Depending on what regions of Colorado, New Mexico, or Wyoming you drive through, you will see corn and cattle, sugar beets and barley, potatoes and onions, melons and hay, goats and peaches, and - increasingly - hemp and hops.

Farmers and ranchers are especially curious about hemp as a viable alternative crop. Will it grow well with limited water and inputs? Are there markets? Will it make money? The answers are maybe, hopefully, and probably. It really depends on your point of view and your overall circumstances. Fields of hemp are cropping up across Colorado largely because the state’s lawmakers took the lead in enacting policies to encourage research and development of hemp.

Patches of hops also are showing up as well. After all, Colorado grows barley for major beer companies, why not hops for microbrews? Learn more on pages 4-15.
You Are The Voice Of Family Farmers and Ranchers

By Dale McCall
RMFU President

Uncertainty remains in the agricultural industry. In my last column here I talked about that uncertainty, especially as it relates to trade wars and federal agriculture policy.

Unfortunately, the trade wars have escalated and farmers and ranchers are suffering as a result of the trade war with China and the lack of congressional action on the proposed trade agreement with Canada and Mexico.

Although the federal government is providing some assistance to farmers and ranchers, the so-called “bail-out” is not the long-term answer. What farmers and ranchers want is access to the global markets and fair trade policies.

In September a delegation of Rocky Mountain Farmers Union members will join hundreds of other like-minded producers to participate in the National Farmers Union annual legislative fly-in to Washington, D.C. Working together in teams, we stop by every congressional office.

We’ve been doing this for decades to put a face on American agriculture and tell our stories of how federal policies are impacting our operations. We also share “boots on the ground” common sense recommendations to lawmakers who may not be as understanding of challenges facing agriculture and rural communities.

Farmers Union has referred to itself as “The Voice of the Family Farmers.” The key word here is “Family.” We work together for the common good.

We are family at Farmers Union, whether we are in our own homes or within the organization. Rather than compete with each other, we cooperate. Rather than criticize each other, we compliment. Rather than being crass toward each other, we care. We celebrate when every individual and every community succeeds. Isn’t this what family is for?

The value of family in farming and ranching is on my mind. Earlier this year, my wife Judy passed away during surgery. Together, we raised a family, we built a farm one field at a time, we did our best to make a difference in our community and in agriculture. Judy and I did not always agree. We always listened respectfully to each other’s point of view, and we compromised. To some, compromise means giving in and not getting your way. For us, compromise meant succeeding and moving forward. All of my accomplishments during my careers in farming and in ag education are thanks to the team Judy and I created. When it comes to family, count your blessings.
**HAPPENING NOW**

**You Can Make A Difference On Capitol Hill**

*Show Up, Stand Up, Share Your Story*

The annual Farmers Union Fly-In is always an enjoyable time for our members in the nation’s capital. It’s also an important and effective way to influence policy. Members of Congress and their staff need to hear directly from family farmers, ranchers, and rural residents. They need to be able to put a voice and face with the issues, and Farmers Union can put you at the table.

Rocky Mountain Farmers Union members participating in this fly-in will share their stories of the daily struggles they face, their hopes for future legislation that will make a difference in their lives and operations, and the key priorities for the organization.

During our time in Washington, we will hear from U.S. Department of Agriculture officials, administration officials, plus leadership and staff of the U.S. Senate and House of Representatives Committees on Agriculture.

To learn more about how Farmers Union can put you at the table where ag policy development is under way, contact Nick Levendofsky at nick.levendofsky@rmfu.org or call 303-283-3528.

**U.S. Senator Michael Bennet of Colorado visits with Rocky Mountain Farmers Union members during the 2018 Legislative Fly-in to Washington, D.C.**
Hemp is Proving to be a Cash Crop with an “In the Field” Learning Curve

If this were Italy, Ben Rainbolt’s neighbors might think he’s been planting tomatoes. But this is northern Colorado and the crop going into the ground - one plant at a time - is hemp.

