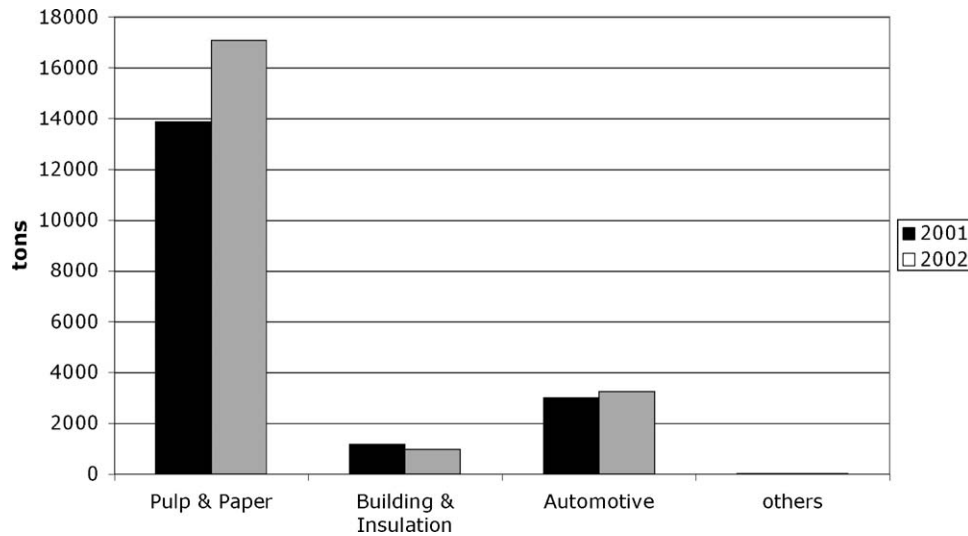


Figure 3. Hemp fibre applications (Karus, 2003).

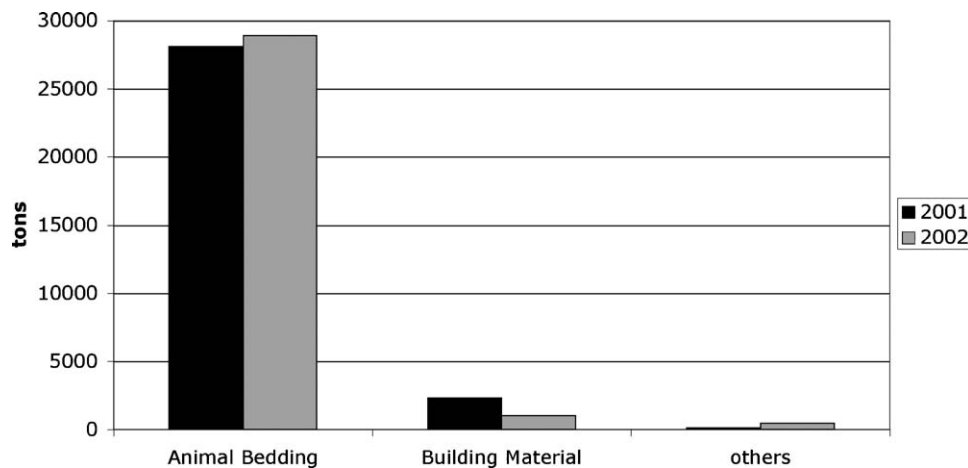


Figure 4. Hemp shives applications (Karus, 2003).

Also the EU end-of-life vehicle directive in its current form and interpretation will have no negative effect on the use of natural fibres in automobiles, as feared at first (www.nachwachsende-rohstoffe.info 09/2000 and 10/2003).

Construction sector (insulation mats)

In 2002, just under 5% of the EU hemp fibres were used for this application (2001: approximately 6.5%). In some countries, the production of natural fibre-based insulation materials is just starting. Sales also depend on the general situation of the building industry, which now shows inconsistent trends among EU countries.

While the German building industry faces a serious crisis, increasing construction activity is being observed in the UK. In Germany, a government-supported market introduction program for natural fibre-based insulation mats was started in 2003, causing noticeable sales impulses in 2004.

Other applications

Approximately 1% – they include agro- and geotextiles, mattresses, shoe lifts, fibres for animal nesting and many others. Traditional applications for hemp fibres, such as twine, textile yarns and fabrics are not important for EU-produced hemp fibre.

