Hemp & Carbon: Opportunities at the crossroads of business and sustainability
21st Century Priorities: Incorporating hemp into existing production systems
Markets: What tech can do for hemp | Business models: Kill the middleman

Looking back, and ahead with 25-year hemp veteran Daniel Kruse

Europe
HELD HOSTAGE IN GREECE
Michalis Theodoropoulos on how not to build an industry
UK: A quiet CBD revolution

Asia
DOUBLING DOWN
China’s big plans for the textile sector
JAPAN: ‘Room to fill’

North America
OF HEMP AND BEES
An important role to play in supporting pollinators
CANADA: Rollercoaster dip
HEMPHARVESTER
The professional harvest solution

HEMPBULL
- 6 meter (20ft) working width
- Variable stripping height
- Two component harvester: flowers, leaves, seeds and fibre
- Less damage to flowers and leaves: conveyor system protects CBD and seeds
- Harvesting speed up to 10 kph (6.3 mbh)

HEMPCAT
- 6 meter (20ft) working width
- Loose depositing on the field
- One component harvester: fibres and shives
- Quick modification to maize harvest possible
- Harvesting speed up to 10 kph (6.3 mbh)

Advantages:
1. Time saver: Duo swath depositing
2. Can be converted into a tractor in a very short time, therefore be used all year round.
3. Cutting up the stems for a better further processing

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COUNTING ON CARBON
At the crossroads of sustainability and business

Best chance for humanity’s ability to thrive
Probing hemp’s potential in biochar

Organizations:
Uniting the world of hemp
New global group forms to ‘cooperate, advocate, co-create’

Research & development:
Product lines multiply in minor cannabinoids, new CBD formulas

Outlook:
21st Century Priorities
A need to incorporate hemp into existing production systems

Soil remediation:
Research shows stalks from polluted soil safe for building, energy

Business models:
Kill the middleman
An innovative co-op in Colorado backs small organic farmers

Genetics:
Enera takes European genetics down a different path

Applications
Stalk cellulose in cosmetic foundation
Eco leather from hemp waste powder
Australian sheep try out a hemp diet
Exploring a plastics supply chain

Hemp Fibre Processing

Cretes is a leading manufacturer of hemp stalk processing systems, with references in France, Holland, Romania, Lithuania, South Africa, Malaysia, Canada, etc.
Beyond the dream, to reality

Everyone knows hemp has thousands of uses. But to realize all that potential after a more than 75-year hiatus in research and development, there’s much to catch up on.

The inevitable boom and bust in the CBD sector had a silver lining. While many dreams were shattered, the CBD craze gave hemp greater exposure to the consumer while the business itself attracted serious investors, the bolder among them now looking beyond cannabinoids into the possibilities in hemp food and fiber, much longer-term, but truly promising opportunities.

Meanwhile, hemp continues to make inroads into those mainstream sectors where it offers a healthy, sustainable alternative to polluting conventional materials, processes and products.

What do investors see now that the CBD blinders are off? Farmers, researchers, inventors, entrepreneurs and other innovators who are developing the genetics, the technology, and the products and services that can make the hemp dream a reality in business, and in meeting the urgent need to clean up the planet.

It’s those visionaries who are defining the next big things in industrial hemp.
A circular player

Hemp can also be turned into biochar, which can be part of a truly circular cycle that provides many benefits in soil. Hemp is the perfect crop for climate farming methods that enrich soils, as it is highly efficient in degrading organic compounds.

Downstream savings

Downstream in the supply chain, substituting toxic raw materials with hemp in renewable products ranging from plastics to construction materials means even greater CO2 savings.

Life-Cycle Assessment

Life-Cycle-Assessment (LCA), a tool to capture all data on CO2 emissions along the supply chain, also provides a basis for placing value on carbon credits.

Hemp & CO2

Hemp has an exceptionally high capacity to draw out and contain CO2. Depending on the type of hemp grown, as well as the farming practices, up to nearly double the amount of CO2 trees can absorb when planted on a similar parcel of land. Research suggests that a kilogram of hemp straw absorbs between 1.29 - 1.84 kilograms of CO2.

Hemp’s promise at the crossroads of sustainability and business

As European nations struggle to advance urgently needed environmental policy, industrial hemp can play an outsized role in reaching sustainability goals, and offers farmers an enticing business opportunity in the markets for carbon credits.

In addition to hemp's potential across a wide range of products and business sectors, trends in policy, pricing and demand for carbon credits put the crop squarely at the crossroads of sustainability and real business.

“The market for these credits can strengthen the business model for hemp farmers,” said Nando Knodel, CEO at HempConnect, a Hamburg-based startup that is working specifically on ways to quantify CO2 captured from hemp farming and production up and down the value chain.

‘Best chance for humanity’

By tracking and quantifying the CO2 absorbed by hemp crops, farmers can generate credits to be sold on these markets — which Forbes has described as “the best chance for humanity's ability to thrive over the next century and to adapt to the sobering realities of climate change.”

“Industrial hemp has massive potential for the EU’s carbon removal strategy,” said Knodel. “It’s an excellent moment to establish standards for measuring carbon capture in hemp farming. We expect the market to be highly dynamic over the next couple years. Measurement will be crucial.

“Once we have quantitative proof of the carbon removed superiority towards other crops and deliver valid sequestration methodologies, hemp as a resource can become a verified carbon sink. Of course depending on the methodology. However, this will be a huge incentive for large emitters, such as big construction companies, to integrate hemp materials in their portfolios and consequently balance their emissions. Eventually, hemp may enjoy a competitive advantage over other resources.”
Carbon

Carbon negative

It’s difficult to overstate the potential of hemp in EU and member state economies for both agriculture and the environment. Hemp is carbon negative, and is the most efficient biomass source on Planet Earth. Hemp has an exceptionally high capacity to draw out and contain CO2, depending on the type of hemp, hemp growing practices, up to nearly double the amount of CO2 trees can absorb when planted on a similar parcel of land. Research suggests that a kilogram of hemp straw absorbs between 1.29 – 1.84 kg of CO2. Downstream in the supply chain, substituting toxic raw materials with hemp in renewable products ranging from plastics to construction materials means even greater CO2 savings.

Hemp is also the perfect crop for carbon farming methods that enrich soil, as it is highly efficient in degrading organic compounds.

The carbon markets

Carbon credits are exchanged through two market systems. The “compliance” market is set by government agencies, and managed by government rules and regulations. A second “voluntary” private market for carbon credits exists among entities which establish environmental programs independent of the government. These voluntary programs are subject to verification and certification through third-party organizations.

“Compliance” market

Major industries and power generators operate under the European Union’s ETS through which they pay for every ton of CO2 emitted. The first large-scale public emissions trading scheme in the world, the ETS was launched in 2005 to fight climate change, and is generally considered to be functioning well 16 years later. This Europe-wide system is central to EU energy and environmental policy, and has spurred re-thinking about the way timberlands and agricultural areas are managed.

Wide participation in private carbon market trades through a variety of programs shows sound environmental principles at work among the growing number of companies directly involved in the hemp business. Expect those companies to contribute significantly to a brisk trade in hemp-based carbon credits in the coming years, and to play a major role in efforts to reverse climate change.

U.S. federal carbon bank

Under one Biden administration proposal, the government would create a federal carbon bank to provide guarantee buyers for agricultural carbon credits – providing a strong incentive for more farmers to turn to regenerative agriculture, and a logical reason to grow industrial hemp.

While nobody expects such a program to develop overnight, the greatest concern over climate change could speed up efforts to reduce the approximate 5.1 billion metric tons of greenhouse gases annually produced in the USA.

The challenges are considerable. First, no standard exists for measuring carbon in crops, and measurement technology and services that do exist are expensive. While the U.S Senate passed the bipartisan Growing Climate Solutions Act in June, which proposes that USDA establish science-based standards for carbon offset claims, putting a price on carbon and creating a new financial instrument to underwrite the carbon market frame work are complicated matters.

High tech solutions

New York-based Hudson Carbon, a soil specialist, hopes to do just those things. The company is developing a carbon offset platform combining real-time carbon measurements on the ground calibrated with analysis of satellite and drone imagery, using artificial intelligence based on ground topography and geography. The company said it will launch a new marketplace for carbon capture this year.

Meanwhile, Ecosystem Services Market Consortium, a non-profit based in Virginia, and other groups are also developing carbon measurement systems. Even in the absence of a government run carbon offset program, agricultural carbon credits are becoming more popular. For example, Microsoft purchased 193,000 metric tons of soil offset credits in the private carbon markets earlier this year. Big food makers such as General Mills and McDonalds and agro-industrial and pharmaceutical companies such as Cargill and Bayer are also investing in company carbon programs.

Growing population

For hemp farmers, carbon credits represent a potential additional revenue stream – if buyers materialize. Stakeholders say if farmers see a path to money through such credits, it might push them to grow varieties better suited to the production of building materials and other industrial outputs that sequester carbon throughout their product lives.

But if the government is to be successful turning farmers to hemp, the USDA will have to provide greater incentives than those that currently exist for sustainable farming practices, which operators say don’t go far enough to cover the extra labor required. Farmers must be assured they can cover the additional labor and equipment needed to reduce carbon emissions.

An alternative to fossil-based carbon

From waste treatment to supercapacitors, the potential in biochar is enormous.

Developers continue to seek innovative uses for the hemp stalk, turning hemp hurd to charcoal opens the door wide to a number of large industrial sectors based on carbon.

From waste treatment to supercapacitors, biochar – charcoal made from plant material – has massive potential as a replacement for fossil-based carbon. Fast-growing hemp is assuredly the most efficient plant to produce large volumes of biochar input, but there’s more; carbon-rich biochar offers soil health benefits by helping to trigger favorable interactions among soil components, a key factor in soil management.

As if that’s not enough, while hemp is a highly efficient soil conditioner that can support the buildup of soil organic carbon as it grows in the field, it also sequesters carbon in the form of carbon fiber, for example charcoal foam, serving double duty in mitigating CO2 on Earth.

Biochar produced through pyrolysis can capture and storage (PyCCS) processes in which the plant material is subjected to temperatures ranging from 350°C – 900°C in the absence of a significant amount of oxygen. Studies have demonstrated that PyCCS renders the resulting material stable for hundreds of years as it fragments into micro- and nano-particles that protect soil from degradation.

Waste management now

Perhaps the most immediate and promising application of biochar is in waste management. Farm manures, municipal solid waste, and wood waste streams that could be converted to valuable energy products with mixed biomass are currently underutilized.

Carbon-based filters from plant materials can cover the additional labor and equip-
Uniting the world of hemp
New global group forms to ‘cooperate, advocate, and co-create’

Organizations

From around the world are joining to form an international association to ad-

vance the interests of the hemp industry.

The new body, as yet unnamed, will
work to establish industry development
priorities, and officially represent hemp
stakeholders before global intergovern-
mental agencies, with a core first objec-
tive to remove hemp and hemp extracts
from the 1961 UN Single Convention on
Narcotic Drugs, said Daniel Kruse, Presi-
dent of the European Industrial Hemp
Association, and one of the initiators of
the global effort.

Key interface

The group intends to interface with
international agencies such as the World
Health Organization, the UN’s Commit-
tee on Narcotic Drugs, the Organization
for Economic Co-operation and Devel-
opment, and the UN’s Food & Agri-
culture Organization (FAO) on matters
related to that agency’s Codex Alimenta-
rius, internationally recognized standards
for food production and safety.

The association will also work on envi-
ronmental issues and represent the hemp
industry before the Intergovernmental
Panel on Climate Change, which is under
the United Nations Environment Pro-
gramme and the World Meteorological
Organization.

The new organization can foster
engagement in multilateral relations,
advance the industry’s agenda, statistical
programs, partnerships, trade, and global
regulation,” Kruse said. “It will improve
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As top CBD producers continue to add minor cannabinoids to their product portfolios, many are also combining functional ingredients with CBD to bolster health claims commonly associated with the compound, according to analysis from researcher Brightfield Group.

Growth in the launching of CBN and CBG lines that started in the second half of 2020 is continuing as “CBN found its place as a sleep aid, while CBG’s main appeal is its ‘newness’ to the market,” Brightfield said in its 2021 U.S. Mid-Year CBD Report.

Mixing approved functional ingredients in CBD products lets producers make claims that also apply to CBD without suggesting the compound has those health effects. “A brand cannot say CBD helps with sleep; it can say melatonin plus CBD helps with sleep,” Brightfield noted.

Industry or ingredient?

CBD brands are mixing in common wellness product ingredients such as mushrooms, botanicals, and adaptogens with CBD in formulations for dietary supplements; beauty product makers are also turning out variations that combine CBD with popular skincare ingredients, Brightfield observed.

“These additives further blur the line between whether CBD is an industry or ingredient,” the analysis notes. “New consumers introduced to CBD in this context could come to see non-psychoactive cannabinoids the same as other plant-based wellness ingredients.”

Once rules for CBD are established, the compound is most likely to find application primarily as an ingredient in the cannabis and wellness industries, Brightfield said. Reflecting that observation, Brightfield noted the U.S. CBD sector has attracted the attention of major Canadian cannabis producers looking to diversify their portfolios.

1,000 brands disappear

Brightfield reported in May 2021 that the number of U.S. CBD brands is contracting as failures and mergers continue apace. At the time, Brightfield estimated 1,000 CBD brands had disappeared during the previous 12 months, blaming coronavirus-related market disruptions which brought store closures, a shift in consumer priorities, and pricing cuts. Nonetheless, CBD sales are expected to rise 15% this year, to $5.5 billion, Brightfield said, driven by strong growth in ingestibles, cosmetics and CBD-infused beverages. The CBD beverage sector is projected to grow by 71% in 2021; sales of gummies are on pace to increase by 44%, according to Brightfield.

Rules still missing

With the overall industry expected to remain strong – despite the fact that “CBD discovery is stunted, and there is still no federally-supported regulatory structure for ingestible products” – the researcher estimated the U.S. CBD market will reach $16 billion by 2026. That’s wildly off an estimate Brightfield made in 2015, when it was predicting that the market would hit $22 billion by 2022.

As in-store retail sales slowed last year, growth in CBD came to be driven by e-commerce, according to Brightfield, with marketers shifting budgets to online sales initiatives. High-profile brands and those already strong in e-sales benefited most in the unstable environment, said Brightfield, which projects online sales will pass $2 billion this year, and rise to 38% of the total sales.

Smaller players suffered: “It has become increasingly difficult for smaller CBD brands to enter the space and find growth opportunities in what has become a very crowded marketplace,” Brightfield’s mid-year analysis of the sector suggests.

The May report had recorded that while smaller companies and brands have failed, many major players were also wiped out. GenCanna, Pyxus International, Myaderm, United Cannabis Corp., and Atalo Holdings were notable failures while other well-known brands and small boutiques entered mergers or were bought out by stronger competitors.

“The sheer number of brands became unsustainable during the pandemic, and those that could not compete were forced to drop out of the market,” Brightfield said.

Other indicators

In other key observations from the mid-year report, Brightfield said:

• Millennials and Gen Xers account for 71% of CBD users, with word-of-mouth mainly driving CBD awareness among both groups.
• Gen Xers get their CBD information from doctors, television or print ads while Millennials learn about CBD mainly from social media, in-store browsing, or from a budtender.
• CBD brands should continue to expand their product offerings to increase growth potential within and outside of CBD products and channels.
A need to incorporate hemp into existing production systems

JEFFREY STEINER is associate director of the Global Hemp Innovation Center at Oregon State University. Formerly division director for plant production at the U.S. Department of Agriculture’s National Institute of Food and Agriculture (NIFA), Steiner has led interdisciplinary research teams with the USDA Agricultural Research Service (ARS) and at universities studying food and agriculture, natural resources, bioenergy systems, and hemp. He has served as an adviser to political appointees and government officials, as well as to commodity, conservation, and economic development organizations.

HT: What can you say about the development of hemp as a commodity in the USA? What’s required to establish such markets, and how fast can that happen? Jeffrey Steiner: Enthusiasm only goes so far. We are at a point where decisions need to be made based on science and financial soundness. With the great investments that have already been made and lost in hemp, now is the time to get facts ahead of the market excitement.

Many priorities need to be addressed to help establish hemp as a 21st Century industry. There is a general lack of knowledge about where different hemp grain, fiber, and essential oil market classes should be optimally grown and what are the best genetics to use. Particularly with fiber, production must be close to handling and processing facilities to reduce transportation costs. Also, there need to be outlets for by-products from processing to return as much value as possible within the system.

Hemp will not be a monocrop spanning entire regions. Diversification of production risks is an established principle in agriculture and as hemp acreage expands, insect pest and disease problems will follow. Also, we need to know how to incorporate hemp into existing production systems in ways that complement rather than disrupt current markets. Hemp is a new kid on the block and it would be best to find out which crops preceding hemp in a rotation benefit hemp and which crops benefit the most from following hemp. Farmers and processors need to be linked so farmers can be assured there is a market for the materials they grow and at a known price.

At the same time, processors need to be assured a dependable and likely year-round supply of materials they can turn into value-added products. Finally, standards need to be developed to evaluate products as they flow through markets to assure the quality and integrity of hemp-based products.

To accomplish these points, there needs to be a dependable flow of information that can help support industry expansion and identify likely growth markets. These are places where industry, researchers, and government need to closely work together. The sooner these are accomplished the sooner hemp will be established in the market, with advantages like any other commodity.

HT: How do you see the balance of outputs shaping up for hemp in the USA? Jeffrey Steiner: That is probably the greatest challenge we face as a country. In Oregon, as well as across much of the rest of the U.S., there was a rapid expansion of hemp production, particularly for cannabinoids such as CBD. Registered U.S. production went from 0 acres in 2013 to 525,000 in 2019 which far exceeded the largest historic hemp acreage in 1943 when 146,200 acres were grown.

However, following this initial enthusiastic expansion, the number of acres produced particularly for cannabinoids crashed in 2020 and again in 2021 because there is inadequate infrastructure to support harvest, handling, and processing, and the market outlets are not there to absorb that level of production.

Also, the regulatory environment and its uncertainty greatly restrict CBD and other cannabinoids production and the marketing of products made from them.

For the grain and fiber market classes, it is a different story. U.S. hemp grain production is becoming established in the North Central states, particularly Montana and North Dakota. These states are across the border from Canadian production in Alberta, Saskatchewan, and Manitoba where North American production was first re-established. Hemp grain production is relatively similar to the production of other grains and so doesn’t require the establishment of an entirely new, costly infrastructure.

At the same time, processors need to be linked so farmers can be assured there is a market for the materials they grow and at a known price.

If we could get the processing side of things to be linked so farmers can be assured there is a market for the materials they grow and at a known price, and if we could get farmers to work together, we could get the traffic flowing, especially when economic entities such as hemp farmers are going to produce the commodity at the scale needed year after year without a processing facility to assure the purchase of their fiber crop.

HT: What is essential to hemp’s future growth and development in the U.S.? Jeffrey Steiner: Essential oil hemp and marijuana varieties are exclusively grown here. Potential pollen intrusion from dioecious hemp plants as with fiber and grain types is an inconveniences to these crops. Also, fiber crops can interfere with the extraction and processing of cannabinoids from biomass. For grain and fiber crops to be grown at scale in Oregon, procedures will need to be worked out for where the different market classes are grown, as in the state of Washington where efforts among growers are being made to coordinate their production.

HT: Tell us about the international partnerships under the 45th Parallel Strategy? How do those partnerships work? Jeffrey Steiner: Before passage of the 2018 Farm Bill, Oregon State University faculty could not do hemp research. After the Farm Bill, Dr. Jay Noller presented for Oregon farmers and the industry more information about hemp fiber production and cannabidiol extraction by the 2014 Farm Bill, Dr. Jay Noller looked for opportunities to begin working with hemp while waiting for approval to do research at OSU.

Jay was able to establish partnerships with research institutions in Eastern Europe and China where hemp was legal to grow. These regions are similarly located as is Oregon along the 45th Parallel where hemp production has historically flourished. Jay began conducting research with these partners and so was able to begin understanding how hemp grows and how to manage it in Oregon conditions. Once OSU could do research starting in 2019, we were able to translate that back to hemp farmers and the OSU faculty and begin our own research program.

There could be significant shifts in what hemp market classes are grown and where they are grown.

With these partnerships, we also were able to begin scientific exchanges, including placing graduate students, doing reciprocal faculty visits, and hosting technical trainings.

HT: And what kind of discoveries are they yielding? Jeffrey Steiner: Traveling extensively beginning in 2015 to Serbia and 2018 in China conducting research and expanding our partnerships overseas. We were able to fir-hand learn about the status of the hemp industry and the challenges and opportunities we could face in Oregon and the U.S. We have been able to assess the status of the production practices and systems used for commercial production there, and especially learn about the performance of the genetics that are being utilized. We looked particularly at hemp fiber production systems in China and Europe; high-density stands are needed to produce high-quality fibers. These will require planting seed amounts in pounds per acre rather than planting each seed as here in the U.S. for CBD production.

Our research has found that the kinds and qualities of cannabinoids produced can be greatly affected by production practices, and there is not a concern with pollen affecting flowers as there is here in the U.S. In fact, there can be unique chemical compounds produced by plants that are allowed to pollinate.

Finally, there is a general need for establishing standards for the marketing – importing and exporting – of hemp products to assure the quality of those products is maintained between sellers and buyers.

HT: How would you describe the development of the hemp industry in China? Jeffrey Steiner: Particularly in the area of fiber production, China is at least five years ahead of the U.S. There is dedicated high-quality fiber production with the supporting infrastructure to import, process, and export fiber. Over half of world hemp production is in China of which most is for fiber, but very little of it is exported. The Chinese are utilizing hemp fiber domestically in the manufacture of garments with antimicrobial properties and for in the apparel and technology manufacturing, China is well-positioned for advancing carbon-based and other high-tech manufacturing – in which hemp is likely to have a role – as hemp production and that more than 60%
Frankly, I do not see a future for hemp as a dedicated crop in the bioenergy space.

## Outlook

### Talk about hemp's potential in bioenergy applications

Hemp has many potential high-value uses in the manufacture of biobased high-performance textiles, advanced manufactured and construction materials that can be made from the stalks or seeds, and health and wellness products—the list goes on and on. These have potentially great value as substitutes for petroleum-based materials with potentially superior end-product and environmental performance advantages. Frankly, I do not see a future for hemp as a dedicated crop in the bioenergy space, other than its possible use as a by-product fraction that remains after all other higher value constituents have been utilized.

### Managing broad interdisciplinary teams to address hemp's potential

What are the keys to successfully managing such a sprawling initiative?

First, the GHIC has been fortunate to have strong support from the College of Agricultural Sciences and Dean Alan Sams. This support allows Jay, Kristin Rifai our center administrator, and me to work full-time on establishing the center, its operations and policies, and especially expanding our partnerships across campus, the state-wide branch stations, and with partners at other universities and industry.

Second, along with the international partnerships mentioned above, Jay initially put into motion a working framework for OSU and the University of Kentucky to assist USDA researchers to become quickly established in addressing hemp research needs for the national good of the industry. These efforts, supported by research grants, appropriations, and gifts, have helped us form a shared vision for what is needed to address the many challenges that must be overcome to accelerate progress and bring hemp up to the same status in a world economy as any other established commodity.

