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Kehrt Reyher
Editor & Publisher

Senior Advisers

Steve Allin International Hemp Building Association	Hana Gabrielová Hempoint Czech Republic
Richard Rose The Hemp Nut Consultancy; CannaCoach, Italy & USA	Morris Beegle Colorado Hemp Co. Colorado, USA
Daniel Kruse HempConsult GmbH Germany	Rachele Invernizzi SouthHemp Italy

Global Advisers

NORTH AMERICA	EUROPE
Robert Ziner Canadian Industrial Hemp Corp., Toronto, Canada	Rafael Dulon Hanf Farm GmbH Germany
John Patterson Tiny Hemp Houses Colorado, USA	Sergiy Kovalenkov Hempire Ukraine
Pamela Bosch Highland Hemp House Washington, USA	Boris Bañas CBDepot, Czech Republic
Mike Leago High Grade Hemp Seed Colorado, USA	Monica Brümmer Cannabric Spain
Carl Martel Formulations by Nature Texas, USA	Pierre Amadiou Initiative Chanvre France
ASIA	AFRICA
Dhiraj K. Shah Nivedita Bansal Shah Shah Hemp Inno-Ventures Nepal	Tony Budden Hemporium South Africa
Riki Hiroi Each Japan, Inc., Japan	Arne Verhoef HempHub South Africa

Media Advisers

Allan Lengel Ticklethewire.com Washington D.C., USA	Marshall Reyher MPR Studio Poland
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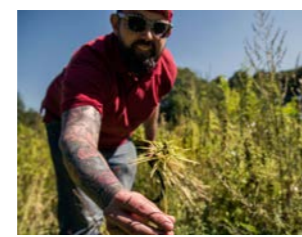
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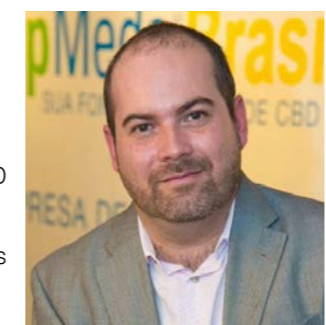
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Deep roots in Europe

The European Industrial Hemp Association (EIHA) is the only pan-European membership organization in the industrial hemp sector. We equally represent the interests of hemp producing and processing companies. EIHA was originally formed almost 19 years ago and was officially founded in 2005. With offices in both Brussels and Cologne, our membership encompasses 25 EU states and 12 additional countries including members from North America and Asia, primarily farmers, processors and manufacturers who represent the entire value chain from seed to shelf. Our primary tasks are to monitor EU hemp related policies and to provide the EU decision makers with accurate and reliable information on which to base legislative and regulatory frameworks. EIHA is currently monitoring the following policies: CAP reform, Hemp extracts/Novel Food regulation; THC & CBD in feed, food and cosmetics; Life Cycle Assessment of hemp materials; and CO2 impacts as well as environmental concerns.

Administration



Lorenza Romanese
EIHA Managing Director

Based in EIHA's Brussels office, Lorenza is a veteran policy advisor and communication manager at the European level. She has led EIHA's efforts in Brussels since February 2019, having worked with a number of MEPs to propose reforms affecting hemp in the EU's Common Agriculture Policy. Lorenza previously advised interests in the oil and gas sector, and led the European Association of Independent Winegrowers.



Francesco Mirizzi
Senior Policy Adviser

Francesco is an EU and international lobbying expert who has worked in the hemp, cotton, flax, wine, spirits, hops, olives and olive oil industries. He previously worked at the European Commission on such issues as rural development, international bilateral relations, and European Economic Area and European Free Trade Association enlargement. Francesco also has experience in Italian and EU public administration as well as in the private sector (Pernod Ricard SA).



Victoria Troyano
Exec. Assistant & Communications Officer

Victoria has EU experience in the agriculture sector, and worked previously for Copa-Cogeca, the biggest farmers organization in the European Union. She graduated from Comillas Pontifical University with a Masters of Arts in Conference Interpreting. She speaks English, French, Spanish and Italian, and completed the European Commission Blue Book training program.

Administrative Office
Rue Montoyer 31,
1000 Brussels, Belgium
Tel: +32 (0) 483 320 380
Email: info@eiha.org
www.eiha.org

Executive Office
c/o nova-Institut GmbH
Chemiepark Knapsack
Industriestraße 300
50354 Huerth, Germany
Tel. +49 2233 4814 40

President

Daniel Kruse, EIHA President, has been in the hemp industry since 1995. He is the founder and CEO of Hempro Int. GmbH & Co. KG, a vertically integrated Dusseldorf-based producer and wholesaler of hemp foods, bulk raw materials for food, textiles, accessories and cosmetics. Kruse is also senior advisor to entrepreneurs, startups, investors and other industry stakeholders through HempConsult GmbH, an independent consulting firm. He was elected President of the EIHA in November 2019.



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Hemp Manifesto

Industrial hemp can play a major role as Europe takes on the economic challenges of the coming years, the European Industrial Hemp Association (EIHA) said as it released a roadmap to the crop's future this spring.

Citing the "huge potential" of the European hemp industry to speed up transition toward an environmentally sustainable economy, EIHA's Hemp Manifesto specifically emphasizes hemp's promise for economic sustainability in rural development. "The whole economy of rural areas could be positively impacted," particularly considering the potential for use of the whole hemp plant – its seeds, stalks, flowers and leaves, according to the document, which underscores the positive impact hemp could have under 10 key recommendations.

EIHA released the manifesto in time for Earth Day 2020 to underscore hemp's potential for reducing

climate change.

"Today's environmental and health catastrophes are the price the world is paying for . . . global economic growth based on individualism, greed and disrespect of all other forms of life," the document states.

"Nonetheless, in the face of the most recent events, humans seem to acknowledge this and recognize that most of the threats we are now compelled to address are indeed a direct consequence of human intervention.

"The change of mindset now needs to be translated into concrete proposals and eventually into decisive actions, because only a drastic change in our patterns would help us deviate from a dangerous trajectory," the manifesto reads.

Noting that public policy should promote hemp in food, feed and manufactured products while financing the development of sustainable value chains, The Hemp Manifesto urges the following:

1. EU Member States should allocate part of direct subsidies for the development of hemp production.
2. The contribution to the environment of the hemp plant should be recognized and the use of hemp for carbon farming encouraged.
3. Member States should not apply drug control laws to hemp and its derivatives as long as THC limits are respected.
4. The maximum THC level allowed for industrial hemp on the field should be restored to 0.3%, allowing the sector to align with international standards and start breeding new and more adapted varieties to satisfy farmer practices and consumer trends.
5. Operators should be allowed to harvest and make products from all parts of the plant, including flowers and leaves, and market any kind of product that respects THC limits.
6. Hemp and hemp preparations containing a naturally occurring cannabinoid content should not be considered as Novel Food.
7. Reasonable guidance values for THC in food and feed should be established.
8. All hemp derived raw materials should be permitted as ingredients for cosmetics.
9. The EU should value and promote the use of hemp for the production of short and long fiber for textiles, and favor the setting up of sustainable value chains
10. The use of hemp-based construction and other materials should be incentivized both in public and private sectors, with clear goals for the total or partial substitution of other less sustainable alternatives.

Working together

EIHA consortium takes a constructive approach to Novel Food challenges

A consortium led by the European Industrial Hemp Association (EIHA), will resort to the current EU food safety approval process for hemp foods and extracts while continuing to challenge those rules.

Stakeholders in the **consortium**, which is being organized as a limited liability company, EIHA projects GmbH, disagree with changes made in January 2019 to the EU's Novel Food catalogue which re-classified hemp leaves and flowers as well as extracts derived from those plant parts – including CBD – as Novel Foods.

But with EU officials and some Member States failing to give any signals that the rules change will be reversed, the consortium has formed to help participating stakeholders get their products on the market legally by going through the Novel Foods approval process.

About the rules

Europe's Novel Food rules were created as a food safety mechanism to control new, genetically or synthetically produced food products before market entry. Under the guidelines, Novel Foods are defined as those that were not consumed to a significant degree in the EU before May 15, 1997.

If a food is considered novel it must undergo a pre-market safety assessment under the European Food Safety Authority (EFSA) before it can be legally marketed in the EU, an expensive and lengthy process which stakeholders say is hurting Europe's hemp food and CBD producers.

How the consortium works

A consortium task force within EIHA is creating a list of 4 product formulations to cover every possible CBD related product, which will be consolidated into one Novel Food application, thereby reducing costs to producers.

EIHA estimates that an individual company registering a single product under Novel Food guidelines would pay around €300,000. Depending on their size, companies may



join the consortium for around €10,000 – €50,000. Those fees will rise over time, with initial founding members getting preferred membership rates, according to EIHA.

The consortium will need a minimum €2 million in financing, with estimates that the required lab analysis of CBD and THC toxicology studies alone will cost €1.8 million. EFSA estimates 18-24 months for an application to be considered under Novel Food rules, but EIHA said the process could take longer.

Previous rules 'workable'

EIHA has argued that hemp-specific Novel Food rules which existed before the changes in 2019 were "workable" for stakeholders, and have encouraged a return to those guidelines. Not doing so leaves Europe at a disadvantage in the rapidly growing global hemp food marketplace where big players such as China, Canada, the United States and Switzerland are aggressively competing, the Association has said.

EIHA has a stated position that Novel Food categorization for hemp should apply only to genetically designed food products or enriched/isolated cannabinoids – and not to hemp leaves and flowers extracted using traditional extraction means and respecting the naturally occurring level of cannabinoids.

It's just food

Those derivatives, including CBD, should be treated as any other food product or food supplement, EIHA contends. The Association carried out extensive research last year to prove that those parts of the cannabis plant, and extracts derived from them,

have been in the European diet going back centuries.

Hemp seeds, leaves and flowers, which have similarly shown up throughout European history as a common food, do not fall under Novel Food rules. EIHA said it will stick to its position on this, "while at the same time leading the hemp industry into the future by a sound and well-prepared Novel Food application process."

All business operators working with CBD-related biomass, extracts, oils, isolates and finished products, who are regular members of EIHA are automatically and mandatorily members in the consortium. The consortium will be executed thru the EIHA projects GmbH which in turn is wholly owned by EIHA. Companies who are not current members of EIHA must first join the Association to become consortium participants.

EIHA's position on hemp extracts

- Leaves and flowers of industrial hemp plants are not Novel Foods, and should be regulated by the existing rules on food and food supplements. Extracts, from traditional extraction technologies, from hemp plants legally grown in Europe are not Novel Foods
- Whole-plant extracts, so called full spectrum extracts with naturally occurring level of cannabinoids are not Novel Foods. As long as a similar level of cannabinoids is maintained in final product, the product is not Novel Food.
- For consumers' safety, EIHA proposes a maximum daily intake of 100 mg food and/or food supplements for an average adult.
- Genetically modified plants and synthetic material should be considered Novel Foods.

Raising our voices

Kruse: 'We're getting the message across in Brussels'

*Daniel Kruse, President, European Industrial Hemp Association (EIHA) has been in the hemp industry since 1995. He is the founder and CEO of **Hempro Int. GmbH KG**, a vertically integrated Dusseldorf-based producer and wholesaler of hemp foods, bulk raw materials for food, textiles, accessories and cosmetics. Kruse is also senior advisor to entrepreneurs, startups, investors and other industry stakeholders through **HempConsult GmbH**, an independent consulting firm. He was elected President of the EIHA in November 2019.*

HempToday: You're a full 7 months into your term as President. How do things look from behind the President's desk?

Daniel Kruse: We're in a great position, due to the hard work of my board colleagues and myself, to build on the strong platform left by my predecessor, Mark Reinders. Our membership continues to grow at all levels, and we've greatly strengthened our lobbying position in Brussels with the addition last year of a Brussels-based managing director, Lorenza Romanese, and a full-time team.

HT: How is the progress with decision makers in Brussels?

DK: We're getting the message across. They definitely know about the hemp industry due to EIHA's work, and step-by-step, we're making them understand both the industry's economic potential and the fact that we need clear rules to reach that potential. It's absolutely critical that we have a strong voice at the EU level, and it takes full-time vigilance and activism to protect our interests and push forward for a level playing field for the European hemp industry.

HT: What is front and center now for EIHA in its lobbying efforts?

DK: We face three ongoing challenges. First, allowable THC levels 'on the field' in Europe, where we are handicapped by a 0.2% barrier while the rest of the world observes 0.3%, the prior EU limit, as the standard. It's crucial we raise this limit as soon as possible to achieve a larger selection of varieties, especially for seed production. We also need modern and sound scientific guidance values for THC in food for all of the EU. The current calculations by EFSA and BfR are based on unnecessarily strict Uncertainty Factors and therefore come to wrong results.

Second, the EU commission (PAFF) has created a problem we must solve re-



"The strength of any organization comes from the contributions of its members."

– DANIEL KRUSE

garding hemp extracts containing naturally present cannabinoids and the related entries of the Novel Food catalogue that has thrown the hemp food and supplement market into a bit of turmoil. Finally, we have a similar problem with EU Cosing guidelines which gives pause to makers of health and beauty products containing CBD. After our direct approach to the commission now finally extracts from Cannabis Sativa are not restricted anymore.

We are working for the same outcome, based on the same logic (industrial hemp is not in the scope of the Single Convention), regarding CBD isolate derived from industrial hemp extract.

HT: What are the pillars of your strategy as EIHA President? What are the goals you've set for your tenure?

DK: First it's to deliver real benefits to our members. The strength of any organization comes from the contributions of its members. EIHA has been around for nearly 25 years, and we have members who have been with us from the very start. Our members represent a terrific knowledge base and years of experience which they contribute to EIHA's efforts. In return, we owe them well-defined benefits that can help them and their companies. While they all understand and appreciate the long-term benefits of our presence in Brussels, we also work

to enhance networking and knowledge exchange through our annual conference and the white papers, research reports and other tools we create to help members in their business. And, as I promised in my speech after my election: I will not give up or falter before we achieve our goals – to have a sustainable hemp industry with sound scientific regulations for THC and CBD that ensure the safety of the consumer as well as the sustainability of our industry. The groundless "witch hunt" on hemp, which we are facing right now, has to stop!

HT: What's EIHA's role globally as hemp undergoes a renaissance around the world?

DK: Collectively, our members have decades of experience in the "new" hemp era that we can share with other associations and individual stakeholders around the world. Everything from seed science to farming, processing and marketing. We're very active and take a "sharing" attitude to knowhow and market intelligence. People from all over the world come to our annual conference in Cologne each June to learn from European hemp experts. And we've recently joined as co-organizers of annual international hemp conferences in Latin America and Asia as a part of our efforts to extend the EIHA brand

Francesco Mirizzi

EIHA SENIOR POLICY ADVISER says industrial hemp stakeholders have the potential to fulfill a 'promise of renewal' for Europe's agriculture sector

INTERVIEW: Francesco Mirizzi was appointed Senior Policy Advisor at the European Industrial Hemp Association (EIHA) this spring, having worked for two years in Copa-Cogeca, the biggest farmers organization in the European Union. He is an EU and international lobbying expert with experience both in the private and public sectors (Pernod Ricard SA, Puglia Regional administration), and has experience in the hemp, cotton, flax, wine, spirits, hops, olives and olive oil industries. Mirizzi has covered policy areas such as rural development and international bilateral relations, and acquired knowledge on the European Economic Area and the European Free Trade Association enlargement during a traineeship at the European Commission.

HempToday: What promise does hemp hold for rural development in the EU? In which countries or regions does it hold the most promise?

FM: It is essentially a promise of renewal. Agriculture nowadays dramatically needs the workforce and the right mentality to adapt to a fast-changing world. Hemp stakeholders have the right profile to start a most needed revolution of the farming sector, especially those who have been around for the past decades fighting relentlessly for a better reputation for hemp.

The most promising countries, in my opinion, are France, because of its status as a historic producer; Italy, particularly for food preparations, the clout of the "Made in Italy" brand, and the experience of food processors; the Baltic countries, where a spike in hemp farming was observed in the last years; and finally Poland and Romania, where the popular culture of hemp is still strong.

HT: What are the key things EIHA would like to see in the upcoming reforms to the EU's Common Agriculture Policy (CAP).

FM: First of all, we expect that the European Parliament to confirm in plenary session the proposed increase of the maxi-



"Agriculture nowadays dramatically needs the workforce and the right mentality to adapt to a fast-changing world."

– Francesco Mirizzi

MOVING HEMP FORWARD TOGETHER

The **European Industrial Hemp Association (EIHA)** represents the common interests of hemp farmers, producers and traders working with hemp fibres, shives, seeds, leaves and cannabinoids. Our main task is to protect and represent the hemp sector in the EU and international policy-making.

EIHA covers different areas for the application of hemp, namely its use for **construction materials, textiles, cosmetics, feed, food and supplements.**



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Novel Food Consortium



By becoming a Regular Member of EIHA working in CBD, you automatically join EIHA's NF Consortium. Following a positive outcome of the novel food application, your company's products will be allowed to be marketed in the EU with an exclusivity on the study that will last 5 years.



Contact person: Victoria Troyano
victoria.troyano@eiha.com
+32 (0) 471 87 06 59

EUROPEAN INDUSTRIAL HEMP ASSOCIATION: Administrative Office: Rue Montoyer 31, 1000 Brussels, Belgium, Tel: +32 (0) 483 320 380; Executive Office: c/o nova-Institut GmbH, Chemiepark Knapsack, Industriestraße 300, 50354 Huerth, Germany, Tel. +49 2233 4814 40; Email: info@eiha.org; www.eiha.org; President: Daniel Kruse, Hemprom International GmbH & Co. KG; Vice President, Catherine Wilson, CannaWell, UK; Treasurer: Bernd Frank, BaFa Neu GmbH, Germany; Board Members: Mark Reinders, HempFlax, Holland; Jacek Kramarz, HemPoland, Poland; Rachele Invernizzi, South Hemp, Italy; Christophe Fevrier, Hemp-It, France.

mum allowed THC rate to 0.3%. This would allow the sector to align with international standards, and start breeding new and more adapted varieties.

Furthermore, we will follow closely the rules for implementing “sectoral aids,” as from the entry into force of the new CAP reform, Member States will have the possibility to dedicate part of the CAP money from the direct payments budget to fostering the hemp sector.

In addition, we ask for hemp to be recognized as a high carbon storage crop, therefore subject to easier requirements in terms of greening or top-up payments.

Finally, we ask the legislators to allow the registration of designation of origins and geographical indications in the hemp sector.

HT: Critics say that supports under CAP are unbalanced in favor of big farms. Do you expect any significant changes in the upcoming CAP reform that will address this unbalance, generally? After all, most hemp farms are relatively small.

FM: The question of economic sustainability of the farming model is at the core of the discussions. Considering recent global developments, I believe that the cards will be reshuffled soon and a bolder approach will be taken by legislators, in favor of cooperatives and small farmers.

This said, we need to acknowledge the general support of the Commission and the Parliament for SMEs (even if for some too little has been done). The new Commission proposal, for example, suggests to limit the financial aid to €60,000 per farm, therefore avoiding giving too much to the big players. Furthermore, even in the current CAP, there is a specific fund for small farmers.

However, very little can be done if the Member States don't vote on a consistent and adequate budget for the CAP.

HT: How does the EU agriculture subsidy program work for hemp farmers in practice?

FM: The detailed rules will be established later and mostly at the national level. Types of interventions that will be possible to finance are among others: investments in tangible and intangible assets, setting up of mutual funds, promotion activities, organic production, etc. Similar measures are already in place for the wine and fruits and vegetables sectors, among others.

These subsidies are not automatic though. Member States need to be convinced to allocate them in the coming year. Therefore, an engagement of EIHA members and the whole hemp community is crucial for ensuring that the hemp sector will be supported by CAP funds in the future.

So far we understand that France was the first country to flag the idea to include hemp

in their future CAP strategy. We trust that more Member States will do the same.

HT: Who are the most important constituency groups inside the EU that we need to reach regarding hemp issues?

FM: The first target of our communication and advocacy is Members of the Parliament and the officials working at the European Commission. Oddly enough, most of them don't have a clear idea of the wonders hemp can do on the field and as a transformed product. We'll focus on multiplying learning occasions for Brussels' stakeholders.

EIHA will put a lot of effort into highlighting the use of hemp in textiles and as construction material. If we focus on CBD exclusively, we'll fail to show the broader utility of this incredible crop.

HT: How does hemp's position in EU policy compare with the more long-standing sectors in which you have worked? How would you assess the overall standing of hemp as a crop in EU programs and institutions? Where do we need change & improvement?

FM: We need a lot of change, unfortunately. Hemp cannot be compared to any other crop in the framework of EU policies. The negative image it had throughout the past decades effectively contributed to its oblivion except for a few (confusing!) rules on THC content. Everything needs to be built from scratch, unlike other agri commodities, which are all highly regulated by a multitude of rules.

It will be EIHA's task to steer the structuring of a true EU-wide hemp products market with clear and common rules.

HT: How important is EIHA's interface with international institutions? What are those key relationships, and what are the common goals?

FM: UN and WHO are the main institutions where the main knot needs to be untied. Therefore, EIHA will of course engage with these two institutions, even more vigorously than in the past. The long-awaited change in the drug scheduling system is still one of our top priorities, and the biggest hindrance to the global development of the sector.

HT: Give us a snapshot of how effective EU policy making works.

FM: Contrary to what many people think, EU policy making is very much inclusive and transparent: all stakeholders have equal access to EU institutions. From my experience, the most effective stakeholders are the most innovative ones capable of providing constructive proposals, regardless of the size. So I guess that we are in a good position so far.

New office in Brussels is key asset

EIHA opened a new office in Brussels earlier this year, completing the establishment of a fully-staffed, full-time presence in the EU capital.

“Having a strong voice in Brussels boosts EIHA's visibility and influence in the European legislative context, and this is crucial for the future of whole sector,” said Lorenza Romanese, the Association's Managing Director, who took up that full-time job one year ago. “The presence of EIHA at the heart of Europe is key to tackling the challenges ahead.”

Romanese said establishing the new office also will enhance EIHA's ability to deliver more services to Association members, EU member states and stakeholders worldwide. To help in meeting those goals, EIHA added communications specialist Victoria Troyano, who now serves the Association as Executive Assistant and Communications Officer.

The role has been designed as part of EIHA's strategy to advance internal communication with members and enhance external relations with partners and other stakeholders.

Participants

Number of companies participating, by country.

- Austria (6)
- Bulgaria (1)
- Croatia (2)
- Czech Republic (3)
- Estonia (2)
- Finland (1)
- France (2)
- Germany (16)
- Greece (3)
- Hungary (1)
- Ireland (1)
- Italy (3)
- Latvia (1)
- Liechtenstein (1)
- Lithuania (8)
- Netherlands (9)
- Poland (5)
- Portugal (1)
- Romania (1)
- Serbia (1)
- Spain (5)
- Sweden (1)
- Switzerland (2)
- United Kingdom (9)



EIHA releases first-ever CBD report

Europe has vast potential in the CBD sector, but there's an urgent need for legislative and regulatory reform that will unlock the market to serve the health and well-being of EU citizens.

Those are the key findings in “The European CBD Market 2019-2020,” a research report from the European Industrial Hemp Association (EIHA) published earlier this year.

Some 84 companies from 24 European countries responded to the survey, led by Germany (16), The Netherlands (9), United Kingdom (9); and Lithuania (8).

“This first-of-its-kind report from EIHA on European CBD is an essential guide to the market, but it's also a key tool we will use in our efforts to help officials at the EU level as they work to set a clear playing field for the sector,” said Lorenza Romanese, Managing Director of the Association.

‘Rising market significance

“The report is in recognition of the rising market relevance and public awareness of cannabidiol (CBD), and intends to highlight and address the economic potential of CBD as well as current challenges to the sector in Europe,” according to the report's introduction.

European CBD stakeholders also say

customers have difficulty understanding how to evaluate CBD, but are nonetheless highly inclined to buy it — even if it would be “illegal.”

Ninety-two percent of stakeholders “agreed” or “strongly agreed” consumers are confused about how to evaluate CBD products; and 66% “agreed” or “strongly agreed” customers are willing to buy CBD whether it's legal or not.

The report also revealed that the CBD sector comprises primarily small and medium enterprises (SMEs), with 69% of those surveyed reporting they employ 9 or fewer workers.

“SMEs are the backbone of the EU economy, and the companies working in industrial hemp are showing what hemp can contribute in innovation and entre-

preneurship,” Romanese said.

Placing Europe in a global context, the report spotlights European market trends and provides analysis on all key issues and challenges facing European CBD stakeholders.

Analysis in the report covers such issues as allowable THC levels allowed in European hemp, CBD in health and beauty products, market indicators, key trends and developments, the effect of foreign competition and transparency issues.

The report offers commentary on market indicators, key trends and developments, and the effect of foreign competition on the EU market, among other analysis.

Broad range of questions

Stakeholders responded to questions about economics and income, sourcing, purchasing and sales along with operator perceptions of the market, business forecasts and interpretations of consumer attitudes impacting the industry.

The report aims to provide insight into the inner workings of the European CBD sector, and is intended to serve as an analytical and business planning tool for operators while giving potential investors an advanced overview of the European market, EIHA said.

The report is free to EIHA members, and is available to non-members for €499.



The European CBD Market 2019-2020 report is free to EIHA members.

Going the limit

Poland's agriculture ministry calls for 1.0% THC barrier

Poland's Ministry of Agriculture has recommended a full 1.0% THC allowable in industrial hemp in a recently unveiled 2-year government farming plan. The country would join nations in different parts of the world which have set allowable THC levels above the globally prevalent barrier of 0.3%, and the 0.2% THC standard observed by most countries in Europe based on European Union guidance.

The proposal pertains only to hemp "in the field" as measured for THC at harvest time.

"This is a welcome statement from the Ministry, and a nice step forward," said Jacek Kramarz, who represents Poland on the board of the European Industrial Hemp Association (EIHA).

Limits for products needed

Despite the progress, Kramarz said the Polish government also needs to address the issue of THC limits for finished hemp products. Allowing greater limits "in the field" removes a level of risk that farmers' crops will be "hot," or over the THC limit, "but it doesn't solve the fundamental issue of specific guidance for THC levels in finished food and food supplement products," he added.

Stakeholders in the European Union are currently lobbying for an increase from 0.2% to 0.3% THC "in the field" under an EIHA initiative.

Kramarz said EIHA's strategy to revert to a limit of 0.3% THC, a benchmark that was in effect in Europe before being trimmed to 0.2% in 1999, is a prudent one, considering the conservative nature of some EU governments. "We welcome any country that wants to push beyond what EIHA is proposing, but we must take more conservative countries into account. For EIHA, it's more realistic" to achieve the 0.3% concession from EU authorities, Kramarz said.

Advantage of 1.0% THC

Hemp plants with higher levels of THC generally contain higher levels of CBD. Nations observing the 1.0% standard therefore have a market advantage in that sector over those where the limits are lower.

Uruguay, South Africa, Malawi and Thailand are among hemp-producing



Poland has vast farmland, about 670,000 hectares (1,655,500 acres) of which are organic,

countries around the world who have set THC levels for hemp at a full 1.0%; some states in Australia also operate under that limit; in Europe, non-EU member Switzerland has an established 1.0% barrier. EU member state Italy has set a national limit of 0.6% THC.

The EIHA's campaign to reclaim the 0.3% THC barrier would re-set the clock to the 1990s. Before 1999, European stakeholders had operated at that benchmark, but EU officials, ignoring facts and science, cut the limit to 0.2% under influence of powerful French hemp interests; their successful lobbying efforts essentially gave French fiber-hemp varieties, which had been bred for extremely low THC, a monopolistic advantage in the cultivation seed market.

Unlocking Polish varieties

While raising the THC limit to a full 1.0% could strengthen Poland's position in the CBD sector, the government's plan stresses the country's potential in fiber – specifically for hemp textiles – a sub-sector in which Poland was once a significant European player.

The Ministry noted that current restrictive THC levels inhibit hemp agriculture in Poland in part by discouraging

the planting of Polish hemp varieties, many of which have great potential in fiber but also carry traces of THC above 0.2% or 0.3%. When Polish crops come in above 0.2% THC, they must be destroyed under current rules.

Subsidies

Under the new proposal, only hemp varieties that meet the 1.0% THC limit could be officially registered for cultivation in Poland, and only hemp that comes in under the current 0.2% European "in the field" guideline would be eligible for direct EU farm subsidies. The Ministry's plan would streamline the value chain from farmers to processors, clearly defining fiber hemp, and reducing the administrative burdens related to the monitoring of hemp cultivation and trade.

As part of the government's push for hemp, the Agriculture Ministry has asked the Ministry of Health to adjust provisions of the 2005 Act on Counteracting Drug Addiction that negatively impact hemp farming and production.

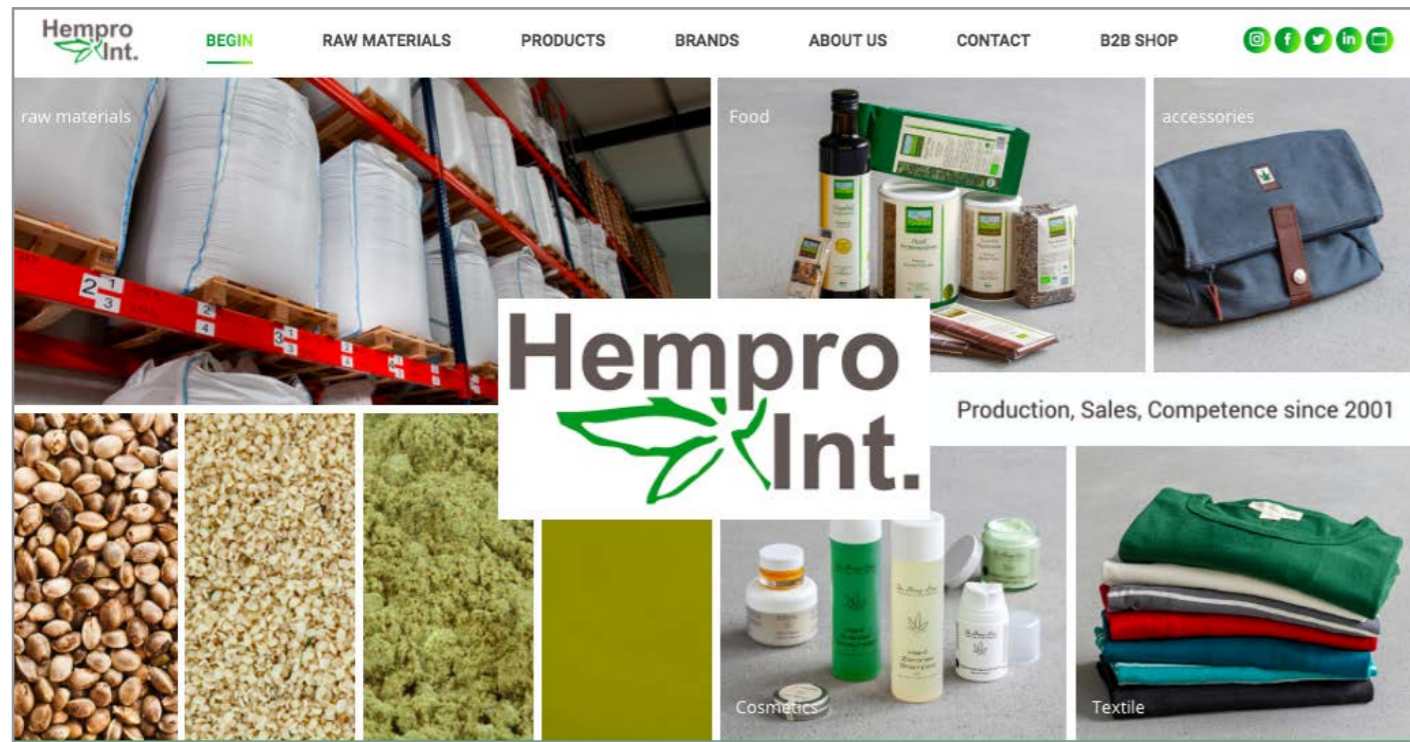
Hemp production in Poland has gradually ticked up over the past five years, with field reports estimating 3,000 hectares (7,412 acres) were planted last year, up from about 1,300 hectares (3,212 acres) in 2018.



Hempro Int.

www.hempro.com

Production, Sales, Competence since 2001



Hempro Int.'s new corporate website (above) complements its rich B2B platform (below).

Hempro Int.'s online facelift

Sleek new platform is major advancement for company's online assets

As online sales and the need to stand out in a crowded marketplace become more and more important, **Hempro International GmbH & Co. KG** has sharpened its web presence with the launch of a new corporate website.

Hempro Int., which marks its 18th year in business in 2020, pulls together its wide array of products and brands on the site, which smoothly connects to the company's B2B shop that features food, cosmetics, fashions and fashion accessories.

The website overhaul is only part of a broader effort by Hempro Int. to expand its media footprint that includes strategies for social media platforms Instagram, Facebook, Twitter and LinkedIn – aimed at addressing generations Y and Z, CEO Rebecca Kruse said.

Company founder Daniel Kruse also has joined a roundtable at Germany's HANF MAGAZINE, which takes up issues in industrial hemp in a weekly podcast.

Raw materials Hempro Int. offers are fully described, and specifications downloads are available on the new corporate site.

Hempro Int.'s companion B2B site may be browsed, but the company requires poten-

tial buyers to apply for full access, to ensure the seriousness of any inquiries.

Düsseldorf-based Hempro Int., one of the longest standing players in the European hemp market, is a vertically integrated producer and wholesaler.

The company's product line includes HANF FARM, its consumer brand for hemp foods. That division has been a major factor in the company's emergence as a leading player in Europe. Next to its own-brand products, Hempro Int.'s main business is industrial scale hemp foods production and bulk distribution, through which the company is meeting demand for raw materials in the fast-growing hemp foods sector in Europe and around the world.

Certifications ensure quality

Hempro Int. is certified under ISO 9001 standards applicable across the company's full range of food products, ensuring quality management standards that meet the expectations of customers, and other stakeholders as well as statutory and regulatory requirements.

The company also has Hazard Analysis and Critical Control Points (HACCP) certification for its food and feed production. HACCP (equivalent to GMP food) assures Hempro Int. uses a systematic, preventive approach to food safety that guards against biological, chemical and physical hazards in its production processes.

Hempro Int. is also qualified under GMP+ Feed Certification standards, a Good Manufacturing Practices scheme for food & feed seed production facilities, storage, transport, and documentation.

Cosmetics sales strong

While hemp food hit its stride over the past few years – especially in Germany – Rebecca Kruse says sales of cosmetics products from Hempro Int.'s THE HEMP LINE family of high-quality creams, soaps, shampoos and lotions are also moving up.

Like all big players in the fashion market, the company also sells a line of affordable, durable, basic hemp fashions – also under THE HEMP LINE brand – with men's and women's collections from both 100% hemp and hemp/organic cotton blends. That division of the company was launched in 2008.

With its acquisition of the PURE brand of bags and accessories in 2016, Hempro Int. strengthened its position in hemp textile-based accessories. While the company had been selling PURE bags since 2005 under a license, its knowledge of the brand, and bringing it fully in house, opened broader marketing and product development possibilities, Kruse says.

As Hempro Int. has carefully added more and more products through the years, the deal with PURE was a special one. "We have a long history with these products, their cre-

ators and the brand," Kruse said. "So it was a natural fit. We know the owners personally, and it all went down as deals like this should, with both sides really happy in the end."

Facing the challenges

HanfHaus Dusseldorf, which opened its doors in 1995, was the basis for Hempro Int. founder Daniel Kruse's hemp career. Since that time, the company has successfully navigated the sometimes treacherous path through hemp, overcoming the obstacles through determination and collaborative decision making at the strategic and management levels.

"I'd never have even thought about the kind of issues I'd be confronted with," said Rebecca Kruse, who has 13 years with the company after first joining as an intern. "For example, our product diversity is boon and bane at the same time," she said.

That's aside from the day-to-day challenges of running a fast-growing business that has Hempro Int. racing to keep pace with its customers as the hemp industry itself races ahead.

As a founding member of the European Industrial Hemp Association, Hempro Int., which has been around since 2002, has a considerable voice based on its 18 years of selling hemp foods, and 17 years spent developing and marketing hemp cosmetics.

"The work is continuous," Rebecca Kruse said of the firm's contribution to EIHA's regulatory efforts at the EU level. "But it's important we spend time and concentrate on this work as we're truly at a formative stage. The framework we set now will affect the in-

dustry for years and years to come. We must get these things right, especially to capitalize on the period of fast growth for the sector that we expect. That's why Hempro invests in these initiatives."

Among the issues Hempro Int. has worked on with EIHA:

- Most recently, Hempro has played a big role in helping to shape EIHA's position regarding hemp extracts vis a vis the EU's Novel Food Catalogue.
- THC limits in planting cultivars; EIHA is working to consolidate the vote of the AGRI Committee of the European Parliament as it pushes to raise the THC limit for hemp cultivars from 0.2% to 0.3%.
- Helping to shape the COSING regime, a European Council directive on cosmetics ingredients that affects regulations related to CBD in cosmetics. Rules are needed to clear up confusion among producers as well as consumers.
- Hempro Int. is also shoulder-to-shoulder with EIHA in efforts to set down sound scientific THC guidance values for hemp-based food products.

Meeting the challenges

From Daniel Kruse's perspective, 18 years of successfully managing the challenges of a hemp business puts Hempro Int. in position to fulfill the bigger vision that he started out with. "The goals must be to make the world better, greener and more sustainable, and to have economic success in doing so," he said. "To create jobs and to generate financial independence for the company by successfully combining ecology and economy."



Rebecca Kruse, who is CEO at Hempro Int., has been with the company since 2007

MILESTONES

Highlights in the development of Hempro Int. GmbH & Co. KG

2002

- Company is founded as Hempro International e.K.
- Beginning of distribution of hemp clothing from Braintree in Germany.



2003

- The Hemp Line is launched as a cosmetics brand.



The Hemp Line

2004

- Beginning of distribution of Hemp Valley products in Germany.

2005

- PURE brand accessories are added to portfolio.



2007

- The Hemp Line expands into food products.
- Rebecca Kruse joins company.

2008

- The Hemp Line brand of clothing is launched.



The Hemp Line

2009

- Official name changed to Hempro International GmbH & Co. KG.
- The Hemp Line brand underwear collection launched.

2012

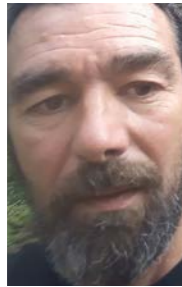
- The Hemp Line food products are relaunched under HANF FARM brand.



2016

- The company acquires the PURE brand of hemp-textile accessories.

CAP reforms can boost EU hemp farmers, but who'll get the money?



Andrew Kelly

If the European Industrial Hemp Association (EIHA) is successful in its efforts to raise the allowable THC level in hemp crops from 0.2% to 0.3% in upcoming revisions to the EU's Common Agriculture Policy (CAP), the continent's farmers would gain several advantages.

CAP provides subsidies and support programs for EU agriculture operations, giving farmers direct payments and price supports. With the Policy currently being updated for the period 2021-2027, it's a great opportunity to advance hemp interests under reformed rules.

More varieties

With the existing 0.2% restraint on THC levels, only about 60 varieties of hemp are approved for planting in the EU. If that level is raised to the globally prevalent 0.3% limit, the number of varieties available to EU farmers would grow to more than 500. That would provide broad flexibility to agriculture operators, offering them hemp strains that are more resistant to disease, have more robust fibers, and require shorter harvest intervals.

At the same time, it would help to overcome problems related to plant genetic diversity (PDG) as hemp strains now grown in Europe are the result of a long cross-breeding process aimed at constraining THC to 0.2%; this considerably undermines the genetic heritage and strength of the plants.

Carbon capture payments

Farmers also could gain on one of hemp's key characteristics: Its ability to capture carbon, which could trigger greater subsidies under a reformed CAP program. While hemp gets scant mention in EU CAP discussions, some ministers have called generally for carbon capture incentives to be included in the 2021-2027 policy reforms. That means a big opportunity, as hemp stands tall when compared to low carbon-sequestering crops and those grown in massive grow tunnels which have extra carbon introduced into their atmosphere to boost growth cycles.

Profitable large corporations could use CAP funding to offset R&D into things such as soil remediation on lands saturated with heavy metals and other pollutants. These "dirty" crops could then be used as carbides or similar for energy storage thus continually reducing our carbon footprint for many years to come.

Who gets the money?

But while the potential for support based on carbon capture is great, there is an anomaly in CAP that also needs to be addressed: Who gets the money. For example, in the UK, at least one in five of the top 100 CAP recipients are farms owned or run by aristocratic families, according to a study carried out by Greenpeace. These include the Queen (£557,707 – \$723,641) and the Duke of Westminster (£437,434 – \$567,583).

"Some 16 of the top 100 are owned or controlled by individuals or families who feature on the 2016 Sunday Times rich list, receiving a total of £10.6m (\$13.75m) last year in "single payment scheme" subsidies alone, and £13.4m (\$17.4) in total farm subsidies (UK), according to the Greenpeace study, which also noted that the top 10% of recipients receive almost half of those payments, which in the UK totals about £3bn (\$3.9bn) per year.

As the UK Brexits, that money will be up for grabs among the remaining EU nations. We need a way to assure a good portion of those funds get into the hands of the smaller farmers who populate today's hemp industry. A fair wage and full institutional support for farmers and innovators is the only way to bring the hemp industry forward.

Andrew Kelly is researching hemp and hemp applications with an emphasis on the potential for affordable fiber decoration technology in farm-to-factory value chains.

"Eliminating existing barriers and bottlenecks can lead to the creation of a sustainable sector"

Michalis Theodoropoulos
Business Affairs Officer
KANNABIO



Looking for fair rules

Hemp stakeholders in Greece push to clear path for producers

Greek hemp stakeholders say they have redoubled their efforts to clear a path for producers following the election of a new conservative government last summer.

"Hemp and CBD production has become a lucrative business for the last couple of years and has attracted a lot of attention from investors and ambitious entrepreneurs," said Michalis Theodoropoulos, Business Affairs Officer of KANNABIO, a Greek hemp cooperative. "They are already considerable economic drivers and deserve fair, just and rational regulation."

Hemp for the economy

Elected with a mandate to end the country's persistent economic slump, the center-right conservatives of Greece's New Democracy Party under Prime Minister Kyriakos Mitsotakis have put a priority on reigniting the economy by slashing taxes and regulations to attract investment. Greek hemp interests say the plant can play a role in that economic revitalization if constructive regulations are set for the industry.

KANNABIO said it has sent the new government detailed data on international economic opportunities and business prospects for hemp, and joined producers in the Panhellenic Cannabis Producers Union in drafting a statement to the government about the main problems

faced by local hemp producers due to an incomplete and fragmented legislative and regulatory framework.

'Legal grey zone'

While hemp farming is "relatively fairly regulated" in Greece, KANNABIO has said the regulations affecting other players in the value chain make for "a legal grey zone that seriously restricts local producers and confuses consumers."

"Eliminating existing barriers and bottlenecks can lead to the creation of a sustainable sector with thousands of new jobs," the group said.

A primary obstacle is a lack of legislation on THC limits in food (and cosmetics), a proposal for which Theodoropoulos said KANNABIO delivered to the Committee of the Ministry of Agriculture under the previous government in January 2019.

Call for 0.3% THC limit

KANNABIO has called on the government to adopt a 0.3% THC limit – generally a global standard – for the dry raw leaves and flowers but has suggested a tolerance of up to 0.8% THC due to Greece's hot climate, which tends to increase THC levels in hemp plants. While 0.3% THC is most commonly observed around the world, several nations have now set allowable THC levels at a full 1.0%. The EU's highly restrictive guidance for THC is 0.2%.

Under the current situation, "hemp food products manufactured by local producers are not considered officially as food by the state authorities, and the products are distributed in a grey zone," Theodoropoulos said. "This has also as a direct consequence the non-certification of organic finished products manufactured in Greece, although the Greek market is flooded with imported organic hemp food that does not face the same restrictions due to the EU freedom of goods clause."

'Barriers to entry'

"Apart from the consumer mistrust and continuous shop-owner and farmer prosecutions, this situation is causing barriers of entry to the Greek producers that face red tape and loss of income in the long run," Theodoropoulos added.

KANNABIO said a lack of action by the government may cause it to take the Greek state to court to remedy a situation that has created "unfair and unjust competition against the Greek hemp producers."

The co-op has not been shy about seeking legal redress. The group last summer filed a lawsuit against the Chania Port Authority following the arrest and criminal prosecution under drug laws of one of its members.

KANNABIO comprises pioneer organic hemp producers and activists involved in cannabis legalization efforts in Greece since 2005.



Mike Leago, COO at Longmont, Colorado-based High Grade Hemp Seed

Crossing the pond

U.S., Swiss companies bring new cultivars to Europe

U.S.-based **High Grade Hemp Seed** has partnered with Swiss Cannabinoid, Stabio, Switzerland, to bring High Grade's entire catalog of CBD-rich hemp strains to Europe, the companies have announced.

High Grade said the move is the first step toward streamlining full international distribution, facilitating order processing and shortening shipping timelines within the Europe. Most importantly, the partnership gives European customers access to previously difficult to obtain best-in-class hemp genetics from Longmont, Colorado-based High Grade. All High Grade Hemp Seed strains are now available for sale as seeds in Europe.

Established partner

"Amidst the turmoil in import/export regulations and the ever-changing political landscape, having an established neighbor in a growing European market helps pave an easier path for the hemp farmer," said Mike Leago, COO at High Grade. "This expansion will encourage European hemp cultivators to try new varieties, better diversify their crops, and increase profitability."

High Grade Hemp Seed and Swiss Cannabinoid started collaboration earlier this

year by paving the way for CBG production in the U.S. with the release of **Matterhorn CBG**, a new strain.

Considered by many in the industry to be the leading edge in hemp compounds, CBG (cannabigerol), like THC and CBD, is one of 120 cannabinoids found in cannabis. While stakeholders have long been focused on developing THC and CBD, researchers and hemp breeders are now teaming up to better understand CBG, and developing CBG-rich cultivars. The compound is known as the "mother" or "OG" cannabinoid, due to the fact that it is the precursor to all other cannabinoids.

Synergies

The companies said the European distribution agreement builds on the successful collaboration on Matterhorn.

"After kick-starting a highly synergistic relationship with the High Grade team on Matterhorn, becoming their European distribution partners was a natural progression," said Swiss Cannabinoid founder Matthias Ghidossi, a long-time veteran on the European hemp scene. "This fresh infusion of hemp cultivars will be a great benefit to farmers across Europe," he said.

Swiss Cannabinoid pioneered R&D of new genetics of Cannabis Sativa L. The company has played a pivotal role in the development of a new strain with low THC content, and collaborates with pharmaceutical companies and key players in the cannabis industry in North America and Eastern Europe.

Complex process

Isaac Cohen, CFO at High Grade, said it was a "huge endeavor" to establish European distribution in time for the 2020 planting. The company had to navigate regulatory hurdles, and sort out complex distribution and fulfillment issues as well as customer service considerations in building a robust system to deliver the company's cultivars to farmers throughout Europe.

High Grade, which has been a leader in the reintroduction of industrial hemp to the global supply chain, also said it is pushing R&D with 20 new terpene crosses and genetics focused on high-potential minor cannabinoids.

HGH seeds are available in Europe through Swiss Cannabinoid; orders are processed same day with 2-3 day shipping continent wide.

H HIGH GRADE
S HEMP SEED

YOUR HARVEST IS YOUR LIVELIHOOD INSIST ON ORIGINAL HEMP GENETICS

Using High Grade original genetics takes the guesswork out of a hemp crop.

Our 95% germination rates and 99.98% feminization rates have set the standard in the industry.

When you purchase seeds from the originator of the strain, you know you will be getting the real deal.



Original Genetics

Chardonnay

This line has been used in industrial hemp cultivation since 2016. Phenotypes exhibit purple flower colorization by the time of harvest.

Berry Blossom

Tried and true nearly everywhere that grows hemp, this line has proven itself to handle the roughest conditions and longest flower cycles.

Red Bordeaux

With no compromise in vigor this varietal allows you to stagger your full-term harvest beginning with Red Bordeaux - a huge logistical advantage.

Cherry Wine

Cherry Wine was created in 2015. This hybrid brings farmers and medical growers alike a true connoisseur CBD hemp cultivar.

Merlot

Merlot is a cross between two of our proven performers, and is one of our most robust strains. High reliable compliance when grown properly.

PLANTING SEASON IS HERE. BROWSE OUR ORIGINAL GENETICS

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Poland's **BOLD** strategy

Institute's hemp program is plan to develop business at home, around the globe

Poland's Institute of Natural Fibers & Medicinal Plants ([IWNiRZ](#)), has launched a program aimed at lifting the fortunes of the agrarian nation's hemp farmers while expanding the country's international footprint through a wide range of research, development and new business activities.

POLISH HEMP PROGRAM

"The dynamic annual increase in the scale of hemp farming in Poland is an opportunity to improve the financial situation of Polish farmers, especially small landholders," said Witold Czeszak, who heads the Institute's Technology Transfer Department, and is co-founder and manager of the new initiative, the Polish Hemp Program.

At the same time, Czeszak said IWNiRZ is responding to the needs of the global industrial hemp market, setting an example for effective



"Our long term strategic goal is to develop the Polish Hemp Program by being present with our seeds and technology in many new countries."

Witold Czeszak, Co-Founder,
The Polish Hemp Program

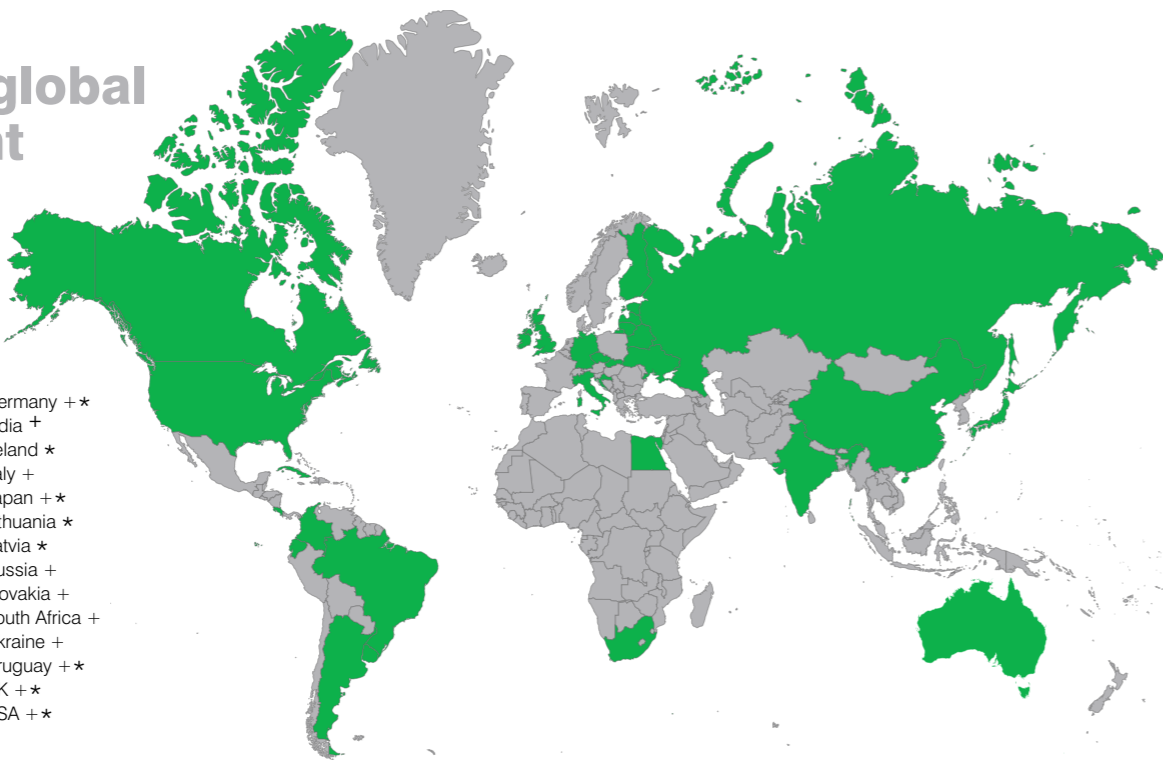
Photo: Wojciech Robakowski

A truly global footprint

IWNiRZ has partners and customers all over the world:

Research Partners + Polish Hemp Program *

- | | |
|-------------------|----------------|
| Argentina + | Germany ++ |
| Australia ++ | India + |
| Belarus + | Ireland * |
| Brazil + | Italy + |
| Canada ++ | Japan ++ |
| China + | Lithuania * |
| Colombia + | Latvia * |
| Costa Rica * | Russia + |
| Croatia * | Slovakia + |
| Cuba + | South Africa + |
| Czech Republic ++ | Ukraine + |
| Ecuador + | Uruguay ++ |
| Egypt + | UK ++ |
| Estonia * | USA ++ |
| Finland ++ | |



commercialization of intellectual property rights developed at the Institute, which marks its 90th anniversary this year.

Working globally, and locally

Supervised by Poland's Ministry of Agriculture and Rural Development, IWNiRZ participates in a wide range of national and international projects, cooperates with numerous scientific organizations around the world, and carries out comprehensive research on the harvesting and processing of natural fibrous and herbal materials. That includes extensive R&D into machines for harvesting, and processing technology for a variety of whole-plant applications. The Institute is currently working with Polish farmers and innovators in developing threshing machines and a hemp harvester for seed material, and provides harvesting services.

Supporting Polish farmers

By offering farmers the chance to earn as much as 15,000 Polish zlotys (\$3,800/€3,352) per hectare, the Institute's outreach in the Polish farming community is creating interest among a young generation of farmers and entrepreneurs who clearly see the potential in industrial hemp. "It's an opportunity for them to develop processing solutions aimed at producing all kinds of finished products," Czeszak said.

With a goal to increase the popularity of the hemp business in Poland, IWNiRZ is working to transfer knowledge in farm technology and processing to Polish agri-businesses, and supporting local initiatives that are developing value-



IWNiRZ seeds in 41 U.S. states

Alabama, Arizona, California, Colorado, Connecticut, Florida, Georgia, Iowa, Indiana, Kansas, Kentucky, Louisiana, Maryland, Michigan, Minnesota, Missouri, Montana, Mississippi, Montana, Nebraska, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, Vermont, Washington, Wisconsin, West Virginia, Wyoming

chain infrastructure – all aiming to push the country into the top ranks of hemp growing and processing in Europe.

International positioning

More specifically, The Polish Hemp Program aims to position Poland as a leader in seed crops by increasing hemp fields by 100% per year, Czeszak said. He envisions most of that increased seed production being exported to the USA.

Such seed development and sales activity is promising for the Institute internationally as it advances large-scale production of certified and elite industrial hemp seed varieties in the IWNiRZ portfolio (Białobrzieskie, Tygra, Henola and Rajan strains), which are sold in Poland and Europe as well as on other continents.

Henola, the newest breed from IWNiRZ which was developed through seven years

of R&D, has gotten positive reviews from growers around the world, with initiatives in North and South America, Australia, Japan, Uruguay and Colombia, according to Czeszak, who notes that IWNiRZ varieties are grown in 41 U.S. states. Having recently concluded one of the largest export contracts in the history of Poland for the sale of Polish hemp seed varieties, Czeszak said international licensing agreements under the Institute's seed sales bring in millions of dollars.

CBD & textile labs

But the Polish Hemp Program it is not only about sowing seed production. The Institute also has high quality cannabinoid and textile laboratories offering a wide scope of services and tests. IWNiRZ also is launching a high-capacity de-hulling line with substantial capacity, and the institute sells grain, fiber and hurd.

The Institute is also in the process of preparing another new strain, Rajan, for commercialization in Europe and internationally. That breed is distinguished by its large amount of biomass and longer vegetation period, and may be interesting for latitudes outside those that bracket Central European countries, Czeszak said.

Along with the international seed business, IWNiRZ also works as a consultant to other countries, to which is it also offering a wide range of technologies it has developed.

"Our long term strategic goal is to develop the Polish Hemp Program by being present with our seeds and technologies in many new countries. We are looking for new partners worldwide," Czeszak said.

Superior hemp cultivars for the global market

Henola: High seed yield, low in THC

The ground-breaking Henola hemp cultivar is the newest variety developed by IWNiRZ. Almost nine decades of experience was brought to bear on this oily strain, gives up twice the seed yield of other varieties available on the market (2-3 tons per hectare for industrial plantations). Henola grows low, to only to about 2 meters in height, has a vegetation time shorter by 3 weeks than other Polish hemp varieties, and has a very favorable fatty acid ratio. The breed was registered with Poland's Central Research Center for Cultivated Plant Varieties in 2018 under number R2908, and has been approved by the Colorado Department of Agriculture in the USA.



Certification followed seven years of research and development of the new cultivar under the direction of Assoc. Prof. Henryk Burczyk, assisted by Jakub Frankowski, M.Sc. Eng., Bożena Michalak, and Grzegorz Oleszak of the Institute's experimental station in Pętkowo, Poland.

Henola is not genetically modified nor was it created via biotechnology methods. The plants give up flower clusters containing 0.013% THC, and 0.07% CBD, according to the Institute.

Białobrzieskie: Quality fiber and seed



The first Polish variety of fibrous monoecious hemp, grown in the Institute of Natural Fibres and Herbal Plants. It is characterized by a high yield of straw with high quality fibers and a large amount of seeds. A stabilized variety, grown for textile purposes since the 1960s. Appreciated by producers of CBD extracts due to its interesting cannabinoid profile, this strain is stable at less than 0.2% THC.

Tygra: High yield for technical purposes

Polish variety of fibrous monoecious hemp, grown in the Institute of Natural Fibres and Herbal Plants. It is characterized by a high yield of good quality fibre, used especially for technical purposes. It allows to obtain a seed yield over 1 tonne per hectare. Stabilized at less than 0.2% THC, this variety has a relatively short vegetation period.



Rajan: Large amounts of biomass

The IWNiRZ variety, which is distinguished by its large amount of biomass and longer vegetation period, may be interesting for other latitudes than Central European countries. Rajan is currently being prepared for commercialization, both in Europe and other continents.



90 years of experience in natural fibers

Poland's modern-day hemp story begins in Vilnius, on March 14, 1930. That's where, at an experimental agriculture station set up in cooperation with the Stefan Batory University, in lands then under Polish reign, that General Łucjan Żeligowski began experiments to develop hemp and flax strains that eventually would be widely used across Europe.

Żeligowski, a contemporary and close friend of renowned Polish military hero and political leader Marshal Józef Piłsudski, gathered experts who began to study bast fiber plant varieties from Vilnius east into former German lands ceded to Poland after World War II.

It was on the heels of the war, in 1945, that Żeligowski's initiative and many of its bast fiber experts relocated to the central western Polish city of Poznań to join with an institute under the direction of Dr. Janusz Jagmin, a professor in the university there. With a post-war mission to rebuild now Communist Poland's bast fiber and wool industries, Jagmin oversaw the construction of 25 factories for retting, spinning and weaving, and set up research facilities to advance those processes with a new generation of machines while also establishing field laboratories for agronomic experimentation.

Operating today as the state-owned Institute of Natural Fibres and Medicinal Plants (in the Polish acronym IWNiRZ), the fruits of Żeligowski's and Jagmin's pioneering work make up one of the most well-known natural fiber research centers in the world, with partner organizations and customers all over the globe.

The FUTURE of FIBER

While the potential is vast,
the road will be a long one

They do things big in Texas, America. In spring 2020, a Dallas outfit called Panda Biotech said it signed a contract with an international equipment manufacturer for construction of the largest hemp decorticator in the country.

With the blessing of state agriculture officials, the company announced it would donate more than 60 tons of hemp fiber seed to farmers in the state, and produce 130 tons of textile-grade

fiber, hurd and cellulose in 2021. The Texas State Department of Agriculture, meanwhile, said it received more than 450 hemp operator license applications.

As reality sets in on the CBD sector, stakeholders are scanning hemp's wide horizon, looking for other opportunities. But is fiber the next gold rush in hemp? The next CBD?

We don't think so.

Over the long run hemp fiber *will* become the most relevant part of the hemp plant, and the most valuable of its outputs.



But the development of fiber as a feedstock, and its incursion into the relevant sectors won't be anything like the route traveled by CBD. Expect many fits, starts and bumps down the road, which will not be a short one.

How to kickstart fiber? In Texas, Panda recognized one key thing: There are virtually no processing facilities for hemp fiber in the USA, where more than 90% of growers have been concentrated on CBD for the past few years.

Demand

Ultimately, demand is driven by the consumer. And while those of us who work in industrial hemp may get the message every day, hemp still has a long, long way to go among the public in overcoming the historical prejudices that gave the plant a black eye over the last half century. Moving from under the dark cloud and popularizing hemp across its plethora of end products will take years and a lot of investment.

Perhaps even more challenging: Entrenched interests cannot be expected to embrace new materials that threaten their livelihoods. Many are sure to fight the incursion of hemp into their sectors on institutional and governmental levels.

Finally, large-scale potential producers who may be technically capable of using hemp inputs won't do so until they can justify the costs.

Fiber is happening.

Still, things are happening with hemp fiber. All over the world, enthusiastic entrepreneurs, innovators and researchers are probing the hemp stalk for its **myriad uses**. It is the stalk's potential in industries that are now polluting the planet, depleting water, wood and other natural resources that hold the most promise: the construction industry, the cotton sector, oil-based plastics – even batteries and super-capacitors.

From a rational perspective, there's a clear and compelling case for hemp fiber that cuts across all potential sectors in which it can play a role. A mature market for hemp fiber implies:

- Greater profitability across the value chain.
- Sustainability, environmental friendliness.
- Lower overall cost of finished products compared to other natural fibers.
- Lighter weight and greater strength.
- Increased durability.

Bigger picture

At the most fundamental level, just as iron ore is a primary product, and steel is a secondary product, seed and CBD outputs are primary while hemp straw is secondary.

As primary commodities, hemp seed and CBD outputs react swiftly to the reality of the world's fast-changing market dynamics, driven by inevitable and often unpredictable

pricing fluctuations. The recent crash in the CBD sector is a perfect example of this.

Unlike CBD, fiber has the potential to respond to a changing market landscape as a secondary feedstock product for many years to come because of the huge gap that now exists between supply and demand in the marketplace. As the supply of quality-controlled, large volumes of hemp fiber increases, more commercial end-users will learn of its benefits and choose to pursue hemp for their needs.

Long-term prospects

For hemp fiber's long-term prospects, one need only look at the potential for innovation in the overall building and building materials industries – a \$21 TRILLION global market; hemp fabric's possibilities in the \$1 trillion global textile market; and even the more modest \$600 billion market in oil-based plastics.

While we believe that hemp fiber will end up being the long-term most dependable and profitable output of the industry, in our view, a supply-demand equilibrium for hemp fiber won't happen for at least 20 years – two decades that will nonetheless be marked by

Is fiber the next get-rich-quick scheme in hemp? We don't think so

steady if slow growth, bringing scale opportunities and financial success to the innovators, first adopters and prudent, patient investors.

Winners

Along the way, there will be a few big, bold outliers now using traditional inputs who will begin to use hemp if they can be assured of a supply of quality-controlled fiber. That will help immensely in getting the supply-demand growth cycle to spinning.

Of course, there will also be companies and investors who'll skip the due diligence, get hooked by the hype, and jump in too fast. There are already notable failures of fiber initiatives suffered by companies that didn't bother to read "The Basics of Supply & Demand 101." Let them be a lesson amid the sure-to-grow hype about hemp fiber.

The winners in this long-term game will be those astute at business planning, lean, nimble operations that can adjust to market conditions and recognize niche opportunities. They'll keep their ear close to the ground and focus on basic products for now, while planning to take further advantage as hemp moves inevitably toward the mainstream.

– KR with Robert Ziner, [CIHC](#)

More about fiber on HempToday.net



[U.S. researchers will study hemp's potential to clear algae](#)



[HempFlax buys German insulation maker, launches new division](#)



[Book by U.S. research team lays out case for hemp building](#)



[China agrees to buy U.S. hemp fiber; Can anyone supply it?](#)



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‘Understand nature, . . . then copy it’

Carl Martel is an independent scientist who has been researching industrial cannabis for over a decade. Formally trained as a geoarchaeologist with degrees in interdisciplinary science, Martel's areas of research include plant carbons for energy storage, green extraction solutions and harvest/processing innovations. Co-inventor of a Canadian developed grain disinfection system, he continues to explore and develop quality post-harvest management systems. Martel's passion is developing processing solutions and products that encourage whole plant utilization including value added products from plant biomass and agricultural waste. He is co-founder of the [Advanced Botanical and Biomass Research Institute](#).



HT: You've developed one of the most extensive maps for the potential of cannabis we've ever seen. What's still out there on the frontier?

CM: If you have an idea, it can probably be made from industrial hemp. The sky's the limit, so to speak. I have heard they have taken cannabis seeds up to the space station.

HT: What's still needed along the value chain to fulfill the rich possibilities for whole plant production?

CM: Innovation, research and development. We are not lacking consumer demand for products, and farmers want to grow industrial hemp. We need to focus on the development and processing of useful consumer products that incorporate hemp and its many benefits. Food and fiber prices need to reach a point where they can be competitive with other commodity crops such as timber. Through innovation we will find ways to become more competitive.

HT: You often use the statement “understand nature, then copy it.” What does that really mean?

CM: I am glad that you picked upon that. It's the fundamental principle I have built into my ethics and apply to my scientific methodology.

For me it means observing how nature comes up with a solution.

Take for example the retting process of hemp in nature. After the plant is cut down, it lays on the ground, then nature slowly begins to break the plant back down to its component parts through microbiological processes. When the process is stopped at the right time, the bast fibers can be removed and turned into woven materials, rope, etc. This process, once observed and understood, has been taken to a lab and developed into a controlled method to produce a myriad

fibers to be processed into the things we use every day.

HT: How does nature store energy?

CM: When I look at a tree, a plant or other carbon-based entity, I see a battery. Nature weaves a tapestry of carbon structures from algae to trees that store energy. Take for example an enzyme that researchers at Concordia [have found](#), or trees that [generate power](#)?

The idea of using carbon to store energy is not new, nor is it new that we can get energy from carbon. Now, we know that carbons can be used to store energy; your common household battery or supercapacitors, as an example, have carbons inside them. Fire is energy, a tree can be felled, piled and dried, then a match is struck to light the pile and the energy is released.

So what I and others are looking at is instead of burning that wood pile (or hemp, sugarcane, etc.) we create stable carbons and turn them into electrodes to store energy. This can be from any electricity generating source: solar, wind, hydro, etc.

Another way to think of this is that a tree is like a little factory. The leaves are the solar panel (energy generation) and the wood is the battery (energy storage) and where the tree gets its carbon is from the atmosphere in the form of CO₂. The tree holds onto the C to build the tree and releases O₂. It's mimicking nature's processes that allow us to be able to build plant carbon batteries.

HT: How far out there are we getting?

CM: For generations Star Trek has offered inspiration for our own innovations. They take from the present and project to the future the possibilities where human potential can take us when we observe and understand the universe around us. Now that we know plants are batteries, perhaps one day the idea in Star Trek may become reality. Discovery of a mycelial network to travel across the galaxy may not be that far fetched.

HT: What would you say is the status of cannabis science right now? Are there other explorers out there with you?

CM: The status of our knowledge in this field is growing in leaps and bounds. As we begin to apply modern science in the study of this plant, researchers are not only finding information in labs but in old texts, herbal medicine reference guides and sometimes even old farmhouses. As global restrictions and stigma lift, the science will continue to grow. Universities are more accepting of, and able to take on cannabis projects unlike in the past 60 years.

HT: You've said plant based carbons via carbonization will play a vital role in future electrochemical technologies.

CM: Yes, the carbons we use currently are mined from the ground and therefore a finite resource with polluting conditions associated with it, while plant based carbons can be grown from the ground and created from existing agricultural waste.

HT: You also talk about CBD as a fuel. What's that all about?

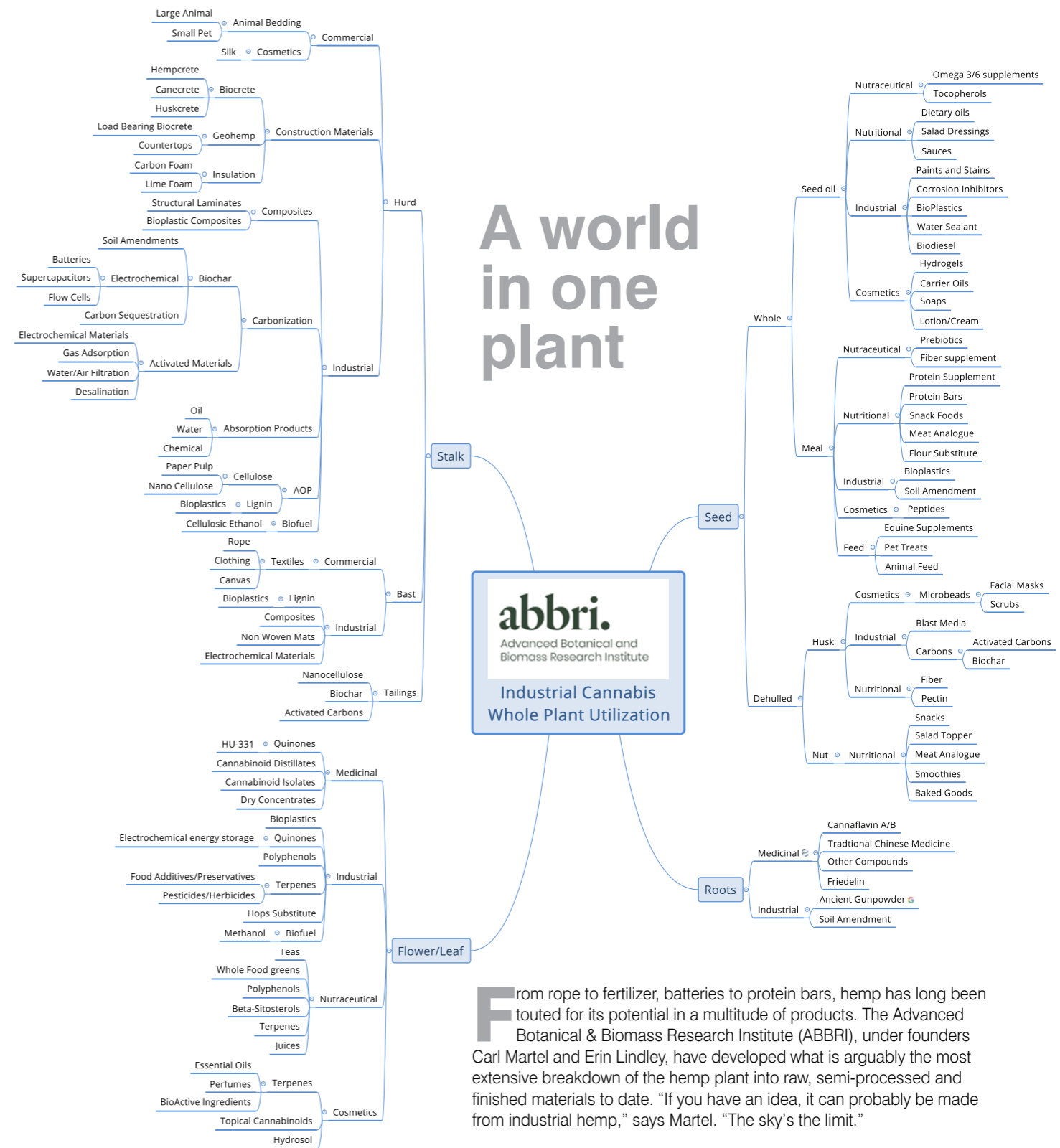
CM: Under alkaline conditions and in the presence of air, cannabidiol is oxidized to a quinone. Experiments have demonstrated the use of quinones in alkaline quinone flow batteries for renewable energy storage.

HT: What were your hobbies when you were a kid?

CM: I loved to draw and build models. I was very artistic. I have fond memories of playing in the backwoods of Ontario, hiking, exploring and discovering nature.

HT: You've been known to eat paint based on hemp oil and natural pigments. What does hemp paint taste like?

CM: Lol ... I guess it depends on how old the oil is. My paints are made from expired food grade hemp oil. Sometimes they still have the nutty taste, but once oxidized it takes on an acidic sour taste.



A world in one plant

abbri.
Advanced Botanical and Biomass Research Institute
Industrial Cannabis Whole Plant Utilization

From rope to fertilizer, batteries to protein bars, hemp has long been touted for its potential in a multitude of products. The Advanced Botanical & Biomass Research Institute (ABBRI), under founders Carl Martel and Erin Lindley, have developed what is arguably the most extensive breakdown of the hemp plant into raw, semi-processed and finished materials to date. “If you have an idea, it can probably be made from industrial hemp,” says Martel. “The sky’s the limit.”

About ABBRI: The Advanced Botanical and Biomass Research Institute (ABBRI) is a research and innovation firm dedicated to developing sustainable, environmentally-friendly products from the industrial hemp plant and other agricultural waste streams in order to foster the growth of these industrial sectors.



COVER STORY:
FIBER | APPLICATIONS



HANF FARM GmbH
Dorfstr. 58
17209 Melz
info@hanffarm.de
www.hanffarm.de



HANF FARM is also the developer of the Multi-Combine HC 3400 hemp harvesting technology.

A fiber strategy that begins with the basics

Leading European hemp firm **HANF FARM GmbH** has moved beyond intensive R&D into hemp fiber, and is now offering straw pellets the company says have a broad range of applications.

Pellets can be the base material for animal bedding, energy, cellulose for paper and packing material, and all kinds of recyclable and compostable materials which can replace plastic, said HANF FARM CEO Rafael Dulon.

Promise of biochar

He said his firm is particularly interested in the potential for hemp biochar, or charcoal, which itself has a wide variety of uses – in agriculture to improve soil and water retention and serve as fertilizer; as an animal feed additive; or a bio-based substitute for active carbon.

Biochar also has application in water treatment and drought tolerance, according to studies, is able to store greenhouse gases, and doesn't decompose for centuries – meaning it can help to mitigate global warming.

Products for animals

HANF FARM also has been running trials on pellets formulated for animal bedding, testing the material's absorption and phytosanitary properties with hens, horses, pigs and turkeys, Dulon said, with initial indicators positive.

The company already serves animal breeders with feed pellets made from 100% organic hemp leaves with CBD content between 0.5 and 2.5% CBD+CBD-A.

HANF FARM arrived at the strategy to pelletize its hemp straw through two years of research that reflected increasing demand for organic fiber. Further research of new methods for fiber harvesting and processing helped determine the strategy to begin its fiber business based on straw pellet production.

Economics of pelletizing

"If you pelletize material you have a product which you can transport more economically," Dulon said, noting that harvesting and transporting straw from

the field, and warehousing are major issues.

While the further processing of straw at commercial scale requires huge machines, Dulon said he is working mainly with traditional processing technology that is much smaller in scale. He's worked out a way to chop the hemp stalks into lengths of 5-10 cm as they're gathered in the field, with equipment used in corn harvesting, for example.

European leader in food

HANF FARM, the leader in organic hemp cultivation and processing in Central Europe, harvests hemp with its own machines and processes the crops immediately after harvesting with either stationary or continuous process technology. The raw materials are then further processed in separate production halls for leaves, flowers and straw.

The company's main business is in a range of own-brand foods, and finished foodstuffs it provides to large-volume buyers who package and sell HANF FARM-produced white label foods under their own brand names.

HANF FARM GmbH operates out of a 25,000 sq. m complex near the village of Melz in the state of Mecklenburg-Vorpommern in northeast Germany, an area that has a high concentration of biologically certified organic agricultural land.

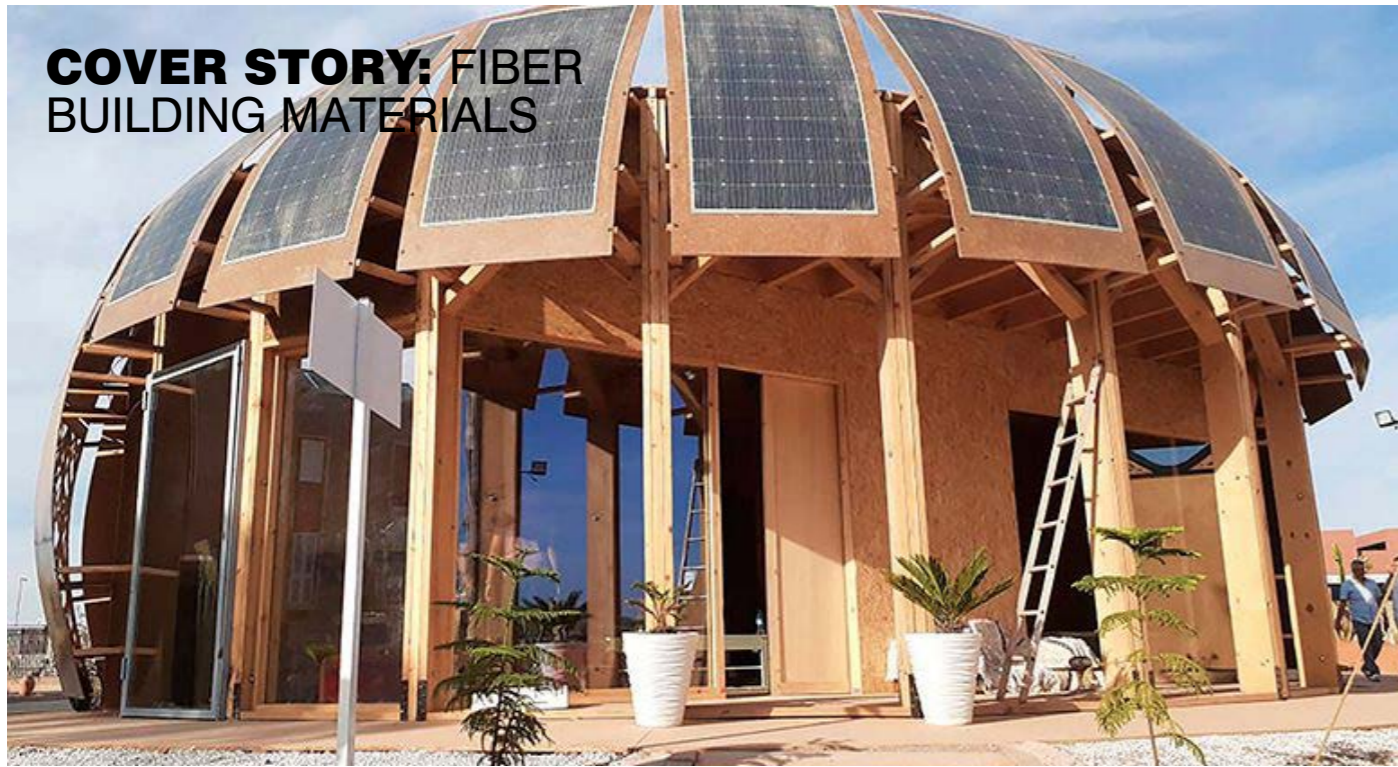
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SEED SOWING SEED FOOD GRADE FEED GRADE PROTEIN HEMP OIL

FLOWER TEA QUALITY EXTRACTION CANNABINOIDS CBD CBG PREMIX OIL

COVER STORY: FIBER BUILDING MATERIALS



Hemp meets solar off grid

Project in Morocco combines hempcrete, photovoltaic

A team of organizations has completed construction of a ground-breaking eco-building in Morocco that combines hemp construction with a high-tech energy system for total independence from the electrical grid.

The SUNIMPLANT project, designed as a single-family dwelling, was created as an entrant in the recent “Solar Decathlon” organized by the United States Department of Energy and Morocco’s Centre de recherche en Energie solaire et Energies nouvelles. The biennial international competition challenges teams of students to design and construct solar-powered buildings. The most recent edition was hosted in Ben Guerir, Morocco, the first time the competition has been held on the African continent.

Advanced ‘space ship’

“This ‘space-ship’ is advanced in time and reflects a turn not only in North Africa but in hemp construction, which doesn’t have comparable prototypes anywhere in the world,” said Monika Brümmer, a German architect and natural builder who led the project.

While the building was designed as a stimulus for rural development, the technology also has application in urban settings, Brümmer noted.

Owner at Spain-based [Cannabric](#),

Brümmer is also a co-founder of Adrar Nouh (2017), an NGO which promotes the use of indigenous hemp stalk for rural development and sustainable employment in Morocco’s impoverished High Rif. Adrar Nouh was started in 2017 by Brümmer and Abdellatif Adebibe, a Moroccan expert in alternative development in the Rif region.

Nature meets high-tech

The challenge was to create a hemp composite using vegetable-based bio-resins, avoiding technical or synthetic components, Brümmer said. The cylindrical envelope of the circular building, with minimal exposure of the 24 exterior panels, gives interior comfort through optimal damping and thermal phase shift, and osmosis of the components in the hempcrete formulation, Brümmer said.

Built for around \$120,000, the building’s price tag was less than half the cost of the most expensive buildings in the competition. Additional features of the 90 sq. m. SUNIMPLANT building include:

A double skin façade that employs a mixture of hemp, earth, pozzolan and lime, all sourced locally; and bio-composites incorporating hemp technical fibers that were produced via vacuum injection technology.

A spherical, aerodynamic outer skin

comprising 24 semi-flexible photovoltaic panels. Sponsored by DAS-Energy, the panels are exposed to all faces for their use of sun and light, with maximum 40% losses.

Curved bio-composite panels made with hemp wool, which increase the performance of the photovoltaic panels by protecting their back side against the weather extremes of the semi-arid region of Ben Guerir, where temperatures reached 42°–46°C (107°–114°F) in the shade during the construction phase last August and September.

High-performance glass from French glassmaker Saint Gobain.

International cooperation

Brümmer said even greater performance could have been achieved if original plans to install hemp-clay boards for the internal partitions and floors, and other minor modifications, had not been abandoned due to funding constraints.

Adrar Nouh contributed the architectural design, developed the hemp materials and cooperated in the construction of the building. Other participants on the SUNIMPLANT project were Morocco’s National School of Architecture and National School of Applied Sciences, both based in Tetouan, Morocco, and Germany’s Fraunhofer Center for Silicon Photovoltaics.

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Making WOOD from HEMP



Pre-cut
HempWood
boards

U.S. producer finds takeup among cabinet and flooring makers

After investing nearly \$ 6 million in a factory in Kentucky, U.S.-based Fibonacci LLC, maker of “HempWood,” has started making deals with companies that have traditionally used wood in their finished products.

Fibonacci recently announced deals with Canadian and American partners who will make cabinets and flooring from the material.

Eastland Group, Inc., based in New Brunswick, Canada, said it is adding cabinets from HempWood to its product lineup. The cabinetmaker, which dates back more than a half century, said sustainability considerations were behind its decision to work with the material.

Hemp tops hardwood

“Hemp is substantially more environmentally-sustainable when compared to traditional hardwood species more commonly used in building materials,” Eastland’s president, Karim Bhibah, said. “Rather than the typical 20-year growth period for traditional hardwoods, hemp grows in a 90-day cycle.”

Bhibah said Eastland is negotiating for an exclusive license to produce HempWood for its cabinets in Canada.

Fibonacci also made a deal with Tennessee Wood Flooring (TWF), which makes pre-finished materials. The Tennessee company says it can press as

much as 5,000 sq. ft (464 sq. m) of the HempWood flooring material weekly. That product is expected to be on the market this year.

In addition to pre-cut boards and flooring, HempWood products come in blocks, and the company is making cutting boards and skateboards.

Government supported

Fibonacci opened a \$5.8 million (€5,4 million) 15,600-sq. ft. (1,450 sq. m.) factory in Kentucky in August 2018 to produce the material. Fibonacci received \$300,000 in tax incentives from the Kentucky Economic Development Finance Authority to develop the facility. Depending on the firm’s performance, Fibonacci could keep some of its investment by meeting job and investment goals.



Boards for flooring from U.S.-based Fibonacci

“This hardwood alternative opens up new possibilities within the construction and woodworking industries and emphasizes the capabilities hemp has across numerous sectors,” Kentucky Governor Matt Bevin said of the startup.

Algorithm mimics oak

Finished HempWood has 20 percent greater density than wood, and can be a replacement in a wide range of applications. Made by compressing hemp stalks and a soy-based binder, finished products also come in blocks, pre-cut boards, cutting boards and skateboards.

The processing is based on an algorithm that mimics the growth cycle and attributes of an oak tree, and which determines hardness, density and stability in the finished product, according to Fibonacci.

Distribution deal

Fibonacci also recently announced a distribution partnership with Reel Lumber Service, Anaheim, California. The company is a fourth-generation family-owned lumber business founded in 1932; its products are available in four retail locations.

California-based CannaGrove also makes a range of hemp-board products and is currently under contract with Silver Mountain Guitars, Colorado, to build speaker cabinets.

The Hemp Line

NATURAL CLOTHING



BASIC WOMEN



BASIC MEN



UNDERWEAR MEN



UNDERWEAR WOMEN

COVER STORY:
FIBER | FASHIONS

Sexy & Sustainable



The Classic Slip, left, is a popular design in The Hemp Line collection. All garments are offered in the colours black, steel grey, marine blue and natural. Women's sizes available are 36, 38, 40 and 42 with S, M, L and XL for men.



Hempro's underwear line offers perfect blend of style and comfort

Put aside for a moment all the benefits of hemp clothing – its durability, breathability, comfort, antibacterial properties and eco-friendliness. With **The Hemp Line** brand underwear collection from Germany-based Hempro Int. GmbH & Co., now it's downright sexy.

That's exemplified most recently by the latest creation from The Hemp Line's design shop in Dusseldorf, the figure-hugging Brazil Slip for women. Elastic and with a bordered hem, the garment's flat seams make it invisible under clothing – a perfect blend of comfort and design.

Getting that blend perfect has been the goal of The Hemp Line brand since the clothing line started back in 2008. Underwear was added with a collection that debuted in 2009, and which has continually been updated through the years.

A major advancement was marked in 2017 when the company revamped

its material composition for The Hemp Line undergarments to 28% hemp, 66% organic cotton (kbA), and 16% elastane, resulting in a softer, more supple and firmer textile.

Focus on Sustainability

For women, The Hemp Line underwear series includes an assortment of bras, slips, panties, t-shirts, and strap tops.

For men, the line offers slips, boxer shorts, t-shirts and vest tops.

Items in The Hemp Line underwear collection come in undyed natural, black, steel grey and marine blue, and are environmentally friendly as the dyes used in the garments are completely degradable and tested for harmful substances

Hempro's focus on sustainability is also reflected in details such as the labels, for which only biodegradable paints and water-based inks are used. And the label-making

process is checked every season to make sure no harmful substances are present.

From the raw material to the weaving of fabrics to the finished product, The Hemp Line production is with Hempro's long-standing partners in China. As a member of the International Association of the Natural Textile Industry (IVN), they guarantee the responsible treatment of workers and respect for nature in the manufacture of textiles used in The Hemp Line garments. The production site is also GOTS-certified

All subcontractors work in accordance with the socially responsible guidelines of the International Labour Organization (ILO), which regularly visits work sites to ensure that production conditions and human rights are observed. That gives a guarantee that The Hemp Line garments are ethically produced in addition to being of highest quality as well good for the earth.

COVER STORY:
FIBER | ACCESSORIES

**Functional
design, quality,
durability**

Leading European hemp company Hempro International GmbH & Co. KG continues to further expand global distribution of its **PURE** brand line of hemp backpacks, rucksacks and bags, according to CEO Rebecca Kruse.

Hempro Int. acquired PURE in 2016, strengthening its position in hemp textile-based accessories. Because it has been a licensee of **PURE** products since 2005, Hempro Int.'s knowledge of the brand and bringing it fully in house translated to broad marketing and product development possibilities, Kruse said.

Constant innovation

"With our PURE line we're constantly brainstorming new products and improvements to the products in our

existing portfolio," Kruse said.

The PURE brand dates to 1995, when its PURE HF Collection of bags was first introduced to the market (well ahead of its time). Because Hempro Int. has been selling PURE accessories since 2002, the company is intimate with the values that have driven the brand's success, Kruse said.

Customer-driven values

"In the case of PURE, we know our customers value functional design, quality and durability – and those are what the brand delivers – backed up by a guarantee. We make it standard practice to not just live up to expectations, but exceed them," Kruse said.

Beyond quality factors, brand personality and character strongly contribute toward finding the right "market fit," not just for the customer but up and down the value chain, according to Kruse. And a key consideration for

Hempro Int. and its PURE suppliers and customers is the sustainability the products represent.

All components that go into PURE accessories are predominantly renewable materials that can be returned 100% into the ecological cycle.

PURE products come in three series that feature modern, functional designs.

The HV Series, which is 100% vegan, comprises a line of bags fitted with multiple inside pockets, closed with zip or magnetic buttons, and made of hemp and organic cotton and with no leather parts.

The HF Series, which dates to 1995, offers timeless and highly functional designs, while the HP series, the newest, replaces the classic hemp leaf logo with subtle lettering of the PURE brand. The HP series was specifically designed for hiking, sports and work, and features well-organized, ample storage space.

A PURE sampler

Designs from the PURE range of hemp backpacks, rucksacks and bags



PURE
original
hemp bags
since
1995



Lifting up farmers

Hemp can 'work wonders' for Latin American agriculture

Lorenzo Rolim da Silva is a consultant to international companies in the development of medicinal cannabis and industrial hemp projects, and is affiliated with [Rhizo Sciences](#), Australia. He started his career in cannabis in California in 2015, later returning to Brazil to work in the first medicinal cannabis company based in the country in partnership with Bedrocan Brazil. After a few years of international consulting, Rolim dedicated his efforts to develop technologies in fiber processing. He is president and founder of the newly formed Latin American Industrial Hemp Association.



HempToday: What was the impetus behind the formation of the new Latin American hemp association?

Lorenzo Rolim da Silva: We realized that Latin America needed an organization to speak on behalf of industry stakeholders. We understood that all other great hemp production regions (Europe, Canada, USA, China) had hemp industry associations, and that these organizations were pivotal for the proper development of the local regulations and laws. And we noticed that Latin America as a whole was far behind in that scenario when compared to these regions. We aim to become the unified voice of the hemp industry across Latin America.

HT: What are the common challenges to hemp across Latin America & the Caribbean?

LR: Lack of sensible regulations to produce hemp properly. We see many cases of countries that completely prohibit hemp and cannabis to be grown (like Brazil) and many more that have limited regulatory frameworks, creating a series of barriers and difficulties for the development of the industry. The truth is that many people in our region are still ignorant when it comes to hemp and cannabis, and prejudice is halting the development of what could be a major economic boost for Latin America, which is much needed during these challenging times.

HT: Which Latin American countries do you see taking the leadership positions in the hemp industry?

LR: Colombia and Uruguay are already a few years ahead of the rest in terms of production. Both countries were pioneers in regulating cannabis production and developing the local industry, many times

with foreign investment. Both countries have focused their efforts on the medicinal and pharmaceutical industries but I believe soon enough we'll see an uptake of industrial hemp for other purposes. Of course, once we have comprehensive legislation all across the region, it is likely that the current agricultural leaders will quickly take the leadership, and by agricultural leaders I mean Brazil and Argentina in the South and Mexico up North. We may also see interesting scenarios in countries like Chile, Peru and Paraguay in the near future.

HT: What is the potential for the export of hemp products from Latin America? Which countries have the best, first opportunities to gain this business? And with what kind of products?

LR: So far most of the opportunities around hemp in Latin America are focused on the medicinal industry, so we can see the export of bulk biomass, flowers, extracts and cosmetics, coming out of Colombia and Uruguay primarily. But the future potential I see as much bigger than that. Brazil is a leader in the global cellulose and paper industry, which is mostly an export market, and they can benefit greatly from large scale hemp production locally. Also, many food supply chains could have the added value of hemp grains in the region, keeping in mind that these countries are leaders in the production of poultry, pork, cattle and

more. I see hemp much more as a crop that will add a lot of value to the already existing export supply of other commodities.

HT: What can hemp do to lift the agriculture sector across the region? What's needed to get constructive programs in place for farmers who want to grow hemp?

LR: Hemp can work wonders for the agriculture of Latin America. The models currently being experimented with are showing benefits for both small and large scale farmers. The problem here is that there is an enormous lack of knowledge about hemp, so the focus must be on education for the farmers, with materials explained in their native languages; we need to reach out to farmers that are located in isolated regions, and start identifying what are the best products that can be produced by hemp in each region. For example, I see Colombia, Ecuador and Peru as good examples of climate conditions that support the production of high quality flowers and biomass. On the other hand, countries like Paraguay, Uruguay, Brasil and Argentina have regions with ideal climate for the production of grains and fibers, not to mention the already established supply chains for both. With time the industry will self adjust and these possibilities will be turned into real gains.

HT: Growing hemp for food would seem to be a logical sector for LatAm stakeholders. What is the potential for growing and producing hemp foods?

LR: Immense. The region is already responsible for producing most of the world's soybeans, corn, cotton, coffee, a lot of wheat and rice, many fruits and vegetables, not to mention the livestock industry that is also among the world's largest for cattle, pork and poultry as I've said before. Considering the nutritional value of hemp grains, with high amounts of protein and Omega fats, and the plant's low water requirement when compared to other crops, it is easy to see how hemp could become one of the best options to be used for animal feed in our region.

All that being said, we haven't even talked about using hemp for human consumption, something that is very rare across our region today. In Brazil, for example, you can't find any hemp foods

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HT: How do you see the THC limits playing out across the region in light of the trend toward 1.0% THC in hemp - which LatAm countries seem to be adopting?

LR: That is a very welcome approach that the two pioneers of our region decided to follow: Uruguay and Colombia. We are also seeing a 0.5% limit in Paraguay. This is important due to the tropical climates of our region, which can more easily increase the THC content of hemp plants.

What we hope to achieve with the association is to stimulate the countries' regulatory authorities to talk and exchange information so that everyone understands this necessity, making it easier to move products across the region and stimulating bilateral commerce opportunities for the countries. I personally believe that globally we are past due in the understanding of 1.0% limits in hemp levels of THC. That level cannot be considered harmful or dangerous, and lower limits only create additional restraints to this industry. I hope Europe and North America follow this trend in the near future.

HT: We notice you've done some work in African countries. What can you tell us about the potential for the hemp industry in Lesotho, Zimbabwe and South Africa?

LR: Yes, I was blessed enough to be able to connect with people from this region of the world as well. Africa, just like Latin America, is an enormous opportunity waiting to be developed. The people from these countries are ready to enact this change, and many times are held back only by poorly written regulations and the wild speculations of the financial markets. If people are willing to put their boots on the ground and do the hard work, there are enormous opportunities in that region.

I can easily see Africa and Latin America giving Europe and North America a run for their money in the hemp industry in the near future. We can outcompete in terms of pricing, availability of land, fresh water resources; and we have a climate that allows year round production in agriculture, favoring the prices of these commodities greatly. We did it once for soybeans and corn, and we can do it again for hemp. We just need the opportunity to do so.



Raul Hector Elizalde Garza, President, HempMeds Latin America

New cannabis law in Mexico criticized as restrictive on hemp

Mexican hemp stakeholders say a new cannabis law moving through the legislative process would significantly hamper hemp interests because it treats hemp the same as marijuana. The new law is now before Mexico's full Senate after having been passed by the body's commissions on justice, health and legislative studies.

"There's no difference between the license that regulates marijuana and the license that regulates hemp," said Raul Hector Elizalde Garza, a lawyer and President at HempMeds, Latin America. That will significantly limit the development and sales of low-THC hemp products, Elizalde Garza said.

"You'll need a license for selling any hemp product, from a hemp T-shirt to hemp seeds or extracts." Such unlicensed hemp sellers would be subject to penalties similar to those for selling unlicensed marijuana, he noted.

Only those 18 years and older would be able to buy hemp product, Elizalde Garza noted: "Imagine them asking for your ID if you are going to buy some hemp seeds for breakfast or some hemp body lotion."

Broad licensing program

And the bill disallows vertically integrated cannabis concerns by limiting participants to only one total license. "You can't process and export. You can't grow and also process for hurds or seeds," said Elizalde Garza, whose firm was the first in Mexico to import CBD products, and the first legal CBD company in the country.

Licensing under the proposed bill

covers harvesting, processing, sales, import and export of cannabis products. A cannabis agency would be established to manage the licensing program.

Research also licensed

The scheme also would require universities to be licensed to research hemp, setting it apart from other plants which need no such government authorization, Elizalde Garza said.

The measure now in the Senate came after Mexico's Supreme Court ruled that possession, cultivation and consumption of cannabis should not be criminalized, and ordered the Mexican congress to change laws on personal marijuana use, giving legislators until April 2020 as a deadline.

Meanwhile a separate law covering the import of medical and industrial cannabis has been on the books since 2017. That law ordered the Mexican Health Department to write a regulation by the end of 2017, but those rules have yet to be written, according to Elizalde Garza.

Overreach

The bill now in congress goes well beyond what the Supreme Court ordered, Elizalde Garza said, by attempting to re-regulate medical cannabis (which is already legal) in addition to placing restrictive rules on hemp.

"We still have a long road ahead in trying to establish a clear difference between hemp and marijuana," said Elizalde Garza. "We need to keep fighting so this law will really benefit Mexico."

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Beyond CBD

Hemp offers a wide range of possibilities for LatAm countries

Manuel Baselga is a public affairs executive and social entrepreneur with 15+ years' operational experience in over 25 emerging countries, mainly across Latin America and Africa. After co-founding UK-based Lignum Resources, a carbon efficiency project development firm invested in interests from solar power generation to sustainable forestry, Baselga joined Savanna, a cannabis investment fund. Although Savanna's most visible asset is [613 Partners](#), a global cannabis services firm, industrial hemp remains a top priority for the company. Based in Colombia, the company is involved in R&D projects in genetics, technology and decarbonization.

HempToday: How would you describe the fundamental legal and regulatory landscape in Colombia vis a vis industrial hemp?

Manuel Baselga: Colombian legislation is attractive at first glance, but like most nascent jurisdictions, it is still ironing out regulation to provide an efficient ecosystem for businesses. Initially, legislation was shaped to prioritize pharma-grade cannabinoid derivatives production, and industrial hemp was included under that framework, which isn't a natural fit. That said, getting licensed to farm hemp is fairly simple in Colombia. An upcoming regulatory update is expected to create a dedicated space for hemp regulation, which should make it even easier to get started with industrial hemp farming.

HT: What is the level of government support? And how is that expressed in practice or financial terms?

MB: The government's role so far has been limited to processing license applications and overseeing compliance. Although their attitude is amicable, execution has been hindered by lack of resources and leadership, in part due to overwhelming demand. There aren't any particular initiatives to support business growth, or public financing initiatives that I'm aware of but they did step in to help companies bank through the Agricultural Bank, a public banking institution aimed at supporting farmers.

Although the incoming conservative administration has sent out ambiguous signals regarding their stance on the industry, I don't see any path other than further deregulation and support for the industry in Colombia or the world.

HT: As a global adviser in compliance, what's the full range of compliance issues



that stakeholders need to be aware of?

MB: Regulatory oversight for industrial hemp in Colombia is relatively loose and conducive to business. There is no limit on cultivation area and reporting on cultivation activities is done only twice a year. Also, the threshold for THC content is higher (<1,0%) than in most other jurisdictions (typically 0.3%), significantly reducing the "hot crop" paranoia. As long as you're growing certified cultivars and all your paperwork is in due form, you're good to go. That said, most companies underestimate the importance of having a dedicated compliance practice, jeopardizing their operation.

HT: You're also investment advisers. What are you telling investors in light of the rush to CBD that caused the market to crash?

MB: The hemp opportunity goes way beyond CBD, and we're confident it will find its space in Latin American agriculture. Also, the continent's main competitive advantages are cost and year-round crops, so local producers should always maintain an edge over North American and European hemp farmers. The CBD boom and bust dynamic of the past couple of years is a valuable lesson for investors. Over 75% of the one hundred or so business plans we've reviewed in the past two years were speculative plays banking on unrealistic CBD price projections and hyped up stock market valuations.

Investors behind these projects have essentially lost two years of valuable time

and traction, not to mention capital. A question we get often is if it's too late to join the industry. If your plan is to put together an attractive pitch deck, take the company public and get a \$50 million valuation, yes, you're late. If you're committed to finding your space in the industry through real value creation, I'd say the opportunities are endless and the timing is perfect. The industry is still in its infancy.

HT: How do you assess the development of the whole-plant concept, and using hemp for all its potential? Do you note any trends toward fiber, for example? Food? Are investors open to talk about those more long-term opportunities?

MB: Most cannabis investors gravitate towards models promising short term returns. The main challenge with industrial applications for hemp is the lack of infrastructure to process raw material into factory inputs. Building that value chain begins by educating industrial textile and paper interests about the opportunity. We're investing time and energy in creating that demand through awareness initiatives in both the public and private sectors.

In parallel, we're researching genetics to develop the right strains for this latitude, exploring efficient technologies to transform stalk into pulp or fabrics and building international networks with like-minded entrepreneurs. This approach attracts different types of investors, like impact capital and institutional partners, the type of travel buddies we're comfortable with.

HT: You place a lot of emphasis on the mitigation of climate change. How do you talk to companies and investors in this context?

MB: Part of our leadership comes from environmental and energy efficiency consulting. And hemp has a lot to say in this space. We're working with carbon certification agencies to certify hemp operations to produce tradable carbon credits. Soil remediation is also a proven application for hemp, and Colombia has a long history of irresponsible mining. We're investing heavily in R&D in environmental applications and our funders are aligned with the vision and happy with our progress. Our investors understand the importance of aligning environmental and social benefits with the bottom line. I'd say it's the only way to build a sustainable business model these days.

HT: As you work across many countries, tell us about some interesting things you've seen in the industrial hemp space. What can you say about how different governments are responding to the opportunity hemp represents?

MB: North America is obsessed with producing CBD oil, and that didn't end up well for many in 2019. Europe is stuck in a no man's land, and despite the European Industrial Hemp Association's advocacy, lawmakers don't seem to grasp the opportunity. I have great hopes for Latin America. There are several groups across the continent that are taking the opportunity seriously and will be making headlines soon.

We've launched the Latin American Industrial Hemp Association, and some of its members are making good progress. Paraguay stands out in terms of government support, and a company we work with is lining up to become a global player in the hemp protein business. We're hoping Brazil becomes a regional leader soon.

HT: You're working with hemp in tropical latitudes. What are the particular challenges to that?

MB: Traditional industrial hemp strains don't work in equatorial latitudes with 12/12 daylight cycles year round, so that is certainly a challenge. We're breeding European and North American strains with local landraces and have promising results, but there's no cutting corners when it comes to breeding and adapting foreign strains to this climate.

Varieties from South East Asia are easier to work with but present other challenges. And auto-flowering strains with low THC work fine for flower farming and cannabinoid extraction, but not for fiber. So we take it as an opportunity to fill a gap in the market through research and innovation which is exactly the type of business proposition we like. The reward for stabilizing the first truly tropical industrial hemp strain, one that can be farmed safely in Indonesia, Ghana or Colombia is worth waiting for.

HT: Talk about hemp and its potential fit in the energy sector.

MB: Hemp has a good net energy yield and similar fuel properties as wood fuels, and significant advantages over other energy crops, such as low pesticide requirements and higher energy content. Hemp was used as an energy source for millennia prior to prohibition, and some countries are picking it up where they left it decades ago. Most of the hemp grown in Sweden is packed into energy-rich pellets used for domestic heating.

Cellulosic bioethanol is another obvious use for hemp. And energy companies are at the forefront of carbon efficiency and decontamination, so those two angles certainly overlap. As with other industrial applications, using hemp for energy requires intense capital expenditures and technological innovation, so again, we're talking about mid- to long-term commitments.

Hemp moves ahead in Puerto Rico, as medical cannabis stalls

A Puerto Rico legislator has proposed a measure that would allow the cultivation of marijuana and hemp for medical products, but says the government is stalling on developing such a program for the island, a U.S. territory.

Independent Deputy Zoila Rosa Volio said the aim of the bill is economic regeneration through development of value chains extending from agriculture to processing. Licenses would be granted for farming, extraction facilities and laboratories under the proposal.

"It would be a project to generate employment. Many companies that are bankrupt could start producing these types of products," Rosa Volio said.

But so far the Puerto Rican government has not developed a program to exploit the potential of medical cannabis, Rosa Volio said, noting the government's failure to develop a cannabis program "leaves billions of dollars to countries like the United States and Canada," when Puerto Rico could tap into those markets.

"I want to reanimate agriculture. I have asked the government to develop a project so that the broken farmers and cooperatives can start planting, but it's talking to a wall," Rosa Volio said.

Industrialization envisioned

Rosa Volio's proposed measure envisions industrialization of extracts such as CBD from hemp, or marijuana extracts to help those suffering such maladies as Parkinson's Disease, immune problems, arthritis and multiple sclerosis.

Medical cannabis production would be regulated and overseen by the country's Ministry of Health under the measure, officially the "Law on Cannabis and Hemp Production for Medicinal Purposes." Rosa Volio said the proposed law could spark development of the pharmaceutical industry, and pre-market value chains starting in agriculture.

The Costa Rican Institute on Drugs (ICD) and the Institute on Alcoholism and Drug Dependence (IAFA) consulted on Rosa Volio's proposed bill.

Irving Rodríguez, director of the Office for Licensing and Inspection of Hemp of the Department of Agriculture, has said his office is preparing a general plan for industrial hemp to submit to the U.S. Department Agriculture, which must approve Puerto Rico's hemp program.



He said farmers in Puerto Rico could produce 10,000 acres worth of the hemp next year, bringing \$100 to \$150 million into the territory's treasury. Thirty research growing licenses and seven manufacturing licenses have already been awarded, and the office expects to award 50 licenses in total, Rodríguez said.

U.S. jurisdiction

Under U.S. jurisdiction, Puerto Rico operates according to the 2018 U.S. Farm Bill, which allows industrial hemp to be fully cultivated and manufactured. Local incentives for registered farmers growing hemp are in place, and government owned land and manufacturing facilities are available for rent. Investments in Puerto Rico are protected by the laws of the United States.

Puerto Rico's Department of Economic Development & Commerce said it has interest in the form of projects adding up to 18,000 acres of land to be developed for industrial hemp farming and its derivatives, not including other private initiatives.

Step by step

Stakeholders in Puerto Rico tout the possibility for up to 3 industrial hemp harvests per year on the island, with potential to attract international players and investment. Toward that end, DEDC is:

- Working with University of Puerto Rico's Mayagüez Campus in the acquisition of a GC-MS for cannabinoid analyses in hemp cultivars.
- Working with PR's Land Authority to establish a land bank of agricultural lands exclusively for industrial hemp crops.
- Developing basic industrial hemp manufacturing Standard Operating Procedures to establish Puerto Rico's industry guidelines.
- Developing an industrial hemp marketing plan.

Feeling the pinch in USA

Tough CBD market could spur a push toward grain, fiber

Rick Trojan is an American hemp entrepreneur and the founder of [Hemp Road Trip](#), which promotes industrial hemp all over the world. He serves as President of the U.S. Hemp Industries Association.

HempToday: What's the mood among U.S. stakeholders these days? What's their state of mind after the euphoria of the Farm Bill, followed by the struggles in the CBD market?

RT: The euphoria of the 2018 Farm Bill quickly dissipated as anticipated access to everyday business services: banking, insurance and shipping, were not immediately available. CBD production grew in nearly every state planting hemp in 2019, and the tremendous market growth realized in 2018 and 2019 slowed tremendously. The market is still growing, but at a much slower rate than prior years. As a result, many CBD farmers and processors are feeling the pinch.

HT: What do you say to that guy out there, that farmer or primary processor who had a bad experience last year?

RT: We got into the industry in 2015, nearly the first year hemp was planted in this Hemp Reformation, as a result of the 2014 Farm Bill hemp pilot program. On paper, the numbers we ran were accurate, and realistic. In reality, it took us a few years to get everything aligned – planting to harvesting to drying and processing.

It's a "new" crop for farmers, so nobody should expect to get rich overnight. It takes some time for the plant to adapt to the new environment, and the farmer some time to dial in production. Any farmer knows that bad years can happen. Education and collaboration will help mitigate the downturn.

HT: How is the coronavirus affecting the industry?

RT: The hysteria over coronavirus will impact the industry negatively, through lost sales and decreased productivity. However, most farmers who



planned to plant hemp are continuing to move forward, and the agricultural sector is an excluded class for the lockdown occurring nationwide.

HT: What are the key issues facing U.S. Hemp going forward, and how is the industry addressing those issues?

RT: The key issue remains education. Now that the FDA and USDA are involved, helping them understand what hemp can do is important for them to create regulations applicable without overreach. The industry is engaging government officials, conducting research and educating farmers, manufacturers and officials.

HT: Aside from legacy players like Colorado and Kentucky, what are the up-and-coming hemp states in the USA? What's interesting that's happening out there?

RT: You have big CBD producers like North Carolina, Colorado, Kentucky & Oregon alongside up-and-coming states on the grain and fiber side: North Dakota, Montana. Up and coming states that show potential: Texas, Wyoming, California, Florida. There's recognition that not everyone can grow CBD, so there's a push towards grain and fiber cultivars, and processing follows shortly behind.

HT: What's the best story you've heard "on the road" in the past year?

RT: I've heard a LOT of incredible stories. A buddy was making extract

in his rental house in Serbia. Things got out of hand when the stovetop mixture caught fire, and he put water into a boiling pan of oil – causing it to splatter and catch his area on fire. This caused his girlfriend and dog to evacuate immediately while he had second and third degree burns all over his body. She ended up going to jail for a few days for potential arson. Thankfully he walked to hospital and was treated, his girlfriend was released from jail and the dog lived to tell the tale.

HT: What are you doing these days when you can't be on the road?

RT: All this corona-hysteria is forcing me to stop travelling, which I've not done for nearly five years. After visiting 6 continents last year studying hemp and engaging global leaders, I had another year of travelling planned – Europe to China to S. Africa. Instead I'm home in Denver working remotely on building the fiber side of the industry and new developments at Hemp Industries Association.

HT: What's ahead for the Hemp Industries Association?

RT: We just announced a new Board of Directors and are actively searching for our next Executive Director. As the largest and oldest hemp association in the USA, we're taking the industry's expertise and applying it to newly developing industries. Look for some great new things coming out of HIA in the near future.

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High Grade Hemp Seed debuts CBG-rich 'Matterhorn' strain

Colorado-based **High Grade Hemp Seed** (HGH) is producing and distributing a new high-CBG boutique European hemp strain.

Dubbed "**Matterhorn**," the cultivar was developed by breeder Matthias Ghidossi, founder of Swiss Cannabinoid, Ticino, Switzerland, who worked with a team of European geneticists and a pharmaceutical company in developing the cultivar. Matterhorn is registered in the USA under Phyllos Galaxy, a crop science company based in Portland, Oregon.

As part of the U.S. launch campaign, 10 licensed hemp farmers received 2,000 seeds each to introduce and test Matterhorn in their regions. Recipients of the giveaway seeds cultivate hemp across diverse states and climate zones ranging from California to Vermont, Texas to Pennsylvania, and Colorado to Georgia.

Therapeutic potential

CBG (cannabigerol), like THC and CBD, is one of 120 cannabinoids found in cannabis. While cannabis stakeholders have long been focused on developing THC and CBD, researchers and hemp breeders are now teaming up to better understand CBG, and developing CBG-rich cultivars.

CBG is known as the "mother" or "OG" cannabinoid, due to the fact that it is the precursor to all other cannabinoids such as CBD (Cannabidiol), CBN (Cannabinol), CBC (Cannabichromene), and THCA (Tetrahydrocannabinolic Acid).

CBG activates both CB1 and CB2 receptors in the endocannabinoid system; it could possibly hold the cumulative qualities of all other cannabinoids put together.

"We chose to focus on CBG due to its powerful efficacy in early trials," Ghidossi said. "Over the past few years, more

and more research has been conducted to understand the value of CBG. The early results of research in Europe are creating a lot of excitement in the fields of science and medicine."

CBG's promise

While clinical trials of CBG have not been performed, early studies have shown the compound may be therapeutic for such things as glaucoma, inflammatory bowel disease and Huntington's disease, and may inhibit tumor growth in some cases; it is known to kill or slow bacteria and advance bone development. CBG also reportedly buffers the feelings of paranoia sometimes caused by over-ingesting THC.

"Paving the way in CBG has been a logical next step – both in advancing the agricultural industry and also in improving the availability of CBG products to U.S. consumers," Bodhi Urban, CEO at High Grade Hemp Seed, said of the company's push into cannabigerol. High Grade carefully develops the value chain through breeding and other partnerships to ensure the farmers it serves get proven, robust genetics, Urban said.

First discovered in the 1960s, CBG, which is non-psychoactive, is not under international drug schedules, and is not considered a controlled substance in the USA.

The relatively low amount of CBG found in conventional cannabis plants means it takes thousands of pounds of biomass to isolate even small amounts of the compound, meaning high prices to the end user, at least for now. CBG has been called "the Rolls-Royce of cannabinoids" due to the costly process of producing it.

Matterhorn offers farmers a vigorous hemp strain specifically bred to yield high levels of CBG, opening up a wide range of opportunities for the next hot cannabinoid.

CBD expected to remain focus for U.S. farmers

A "vast majority" of American hemp farmers and processors will focus on CBD in 2020 according to a report by Hemp Benchmarks, which monitors the sector.

That's despite a current glut in supply that has many companies sitting on massive amounts of biomass and CBD oil.

"Reports from regulators and producers tell of large volumes of biomass still sitting unsold, which may dissuade some from growing again this year," Hemp Benchmarks said in narrative analyzing a recent survey among stakeholders.

Leading states dip

But while the number of applications to grow hemp is down from 2019 in several leading hemp states, with sources in Colorado, Montana and Oregon citing declines, growers in new hemp states are showing enthusiasm over hemp, according to the report.

Florida and Texas, which are both in their first season of hemp growing, report strong demand for licenses. Agriculture officials in Florida say they have already approved 123 licenses from among 817 total farming and processing applications submitted. Texas state officials have said more than 450 applications for producer licenses have been received by the state.

Noting that "much less acreage was planted and harvested successfully than was actually registered" in 2019, Hemp Benchmarks said that may not necessarily lead to a slowdown in CBD production in more mature hemp states if established farmers stay in the industry while others disappear after the difficulties of last year.

"The flip side of that possibility is that the surge in licensing in states with new hemp programs may not translate into greatly increased production of viable biomass," as new entrants struggle to produce harvests.

Fiber interest grows

In other notes from the report, the survey revealed increasing interest in other end markets for hemp-derived raw materials, particularly hemp fiber. The report said cultivation for industrial applications will likely constitute a larger portion of total production compared to 2019.

Also, survey respondents reported they've had no difficulties in the licensing process as a result of the coronavirus crisis, although some are concerned that if the crisis lingers, they could face a shortfall of labor.



Traditional Cannabis growing in South Africa's Eastern Cape

A narrow window South Africa reschedules under tight restrictions

The South African government has rescheduled CBD and THC, amending previous drug laws to open up the cannabinoid economy. The rescheduling has been welcome progress for the country's industry, though the scheduling of CBD means that even the smallest players would now have to comply with pharmaceutical and medical legislation and regulatory requirements.

The country has also exempted industrial hemp from medical control, though the THC limit, set at just 0.2%, surprised many.

South Africa said earlier in the year that new cannabis legislation would be released in April 2020, but as elsewhere in the world, the coronavirus pandemic has seen the country in a "lockdown" since March, stalling progress until recently.

CBD

The notice, signed by the South African Minister of Health Zweli Mkhize, was published a week after a CBD moratorium expired. The 12-month moratorium permitted the sale of certain CBD products within set parameters. Now, CBD has been scheduled using a two pronged approach: Its default scheduling is as a prescription only medication (Schedule 4), except when in pack sizes containing 600mg or less of CBD and limited to maximum dose of 20mg/day, where it would then be regulated as a supplement on schedule 0.

"Schedule 0" is a class that includes many off-shelf medicines such as aspirin and supplements such as vita-

mins. This scheduling means that only GMP-produced products will be allowed, and only when the producers are registered as medicines manufacturers and the products themselves registered through the South African Health Products Regulatory Authority (SAHPRA).

"They're clearly going to come down hard on CBD, it's very dangerous for players in the CBD space," said Ricky Stone, a legal expert for the cannabis industry.

'Whole plant or any portion'

Though he has reservations about the scheduling approach the government chose, Stone is optimistic about other parts of the rescheduling. "The main positive is obviously that cannabis, as a plant, has been removed from the Medicines Act. The entire entry of cannabis has been omitted from Schedule 7.

Schedule 7 is reserved for strictly controlled substances, and hemp's inclusion has often been the greatest hurdle in the path of research, agricultural trials and hemp business in the country, where stakeholders have been trying to establish a hemp industry since 1996. Now, the government seems to be taking a new approach.

"It's in preparation of moving cannabis to the Department of Agriculture, who will then regulate it as an agricultural crop. That's a huge move forward," Stone said.

THC?

The rescheduling of THC opens up the potential for a medical cannabis industry in South Africa. It also

exempts industrial hemp from the schedules, but sets the limit for this exemption at 0.2%, copying the contentious EU limits (themselves expected to be returned to a previous limit of 0.3% this year).

Processed products, on the other hand, have a THC limit set at only 0.001%, whether for fibre or food.

Industrial cannabis

Clarification on where the new scheduling leaves industrial hemp is expected from South Africa's Department of Agriculture, Land Reform and Rural Development, but Stone's opinion is that the government is readying to regulate Cannabis from an end-use perspective, a move stakeholders hope will free industrial hemp production from the yoke of pharmaceutical and medicinal laws.

But of course, the low THC limit defined in the rescheduling is already expected to be problematic for the South African industry, who see a different approach to industrial cannabis.

"Biomass has to be completely lawful, to make use of the economic opportunities, especially in the rural areas," Stone said.

Narrow window

Like Stone, many stakeholders are of the opinion that a low THC limit, if enforced and not adjusted, would further impede efforts to establish the hemp industry in South Africa. There aren't many varieties of hemp that are suited to the latitude and climates of South Africa, and that would keep to these ultra-low limits implied in the gazette, a fact other African nations have considered (Malawi, for example, one of the most conservative nations on the continent, set the limit at a full 1.0% THC).

It would also exclude the lowest hanging fruit for the local hemp industry: using the sturdy native landraces as industrial raw material and an economic tool to uplift the rural poor, and providing a new market for the vast numbers of traditional cannabis farmers and budding entrepreneurs set to benefit from South Africa's new approach to the hemp plant.

— Arne Verboef

Ghana cannabis law puts hemp oversight under narcotics board

Ghana's Parliament has passed a law that legalizes the use of cannabis for health and industrial purposes but gave the country's Narcotics Control Board (NACOB) oversight of industrial hemp.

The NACOB is also charged with the responsibility of controlling and eliminating the trafficking of illegal narcotic drugs under the new law.

Hemp stakeholders in Ghana had criticized the law as it was moving through the legislative process because it puts hemp under control of the country's drug authorities.

'Copied U.S laws'

"HAG insists that the inexperienced drafters of Ghana's drug laws blindly categorize industrial hemp as part of the basket of narcotics despite extensive facts to the contrary," Nana Kwaku Agyeman, President of Hemp Association of Ghana (HAG), said in late December. "We seem to get lost in this issue of getting high, and all we can talk

about as Ghanaians is smoking.

"We are promoting cleaning up the environment, we are promoting creating a new revenue stream for government in terms of taxing . . . and we are talking about promoting medicines that are far better than opioids – medicines that cannot kill you," the HAG president said.

Optimistic estimates

HAG has estimated that taxes to the Ghanaian government could bring in more than \$10 million per 100 acres of industrial hemp if processed on a "whole-plant" basis.

HAG in December announced it had signed a deal with Soringa TM, a Ghanaian-owned cannabis operator based in Portugal, that would "gross a staggering \$56 million in five years from merely cultivating and exporting industrial hemp from a land size approximating 100 acres. It will rake in around \$2.8 million per harvest of HAG's industrial hemp on the planned 100 acres," according to the website ghvan.net.

Malawi cannabis bill's passage should boost hemp's fortunes

In a landmark ruling, the parliament of Malawi approved the Cannabis Regulation Bill, which legalizes the cultivation, processing and marketing of industrial hemp, setting the allowable THC level at a full 1.0% – thereby joining a global trend. The bill was widely backed by legislators who hope it will spur economic growth in the country.

For Malawi's Invegrow, which has been lobbying for industrial hemp since 2013, the bill's approval feels like a personal victory. "This Bill is a dream come true for us." CEO Tanya Clarke told HempToday. "Now begins the real work." Her company has been running trials since 2015 using low-THC (max 1.0%) varieties, working hand-in-hand with government to evaluate the feasibility of Malawian industrial hemp.

"It's been slow and steady, but government is taking a logical and practical approach to the plant and the industry. The Bill and Regulations seem to be prudently using the experi-

ence from our trials to guide their policy" Clarke said.

THC level set at 1%

The traditionally conservative republic joined an increasing number of countries in setting a THC limit of a full 1%, for increased access to suitable and well-performing, but non-EU certified, varieties and a more accessible industrial hemp program. Invegrow has been evaluating many of these varieties, investigating their agronomy and performance, but also investing in R&D for diverse hemp products that exploit the stalks, fiber and hurds, as well as the plant's seeds and flowers.

"Developing a responsible, inclusive industry for Malawians is going to be key, as well as value-adding as much as possible," Clarke said. "This is a largely agricultural economy that relies heavily on tobacco. Industrial hemp and medicinal cannabis can help people here – and the country's fortunes"

— Arne Verboef



China has the biggest hemp growing fields of any contiguous market in the world.

China Hemp Inc. Government encourages big firms to exploit hemp for all applications

The development of the Chinese hemp market will no doubt be significant for the industry globally. While little is known about the world's biggest hemp producer, glimpses of what's being done are tantalizing.

By far the world's leading hemp nation, China has the biggest hemp growing fields of any contiguous market in the world. Chinese authorities earlier this decade rolled out a great plan to plant hemp on 1,333,333 ha. to produce 2,000,000 tons of fibres – and that's only to feed the country's textile mills, which primarily turn out exports. But other sectors – food, medical, cosmetics – are also in rapid buildup while research expands as big industrial players enter the industry.

Giant Chinese concerns are expanding into industrial hemp, with activities ranging from farming, processing and extraction of CBD, and everything else hemp — from low tech to high. All have aggressive R&D programs that are probing the outer limits of what can be done with the plant.

Clear push for hemp

Several Chinese hemp companies are operated by the biggest investment companies in China, and while worldwide awareness of those companies remains low, the country's move toward hemp is clear.

Companies are showing significant interest focused on the CBD market. Currently, non-psychoactive cannabinoids in China are legalized, and CBD crystals and water-soluble CBD are on sale.

China continues to expand its current CBD legal framework to tap into a market expected to grow into a 100-billion-yuan (\$14 billion) industry for China in five years' time.

Meanwhile, the number of Chinese companies extracting CBD from leaves and blossoms grows continuously. In some states of China, CBD is produced officially, in others it is illegal.

Export advantages

Aside from its land mass, huge and inexpensive work force and a massive domestic market, China is geographically positioned to take advantage of the nearby export markets of Japan, Korea, India and Australia, where demand grows for hemp food, cosmetics and health products.

As Heilongjiang Province, China's hemp epicenter, vastly ramped up its hemp farming in recent years, researchers are intensely looking into applications for pharmaceuticals and foods along with the traditional focus on textiles.

China holds hundreds of patents on cannabis applications — for the plant itself, processing, textiles, food, oil, paper manufacturing and medicine, among others. That's well over half all patents for hemp registered worldwide – a clear indicator that forward-thinking firms see hemp's potential in China and around the world. China's rate of evolution will outpace such developments in the West.

While imports to China are technically legal, doing business of any kind in China is never easy; first movers will be the ones to cash in on CBD opportunities.

The Chinese also see hemp as a ratio-

nal replacement for the country's cotton growing and processing industry as it addresses the environmental impact of cotton — water shortages, soil salinization and pollution from pesticides. As Chinese cotton grows less and less competitive worldwide, the Chinese see hemp as a logical, environmentally friendly substitute.

To advance the transition, new processing technology and methods are being developed to gain fine hemp fibers. Chinese experts have worked out a process using enzymes in the development of those fibers that makes them suitable for processing by the country's vast cotton processing infrastructure to produce pure hemp fabric and blends – all the while going easy on the environment.

Food, oils, bio-plastics

Beyond medical and textile applications, Chinese hemp stakeholders are also looking at expanded use of the plant by moving into such sectors as food, hemp oils and bio-plastics.

The Chinese also see a fast-growing market in hemp oil-based cosmetics. Valuable skin caring substances in hemp oil make it an ideal, natural ingredient in a wide variety of excellent cosmetic products – cremes, body lotions, bubble baths, shower gels and massage oils.

And they've noticed the small but growing potential in hemp-fibre-based composites such as plastic and fiberglass, applications which are being explored in the auto and construction industries. The Chinese are already using a rougher variant of the hemp fibre to produce lightweight pre-formed doors and shelves.

Technology advances

With labor costs rising, the Chinese realize they need to develop more efficient machines to replace hand sowing and harvesting and to speed up the decortication processes, which now are slow and wasteful. To address those needs Universities from Heilongjiang Province, Ukraine and Canada are conducting comprehensive research to develop new hemp varieties, more versatile and efficient harvesters and new technologies to generate fine hemp fibers, seeds and flowers.

Adding to those challenges is the need to develop cultivars and cultivation practices that maximize yields across the vast country's various climatic and soil regions. More high-quality, high-efficiency hemp strains need to be developed and introduced into the market in an improved and expanded lineup of seed varieties.



WORLD: ASIA

India gears up

The nation looks to build on its heritage in the new hemp era

Like everywhere else in the hemp universe, Indian enterprises expect the first major development will be in the CBD sector, with a movement toward the legalization of cannabinoids and other compounds derived from the hemp plant under way.

Reports show native Indian cannabis varieties exist that contain more than 15% CBD. But India's future in healing applications may not only be about CBD; it may be CBG, or CBC. As data and research emerge about how individual cannabinoids affect the endocannabinoid system, the purer compounds, and crops that contain peak amounts of the compounds will become more valuable, allowing Indian producers to create dedicated formulas for a range of applications.

Beyond such health products, Indian hemp stakeholders have said development is likely to follow quickly in food and cosmetics, followed by clothes, bio-composites and construction – applications that all are being researched in India.

Broad research efforts

In a broader sense, studies also are underway on everything from seeds to product development to hemp's potential to revive of local economies through co-operatives and entrepreneurial enterprises.

So far, it's Uttarakhand that is most associated with industrial hemp in India. The state, which in 2016 legalized the cultivation of hemp for fiber and seeds, has developed a scheme that allows individuals and companies to obtain four types of licenses: for hemp farming; for

storage of raw material; for sales; and for transport.

In Uttar Pradesh (UP) the government allows hemp farming under the supervision of the Excise Department. The UP government has committed to doubling the income of farmers by 2022 and hemp is part of the plan to achieve this. Meanwhile, the states of Himachal Pradesh and Arunachal Pradesh also are reported to be eyeing options to legalize hemp as a crop.

While hemp grows wild in India, farming it is still prohibited in many states. The federal government does not impose hemp policy on the states, which can individually approve hemp cultivation and processing for fiber-based materials and medicinal products.

That states' rights approach indicates the potential for a diverse, thriving industry but underscores a need to communicate hemp's economic development potential among politicians and government officials as well as across India's many administrative units and other constituencies.

Hemp's potential multi-crop yield could hold great promise for Indian farming by bringing relatively high per-hectare revenue to the typical Indian farm, which averages under two hectares in size.

Farmers & seeds

It's about the farm that key fundamental decisions remain regarding how Indian hemp will move forward, especially about seed.

Indian farmers remember well the Green Revolution of the 1960s, when foreign enterprises such as Monsanto tampered with the

local ecosystem by introducing Genetically Modified Organisms (GMOs).

That's the first association that any Indian farmer or agribusiness makes when asked about importing certified cannabis seeds into India.

GMOs were touted as having the potential to stop world hunger, when in fact they only worsened the fragile, community-based agricultural industry of the Indian subcontinent. Indeed, GMO crops such as W129 BT Cotton, glyphosate-resistant GMO-wheat, and Roundup Ready Soybeans, ultimately led to a vast number of farmers committing suicide all over the country.

Although there is a significant difference between the concept of GMOs and certified seeds, which are naturally selected through controlled breeding programs, Indian farmers are understandably wary of "outside" solutions.

Value of native varieties

While importing foreign seeds and registering them, or breeding local germplasm with foreign seeds to make new cultivars may be tantalizing options, the best way forward for India — and for Indian agriculture — is to utilize landraces that are readily available to every farmer. It fills the gap between a local farmer and a private R&D company, but it also taps into the natural capability of these landraces to adapt to their environment.

According to the Protection of Plant Varieties and Farmers' Rights (PPV&FR) Act of 2001, farmers, plant breeders and researchers may be granted intellectual property (IP) rights over a registered plant variety. Farmers are thus entitled to "save, use, sow, re-sow, exchange or sell their farm produce including seed of a registered variety in an unbranded manner."

However, the PPV&FR Act in itself does not ensure that farmers' varieties are capable of competing with national and foreign companies developing new varieties with greater resources at hand.

Indeed, it merely allows the farmers to survive and sustain themselves while the real commerce remains in control of wealthier interests.

Domestic market for hemp

Meanwhile, the domestic market for consumer products grows along with increasing health consciousness among a rising number of India's billion consumers, sure to lead to gradually expanding domestic demand for locally-produced hemp-based and other natural products.

Given the size of the country, its history with the plant and its emerging economy, India looks well on its way to becoming a true global hemp powerhouse.

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MH medical hemp advances

German company to distribute medicinal cannabis, expands CBD line

Germany-based **MH medical hemp GmbH (MH)** said it expects to begin importing medicinal cannabis for distribution this summer.

The development comes after the company convinced local authorities in Düsseldorf to define medicinal cannabis flowers as an active pharmaceutical ingredient (API). Following lengthy discussions, MH said the authorities agreed that API designation and good distribution practices (GDP) certification give the company a clear path to begin wholesale activities.

MH holds a Wholesale Trading Authorization for human medicinal products as well as a Narcotic Drug License as outlined in the German Narcotic Drug Act.

Suppliers lined up

“We are in talks with different European medicinal cannabis suppliers, and have agreements ready to sign,” said MH CEO Joscha Krauss. He noted the company will work with European suppliers only.

Germany’s medicinal cannabis law, which went into effect in spring 2017, makes it easy for patients to access cannabis for medicinal purposes, removing a complicated system in which special authorization was required to obtain cannabis remedies in the past. Patients are only required to have a doctor’s prescription, and can collect reimbursement via their health insurance program.

Krauss said the fact that German health insurers cover the cost of medicinal cannabis empowers both patients and doctors in their efforts to manage patient needs. The legalization gives the country a leading international role, and is expected to spur German research on cannabis in all of its medicinal forms, including CBD, Krauss noted.

Product portfolio expands

MH also announced it launched CBD Gold 2% in oil and capsule form, under its **Phytalize** brand, with the product already set for listing in the retail shops of one of the leading drug store chains in Germany. The company also expanded its existing range of Phytalize Skincare products with a “Care Oil” product. The Phytalize portfolio also includes a face cream, balsam and body lotion, all of which incorporate CBD into the formulas.

Along with high CBD content, products in Phytalize cosmetics contain essential fatty acids, including gamma-linolenic



“We are in talks with different European medicinal cannabis suppliers, and have agreements ready to sign.”

– Joscha Krauss, CEO

acid – which is lacking in most people but which is crucial for healthy skin. Individual products also include derivatives from other beneficial plants to heighten the desired restorative effects of each. For example, the Phytalize balsam balm combines CBD with extract from the Calendula plant, an anti-inflammatory and healing agent that has long been used to treat wounds and rashes.

All products are free of GMOs, parabens, phthalates, formaldehyde and artificial coloring – substances often found in highly processed, chemical-based cosmetics.

Well positioned

On the wholesale side of the business MH offers bulk cannabidiol rich hemp

extracts, CBD oils and CBD isolate to formulators and manufacturers around the world looking to create their own line of CBD products.

The company’s high-quality CBD can be added to a number of products, allowing for the creation of custom CBD-infused brands simply and effectively.

Krauss sees MH as well positioned to serve the medicinal cannabis and CBD markets in Europe and beyond. Anticipating the sector will some day reach a set of industry-wide standards, the company has already established internal controls critical to further development of large-scale manufacturing processes that employ safe and environmentally-friendly methods.

New products

Added to MH medical hemp’s Phytalize brand product portfolio, from left: CBD Care Oil; CBD Gold 2% Oil, and Capsules



NEW



The **Phytalize** brand, from **gr. phyta = plants** **lat. vitalis = life giving** guarantees high quality, natural health products that utilize the original potential of the hemp plant with its phytocannabinoids and many other valuable ingredients to maintain your health.

www.medicalhemp.com



Building on a legacy, with hemp

Czech extractor has global footprint, but can cater to small players

Radek Stanek is CEO at Czech-based extractor Trumf International, one of Europe's legacy operators in the food business. The company has been making extracts from hemp since receiving a processing license in 2015.



HempToday: Your company has been in business for 25 years. Tell us a bit about how Trumf is positioned.

Radek Stanek: Our company is based in Central Europe, but we offer services worldwide; most of our customers are in Western Europe and southeastern Europe, but we also have customers in the USA. We can do business worldwide.

HT: What kind of companies are you working with?

RS: We're working with customers focusing on herbal and hemp extracts. Most of our customers are rather smaller companies and startups who look to produce small batches. That's the ideal type of customer we work with because our extractor is the size to suit their needs.

HT: How exactly do you work with those customers? What do they expect?

RS: Our customers usually supply the raw material and we give it back to them in extracted form. We're supplying the technology and services they need to obtain high quality extract from the material they bring us. By working with us, our customers save money because they don't have to invest in equipment. CO2 extraction technology is quite expensive, a few million Euros.

HT: When you say small batches, what does that really mean?

RS: Our extractor size is 200 liters. Batch size in our case is basically from 45 kilos of dry material, which is relatively small. We provide packing into standardized retail sizes for some companies. For those that do further processing on their own we can package the finished material into standard bulk units.

HT: What are the key advantages of CO2 extraction?

RS: The main advantage is you don't use any solvent or alcohol, just natural CO2 gas under pressure in semi-liquid form. This liquid gas goes through the material you are extracting from, taking out all desired flavors, smells and other

materials. One unique advantage is that the temperature inside the machine, and therefore the material, doesn't cross 45 degrees Celsius. It's natural that the temperature in the hottest moments of summer sometimes reaches that high in the field when you grow spices or herbs. This processing temperature level means everything you extract is not destroyed by high temperatures. It also means the extracts we achieve are biologically active. And, of course, there is no solvent or chemical residue.

HT: Talk a bit about storage and shelf life. What technology do you use in your facility to address that part of the process?

RS: After you get the extract, it's important to store it in proper conditions. Our company is equipped with chilling rooms that control temperature and humidity, as it's important for shelf life that the material be stored under the proper conditions. Some extracts are covered by nitrogen gas so oxygen doesn't touch the extract at all. That's also about extending the shelf life.

HT: Your license allows you to handle THC so as to achieve legal levels in the extracts you produce. How does that work?

RS: When we achieve concentrated extract of hemp, the THC content is often higher than allowed for free distribution.

Because our company has a license to manipulate the levels of THC content, we can store it and standardize it by diluting highly concentrated extract to the level where THC is not problem any more.

HT: Tell us about the full range of products Trumf produces.

Radek: Our core business is in spices, spice blends and spice extracts for flavoring in food processing, with our main customers being food processing companies – canning, meat processing operations, and dairies. Our main business now is to extract from special herbs like Astaxanthin, which is a strong anti-oxidant used for different cosmetics and food supplements. We're also extracting Amaranth right now, which is a quite nice project, also for the cosmetics industry. The equipment that we run is quite flexible, so we can work with all kinds of material. In 2015 we received a license to extract hemp, so we have a full five years serving customers with hemp extraction.

HT: What's the role of chromatography in assuring quality?

RS: When we achieve the extract, we have to measure it to make sure the extraction went properly and we obtained material that has reasonable content of the components that are important. In the case of hemp, of course, it's CBD, THC and other cannabinoids. Our company is equipped with liquid and gas chromatographs, so we can do the analysis in a very scientific way. So when you get your extract you really know what you are getting. It's not like talking about it or making claims. You can see from the chromatographic analysis what's really inside.

HT: You also operate under several certification regimes. Why is it critical to invest the time and money in those certificates?

RS: Because our business is in the food industry, we really focus on quality and product safety. Also, we are active in 15-16 markets so we have to be fully certified to prove internationally that our production is under control and the products we produce are safe. So that's why we really focus on quality and keep these certificates alive. Quality is the major issue for us.



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- Technical support included
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- Proved supplier of various extracts since 2000



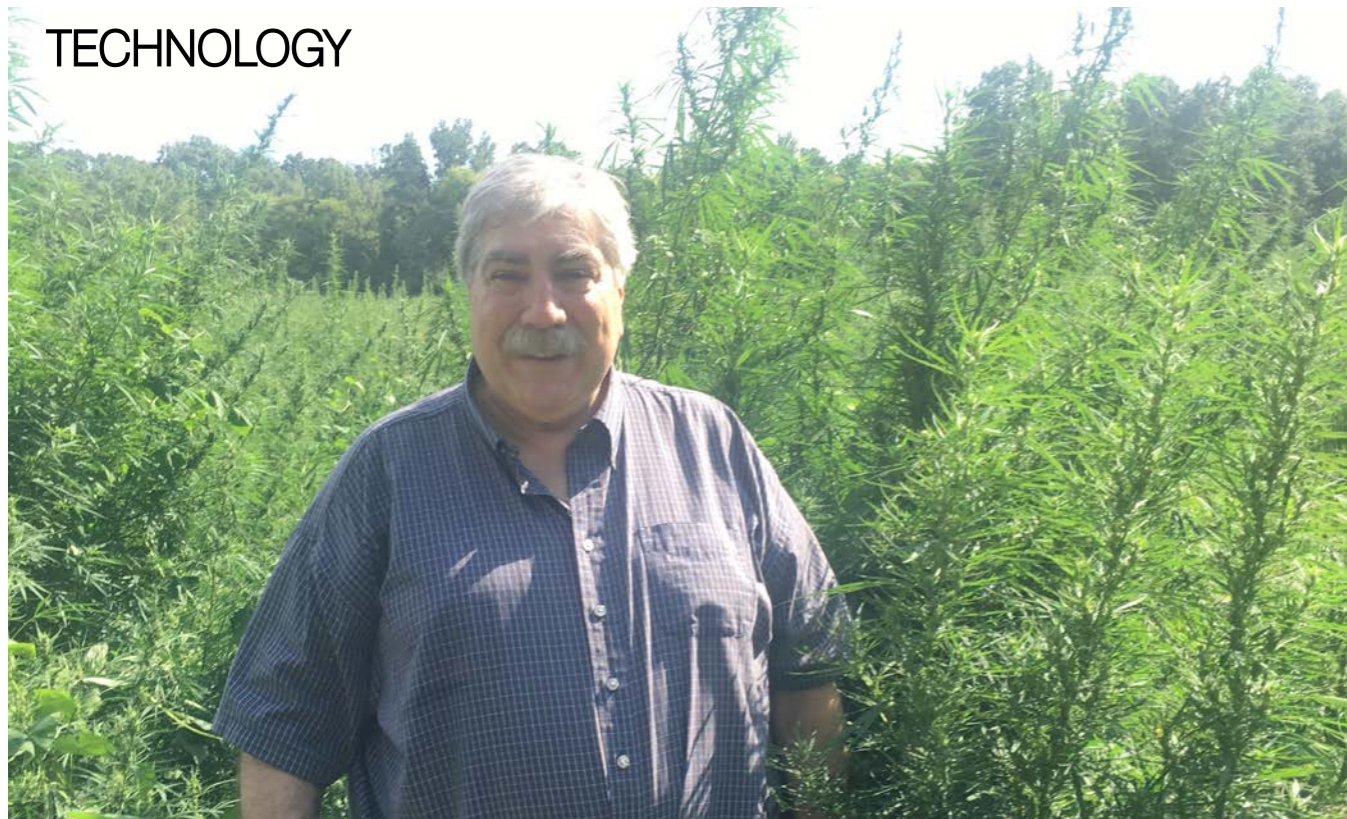
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Processing pros & cons

Choice of extraction method depends on end product

Ernie DeMartino, CEO at Texas, USA-based ASA Process Solutions, has been involved in all types of process system design, engineering, fabrication, construction and equipment supply for all types of industries – environmental, chemical, marine, alternative energy (biodiesel) and industrial hemp. He has more than 45 years' experience in mechanical separation by centrifuge.

HempToday: What's the effect of the CBD crash for the hemp extraction niche?

Ernie DeMartino: I would not consider that there is a "CBD crash" but a "slow-down" caused by lack of badly required government regulations. In USA, the USDA, which regulates growing, has proposed guidelines that many states are objecting to, causing states to revert to the 2014 pilot program. The FDA, which regulates processing and product quality/specifications, is working toward providing regulations but does not have a timeline. In addition, due to the current oversupply of wholesale products, sale prices have dropped. With the lack of government regulations and current supply and demand, hemp CBD extraction has reached current demand levels.

HT: Where do you see the geographic

growth for technology relevant to industrial hemp?

ED: The industrial hemp growth markets will increase as acceptance of hemp products (fiber, seed and extracts) is achieved. Acceptance, through education and regulation is the key. Currently, proven technology being used is advancing both with upgrades and new technology.

HT: How fast is extraction technology changing, what's driving the pace and how can the players in this market keep an edge?

ED: Extraction technology is changing at a moderate pace. Requirements for solventless extraction methods are being developed and proven to keep up with industry demands. Players need to first determine what products they will market and determine the best, most economical extraction technology for those specific products.

HT: What's your view on CO2 extraction vs. alcohol-based methods?

ED: The best extraction method is determined by the amount of hemp to be processed and products that will be marketed. All processes have pros and cons that need to be taken into consideration.

Example is if you have small volumes of biomass to process, CO2 extraction may be best. Processing large volumes of biomass, alcohol (ethanol) extraction may be best. For full spectrum tinctures, solventless infusion (go from dry hemp to approximately 1500 mg/30 ml) may be best. Other technologies such as hot air extraction and cavitation reactors are being developed, mostly for large volume biomass plants.

HT: What kind of projects have you worked on in the environmental sector?

ED: We have worked on projects for remediation of crude oil spills, removal of FOG (fats, oils and grease) from municipal waste water processing plants, waste reduction of hazardous chemicals in chemical plants, used motor oil processing to produce fuel oils, and crude oil tank cleaning, to mention a few.

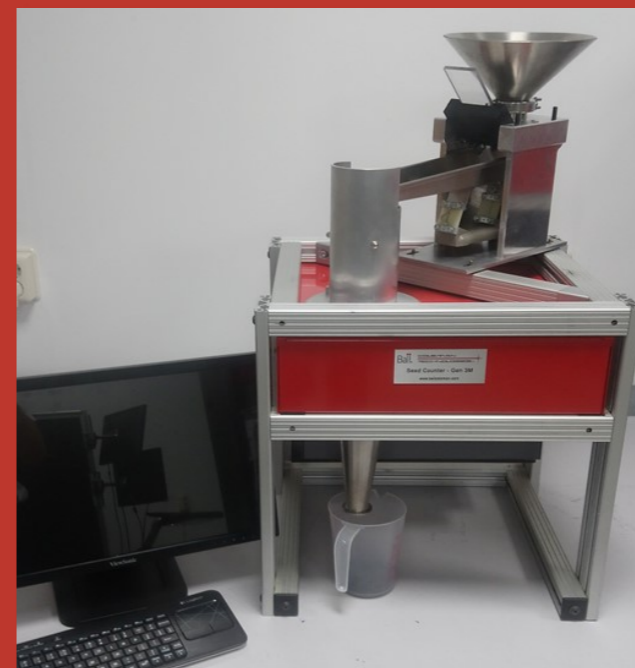
HT: What's on the horizon for ASA Process Solutions?

ED: Pertaining to industrial hemp, we see refinement and improvement to current extraction and refining of CBD products, bringing new technology/extraction methods to reality and processes for using byproducts such as spent biomass and hemp seed oil for biofuels.



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TECHNOLOGY



CEO Daniel Kruse of Hemp Factory



Ground floor view of the Hemp Factory production line. The facility is the biggest hemp food processor in Central Europe.



Among products turned out at the new processing facility **Top:** Hemp seeds being cleaned and separated. **Middle:** Hulled hemp seeds. **Bottom:** Hemp protein powder.

Factory of the Future

Up and running, solar-powered processor will expand

Hemp Factory GmbH, the fully solar-powered food processing facility in Borken, Germany, is set to install new oil presses in the second half of 2020 and boost capacity at its facility near the German-Dutch border.

The biggest hemp food manufacturer in Central Europe, **Hemp Factory**, was developed and guided by HempConsult GmbH, the Dusseldorf-based hemp industry advisory. HempConsult founder and CEO Daniel Kruse is also interim CEO at Hemp Factory. The facility went online last year

Doubling down

“We continue to refine and expand this facility and are constantly re-evaluating and improving performance,” said Kruse. “This highly efficient, clean-energy factory is our way of doubling down on our commitment to sustainability. It’s intended as an example to

the hemp industry that we can be the leaders in shrinking our carbon footprint.”

Hemp Factory produces hemp foodstuffs for the processing industry with a ratio of almost 100 % certified organic, and the remainder of conventional production.

In addition to the planned new oil press, Hemp Factory’s facilities include systems for cleaning and sterilization to produce sterilized whole hemp seeds; hulling technology for hulled or shelled hemp seeds; and in addition a milling and sieving operation for hemp protein and dietary fiber.

Careful quality control

Another production line turns out fodder, concentrated feed stuffs and feed oil for the animal feed industry, and supplies livestock businesses with high-quality feed concentrates from by-products such as oil, oil cake and coarse meal.

With careful quality control, Hemp Factory offers comprehensive analysis;

continuous improvement of production standards; and certification under Organic, Kosher, Halal, HACCP (equivalent to “GMP food”) and GMP+ standards. The plant’s quality management system also is being extended.

Impressive customer base

Hemp Factory’s no-emissions, cost optimized complex features a solar roof that provides electrical power for all facilities, production and heating. The plant optimizes waste separation, and the enterprise is using electric forklifts and electric vehicles in its transportation fleet.

Hemp Factory’s customers include well-known food and baked goods producers as well as leading wholesalers. The factory turns out a variety of bulk hemp food products for sister company **Hempro International GmbH & Co. KG**, which has been selling hemp foods for 17 years.



Solar panels that power the facility



Hemp Factory is located at Borken, Germany near the Dutch border



The machine is small enough to fit in an SUV or pickup truck. Input (left) and output.

The HurdMaster

An affordable hemp micro-decorticator from Latvia

The **HurdMaster** Micro Decorticator, a small-scale fiber processing unit designed by Industrial Hemp Latvia (IHL) founder and entrepreneur Kristaps Eglitis, is now in production and may be ordered.

The machine is designed for small-scale flower and seed growers who want to monetize leftover stems from their harvests, Eglitis said. It is intended for farms of 2-5 hectares (about 6-10 acres).

"We're getting excellent hurds for hempcrete," Eglitis said of the sleek, boxy, stainless-steel unit, which is small enough to fit in a car. "We processed some fiber for hempcrete to insulate my own house which we're now working on, and the hurds' performance in the mix was excellent," Eglitis said.

IHL said it will sell the first three machines from its initial production run to customers who purchase and donate a second machine to a worthy humanitarian project.

"We've identified some remarkable initiatives around the world where the HurdMaster can be of infinite value in providing shelter and jobs through hempcrete construction," said Kristaps Eglitis, founder at IHL.

Inspiration: The HurdMaster was inspired in part by Eglitis' research of a decorticator project started by Australian-Latvian Voldemars Cirulis, who built a much bigger machine while living in Australia in the early 2000s.



Specifications

Supply-220V / 1500W
Capacity: ~50kg/hr
Dimensions: 80cm X 80cm X 60cm (~31" X 31" X 23")
Weight: 150kg/330 lbs

Key features

Compact, simple design
Easy to operate
Chain driven
Durable parts; stainless steel rollers
Adjustable to handle all sizes stalk
Minimal maintenance

Contact

info@hemptoday.net
+48 602 336 685

Eglitis designed the HurdMaster with help from a student at Latvian Technical University after intense research on decortication technology.

He eventually bought the machine from Cirulis and studied its components and how it functions – research he said was critical in the design process.

Engineering collaboration: Eglitis, who designs and builds metal interior features such as staircases, has worked in metal construction for more than 20 years.

He is collaborating with Peruza, a leading manufacturer of machinery for fish processing, developing engineering enhancements that will reduce the HurdMaster's weight while boosting efficiency. While Eglitis is satisfied with hurd quality turned out by the machine, planned adjustments to improve the quality of technical fiber output are still being worked out, he said. Plans are in the works to build a bigger model decorticator as well, Eglitis said.

Just last month, Eglitis secured an EU grant he'll use to build an engineering building, he said.

While Eglitis has now lost contact with Cirulis, 96, who is blind and infirm, he knows the old inventor would be proud. "Voldemars would be happy to see that his work has inspired me to move forward," Eglitis said.



After four years in development, German entrepreneur Heinrich Wieker is now taking orders for a harvester designed specifically for outdoor hemp fields producing flowers for CBD, food and other niche products.

Designed with small and medium-sized farms in mind, **Henry's Hemp Harvester** (HHHarvester) gently strips the plant's flowers and severs the stems in one pass, employing a patented stripping mechanism. The flowers can be collected in a bag or container, while the hemp stalks are left in the field for retting. Depending on plant maturity at the time of harvesting, it's also possible to shake out the seeds, completing a triple yield, Wieker said.

Modular, adaptable

A dual-unit header configuration of the harvester, designed to be front mounted to a small tractor with hydraulic lift, is priced at €50,000 (\$55,400). Additional units to expand the harvesting width, and specialty add-ons are extra, Wieker said.

An electrical engineer by profession, Wieker has 25 years experience designing and implementing processing solutions for the automotive, chemical, pharmaceutical and nutrition industries. He was initially inspired to build the HHHarvester after observing the laborious and expensive process of harvesting hemp fields by hand.

21st Century harvesting

"I watched all these people in the field,



A small tractor with hydraulic lift can handle the harvesting units.

Four-unit configuration. The front-mounted units can be expanded to 6 across.

and while there was something romantic about it, it is obviously not an efficient way to harvest in the 21st century," Wieker said.

The standard 2-unit HHHarvester is designed to be efficient for conventionally planted outdoor hemp fields as small as 5 hectares (12.3 acres). Wieker said tests with the machine proved it can harvest 4-5 hectares (9.8-12.3 acres) per day. But the harvesting ensemble is modular, expandable up to six units that proportionally increase the harvest area.

Affordable alternative

The HHHarvester is an alternative to massive hemp-specific combines that can cost as much as €600,000 (\$665,000). Wieker, who self-financed the technology through its four years in development, is focusing first on sales in Europe.

"Our strategy is to engage closely with our customers and make them feel they have a stake in the technology," said Wieker, who held a workshop in Han-

nover in March 2020 to present the technology in detail, and to plan individually with committed customers, designing configurations most suitable for their specific needs.

More technology coming

He'll also begin to look for engineering and manufacturing partners in North America and other parts of the world over the next 12 months, Wieker said.

Specialist engineering firm Eilhauer, based in Langenhagen, Germany, which has long-term experience in the design and construction of customized technology solutions, is building the HHHarvester under contract.

Wieker also has developed an electrically-driven hemp bud stripper that can be used stationary in a barn or be transported on a trailer for operations in the field. That technology is not expected to hit the market until the second half of 2020.



The MC HC 3400, which undergoes constant refinement, has been successfully deployed in hemp fields the last 5 harvest seasons.

Revolution in the field

HANF FARM's ground-breaking combine marks five years running

Germany-based **HANF FARM** GmbH marked its fifth year of deployment of its revolutionary **MC HC 3400** hemp harvester with the 2019 harvest season.

First conceived in 2014, the MC HC 3400 was HANF FARM's response to a growing demand for pristine hemp flowers and leaves – obtainable in the past only through laborious hand-harvesting methods.

The combine can harvest short and long varieties of hemp, taking the tops, blossoms and seeds without damaging the plants as the machine moves through the field. The system allows for the lopping off of the crop several times during the yearly vegetation. Once cut, the tops are gently transported on conveyor belts to a bunker in a highly efficient and loss-free system.

With flexibility to cut spans ranging from 20 cm up to 3.40 meters, a maximum cutting height of 3.40 meters and ground clearance adjustable from 1.20 to 1.60 meters, the combine provides for multi-purpose yields on an industrial scale, delivering maximum value from all of the crop's valuable component parts. And the harvester's adjustable double-knife cutterbar allows for

scaling up as the quantity of hemp being harvested expands.

The harvester also features a cutting unit on the truck which lets the harvester precisely chop the raw material on its way into the bin, thereby making better use of bin capacity. It also results in a significant efficiency gain in the drying of the raw material. A simple mechanism controls engagement of the cutter, which can be disengaged for other operations such as seed harvesting.

HANF FARM CEO and European hemp veteran Rafael Dulon started working with a range of contractors and suppliers in 2014 to develop prototype technology after talking with farmers about their needs in the field. By August 2015 the company completed its initial working model.

HANF FARM says it is also working on a Multi-Combine Light Version – a smaller hemp harvesting system that can be hooked up to existing tractors.

In addition to technology development, HANF FARM is a vertically integrated industrial hemp grower, and a producer of a wide range of hemp food; flower and leaf material for extraction, and hemp fiber.

MultiCombine HC 3400

Key features:

- Carrier vehicle based on Hydro-Trac technology
- Ground clearance adjustable from 1.20 to 1.60 m
- Cutting width/header: 600 cm
- A powerful Deutz engine
- Hydraulic drive: 150 L/max. 200 bar
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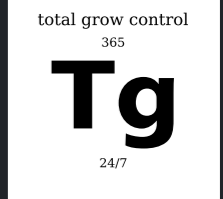


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A new green deal

Bio-economy's pillars are linked to plant materials

Hana Gabrielova, founder and CEO at Czech-based HempPoint, is one of Europe's pioneering and most innovative hemp entrepreneurs and a widely recognized expert on agricultural issues related to hemp and food. Her company consults with farmers on hemp cultivation, and is an organic hemp food producer. Gabrielova is an adviser to the Prague-based International Cannabis and Cannabinoids Institute (ICCI), and works on several initiatives dedicated to the environmental aspects of hemp and its potential in green transition and the bio-economy.



HempToday: You were recently named an expert adviser to the European Innovation Partnership for Agriculture initiative. What is that all about?

HG: The ultimate goals are to gather knowledge and document practical experience of industrial farming practices that avoid displacement of food production. The European Commission (EC) has different focus groups which bring together experts on specific subjects to produce reports, factsheets or whatever the EC needs. I will be advocating for hemp and all the different industrial applications in which hemp can replace fossil fuels, accelerate regenerative farming and play an important role in carbon sequestration. The work we do in that group is part of the process of writing legislation.

HT: Part of it is about cutting edge solutions developed through stakeholder collaboration. What kind of solutions and what kind of collaboration?

HG: Last December, the EC published the European Green Deal, a blueprint for transition from our old-school economy to a new bio-economy. The pillars of the bio-economy are very much linked to plant materials, renewable biological resources, climate neutral and circular products, new local value chains from waste and biomass, and other sustainable innovations. In all these areas, hemp can play a vital role and become an essential tool to make this positive shift happen.

HT: What kind of value chains? What do they look like?

HG: CzechHemp, one of the projects I work on, is one example. It's a cluster of private

companies, public sector entities, research and education institutions who are working to develop the cannabis and hemp industries. We are partners of the Bioeconomy platform of the Czech Republic, the European Cluster Cooperation platform and the National Cluster Association, which gives us opportunities to talk to many different active groups and get them in our network not only in the Czech Republic but across the EU. We organize education and other programs.

HT: What are the key challenges facing hemp today?

HG: The first challenge for all hemp stakeholders is to educate and promote green alternatives based on hemp. If we can provide clear taxonomy for classifying hemp products and their environmental benefits as well as their contribution to sustainable activities, this could be a good starting point to advance hemp as an essential tool for global change.

Another challenge is that the hemp industry is still missing guidelines and standards for product quality and sustainable practices. Also, we need more manpower in industrial hemp at all levels.

HT: What's your view on the most recent delayed UN-CND vote on rescheduling of cannabis and removing it from international drug lists? Where does it leave us, and what's the effect on industrial hemp?

HG: The cannabis plant has already been illegal for 59 years, so we'll be patient. I feel positive. It gives us a bit more time for advocacy and it gives governments time to take their decisions about the vote seriously and responsibly. The worst part of the delay, of course, is that it hurts patients who still don't

have access to medical cannabis.

HT: World Health Organization (WHO) recommendations would mean that cannabis preparations for medical use with negligible THC content (less than 0.2%) be removed from the scope of international narcotics control régime. This affects CBD and other extracts. What's your perspective on this situation?

HG: In my view, the WHO recommendations are irrelevant. All of that is about medicines and the pharmaceutical sector ("drugs"). It's not about hemp at all. The UN Single Convention on Narcotic Drugs does not even mention the word hemp and specifically exempts the cannabis plant when it is used for horticultural and industrial purposes (seeds and fiber).

WHO manages medicine and health, so we can ignore their statements on food, cosmetics, and anything that is not a medicine. For this reason the 0.2% THC limit proposed by WHO only refers to medicines, not to foods or cosmetics that come from hemp.

HT: Do you see any significant shift in the kinds of seeds customers are buying? Are most seeds still for CBD flowers?

HG: Two years ago 95% of our queries were from people asking for high CBD seeds. I have to constantly remind that we don't have such seeds registered in the EU catalog, which means they are not legal to be grown in Europe. This year we do have more requests for CBG hemp varieties and fiber hemp. We continue to supply a lot of small packed bags of different seed varieties, mostly for research purposes. That's a good sign.

Now more than ever, we need to support those in the industry



Steve Allin

It is scary how things can change in just a few weeks. Unless you were living in China during January, most of us thought the outbreak of a new virus in a city called Wuhan, which most of us had probably never heard of, would be over in a matter of weeks and would not affect much of the rest of the world. How wrong we were!

I was no different. As director of the International Hemp Building Association (IHBA), I was not only distracted by the importance of the work we in the Association were doing but I thought the implications for our Symposium, to be held earlier this year in the UK, would be only a slight problem. However the disaster unfolded very quickly, and by late February it was clear that this situation was getting out of control.

What can we do?

As governments around the world struggle to come to terms with collapsing economies, we in the hemp world are asking: What can we do?

I am not pretending that I knew any of this was coming, but having been a cannabis and environmental activist for most of my life, the implications of humanity's overshooting the carrying capacity of our planet are not a surprise.

Despite the plethora of claims that the virus is part of some conspiracy, I am sure it is only the result of our complete disregard for our biosphere that has caused this new mutation of an animal born virus to jump to humans.

We should remember that the original hemp activism was born out of a wish to heal the Earth. Now is the time to remember this, and use our knowledge to overcome the problems this pandemic will create, both now and in the future.

Optional luxuries

For now we know that hemp foods can provide a concentrated nutrition and give our immune systems a boost to help resist the disease, but this will only be a solution to those who can afford such luxuries. We are not yet at a point where hemp foods are an option for all.

Cannabidiol has been suggested as an anti viral substance but we have no proof of that, and this is another contentious subject.

In a recent presentation called "Time To Get Serious or what has CBD got to do with

Hemp Building?" I introduced the concept of Complex Bio-engineered Device to describe the structure of hemp hurd and how it works to improve our building material.

I talked about Cannabis Building Design to illustrate how we have much to learn about vernacular architecture in the way we design homes built with natural materials such as hempcrete. I ended my talk with another use of the letters — how we might address Climate Break Down, and that if we don't, it will be Complete Bloody Disaster!

By saying this I did not mean that I thought CBD was not a medical or dietary tool we might use to improve our health or immune systems. I was just looking at the sudden frenzy around the substance.

However like toilet roll, CBD is a luxury many cannot afford (I'm thinking of recent memes of a child in the ghetto asking what is toilet paper?). The extraction of most isolated elements of the cannabis flower are not cheap, especially if they are to be of either high quality or quantity in products available to the public. The recent reports in British and Irish media concerning the difference between stated and actual amounts of CBD in several brands on sale around the world are disappointing to say the very least.

Back to tilling the land

In the immediate future in the Northern Hemisphere, they are tilling the land and sowing the seed, and hopefully this will continue as previously, if not to an even greater extent. Despite the damage, the almost complete halt to economic activity has caused, we will still need hemp crops and the developments around harvesting and processing that were already underway.

Now more than ever we need to support all those in the hemp industry. It is time to make it fashionable to wear that hemp t-shirt that is softening with age. To push for legislation that allows home production so we can eat more Hemp and less meat. To repair or improve our homes with hemp materials so they will last for at least another generation. All these actions will hopefully be possible as we emerge from this disaster and the contagion is past.

However it will not be easy especially if we don't face the fact that there will be no return to "normal." There'll be no quick recovery, but recovery is possible with the fantastic tool we have to hand: Hemp!

Hemp veteran Steve Allin pioneered the International Hemp Building Association (IHBA), which he serves as director. An author, teacher and consultant on ecological building, he has been building with hemp and promoting hemp's use in construction all over the world for the last 20 years.

EU should look for a THC standard consistent with USA's



Sanford Stein

Hemp laws and regulations in Europe remain uncertain and variable. Much as in the USA, various jurisdictions apply different standards to the cultivation and use of industrial hemp. The European Union recognizes industrial hemp as the plant Cannabis Sativa L with a THC content of 0.2% or less and there is strong support to increase that limit to 0.3%. While the increase is small, 0.3% is defaulting to the world standard even as some active groups and some countries, notably in Switzerland, a non-EU member, are permitting much higher THC content for Industrial hemp.

Small change?

Arguably the small change isn't small at all; it would allow European hemp cultivators and processors to compete with the USA and Canada more easily and there are a variety of products and foods that are more easily obtained with the higher THC content. Importantly, the THC levels don't matter much for industrial uses of hemp such as textiles, building materials or plastics, so why be so restrictive especially in the face of a developing world standard that is different? Finally, the limitation on strains and varieties at 0.2% devalues genetics and increases the use of pesticides. It is also claimed that the influence of climate change makes it more difficult to grow at 0.2% THC in hotter conditions. Since no one is getting high at 0.3% THC, what is the reason to limit European farmers? These are some of the arguments that might be pressed forward in persuading officials to relax current restrictions.

Change is hard

All of that said, laws and regulations are hard to change. As with any laws, the movement to legal reform starts with active intervention in the legislative and regulatory process. Interest groups and industry associations must first educate the public about the benefits, economically and commercially, to create a desire for legislative change. Rarely do politicians act without a push from the public they represent.

Next, a governmental "champion" should be identified – someone inside the government who is skilled in legislative procedure and can make the case for the legislative or regulatory change.

A key question facing legislative reform in Europe is whether to attempt a change at the EU level or at the individual member countries and non-member countries. As with the USA, but unlike Canada, Europe remains a place with multiple jurisdictions and a difficult international assembly. The variety of interests and attitudes in various member countries make an omnibus EU standard difficult to change.

As with the USA, where the individual states have created their own sets of cannabis laws, European nations might consider "going it alone" when it comes to hemp regulations. Interestingly, however, even in the USA industrial hemp, defined as Cannabis Sativa L with a THC content of 0.3% or less on a dry weight basis, is now legal nationwide.

That said, the U.S. Department of Agriculture has not yet entered regulations to implement that standard and the US Food and Drug Administration has not yet issued regulations on use of hemp products in food and beverages. Even so, the U.S. hemp industry is flourishing and this helps argue for a European EU standard consistent with that of North America.

Lobbying first

Regardless of how European industry leaders approach this, it is key that an organized lobbying effort be in front of the legislative reform. Once key members of the public are engaged, legislative urgency must be applied and proposed reforms introduced into the governing legislative bodies. Commercial interests, farmers, health care and retail product manufacturers must assist and make the case for reform.

Also, in a world of COVID-19, proven products that can help national economies need fewer – not more – regulatory restrictions. That said, the health benefits of Hemp derived CBD still engender debate so best not to engage too heavily on that topic unless it is raised by regulators. Then, of course, the documentation is clear that CBD is helpful and not harmful to a variety of ailments, including anxiety, pain management etc. Nevertheless, the case for industrial hemp is best made as favorable to agriculture and industry. This is how it became legal in the USA.

There is little excuse not to raise the European standard to 0.3% and much to lose if it stays at 0.2%. The time to act is now.

American lawyer Sanford Stein is a leading authority in the regulated cannabis industry with emphasis in government regulations, legislation and business opportunities. He has legislative experience at every level of government, and has appeared as lead counsel before at the United States Supreme Court. He is the founder of [Cannabis Law LLC](#).



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