

An overview of hemp for fibre market opportunities for Romania

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ABSTRACT – REZUMAT

An overview of hemp for fibre market opportunities for Romania

Hemp has been cultivated by man for its multiple uses: its solid fibres for textiles, its nutritious oilseeds and the medicinal and therapeutic properties of its resin. Hemp is a technical plant that has been cultivated in Romania for over 2,000 years, its main use being to obtain fibres for making clothing. Before 1989, in Romania hemp was cultivated in large areas, exceeding 50,000 hectares, ranking 4th in the world. After 1989, interest in cultivating hemp declined, and by 2008 this crop has almost disappeared.

Starting from national production capacity, this paper is presenting an overview of the textile market in Europe, with a view on the hemp market, and the marketing possibilities for Romanian hemp, based on calculations retrieved from official data available on INTRACEN and the National Institute of Statistics of Romania.

The study of production capacities was analysed in terms of cultivated areas and productions obtained in Romania, reported in official national statistics. For a market projection, the data were extracted from the trade map database. The export potential was studied taking into account the harmonized standard codes for hemp.

Keywords: *textile industry, hemp for fibre, market analysis, export potential*

Cultura de cânepă pentru fibre, o oportunitate de piață

Cânepa a fost cultivată de-a lungul timpului pentru multiplele sale utilizări: fibrele rezistente pentru industria textilă, semințele cu conținut ridicat de substanțe nutritive și proprietățile medicinale și terapeutice ale rășinii de cânepă. Cânepa este o plantă tehnică care se cultivă în România de peste 2.000 de ani, principala sa utilizare fiind obținerea de fibre pentru confecționarea îmbrăcămintei. Înainte de 1989, în România cânepa era cultivată pe suprafețe mari, depășind 50.000 de hectare, ocupând locul 4 în lume. După 1989, interesul pentru cultivarea cânepii a scăzut, iar până în 2008 această cultură aproape a dispărut.

Pornind de la capacitatea de producție națională, această lucrare prezintă o imagine de ansamblu asupra pieței cânepii din Europa și a posibilităților de comercializare a cânepii românești, pe baza calculelor preluate din datele oficiale disponibile pe INTRACEN și ale Institutului Național de Statistică din România.

Studiul capacităților de producție a fost analizat din punct de vedere al suprafețelor cultivate și al producțiilor obținute în România, raportate în statisticile naționale oficiale. Pentru o proiecție a pieței, datele au fost extrase din baza de date trade map. Potențialul de export a fost studiat ținând cont de codurile standard armonizate pentru cânepă.

Cuvinte cheie: *industrie textilă, cânepă pentru fibre, analiză de piață, potențial de export*

INTRODUCTION

Hemp, *Cannabis sp.*, family *Cannabaceae*, is an annual herbaceous plant with palmate leaves. *Cannabis sativa* is grown for its stem (textile fibre) and seeds (chènevis for birds and oil). Hemp is native to Central Asia and has spread to China, all of Asia and the basin Mediterranean. Hemp has been cultivated by man for its multiple uses: its solid fibres for textiles, its nutritious oilseeds and the medicinal and therapeutic properties of its resin [1].

Traditionally, hemp is grown for either seed or fibre. Hemp seeds contain approximately 30% protein, 25% starch, and 30% oil [2, 3]. At a time when it is important to consume sustainably and responsibly, hemp appears to be a very interesting ecological material for textile production, because i) its cultivation requires a small amount of water; ii) cultivation

does not require pesticides or insecticides; iii) hemp is a plant that stores CO₂ in the soil, allowing it to regenerate very quickly; iv) clothing and accessories made from hemp are durable, resistant and above all biodegradable (provided that are used use only natural processes and materials for dyeing and making), they avoid the accumulation of waste [4]. Optimisation of hemp varieties with higher cellulose content in the fibre and lower pectin and lignin cross-linkages could reduce the retting necessities, thus improving the strength of the obtained fibre while saving time and labour [4, 5].

Little by little, the general public is becoming aware of the ecological footprint of fashion. Synthetic, non-biodegradable fibres are found in thousands of tons in the oceans and the stomachs of aquatic fauna and

conventional cotton, often GMO, depletes water resources.

From an agronomic point of view, hemp is particularly interesting because:

- Hemp breaks the cycle of diseases [2].
- Like all spring crops, it allows a break in crop rotations based on autumn crops and limits the reproduction of weeds [5].
- In organic as in conventional, hemp is not very sensitive to diseases and insects. It does not need any fungicide or insecticide. If the emergence takes place in good conditions, it is a stuffy plant that does not require any weeding (neither chemical nor mechanical) [3, 6].
- Hemp can easily find its place in a rotation and it is a very good rotation head in organic farming. Its taproot leaves an excellent soil structure for the next crop [2, 7].
- Drought resistant, it does not require irrigation and is not susceptible to pouring.
- Hemp makes it possible to reduce the IFT (an indicator of the frequency of phytosanitary treatments) of the farm and thus promote the development and action of the microflora and microfauna of the soil, a guarantee of its proper functioning [1].

The hemp for fibre has antibacterial properties that are effective against many pathogenic bacteria. Alkaloids, flavones and saponins are active biological substances found in hemp fibre. It was reported that hemp fibre is having antimicrobial activity against *Escherichia coli*, *Staphylococcus aureus* [8], and *Pseudomonas aeruginosa* [9, 10]

Starting from national production capacity, this paper is presenting an overview of the textile market in Europe, with a view on the hemp market, and the marketing possibilities for Romanian hemp, based on calculations retrieved from official data available on Intracem and the National Institute of Statistics of Romania.

MATERIAL AND METHODS

The study of production capacities was analysed in terms of cultivated areas and productions obtained in Romania during 2014–2020. For a market projection, the data were extracted from the trade map database. The export potential was studied taking into account the harmonised standard codes for hemp for fibre, as follows: 530210 True hemp “*Cannabis sativa* L.”, raw/retted; 530290 True hemp “*Cannabis sativa* L.”, processed but not spun; tow and waste of hemp, incl. yarn waste.

The potential export value of hemp supplied by various countries to a specific market, expressed in US dollars, is calculated as supply × demand (corrected for market access) × bilateral ease of trade. Supply and demand are projected into the future based on GDP and population forecasts, demand elasticities and forward-looking tariffs. Ease of trade is based on the ratio of actual trade between the selected exporter and specified market relative to the hypothetical trade if the exporter had the same share in the specified market as it has in world markets.

RESULTS AND DISCUSSIONS

Hemp is a technical plant that has been cultivated in Romania for over 2,000 years, its main use being to obtain fibres for making clothing. Hemp stalks contain different weights of fibre, namely hemp from local populations and wild hemp 10–12%, and improved varieties 26–32%, these being influenced by variety, technological conditions and soil and climatic conditions [11].

Before 1989, in Romania hemp was cultivated in large areas, exceeding 50,000 hectares, ranking 4th in the world. After 1989, interest in cultivating hemp declined, and by 2008 this crop has almost disappeared (figure 1).

Hemp gives good results in areas with a cool and humid climate, where it can occupy large areas in

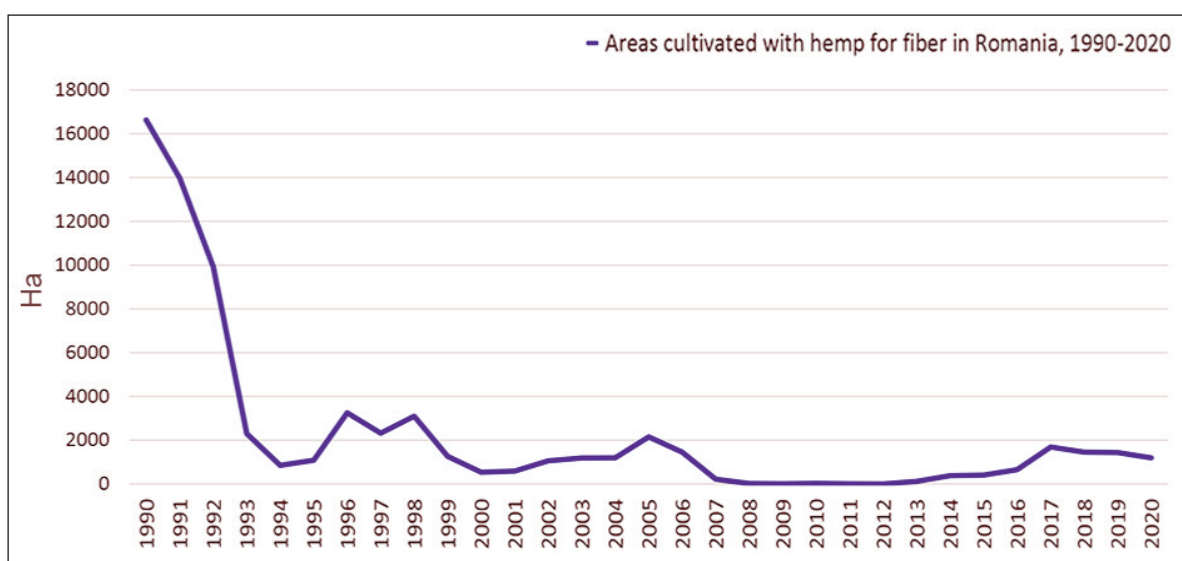


Fig. 1. Areas cultivated with hemp for fibre in Romania, 1990–2020 [12]

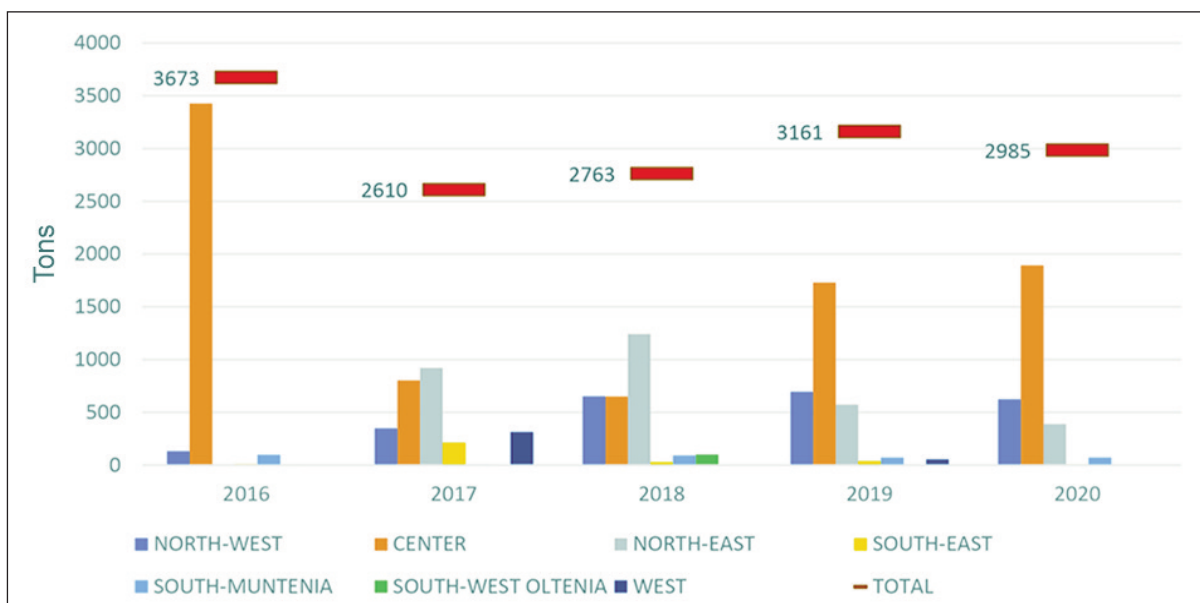


Fig. 2. Areas cultivated with hemp for fibre in Romania, by development regions, 2016–2020 [12]

rotation with potatoes, flax, sugar beet and oats. The largest areas cultivated with hemp are located in the Center Region of Romania (multiannual average of 251.8 ha) and the North-East Region of Romania (multiannual average of 317.7 ha) (figure 2).

Almost the entire quantity of hemp produced in Romania is going to export in countries such as Germany, Spain and Netherlands (figure 3). Although the processing capacity of the harvest is low, still this crop could be a profitable business, and this will be further discussed in this paper.

The Export Potential Indicator identifies the potential export value for any exporter in a given product and target market based on an economic model that combines the exporter's supply, the target market's demand, market access conditions, and bilateral linkages between the two countries. The potential export value in 2026 is based on projections of supply, demand, market access conditions and bilateral ease of trade, expressed in dollars.

Market potential for 530210 True hemp “Cannabis sativa L.”, raw/retted

The world suppliers with the greatest potential to export 530210 True hemp “Cannabis sativa L.”, raw/retted to World are the Netherlands, the United States and Switzerland (figure 4, a). The Netherlands shows the largest absolute difference between potential and actual exports in value terms, leaving room to realize additional exports worth 1.2 million dollars. Romania's export potential for hemp is 604.8 thousand \$, while actual exports value 777.0 thousand \$. The untapped potential remaining in individual countries is 383.0 thousand \$. Regarding the ease of trade, Switzerland has the closest export links with the rest of the world, followed by the United States and Romania. The lowest values are for Netherlands, Spain and Italy. At the same time, the Netherlands has the highest supply capacity (bullet size in fig. 4, b) in 530210 True hemp “Cannabis sativa L.”, raw/retted, followed by the United States and

Switzerland. The lowest supply potential (line width in figure 4, b) is for Germany, Spain, Spain and Belgium (figure 4, b).

Romania export market analysis for 530210 True hemp “Cannabis sativa L.”

The markets with the greatest potential for Romania's exports of 530210 True hemp “Cannabis sativa L.”, raw/retted are Switzerland, Czechia and Germany (figure 5, a).

Switzerland shows the largest absolute difference between potential and actual

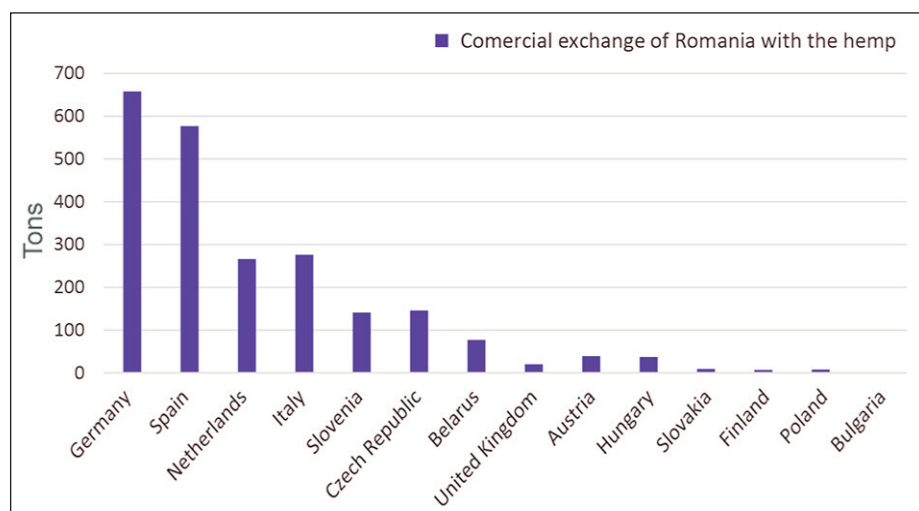


Fig. 3. Commercial exchange of Romania with the hemp [13]

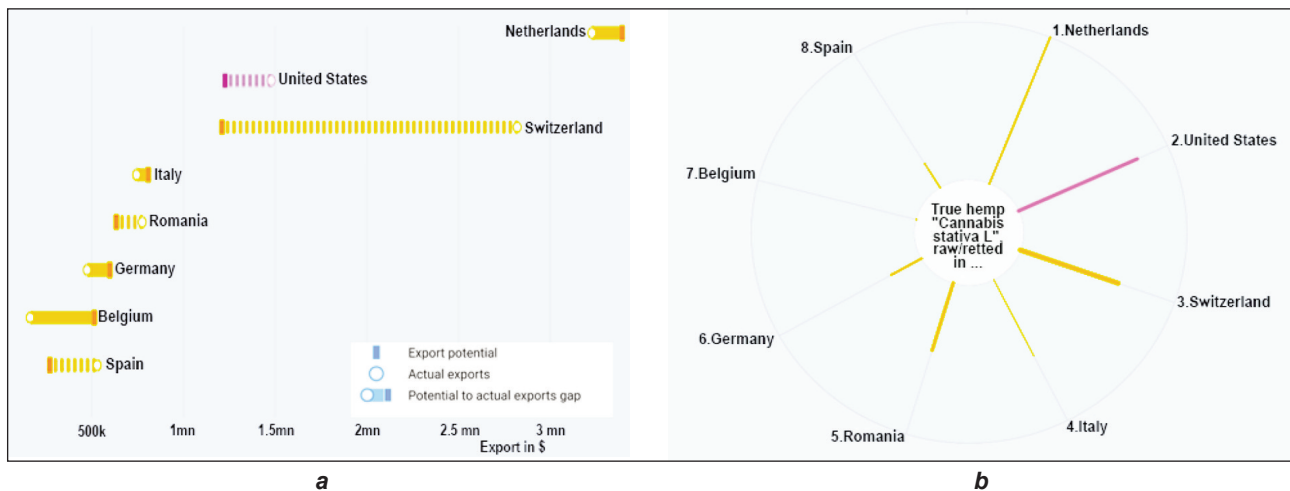


Fig. 4. Data on: a – countries with market potential for raw/retted hemp, 2020; b – potential export for raw/retted hemp [13]

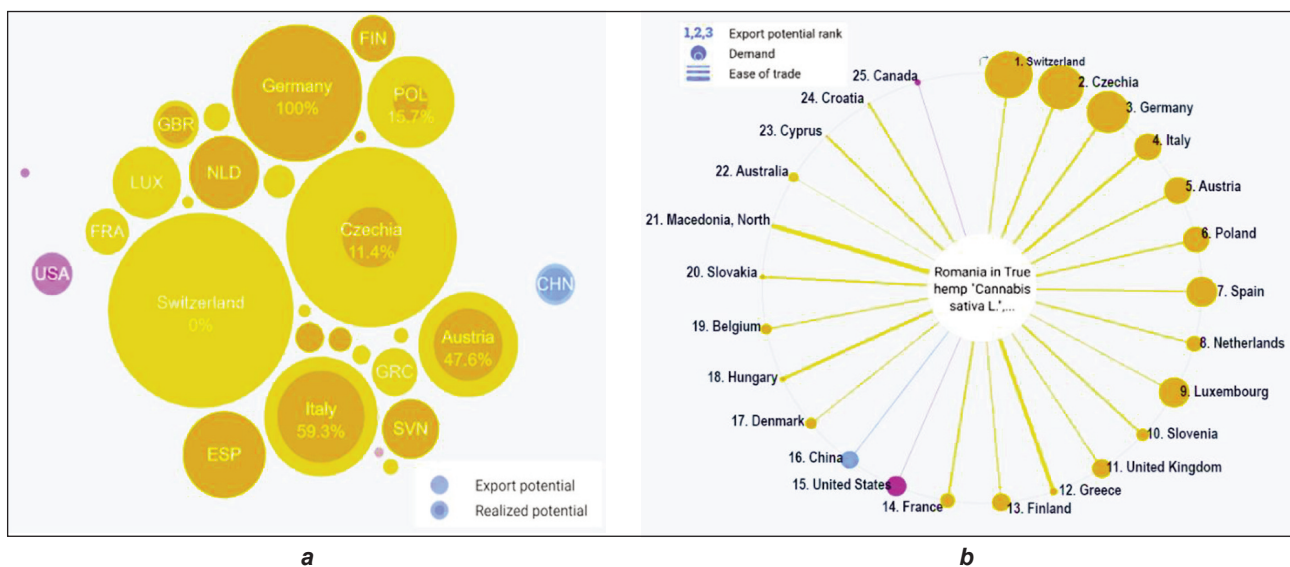


Fig. 5. Data on: a – Romania's export market for raw/retted hemp, 2020 data; b – analysis of Romania's export potential for raw/retted hemp [13]

exports in value terms, leaving room to realize additional exports of approximately 148 thousand \$. Romania has the closest export links (line width in figure 5, b) with Macedonia, North. Switzerland is the market with the highest demand potential for 530210 True hemp "Cannabis sativa L.", raw/retted. (figure 5, b).

Market potential for 530290 True hemp "Cannabis sativa L.", processed, not spun

The world suppliers with the greatest potential to export 530290 True hemp "Cannabis sativa L.", processed, not spun to World are Netherlands, Romania and Italy (figure 6, a).

The Netherlands shows the largest absolute difference between potential and actual exports in value terms, leaving room to realize additional exports worth 1.2 million \$. The total untapped export potential of True hemp "Cannabis sativa L.", processed, not spun was evaluated to 4.1 million \$.

Switzerland has the closest export links with World, followed by the United States and Romania. The

ease of trade is lowest for countries such as China, Spain and Italy. The Netherlands has the highest supply capacity (line length in figure 6, b) is 530290, followed by China and United States (figure 6, b). The lowest supply capacity is for Belgium, Spain and UK.

Romania export market analysis for 530290 True hemp "Cannabis sativa L.", processed, not spun

For the product: 530290 True hemp "Cannabis sativa L.", processed but not spun; tow and waste of hemp, incl. yarn waste, Romania's exports represent 8.5% of world exports for this product, its ranking in world exports is 6.

The markets with the greatest potential for Romania's exports of 530290 True hemp "Cannabis sativa L.", processed, not spun are Germany, Italy and Poland. Italy shows the largest absolute difference between potential and actual exports in value terms, leaving room to realize additional exports worth \$88.5 k.

Romania has the closest export links (line width in figure 7, b) with Bulgaria (figure 7, b). Germany is the

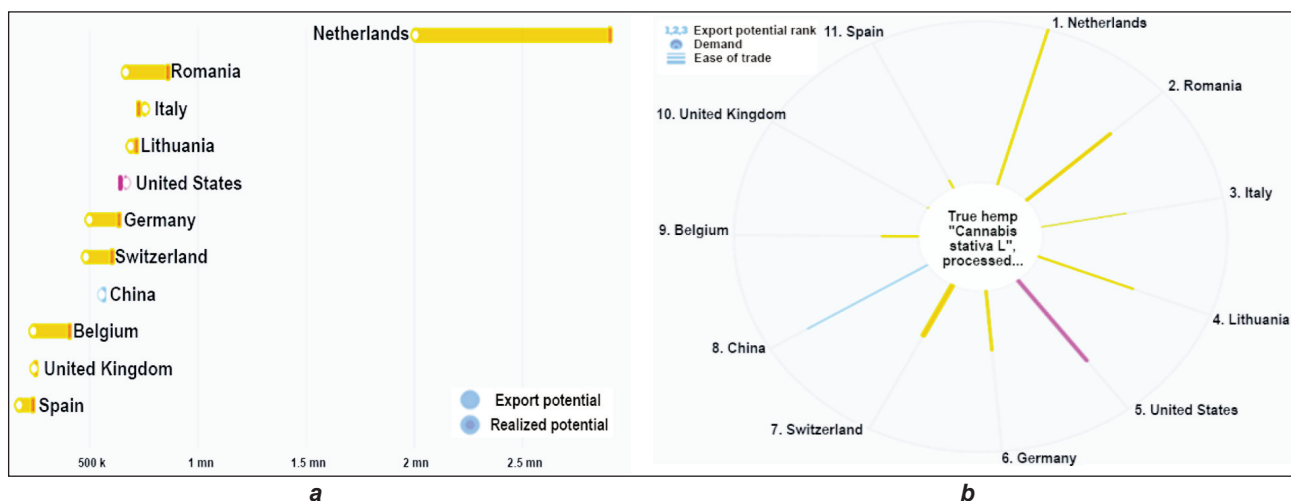


Fig. 6. Data on: a – countries with market potential for processed, not spun hemp 2020; b – potential export for processed, not spun hemp [13]

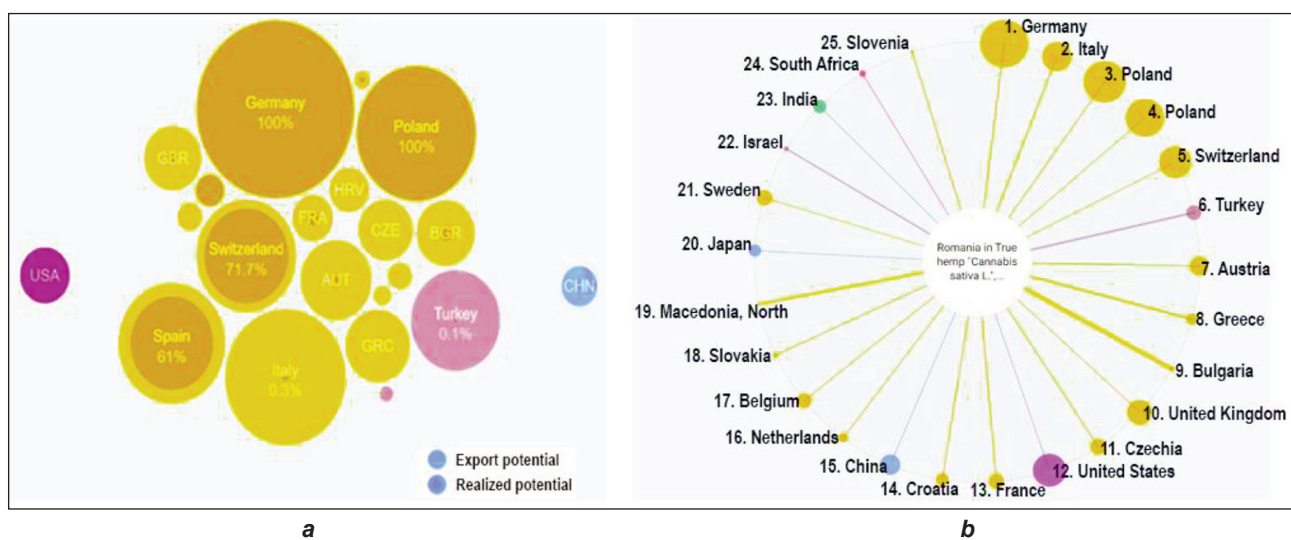


Fig. 7. Data on: a – Romania's export market for processed, not spun hemp 2020; b – analysis of Romania's export potential for processed, not spun hemp [13]

market with the highest demand potential for 530290 True hemp "Cannabis sativa L.", processed, not spun, from Romania.

Cultivation of hemp for fibre could be a promising alternative for market diversification, as currently, hemp fibre is attempting a new economic breakthrough in several manufactured forms [14]:

- Special pulp, such as Bible paper and cigarette paper.
- L'insulation: light, economical, recyclable hemp wool; rigid panels.
- Compounds or related materials (plastic + hemp) are used to make a matter first ready-to-use for industry (moulded products).
- Building materials (mortar and concrete of hemp) use the chenevotte, woody residue of the stem.
- The litters for animals in chenevotte are very absorbent.
- The mulching soils (absorbent power, insulator, neutral pH and stable at wind).
- Pellet soil improvers help to regenerate the humus.

- Hemp fabrics and clothing: some companies are trying to revive their manufacturing.

By emphasizing its specificity of cultivation in the total absence of phytosanitary treatment and its "carbon sink" outlets replacing highly energy-intensive materials (mineral fibres) and/or elements of highly insulating construction systems (hemp concrete, hemp "wools") [1, 5, 6, 12], the hemp sector has in various countries of the European Union been able to benefit from advantages such as coupled support or integration into green policies. However, hemp cultivation is strictly regulated by EU regulations regarding cultivation and seed importers while tetrahydrocannabinol is constantly observed.

CONCLUSIONS

Currently, hemp (fibre) is attempting a new economic breakthrough in several manufactured forms for the textile industry, paper industry, constructions industry, and agriculture practices.

Hemp cultivation presents environmental benefits related to green deal priorities, such as Carbon storage, Breaking the cycle of diseases, Soil erosion prevention, Biodiversity, and low or no use of pesticides. Hemp cultivation does not impose troublesome parameters, but the harvesting and processing are implying specific machinery. However, demand for hemp for fibre is high, and this product could be a promising alternative for market diversification in Romanian trade. Better promotion of the properties

and the possibilities of capitalization of hemp could lead to the return of this crop in our agriculture, to increase the farmers' incomes. The problem must be approached from head to toe, in the sense of first identifying potential buyers to properly size the cultivated areas. In this sector, too, storage spaces are an essential problem, which requires an immediate sale after harvest or in an initial phase of processing. Consuming sustainably and responsibly means reconsidering a range of materials, including hemp fibres.

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