Because an entirely new industry with the complete supply chains needed to be established and mature as fast as possible, there are innovative contributions that must be made by disciplines not only in agricultural production but also genetics, genomics, food science, engineering, logistics, business and finance, and pharmacy. The key to making this happen is not so much what Jay, Kristin, and I do, but what we can help facilitate through working with like-minded faculty leaders across the entire campus who can contribute their expertise and experiences. What we are doing resonates with industry, which helps us all focus on their needs to establish a competitive hemp sector.

### As a veteran of the USDA, how would you rate the agency's performance in establishing the industrial hemp sector so far?

There has been good progress towards advancing hemp through research on many fronts, and in a relatively short amount of time. I was at NIFA (National Institute of Food and Agriculture) in 2018 when we worked with the USDA general counsel’s office to establish the policies that allowed financial support of hemp research, education, and extension activities. Hemp is now considered like any other commodity when it comes to grants and applications and the use of base capacity funds by the land grant universities to work with hemp.

We also recently hired a state-wide hemp extension specialist and we have received a higher education challenge grant to create hemp specialization certificates for graduate students. These new classes supported by NIFA will build on a general hemp course that has been offered for several years in the College of Forestry.

Also, the College of Engineering is sponsoring senior capstone design classes. The GHIC has also been able to establish new research partnerships with (USDA) ARS in cannabinoid chemical analyses and methods development at Peoria, Illinois; hemp fiber processing and quality assessments at New Orleans, Louisiana; and as mentioned earlier, work with the curator of the new hemp germplasm collection that will be housed at the USDA repository in Geneva, New York.

We have also worked with the National Agricultural Statistics Service, where they are developing the production survey tools that will bring hemp into the Agricultural Census surveys (just like other commodities) as well as giving input to the Risk Management Agency that is setting crop insurance tools for hemp producers.
Hemp grown to clean up polluted soil could be used for hempcrete construction and to produce energy, with virtually no health risks, an Italian researcher has suggested.

Vito Gallo, Professor of Chemistry at the Polytechnic of Bari, said the hemp plant’s performance in the phyto-remediation (phyto-purification) process leaves only trace amounts of any pollutants behind.

“Hemp allows a sort of dilution of metals in the biomass and this results in material that, in principle, presents very limited or even no health risks,” Gallo, who is also coordinator of BIO SPHE.RE., a hemp-specific research initiative, told Canapa Industriale.

Gallo suggested that scientific organizations could get together to set acceptable levels of concentration of any foreign substances in downstream hemp products.

Robust research

Italian stakeholders are working on significant research regarding phyto-remediation, in which specific plants are grown both to clean up pollutants such as heavy metals, and to stimulate the degradation of organic compounds to enrich the soil. Hemp has proven itself to be highly effective in both roles, as Italian scientists have posited that most of the heavy metals absorbed by hemp are stored in the roots and leaves of the plant, leaving only miniscule amounts in the hemp stalk, and continue to study that process.

Hemp and soil

The research in Italy builds on studies from as far back as 2002, when researchers from the University of Wuppertal and the Faserinstitut of Bremen, Germany, showed that hemp plants sown for remediation collected most heavy metals in the leaves, while plant stalks were virtually unaffected by contamination. A later study in India in 2014 identified hemp as a promising tool for the hyperaccumulation of heavy metals such as arsenic, lead, mercury, copper, chromium and nickel. Further studies since then have underpinned both analyses.

In addition to using the hemp stalks for hempcrete, hemp biomass can be burned for energy. With the ashes collected under controlled conditions, the metals can be extracted and re-used, Gallo said.

“The use of hemp for phyto-remediation would not only lead to the creation of a new system of land use linked to environmental protection, but also to the creation of jobs and sustainable resources for the community, according to the principles of the green economy and bio-economy,” said Marcello Colao, a biologist at the Italian non-profit Association of Apulian Environmental Biologists (ABAP), which is also studying phyto-remediation.

Colao is directing the GREEN project (Generate Resources And New Economies), which is studying different varieties of hemp and ranking them for their phyto-remediation capacity. That research, in partnership with the region of Puglia government, is part of a broader initiative that is researching hemp for its potential in sustainable development and carbon sequestration, and developing strategies for improved agricultural management practices.

Micro-algae & hemp

Also supported by the Puglia government, BIO SPHE.RE, the project under Gallo’s direction, is studying a mixture of micro-algae and hemp to see how it can enhance the phyto-purification of both water and soil. The researchers have reported that lab analysis showed the mix facilitated growth of hemp plants in polluted soil, thereby speeding up the phyto-remediation process; hemp plants were particularly effective at absorbing cadmium, nickel and zinc, the team said.

Reliable and cost-effective, the Laumetris KP-4 Hemp Harvester drastically increases harvest efficiency. Cutting hemp to short, workable lengths that are essential for proper on-field retting, tedding, raking, and baling, the KP-4 will play a pivotal role in fostering a thriving global hemp industry.
Tools for growth and scale
From traceability to crop analysis, what tech can do for hemp

ALEX ARKENTIS is the CEO and Co-Founder of CanXchange, the European commodities exchange for physical hemp and CBD products. A serial technology entrepreneur and investor, Arkentis has been involved in successful startups in the UK and Europe. He and two co-founders started CanXchange in 2019 to advance industry standardization by creating the market and trading infrastructure needed to position cannabis as a thriving global commodity.

HempToday: If you look across all of hemp's potential applications, what do you see for the derivative sectors: fiber and hurd, food seed and seed oil, flowers for CBD and other cannabinoids? What do you expect to rise?
AA: My team and I are confident that fiber will rise. Its applications in big industries such as construction (shivs) and car manufacturing (fiber) have already grabbed the attention of big players who are looking to enter the market and will require huge volumes. The current lack of infrastructure is hindering the progress and access to the other products you mention, and this is exactly why CanXchange was started in the first place. We are working hard to further fill in the gap and strengthen the infrastructure to facilitate all product categories to ultimately help the market thrive.

HT: What are your thoughts regarding how technology can impact and help shape the industry moving forward?
AA: I strongly believe that our industry is no different to any other in terms of how much the presence of technology can help it grow and scale. There are so many innovative businesses popping up in the space, introducing new technologies which is exciting to see. For example, traceability technologies like seed to sale, satellite crop analysis, innovative testing solutions and so many others. At CanXchange we are constantly looking for new ways to disrupt and innovate so we closely monitor what other players are doing.

We think new technologies in R&D are fundamental to the growth of our industry and we are putting a lot of our effort and attention towards this to really address what's needed. We will soon be launching a brand new and improved version of our platform which will be a big "tech" moment for us, and will incorpor-
rate all of our learnings and research thus far. We will continue to evolve our technology daily depending on what the market requires and how it evolves. Technology in the cannabis industry should be more of a hot topic and my team and I are fully championing it.

HT: What do you see happening in the CBD markets these days? How did companies behave coming through the glut?

AA: At CanXchange we have always seen CBD as a trend. But what we have said is that one will continue for a considerable amount of time and we’re confident that it will be the precursor to a boom on the industrial side of the market.

We have also started to see businesses looking more towards alternative cannabinoids like CBC, CBG and CBN as there is a need for innovation and diversification to be competitive. At the beginning, CBD was very much centered around wellness oils, but now it has evolved into food and cosmetics as well. The market is undoubtedly still led by CBD but is slowly becoming less dependent on it as more doors open for industrial materials.

HT: Talk about your trading portfolio. What's in there and what's moving?

AA: We now have over 40 products live on the platform including biomass, flowers, distillates, isolate, oils and seeds. The product where we have seen the most movement has been with high potency biomass, CBD flowers and isolates, which we believe will continue for the time being. As I mentioned previously, alternative cannabinoids (CBC, CBN etc.) are also gaining significant interest and it will be interesting to see how this develops.

My team has worked tirelessly over the past year to ensure we have a large supply of product available to the markets and that it is in place we are committed to making sure our platform is equally valuable to the downstream and upstream components of the supply chain. This balance will be critical to the market’s long-term success.

HT: What’s the short-term outlook for CBD biomass?

AA: Large market players provided an increased amount of supply over the last year or so which obviously led to a price reduction (and low potency) biomass. It seems to be that after last year’s glut, there is still a large amount of oversupply in the market and hence why prices are so low at the moment.

So, a lot of growers are concerned with regards to next year’s demand due to the ongoing Covid-19 crisis and they have taken the decision to either plant much less or nothing at all. If the Covid-19 situation eases and the demand for CBD products continues to rise there will be a sudden rise in prices as the amount of fresh product on the market over the next year will likely be much less.

HT: COVID has been a stress test for everybody. Who’s coming out on the other end? What are the characteristics of those companies that will survive to thrive?

AA: It’s no secret that Covid-19 has brought on a host of challenges for businesses large and small. Sadly, many businesses in the cannabis space have simply disappeared or gone out of business. The severity of the situation is that larger businesses who have significant backings are able to weather the storm whereas smaller businesses face greater financial challenges. It’s also an incredibly difficult time for new business and early stage companies due to the lack of funding and general nervousness with regards to the situation. That being said, I still tend to think that if you offer a good product/service or service that adds value there will always be demand in our fast-growing industry.

HT: You’ve said before that security and trust are fundamental to CanXchange’s mission. How do you address those critical factors?

AA: It’s not a secret that the industry too lacked transparency and a secure market and we recognized that certain things were needed to be put in place in order to guarantee a legitimate marketplace and transaction flow. The first thing we addressed was the implementation of a secure payment solution (operated by the proceeds of which we would eliminate cash payments and introduce financial security for business transactions). We have also put in place a rigorous due diligence/verification process (in line with financial institution standards) for any business wanting access to trade on the CanXchange platform. This ensures all users are legitimate and ultimately protects our network of clients. Lastly, our two laboratory partners, who test all items available on our platform, continue to ensure product standardization and consistency. These steps are fundamental to the CanXchange offering and we strongly believe they will open doors and encourage large corporations to confidently enter the market.

HT: What are the basic qualifications to list on CanXchange?

AA: We were inspired by the due diligence process for banks and financial institutions and literally no stone is left unturned. The main requirements are as follows:

- Demonstrate that you are a registered company or sole trader;
- Proof that you are active in the wholesale business;
- Consent and entry into an extensive background checks that include individual and entity checks, financial credit checks and anti-money laundering checks.

HT: How would you describe the uptake with CanXchange so far? What’s been the reaction?

Alex Arkentis: A year ago our platform first went live for the first time and the pick-up has been better than we anticipated. Currently we have more than 300 clients globally. We have taken the first year as an opportunity to focus on gathering customer feedback to ensure we are making the right decisions to help best serve our clients and improve the overall user experience. The traction has been positive to date and the feedback has really proved the gap in the market and need for the different services we provide. At the moment we are reinforcing our sales and marketing departments as we need the additional resources to help support increased demand and market growth.

HT: Where do you see CanXchange in 5 years time and what is the long-term goal?

AA: Although an exchange will remain an integral part of our business, we are also working towards diversifying into other areas that will add additional value to business who want to operate efficiently and securely in the cannabis industry. Essentially we want to be the global “go-to” business and financial authority for cannabis businesses.

A hemp cooperative in the U.S. state of Colorado has focused on boosting the fortunes of the state’s small organic farmers, offering a range of support if they meet the initiative’s criteria. A key goal is to cut out the middlemen who’ve insinuated themselves into every level of the hemp value chain, said Bill Althouse, one in a group of Colorado-based hemp veterans who are donating their time and expertise to the initiative.

“These aren’t any real farmers in hemp. The whole industry has been investor-driven by corporations,” said Althouse. “Only a farmer can protect a farmer from getting exploited.”

Through a cooperative model, farmers can secure a reasonable level of income and benefit for themselves by being the owners of the entire supply chain,” said Althouse. “Along the way the worker co-op, Fitt Collins-based Fat Pig Co-op (FPC), is advocating the use of cloned plant cuttings instead of seeds as the path to stability in meeting the high demands of a constant headache of hemp farmers. That’s key to reducing the risk factor for the small farmers FPC wants to help, according to Althouse.

Co-op to co-op

FPC is developing a lean, vertically integrated “farm-to-table” supply chain that will be turned over to a farmer-veteran abandons cooperation when the latter organisation is formed under guidelines of the U.S. Department of Agriculture (USDA).

FPS includes Althouse, one of the first U.S. CBD producers; Igna Boccalan- dro, a sustainability expert who has a track record in organic hemp cooperatives; and Yami Lucero, a farmer versed in biodynamic growing who serves as a farm foreman and supports Fat Pig Co-op’s extraction and sales efforts.

In addition to the Fat Pig Society, the genomics project team includes Terry Moran, Moran Hemp Seeds and Ag Consulting, who developed the Colorado seed certification program while working at the state’s Department of Agriculture; the Agricultural Genomics Foundation, a non-profit group that studies emerging crops for their promise as medicines; and Barbara Campbell, an intellectual property attorney specializing in horticulture.

While the co-op is working with just a handful farms now, Colorado’s total 142 small, struggling organic farming operations offer plenty of room for expansion. As the funds come as Fat Pig Society fine tunes its value chain and pushes farmers to overcome the risks associated with new crops.

Chemistry lesson

The initiative starts off, of course, with what the farmers put in the ground. That’s why FPC is constantly working to develop hemp varieties for cloned plant stars – or cuttings – that will consistently remain below the U.S. THC limit of 0.3%, and working to get those cultivars approved under international criteria of the Association of Official Seed Certifying Agencies (AOSCA).

AOSCA standards under AOSCA standards must be unique, stable and result in uniform crops; to meet those criteria in cultivation seeds takes an average of three years. Althouse said cloned plant cuttings, analyzed by their chemical composition (known as ‘chemovars’ or ‘chemotypes’) – rather than their adherence to cultivation standards – is a better way to arrive at hemp varieties that consistently fall under 0.3% THC.

“People are still trying to arrive at hemp varieties that feed their local communities. A limited number of food cooperatives also sell the co-op’s CBD. Anyone who wants to support the mission and see their money go directly to farmers, instead of investors, can also buy directly from the FPC website, Althouse said.

While the ideal scenario, Fat Pig Society aims to demonstrate to farmers that they can add $100,000 in income each year by planting 2 acres of hemp, a goal set based on state research which shows that amount of additional income can help small organic farmers remain viable, according to Althouse.

“Last year we saved one dairy farm from bankruptcy,” Althouse said. “They made $50,000 off one acre of hemp.”

To participate in the co-op, farmers need to have official USDA Natural Organic Program certification, engage in regenerative cultivation of their crops, and be turning out produce that feeds their local communities.

Also under co-op guidelines, hemp can be only one of the crops in a farmer’s rotation. Fat Pig Society enjoyed a major advance this year when the variety of the varieties it has developed, Unicorn 1, was added to the list of cultivars approved by the Colorado Department of Agriculture.
Meet the MD1000 mighty hemp micro decorticator.

Applications
- Hempcrete construction
- Natural fiber insulation
- Animal bedding & litter
- Plant bedding

Perfect for
- Hemp building teachers
- Research organizations
- Small farmers
- Do-it-yourselfers

Key features
- Compact, simple design, Easy to operate
- Gear driven, Durable parts
- Stainless steel rollers
- Minimal maintenance

Technical specifications
- Power supply: 220V / 1500W
- Capacity: ~50kg/hr
- Dimensions: 80cm X 200cm X 125cm (32" X 79" X 49")
- Weight: 260kg/575 lbs

hurdmaster.com
I decided to enter the market with little steps, to be a student and learn how to grow together – and never pretend to be a master of it.

Europe is not known for its cannabinoid genetics; Enecta is changing that.

EHT: These new varieties are nearing a listing in the EU seed catalog. Tell us a bit about the process to get those listings.

JP: In order to have the varieties registered in the EU, it’s necessary to pass two important tests. The distinctiveness, uniformity and stability (DUS) test establishes if the new variety is clearly unique among all other existing varieties within the species; whether the variety remains uniform during propagation; and whether its characteristics remain stable during repeated propagation. Testing for Value for Cultivation and Use (VCU) is a check against other industrial plant varieties to establish parameters important for hemp production; ~95% of production must be close to standard in order to pass.

In 2019 and 2020 we successfully passed 1 DUS and 1 VCU test, and in 2021 we’re completing VCU 2. At the end of the process, we’ll be granted the blue label and listing in the EU catalog that will give us the possibility to reproduce and market seeds in unlimited amounts. Our strategy is to invite as many farmers as we can from all around Europe to test varieties and see if they’re ready for the massive launch in 2021.

EHT: Where do you see the markets for these new varieties?

JP: The biggest markets are in the Czech Republic, Germany, Poland, Croatia, Romania, Greece, Hungary, Lithuania, France and Spain, due to the similar climate conditions to those of Italy. At the end of 2021 we will release variations of our strains which are more suited for different climates. In 2022, we will release the varieties in the catalog; ~95% of production must be close to standard in order to pass.

EHT: What is the geographic scope of your customer base on Enecta’s CBD products?

JP: Our network extends to most parts of Europe as well as Canada, Australia, Brazil and soon Japan. In Europe, our biggest markets are in Italy, Greece and Spain. For the years 2021 and 2022 we are focusing on the UK and France.

EHT: How can we expect to see CBD products in the next few years?

JP: Right at the moment we are focusing on the UK and France. The next steps are focusing on the UK and France.

EHT: What is your outlook for the CBD market over the next two years?

JP: The CBD market will be growing significantly. We believe the biggest markets are in Italy, Greece and Spain. For the years 2021 and 2022 we are focusing on the UK and France.

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EHT: Charting a different path

Jacopo Paolini is a founding partner at Enecta, an Italian-Dutch company that develops new cannabis genetics and is a producer and seller of high-concentration cannabinoid products for the medical, pharmaceutical and nutraceutical industries. The company recently began marketing two new hemp cultivation seed varieties for CBD and CBG production. Founded in Holland in 2012, Enecta is based in Bologna, Italy.

HempToday: Talk about your CBD business, branded, wholesale and bulk?

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Hemp stalk cellulose in cosmetic foundation

A team from Chinchio Sichuan University has created a liquid cosmetic foundation based on cellulose from hemp stalk, which the researchers say brings several improvements over conventional makeup.

Made from hemp cellulose nanocrystals, the substance replaces ingredients such as mineral oil and titanium oxide that are common in such beauty products. The hemp-based foundation helps reduce skin barrier damage because removal does not require harsh cleansers needed to clear conventional foundations; such cleansers can lead to skin issues such as sensitivity and rosacea.

"Importance role" envisioned

"It is imperative to find a new alternative material that avoids the skin barrier damage caused by excessive cleaning," the research team said in a study about the formula. "With the natural emulsifying and stabilizing characteristics, hemp cellulose is going to play an important role in cosmetics, besides food production and the packaging industry."

While hemp seed oil and extracts from hemp flowers are widely used in cosmetics and health products, and natural microfibrillated cellulose from other plants is more and more common in makeup, the Sichuan University initiative may be the first potential application of cellulose from hemp to the health and beauty sector. The development was first reported this week by Cosmetics Design-Asia.

Key advantages

While demonstrating adhesion similar to the conventional foundation, the hemp formula maintained stable gloss and uniform colors for nine hours, the researchers said. Analysis also showed the hemp foundation's performance matched the conventional foundation in coverage of facial pigmentation and acne.

The scientists said dermocopic observation tests on human subjects showed the hemp-based foundation left less residue behind compared to conventional foundation when simply wiped with a cotton pad. The hemp foundation was also observed to remain on the surface of the skin while the conventional foundation penetrated into the dermis, or second skin layer, risking damage.

Finally, because of the absorption effect of cellulose, the act of clearing the hemp-based foundation also removes excessive oil and air pollutants on the skin surface, similar to the manner in which cellulose acts during digestion and metabolism in the intestine, the researchers said.

Italian developers debut eco leather from hemp waste powder

Italian developers have introduced Nape, an "eco-leather" textile containing hemp waste powder that does not use toxic solvents in the production process, is recyclable and has a negative carbon impact.

Developers Alessandro Fabbi and Giuseppe Guido said Nape is the first 97% green coated fabric from a biopolymer based on natural oils with 20-30% hemp.

The bonded fabric is made by adding dust production during the fiber decortication process to biopolymers which are then spread on a textile base. The result is a mixture of plants and resins that can undergo the printing, drumming and embossing processes into a final faux leather product that maintains breathability.

Advanced processes

The developers work with contractors who operate advanced technology for textile production that does not use traditional, polluting solvents; also, new generation polymers used in the process are partly biodegradable.

The company's research is now aimed at developing biopolymers made directly from hemp in order to close a circular supply chain that is absorbing CO2 throughout. The developers are also studying the possibility of including a basalt filament yarn in the material that would make the eco-leather fireproof.

Fabbi has been experimenting with sustainable textiles since 2006, with a goal to develop waste material into commonly used articles. Guido, a former military officer, director of a theater company, and commercial agent in the fashion industry, has also studied sustainable materials.

Goal: local supply chain

The partners say they are sourcing hemp from all over Italy, but are developing a localized circular supply chain model that minimizes the need for transportation.

The company said it has held discussions with APM Automotrice, France, which is already using hemp fibers in compounds for plastic car parts, and with fashion industry representatives through financier Furio Piemonti, who is a backer.

The most promising first uses for the fabric are as a substitute for leather and imitation leather in clothing, bags and accessories, shoes and upholstery, the company said.

Australian study shows promise in hemp feed

Sheep that were fed hemp pellets showed production gains, indicating potential for a high yielding, multi-purpose, summer feed option for livestock, according to a study in the state of Western Australia.

The pilot study, "Opening the gates to hemp-based feedstock in Australia," was carried out by the state’s Department of Primary Industries and Regional Development (DPIRD).

"The most profound outcome was the increase in minor volatile fatty acids, suggesting an improvement in energy availability and a change in the gut microbial population, which may account for the improved digestibility," said Bronwyn Blake, who led the research team.

High digestibility

Results showed the digestibility of dry and organic matter were higher for both hemp diets compared with a control, though it is not clear why, the researchers reported.

Fifteen Merino wethers in New South Wales were fed hemp pellets made from the Morpeth Late hemp variety grown in Western Australia. Approximately 500 8-millimeter pellets were manufactured by a Western Australian company.

In Australia, the study showed THC was apparent in all measured tissues. While the levels were extremely low, they would not meet Australian regulatory requirements. Blake said the results suggest it will be possible to develop management practices for feeding hemp biomass to sheep, goats and cattle that can meet animal feed rules. No THC residue may be present in feed intended for livestock in Australia other than in approved research trials.

The results of the research will lead to a second-phase study which will explore the nutritional value and how to meet market regulations for hemp as a possible forage crop. That further research will also investigate the pathways to market for livestock-fed hemp, including clearances for THC.

Italian initiative explores plastics supply chain

Authorities in the Italian town of Roccasecca say they will explore the potential for developing a hemp plastics supply chain while cleaning up local land through the plant’s remediation possibilities.

Marco Delle Cese, president of the Consortium for the Industrial Development (DPIRD), and Roccasecca Mayor Giuseppe Sacco recently announced the initiative.

Scientists partners

A memorandum of understanding was signed with the National Agency for New Technologies and Sustainable Energy (ENEA) and the University of Cassino (Unica), which will be scientific partners on the project.

"The way to obtain plastic will be studied starting from hemp molecules and no longer from a synthesis process that starts from petroleum derivatives. Plastic that does not pollute, green plastic that is biodegradable: that is the dream," said Delle Cese.

The partners have already identified packaging as a key business opportunity. The initiative now seeks industrial partners who will bring expertise in polymers, green management and energy, according to Delle Cese. "We need those who are able to take the product and transform it," he said.

Delle Cese said an industrial consortium being formed in Lazio can also play a role in establishing a hemp industry for the region.

Mayor Sacco, whose administration has focused on environmental issues, said the initiative can not only help clean up the land but also put it back into business and create jobs. The project is the first effort to reclaim land in the Roccasecca industrial area through crops capable of absorbing metals authorities say have poisoned the local soil for years.

Neighboring initiative

Officials in Umbria, an adjacent region in central Italy are also looking closely at the potential in hemp fiber-based bioplastics and biopolymers, as well as the natural textile and fashion sectors.

The project aims develop a supply chain similar to one organized among stakeholders for the local tobacco industry in Roccasecca and several local communities in the Lazio region.

Authorities envision a local industry that starts with seedlings, ensures raw material is available to processors and guarantees payment to farmers.
C
losing in on three years since the 2018 Farm Bill legalized hemp federally, the U.S. industry continues to face a wide range of challenges on the way to maturation. After the CBD crash of the past two years upended the value chain, eliminating thousands of companies in the sector, those hemp farmers sticking around have begun to look more seriously into grain and fiber, with hemp acreage dedicated to those outputs expected to rise over the next decade.

Meanwhile, American hemp stakeholders are addressing such things as the legality of smokable hemp flowers and delta-8 THC products derived from hemp. The 2018 Farm Bill that finally legalized CBD are held up by the Food & Drug Administration (FDA). Some individual states are also up against an end-of-year deadline to make a decision whether to continue state-run programs or let farmers operate directly under the USDA’s federal hemp program.

Rules for food, smokable, delta-8 THC challenge USA

A bill introduced earlier this year would make hemp-derived CBD legal over-the-counter as an ingredient in dietary supplements, foods and beverages. The Hemp Access and Consumer Safety Act would direct the FDA to update its rules accordingly.

In the absence of federal regulations, CBD makers and consumers continue to be faced with inconsistent rules – or no rules at all – in individual states, creating problems for legitimate CBD vendors and endangering public health.

Challenges to CBD

While CBD has tumbled, those players who survived say the sector cannot just sit back and watch the compound emerge. After the FDA turned back two New Dietary Ingredients (NDI) applications for approval of CBD products in summer 2021, it now looks like the federal legislation may be the only path to legalization, according to stakeholders.

In rejecting the NDI applications, the FDA equated CBD in full-spectrum hemp supplements with concentrated CBD, such as that contained in Epidiolex, the only FDA-approved high-CBD drug. By doing so, the FDA is suggesting such CBD supplements should be available only by prescription.

With the NDI approval process putting the sector in danger, stakeholders now say Congress should be called on to pass legislation clarifying CBD’s legal status.

Lawmakers are attempting to do so. A bill introduced earlier this year would make hemp-derived CBD legal over-the-counter as an ingredient in dietary supplements, foods and beverages. The Hemp Access and Consumer Safety Act would direct the FDA to update its rules accordingly.

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Hemp flowers

Individual states are also struggling with the legal status of hemp flowers, which are rolled into smokable products often marketed based on their CBD content. The sector has massive potential.

Stakeholders were bout when a ban on the production of smokable hemp was overturned in Texas earlier this year after a judge found it violated the state constitution. And Wyoming lawmakers last year rejected a proposed measure that would have banned smokable hemp and products containing CBD.

But many states are rejecting smokable hemp. New York banned hemp prerolls, cigarettes and loose flowers (but abandoned an original proposal that would have also blocked the sale of flowers for purposes other than smoking).

Hawaii has banned smokable hemp products. Hemp operators in Indiana are still awaiting a decision on their challenge to a 2019 smokable-hemp ban brought by the Midwest Hemp Council, an industry group, and other petitioners.

It’s an issue that won’t be sorted out soon.

Delta-8 THC

U.S. states also continue to grapple with how to handle delta-8 THC, a form of THC distinguished from the more common delta-9 THC prevalent in marijuana plants. Delta-8 is produced by extracting CBD from industrial hemp and then using acetic acid to turn it into THC.

Producers have argued that the compound is legal under hemp provisions in the 2018 Farm Bill that made all parts of the hemp plant legal, but regulators have pushed back because the compound is created by further processing of CBD, and therefore is not a direct natural extract. That makes it a controlled substance although it is not explicitly outlawed under the U.S. Controlled Substances Act.

Hemp processors over the past two years started turning delta-8 THC from hemp for such products as vape liquids, edibles, and high-CBD hemp buds laced with the compound. Many legal marijuana dispensaries have stocked the products, but delta-8 brands have also shown up in convenience stores and independent smoke shops.

While a group of stakeholders led by the Hemp Industries Association have challenged the federal government’s stance, analysts have repeatedly warned that delta-8 would likely come under tighter regulation by the DEA. Other hemp organizations have gone so far as to criticize producers who have put delta-8 products on the market.

Nearly a dozen states have already set outright bans on the compound, which had sparked a vibrant gray market. Colorado officials recently moved to ban sales of hemp-derived delta-8, and Alaska, Arkansas, Arizona, Delaware, Idaho, Iowa, Mississippi, Montana, Oregon, Rhode Island and Utah all have moved to block delta-8 THC sales.

Other states are considering going the path of Michigan, instead of outright bans, they look to regulate delta-8 THC in the same way as the more common delta-9 THC found in marijuana plants. California and Washington are among states also known to be exploring this option.

Rise of fiber

As the U.S. hemp industry takes a more comprehensive approach to the plant, 2021 may come to mark the relaunch of an American hemp fiber industry. Roughly 15 initiatives to start facilities to process hemp stalks have been announced, as some enterprises enter what’s surely a classic chicken-or-egg conundrum: Who’ll provide the input crops, and who’ll buy the outputs?

Observers say northern U.S. states, many of which grew fiber hemp in the 20th century, can again become major producers. That potential was signaled this year in South Dakota, where hemp farmers shied away from CBD, overwhelmingly putting in grain and fiber crops in its second year of the state’s hemp program. The South Dakota Industrial Hemp Association said a total of 20 farmers seeded roughly 2,000 acres in the state, with only 35 of those dedicated to CBD flower production.

There are other positive indicators for hemp fiber.

Hempcrete building, which uses hemp chippings (hurd, shives, shivs) from the stem’s inner core in hempcrete wall construction, and insulation made from fibers of the outer skin, is gaining an ever greater profile. Simple hurd-based products such as horse and other animal bedding, plant bedding, cat litter, fire starters and energy pellets are finding buyers.

Many startup processors tout the potential for using hemp technical fibers in textiles, but it is doubtful the USA can compete long term with the likes of China’s mature hemp textile industry, and India’s potential one.

Licensing

The 2018 Farm Bill allows U.S. states and tribal nations to set their own licensing and regulatory schemes for hemp production as long as their programs are

_rows yet to plow_
in compliance with USDA regulations.

Some states, and most Native American tribes, are operating directly under the USDA’s Domestic Hemp Production Program. In the case of states, some have given up on establishing their own hemp programs, leaving farmers no options but the federal program. Twenty-four states currently operate USDA-sanctioned state hemp programs. Of the remaining 26 states that as yet lack USDA-approved, 20 continue to operate under the 2014 Farm Bill’s pilot program, which expires at the end of the year.

While hemp enterprises in states which lack their own programs say federal oversight simplifies things for them – they must comply with only one set of (federal), for them – they must comply with new state standards. Some states, and most Native American tribes, are operating directly under the USDA’s Domestic Hemp Production Program. In the case of states, some have given up on establishing their own hemp programs, leaving farmers no options but the federal program.

Looking ahead

Over the long term, acres licensed for CBD hemp are expected to be dwarved by those dedicated to fiber and grain. In a recent report, the National Industrial Hemp Council (NIHC) projected CBD-hemp fields will shrink to just 2.78% of total U.S. acreage, with hemp sown for seed production growing to become the dominant output one decade from now.

With CBD this year having been grown on 82% of total licensed U.S. hemp acres, NIHC expects seed production will rise to 65.8% of total acreage while that dedicated to processing of the hemp stalk will reach 31.4% by 2030.

Those totals will come as hemp expands robustly in the United States to meet growing demand, and becomes a major commodity with farm-gate sales surpassing $10 billion a year by 2025, NIHC projects in the report, released in summer 2021.

California has hemp law after years of controversy

California has new hemp law after years of controversy among hemp and marijuana interests. Gov. Gavin Newsom signed Assembly Bill 45 in September 2021, the end of a long road for hemp legislation. Under main provisions of the new law:

- Hemp-derived extracts – including CBD – may be added to foods, beverages, cosmetics and pet products.
- Farmers and businesses operate under the regulatory framework for marijuana companies, such as lab testing standards.
- Out-of-state hemp products imported into California must meet new state standards.
- THC isomers such as delta-8 THC may not be sold outside regulated cannabis sales channels.

Tax will delay smokable hemp

Sales of smokable hemp will be allowed, but only after lawmakers agree on a new tax for “inhaleable products.” The timing for such a tax is uncertain. Producers can produce smokable-hemp products for out-of-state sale before the tax is set. It’s the tax provision that has hemp stakeholders up in arms in California, as it means an indefinite ban on smokable hemp.

“It’s a trick they pulled on us,” said Chris Boucher, CEO of Farmtiva, a hemp ag services company and CBD consultant who also serves as a board member and treasurer at the California Hemp Farmers Guild. Boucher said wording regarding “inhaleables” in the bill’s final draft means those products won’t be available until the state establishes a tax levy.

Meanwhile, the remainder of the bill “creates a confusing new bureaucracy adding burdensome regulations and compelling CA state agencies to inspect and certify out-of-state hemp facilities selling into California,” the Guild said.

Advantage to marijuana industry

Opponents said the marijuana industry stands to benefit because low-THC hemp products now will be subject to the same regulations that guide the marijuana business.

Those against AB45, which puts hemp under the state’s Bureau of Cannabis Control, have long argued that the law is the result of lobbying by marijuana interests that are looking to disadvantage industrial hemp.

“They picked the California hemp industry big time,” said Boucher. “Big Marijuana will now grow and sell hemp CBD, CBG, CBN, CBDV and THCV, thus removing almost all hemp farmers from commerce.”

In addition to the Hemp Farmers Guild, opponents of the measure included the National Hemp Association, the California Hemp Association, the California Hemp Coalition, the National Industrial Hemp Council, the Cannabis Distribution Association, and StopAB45.com, a grassroots online initiative.

Organizations supporting AB45 include the U.S. Hemp Roundtable, the California Hemp Council, Vote Hemp, the U.S. Hemp Authority, and the Hemp Industries Association, the California Cannabis Industry Association, and the Cannabis Beverage Association.
Canada’s hemp roller coaster

Acreage dips in 2020, as long-term outlook is adjusted

Canada’s hemp agriculture sector now says it will need another decade to reach 250,000 acres, a level that early rosy predictions suggested would be achieved three years ago. That comes as many farmers held off on hemp last year amid depressed prices, with total acreage reaching just 69,000 acres, a 33% decline from 104,000 acres in 2019, according figures provided by the Canadian Hemp Trade Association (CHTA).

Stakeholders have said rising prices for canola and a corresponding dip in hemp grain prices from 70-80 cents per pound to 50 or 60 cents after the 2020 harvest has meant that many farmers also held back from planting hemp in 2021.

Predicting is tricky

Projections back in 2014 held that hemp acreage in the country would reach the 250,000-acre mark in 2018 as hemp became more common in farmers’ crop portfolios. But hemp acreage across the country has fluctuated wildly since that prediction. After reaching a high of 118,000 acres in 2017 amid a surge in demand for hemp food seed from Korea, total fields crashed to 70,000 in 2018 as China took over that market before the partial rebound in 2019.

While the country has been primarily a hemp grain producer, with notable fiber production, Canadian growers jumped into CBD – just in time for the crash in that sector – planting for flowers on 16,000 acres in 2019 (the first year harvesting of flowers was legal), and then on 20,000 acres in 2020. High-CBD hemp varieties, most from the USA, were approved for sowing in Canada earlier this year. Despite the current glut, that will help those producers who still have faith the CBD market will settle down into a period of growth.

Across Canada, most of the drainoff in hemp fields in 2020 was in Saskatchewan, where acreage fell from roughly 20,000 in 2019 to 6,000 in 2020, according to regulator Health Canada. Fields in Alberta, Canada’s second biggest growing province, meanwhile were reduced to 8,332 acres from 9,119 acres for the analog year. Manitoba and Ontario fields remained steady at roughly 5,000 acres and 1,500 acres, respectively, in 2020.

Ongoing challenges

Canadian stakeholders say demand for grain has failed to meet the expectation that big fast-moving consumer goods companies would embrace hemp seed as an ingredient for protein bars, healthy snacks and other foods.

Producers also say the U.S. market continues to be troublesome due to a developing regulatory environment as many individual states are still setting rules for hemp products, and the U.S. Food & Drug Administration is dragging its heels on setting rules for CBD.

Canadian hemp companies are also no doubt also under pressure from producers in the United States after the 2018 U.S. Farm Bill legalized hemp growing at the federal level. Chinese grain producers are also getting more aggressive globally, including in North America.

Grain, and more grain

Fiber and biomass are dwarfed by grain categories in Canada. Outputs for 65,000 acres planted in 2020.

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**Colorado is the undisputed leader in the cannabis industry,** and our hemp plan is a model for the country,” Polis wrote in a letter that accompanied the final Colorado plan.

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<tr>
<th>Hemp fields shrink</th>
<th>Registered acres in Colorado by year</th>
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<tbody>
<tr>
<td>2020</td>
<td>36,225,000</td>
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<tr>
<td>2019</td>
<td>88,743,000</td>
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<td>2018</td>
<td>146,748,000</td>
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<td>2017</td>
<td>141,956,000</td>
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<td>2016</td>
<td>32,262,000</td>
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<td>2015</td>
<td>50,593,000</td>
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<td>2014</td>
<td>5,231,000</td>
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<th>Registrations fall</th>
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<td>2020</td>
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<tr>
<th>Expenditures too</th>
<th>State hemp program spendings by year</th>
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<tr>
<td>$0</td>
<td>2014</td>
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<td>$500,000</td>
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**Colorado's hemp program has grown exponentially and CDA's regulatory footprint has expanded along with registrations and acreage, the state noted in its hemp plan submitted to USDA, adding that authorization was granted to increase CDA's spending in fiscal year 2020-2021. The agency said it will continue to grow the regulatory program to scale with the industry.**

"Importantly, the success of Colorado's hemp program is the result not only of the robust state regulatory environment, but also of the community of hemp cultivators, product manufacturers, and ancillary business operators and stakeholders who have helped drive the growth of the program," the plan points out.

**Challenges remain**

Since 2015 "the program has rapidly scaled up production, launched a certified seed program, diversified supply chains, and is establishing a statewide Hemp Center of Excellence, which will help direct outreach, training, and educational efforts for Colorado's hemp industry," according to the CDA release.

Still, Colorado's hemp industry faces the universal challenges of finding or developing technology for hemp farming and processing, and workers with technical skills for the modern agri-industry.

Pollen drift, in which female marijuana or hemp plants are inadvertently pollinated by a neighboring crop of male plants, is also a challenge. The phenomenon can affect both outdoor and indoor grows, and lead to crop losses in both types of cannabis. A Colorado House working group is considering measures to address that problem.

Hard-core stakeholders bolster state’s hemp program

"Colorado is the undisputed leader in the cannabis industry, and our hemp plan is a model for the country," Polis wrote in a letter that accompanied the final Colorado plan.

And while the governor commended USDA for improving regulations in a revised Final Interim Final Rule (IFR) on hemp in 2019, USDA requested changes, and the state then re-submitted the plan in August 2020 after revisions that resulted from extensive negotiations with the federal agriculture agency. Approval came last month.

Ignoring the aberrant year of 2019, when hemp farming and licensing doubled in Colorado, registrations were still higher in 2020 than in 2018, before the CBD boom and bust. That means Colorado has a group of hard-core hemp stakeholders who are not giving up on the crop.

After the number of registered operators more than doubled to 1,947 in 2019, roughly half that number dropped out in 2020. Registered hemp acres, which were recorded at 88,743 in 2019, more than halved in 2020, dropping to 36,225.

With Colorado's hemp program now approved by the U.S. Department of Agriculture (USDA), state officials say they hope to build out from that hard core by continuing to advance the interests of family farmers and the industry's expansion.

CDA's hemp goals

"We look forward to seeing how hemp can be further developed for fuel, food, and other uses while being a source of revenue for family farms," Gov. Jared Polis said in a press release from the Colorado Department of Agriculture (CDA).

In addition to its focus on small farmers, the Polis administration has committed to implementing large-scale initiatives to support research, the development of processing centers, and financial bonuses for hemp farmers under the Colorado Hemp Advancement and Management Plan (CHAMP).

The governor's office said the state hemp program also puts environmental and renewable energy goals high on the agenda, including the Polis administration’s goal to achieve 100% renewable energy in the state by 2040.

The CDA submitted its original hemp plan after publication of the USDA's Interim Final Rule (IFR) on hemp in 2019. Rule which went into effect in March of this year, he also took the occasion to notify USDA that “CDA will continue to advocate for additional rule revisions to create even more flexibility for producers.”

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Maryland farmers urged to hold off on planting hemp

A research team in Maryland is recommending farmers hold off on farming hemp, citing the “chicken-and-egg” nature of the nascent industry, over-saturation in the biomass market, and the need for further studies.

The team, from the University of Maryland College of Agriculture & Natural Resources, noted that with production and research of hemp still in its infancy, it may not yet be an economically viable crop for the state’s farmers.

The multi-year study, led by Andrew Ristvey, a commercial horticulture specialist at the University of Maryland Extension, and Nicole Fiorello from the university’s Department of Plant Science and Landscape Architecture, looked at hemp economics and agronomics in search of ways to maximize production under existing legal restrictions.

“I would recommend farmers hold off and not grow just yet,” Ristvey told the website myeasternshore.com.

Researchers cautioned farmers regarding the current bloated market for biomass, marked by prices that have dropped by roughly 80% over the past two years amid an oversupplied CBD market.

Learning curve

“The current limit of maximum 0.3% THC in hemp plants was also cited by the research team as a critical factor in farmers deciding whether to plant,” Ristvey said. Plants that go over that limit can mean crops must be destroyed.

Finally, researchers noted that while the study of hemp has advanced in Europe and other parts of the world, the industry in the USA is offering few knowledge gaps attributable to drug laws that shut the industry down in the middle of the 20th century.

“We’re struggling because we really just lost the knowledge of hemp production. We really lost out on a valuable crop,” said Ristvey.

Funded with a grant from the Maryland Agricultural Experiment Station, the research initiative is part of a broader state effort among seven universities and 65 growers.

The University of Maryland team worked directly with 11 of those growers, and grew hemp over two seasons at the school’s Wye Research and Education Center in Queenstown in developing its report.

Maryland’s state hemp program was approved by the U.S. Department of Agriculture in August 2020 after the state’s Department of Agriculture adopted new regulations to comply with provisions of the 2018 U.S. Farm Bill.

South Carolina researchers say they’ve developed a stronger plant

Researchers in South Carolina say they have developed a hearty new hemp variety that can withstand weather that blew down crops tested in previous years.

A team at Clemson University’s Coastal Research and Education Center (REC) said the new variety, “Hurricane Hemp-Florence,” produces massive stalk and root systems that can stand up to heavy winds and storms, common in many parts of the hurricane-prone coastal state.

The new genetics were developed through a two-year project.

Hurricane Florence loomed much of the South Carolina hemp crop in September 2018, with farmers losing up to 20% of their yields. Brian Ward, an organic vegetable specialist and assistant professor at REC said those trials involved hemp varieties that were not bred for South Carolina conditions, prompting researchers to probe the potential for developing stronger plants.

Bread studies

The REC researchers are doing further studies to determine the most effective plant spacing, fertilization, and the best times to plant hemp crops, aiming to optimize farm economics.

Research with different hemp varieties in South Carolina so far has found that most perform best at 60-inch spacing, but some cultivars perform better at lower plant densities. Most reach peak biomass yields and CBD levels at nitrogen rates of 60-120 lbs. per acre, preferring about 80 pounds of nitrogen per acre, research has also shown.

A fertility study found that the most biomass was produced by plants fertilized at a rate of 75-95 lbs. per acre.

CBD study

Clemson researchers say they also plan to study plant hormones to determine if THC production can be arrested as CBD in developing plants increases, which they say could help reduce the number of plants per acre, and give more control over when CBD is produced during the plant’s life cycle.

That study is to include Hurricane Hemp-Florence and one hybrid variety.

Other Clemson research teams are studying such things as diseases and insect and weed pressures in hemp crops.

213 growers this year

Industrial hemp was first grown in South Carolina in 2018 when the South Carolina Department of Agriculture’s hemp pilot program licensed 20 farmers to grow the crop. That number ballooned to 265 in 2020, but dipped to 213 in 2021.

South Carolina hemp farmers now operate under a state plan that was approved by the U.S. Department of Agriculture last year. USDA works with the Clemson Cooperative Extension Service and Clemson Department of Pesticide Regulation in supporting South Carolina hemp growers.

The state’s Department of Agriculture has six full-time employees devoted to the hemp sector.

Brian Ward of Clemson University
Tracking down hemp’s roots
Uncovering the sources of hearty feral hemp in the U.S. midwest

SHELBY ELLISON has directed the industrial hemp program at the University of Wisconsin–Madison (UW-M) since August 2020. An assistant professor in the Department of Horticulture, Ellison’s primary research interest is preserving, characterizing, and utilizing genetic diversity in alternative crops such as hemp to meet the needs of Wisconsin farmers. She holds a bachelor of science degree in genetics from UW-M, and a Ph.D. in genetics, with an emphasis in plant breeding and biotechnology, from the University of California-Davis. She previously worked as a plant science degree in genetics from UW-M, and a Ph.D. in genetics, with an emphasis in plant breeding and biotechnology, from the University of California-Davis. She previously worked as a plant genetics research associate at the University of California-Davis, where she focused on the genetic diversity of hemp.

Hemp Today: the state has a serious hemp history.

Shelby Ellison: Wisconsin is interesting because it was a big producer in the 1930s and 40s. We were primarily a producer of rope and twine, and long bast fibers for canvas making. When we started growing again in 2018, there were still traces of a hemp culture. There are still people living who remember hemp being grown, and they are still interested in doing so.

We have a lot of feral hemp or “ditch weed” that has persisted since those times. There are a lot of old fields that have populating the state so there’s always a ton of interest in agricultural research. I’m fascinated by the challenge of figuring out where the feral hemp in this part of the country came from — that which survived or was not eradicated. If you trace it back to the original populations that were grown, we know there was some Italian seed, and some Chinese. That’s across a big section of the country, the western part of the Midwest from the Dakotas, Minnesota, Wisconsin. We have tracked down some seeds and plant material from 1908 at the Wisconsin State Historical Society. Those seeds originally came from the University’s agricultural extension program. We know about breeding efforts in the 1920s and ’30s, but that research certainly was not very high tech.

H1: It sounds like the perfect situation for a researcher.

SE: We’re a very diversified farming state and we’re a lot of interest in agricultural research. I’m fascinated by the challenge of figuring out where the feral hemp in this part of the country came from — that which survived or was not eradicated. If you trace it back to the original populations that were grown, we know there was some Italian seed, and some Chinese. That’s across a big section of the country, the western part of the Midwest from the Dakotas, Minnesota, Wisconsin. We have tracked down some seeds and plant material from 1908 at the Wisconsin State Historical Society. Those seeds originally came from the University’s agricultural extension program. We know about breeding efforts in the 1920s and ’30s, but that research certainly was not very high tech.

H1: What’s the outlook for fiber in Wisconsin?

SE: Given our climate, all indicators are that fiber will be Wisconsin’s main output from hemp. For things to be economically viable, we’ll need production facilities in every state in the USA. But large-scale facilities will need consistent supplies of feedstock. We have massive paper mills in Wisconsin, for example, but these kinds of factories require massive input.

H1: What are you specifically studying at the University?

SE: At UW-Madison, we’re looking at fertility, and exploring what production practices and varieties work best in our northern climate, and collecting data on yield, CBD and CBG levels. We’re also involved with the Midwestern Hemp Database, which is spearheaded by the University of Illinois. We’re collecting and sharing data from growers all across the region, and the project provides discounted laboratory services to participants.

We’re also working with the University’s Biological Systems Engineering program on a small decorticator so we can do research on fiberboard, bioplastics and textiles. We hope that will kickstart downstream product development.

H1: What does the future look like for hemp and climate change?

SE: It’s remarkable the amount of biomass hemp can produce in a week. It’s amazing compared to other crops. We also see strong preliminary evidence of hemp’s potential for phytoremediation and carbon cycling. It all comes down to how the crop is managed.

Let me also suggest that, as a cannabis industry, we must be aware that controlled indoor growing can be very bad for the environment. We need to think of ways of growing that make a positive impact, holistically. We need to grow more and move crops, and in different ways. A diversity of crops is very beneficial.

H1: What was the difference in hemp and climate change for us?

SE: There are a lot of benefits to hemp, not just carbon sequestration. Hemp is a very high tech, strong preliminary evidence of hemp’s potential for phytoremediation and carbon cycling. It all comes down to how the crop is managed.

Let me also suggest that, as a cannabis industry, we must be aware that controlled indoor growing can be very bad for the environment. We need to think of ways of growing that make a positive impact, holistically. We need to grow more and move crops, and in different ways. A diversity of crops is very beneficial.

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Wisconsin gives up on hemp; Farmers will work under USDA

T he Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) has announced the official end of the state hemp program, leaving farmers to work directly with the United States Department of Agriculture’s (USDA) Domestic Hemp Production Program beginning in 2022.

Hemp processors will remain under DATCP’s authority for consumer and food products, the agency noted in a press release announcing the end of the state program.

The change was foreshadowed earlier this summer when the Wisconsin legislature declined funding that would have maintained positions essential to managing the state’s hemp farmers.

With hemp farming licenses falling from 1,301 in 2020 to 340 this year, and hemp processing license applications tumbling from 619 to 248 in the same period, the Wisconsin hemp program suffered a shortfall of nearly $1 million dollars as fee income dropped 50%

The state attributed the falloff in hemp licensing to the coronavirus pandemic, and an overheated CBD market that has had the sector in the doldrums for the past two years.

Silver linings?

With funds drying up, Wisconsin could not qualify to manage its own program under USDA requirements, so the state has relinquished regulation of hemp growing to the federal agency.

Wisconsin has operated under a pilot program established by a previous Farm Bill in 2014, and had been readying state rules to get USDA approval under the 2018 Farm Bill, which legalized hemp federally, before the funding reversal.

Despite the state’s unwillingness to invest in hemp, stakeholders point to what they see as advantages of working directly under USDA.

Once growers are no longer under the state pilot program, beginning Jan. 1, 2022, they will need to comply only with the set of federal rules with state regulations layered on top; will pay no license or registration fees to USDA; and will be eligible for federal grant and research funds.

Also, USDA licenses are good for three years instead of one (the licensing period applied in most states), and federal oversight lets farmers use private labs to sample and test their crops for THC levels.

Rob Richard, President of the Wisconsin Hemp Alliance, their crops, so the transition aligns with processes already occurring, DATCP said.

Wisconsin Hemp Production Program beginning in 2022.

Licensing status

The 2018 Farm Bill allows states and tribal nations to set their own licensing and regulatory schemes for hemp production as long as their programs are in compliance with USDA regulations. Hawaii, Mississippi, New Hampshire and North Carolina, and several Native American tribes have opted for federal oversight.

Twenty-four states currently have federal approved operational state hemp programs. Of the remaining 26 states that lack USDA-approved programs, 20 continue under the 2014 Farm Bill’s pilot program, which expires at the end of the year.
A broad plan to bring back hemp
California grain, fiber trials are first since restant of industry in 2017

An initiative in California has planted five hemp varieties from four countries in the first extensive growing trials for hemp fiber and grain in the state since the 1990s. The project is a joint effort among the World Cannabis Foundation (WCF), legacy U.S. hemp wholesaler Hemp Traders, and Oklahoma-based processor Western Fiber.

In addition to checking the varieties’ performance under different planting dates and sowing methods in hot-weather and cool-weather cycles, yields from this year’s first farm-scale crops will be processed for sale, said Tony de Veyra, president at WCF.

The group is also repurposing a cotton gin to process hemp that will be installed in a fiber production facility under Riverdale Hemp Factory, a new entity set up to process hemp stalks into technical fiber and hurd.

Larry Serbin of Hemp Traders said the Riverdale factory will source hemp from Canada, China, and Oklahoma and other U.S. states while California grown feedstocks develop, starting with the yield from this year’s trials.

The fiber and grain trials in central California are also the first since hemp was legalized in California in 2017. Fiber varieties in the 2021 trials are Chin Ma, a Chinese strain, and the Polish variety Bialobrzeskie. Grain varieties include Katan, Canada; Henola, Poland; and Hlesia, Ukraine.

Biochar study

Western Fiber is also in a group that will study the effects of biochar on hemp cropping systems under a $25,000 grant from the U.S. Department of Agriculture received by de Veyra. That project, financed under USDA’s Sustainable Agricultural Research and Education program, is set to begin a two-year run in October. It will examine crop yield and performance, and changes in soil nutrient and carbon levels as a result of applying biochar and compost to the soil.

Hemp has been identified as having high potential as input for production of biochar, charcoal produced by firing plant biomass in the absence of oxygen. It sequesters carbon and provides soil health benefits.

Quantifying carbon

The project will also track changes in soil carbon levels in an attempt to quantify the amount of carbon sequestered through a combination of hemp, cover crops, no-till management and biochar compost.

Alan Hancock College, Santa Maria, California, and the Pennsylvania-based Rodale Institute, a nonprofit that supports research into organic farming, are also partners on the USDA-supported biochar research project.

“H IS FOR HEMP” brings you along on a journey of visual discovery. See how others have used hemp to feed, house, clothe and heal themselves. Join photographer and researcher Maren Krings on her travels from Mongolia to Morocco and get inspired to start your own journey towards a more sustainable world with hemp.
Larry Serbin’s long hemp road

Hemp veteran still optimistic after three decades in the fight

Hemp Today: You have a wide, wide assortment of hemp products at Hemp Traders. What kind of products are trending now? Lawrence Serbin: We have always sold hemp textiles, but at this moment, there is definitely a surge in the interest to use hemp as an environmental alternative to other fibers in textiles.

HT: You’ve mentioned that Hemp Traders now imports yarns from China since the machines don’t exist in the U.S. Will yarn from China always be less expensive? LS: Perhaps. China has lower production costs due to a lower standard of living, so there is going to be a cost benefit to working with China. And it is fairly inexpensive and environmental to ship things to and from China by boat. But we do have an opportunity to grow the hemp in the United States.

HT: How is your work going with respect to bringing farmers and processors online to support the development of a U.S. supply chain for textiles and building materials? How do you see the investment picture shaping up there? LS: Very well. We are growing our first farm size test crop in California’s Central Valley. The information we are getting this year will allow us to grow on a commercial scale in 2022. We have also set up a fiber processing facility near to where the hemp is grown.

HT: What are the economics of the hemp particle board you developed at Canna-grove? Is it even fair to ask, at this point, for price comparison with conventional wood particle board? LS: The first boards we made were more expensive than regular particle board mainly due to having to ship the raw materials around the country to the factory who could produce it. The shipping costs were half of the cost of making the board. But when the hemp is made at a facility which is near to where the hemp is grown, it become much less expensive. And now with the higher costs of regular wood particle board, hemp is going to be a less expensive alternative.

HT: What’s happening with hemp building materials in general? Do you see any significant movement in that market? LS: One main problem with the hemp building market has been a lack of raw materials. Mostly we have had to import them. As we begin to grow more hemp in the United States for fiber, there will be much more material available at a lower cost. This will be what kickstarts the hemp building industry.

HT: How do you see the arc of production for such biocomposite products going forward the next five years? LS: I think we will see 2021 and 2022 begin to establish the markets for hemp fiber products and grain. After that, there will be a huge increase in demand with farmers increasing acres devoted to fiber and grain.

HT: Some parts of California don’t seem very friendly to hemp. What’s up with that in your state? LS: There are two things going on. Some areas of the state have a history of marijuana production. Those areas are concerned that high CBD hemp flower varieties might cross pollinate with their crop and lower the value. In other areas where people have grown for CBD, a pungent odor of cannabis around harvest time has had people complain. Overall there is overregulation of the hemp industry, especially when it comes to fiber crops, which don’t even produce a flower.

HT: When you started in hemp three decades ago, did you think the industry would develop faster than it has? LS: In the beginning in the early 1990s I thought we would first see industrial hemp legalized, followed by medical cannabis and then recreational cannabis. I thought this would all happen by the end of the decade. In reality we first saw medical marijuana legalized, followed by recreational, and then industrial. And it took over 25 years.

HT: Thirty one years is a long time in the hemp industry. Lawrence Serbin is past national director of the Business Alliance for Commerce in Hemp and past president and director of the National Hemp Industries Association. He served as chair of the California Hemp Advisory Board for the California Department of Food and Agriculture from 2017 - 2020. He is currently working to bring certification, processing, and manufacturing facilities online to support the U.S. hemp construction and textile sector.

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Begin the bees

U.S. researcher is focused on hemp and pollinator communities

HEATHER GRAB is Senior Lecturer at Cornell University’s School of Integrative Plant Science where she teaches and mentors students in the Hemp Science Master’s Program. As a researcher in the school’s hemp research program, her interests include hemp production and processing, agroecology and how insects interact with plants. Her recent work looks at the role of hemp in supporting diverse, native and managed pollinator communities; and how hemp can promote the pollination of other specialty crops.

HempToday: We can’t remember too often of the critical situation with the bee population, and the risks implied. Please summarize the challenge.

Heather Grab: The problem of bee declines is quite complex for several reasons. First, there are many species of bees. People often think of the honey bee, Apis mellifera, but there are at least 20,000 species of bees across the globe. Some bee species are doing just fine while others are sparse or even nearing extinction. These declines and frequencies associated with the declines of populations for one species are often also true for the populations of another species. For example, climate change is a major risk factor for bee species that live in forested and open habitats for wildlife. Reduced dairy and animal feeding has added stress for those species. By demonstrating the viability of the supply chain with these small projects we are starting to see interest from large companies that would require higher volumes of production.

H: How do you see the markets for hurd and fiber outputs from that production unfolding? It’s the chicken-and-egg question.

HG: In the US we have been slowly building fiber hemp supply chains starting with specialty products that have higher margins. By demonstrating the viability of the supply chain with these small projects we are starting to see interest from large companies that would require higher volumes of production.

H: The Cornell hemp program is a very broad one. Give us an idea of the scope.

HG: Our mission at Cornell University College of Agriculture and Life Sciences is to do purpose-driven science. The Cornell University Hemp Group works across disciplines to tackle the challenges of this new industry through our world-renowned research as well as in our education, and outreach.

The Hemp Group has more than 40 experts who work on topics including insect and disease pests of hemp, hemp’s place in crop rotation, hemp genetics, seed science, cultivation practices, production economics and hemp product development. We are proud to house one of the first graduate degree programs in Hemp Science where students can leverage our world-class resources and expertise to develop their knowledge and gain hands-on experience across the supply chain.

Through our Hemp Science degree program, we facilitate the education and industry outreach we hope to support the developing hemp industry to make effective decisions based on the latest science.

H: Hemp-derived biochar specifically seems to hold a lot of promise for many, many applications. Any thoughts on that?

HG: Thermally carbonized hemp fibers offer many promising applications for replacing mined products like graphene in capacitors and batteries as well as in remediation of pollutants like phosphorus from wastewater.

H: What’s the status of development in specialized equipment needed for processing hemp stems? Where are we now with rectification? What’s needed?

HG: The mechanized process of decorticating fiber hemp is a well developed technology but a major hurdle is in building of large scale processing facilities as well as in the adoption of small scale equipment that can enable smaller cannabinoid hemp producers to reduce their waste and capture new value streams. On the fiber side, one area that I think has high potential for improvements is in the setting and degumming processes that happen before and after decortication.

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H: Tell us a bit about your homestead at Full Circle Farm, how it started and the work that you do there.

HG: My husband and I have been very lucky to steward our small homestead where we raise chickens, ducks, turkeys, and hemp. It’s a small carbon footprint farm. We use regenerative farming practices and rotational grazing to improve the soil health. It’s a labor of love and we are very lucky to do what we do.

H: What role does hemp have to play in decortication? What’s still needed?

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H: Can we talk about the importance of this initiative?

HG: It is not just the hemp industry itself that requires the financial support of this initiative. We see in the southern US that fiber cultivars were developed in other regions of the world for textile production where hemp is not well adapted to growing environments. Hemp seed is frequently not well adapted to new growing environments, are not stable in their traits or not ideal for a particular end product.

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A better-behaved best friend

U.S. pet owners say broad spectrum CBD treats helped their dogs

Dogs from across the U.S. who were given a broad spectrum, CBD-rich, nutraceutical pre-lunch snack called Calmer, by Okoa Pet, a Colorado USA animal health company, benefited from a 14-day trial with 98 pet owners for the highest percentage of pet relinquishments to animal shelters. Many of those dogs are not able to be sufficiently stabilized to be adopted and are subsequently euthanized, the report notes.

In brief

Study will look at life cycle of hemp building materials

A two-year study in Pennsylvania is breaking down at the life cycle of hemp derived building material from the field to the build by collecting plant growth and supply-chain data for a hemp-derived bitumen material that was funded with $70,160 from the state’s Specialty Crop Block Grant program, will track biochar, carbon capture achieved through different farming methods, then monitor indoor air quality and performance variables in 14 different roof timber framed model structures.

The model, to be built of Reading-based Allentown based Hush, Puppy-Tech, a Canadian company in Kenthurst, Pennsylvania, is supplied by Coxxet, an architecture firm with expertise in hempcrete-based cabin kit, and makes hemp blocks and hemp blended insulation.

Canadian group buying land

Vancouver-based Global Hemp Group (GHG) said it has contracted to purchase a 640-acre plot of land in Colorado where hemp has historically been sold to produce hemp fiber as a feedstock for composites and hemp-based building materials.

The hemp farm is GHG’s Colorado Hemp Agricultural Industrial Zone (HAIZ) project, which is under the company’s innovative Hemp Technologies (HT) subsidiary. The initiative aims to prove the viability of hemp-based building materials to build sustainable, affordable houses, according to Global Hemp Group’s website.

GHG said that the purchase is the company’s third such acquisition this year, and brings its total land holdings to 874 acres for a planned complex near Hayden in the northwest part of the state. GHG announced in May it had acquired nearby water in infrastructure in Colorado through a private, third-party transaction with Prescott Strategies Group, LLC, Steamboat Springs, saying it kept control over water assets of Western Sierra Resource Capital valued at more than $40 million.

Florida commissioner backs MJ to help hemp industry

A lack of clarity in federal cannabis law is hindering the development of hemp, a product once considered a sideline to the growing legal marijuana industry, the state agriculture commissioner said Thursday.

Terryki Brown, a former textile mill into a factory to turn out hemp-based materials and packaging, has been on a mission to turn his hempcrete-based cabin kit, and makes hemp blocks and hemp blended insulation.

Calmer, more playful

Improvement was also observed in dogs that engage in excessive scratching, have issues with food or appetite, and suffer separation anxiety. The study also reported that behavior such as panting, panting at or after the 14-day treatment period, those gains were not to the same degree of statistical significance as the arresting of negative behaviors.

The study was led by Okoa Pet Veterinary Science Officer Dr. Robert Silver, a 35-year holistic veterinarian, and author of Medical Cannabis & Your Pet — The Definitive Guide, who designed the dog-owner survey, and Nancy Retzlaff, a pharmaceutical biotech industry veteran who is CEO of the company which makes “Hush, Pappy,” the chew used in the research.

The hypothesis of the study was that a ze- ro-THC, broad spectrum, proprietary CBD extract blended with three nutraceuticals and one herb already known for their “calming” qualities, can improve canine behavior in a dog administered at a relatively low dosage based on a dog’s weight.

“We decided to manufacture a high-quality dog and cat chew infused with broad-spectrum CBD distillate with the THC removed, rather than full spectrum hemp distillate, because the cannabinoids effects associated with THC and dogs,” said Retzlaff. “This proved to also be a sound business decision for CBD pet chews can be sold in Europe under the Okoa Pet name.

Pennsylvania company will turn old mill into hemp factory

A deal announced last year will turn part of an old, now-defunct rural textile mill into a factory to turn out hemp-based building materials and packaging, including composite panels and doors.

Sixine Converting LLC said it purchased 500,000 square feet of industrial space in the former fabric company Turley Mill. Sixine, based in Mountain Top, Luzerne County, estimated the factory will employ 50 jobs in the initial phase of its first year. The company said it hopes to grow the workforce to more than 125 in its third year.

North America

2.5 million approved farmers

Canada’s BFTI invests in fiber processing in Hungary

Victoria, British Columbia-based Best Fibre Technologies Inc. (BFTI) said it is developing a technology processing facility at a site in Hungary, with the goal of producing comparable disintegrating fibers from European-sourced flax. The company eventually intends to source bast plant material in Europe and sell the processed fibers to customers in North America.

BFTI said it will use some of the $7 million it recently raised earlier this year to develop the nanoprocessing site at its focus on ramping up production of fibers for non-woven applications.

U.S. based private equity firm Merita Capital Holdings, New York, and existing investors privatized the series A financing, which the company said will allow it to advance business beyond the R&D phase to full commercialization of its intellectual property in natural fiber processing.

Montana experiences steep decline in 2020 hemp fields

Total hemp fields in Montana fell to 12,000 acres in 2020, which saw Montana farmers switching to hemp fiber and grain. State officials estimated that while 80% of hemp grown in 2018 and 2019 was mowed for CBD flowers, only 20% of those growing hemp last year and this year are cultivating them for CBD flowers. Montana farmers planted 22,000 acres of hemp in 2018, more than any other state that year. An oversupply had already led to cutoffs in the market when Montana farmers drastically ramped up hemp farming to 60,000 acres in 2019, resulting in more crops that were unsold.

$65 million approved farmers in case against business execs

A group of Canadian and American business executives are embroiled in a lawsuit after they left a group of Montana farmers stranded with hemp plantations — an amount larger than the plaintiffs had sought in court case. The judgment was the second-largest award ever granted by a jury in Montana’s civil courts.

A company named USA Biofuels contracted with the farmers to grow hemp for CBD flowers, a crop of sweet and dried payments of $150 per acre promised to the farmers was delayed, according to the plaintiffs. Those obligations were later met by a company called Vital CBD Natural Foods, according to the lawsuit. USA Biofuels eventually merged with LivWell Canada Inc., which folded and failed to form a new entity, Eureka 93. But the farmers never received payments for those crops, which the court ruled the farmers had a lien on.

The jury awarded $65 million in compensatory damages to 25 eastern Montana farmers — an amount larger than the plaintiffs had sought in court case. The judgment was the second-largest ever granted by a jury in Montana’s civil courts.

A group of U.S. and Canadian hemp farmers seeking $65 million in damages to Montana farmers

Negotiation Breaks Down

Flournoy’s breakout

American CBD cultivars are approved for Canadian farmers

Nine American CBD cultivars from four breeders are now listed among approved hemp varieties in Canada. The list of approved hemp varieties in Canada are now listed among approved hemp varieties in Canada.

Embargo expired

New hemp varieties

Four new hemp varieties are now listed among approved hemp varieties in Canada. The list of approved hemp varieties in Canada are now listed among approved hemp varieties in Canada.

North America

In brief

Washington state will begin to certify hemp extracts

Washington state’s Department of Agriculture will begin to certify hemp extracts, in a move that will help producers who produce in other states.

The state allows hemp extracts before but not after licensing.

Under the new program, producers who want to produce hemp extracts for a food as a final food ingredient may apply for a hemp extract certificate that assures compliance with state’s standards, which regulate use in food and good manufacturing practices requirements. But those products may only be sold out of state.

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Baha ma’s government warns hemp is not a get-rich mine

Cannabis officials in The Bahamas say they still lack hemp, but the commonwealth’s foothills in the sector will depend on strategies to separate hemp from man- ijuana fields to avoid cross pollination. At the same time, Bahamas officials are also entering into an agreement with Canada’s Chief Quin McCartney cautioned that hemp may not be the gold mine some see it to be.

The BNMC has listed at both marijuana de- criminalization and the cultivation of industrial hemp and issued a preliminary report last year. Among 24 recommendations, the commission advised the govern- ment to allow those prescribed medicinal cannabis to be grown in hemp fields, target cancer patients, build industrial cannabis by prescription, and allow imports of regulated cannabis health products.

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North America
Europe’s hemp industry has seen significant advancement in the past year. Developments in the CBD sector, allowable THC levels in industrial hemp crops, and initiatives aimed at clearing hemp extracts for use in food have combined to spark lights at the end of the tunnel for European stakeholders.

Most importantly, the EU stands on the verge of a legal CBD market. Member states are now in the process of adjusting their laws and regulations after an industry defining decision last year by the European Court of Justice, which ruled in a French case that hemp-derived CBD should not be considered a narcotic, and that the compound should be free for trade among EU member states.

Defining moment

That ruling later led the European Commission to change its previous position that CBD should be considered a narcotic in EU states, and may be considered a food – a defining moment for the sector.

If clear rules for CBD are established, and proper safety assessments and standards are developed, it is sure to set off further investment, research, entrepreneurship and a thriving consumer market in Europe over the next several years.

THC

The important advancements in CBD were preceded last autumn by the European Parliament voting to increase the authorized EU THC level for industrial hemp “on the field” from 0.2% to 0.3%, putting Europe on a par with most countries around the world.

The 0.2% THC barrier has specifically proved a hindrance to CBD producers because CBD in hemp rises in proportion to THC. European scientists and researchers have not been incentivized to develop the high-yield seed varieties and high-CBD strains that are now in great demand.

Raising the THC limit in hemp also helps the fiber sector, where Europe has long dominated in hemp genetics.

The change can be expected to immediately spur development of more advanced fiber varieties, and lead to the re-animating of a number of existing high-yield cultivars from northern and eastern Europe that have been dormant because they express THC levels beyond 0.2% (but less than 0.3%).

The European Commission is also expected to set a binding THC limit value for hemp food of 7.5 mg/kg by the end of the year, a move urgently needed to give producers security in their business planning and, again, giving Europe’s producers an even chance in the global marketplace.

Sustainability

If European hemp stakeholders can get the message across, the hemp industry has a huge role to play in meeting the EU’s sustainability goals, and can benefit from funds to support the ultimate mission of making Europe climate neutral by 2050.

Hemp can play a key role in the transition towards a regenerative growth model that creates thousands of new green and highly-skilled jobs in manufacturing while uplifting rural areas, other key EU long-term goals.

That will require a clear playing field in which producers are allowed to maximize the income from all parts of the plant, especially the flowers and leaves.

Hemp’s ability to capture and store CO2, its promise in cleaning heavy metals from European soil, and its potential as a replacement raw material in such diverse industries as construction and cosmetics, plastics, cotton and wood, could lead the continent’s sustainability initiatives.

Europe makes critical advances in CBD, THC

This dioecious variety FINOLA is the shortest and fastest auto-flowering hemp variety. The crop typically begins to flower at 25–30 days after sowing. The auto-flowering characteristic ensures that it will begin to flower under constant lighting conditions, soon after the seed has emerged from the soil. FINOLA is a well known oilseed hemp variety in Europe. It is an excellent source of healthy oil and plant protein.

Choose the fastest, choose the most popular one. Choose FINOLA.

FINOLA – CERTIFIED PLANTING SEED

Europe makes critical advances in CBD, THC

Moving forward

It could take at least three years to work through what would be the remaining hurdle to a fully open market: Hemp’s status under the EU’s food safety rules. Stakeholders are already moving, with several having joined in a consortium to push forward applications, now pending, for CBD under the EU’s Novel Food guidelines.

PHOTO: HEMPOINT

FINOLA

• EU approved variety
• Country of origin: Finland
• Planting seed certified according to EU standards
• Recommendation for sowing density: 25–30 kg/ha
• Breeder: Finola Oy
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54 Hemp Today | Q4 2021

Trans Farm Oy, Oitti, Finland
**ANDY YATES**

Pharmacy Associate at the UK-based Association of Cata dbility (ACI), which assists companies looking to enter the UK and intends on certifying more than 15 years’ experience in medical, commercial, business and pharmaceutical development positions. A UK pharmacist, Andy received his PhD in cannabis medicinal chemistry from the University of Nottingham. He has extensive experience in all aspects of medicine development programs and has been responsible for multiple collaborative initiatives among academics, the pharmaceutical industry and government. In addition to his responsibilities at ACI, Yates runs an independent pharmaceutical consultancy. He holds an Honorary Lecturership at Keele University.

HempToday: You’ve referred to the situation in the UK as a ‘quiet cannabis revolution.’ What’s your take on it? And how does this revolution that has happened within the UK has happened either serendipitously or in response to a specific event, rather than through strategic or planned interventions at a government level. The legal cannabis industry has therefore grown almost silently in the background to the significant presence we now see.

HT: What’s needed to set a level playing field? Andy Yates: We believe the time is right for the UK Government to recognize the significant value and benefits that the industry brings to the UK. They need to provide a framework and regulations that encourage and support the established industry and foster new growth within our borders.

There are three regulatory areas in which the UK still needs to level up:

**HT: How do we ‘avoid any doubt’ about the status of THC in consumer products?** Andy Yates: The ACI has conducted a data-driven review of the literature and subsequent safety assessment (led by a toxicologist) of acceptable THC levels within legal cannabis consumer products which we have submitted to the Advisory Council for the Misuse of Drugs (ACMD) who advise the Home Office to support a change in the current law.

**HT: What has come out of the human clinical studies so far?** Andy Yates: The use of cannabis in human clinical studies is sufficiently positive for medical products that contain CBD on the market for childhood epilepsy (Epidyolex) which shows that for the right dose, in the right disease, the benefit-risk profile of CBD would develop to allow the US regulatory body to approve it as a medicine. Out of the many studies already completed, the most important is the pivotal 2019 and 2021 reports into CBD spasticity in multiple sclerosis patients which shows that for the right dose, in the right disease, the benefit-risk profile of CBD is sufficiently positive for medical products that contain CBD on the market for childhood epilepsy (Epidyolex) which shows that for the right dose, in the right disease, the benefit-risk profile of CBD would develop to allow the US regulatory body to approve it as a medicine. Out of the many studies already completed, the most important is the pivotal 2019 and 2021 reports into CBD spasticity in multiple sclerosis patients which shows that for the right dose, in the right disease, the benefit-risk profile of CBD would develop to allow the US regulatory body to approve it as a medicine.
German hemp company Signature Products has received a commitment for ~€800,000 in funding from the state of Baden-Württemberg for the development of a regional hemp protein value chain. The Pforzheim-based company and the University of Hohenheim joined in applying for state innovation funds that will be used to develop processes, technologies and recipes for the production of protein-rich tofu, pasta and other foods from regionally grown hemp. The university’s Institute for Crop Sciences provides research in ongoing cooperation with Signature Products.

Pichlmaier said the initiative recognizes changing global dietary trends are bringing an increase in demand for plant-based foods in place of animal-based foods. Developing such regional chains can be a key to improving human as well as planetary health, Pichlmaier observed.

Commitment

“With the commitment of the state of Baden-Württemberg in Germany, the state is sending the right signal to sustainable, plant-based and regional products,” Pichlmaier said.

Signature Products is a vertically integrated company that offers trade in hemp raw materials such as hemp seeds, hemp protein, extracts and the extraction of cannabinoids. The company, which employs more than 20, has launched more than 40 private label products for German customers, and said it is expanding to Spain, France and other EU countries under a “Made-in-Germany” strategy.

Bread portfolio

Signature Products works with hemp farmers in Europe to provide high quality hemp products. The biomass, hemp seeds, hemp protein and flowers, in addition to extracts, distillate and isolate, are sourced from controlled cultivation or certified organic operations. White label and private label services are offered for such products as high-quality CBD and CBG oils, cosmetics, hemp seed oils and other liquids. The company’s bottling plant is certified organic, and Signature Products offers complete component sourcing, on-site laboratory services and contract packaging.

Signature recently started selling CCELL products in Europe as an official distributor, complementing the bottling of e-liquids with the distribution of high quality vape products.

Innovation ‘Made in Germany’

Grant will let Signature Products develop regional hemp protein value chain
Hemp held hostage in Greece

Greece was recently in the international spotlight due to legal reforms aiming to further regulate production and exports of medical cannabis products. A big fuss followed as 160 applications were submitted, 100 or so installation licenses were granted, and much was made of the millions of Euros expected to be invested, and the hundreds of new jobs that could be created. But in Greece, everything is in the future tense, since only three projects are up and running so far and little progress has been made.

Greek hemp producers remain hostages of the Greek State although hemp cultivation has been legal and regulated since 2016. The previous government had many issues unresolved and open, especially regarding processing and final products. The current conservative government that took power in 2019 has followed a rather restrictive approach with the hemp sector, although it dramatically changed existing policy and public stance towards medical cannabis.

Half-regulated, on purpose

The hemp industry in Greece has remained half-regulated — on purpose — to this day, even though it is an established industry with dozens of farmers and producers trying to position themselves, and hundreds of families living off the commercial services of the many dedicated hemp shops that have been established all over the country.

Although hemp cultivation is fairly but strictly regulated, processed hemp products, especially food, food supplements and flowers remain in legal gray zones and suffer from misconceptions, bias among public servants and unfair competition practices.

According to the 2016 law that regulates hemp cultivation in Greece, a Joint Ministerial Decision should have followed immediately to regulate processed hemp food and cosmetics. That never happened. In 2018 an Experts Committee, where we actively participated, was formed, and it set THC limits based on Denmark’s model) were never transposed into a legal document due to the change in government a few months later.

As a result, hemp processed goods produced in Greece cannot be officially registered as food because they contain traces of THC and consequently cannot receive organic certification and all the legal documents needed to place them into the market and export them. Furthermore, absurdly, the same restrictions apply to non-THC containing hemp products from Greece such as seed oil, flour, protein, beer and essential oil.

Unfair, ‘surreal’

At the same time, similar products are imported from other EU countries and sold in the Greek market with no restrictions or obstacles, under freedom of trade provisions within the EU. That means substantial profits for local traders and foreign producers. Some traders even import certified organic raw material from other EU countries that they package in Greece and sell as Greek organic hemp food, whereas local pioneer organic producers such as KANNABIO Hemp Cooperative cannot receive organic certification for their locally grown and processed products.

It’s surreal: KANNABIO can import certified organic raw material from another EU country and put the processed products on the market as certified organic products; but if we use organic raw material that we cultivate in the Magnesia region, we cannot receive the organic certification in the final product.

The Greek government shows a clearly prejudiced attitude against Greek hemp producers, and favors traders over producers by setting an unfair competition environment with barriers to entry only for the latter. This has resulted in loss of income for the Greek producers, increased burdens, disappointment and finally, in many cases, withdrawal from the sector.

Moreover, the previous Minister of Agriculture and Food, just before leaving office in January 2021, introduced a new law amendment where only EU cultivars can be cultivated and all batches sampled and tested above 0.2% THC must be destroyed under the expense of the farmer. That restrictive measure, the economic impact of the COVID-19 pandemic, and various unlawful actions of hemp producers and traders over the last couple of years, have resulted in decreased numbers of farmers and acreage for the 2021 season, especially for outdoor operations.

Keeping up the fight

Nevertheless, Greek hemp producers do not stand idle. We are constantly sending policy proposals to the government and we are forming a Panhellenic Hemp Producers Union to fight collectively for the future of our sector. We believe that we have a strong case for legal actions against the state for unfair competition practices that we will pursue if the new Minister of Agriculture does not provide solutions soon.

Things don’t necessarily look promising. For the moment, the minister has not even replied to our request for a meeting.

Unfortunately, in Greece, hemp falls under the same jurisdiction with cotton in the Ministry of Agriculture and there are certain economic actors that still perceive cannabis as a threatening and competitive activity. Establishing an independent Cannabis Agency that will take care of all issues related to medical cannabis and hemp will be an important step towards a healthy sector.

Incentives needed

Despite the obstacles, the hemp industry already supports hundreds of families in Greece. Setting reasonable THC limits in food and allowing the processing or sale of hemp flowers and biomass up to 0.6% THC, will not only attract foreign investment but will provide incentives for Greek farmers to move into hemp cultivation and support existing hemp producers on the way to becoming sustainable businesses. The decriminalization of cannabis possession for personal use is a very important horizontal measure that would favor the sector at the EU level and increase competitiveness, especially with the across-the-Atlantic markets.

Gray legal areas only favor shady businesses and do not provide fertile ground for a vibrant and competitive sector. We strive for a transparent, open, fully regulated but unrestricted industry that takes into consideration international best practices and explores all the commercial aspects of the hemp plant without prejudice and ideological constraints. Hemp should be treated like any other agricultural commodity and should not suffer discrimination.

With the proper support, hemp can become the “new olive oil” or the “new wine” for Greece, and the industry can set quality benchmarks such as products of origin and establish a solid market share worldwide. That’s not to mention the direct environmental benefits hemp offers in the fight against climate change.

Instead of keeping hemp producers as hostages, the Greek government should utilize its expertise and knowledge to build a sustainable and profitable industry while at the same time promoting a crop that can that can heal the planet.

Michalis Theodoropoulos is co-founder & President of the Board of the KANNABIO Social Cooperative.
Hemp fields in Poland fell by roughly 36% this year after many farmers pulled back due to subsidies being blocked for the Finola oilseed variety, highly popular among Polish growers.

Hemp fields totaled 2,300 hectares, down from 3,600 in 2020, according to state farming records.

Poland’s Agency for Restructuring and Modernization of Agriculture (ARiMR) declared last March that supports for Polish farmers planting FINOLA this year would be blocked claiming the variety was found to express excessive THC levels.

Knocking down the country’s outdated crop zoning system could lead to make the sector more dynamic, said Maciej Kowalski, founder and CEO at leading Polish hemp company Kombinat Konopny.

With the government generally favoring development of cannabis industries, “all analyses show that if legislation does not put significant obstacles on farmers’ feet, agriculture and hemp processing will develop at a staggering pace,” Kowalski said. “Farmers will undoubtedly play the most important role here because they are responsible for the local raw material supply chain.”

Antiquated system

Under Poland’s regulations, hemp zoning requirements obligate regional governments to take into account “local demand for raw materials, local traditions and local level of drug-dependency risk” – that last factor a vague nod to past paranoia regarding marijuana. Farmers must declare their hemp fields by total area in autumn before the next year’s planting season. But “there is no rational justification for the requirement of annual crop zoning,” Kowalski said. The system, he said, which has its roots in central planning from Poland’s communist times, should be abolished.

Also under the rules, farmers are not obliged to actually plant hemp in fields declared; may state their intentions at the local or regional level; and can declare fields anywhere in the country. Demonstrating the lack of logic in the hemp zoning system, while actual hemp fields this year were only 2,300 hectares, data collected by Kombinat Konopny from all 16 of Poland’s administrative regions showed more than 100,000 hectares are declared for hemp this spring across the entire country – a staggering number.

“It has absolutely no meaning as a forecasting tool,” said Kowalski, who himself declared several thousand hectares but will farm only 40. “Nobody really knows what it is for.” Kowalski said he also declared small hemp fields in several places where he sells seed for gardeners and those who want to run small trials, giving them legal cover and “so as to limit the clerical nonsense that makes it difficult for beginner growers to grow cannabis.”

Other growth indicators

Also indicating the dynamics of hemp in Poland, 472 growers applied for farming subsidies in 2020, up from 85 applicants back in 2015. Polish hemp farmers received only about €100,000 in support last year, but can tap into other support programs for which they are eligible, such as those for single area payment, greening, and support for young farmers, Kowalski noted.

Cannabis and hemp specifically have been points of discussion in parliamentary sessions over the past couple years in Poland, as public support has grown steadily.

Poland produces straw for fiber and hurd, seeds, and flowers for CBD-based products. In addition to cutting bureaucracy, Poland, like all emerging hemp nations, needs modern solutions. “Unfortunately, the technology for hemp is not yet as mechanized and modern as for other plants,” Kowalski said. “While producers are ingenious and go to great lengths to catch up, the 60-year downtime in hemp production still leaves it mark.”

Poland wants faster growth

Outdated crop zoning system needs to be overhauled

The rich bounty of Anatolia welcomes a new future of collaboration.

Cannabis has been growing in the fertile lands of Anatolia for thousands of years. A main thoroughfare of trade for centuries, Anatolia is once again sharing its bounty thanks to the expertise of Doğatek.

Doğatek is your source in Turkey for advanced technology infrastructure, a sustainable future, and new opportunities for hemp related investments from leaf to stem.

Polish hemp fields since 2016 in hectares

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<th>Year</th>
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6762 HempToday Magazine | Q4 2021
Farmers struggle with police, and government bureaucrats

Several Portuguese farmers have found themselves on the wrong side of the law after they pushed back against a bureaucracy that has been slow to issue licenses – even to long-time growers.

Hemp stakeholders have continually criticized the country’s General Directorate of Food and Veterinary Medicine (DGAV) for delays in awarding authorizations for hemp growing they say have put farmers at risk. The problems come even as industry representatives have repeatedly tried to get clarity on hemp from the DGAV over the past two years.

Some have plunged ahead and put in their crops anyway, drawing police attention that resulted in raids, seized materials and products, and arrests on drug charges.

Decisions needed

In addition to the licensing problems, industry representatives say the painstaking decision-making by the DGAV is also critical in light of changes brought by a European Court of Justice case last year, which settled key questions about the legality of CBD. That started the process among EU member states of making their national rules comply with Union-wide regulations.

Portuguese hemp companies say their challenges are grounded in rules in a new law covering medical cannabis and hemp that put undue burdens on the industry. They have repeatedly called for changes.

The law, which covers licensing for the cultivation, manufacture, wholesale trade, transport, distribution, import and export of cannabis-based substances for medical and industrial uses, was published in April 2021.

Problems with planting seeds

While the government this summer removed a requirement that hemp farmers must employ a technical manager, decisions for THC control.

While France and Italy have national certification schemes for their locally produced cultivation seed, in addition to holding listings in the EU seed catalog, not all countries have such national certification programs.

Under Portuguese rules as now written, both national and EU certifications are needed for cultivation seed imported into Portugal. That means Portuguese hemp farmers are technically blocked from planting hemp varieties from member states that do not have national certification bodies, despite the fact that seeds from those countries are EU certified.

Hemp producers also take issue with a regulation that would require farmers to pay any costs related to laboratory analysis for THC control.

And stakeholders say the rules fail to properly sort out the parts of the hemp plant. While the regulatory language specifically mentions seeds and hemp stalks, it fails to explicitly mention whole-plant biomass and flowers, leaving a wide gap for interpretation because it doesn’t specifically indicate that all parts of the plant can be sold.

Overly strict rules

Also of concern, requirements for identification of farm fields under the rules go against guidance from DGAV, which administers the hemp side of Portugal’s hemp program. While DGAV has only required an address and geographic location for hemp fields, rules under the new law mean farmers must track and report on plant development, indicate quantities to be grown and harvested by variety, identify buyers of their crop, and give locations of storage facilities — all requirements imported from the medical cannabis licensing process.

For farmers, the troublesome rules represent possibly the strictest requirements for the cultivation of industrial hemp in Europe.

Long-time growers victimized

Prominent hemp entrepreneur and activist Hugo Monteiro is among those who were arrested on drug charges this year. His episode followed a raid and arrest of Barry McCullough, another longtime hemp grower, earlier in the year. In both cases, law officials admitted that they didn’t know if the material seized in the raids was hemp or marijuana. Both raids, by the National Republican Guard, took place in the central Portuguese region of Alentejo.

France floats plan to ban flowers

Stakeholders push back against draft decree submitted to EU

French hemp stakeholders say they will appeal a proposal that would ban the sale of raw hemp flowers after the government issued a draft decree on hemp to the European Commission.

Under provisions in the decree, the French government would open up the country’s potential €700 million CBD market as it makes legal all parts of the hemp plant and hemp-derived products. Growers could harvest flowers to be processed into CBD and other extracts. But the sale of smokable hemp products and loose hemp leaves and flowers to consumers would be illegal, based on “public order” and “public health” considerations. The provisions would revise a 1990 decree that addresses cannabis in France’s public health code.

“Suffocating”

“By excluding the raw hemp flower from marketable products in France, the government deprives the operators of the most important parts of the crop and derates the country’s potential hemp production,” Jean-Paul Person, CEO of the French hemp industry association Humulus France, said in prepared remarks. “These are the raw materials used in the production of hemp and cannabis extracts, in the CBD market and other uses. The draft [decree] is a setback for the entire hemp industry.”

The decree is essentially an outline of the French government’s plan to comply with a landmark ruling by the European Court of Justice late last year. France is required to comply with a landmark EU ruling that hemp extracts from cannabis plants are not illegal under EU law.

The draft [decree] is a setback for the entire hemp industry.

Under the draft decree, “the sale to consumers of raw hemp flowers or leaves in all their forms, as well as hemp seeds, ingredients, in particular as smoking products, herbal teas or potpourris, their possession by consumers and their consumption are prohibited,” the draft decree states. “Flowers and leaves may only be harvested, imported, used for the industrial production of hemp extracts.”

Getting EU compliant

The decree is essentially an outline indicating how France intends to comply with the landmark EU ruling in the legal framework of medical cannabis in the Czech Republic and enjoy wide respect in international medical circles, passed away at age 67 in July 2021. Zábranský’s work in research and legalisation established him as a leading figure in medical cannabis, where he worked as an expert in drug epidemiology and monitoring of the drug problem in the United Nations and European Union. He was named by the EU Parliament as an independent member of the Management Board of the European Monitoring Centre for Drugs and Addiction in 2015.

Widely published in cannabis circles, Zábranský was the main author of the first annual report on the state of the drugs problem in the Czech Republic prepared in accordance with standards of the European Monitoring Centre for Drugs and Addiction, and served as editor and contributor at a number of scientific journals.

Finola fights back against Polish authorities block subsidies

The producer of Finola cultivation seed is fighting a decision of the Polish authorities to eliminate subsidies to farmers who cultivate the popular hemp variety in Poland.

Poland’s Agency for Restructuring and Modernisation of Agriculture (ARMH) issued a statement last spring declaring that supports for Polish farmers planting Finola this year would be blocked because the variety was found to be above the EU limit of 0.2% THC in tests over the past two years.

Poland is one of Europe’s biggest hemp producers, and Finola was developed in Finland, was the first industrial standard hemp variety to be registered in Canada and the EU. Finola produces abundant seed in a short, auto-flowering and early maturity crop. The variety, which can store well in cold and temperate regions, has thrived in Polish conditions, farmers have said.

Holland & Barrett introduces CBD oral strip in Netherlands

European health and wellness retailer Holland & Barrett has introduced Eleven Leaf CBD Oral Strips. The product debuted on the company’s online store, and is planned for rollout in 200+ retail stores across the Netherlands. Each strip offers 25mg of CBD in a Fresh Mint, Berry Mint and Lemon Balm flavors. Holland & Barrett is one of Europe’s leading health and wellness retailers, offering a wide range of clean brand and other vitamins, supplements, specialist foods, sports nutrition and beauty brands. The company has more than 1,300 stores worldwide.

Small farmers optimistic, but not as much as bigger ones

Europe’s small hemp farmers are optimistic, but see less than agrico-consortiums and cooperatives, according to a report from commodities trading platform CanFarma. While larger farm arularities often broker and weather the legal changes associated with a number of factors have put pressure on smaller players that may be giving them pause. CanFarma said smaller operators struggle to get distribution and have lower margins than their larger colleagues, which means it tough to compete on price. CanFarma said smaller players may also have been hit harder by the weak cash flows when the global lockdown began, CanFarma suggested.

Portugal authorizes 20 of 60 applications to grow hemp

Portugal’s Directorate-General for Food and Veterinary (DGAV) authorized 20 of 60 requests submitted by hemp growers to cultivate industrial hemp this year, according to the Ministry of Agriculture. It said the Ministry approved 57 license applications to grow hemp across the country, with a view to producing the drug THC and primarily CBD.

Overall, the draft rules authorize the growing of hemp for industrial and commercial use of all parts of the hemp plant with less than 0.2% THC, and the CBD market. The CBD industry’s growth in the country has mostly been based on products from the hemp stalk, and in the creation of hemp seed varieties.

“The objective of this decree is both to allow the development of new sectors in France, to protect consumers and to maintain the capacity of internal security forces to combat trafficking in narcotics,” the decree states.

Opening the market

Union des Industriels pour la Valorisation des Exraining des Chanvre (UIVEC), another CBD trade group, said the decree “is only a first step in the French regulations on CBD, but it goes in the right direction and should disarm the debate.” UVEIC has estimated France’s CBD and hemp market is worth as much as €700 million in 2022.

The final decree is expected to be published sometime around the turn of the year.
HempToday: Your first hemp company was famously born in a former Düsseldorf police station more than 25 years ago. What was the business?

Daniel Kruse: I started with the hemp retail Hanf Haus (hemp house) in the center of Düsseldorf’s old town.

HT: What do you consider your biggest professional achievement through your two and a half decades in the business?

DK: Opening our own factory, the Hemp Factory for food production, which is solar powered and has highest possible quality standards. Also supporting the development of the MultiCombine Harvester.

HT: What are the biggest misconceptions about getting into and running a successful business in the hemp industry?

DK: While hemp provides unlimited chances, business life provides unlimited challenges. The hemp industry is almost like every other industry - it takes time to become mature. And it needs patience to get your business established.

HT: Where do you see the industries in five years? Which outputs will rise and fall?

DK: The next big wave of success in our industry is just starting. The demand for sustainable and healthy products has never been so strong. Even large retail chains and multinational companies are discovering hemp. Food and feed products will rise strongly for sure. Fiber and construction material will have unforeseen success. Even the textile industry will take a closer look at hemp. The CBD sector should stay stable until we finally have achieved the novel food registration and that will be the starting point of the second uprising for those outputs.

HT: What battles are ahead and how many more lawsuits will it take to normalize industrial hemp in Germany?

DK: For years the German and European authorities have put up obstacles or failed to move these out of the way. The latest rulings by the European Court of Justice and the BGH (Germany’s Federal Court of Justice) on industrial hemp products strengthen our legal position. Most recently, the city of Düsseldorf also had to back down on a CBD-containing food sales ban. Politicians are finally seeing the commercial hemp industry as a partner, and especially with regard to the goal of EU climate neutrality by 2050.

HT: What’s the status of fiber hemp farming and processing in Germany? Do you see enough of a local market to support such products as building materials and animal bedding? Are there potential markets for technical fibers?

DK: Fiber hemp farming, processing and the marketing of products such as building materials, technical applications and animal bedding will increase tremendously. But of course, for this we need the whole plant approach. Fibers can only be competitive when seed and larvae are marketed at the same time. And vice versa – seed and leaves will be available on the market for reasonable prices as soon as fiber production increases.

HT: How do you see carbon credits for farming shaping up in Europe, and how big a role can hemp play in those markets?

DK: I believe carbon credit will be a major change for the farming landscape of Europe and hemp will play its major role. The goals for sustainable and carbon neutral agriculture and bio-economy are set on a political level and very soon industry will see this as a new opportunity and align with this approach.

One of the partner companies of my company group, HanfFarm GmbH, is already gearing up and preparing to be able to cover all three main areas of industrial hemp production in the future.

HT: Looking at it from abroad, China seems to be moving quickly on hemp. How much of that is real, and how much is hype?

DK: From my personal experience on site and from the intel I receive, I’m very sure that the Chinese approach and development regarding hemp is real. China understood long time ago how important hemp, hemp raw materials and products will be in the future.

HT: You’re leading companies in farming, food, cannabinoids, clothing and accessories and consulting while also serving as president at EIHA. What are the keys to successfully managing such a broad portfolio?

DK: Quality and reliability. And, of course, you need legal and planning security granted and decided by the legislation and administered by the executive branches of governments. Europe, and especially Germany, have got to rise of the arbitrariness of authorities that has hindered the development of our market during recent years.

As you know, at EIHA, I am particularly active in my specialty of cannabinoids in food. I have been involved in the topic of THC in food for 15 years and CBD for 10 years. My cooperation with internationally renowned hemp experts as well as the advisory committee of the EIHA summarizes the well-founded know-how from practice and science in the hemp and food sector. In the course of our joint work, various positions papers and studies on THC and CBD in food have already been prepared and published. Now, finally, after many years, our positions are taken into consideration on the political and administrative levels.

HT: As you look back over your two and a half decades in hemp, what moments are seared in your memory?

DK: In 25 years one does have a couple of those moments: Launching our first own-brand products, opening my own factory, speaking to European Commission and, traveling around the world meeting business partners and other dedicated hemp stakeholders in other countries.
Foods lead way in Hempro Int’s broad portfolio of products

Legacy European hemp company Hempro International GmbH said demand for its hemp foods are on the rise as the company marks its 19th year in business in 2021.

That means the company is shipping greater volumes of its HANF FARM-brand packaged foods this year along with high-quality bulk raw material Hempro Int.’s HANF FARM line of products has been a major driver in the company’s emergence as Europe’s leading hemp player.

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.

Hempro Int., based in Düsseldorf, is a vertically integrated producer and wholesaler of hemp foods, textiles, accessories and cosmetics products.

Cosmetics sales strong

While hemp food hit its stride over the past few years, the company says sales of cosmetics products from Hempro Int.’s The Hemp Line – 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 2017, 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, opens 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 creators 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

HainHaus Düsseldorf, which opened its doors in 1995, was the foundation stone for founder Daniel Kruse’s hemp career, he said. 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.
Hemp Factory boosts capacity as demand for protein picks up

Borken, Germany-based Hemp Factory has increased production capacity at its fully solar-powered food processing facility near the German-Dutch border. The biggest hemp food manufacturer in Central Europe, the company said the upgrades come as sales of dehulled hemp seed and hemp protein are picking up.

Development of the facility was guided by HempConsult GmbH, the Düsseldorf-based hemp industry advisory. HempConsult founder and CEO Daniel Kruse also serves as CEO at Hemp Factory.

The highly efficient, clean-energy factory is the company’s way of doubling down on its commitment to sustainability, and is intended to serve as an example to the hemp industry that it can lead the process of reducing carbon in the atmosphere. “We all know hemp food can contribute to environmentally friendly and healthy nutrition for the growing world population,” said Kruse.

Product range

Hemp Factory produces hemp foodstuffs for the processing industry from certified organic hemp crops, with a strong emphasis on quality. The company employs germ reduction technology in its production facilities, in addition to systems for cleaning and sorting to produce highly cleaned whole hemp seeds, dehulling technology for hulled or shelled hemp seeds; and a milling and sieving operation for hemp protein and dietary fiber.

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.

Quality control

With careful quality control, Hemp Factory offers comprehensive analysis, continuous improvement of production standards, and certification under Organic, Kosher, HACCP and GMP+ standards. The plant’s quality management system is to be extended to FSSC22000 in the near future.

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, which has been selling hemp foods since 2002.
Hanf Farm will double seed output, launches carbon projects

Hanf Farm GmbH, Central Europe's leader in organic hemp cultivation and processing, said it has doubled its output of planting seed and made its first moves into the hemp-based carbon sector.

Hanf Farm also said it is on track to triple its output of hemp grain in 2022 to meet growing demand in the food sector.

A long time multiplier of EU certified planting seed, Hanf Farm has well-established relationships among international partners and seed banks. The company also develops hemp genetics from approved European hemp breeds, can deliver food, fiber and CBD varieties suitable for dual cropping, and even turns out genetics adapted to individual customer requirements. In addition, Hanf Farm has extensive experience in the registration and approval processes required to introduce new hemp cultivation varieties.

All seeds from Hanf Farm are developed without genetic engineering, and the company employs advanced separation technology and a state-of-the-art automated cleaning system in its cultivation seed production line.

Hanf Farm recently launched initiative in carbon farming is on two tracks. First, the company is studying the effects of hemp cultivation and monitoring carbon in the soil, in hemp plants and in products. As a part of this sustainability initiative, Hanf Farm recently signed a cooperation agreement with HempConnect, a Hamburg-based startup that is working on methods to certify carbon credits for hemp agriculture and the hemp supply chain.

Hanf Farm is also researching the potential for organic biochar produced from hemp stalks, envisioning potential markets in such materials as activated carbon, Terra Preta and graphene.

Meanwhile the company is also advancing its core business in hemp foods and biomass. Hanf Farm recently added organic high-quality tea leaves in different sizes, powder products from plant leaves and blossoms, and a hemp root powder to its production portfolio. In addition to those products, the company turns out hemp premium flower, CBD and CBG extracts and oils, broad spectrum distillates, isolates from natural cannabinoids, flower and leaf fodder for animal feed, and hemp feed for fish, birds, cattle and horses.

As Hanf Farm steadily expands its footprint and activities in the development of sustainable hemp agriculture near its operations in village of Melz in the state of Mecklenburg-Vorpommern in northeast Germany, the company is well-positioned to play its part in the broader regional economy. Access to certified organic agricultural land in the area is particularly suitable for Hanf Farm’s mission to grow and harvest industrial hemp for all of the plant’s potential.
As the regulatory system for cannabinoids in Europe advances, MH medical hemp GmbH is well positioned to serve the medicinal cannabis, CBD and cosmetics markets in Europe and beyond.

With the European Court of Justice (ECJ) ruling CBD is not a narcotic and may be freely traded in EU countries, and recent changes in cosmetics safety rules, Düsseldorf-based MH medical hemp, a veteran cannabinoids company by European standards, has established internal controls critical to further development of large-scale manufacturing processes that employ safe and environmentally-friendly methods. That lets MH medical hemp keep pace with the market, according to Joscha Krauss, the company’s CEO.

With a clearer horizon for CBD and other cannabinoids, MH medical hemp can put more emphasis on hemp’s potential in its portfolio. The company continues to probe hemp’s potential uses in skincare products, recently joining with the Technical University of Braunschweig to apply for R&D funding from ProPharm, a German national innovation platform that is supporting development of the pharmaceutical supply chain. The joint project would look at hemp’s potential in cosmetics for use on stressed skin.

ProPharm is funded by the German Federal Ministry for Economic Affairs and Energy as part of the Central Innovation Program, which supports SMEs that are advancing manufacturing processes, products and technical services for the pharmaceutical industry.

On the wholesale side of the business MH medical hemp offers hemp whole-plant Co2 extracted CBD oil that features the full range of cannabinoids, terpenes, flavonoids and phenols from EU certified hemp. 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.

Besides its core business as a supplier of raw materials for the nutraceutical/cosmetics industry, MH medical hemp continues to develop its pharma branch. The company expanded its sources for medical marijuana by securing contracts with two additional European suppliers in the past year after having obtained Wholesale Trading Authorization for human medicinal products as well as a Narcotic Drug License. That gives the company a strong foothold in Germany’s medical marijuana sector, where demand is strong, and prescriptions are covered by insurance companies.

In other recent developments, MH medical hemp GmbH has added CBD Gold 2% in oil as a natural flavoring preparation to its Phytalize line of products. The Phytalize portfolio also includes a face cream, balsam and body lotion, all of which incorporate CBD into the formulas.

Joscha Krauss, CEO of MH medical hemp
Highlights in the development of HempHolding companies

1995
- HanfHaus Düsseldorf founded as a retail store.
- First farming operations established as precursor to Hanf Farm GmbH.
- Daniel Kruse becomes Sales Director and Co-Shareholder of HanfHaus GmbH in Berlin.

1996
- Hempro Int. acquires the PURE brand of hemp-textile accessories.
- Hemp Factory purchases second protein machine.

2001
- Hempro Int. acquires assets in the hemp food raw material business.
- The Hemp Line launches The Hemp Line cosmetics brand.
- Hempro Int. becomes licence partner of the PURE brand for bags and accessories.

2003
- Hempro Int. strengthens distribution of clothing and textiles in Germany and Europe.
- MH medical hemp GmbH is founded in Berlin for the distribution of CBD products.

2004
- Hempro Int. strengthens distribution of clothing and textiles in Germany and Europe.
- Hanf Farm develops and builds the MultiCombine HC 3400 hemp harvester.

2005
- Hempro Int. launches food products under the HANF FARM brand.

2007
- Rebecca Kruse joins Hemp Factory GmbH.
- Hempro Int. launches its own The Hemp Line brand of clothing.

2008
- Hempro Int. launches The Hemp Line brand underwear collection.

2009
- Hempro Int. acquires the HANF FARM brand.

2014
- Existing organic farming operations come under the Hanf Farm GmbH name.

2015
- Rebecca Kruse joins the management board of Hempro Int. as Co-CEO

2017
- Hempro Int. is certified according to HACCP, ISO 9001 and GMP+.
- Hemp Factory establishes food and feed production.
- MH medical hemp begins planning of BfM approval and GMP certification.

2018
- Hemp Factory receives HACCP and GMP+ certification.
- MH medical hemp gets a safe room built into its Düsseldorf warehouse.

2019
- Hanf Farm moves operations to Melz, in the state of Mecklenburg-Vorpommern.

2020
- Hanf Farm founds an enterprise for Agricultural and Forestry Operations with up to 1.000 ha.
- Hemp Factory purchases and installs additional oil presses.

2021
- Conversion of Hempro International GmbH & Co. KG into Hempro International GmbH.
- MH medical hemp debuts „Phytalize“ CBD cosmetics line, and launches „Phytalize“ food flavouring preparations.
- MH medical hemp receives GDD certification and narcotics license.
Argentina’s edge

Tradition, climate, latitude and a hemp law on the way

Argentina’s Senate has overwhelmingly approved a law that would establish a regulatory framework for the development of the medical cannabis and industrial hemp sectors.

The proposed law, which backers say could quickly generate 10,000 jobs in the hemp production chain, passed the Senate 56-5 with one abstention. While all signals are positive in Argentina, the legislative progress is moving slowly.

According to the draft bill, “the development of hemp is an excellent productive alternative to diversify and energize the agricultural sector … from large companies as well as small producers and cooperatives of family, peasant and indigenous agriculture.”

Importantly, the law retains an earlier established 0.3% THC limit for hemp at 1.0% THC in hemp plants, meaning more efficient production and expanded imports. If the proposed bill on medical cannabis and hemp production becomes law, companies importing into Argentina will have to compete with domestic players.

Whole-plant exploitation

Proponents envision exploiting the hemp plant for its full range of possibilities — to produce food & drinks, cosmetics, textiles, bio-fuels, paper, bio-plastics, construction materials and animal bedding, suggesting the industry can boost the fortunes of the agricultural sector.

The measure pays particular attention to Argentina’s small farmers, Bertone said.

Those backing the hemp initiative in Argentina have underscored that a national hemp industry can also support the country’s alignment with the United Nations Sustainable Development Goals as well as the Escanvi Agreement, an environmental human rights treaty among the nations of Latin America and the Caribbean.

Litudinal advantage

The Latin American Industrial Hemp Association (LAIHA) also cheered the developments in Argentina. “We are very happy to see Argentina moving forward with this project,” LAIHA President Lorenzo Rolim da Silva told HempToday.

“It presents the largest opportunity for hemp production so far in Latin America, considering that the country has most of its agricultural land at latitudes where hemp varieties most commonly planted in North America and Europe can readily adapt while remaining compliant on THC levels.”

“Like all countries in the region, Argentina is suffering deeply with an economic recession, currency devaluation, so hemp can come as the bearer of good news for the agricultural and industrial sectors,” Rolim da Silva added.

3 million organic hectares

Seventy-five percent of Argentina’s farms are family farms, accounting for 18% of the country’s total 40 million hectares (98 million acres) of arable land, and 27% of total agricultural production. Argentina is a major producer of soybeans, with other agricultural output in wheat, maize, sunflower, corn, cotton, cottonseed, sunflower seed, sugar cane, grapes, pears and apples. Nearly 3 million hectares (7.4 million acres) are farmed organically for sugar cane, fruits, vegetables and beans.

Hemp has a long history in Argentina, which produced the crop for more than a century before the global war on drugs interrupted the industry in the 1970s. Much like in the United States, the government urged farmers to plant hemp in the 1930s in the national interest.

Ecuador: ‘A day that will remain engraved in our memory’

Ecuador has set the stage for development of the country’s hemp industry with the release of regulations from the Ministry of Agriculture that will guide such things as seed production, farming, processing, marketing, export and other links in the hemp production chain, among others.

For Ecuadoran hemp advocates, “Agreement 109,” the 48 pages of detailed rules will be a document to remember.

“Cáñamo Industrial Ecuador, a non-profit agricultural organization, in a tweet, praised “a historic milestone . . . with the signing of Ministerial Agreement 109.”

A new era

The day the regulations were issued “will remain engraved in our memory as the beginning of a new era for agriculture in Ecuador,” Ecuadorian Minister of Mines and Energy, the Ecuadorian Association of Medicinal and Industrial Hemp, said in a statement on its website. The group said the hope hemp production will give a boost to the Ecuadorian economy.

The regulations specify requirements under various categories of licenses, which will be valid for 10 years and can be renewed 90 days in advance of the expiration date.

The Ecuadoran National Assembly cleared the way for the hemp industry when it decriminalized the cultivation and production of cannabis products in September 2019, setting the limit for THC in hemp at 1.0%

Other key regulations:

- The Undersecretariat of Agricultural Production will issue technical standards and protocols for the application of the regulations, and control the industry.
- Producers of industrial products must obtain the corresponding licenses to be able to market in Ecuador and abroad.
- The national agriculture information agency is to create a National Register of Medicinal and Industrial Cannabis in the Ecuador on licenses that have been issued, suspended, revoked or not renewed.
- Importing of hemp seeds must be authorized by the Ministry of Agriculture. Seeds must be used by the importers directly or traded to other authorized parties who will plant them.
- The export of seeds will be regulated under the Organic Law of Agricultural Health. The export of derivatives will be done only by those licensed for that activity.
Political turmoil could set the industry back by up to two years

Aft er much optimism fol lowing developments last year, hemp stakeholders in Brazil have turned sanguine as political turmoil under the Jair Bolsonaro government has all but derailed progress for the present.

“There is no Horizon for cultivation in Brazil under the Bolsonaro Government,” said Lorenzo Rolim da Silva, President at the Latin-American Industrial Hemp Association (LAIHA). Rolim da Silva nonetheless said Brazilians are enthusiastic about cannabinoids.

“For the next two years, we’ll continue to be an import and distribution market only, which is not that bad in the end as the public seems to be learning and enjoying using cannabinoids for therapeutic purposes,” he said. “And that will create a better market for whenever we actually can produce.”

Hopes dashed

Companies in hemp and medical marijuana were optimistic late last year as a proposed law that would have set rules for the two cannabis sectors moved through the legislative process. The bill would authorize the production and marketing of products made from industrial hemp as long as they are not intended for medical use or marketed for “prophylactic, curative or palliative purposes.” It would clear the way for hemp hopes are dashed in Brazil

HempToday Magazine | Q4 2021

84

Hemp hopes are dashed in Brazil

Political turmoil could set the industry back by up to two years

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But hemp’s future looks clouded now. While some observers have suggested that Bolsonaro would open up the market based on a high number of farmers among his supporters, the president is on record “multiple times” as being opposed to cannabis cultivation in any form, Rolim da Silva said.

Current rules already allow for the import and sale of cannabis-derived medicines in three categories: 1. Those registered as pharmaceuticals; 2. Products with “sanitary authorization” which don’t require clinical trials; and 3. “Compassionate use” authorization which lets patients import cannabis products on an individual basis.

Big players move in

Under the proposed law, CBD would be considered “plant medicine,” and therefore relegated to the “sanitary authorization” category, requiring a prescription.

The largest country in South America, Brazil is the fourth biggest pharmaceutical market in the world. Observers say the potential for medical cannabis could surge if the proper legislation is ever enacted. Estimates hold that the sector could reach turnover of $4.7 billion in the next three years.

Several importers have already established beachheads in Brazil, including GW Pharmaceuticals of the UK, which sells its Sativex CBD-based medicine in pharmacies; Colombia’s Clever Leaves and Canopy Growth of Canada are both developing medicinal cannabis products for sale in Brazil. Drug giant Merck announced its entrance into the market last year.

Support for patients

Brazil has several million epileptics and patients with other ailments like autism and chronic pain who could benefit from CBD. Estimates are that 7,000 patients are registered and receiving government-approved CBD oil for medical purposes, but the black market could make that figure much bigger. Under medicine subsidies in Brazil, the government offers generous support to patients. At least one CBD seller estimated it gets as much as half its revenue from such subsidies. From the beginning of Brazil’s colonization until the early 20th century, Brazilians legally cultivated hemp in various regions of the country, as did the government, primarily harvesting for fibers to be used in textiles. Historical documents also show that up until 1932 extracts and other remedies derived from hemp were considered legitimate and recommended by doctors for various ailments. Brazil’s hemp industry led all agriculture sectors in the late 1800s.
Paraguay’s hemp industry is up and running, with hopes it will live up to government expectations as a “crop of national interest,” as decreed by President Mario Abdo Benítez.

The national program supports development and commercialization of industrial hemp and advances research, with emphasis on helping the country’s many small farmers and cooperatives.

The decree, issued last autumn, is a major landmark in the advancement of hemp in Latin America, and probably in the world, according to Lorenzo Rolim da Silva, President of the Latin American Industrial Hemp Association.

“By declaring hemp as a plant of national interest and assuring companies and farmers that hemp will be given priority and be incentivized, Paraguay is taking solid steps towards consolidating itself as a leader in the region,” Rolim da Silva said.

Signaling the pace of developments in the newly opened market, Healthy Grains SA, a Paraguayan maker of superfoods, recently made a first export shipment of hemp-based products to Europe. Paraguay is believed to be only the third country to export hemp seeds into the European Union, which has been importing seeds from Canada and China for several years. Healthy Grains is also exploring other exports markets.

The company last year was approved by Paraguay’s Ministry of Agriculture (MAG) to import 17 seed varieties from Hungary, France, China and the United States, and is studying those varieties.

Healthy Grains, which has a production facility in Nuestra Señora de la Asunción logistics park in the City of Luque, said it is also launching “Hemp Guarani,” a “social seal” that is part of an effort to establish a country brand for hemp from Paraguay.

The government has recognized a seven-member association, the Paraguay Industrial Hemp Chamber (CCIP), and interest is growing among large scale operators reproducing seed for future cultivation.

Not everything has gone smoothly. Paraguayan regulators have suffered criticism. A group of stakeholders earlier this year complained that the country’s hemp program is favoring large business interests to the disadvantage of peasant farmers, in contravention of President Benítez’ decree.

Paraguay’s new rules limit farmers to growing hemp on 2-hectare (~5-acre) plots, but many may be able to raise two crops every 12 months for the production of food, oils, fiber and other raw materials.

Specifically, the hemp decree declares the national program will:

- Promote the benefits of hemp and facilitate diversification in production among cooperatives and associations.
- Generate greater added value with appropriate technology.
- Ensure quality control.
- Coordinate supplementary regulations and recommendations for such things as phytosanitary and biosafety issues related to hemp cultivation.
- Promote the introduction and registration of varieties of cannabis in the National Register of Commercial Cultivars (RNCC), commercialize and manage quality control of seeds.
- Develop strategic alliances with companies, associations and others, establish cooperation agreements with national and international entities, and set strate-
Latin America

Agriculture booming

A boom in agricultural commod-
ity prices and sound macroeconomic
policies have led Paraguay to an aver-
gage growth rate of 7.6 percent in the
past 15 years. While transitioning canna-
bis to a legitimate industry has had a
positive effect on Paraguay’s economy, the
crop faces major challenges along the
way. Well known for its cotton production,
the country’s growing soy fields,
between 85 percent of eastern Paraguay,
but it is also becoming one of the
most important export throughout much of
the world. Known for its forests,
which are 75% of the
population owns about 75% of the
land, are reported to be selling
their land for use as farm
space, which poses a
problem for environmental
proponents say hemp can be a sustainable
replacement for both.

General investment picture

With a reputation for government
corruption, private foreign invest-
ment is considered rare and risky
in Paraguay. Until recently, the
infrastructure has hindered the growth
of the industrial sector, but low labor
costs have prompted some U.S. and
Latin American companies to move their factories
to Paraguay nonetheless.

In 2016, a report by the European
Union indicated that the trading bloc
saw that the effort of entering business in
Paraguay was both necessary and
advantageous, and funds were issued
for agriculture, food security and
environmental projects. Much of
the current EU funding to Paraguay fo-
cuses on improving the sustainability
of cattle farming and beef exports.

The United States is one of the
largest foreign direct investors
in Paraguay. More than a dozen U.S.
international firms in the country,
agro-industrial, telecom, banking,
and retail sectors.

Supporters have cited studies
that claim that 100,000 hectares (~250,000 acres) could create 40,000-50,000
sustainable jobs, bringing better
housing, banking and insurance
and retail sectors.

Gonzalez said the issuing of first-ever medical
licences in February 2020 and
recent approval of personal cannabis
cultivation for therapeutic purposes
mark positive steps toward legitimizing
for the industry. The elevation of hemp
is only the latest step forward by the
government.

Incursion of soy

Meanwhile, large landholders in
Paraguay are pushing back against
the government’s plan to allow the
population owns about 75% of the
land, are reported to be selling
their land for use as farm
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Cotton proponent says development
has brought jobs along with income
cotton. But, cotton, an economic mainstay
of low- and middle-income countries
around the globe, is a notoriously
unsustainable crop, requiring exces-
sive amounts of water, more than half of
global cotton production – 85 percen-
takes place in areas under high or extreme water stress, according
to data compiled by the World Resources
Institute. And cotton cultivation
currently uses 4 percent of all world
water needs and 10 percent of elect-
tries, according to the Institute.

While the soy and cotton sectors ar-
ge among their strategies offering
way forward for agriculture in Paraguay,
critics argue the development
comes at too high a social cost. Nearly
half of Paraguay’s population relies
upon subsistence farming. Mecha-
nized farming equipment puts many
farmers out of work, some say, critics,
while others worry about the envi-
ronmental and economic impact of
monocropping soy and cotton. Pro-
ponents say hemp can be a sustainable
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Optimistic projections

Proponents see economic benefits not
only from hemp farming and processing,
but noted knock-on potential commercial
benefits, including additional
banking, insurance and retailing
sectors.

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High-tech hemp for textiles
Doubling down in China's Heilongjiang Province

A single county in China's Heilongjiang Province expects to harvest hemp from 40,000 acres (~16,200 hectares) in 2021 as the government increases its support for development of high-tech solutions in the world's capital of hemp textile production.

Heilongjiang is a key region for the hemp industry in China, with a large number of initiatives in cultivation, textiles, and a wide range of applications for hemp-based products. The province has grown to be a major supplier of hemp products to the global market.

Key developments
- The county: Expanded its field of large-scale precision plantations, unmanned plant protection, and precision harvesting systems. The county is currently testing new techniques for increasing yield and sustainability.
- The hemp: Heilongjiang hemp is known for its high-quality fiber and is used in high-tech textile production.

International cooperation
- A comprehensive research program involving universities from Heilongjiang Province and partners from the United States and Canada is developing high-yield hemp varieties, optimizing combine harvesters for stalks and seeds, and introducing biotech methods that allow production of hemp textile fibers in an environmentally friendly and sustainable manner.

Major CBD supplier
- The provincial government has been working on establishing a hemp-based ready-made food industry, with plans to launch products this year. The province is also working on developing new foods, beverages, supplements, and health & beauty products containing hemp.

Chinese giants form hemp association in Yunnan province

Fourteen major Chinese hemp companies have joined to form a new association to establish hemp operations in the province, with a focus on robust R&D and development of the hemp fiber sector.
- The new association aims to strengthen Yunnan's hemp industry amid rising international competition by developing self-regulation and industry policy while serving as a forum for the exchange of information and know-how among members, the association said.
- In addition to the 15 founding members, led by Yunnan Industrial Hemp Industry Investment Co., Ltd., 50 additional companies joined the association as members at its inception, marked by a recent ceremony in Kunming, the provincial capital.

Robust R&D
- The province has expanded its fleet of large-scale precision planters, unmanned plant protection, and precision harvesters, changing from a field-to-shelf industrial supply chain.
- Qiqing County officials say 6,600 acres (~2,600 hectares) of hemp were planted for research purposes alone in the county this year.
- Heilongjiang Province accounts for half of the world's production of hemp fiber, and Qiqing County makes 70% of that output; all hemp yarns exported from Heilongjiang Province come from Qiqing, according to provincial officials.

Thai authorities hope to move tobacco farmers to hemp

Thai companies have signaled their plans for hemp, with CP Foods launching a hemp-based ready-made food company.
- Meanwhile, Thai companies have signaled their plans for hemp, with CP Foods, a subsidiary of Charoen Pokphand Group, launching a hemp-based ready-made food company.
- The parent company operates across a wide range of industrial and service sectors in eight business lines, and has investments in 21 countries.

Legal considerations
- Another leading Thai company, publicly traded DOD Biotech, said it is developing supplements and skincare products with hemp, partnering with leading retailers including Robinson International Beauty Community, and 555 Shopping Company. Manufacturers in Thailand can produce hemp seed protein powder with a maximum THC limit of 2mg/kg and CBD at 3mg/kg per permitted under the rules.

Drones spray fertilizer on Chinese hemp crops

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In Japan, ‘a whole lot of room to fill’

INTERVIEW: Yosuke Koga is Director at Japanese hemp company Prossimo, which is developing a broad portfolio of hemp-derived products and recently embarked on retail operations in CBD and hemp footwear. An entrepreneur and researcher, Koga previously worked for Natomo Hospital in an initiative to introduce cannabinoid therapy in Japanese medical society. He is also Editor in Chief of HempToday Japan.

HempToday: There seems to be some recent movement on cannabis issues in Japan. What does the current landscape look like?

Yosuke Koga: First of all, Japan is an extremely conservative and bureaucratic society. Drastic social change regarding such things as cannabis requires a lot of time and work. There’s some schizophrenia right now. First, thanks to the internet, interest in cannabis and hemp is growing rapidly because people are becoming aware that any kind of product containing hemp can do in terms of sustainability.

HT: Which are the most promising sectors for hemp products in Japan? How do you expect the introduction of hemp-based products to proceed?

YK: It depends on what time frame you are talking about. CBD is the king so far, but other sectors will rise soon. We expect there will be a huge demand for bio-based plastic and natural fibers. Unfortunately we are the second largest plastic waste producer in the world. We love plastic too much, and we are facing the consequences of our actions. That can be said about fiber as well. Japanese are fashion animals. We are responsible for a whopping 1 million tons of annual fashion waste. Our fashion industry is facing a big challenge in switching from cotton to materials with lower environmental impact.

HT: What can you say about the status of CBD in Japan?

YK: Of course CBD is leading all hemp sectors, and the market will continue to grow. A few years ago there was only a handful of CBD brands in the Japanese market. Now there are more than 100. Introducing CBD into cosmetics, food and beverages has just started. There is a whole lot of room to fill, with no doubt. But due to the lack of well established regulations, the future of the CBD business in Japan is a bit uncertain. At Prossimo, we’re mitigating risk by not depending on CBD sales too much. Still, we need to keep raising awareness about the CBD sector, and that is the reason why we started our CBD bar.

HT: How does hemp figure in Japan’s goals for the environment?

YK: Both consumers and industries don’t yet know what hemp can do in terms of sustainability. Japan is way behind the rest of the world in dealing with environmental issues. The government has just become aware that any kind of product development doesn’t make sense without Sustainable Development Goals in mind. Here’s the most promising signal: We are getting more and more inquiries from industries such as construction and textiles about how to switch their materials from petroleum-based sources to hemp.

Recently China stopped importing plastic waste from Japan. We are not capable of recycling all of that plastic waste, so we are simply burning 70% of it now. Bio-plastic with a low carbon footprint will be much needed throughout the society sooner or later.

HT: Prossimo seems to be looking into all things hemp. Tell us how the company got its start.

YK: We are strong believers in a “media first” strategy. We joined the HempToday franchise in 2013. The strategy was to provide hemp related information in Japanese in order to educate and bring in stakeholders from other industries that can use hemp. We believe that’s the foundation for expanding the hemp industry overall, and that’s been our goal from the very beginning. Our strategy put us into a unique position as the hub for the industry, and started a constant flow of inquiries and interesting contacts. We have been running the media for three years, and established great relationships with people in the industry. Now we have entered the retail and wholesale business with their support.

HT: What’s the next big thing for Prossimo? What is front-and-center with you now in your role as Director?

YK: Generally, we are building out a broad portfolio, from raw material to final products such as CBD and hemp shoes. As hobbies, our most recent ventures. Prossimo is getting serious inquiries about sustainability and hemp fiber from some major apparel companies, so we are searching the possibilities there. At the moment, running the Bohempia channel is more smoothly is also a major priority. We will continue to move up the supply chain, and connect companies and people inside and outside of the hemp industry, and making hemp the Green Gold. As soon as the COVID-19 lockdown is lifted, we will team up with fashion designers and material manufacturers to help develop new products.

In Pakistan, the hemp industry is still in its infancy. However, there is growing interest in the potential of hemp as a sustainable agricultural crop. The government is taking steps to promote hemp cultivation and its value-added products, with the aim of creating jobs and reducing dependence on traditional crops like cotton. The recent progress in hemp research and development is a positive sign, and it is hoped that the future will bring more opportunities for the Pakistani hemp industry.

Science & Technology

Minister Fawad Chaudhry

HempToday: Pakistan sees a hemp future in high-tech farms, biotechnology

Hemp can play a key role in Pakistan’s future, which depends on the development of the technology and biotechnology sectors, according to Federal Minister for Science and Technology Fawad Chaudhry. The government envisions high-tech farms focusing on non-traditional agriculture including hemp-generating plants, which can be a replacement crop for cotton in Pakistan’s textile industry, and has said it hopes to capitalize on CBD production and by turning hemp fiber residue into bio-energy.

In government efforts to revive manufacturing, “it is important to keep an eye on technological advancements besides observing which businesses have a good scope in the market and which are getting obsolete,” Chaudhry said recently in comments marking the launch of a new app and website for the Lahore Chamber of Commerce.

$1 billion market?

Pakistan approved hemp farming and processing under government control last September, suggesting the sector could result in a $1 billion market over the next three years. Farms for cannabis production are being established in Jhelum, Peshawar, Chakwal and Islamabad.

The government has said hemp can be a sustainable replacement for cotton production, which is in decline in Pakistan; the country was once the fourth biggest cotton producer in the world behind China, India and the USA, and the world’s largest exporter of cotton yarn. Pakistan’s farmers are shifting from cotton to other crops due to low prices and a lack of high-quality seed. Growing hemp for textiles is an obvious alternative, the government suggested.

A first hemp license in Pakistan has already been given to Ministry of Science and Technology and the Pakistan Council of Science and Industrial Research (PCSIR) to analyze such things as local cultivars, plant chemistry, and industrial applications.

“Things can’t really move forward unless proper rules are defined,” said Muhammad Aslam, an adviser to the Pakistani government, and a director at Medico Laboratories Pvt. Ltd., Karachi, a producer of herbs and nutraceuticals.

With the obvious first business being in CBD imports to Pakistan, Qayyum said for that to happen:

“Ministry of Narcotics must remove the word ‘hemp’ from definition of ‘narcotics’ or define separately as ‘industrial hemp’.

CBD must be declared a non-controlled substance or given permission for import under specific conditions, and customs informed that CBD is not a controlled substance.

Specific rules for the import of CBD need to be established.

The Drug Regulatory Authority of Pakistan must give market authorization for CBD products either as a pharmaceutical, herbal or nutraceutical product.

Investor signals

Not much progress is reported yet regarding role making needed to set up the hemp industry in Pakistan, where such processes tend to unfold slowly. Nonetheless, key strategic license PCSIR likely already is moving forward asking for expressions of interest from the private sector. And foreign companies are already taking notice of developments in Pakistan.

One early move is Australia-based nutraceuticals maker Cresco Pharma Ltd., which recently announced a distribution agreement with Route2Pharm Pvt Ltd, Lahore. Route2Pharm is reported to be pushing hard for approval of CBD in Pakistan itself, but the company’s agreement with Cresco goes beyond Pakistan to include Cambodia, Afghanistan, Azerbaijan, Bangladesh, Georgia, the Maldives, Myanmar, Tajikistan, Turkmenistan, Uzbekistan and Vietnam – markets totaling a population of 750 million.

Pakistani Prime Minister Imran Khan’s government has pushed for development of a cannabis industry to improve Pakistan’s foreign exchange position amid the country’s economic challenges.
Pakistan mills begin production of hemp/cotton fabrics

*HempToday* Magazine | Q4 2021

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A Tasmanian hemp farmer destroyed his entire hemp crop after seeds he planted from China went beyond Australia's legal THC limit of 1.0%. Farmer Tim Schmidt said the plants expressed 1.5% THC, a much higher limit. The same variety of seeds planted by the company last year produced plants within the 1.0% THC limit, said Ronald Chung, a consultant assisting Schmidt. Chung said weather and genetics may have played a role in the plants exceeding the limit. Schmit, who is also President of the Tasmanian Hemp Association, estimated his losses at about A$100,000 ($3,400).

Shenzhen Datong introduces diapers from hemp paper

China's Shenzhen Datong (Datong) has developed a range of diaper and feminine hygiene products as the company gears up a full industrial supply chain for hemp paper based production. Datong debuted the new products at the recently held 21st CBME Maternity, Infant and Child Exhibition.

The products were developed at Datong's research institute where applications for hemp textiles, CBD and other hemp-based products are being studied. Shenzhen Datong has established production operations and extensive sales networks to market its products and services. The vertically integrated company has divisions for cultivation, extraction and research & development in addition to its several lines of production.

Datong also makes functional skin care products, pet products, health foods, functional foods and beverages, and offers hemp genetics for medicine and food. The company launched a series of CBD-based cosmetics last October. Its textile division makes hemp towels, T-shirts, underwear, socks and golf attire.

**Indonesia's BOHECO to supply food, fabric to Australia's SSA**

Bendigo Hemp Company (BOHECO) of India will be an exclusive supplier of its products to Spring Sciences Australia Pty. Ltd. (SSA) under a cooperation agreement.

BOHECO products will be marketed under the SSA brand, and the partners are to explore establishing an R&D platform to make new products for both the consumer and pharmaceutical markets, the companies said. The deal also involves BOHECO's hemp-based textiles, SSA, part of the Michigan, U.S.-based Spring Sciences Group, said it is licensed by Australia's Office of Drug Control to cultivate and manufacture medicinal cannabis products, and is working to establish a network of medicinal cannabis growing and manufacturing facilities in Queensland, Australia.

BOHECO makes hemp hearts, hempseed oil, and hemp protein powder, as well as hemp fabrics and a clothing line.

**Chinese foodmaker says it has 'elevated' CBD extraction tech**

Chinese foodmaker Chenguang Biotech Group Co., Ltd. said it has reached elevated extraction yield levels that give the company a significant edge in the production of CBD, allowing it to make margin-friendly products. Chenguang claims output from its extraction operations is significantly greater than that of its peers, leading to cost advantages that are allowing the company maintain sound profitability despite what it calls an industry-wide drop in CBD prices. Chenguang said CBD has dropped in price from ~$6,000 per kilogram to ~$1,000 in the past 18 months. Further planned expansion is expected to lead to even greater efficiency gains, the company said. Long-term investment in raw materials research, and internal development of core plant extraction technology give the company a decided edge in global markets, where Chenguang has experience in overseas factory management. The company said it maintains robust monitoring of hemp markets around the world, and continually tracks regulatory policies.
Master Plan follows the government’s industrial strategy to develop public-private partnerships

South Africa could have a hemp program in place by 2023 under the country’s draft National Cannabis Master Plan (NCMP), which sees the plant as a potential economic driver that can lift up small-scale growers from poverty-stricken areas of the country.

The much anticipated plan follows a number of studies going back two decades in South Africa that showed the domestic cannabis industries can thrive if current legal restrictions can be amended or removed altogether.

Landmarks

The release of the NCMP follows the government’s rescheduling of CBD and THC in May 2020 through the amendment of previous drug laws, and exemption of industrial hemp from medical control under a relatively low 0.2% THC guideline. Those changes came after a landmark Constitutional Court judgment in September 2018 that ruled the use, possession and cultivation of cannabis (can have) a net-positive impact on the country by potentially creating new jobs,” the plan says. The government estimates that the cannabis industries can create up to 25,000 jobs and generate $1.9 billion in revenue per year.

“Enterprising suppliers and other stakeholders are important in terms of ensuring sustainable growth and development of the cannabis industry,” the plan suggests, envisioning the formation of cooperatives of small farmers that can participate in the larger cannabis value chain.

Market potential

With current net imports, South Africa is a proven market for hemp products, the plan notes, suggesting the growing demand for locally-produced hemp products can be met by domestic companies on a lower cost structure, which can also enhance the country’s export possibilities.

But the legal status of hemp needs to be sorted out in order to unlock the full potential of the industry, the plan says, calling on government departments to enact amendments to existing laws that prohibit hemp production.

“It is important to establish a new legal regime that must be clear to the general public, industry stakeholders and law enforcement agencies, with enforceable rules” the plan suggests. “This includes amendments to existing legislation by removing existing constraints that are hindering commercialization.”

The plan also admits other challenges, including the lack of manufacturing capacity, limited investment in R&D, and a highly fragmented market. Historical barriers are also highlighted as a big challenge within the South African context, as well as, according to the government, the “thousands of tables by previous legislation”.

The master plan has only started the public participation phase, it is hoped that with further public participation, the NCMP will be even more progressive and the government will emerge as a key entity in the South African cannabis industry.

— With reporting by Arne Verhoef

Pillars of South Africa’s Cannabis Master Plan

Among other key considerations, South Africa’s National Cannabis Master Plan calls for:

• Communicating a clear and unambiguous message about the cannabis industry and related matters to all stakeholders and the general public.

• Investment from the government, state-owned companies and the private sector in manufacturing facilities for food, medicine, beverages and other value-added products.

• Support for research and development through the Indigenous Knowledge- (IK) based Bio-Innovation Programme, which comprises science councils, universities, partner government departments, traditional health practitioners and rural co-operatives.

• Establishment of incentive programs and other support from government departments and financial institutions, including grants, soft loans and blended financial instruments to support growth and development.

• Establishment of formal and informal training in cannabis cultivation practices, manufacturing, product development, marketing and other related skills.

• Setting up Master Plan Task Teams which will be responsible for implementation of various aspects of the NCMP.

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The government has even hinted at the “threat of takeover by big corporates” and the “threat of taking out small farmers that can participate in the South African cannabis value chain.”

The master plan sets out eight pillars necessary to support the emerging legal cannabis economy, and serves as the framework for a legislative initiative covering both industrial hemp and marijuana under oversight of the Department of Agriculture, Land Reform and Rural Development.

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• Investment from the government, state-owned companies and the private sector in manufacturing facilities for food, medicine, beverages and other value-added products.

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— With reporting by Arne Verhoef
Africa can build a hemp industry based on locally owned and operated supply chains, but the continent’s many diverse nations need expertise and investment from abroad, a newly organized PanAfrican Hemp Association (PHA) has suggested. As governments across the continent expand legalization of cannabis in some form, and investments begin to flow into African cannabis operations, the excitement isn’t all about marijuana, said Malobi Ogbechie, founder and Managing Director of the recently launched association, based in Lagos, Nigeria.

"There’s a lot of expertise and investment reaching out from North America, and there will be close ties to Europe because of the proximity to market and shared time zones,” Ogbechie said. “If Africans are not going to build the industry, someone else is going to. If the diaspora is not going to invest in Africa, someone else will,” said Ogbechie. "Obvi-ously China is dominating the market, so in terms of machinery, seed supply and knowledge, there will be a lot of collabora-tion. We’re not necessarily averse to it."

The new association hopes to build a strong industry framework that’s nimble enough to be able to respond to the diverse needs of Africa’s many, varied markets. “Things work differently in Africa, and each country has its own laws and ways of doing things,” said Ogbechie.

African’s edge
From genetics and farming to processing and innovation, African hemp growers will need a lot of help to get the industry going. But the continent has significant advantages. “We’ve got a lot of land and a lot of good weather,” Ogbechie said. "And the great thing about Africa is that we can skip a lot of steps. We can jump directly to solutions that have been proven to work. This means our industry is going to go from zero to 100 very quickly.”

Development boom
With Africa experiencing an overall development boom – six out of the top 10 leading high growth countries are located on the continent, according to the International Monetary Fund – Ogbechie and others like him see hemp as a tool to develop even faster, but more sustainably.

“It’s the environmental aspects and the versatility of the crop, the fact that it’s sustainable and that a single plant can provide so many end-products. It has the potential to industrially transform economies,” Ogbechie said. Ogbechie said he was seeing the value of formal hemp associations in the UK, Europe and North America that inspired him to start the PHA. “They bring a lot of value to their industries, and we’re going to need similar structures and good organization if we are going to do hemp in Africa,” he said.

But the PHA doesn’t simply want to replicate how others are doing things, or even define itself pre-emptively. “On the one hand we’ve got the structure of an association, but because the association is in its infancy, we want to stay open, we want to stay flexible and we want to under-stand the different needs of countries, and the needs of particular businesses or projects,” said Ogbechie.

International outreach
PHA is hoping to develop relationships in African nations, but also abroad. “We’re looking for international partners and educational institutions, hemp companies, cooperatives and consultants,” Ogbechie said. “We get a lot of requests for technical expertise and guidance and we would love to add them to our database” The young association is already active, holding group chats and hosting webinars as it tries to connect interested parties to potential projects. Ogbechie said the next year will see a push to expand member-ship, which will be offered to anyone with an interest in the African hemp industry. Interested parties can join for free online.

Zimbabwe shifts gears
Government abandons state monopoly to drive investment
Officials in Zimbabwe say changes that loosened rules for cannabis production have translated into initial investment interest from Canada, Germany and Switzerland, as it awarded 57 licenses for medical marijuana and industrial hemp in September 2021.

Scraping regulations that would have put all cannabis under state ownership, the government says, will let private players begin to develop hemp as a replacement for the country’s falling tobacco exports.

“It’s most relevant now considering the threat that the tobacco industry faces and knowing very well that Zimbabwe heav-ily depends on tobacco production,” said Zorodzai Mateveke, who heads the Zim-babwe Industrial Hemp Trust (ZIHT), a development initiative set up to assist farmers in starting up hemp operations, and to look for new export markets for their hemp outputs.

Looking for alternatives
“Our economy has to start looking for alternatives. And I think industrial hemp tops the list,” said Mateveke. “It’s a green crop and there is a lot of social impact in comparison to tobacco. I think in ten years you will see the value chains that will come out of this sector are way more than tobacco.”

Zimbabwe is Africa’s largest tobacco producer, but the country has seen that sector shrink in light of global trends away from smoking. That has contrib-uted to stagnation which has beset the country’s economy for nearly two decades despite the African nation’s vast wealth of natural resources. Tobacco makes up roughly 20% of Zimbabwe’s exports. The government had said it intended to manage Zimbabwe’s hemp industry un-der state ownership when it embarked on hemp trials two years ago. But it has now abandoned that strategy to encourage private investment in hemp and medical marijuana, the only subsectors in which operators can open legal businesses under the country’s cannabis laws.

Licenses and leases
Zimbabwe, which recently began awarding licenses and providing 99-year leases on state-owned farms to kickstart cannabis farming, harvested its first crop of legally cultivated industrial hemp in February 2019 after decriminalizing cannabis growing in 2018. Regulations to guide the industry were released in October 2020. “Zimbabwe has gone a little step further to show that it is willing work with its partners and investors by coming up with an investor agreement which further protects you against anything like expropriation and change or changes in law, which is quite great,” said Timo Kambasha of the Zimbabwe Investment Development Agency.

High risk investments
Despite those policies, businesses operating in Zimbabwe face high legal risks, limited access to international capital markets, foreign currency shortages and significant challenges repatriating profits, according to groups that monitor the investment environment. Such groups also report that market volatility makes most transactions highly time-sensitive, especially those involving domestic currency conversions. High operating costs due to infrastructure gaps, electricity interruptions, onerous taxes and expensive financing costs are also cited as challenges to doing business in Zimbabwe.

Africa
‘We’ve got a lot of land, and a lot of good weather’
**Ghana policymakers call for rules that favor local investors**

P
cilymakers in Ghana should implement hemp rules that favor local investors and farmers under a well-equipped agency that will spearhead production and research into developing the sector, Chinese researchers say in a new paper.

The conclusions were reached in “Industrial hemp as an agricultural crop in Ghana,” a study by researchers from the Zhejiang University of Economics and Law published this month in the Journal of Cannabis Research.

The paper, which looks at the economic prospects of industrial hemp, suggests that the legislation passed last year can pave the way to a new agricultural cash crop for Ghana’s farmers. Notably, the conclusions of the Chinese researchers differ from earlier studies that discounted hemp’s advantages by primarily arguing against the general legalization of all cannabis on narcotics grounds.

**Applications Limited**

Ghana’s Parliament last spring passed a law that legalizes the use of cannabis for health and industrial purposes but gave the country’s Narcotics Control Board (NA- COB) oversight of industrial hemp. The legislation allows for industrial and medical purposes only and draws the line between marijuana and hemp at 0.3% THC.

Applications of industrial hemp such as biofuel and construction might not currently be feasible in Ghana due to technology disadvantages, the report notes, but the country can nevertheless grow hemp as a raw material for export and make some semi-processed products for the domestic market, the report suggests.

While CBD is presumably not legal across the country as the law reads, the report nonetheless suggests that “the legalization and commercialization present a new opportunity for the Ghanaian pharmaceutical industry to research into CBD and possibly produce CBD-related drugs for the local market.” Also, herbal medicine producers should explore the potential of hemp for medicinal and therapeutic products, the report suggests.

**Reviving textiles**

Hemp could also revive Ghana’s flagging textile industry, which has been plagued by over a decade of challenges of large-scale hemp crops for the country’s farmers, agriculture makes the village where the company has its processing facility. The self-contained MC HC 3400, powered by a 50-kw diesel engine, has a ground clearance of 1.60 meters, can lop off plant tops several times during the yearly vegetation cycle, which has had success with some automobile giants such as Volkswagen and Nissan, which have set up assembly plants in Ghana. That kind of development could be replicated in the cannabis industry, the report implies.

Ghana has climatic and soil conditions well suited to the production of industrial hemp. Despite the technological challenges faced by the country’s farmers, agriculture makes up about 20% of Ghana’s GDP.

Established institutions such as the Plant- ing Fund and Jobs program introduced in 2017 to modernize agriculture, create jobs and reduce poverty could serve as the framework for research into development of the cannabis sector.

Ghana should engage in knowhow partnerships with institutions in China, Canada, and the USA that already have experience in hemp production.

**In brief**

Malawi stakeholders envision hemp as leading export crop

Proponents in Malawi have said hemp alone has the potential to surpass earnings from tobacco, the country’s main export crop. “This would certainly help to boost the economy of the country,” MG Health’s CEO.

Malawi’s Parliament approved the Cannabis Regulation Bill in March 2020, legalizing the cultivation, production and marketing of industrial hemp, and setting the allowable THC level at a full 1.0%. The bill was widely backed by legislation who hope it will spur economic growth in the country.

But farmers have struggled with the government over the slow rollout of hemp licenses. One group of farmers, mostly from Mambwa in northern Malawi, say they have invested more than $1.5 million in preparation for hemp farming.

Farmer Martin Kumwenda wondered why an initiative conceived by the government itself was also being hindered by the government. “We were asked by the same government to get organized to grow cannabis. We underwent trainings, paid license fees and got down to prepare land. We are very concerned that government does not mind the time frame that was agreed upon,” Kumwenda said.

Lesotho company says it has license to export to EU states

MG Health said it is the first African company to receive a national license to export cannabis flower, oil and extract as active pharmaceutical ingredients to EU member states after meeting good manufacturing practice (GMP), standardize, GDP, GMP, GSP, GSP, GSP. The company said it has also received inquiries from France, the UK and Australia.

Lesotho’s capital. Nthabiseng Peela, MG Health’s community liaison manager, said the company hopes to eventually increase its workforce to 2,000, which is almost the entire population of the village where the company has its processing facility.

“We are sitting in a rural area where there is hardly any income. More money for the company will create a knock-on effect on the local, tourist and agricultural sector, as we have some products and services from the farmers,” said Andre Botha, MG Health’s CEO.

Lesotho was the first nation in Africa to license the growing of medicinal cannabis in 2017. The crop is widely produced in the country, although cannabis possession and use is illegal.

**Zambia government says two bills can give hemp a kickstart**

The self-contained MC HC 3400, which has a ground clearance of 1.60 meters, can lop off plant tops several times during the yearly vegetation cycle, employing precision double-knife cuts to harvest the whole plant. With the new add-on, plant tops are harvested before being gently carried to the bunker by a conveyor, ensuring loss-free operation that results in pristine raw materials.

The MC HC 3400, powered by a high-performance Deutz engine, is based on Hydro-Trac technology and features a control panel to set various harvesting parameters. This technology is said to save up to 30% of farmers’ time and energy and is designed to make it easier for farmers to become hemp farmers.

The government of Zambia has passed a bill to legalize cannabis for various uses that establishes licensing and regulations for the cultivation and processing of hemp in the country. The bill has been passed by the country’s parliament and awaits presidential signature before it becomes law.

But the bill also sets the THC limit at 0.3%, which is lower than the limit set by the European Union. The bill does not address the issue of hemp for medicinal and therapeutic purposes only, and draws the line between hemp for scientific and research purposes. The government has also established the National Board of Cannabis (NACOB) to oversee the cultivation and processing of hemp, and establish the allowable THC level at a full 1.0%. The bill was widely backed by legislation who hope it will spur economic growth in the country.

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‘Dedicated to good practices’

Hemp Farm, which is mainly a hemp food ingredients producer, gets its raw, organically grown plant material primarily from fields in ecologically managed areas near its farming and processing complex in Melb, about 1.5 hours north of Berlin. The company has been certified organic since the very first day in the nineties and stands for absolute transparency in all production steps. All products can be traced back to the field where they were produced.

‘We are totally dedicated to agricultural good practices that demonstrate our commitment to the environment and to humanity in general,’ said Dulon.

**Ghana’s Hemp Farm GmbH has added new technology to its Multi-Combine HC 3400, incorporating a stripper into the highly flexible hemp harvesting ensemble which has been crawling European hemp fields since 2015.**

The new attachment means even greater efficiency for farmers growing hemp plants on a massive scale, incorporating a critical step in the production of seed, leaves and flowers to field operations.

“This is the next logical step in the development of our harvesters,” said Rafael Dulon, Hemp Farm’s CEO, who has been working on solutions for the complicated challenges of large-scale hemp crops for over a decade.

**Multi-cropping combine adds technology that strips plant tops**

The new stripper unit (above); plant tops after being gently carried to the bunker by a conveyor, ensuring loss-free operation that results in pristine raw materials.

The MC HC 3400, powered by a high-performance Deutz engine, is based on Hydro-Trac technology and features a control panel to set various harvesting parameters. This technology is said to save up to 30% of farmers’ time and energy and is designed to make it easier for farmers to become hemp farmers.
Machines & Technology

Mastering the stalk
Portable decorticator finds niche among researchers, builders

Industrial hemp Latvia (IHL) is finding success with its HurdMaster 1000. The Micro Decorticator, recording sales in North America and Europe over the past 12 months as demand for hemp hurd and fiber picks up.

A small-scale processing unit designed by IHL founder and entrepreneur Kristaps Eglitis, the MD 1000 is designed to process stems from conventional hemp stalks. It is intended for farms of 2-5 hectares (about 6-10 acres), small-scale processors, hempcrete self-builders, hempcrete building teachers, researchers programs and innovative entrepreneurs.

Research tool

The machine separates the hemp stalks woody inner core (hurd, shives), from the exterior bast fibers. The resulting hurd can be further processed for a wide, variety of applications, from insulation to textiles.

Eglitis has already sold a number of machines in the USA, most recently shipping a unit to Cornell University, home to one of the USA's most prestigious hemp research programs. Cornell researchers will use the MD-1000 in their study of fiber processing and applications.

Eglitis designed the HurdMaster with help from a student at Latvian Technical University after intense research on decortication technology. He eventually brought an old decorticating machine and studied its components as a part of the design process.

IHL is collaborating with Peruza, a leading maker of technology for fish processing, developing engineering enhancements that will reduce the HurdMaster's weight while boosting efficiency.

Separator in works

The partners are also working on a separator that will sort the hurd from the fiber, which is expected to be ready soon.

The current (third) iteration of the HurdMaster MD 1000 features several upgrades that result in better quality shives, cleaner fibers and increased capacity:
• An upgraded, rugged grinding process to make the machine capable of processing green stalks.
• Boosted engine power, thereby increasing throughput volume.
• Anti-"twining" technology that prevents fibers getting caught in the roller mechanism.

The HurdMaster MD 1000 is the smallest possible machine that can process 50 kg of hemp stalks into: 10 kg hurd/hr; 10 kg fiber/hr; 10 kg waste/hr; hurd 5-30mm long for hempcrete, animal bedding and plant bedding.

Technology that goes for the bud
German flower harvester surpasses €1 million mark in sales

Germany's HHH Hemp Harvesting Technology (HHH) surpassed €1 million in sales in its first full year on the market, finding customers abroad in Canada, the United States, South Africa, Lesotho and Uruguay. As of mid-September, the company had shipped 25 units of the specialized HHH-700 harvesting patented technology that renders flowers as if they were hand-picked.

In Europe, HHH has sold units in Germany, Austria, Switzerland and Slovenia. The company addressed demand last year in the U.S. and Canada, where it signed on North American distribution partner Cultifarms, Vancouver Island, British Columbia. HHH has also picked up sales representation for Uruguay and Paraguay, and is pursuing arrangements to serve other Latin American and African markets.

Slashes costs

The HHH-700 cannabis flower stripper, which can drastically reduce costs compared to traditional hand harvesting, is being taken up by both growers in CBD hemp and marijuana, said Heinrich Wieker, CEO at HHH and the developer of the harvester.

Wieker said cost analysis of field work proved the company's HHH-700 model reduced labor costs by 73%, and trimmed work staff from 15 to only 4 workers required to run the harvester in "semi-stationary" harvesting. The data is based on field work in which a team of operators collect and then hand feed bushy plant stalks into the harvester's stripper mechanism as a tractor moves the unit from one spot to the next.

Highly flexible

Highly flexible, the HHH-700 can also operate stationary in farm buildings for indoor and greenhouse growers, and can be front-mounted to a tractor to collect flowers from conventionally planted, straight-stem industrial hemp varieties while running through the field.

The machine gently detaches cannabis flowers from the stalk and stems by a patented stripping mechanism. The flowers can be collected in a bag or container. In field operation mode for harvesting traditional hemp plants, 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.

"With industrial hemp we were like 20 times faster than hand harvesting," Wieker said of the technology's performance in hemp fields last autumn. "With the bushy marijuana plants, it's 12 times faster."

Designed to be efficient for conventionally planted fields as small as 5 hectares (12.3 acres), the standard single-unit HHH-700 can harvest 4-5 hectares (9.8-12.3 acres) per day. But the harvesting ensemble is modular, expandable up to three units that proportionally increase the harvesting capacity.

Award-winning technology

Four years in research, development and production, the HHH-700 has an aluminum frame and rollers for weight reduction, and stainless steel components such as chains and other flower-contacting parts for pharmacy- and food-grade yields.

Wieker, an engineer, started developing the machine after observing the laborious process of hand harvesting hemp flowers during a visit to the Czech Republic in 2015. That visit left him not only "fascinated with the possibilities of hemp" — but with the realization that hemp's expansion is inhibited by the lack of a suitable harvester for small and medium size farms.

The HHH-700 was named winner of the European Industrial Hemp Association's "Hemp Product of the Year" competition in June 2020.
T
toronto-based CannaSystems Can-
ada Inc. is offering its R-2 hemp

decortication system to 10 initial

It has developed, steadily, through a number of full-scale

The Kadamba has a semi-mobile design and is designed

The Kadamba is equipped with a high-cube shipping container

Kadamba is also equipped with a high-cube shipping container

Alliance partnerships

To maximize the R-2's operation, Greer said CannaSystems will join its units to the door and work closely with those customers under its Alliance program, monitoring their experiences and the machines' performance. Input from these partners will be used to make any needed refinements to the machine. Any upgrades made will be offered to all Alliance members at cost.

"We have done extensive testing with our prototype and found that it works very well," Greer said. "However, there will be situations not foreseen, given that we could not possibly test for every strain of hemp or every planting or harvesting process."

Alliance members also get dealer-priced discounts of 30% on their purchases, paying just $225,000, and receive continued dealer pricing for any future purchases. "This automatically puts our Alliance members in a good position to be partners in our global expansion," Greer said.

Bringing IP together

Design of the R-2 decorticator, which has been six years in research and development, is based partly on processing machines built for other crops, such as banana, pineapple, sisal and palm. The design also incorporates patents on hemp processing technology from the mid-20th century which were updated with modern CAD design and material specifications.

"Advances made over the past 70 years are significant when it comes to building farm equipment to handle hemp crops," Greer said. CannaSystems has exploited those advances through existing patents while developing intellectual property in house for new manufacturing and "green" processes for key markets.

The company built prototypes and full-scale machine heads last year and assembled and tested a complete full-scale R-2 system. After a round of upgrades and the addition of an integrated bale unwinder, the R-2 reached the commercial production stage, and can be fully functional upon delivery, Greer said.

Hit the critical mass

CannaSystems was founded in 2015 by cannabis industry veteran Bruce Ryan, Founder, and Ron Larsson, CFO, a corporate finance executive who worked at PriceWaterhouse and Manulife, and held the position of CFO for X-Prize and ebay. Ryan and Larsson continue to be investors in hemp businesses.

The company has been self-financed through six years of research and development. Greer said early attempts to raise small amounts of seed money proved unsuccessful. While the company is in talks with potential investors and entertain qualified potential partners, CannaSystems has now reached a "critical mass," Greer said, based on the technology’s readiness and eager, well-defined markets for fiber and hurd. That means CannaSystems will continue to develop between a conventional single-sickle mower adapted for hemp stalks — which means further processing is required — and industrial scale double-cut harvesters that sell for more than $1 million. "We believe there has been some pent up interest in hemp fiber, but barriers to entry, mainly cost, have made it challenging for things to get started," Diusoph said.

Parts and service

Under Forever Green's agreement with Laumetris, the Canadian company will also provide parts and maintenance support, while the machines will continue to be made in Lithuania. Depending on location and method of transport, Diusoph estimates average delivery time of three months for the harvesting units. Forever Green comes from a second-generation family farm operation in Vaudheeld, British Columbia, in the Bulkyway, forestry, mining and agricultural area.

"We appreciate Forever Green's vertical integration approach to the hemp supply chain and their hands-on experience in field preparation of hemp to meet the needs of processing mills," Taurius Puska, Export Executive at Laumetris, said of the partnership.

Laumetris, founded in 1993, specializes in manufacturing small agricultural machines including strip till drills, cultivators, transportation and spraying equipment, with customers worldwide. Laumetris also makes the K-15 Hemp Harvesting System, a cannabis flower harvester.
Family farmers at UAB Hemp Spot, a Lithuanian hemp agribusiness, have developed two solutions for large-scale flower harvesting, with options starting at €16,000 (~$18,900).

That’s the price tag for the 3.5m (11’5”) FEROMOTO header, which can be attached to small and medium-sized tractors outfitted with hydraulic front-mounted lifts for a conventional setup in which a second driver pulls a bunker alongside the harvesting ensemble. The harvester can cover 1.0-1.5 hectares (~2.5-3.7 acres) per hour.

Further processing through a separator the company has also developed (about €37,000/~$44,000) results in consistent biomass, a key factor in harvesting hemp flowers for CBD and other extracts, said Audrius Karnisauskas, Hemp Spot’s CEO.

Goal: Consistent biomass

“When you look at hemp biomass, it varies greatly between producers in terms of fraction size, moisture, consistency and overall quality,” Karnisauskas said. Hemp Spot’s technology overcomes that challenge, he added.

Combining Hemp Spot’s harvester and separator with a belt-driven dryer, completes a full processing system that yields food- and feed-grade seed along with the hemp flowers.

Hemp Spot began building the customized 3.5m header last winter, and put the technology on the market this year.

Hemp Spot also offers a bigger, self-contained hemp harvester it has engineered by stripping down sugar beet harvesting technology made by German farm equipment maker Holmer and pairing it with a front-mounted header from UK-based Shelbourne-Reynolds. With a cutting width of 5 meters (~16’5”), and a harvesting rate of 2 ha (~5 acres) per hour, that combine sells for roughly €153,000 to upwards of €708,000 ($180,000-$835,000), depending on whether the Holmer unit is used or new.

Key advantages of the Holmer-Shelbourne combine include its weight and durability, a powerful 420 horsepower engine, ample clearance height, an oversize bunker which can quickly be unloaded, and cockpit positioning that gives the driver a clear view of the plant tops. Most importantly, the harvester, with adjustable cutting height ranging from 30cm to 4m (1-13 feet), can be operated by one man, reducing harvesting costs.

Mother of invention

Hemp Spot started tinkering with hemp harvesting technology six years ago, strictly out of need: “Even though hemp has been cultivated in Lithuania for thousands of years, when we started there was not much information on how to grow and harvest hemp on an industrial scale,” said Karnisauskas. “There was literally no equipment dedicated to hemp, so we rented various equipment that we thought might work. It didn’t.”

Based in Rudiškiai, Lithuania, Hemp Spot farms 110 ha of hemp on its own fields and contracts another 100 ha from local farmers whom it supports with seed procurement, field preparation and harvesting. While the company has primarily been farming Futura 75 and Santhica 70, French hemp strains, Karnisauskas said the company is constantly test planting other cultivars.

Despite its relatively small land mass in comparison to other European countries, Lithuania is the second largest hemp growing country in the EU behind France, with hemp fields totaling about 9,000 ha (~22,000 acres).
Belgian custom equipment maker Hyler BV has introduced a new hemp harvester that gives flax farmers an additional crop option while signaling the rebirth of hemp textiles. And with additional components designed for the machine, the Sativa 200, growers can also collect leftover cut straw and plant tops in a quick-change 17-cubic-meter bunker mounted on the back of the unit.

It's the first hemp-focused technology from Wielsbeke, Belgium-based Hyler, which already has two flax harvesting models and a square baler in its portfolio.

Option for flax growers

"Farmers who grow flax are very interested in hemp as an additional crop to spread their risk in cultivation and marketing," said Niels Baert, Hyler's founder and owner. "However, until now there were no machines to harvest hemp fiber in separated swaths efficiently, to parallelize the top section of the stalk and the foot separately on the field."

The new technology, priced at roughly €300,000, can harvest up to two hectares per hour, a pace similar to flax harvesters.

Based on the engineering fundamentals of Hyler's flax harvesters, the Sativa 200 can cut down hemp plants 1.4-3.0-meters in height, swath length can be adjusted to between 0.6-1.3 meters. Onboard controls let the machine's operator lay the hemp straw in perfect parallel rows for efficient processing in the next stages. The final straw lengths match standards used in flax processing, a factor critical to making the Sativa 200 attractive to flax growers, Baert said.

Speedy development

The new harvester was developed by Hyler from scratch in six months, working with technology partner Bosch Rexroth NV on the programming. Bosch Rexroth also supported development of the software behind Hyler's flax machines. The development team behind the Sativa 200 brings 11 patents and more than 40 years combined knowledge and experience in building fiber harvesting and processing solutions. Baert said Hyler also established partnerships with leading suppliers and research institutions in its mission to provide an added-value hemp harvesting solution for its clients.

In addition to technology development, Hyler puts a strong emphasis on after-sales service and fine tuning of the machines it sells, working closely with customers to make sure its harvesters operate at maximum efficiency and meet individual client needs.

Hyler sold its first Sativa 200, a prototype, to French linen co-op Linière Du Nord De Caen, after demonstrating the machine's ability to process the stalks and lay them down for field retting. Linière Du Nord De Caen, based in Villons-les-Buissons, is among enterprises that make up a thriving flax industry in Normandy, where scutching factories from Bayeux to Dunkirk produce 80% of the world's linen from roughly 150,000 tons of long fibers processed each year. Linière Du Nord De Caen's factory in the commune of Villons-les-Buissons turns out 24,000 tons of flax yarn annually.

Supply chain fit

With a new scutching factory having recently opened in nearby St-Manvieu-Normandie, the Sativa 200 slips perfectly into the already existing local fiber supply chain in Normandy. Local officials say hemp farming and processing of textiles could replace sugar beet production in the region while playing a major role in France's contribution to the wider European Green Deal. Because of the hemp plant's outsized ability to absorb CO2, hemp can be a major factor the European Union's program to develop more sustainable industries, Baert noted.
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