Last year, these acres of hemp were planted by hand, a slow and tedious effort. This year Mike Lennon of MTM Botanicals was able to speed up the planting process using a tomato planter from Italy. The planter looks a bit like a Rube Goldberg machine in operation, as trays spin and slide seedlings into cones that rotate into position for dropping into the soil. It gets the job done. “It was a fluke. We were trying to find something that would plant a tree,” says Lennon. “Our hemp spacing is much like a Christmas tree farm with five-foot rows and three-foot spacing. Each plant grows to nine square feet.”

Rainbolt, who is Rocky Mountain Farmers Union’s Executive Director, hired Lennon and MTM Botanicals to help him plant, harvest, and market his 2019 hemp crop. As with many farmers, Rainbolt is curious how hemp compares to other Colorado row crops, such as corn.

Both Rainbolt and Lennon are gaining experience in growing hemp by innovating and adapting as they go. Last year, Rainbolt converted his equipment shed into a drying house using construction scaffolding as way to hang the plants. It worked.

This year, Rainbolt says he noticed fewer weeds in the field. Lennon says hemp enriches the soil. The roots can go down more than a dozen feet by August, allowing the plants to tap the water table and thrive during a time when other crops wither under the hot sun. In his experience, Lennon says hemp needs about half the water of corn. The sandy soil in this field drains and dries quickly, making it well suited for hemp, adds Lennon. Colorado State University is determining the plant’s true water, inputs, and management needs at several test plots across the state and other growers say the “needs less water” belief may not work in all growing environments.

Hemp can be grown for various final processing uses from fiber and flour to cannabidiol (CBD) oil, the latter of which is extracted, refined, and incorporated into numerous consumer products ranging from cosmetics to chocolate. Rainbolt sells his harvested hemp to a Colorado company that converts the plant to CBD oil. Right now, the real money is in CBD oil. And Rainbolt says the learning curve is worth it when all the costs and time invested is balanced against the check after harvest.

Drying hemp on the Rainbolt farm is not all that different than drying tobacco in Kentucky, yet with a few twists. Rainbolt set up scaffolding in his equipment shop and hung the plants from the rungs. The “in the field” learning curve has presented both day-to-day challenges and solutions. In many ways, Colorado is becoming the ground-floor opportunity for hemp farmers and processors. Each growing season brings new answers, new growth, and new income.
Hemp May Not Be Colorado’s Next Gold Rush, Yet Farmers See Black Ink Coming From Green Fields

By Bob Kjelland
Union Farmer Editor

Here is everything you need to know about hemp in one paragraph. One, it is not the miracle crop that is going to save agriculture. Two, lots of individuals and companies believe there is money to be made selling hemp products, yet finding a long-term business plan that will be profitable remains elusive for many. Three, if it is profitable, expect hemp to evolve from a value-adding cottage industry into another commodity crop competing for market share.

Actually, there is a lot more to know about hemp and those who are working to establish a new ag industry from crop to consumer will tell you to learn everything you can before penciling in next year’s spring planting plans. Some in the industry are making money. Others hope to as new processing infrastructure comes on line.

Farmers (and lawmakers) in Colorado, New Mexico, and Wyoming - not to mention states from Oregon to Florida - want to know if hemp is a viable alternative to other crops. The answer is, it depends on a lot of variables from soil and climate conditions to access to local, sustainable markets.

Colorado and Kentucky are two states that took an early lead in getting hemp, well, off the ground. Kentucky sees hemp as a replacement for tobacco. This isn’t surprising as burley tobacco in Kentucky is trending down both in terms of acres planted, yields, and value of production. Colorado became an early adaptor of hemp, thanks to state government action to develop regulations for growing hemp and even being the first state to create a specific director of hemp in its Department of Agriculture. Colorado was ahead of the curve partly because voters cleared the way for medical marijuana in 2000, and recreational marijuana in 2012. Colorado could lead the nation in planted and harvested hemp acres this year.

Worldwide, China is the top producer of hemp, followed by Canada, the United States, and France.

