

## HEMP CULTURE FROM TRADITION TO MODERN USE METHODS

MATEOC-SÎRB NICOLETA<sup>1</sup>, STOI VERONICA<sup>1</sup>, VENIG ADELINA<sup>2</sup>,  
VASS HUNOR<sup>1\*</sup>, MATEOC TEODOR<sup>1</sup>, CIOLAC RAMONA<sup>1</sup>, ADAMOV TABITA<sup>1</sup>,  
PLEȘCA CLEOPATRA<sup>1</sup>

<sup>1</sup>*Banat's University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timisoara, Faculty of Management and Rural Tourism*

<sup>2</sup>*University of Oradea, Faculty of Environmental Protection*

\*First author's e-mail: nicoletamateocsirb@usab-tm.ro

\*Corresponding author's e-mail: vass.hunor93@gmail.com

**Abstract:** *Hemp is the most popular plant in the Romanian people's tradition. It has been cultivated on the territory of our country for a very long time. One cannot accurately determine how long this culture has been known and used by the ancestors of the Romanian nation. It is known that it has been grown on large areas, in all Romanian villages, to obtain textile fibbers. There is no peasant household that does not have a hemp parcel, because it was a raw material, the basic source for obtaining cloths manually woven by housewives and to make clothing or other products used in peasant households (towels, bags, sheets, covers, ropes, strings, etc.). After 1990, because legislation stated that this plant is the basis for drugs, hemp cultures have greatly reduced and they are almost endangered. The authors of this article aim at highlighting that, by modern methods of use, of processing, hemp is the only plant from which stems, seeds, and leaves can be a very profitable crop that deserves more attention from Romanian farmers.*

**Key words:** *hemp, tradition, evolution, use, Romania*

### INTRODUCTION

Hemp used to be cultivated in all peasant households in Romania because the fibbers obtained were the raw material for making the fabrics needed for the family. Annually, summer or autumn hemp has been cultivated as long as it is necessary for clothing for family members, for other products needed in the household, and also to ensure the dowry of the girls who were to marry. [5,17]

All processing steps in order to obtain fibbers were manually performed by housewives. Summer hemp is harvested in July, and summer hemp is harvested in August, depending on the plants reaching maturity. Harvesting consists of pulling out the plants and putting them in sheaves, then drying them in the sun in a vertical position in order to remove the leaves and inflorescences. Stems linked in the sheaves were taken to be macerated, placed in water to separate the wooden stem fibbers for one or two weeks. After the maceration period, followed the washing of hemp stems in flowing water and then they were taken home, dried in the sun, upright on the fence.

During this period, all fences in the villages were filled with hemp. The release of the wooden part of the fibber was made with a braker, wooden tool that was used to break the wooden part and obtain the fibber. Then followed the fibber combing operation in order to prepare them for spinning. [3,4]

Three categories of fibbers were obtained after combing the hemp: *hemp bundle*, *warp* and *tow*, depending on their length and thickness. Through the spinning operation on the hemp bundle with the spinning fork, threads were obtained. The threads thus obtained from the hemp bundle were used to make fabrics with a *manual weaving loom* for finer fabrics. The warp was usually used to weave sheets because the threads were shorter than the hemp bundle, and the tow being the shortest threads left after combing the hemp bundle were used to weave cloth for the sacks, for mattresses, or for cords and strings.[7,9]

This beautiful tradition has become history because it is done, nowadays, for tourist purposes, in few places of our country, by artisans who want to revive these old methods of making wipes and folk, traditional Romanian costumes.

The area cultivated with hemp decreased worldwide but, in our country, it fell almost to the total disappearance of crops. After 1990, gradually, almost all hemp processing factories were closed and dismantled (out of 28 working before 1989, only two are left).[14,18]

The current increase of the areas cultivated with hemp in Romania and encouraging farmers to cultivate hemp is an exceptional chance of rebounding in the agriculture of our country under conditions of economic efficiency, as this crop is a niche business for the future of Romanian farmers.[11]

## MATERIALS AND METHODS

In order to achieve the objectives of this paper, the authors collected information and data from various bibliographic sources that they analysed and interpreted to be able to draw real conclusions on the evolution of hemp cultivation in our country, on the possibilities of expanding this crop due to its profitability, and on obtaining different hemp products that are currently made by different processing methods.

The authors used a multicriterial analysis to pursue the purpose of the paper using the different sources of information.

## RESEARCH RESULTS

### *Evolution of hemp cultivation in Romania*

Characteristic for hemp is that it has the ability to biosynthesise a chemical compound with narcotic and hallucinogenic effect called tetrahydrocannabinol (THC) whose content can increase uncontrollably during the vegetation in very warm regions.

Hemp seeds used for sowing cultures in our country for the production of seeds and oil, and also for fiber, are a Romanian product with a very good growth capacity and a THC content below 0.2%. [6,10]

The presence of this element in the composition of the hemp plant led to the introduction of international control of the products obtained from *Cannabis sativa*, irrespective of the hemp species from which it is obtained, even if hemp cultivated for fibers, *Cannabis sativa* L., subspecies *sativa*, has a low content in narcotic and hallucinogenic substances. The high content of these substances is in *Cannabis indica* (an Indian hemp species), *Cannabis sinensis* (a Chinese hemp species) or *Cannabis sativa* ssp. *spontane* (a species of wild hemp) and are easy to recognize because they grow up to a maximum of 1.5 m, they have narrow leaves, are strongly branched, and have large seeds. [8,11]

United Nations Conventions of 1961 and 1971, as well as Law no. 143 from 2000 voted by the Government of Romania established the rules for authorization and monitoring of hemp crops and coercive measures were introduced against illicit trafficking of hemp products.[1,2]

Worldwide, hemp has represented an important source of textile fibers and food oils, being used in medicine and also in the production of food. This plant has been, industrially, an important crop, but after World War II, its culture has seen a considerable decline since the 1960s. In most Western European States, hemp culture has disappeared. After 1990, it began to be reconsidered so that, at EU level, it is cultivated on an area of up to 15,000 ha. The most important hemp cultivator in Europe in the last 30 years is France. Worldwide, the largest areas cultivated with hemp are in Canada, U.S.A., and China.

In our country, has always been cultivated for fiber, not for drugs, as shown by statistical data of the past decades.

**Table 1.**

**Evolution of hemp cultivated areas and productions in Romania (1061-1989)**

Specification	U.M	1961-1965	1966-1970	1971-1975	1976-1980	1983	1989
Area cultivated with fiber hemp	thousand ha	25.3	26.4	28.3	33.1	38.7	46.1
Average production of fiber hemp	kg/ha	2920.0	3875.0	4101.0	4251.0	-	2472.0
Total production of fiber hemp	thousand t	73.7	102.3	116.2	140.8	-	113.9

Source: Calculated on the basis of data from the statistical yearbooks of S. R. of Romania[19]

After 1990, hemp cultivated areas have fallen sharply so that, in 2010, in Romania, it was cultivated on only 23 ha.

According to statistical data published by the Ministry of Agriculture and Rural Development, the evolution of hemp cultivated areas and hemp production after 2013 is presented in Table 2.

**Table 2.**

**Evolution of flax and fiber hemp cultivated areas in Romania (2013-2019)**

Specification	Cultivated area (ha)	Production
2013	100	...
2014	400	2.300
2015	400	1.900
2016	700	3.700
2017	700	2.600
2018	1.400	2.800
2019	1.400	3.100

Source: Calculated on the basis of N.I.S. data, Romanian Statistical Yearbook 2019, N.I.S. data, Tempo Online [13,19]

Statistical data confirm that, during the communist period, Romania was the largest hemp fiber exporter in Europe, and that it ranked third in the world.[19]

Reducing hemp cultivated areas in Romania after 1990 up to being endangered was caused by several factors:

- ❖ First, farmers were discouraged to cultivate hemp because it is considered a drug: they were subjected to bureaucratic actions for approving, controlling, and monitoring crops;

- ❖ Technological spending on hemp crops was not covered by revenues from selling the production, the crops often becoming unprofitable for farmers;

- ❖ Under these circumstances, farmers focused on other crops with a higher degree of technology and mechanization such as rape, maize, or sunflower, much more cost-effective during the 1990s.

In recent years, the Romanian Government has planned to support the development of hemp culture through considerable subsidies to stimulate farmers in hemp cultivation.

Also, since 2016, through an Emergency ordinance of the Government of Romania, which amends and complements *Law no. 339 from 2005 on the legal regime of narcotic and psychotropic plants, substances and preparations*, hemp (*Cannabis sativa* L.

subspecies *sativa*) can be cultivated on both lands outside and within urban areas, in family gardens.

The maximum area that can be cultivated in family gardens within urban areas for one's own needs is 1,500 sqm (15 acres). In this case, the cultivator declares on his own responsibility that the resulting production is used exclusively for his own, household, and traditional use, as well as the estimated and final production of each part of the plant: stems, leaves, inflorescence, fruit, seeds, and products obtained following processing. Thus, the declaration on its own responsibility replaces the product sales contract.[17,19]

Currently, in our country, hemp areas must be authorized and monitored by the Ministry of Agriculture and Rural Development, the Ministry of the Interior, and the Ministry of Health. Romanian legislation stipulates that the release of the authorization for the cultivation of plants containing psychotropic and narcotic substances must be issued by the County Agriculture Directorates annually by May 10<sup>th</sup>. In this respect, the Ministry of Agriculture and Rural Development is bound to transmit data on the hemp cultures of the current year, the National Anti-drug Agency and the Ministry of Health. During the vegetation period, the Ministry of Agriculture and Rural Development, through its own territorial structures and empowered persons, is bound to inspect cultures of plants containing psychotropic and narcotic substances. This category includes poppy, *Papaver somniferum* L. Therefore, farmers can set up hemp cultures only from *Cannabis sativa* L, subspecies *sativa* to get a licence attesting the right to cultivate crops for the production of stems or of seeds certified for sowing or agricultural research, a licence granted by the Ministry of Agriculture and Rural Development through its county and Bucharest directorates.[16,21]

Farmers wishing to set up hemp cultures need to use for sowing only seeds of the varieties recorded in the *Official Catalogue of Varieties and Hybrids of Crops in Romania* or in the *Common Catalogues of the European Union*. Also, seed producers should be licenced and registered by the Ministry of Agriculture and Rural Development through its official designated institutions.

#### ***Why cultivate hemp in Romania***

According to literature, over 25.000 products can be obtained from hemp plants, the range being very varied: from industrial ones to food, namely the bakery industry (hemp flour) [20]

Hemp is an unpretentious plant because, in addition to being cultivated on soils without excess moisture and neutral pH, it does not require maintenance, and costs per ha are below the costs of other crops such as wheat or rape. The cost of a ha cultivated with hemp is up to 2.500 RON/ha, while the costs in wheat are from 2.500 RON/ha to 3.500 RON/ha, and the costs in rape starts from 3.000 RON/ha and can reach 4.000 RON/ha (after analysis of farmers' expenditure estimates in the western area of the country).

Hemp fibbers have a diverse use, from fabrics to cords, bags, strings, fishing gears, etc. The boon that remains after the extraction of the fibbers from the stems through the breaking process is raw material for the production of conglomerate plates used in the construction field.

Siccative oil extracted from hemp seeds is used for the production of dyes, paints, and in the cosmetics and pharmaceutical industries.[20]

*Hemp seed oil* is a very beneficial product for people's health. In some countries from Eastern Europe, oil obtained from hemp seeds was used to replace butter. Subsequently, this product has become a delicacy in those regions. Following oil seed processing, *cakes* remain, which are used as a nutritional supplement in animal feed, but also for obtaining flours that have a very high protein content. In our country, the flour

from hemp seed cakes is used in the region of Moldova for the preparation of some fast cakes, being a tradition on Christmas Eve.[18]. Research confirms that the production of white flour in mixture with partially degreased hemp flour (10-20%) is similar to the bread prepared from whole flour. Cookies, pastries, confectionery, pasta, alcoholic, and non-alcoholic beverages, etc. can be prepared.

In addition to the fact that hemp is fully capitalized also has an important use from an agrotechnical point of view, because after the hemp culture the land remains clean from weeds. Researchers also concluded that hemp plants produced on 1 ha cultivated with hemp produce a *quantity of wood* equivalent to the amount of wood from 1 ha of mature fir tree annually.[12]

## CONCLUSIONS

Hemp is the plant from which all vegetative parts can be capitalized, constituting a raw material for a very diverse range of products.

From an economic point of view, hemp crops are a very profitable niche business, especially for small farmers, but not only.

The costs of setting up a hemp culture are around 2.500 RON/ha, much lower compared to wheat culture or rape culture.

Hemp seed can be sold for 30-40 RON/kg, and production may reach, on average, depending on the soil and climate conditions, 1.000-1.500 kg/ha.

It is an important source of revenue for household members in rural areas.

Cultivators benefit from substantial grants granted through A.P.I.A.

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