PRESSRELEASE UNDERCOVER

Hemp: **material of the future** towards zero waste in many industries from green building, to automotive, aerospace, textile, to disposables

The weak points of the newly formed Italian fiber hemp supply chain

How to **maximize the investment** in industrial hemp to use the **whole plant**: **1 cut 4 crops**, the experience of researcher **Vincenzo Guarnieri** (Policanapa, CSI member)

Canapa Sativa Italia (CSI) is a **non-profit association**[1] bringing together the most committed exponents of Italian hemp industry from all over the peninsula: passionate and competent standard bearers in young farmers, skilled processors and entrepreneurs, scientists and researchers. In a word, the new 'pioneers' of an ancient sector, hemp-harvesting, which now covers every spectrum of a quality supply chain: from agro-food, to nutraceuticals, to pharmacopoeia.

Born as an online group in 2014 with about 15,000 members, it was legally constituted in 2018; the members created a very rigorous adhesion process, validated by an internal ethics committee. The association offers a solid agricultural, technical and commercial counseling to its members as well as having created a group of *in-house* suppliers who offer goods and services on a competitive basis to members. CSI is, together, **a non-profit house organ for the general public** and a **competent advocate** that illustrates the benefits of the plant, the areas of application and the importance for the Italian agri-food industry to policy makers and the final consumers.

As part of an institutional press campaign, Canapa Sativa Italia (CSI) describes the entire hemp supply chain (ruled by Law 242/16) and highlights its hurdles and potential, giving

[1] Italian only: CSI Statute: https://www.canapasativaitalia.org/chi-siamo/

voice to its members. Today CSI will present the great constructive, textile and design qualities of industrial hemp.

Will a hemp supply chain 'from seed to finished product' see a certain green light (again) in Italy?

It is a crucial question whose answer unfortunately remains critical for thousands of entrepreneurs, researchers and processors who believe in a versatile plant, important for both food and medical uses whose fibers can be even more versatile for the textile, automotive and design industries, construction and coatings, even for the aerospace or 'disposable' industry.

The lack of clarity in the existing rules that often contradict or are often contradicted by investigative bodies (especially in Sardinia where unlike the laws applied in other Italian regions it is forbidden to separate the flower from the rest of the plant) discourages the attraction of intern and external investments and does not grant the compaction of a healthy and 100% made in Italy supply chain.

If laws acquire clarity and if the control bodies abandon their attitudes contrary to the existing regulations, an industrial hemp supply chain could already be a fruitful reality starting from **the creation of crops of plants useful for all the four qualities of *Cannabis Sativa Linnaeus***: **seed** (food and agricultural), **flower** (wellness, extractive, medical), **shive**, **fiber** (cellulose and innovative materials) in order to minimize the costs of planting, processing and 'harvesting' and maximize the return on investment.
Italian hemp is historically the best in Europe thanks to the microclimate and quality of the soils but to this day - while we are discussing how to get the newborn supply chain off the ground - it is preferred to poorer but less expensive qualities (from French to Chinese).

Today, potentially and in the light of the speculative bubble affecting the flower in particular, **the creation of value and economy of scale around cellulose and fiber** would represent **a driving force capable of completely revolutionizing** the global production of **high-potential materials**.

The value of hemp fiber has been recognized over time: before plastic existed, hemp fiber was the master in more than one industry. Nylon was created by 'mimicking' hemp just as Bakelite was created by mimicking ivory.
Developing in the laboratory a material equivalent to the one obtained in nature has had the effect of destroying a complementary sector as the production of paper, plastic and other similar materials.

Today, unlike seventy years ago, science has reached unthinkable milestones and the **circular economy is no longer just a mantra for enlightened researchers** but a 'mandatory' law in many advanced economies.

The fiber derived from cellulose is a completely **eco-compostable**, **renewable resource** (produced in the open field every three months) and is the main matter for the construction of innovative materials, different from those that were already produced by mimicking hemp seventy years ago.

Vincenzo Guarnieri, researcher, Policanapa CEO, talks about his experience on the sidelines of an online meeting open to the generalist and specialized public CSI organizes and offer for free every Tuesday on its social channels from 9 to 10 pm (Il Salotto della Canapa di CSI, Italian only, chaired by Marta Lispi) interviewing protagonists of the Italian supply chain and a Q/A with the audience.

'Performing materials derived from hemp are already a reality and are applied in the automotive or space, textile, construction industries - even for the disposables, *just in time* or for an infinite time.

The hemp cellulose, for example in textiles, could build (needle-punched textile or for warp wefts) fiber fabrics with particular technical capabilities, making it possible to replace plastic and other incompatible materials to strive for the optimum of zero waste. Among other things, unlike plastic produced from petroleum, bio-plastic from hemp does not have any difficulties and costs related to the end of its life-cycle.

Many companies such as **BMW** and **Ferrari** have already noticed its important technical capabilities, two above all: **specific lightness** and **structural resistance**.
Hemp produces a lot of biomass in a short time and for this reason there are many companies interested in the use of hemp cellulose for bio-plastics both as a base (hemp as a single component) and as a filler (hemp as an additional component).
Last but not least, a car or a piece of furniture, an electronic hemp gadget could be disposed of in the wet.

Other nations already invest significant budgets in research on this natural matter. Depending on the supply chain and how it is developed, there are different applications. At a time when it is possible again to create a sector also in Italy - since 2016 hemp can be cultivated again - it is impossible to create industrial production and this prevents us from reaching the level of other operators in other states.

A processing plant costs a few thousand euros and in Italy are absent because no one (Italian or foreign) invests if not 'sure' of the return on investment. And in Italy the security of operating in a regulated industrial sector with little clarity is not there.

Here as elsewhere, we also have a 'species' problem which, if combined with the specific difficulties of the Italian supply chain, causes the latter to end up in *a cul de sac* that is difficult to subvert. Plants that are genetically designed to produce flowers in the open field are specific only for this use and have a particular branching: to enhance their hemp or fiber discards it is necessary to remove the branches and this means increasing costs. Similarly, seed plants are not useful for fiber because they are short plants.

There is also a problem of quantity and quality. **Flowering plants** such as those found in the tobacconist's **should be a 'craft' product**, very artisanal and of the highest quality, to be developed in a maximum of 10 hectares and worked by hand. **To work profitably with seeds and fibers, hundreds of hectares are needed**.

The process we at **Policanapa** developed and implemented in Abruzzo in 2019 on 15 hectares of hemp divided into two species - Santica 27 and Futura 75 - can be summarized in " **1 cut 4 crops**".

We have employed a lot of manual work and a modified wheat harvester but we have studied and developed the experiences for the construction of a machine (whose name is

TCP120) for the field harvest (1 cut) that cuts and collect whole plants with canes of different heights at once, leaving the ground immediately free and ready for subsequent processing.
It is a machine designed to recover the whole plant without losing any flower, leaves, seed and cane. Without diminishing the quality of all the crops, but preserving the organoleptic capacity of the seed for agro-food, the predisposition for the extraction of clean flower (biomass with GMP protocol), fiber and hemp of the highest quality because they are not mortified by atmospheric agents and molds in their peculiar qualities of tenacity, resistance and structure (four crops).

The transport and composting of whole canes allows natural indoor drying: it is delicate, preserves (does not reduce and does not oxidize) the precious raw material.

When the plant loses up to 70% of weight (water) and is at a controlled humidity percentage below 15/12%, then it is ready to be placed on the conveyor belt that will take it inside the **DS1000** (deflorator).

The flower will be separated from the seed here at this stage and both will be free of insects: during drying these leave the plants and therefore do not end up with the clean product. The barrel is also separated, making the various co-products clean by their presence from each other.
Flower and seed still follow a common path passing through a multi-story vibrating screen.
In addition to having a further visual and manual control by the operator, they will be separated from each other making the first ready for extraction and the second ready for separation into flour and oil.

The hemp stick intact and as long as the whole plant cleaned of all the leaves, flowers and seeds coming out of the DS 1000 (deflorator) will be transported on a belt and will be ready to be separated from the fiber by the **STK600** or by the **STK1000** (**both scribers**) in long and clean and dust-free white shives.
Two levels of conveyor belts await the outgoing co-products, one high and chained to collect the fiber and one low and belted for the hemp.

Both the DS and the STK are equipped with vacuums **recovering the dust of the related processing which are in turn additional materials of the highest quality** (and with their own sales compartments).
The subsequent processing of the fiber and the hemp will follow the paths defined within the local supply chain to make these products further functional for the sale.‘

As recently declared to Lampoon Magazine who started a column on hemp and its advanced uses especially for textile industry, Vincenzo Guarnieri recalls that the Hemp Plastic Company was founded in the United States and develop flexible bio-plastic packaging made with by-products of hemp processing. This company produces about four hundred and fifty tons per week. The Italian entrepreneur and researcher, partner of Canapa Sativa Italia (CSI) since the beginning, hopes that such an innovation can also be introduced in Italy: 'In a historically manufacturing country like Italy we should have all the tools and infrastructures to process raw materials, so as to have a zero kilometer output. Investments and specializations are required.'