Hemp, Marijuana and THC

In America, hemp - once a staple crop for farmers - fell out of favor because of tetrahydrocannabinol, or THC, the chemical that accounts for the psychoactive “high” derived from marijuana. Hemp and marijuana plants look similar, smell similar, and are easily confused for each other. In the eyes of law enforcement, hemp looks like marijuana. In general, hemp...
leaves are skinny and shiny, with the plant itself appearing tall and skinny. Marijuana is bushy and shorter. Hemp that is being grown for fiber production tends to be taller, with the leaves gathered toward the top. Hemp grown specifically for harvesting the seeds and flowers may be shorter and bushier. See the challenge for law enforcement?

In chemical terms, marijuana might have up to 30 percent THC content while hemp, to be legal for use, cannot have more than 0.3 percent THC content. Determining the difference depends on labwork rather than a visual inspection.

Colorado voters passed Amendment 64 in 2012 that effectively legalized marijuana for recreational use and the measure cleared the way for industrial hemp to be grown in the state. The confusion between industrial hemp and marijuana is natural and it continues to this day. The Colorado Department of Agriculture made space for a new industrial hemp regulatory program that included specific staff responsibilities.

Today the Colorado Legislature and Department of Agriculture are setting the pace when it comes to developing, implementing, and fine-tuning how state regulations can work for farmers and help nurture the industry.

“We have states calling us asking for advice. We are ahead of the curve,” says Colorado Commissioner of Agriculture Kate Greenberg. The department is holding stakeholder hearings to evaluate the entire industry under the Colorado Hemp Advancement & Management Plan (CHAMP). “We are getting experts to look at the entire supply chain. CHAMP will look at research and development of seed, cultivation, transportation, and testing. We will examine processing, manufacturing, marketing, and banking and insurance,” she says. “This will set us apart nationwide in pushing leading edge.” The CHAMP final report is due for release next spring.

Brian Mitchell, a PhD student at Colorado State University has been studying hemp varieties and production methods in test plots at the Agricultural Research Development and Education Center not far from Fort Collins. Mitchell is participating in the CHAMP initiative. He says Colorado is well along on the learning curve when it comes to hemp. And, he adds, we still have a lot to learn. Mitchell is weeks away from “harvesting” his hemp performance data for a second year. His work will reveal more insights on hemp as measured in water usage, temperature, insect populations, and use of fertilizer. The bottom line is determining how hemp performs in grain yield and quality, in fiber yield and quality, in total biomass production, and as canopy cover. Each test plot and each growing season provides more answers and encourages more questions.

Earlier this summer, CSU’s Agriculture and Business Management’s Extension Specialist Brent Young issued a risk assessment for hemp. “In order to make a sound decision regarding the production of hemp, growers must evaluate the risks associated with the crop. That risk assessment should include a thorough review of... price, production, legal, financial, and human risk,” he writes.

Hemp Is In The Roots Of U.S. Agriculture

There’s nothing new about hemp, except that there is a 50-year gap in practical experience in growing the plant in the U.S. In fact, Presidents (and agrarians) George Washington and Thomas Jefferson grew hemp on their Virginia farms. Washington relied on hemp for fiber that was used to maintain fishing nets and create ropes and sail canvas. Jefferson used hemp fiber to make clothing.

The 1937 Marijuana Tax Act legally considered hemp and marijuana as the same thing. Marijuana is a Schedule I substance under the Controlled Substances Act of 1970. Hemp was excluded from the Controlled Substances action in the 2018 Food and Farm Bill.

Yet in 1942, USDA produced the film “Hemp For Victory” to encourage farmers to plant the crop to offset supply shortages during World War II. The U.S. Navy needed rope so the Marijuana Tax Act was lifted briefly to allow farmers to meet the need. They did, and then hemp went back to being viewed as an undesirable plant for its link to marijuana.

At the federal level, marijuana remains an illegal drug. In Colorado and a number of other states, marijuana is legal for medicinal and recreational uses. In Nebraska, marijuana is
decriminalized. And in Wyoming and Kansas, marijuana is illegal. Coloradoans hauling marijuana in their cars driving east through Kansas will discover the Colorado state law ends at the state line. As state laws and federal laws are evolving, police are having to sort through how they enforce the laws of the land.

Financial institutions too are facing a learning curve when it comes to hemp. As a new crop, and one whose history has little real track record and is still linked with decades of being illegal, hemp is providing its own challenges for lenders.

Finding the Sweet Spot Will Take Time

Hemp has the critical mass of grower and government support along with increasing market momentum to become a relatively common crop. It just won’t happen this year. Many in the industry say it will take anywhere from one to three years to really hit its potential. Hemp is being held back by several things. USDA, the Food and Drug Administration, and Drug Enforcement Agency are working together to harmonize their respective roles for the growing, processing, and marketing of hemp. It will take time for these agencies to work out all the details. And, state governments that have been proactive in writing their own rules and regulations for hemp will need to make sure they are compliant with USDA.

Processing is another chicken-and-egg situation. Large-scale processing, especially for fiber, requires investment in infrastructure - bricks and mortar. Without a crop, there has been no need for such processing facilities. Without processing facilities, farmers are reluctant to invest too much in a crop without knowing when local markets will be up and running and reliable.

It is not for a lack of innovation or entrepreneurship. Hemp fiber can be used to make ropes and shirts and paper products including many products currently made from wood pulp. Hemp fiber also can be used to make building materials. “Hemcrete” blocks, hemp “plastic,” and hemp “wood” are ways to combine plant fiber, resins, molding machines, and other techniques to create durable goods.

Again, this is nothing new. In 1941, Henry Ford gave serious attention to building car bodies and interior items from “cellulose-plastics” made from hemp and soybeans. Ford’s 1908 Model T could run on alcohol distilled from crops. For a number of reasons, gasoline distilled from oil emerged as the leading fuel, yet Ford never lost his interest in finding ways to incorporate agricultural products into manufacturing. Ford’s “edible car” may have been the butt of jokes on the eve of World War II but it was also ahead of its time.

So, is hemp going to be a great feedstock crop for ethanol production? Don’t count on it. There are other crops that are much better at being converted to fuel based on their tried-and-true properties and cost structure, explains Mitchell.

“The market for raw materials associated with hemp stalks is growing. Research around hemp uses for fiber, or hemp-based
In the Field

plastics and bio-lubricants are opening what is soon to be the global side of the hemp market,” says Tim Gordon. “While CBD is the talk around hemp now, its only the tip of the iceberg as far as what will be driving the hemp market in the near future.” Gordon is president of Colorado-based Functional Remedies.

There is speculation that as the hemp industry evolves it will begin to look more like any other commodity crop. “We have yet to see “Big Ag” and “Big Retail” associated with hemp, but we will,” Gordon adds. “The commoditization of the hemp industry is ultimately going to happen, and while folks can make a decent income from their small plots of land now, the prices of growing for CBD will fall drastically, making it difficult to justify for folks in some cases.”

Hemp may look appealing in the short run as being highly profitable for CBD oil. In the long run, hemp grown for fiber may actually compete with cotton (t-shirts) and lumber (paper products) in a much bigger market as measured by the ton rather than the eyedropper.

The numbers remain in flux as the industry ramps up on speculation and retreats on reality. Hemp may not be any cheaper to grow than other crops. “Hemp requires as much water as any crop for optimal outcomes. While folks have consistently said you need less water for hemp, in my five years of farming hemp in Eastern Colorado, I use as much water as corn, on average,” explains Gordon. Mitchell says much the same. A healthy hemp crop needs as much water to flourish as any other option.

Tom Durmody of Colorado-based Biji Hemp says that while the market for hemp seed oil is growing rapidly, the market for fiber and stalk processing is still limited within Colorado - and much of the country - due to the high start up cost and lack of availability in standardized crop inputs. “But there are a number of companies leading the way in developing this domestic market, including Sunstrand in Kentucky, C2renew in North Dakota, and Bastcore in Nebraska. In my opinion, monitoring how Texas develops its hemp program will be a major factor in how fiber and stalk processing for industrial materials comes to fruition, given the ancillary, downstream supply chain needs within this state and surrounding regions.”

After all, it farmgate hemp prices vary wildly across the U.S. Some speculate the market for CBD oils will be taken over by major pharmacy chains and other retailers with significant reach and clout.

“While major retailers will play a role in the development of this industry, we must remember that consumer preferences will play a major role in defining who and where the products are sold,” explains Durmody. “Given that major retailers have been leery of marketing these products to date, local processors and brands must invest in marketing campaigns that emphasize regional economic benefits and safety of their products to maintain their market share for the foreseeable future.” That’s a valid point in a region where microbrews and marijuana dispensaries define local.

USDA expects to finalize its hemp rules by early November. Individual state will need to submit their respective hemp
management plans to USDA for approval or alternatively defer to the federal standards. “Concurrently, FDA is expediting their own rule making processes to regulate hemp-derived consumables including, but not limited, to cannabinoid rich and hemp seed oil containing products,” observes Durmody. “One important item that gets less attention is the USDA providing generally recognized as safe (GRAS) status to hemp seed oil, which is now providing a lane for this oil to enter the animal feeds market as well.”

The Biggest Challenges

Unlike other crops, hemp is surrounded by a unique set of challenges. Learning curves abound including how to grow it, where to sell it, and how the entire hemp industry and regulations will come together. “Navigating the fluid regulatory market has always been the biggest challenge for producers,” says Durmody. “Headed into 2020, I think the largest issue growers will face is identifying bona fide purchase contracts that match with their production systems.”

Gordon sees the situation the same way. “The backbone to all challenges is the industry has run unregulated for the last five years. Banking issues and lack of federal crop insurance programs have made it hard for farmers to take the plunge. Many farmers have been burned in the CBD market by unscrupulous folks. This all needs regulation in place to further development the industry and drive confidence among farmers considering the crop,” adds Gordon.

First Steps to Take

For farmers and ranchers thinking of adding hemp to their operations, both Durmody and Gordon have some sage advice. “Set a realistic trial budget that allows you to learn and scale this crop before getting ahead of yourself, and connect with processors in your area to map out your production by the end of 2019 so you can mitigate as much risk as possible before you plant,” says Durmody. “And review your Colorado Department of Agriculture resource guides so you understand your obligations and liabilities before jumping into this market.”

Next, make sure you use certified seed, advises Gordon. “This going to be a mandate through the USDA” and it will also be a requirement for crop insurance and selling in local, regional, national and even global markets.

Is hemp a high-value crop or a common commodity or a speculative trend that will first flourish, then falter? The sure bet is hemp is here to stay. It may be finding its way as a crop, as an industry, and as a still expanding product line, but the ongoing interest is beyond the curiosity threshold.
Movers & Shakers

Fast Facts

U.S. Market for 2018
- Supplements: 4%
- Personal Care: 18%
- Industrial Applications: 16%
- Food: 13%
- Consumer Textiles: 11%
- Other: 25%
- Hemp-derived CBD: 36%
- Hemp is expected to more than double to $2.6 billion in 2020.
- In 2019 Colorado more than 2,500 producers registered to grow hemp on more than 80,000 acres. Actual harvested acres will be less. For comparison, Colorado had 9,700 acres in 2017 and 21,578 in 2018.

Learn More
- The next Union Farmer will continue its coverage on hemp. Specifically, the stories will delve into hemp research and hemp markets and products.
- The RMFU Convention set for November 22-23 in Greeley, Colorado, will include a panel of hemp growers, researchers, and industry representatives.
By Nick Levendofsky
RMFU Director of External Affairs

With passage of the Farm Bill last year, the landscape has changed dramatically for the hemp industry. After decades of prohibition, hemp cultivation is once again legal in the U.S., and many states are looking to the crop to help boost their local economies.

In the 2019 legislative session, New Mexico Governor Michelle Lujan Grisham signed a bill that would regulate the production, testing, research, manufacturing and transportation of hemp and similar products in New Mexico. House Bill 581, known as the Hemp Manufacturing Act, was sponsored by Representative Derrick Lente (D-Sandia Pueblo) during this year’s 60-day legislative session. In a statement, Lente said the legislation “will help farmers and manufacturers access this lucrative industry while maintaining compliance with federal and state laws.” Among other measures, Lente said the bill will help with the development of new hemp products such as clothing and textiles.

Business leaders are hurrying to capture part of what cannabis market research firm New Frontier Data estimated will become a $2.6 billion industry nationwide by 2022, the Albuquerque Journal reports. As of April 15, the department issued 93 hemp-growing licenses and had 38 applications pending, according to information obtained by the Journal. Of the 93 licensees, 52 are for “continuous grow” operations, or those that will maintain a crop throughout a year. The remaining 41 are for annual grow operations.
State lawmakers voted earlier this year to legalize industrial hemp in Wyoming, but many details must be sorted out before hemp becomes the newest cash crop in the state’s $2 billion agricultural sector.

Since the passage of the 2018 Farm Bill legalized industrial hemp production nationwide, states have been racing to not only codify the legality of the non-psychoactive cannabis plant into their statutes, but to draft the plans required by the United States Department of Agriculture that are needed to begin growing it. Wyoming’s plan, submitted mid-April, officially kicks off what could be the first bonanza-type economic movement the state’s growers have seen in years.

However, efforts to set up stakes in Wyoming’s incoming industrial hemp sector have been ongoing for months.

With the February signing of House Bill 171 by Governor Mark Gordon, speculators and growers with an eye on shaping Wyoming’s newly established hemp industry have descended onto the state, drawn by the promise of new markets, new supply chains, and the promise of opportunities in a new business environment. Since the start of 2019, more than two dozen businesses with names playing off of or containing the word “hemp” have been filed with the Wyoming Secretary of State’s Office.

According to recent figures compiled by the Denver-based trade publication, the Hemp Business Journal, Wyoming farmers are expected to be cultivating roughly 250 acres of industrial hemp by the end of next year, a number that is anticipated to increase to an estimated 3,300 acres by 2022.

While not a significant amount of acreage (Colorado and Kentucky – the national front-runners for total hemp production by acreage – combine for more than 25,000 outdoor acres licensed for hemp) any new industry such as hemp can make a noticeable impact on a state’s economy, said Sean Murphy, a Casper native and the publisher of the publication. “I don’t think it’s going to make a huge dent on the national scale, but the impact for Wyoming will be really significant,” he told the Star-Tribune. “It’s not every day that a new crop comes along. Wyoming might not be the most progressive state regarding its hemp policy – other states have done this already – but that fact the state is going for it, I think that’s what’s exciting.”

The Colorado Department of Agriculture recently kicked off a statewide initiative to chart how to manage and promote hemp cultivation and production amid questions about federal regulations. The Colorado Hemp Advancement and Management Plan (CHAMP), will draw on the expertise of state agencies and private companies, according to the department.

“Colorado’s ahead of the curve because we’ve had a program in place for five years, but there are still a lot of questions around a regulatory framework,” CDA Commissioner Kate Greenberg recently told the Denver Post.

CHAMP initiative topics include transportation, research and development, testing protocols, banking and insurance. Participants in CHAMP will include people from the Colorado Department of Public Health and Environment, Revenue Department, the Department of Regulatory Agencies, Office of Economic Development and International Trade, Department of Public Safety, Colorado Commission of Indian Affairs, Department of Higher Education, local governments and industry experts. The project will culminate with a report in spring 2020.

CHAMP Meetings under way

Leaders of the Colorado Hemp Advancement and Management Plan (CHAMP) held the first of several public meetings on August 16 in Hesperus, Colorado. The meeting was held in partnership with Fort Lewis College and the Southern Ute and Ute Mountain Ute Tribes for the purpose of gathering public feedback on specific issues related to the research and development, sustainability, seed certification, cultivation, crop disposal, transportation, and testing of industrial hemp.

“There is much excitement about hemp, and also a lot of questions. The Department of Agriculture wants to hear what’s on people’s minds as we build out the framework for the hemp industry across Colorado and the nation,” said Colorado Commissioner of Agriculture Kate Greenberg. The CHAMP Initiative is a statewide effort to develop a Colorado blueprint that will outline a regulatory framework and identify the economic opportunities needed to build a robust and sustainable hemp industry across the state.

It is spearheaded by the office of Governor Jared Polis, the Colorado Departments of Agriculture, Public Health and Environment, Regulatory Agencies and the Office of Economic Development and International Trade. The initiative also includes a number of other state, local, and tribal agencies and more than 150 stakeholders representing private industries.
Hops
Joining Barley In The Batch of Colorado-Grown Beer Ingredients

By Bob Kjelland
RMFU Union Farmer Editor

The ingredients for beer can be counted on one hand: water, grain, hops, and yeast, and in that order. Until recently, more than two-thirds of U.S.-grown hops came from Washington’s Yakima Valley, with Oregon and Idaho taking up the slack. Last year, just over 55,000 acres of hops were harvested, and this included a patch of hops growing 10 miles northwest of Greeley.

“About five years ago, I was looking for an alternative crop to alfalfa,” says Doug Hehman of Lakeside Hops. “My son and I bought some plants and poles from someone that was going out of the business. We purchased everything and started from there.”

Initially, the father-and-son team considered growing organic hops. “I did take some organic courses, but realized it was too costly and most of the brewers did not care,” he says. “We follow organic principles, but we are not certified organic.” He did his research to learn how to grow hops. “I attended a few conferences and toured some hop farms on the Western Slope.”

Using local ingredients including hops is important to brewer Scott Pell, a co-owner of Green Earth Brewing Company in Greeley. “We have used local hops, and we use all Colorado hops, some from the Western Slope communities of Montrose and Olathe. Our true motivation is to use a local product that requires little transportation.”

Mature hops resemble green pinecones. The vines can climb 20 feet high, and that explains the poles and lines growers use to encourage

Introduced early in the process, hops result in a more bitter beer, although bitter is relative. Added later, hops create a beer with more flavor and aroma. The hoppiness of beer is measured by a numerical value as defined by the International Bittering Units (IBU) scale. And there is a difference between hoppiness and bitterness. Given that there are dozens of varieties from Belgian Whites to Brown Porters, consumers quickly find what brews are worth another round.

Water accounts for more than 90 percent of your draft or bottle or growler or barrel (31 gallons) of beer. Colorado’s reputation as a headwater state means snow, sun, and streams work together to deliver water to breweries. So, water is available, although supplies are always impacted by drought and increasing demand.

Colorado farmers annually grow more than 7.5 million bushels of barley on more than 50,000 acres. Barley, once it is malted, is used in volume by brewers. A lot of those bushels are destined for use by MillerCoors in Golden or Anheuser-Busch (Budweiser) in Fort Collins. The massive Fort Collins operation went into production in 1988 on the west side of I-25. It’s also home to a team of the iconic Clydesdale horses. Coors in Golden is the iconic Colorado beer, with brewing going back to 1973. Vintage Coors advertising played up those
clear, mountain streams as essential to the brewing process. If you see a “Colorado Native” beer made by AC Golden Brewery using 100 percent Colorado ingredients, know that this craft operation is tucked away - surprise - somewhere in the Miller Coors plant in Golden. Even the big brewers are cashing in on the craft brewing market and locally-sourced ingredients.

So, streams of water and golden seas of barley are close at hand for the major brewers. Hops, however, are brought in from the Pacific Northwest simply because that’s where they grow well based on soil, climate, and due to generations of farmers who know the crop.

From the 1980s on, the notion of local beer took on a flavor of its own as small microbrews began popping up from Denver north to Fort Collins. Today, some of those earliest breweries such as New Belgium have gained national recognition for its Fat Tire or other popular brews. It seems most communities have at least one craft brewery of their own and the trend is spreading out across New Mexico and Wyoming.

“I can find just about any variety of hops I want,” says Pell. As mentioned, Green Earth Brewing uses hops for flavoring and aroma, and to add a measure of bitterness and for its preservative quality.

Hehman is gaining experience with each season. He is still learning. “I can’t tell you what works and what doesn’t. There are too many variables.” “Hops, I think, love the Colorado climate.” He says brewers say they want local hops, but the market is still unpredictable. “Don’t go into it for the money. It’s a big investment initially and lots of work and lots of time and water.” