

// **TECH ZONE** // Presented By: 

Bring Your Dream to Greeley — Northern Colorado's Hemp Epicenter

Section compiled by Patricia Miller

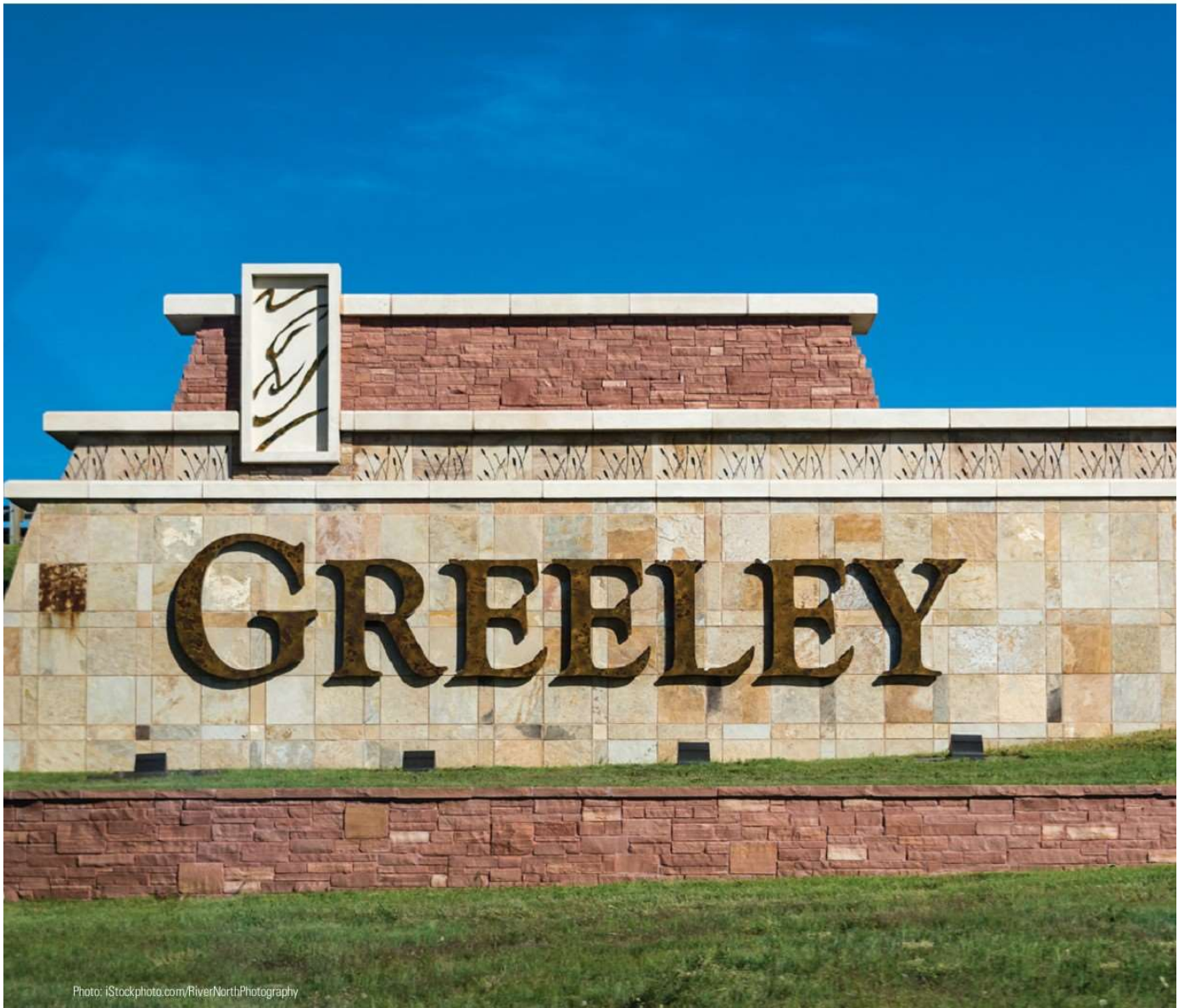


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Driving through Northern Colorado, one can't help but notice the striking contrast between the white-capped mountain ranges towering in the distance and the lush, green fields spanning into the horizon on either side of I-25.

It's a region that in recent years has become synonymous with hemp, thanks in no small part to the annual NoCo Hemp Expo that's been taking place there since 2014. The event is now the world's largest hemp conference and exposition and draws thousands of global visitors to Northern Colorado every year.

Cultivation

It's not the expo that's brought in hemp cultivation, rather it's Northern Colorado's unique pairing of pristine soil, ideal climate, and forward-thinking local governments that offer regional farmers a dreamscape for industrial agriculture.

Nearly a quarter of all industrial hemp produced in Colorado originates from just five counties. Weld, Larimer, Boulder, Morgan, and Adams Counties grow more than 30,000 acres of industrial hemp each year, contributing to Colorado's authority as the leading hemp producer in the United States.

Processing

The abundance of hemp cultivation has drawn a high concentration of hemp processing facilities, culminating to create a rich ecosystem for the entire industrial hemp industry to grow and thrive. Greeley, Colorado is the epicenter for many of these operations and the birthplace of the Colorado Hemp Industries Collaborative (CHIC). The group connects private-sector hemp companies with regional governments to boost industrial development.

Partnerships

Every level of government seems to be involved and supportive of the industrial hemp industry in Northern Colorado. Even Greeley's Mayor John Gates is actively engaged with the sector. "Given our agricultural heritage and strategic location, we see Greeley as a natural fit to lead and support the growing regional hemp ecosystem," boasted Gates.

This ecosystem is heavily supported by CHIC, which offers educational events, networking opportunities, and financial incentives to hemp entrepreneurs in the region. Beyond networking, CHIC offers insight on commercial loan acquisition, insurance, inspections, and real estate development.

Greeley Senior Plans Examiner Matt Wagy is fond of inviting entrepreneurs to, "Bring your dream." He understands that leadership in the area is supportive of hemp and does what it can to ensure the industry isn't burdened with uninformed regulations.

He shares: "We invite hemp project developers to approach us with their plans and we will support their efforts. We treat industrial hemp as just another crop from a compliance perspective." This openness to hemp isn't something one can find all over the country. An open-minded and economically-driven approach to industrial hemp has created a one-of-a-kind ecosystem in which the nascent industry can expand and thrive.

In this issue's Tech Zone, *Cannabis & Tech Today* will dive into the colorful ecosystem of Greeley and explore all the facets of Northern Colorado's emerging industrial hemp industry. Areas of interest include soils and plant genetics, research, farming and cultivation, processing, manufacturing, and marketing and support. ❖

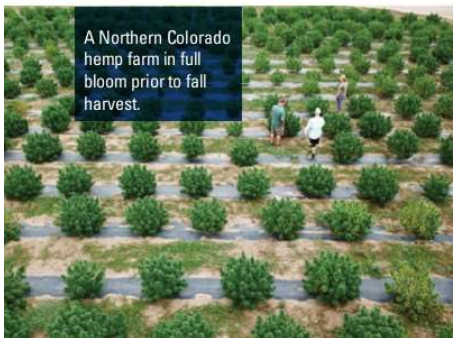


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Soil & Seeds in NoCo's Hemp Hub

Hemp has some incredible properties. Not the least of which is its ability to pull heavy metals and other contaminants from the soil. It's one of few crops that will leave the soil in better shape, albeit lacking some nutrients, than when it was planted.

Further, hemp seed genetics are increasingly important as farmers strive to grow fields with high concentrations of specific cannabinoids, like CBD or CBG. They must also be low in THC or risk destruction by the federal government for exceeding limits set in the 2018 Farm Bill. Northern Colorado is pushing the boundaries of soil and genetics research, propelling the industry into center stage for industrial agriculture.



A Northern Colorado hemp farm in full bloom prior to fall harvest.

game-changing implications for industrial agriculture. HumiSoil supports building humus and stimulating natural biological reactions responsible for organic matter conversion.

Increasing organic matter by just 1% in the soil can save up to 27,000 gallons of water per acre. Many hemp farmers are operating on razor-thin margins when they start out, so cutting costs on water consumption is vital. Marketing Manager Clinton Sander is proud of the work A1 is doing in the region, stating: "Using regenerative methods in farming practices creates a foundation for what's most vital, the soil health."

Soil health is closely linked to the quality and quantity of yields. That's why the NoCo region is also home to soil-testing companies like Soil Sage. The research company is well known in Greeley for their testing services and one-on-one soil consultations.



Living soil is an important part of healthy crops. Here, soil is pictured stockpiled and awaiting relocation.

Soil Science

Healthy plants start with living soils. In Greeley, many farmers are using a unique product known as HumiSoil™, developed by VRM Biologik and A1 Organics. HumiSoil rebuilds topsoil, energizing plant growth and lessening the water required for robust crops. Founded by Duane Wilson in the early 1970s, A1 Organics has been a family-operated business in Northern Colorado for four generations. They've grown from a humble lamb farm to a robust commercial composting operation, recycling more than 425,000 tons of organic material per year.

They're the first company to offer HumiSoil in the United States and the product could have



can assure that our plants are stable for low THC production."

International Hemp Solutions also saw the need for reliable, standardized hemp genetics and launched their diverse brand of services in 2014. They were the first company in the U.S. to import "Farm Bill compliant" industrial hemp seed. They now provide not only AOSCA-certified seed, they're conducting work in hemp R&D, production, propagation, harvesting, processing, manufacturing, and distribution.

The hemp industry is just beginning to find its roots in the U.S., which allows local farms and family-owned businesses to throw their years of farming experience into the newly legalized crop. BD Farming is one of Northern Colorado's family-owned hemp operations, specializing in hand-picked clones that offer a robust cannabinoid profile year-round. Robert Brooks, master grower and co-owner of BD Farming, is now testing CBG and high-count CBD strains for commercial development. ❖



Genetics and the Power of Seeds

Arguably, the second most important asset for a hemp farmer are his or her seeds. Matt Gibbs, founder and CEO of Sunrise Genetics, explained why seeds play such a pivotal role in the industry: "The USDA's 2018 Farm Bill has put the burden of managing THC compliance entirely on farmers — they take the greatest risk and suffer the largest losses if a crop creeps above that arbitrary 0.3% THC level. By screening the DNA of our breeding stock, we

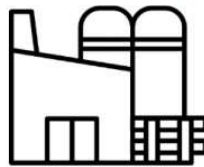


The Agricultural Industrial Revolution is here in Greeley, Colorado's Hemp Production Hub

Greeley's top industries are helping hemp to grow at scale



Energy & Power



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Education & Health

Northern Colorado's Hemp Innovation Ecosystem includes:



1. NoCo Hemp Expo, the world's largest
2. Colorado Hemp Industries Collaborative
3. Aims Community College's Certificate in Hemp and a new AS degree coming
4. CO SBDC's Harnessing Hemp conference
5. Acres USA Magazine's Hemp Summit
6. Colorado State University – Hemp Research & Agricultural Extension

 Counties producing over 2,450 acres of hemp per year (2019)

Let us help you grow your hemp venture here!

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Cultivating Cooperation

NoCo's collaborative attitude spurs innovation in industrial hemp.

Enhanced farming practices, robust yields, and the development of precision genetics wouldn't be possible without research. The Greeley area has embraced collaborative research initiatives, like those produced by New Horizon Agro (NHA) and their Evolving Research Farm. The farm spans more than 500 acres and serves as a cooperative research center. Co-op members can test and research the latest agronomic practices to maximize profitability and yield.

Collaboration Breeds Innovation

Co-Founder of NHA Artie Elmquist shared his inspiration for starting the cooperative: "I got a degree in General Agriculture and graduated from [Colorado State University] in December of '87, came back to the family farm. In 2015, I was invited to my first NoCo Hemp Expo and decided my future didn't lie in traditional agricultural farming.

"Being a lifelong sugar beet grower and understanding and appreciating the value of cooperatives, I concluded what we really needed was to develop, across the United States, a network of hemp cooperatives of farmers — to make it easier for them to be vertically integrated when they market their products."

Elmquist and Co-Founder Roger Bryant are passionate about hemp's potential and eager to provide marketing opportunities for farmers across the country. Elmquist confided that one area he's especially interested in is the development of hemp building materials, particularly a material known as hemp adobe. He explains: "Hemp adobe creates very efficient houses. R80 insulation value but with 65% cost savings to conventional construction... they are very healthy buildings to live in — mold and mildew resistant, fire retardant — just so many great benefits."

The Evolving Research Farm is also focused on creating a sustainable, resilient hemp industry that will influence how the rest of



Hemp spans into the horizon near the base of Colorado's Rocky Mountains. The region's rich agricultural resources provide a welcoming home for the hemp industry.

commercial agriculture operates. Elmquist notes: "The main focus of the research farm will revolve around how we reshape the way agriculture looks. Weld County can become ground zero for ag innovation."

He explained that hemp allows farmers to collaborate intensively, relying on each other to fulfill different aspects of production and cooperation. For instance, the area's dairy farms

supply waste to local composters, like VRM Biologik; that soil is then sold to local farms for hemp cultivation. Those farms could produce hemp seed, which can be pressed into hemp cooking oil, creating a byproduct of hemp seed cake — a nutritious feed for livestock. This synergy creates a hemp ecosystem that encourages crop diversity and local collaboration while lowering transportation costs.



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Crops and Soils Instructor at Aims Community College Kirk Goble often takes his Hemp 101 students on field trips to local farms. He says interest in the plant has been intense and his non-credit industrial hemp course is frequently sold out.

Elmquist elaborated: “We now have a justification for a lot of farmers in the county agreeing to shift some percentage of their acreage to hemp production, maybe cut back on their corn acres and some other crops, but then add hemp into the rotation...”

“Through this research farm, I think we can develop the innovation center that attracts the right businesses to make all of this happen. Greeley is becoming this amazing metropolis for hemp.” Bryant reiterated Elmquist’s enthusiasm, noting: “We’re going to make Greeley to hemp what the Sonoma Valley is to wine.”

An Education in Ag

An old adage comes to mind, “If you think education is expensive, try ignorance.” For farmers, industry professionals, and real estate brokers, the value of a hemp education is tangible in the results they sow into their fields. Between Colorado State University in Fort Collins and Aims Community College in Greeley, would-be students have several avenues

for pursuing an education in ag.

Crops and Soils Instructor at Aims Community College Kirk Goble even offers a six-hour, non-credit course on industrial hemp, which he notes is always sold out. Goble shared an interesting contrast: “We’re very large corn producers around here, but we don’t offer a corn class. And we produce sugar beets around here, we don’t offer a sugar beets class. But the interest in hemp has been so intense.”

“The administration and Board of Trustees at Aims Community College have been very supportive of the addition of hemp education to the curriculum,” notes Goble.

He believes it isn’t just the crop’s recent arrival to the ag scene that’s driving interest — it’s also the plant’s versatility that’s drawing new industry. “Starting out, pretty much 70% of the crop throughout the nation was going for CBD, but CBD is not an industry. It’s an ingredient.

“So, you can have one of the uses of the plant being extraction of the cannabinoids, but that is

only one of the thousands of uses of the plant. So our emphasis now is to expand everybody’s knowledge and attract processors and so forth to the area so we can capitalize on the multiple uses of the crop,” Goble explained.

The Future of Farming

Some companies take full advantage of hemp’s versatility, creating multiple product lines centered around the plant. Athena Biohealth, for example, offers five different product lines, ranging from CBD-infused wellness products, like vitamin capsules and skin cream, to hemp-infused granola, soaps, or even environmentally-friendly home cleaning products. The woman-owned business now cultivates 1800 acres of Colorado hemp farmland.

Other farms, like Fern Hill Farm, were more reluctant to start growing the crop. Certified Master Gardener and Farmer Clifford Clift started growing hemp after his 46-year-old son approached him with a business proposition. When asked by his son if he would consider growing hemp rather than Christmas trees, Clift replied with a firm, “No way in hell,” according to an interview with the *Colorado Sun*.

It wasn’t until the 79-year-old former real estate agent tried CBD for his arthritis that he became convinced of the plant’s medicinal value. “My pain was minimal after that,” Clift shared with the *Colorado Sun*. He’s now working with his son Paul producing hemp on their farm just outside of Greeley.

Farmers cultivating hemp are taking a risk, though, despite hemp’s federally legal status. If a crop has more than 0.3% THC, the entire harvest must be destroyed. Agriscience Labs is one of Colorado’s leading ISO-accredited cannabis and hemp testing labs. They work closely with Northern Colorado farmers, testing their genetics and hemp plants to ensure crop compliance with state and federal guidelines.

Those who experience crop failure due to natural processes, such as hail, freeze, drought, or flood, often turn to local company J9 Crop Insurance, providing protection for farmers across three states. They offer crop and livestock insurance, as well as personal and business lines of protection. It’s a much-needed safety net for what could be perceived as a high-risk venture. ❖

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Processing and Partnerships in Hemp Country



(Top row) Hemp Ventures CEO Ryan Dougherty. A hemp t-shirt worn in a field of hemp. Compounded hemp and polylactic acid (PLA). Starches are extracted from hemp or corn and fermented to form lactic acid, which is then polymerized to create PLA — a biodegradable material that can be used in a variety of applications. (Bottom) A wide angle photo of the BDX extraction facility

For many who choose to live and work in Northern Colorado's agricultural communities, there's more to love than just the picturesque mountains in the distance or the easy accessibility to major metropolitan hubs like Denver and Fort Collins. The area provides access to ag-based educational opportunities, industry partnerships, and processing facilities that just aren't available in many parts of the country.

Creating a Knowledge Base

Owner of Hemp Processing Partners Shane Pritchard is opening an industrial hemp collaboration hub and laboratory in Greeley later this year. He explained why the area is such an ideal fit: "Greeley and Weld County are very strong agricultural areas and we have access to agricultural universities, with Colorado State University in Fort Collins, the University of Northern Colorado in Greeley, and Aims Community College. So there are good

educational resources there and a lot of really productive agricultural land."

Hemp Ventures is a hemp processing and technologies company led by CEO Ryan Doherty. He feels shared knowledge will encourage more adoption of hemp throughout the country: "I really want to engage with students, colleges, and universities to get the whole next generation seeing this material and getting their hands on it so they can come up with businesses and ideas to take advantage of this new opportunity — which, I think, is one of the greatest in the last couple of decades. How often do you see a plant reintroduced that has the capabilities of cotton, timber, and petrochemicals? It has never happened."

Informed Farmers Grow Better Crops

One of the largest hemp extraction footprints in the U.S. belongs to BioDynamic Extraction (BDX), which can produce up to 20,000 kg of

CBD per year in one of their facilities. BDX Market Strategist Preston Mantel encourages the farmers they work with to be educated and informed so they can cultivate quality crops.

Mantel noted: "Ken [Thieneman, BDX founder] recognized the importance of biomass. With extraction, you get out what you put into it, so making high-quality CBD products starts with quality biomass." That's why many companies choose to work with hemp agronomists — scientists who are trained to increase soil productivity and improve crop quality.

Well-educated farmers produce better crops, which allow for a synergy between producers and processors that's hard to find in such a localized area. High-quality hemp can be processed into an astounding array of products, able to create thousands of goods from fiber to fuel to food.

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