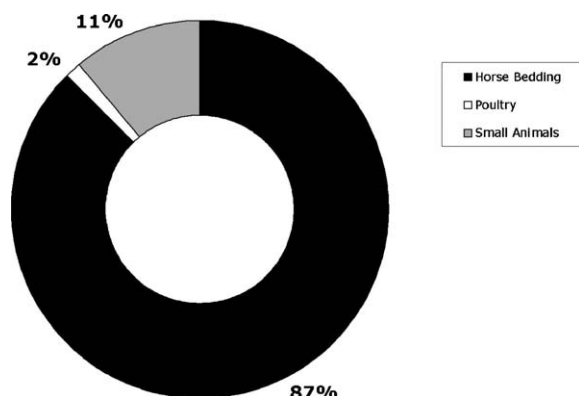


Figure 5. Animal bedding – different applications.

Hurds

During fibre separation, significant amounts of hurds are generated. Depending on the residual hurd content in the fibres, the hurds-to-fibre ratio varies from 1.5 to more than 2.

The total EU production of hemp hurds was approximately 40,000 t. The most important product lines are described later.

Animal bedding

Approximately 95% of the hemp hurds are used as animal bedding, 87% of which as horse bedding and only just under 13% are used for other animals. The use of hemp hurds became more and more established in the field of small animal beddings (11%), an application that has been professionally marketed only since 2001.

Third comes the use as bedding for poultry farming (2%; Figure 5).

Hemp hurds do sell as animal bedding mainly because of their favourable properties: good absorbency, easy handling and rapid composting after use. Overall, none of these markets indicate any short-term saturation.

Construction sector

Almost 4% of hemp hurds (2001: 8%) are used in the construction sector, as pour-in insulation, hurd board, or as additive to bricks or loam construction. This market also offers much undeveloped potential. The decrease from 2001 to 2002 was due to marketing problems which can be considered as overcome meanwhile. Hence, growth rates are about 10% for the year 2003.

Hemp seeds

An estimated total of just under 6000 t per year of hemp seeds are produced in the EU, predominantly in its southern regions. In 2002, 5300 t were produced by the hemp companies mentioned earlier.

Figure 6 shows the most important sales markets.

Animal feed

More than 95% of the hemp seeds are sold for animal feed, mainly as bird feed, with smaller amounts used by anglers as bait. The attractiveness of this sector strongly depends on the dollar exchange rate and its impact on the competitiveness with imports from China.

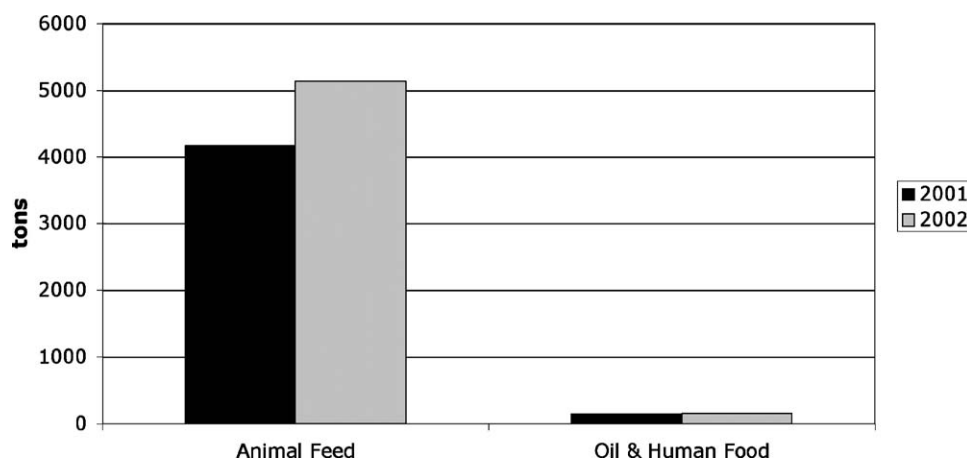


Figure 6. Hemp seed applications (Karus, 2003).

Food and body care

The remaining, just under 5%, are used in the production of foods in the form of whole grains, as hulled hemp seeds and as hemp oil, smaller parts go into the body care and cosmetic sector as well.

The sectors food and body care still represent very small niche markets with an above average growth. The expansion of these sectors mainly depends on adequate marketing activities, while the qualitative applicability of hemp seeds oil is beyond all question.

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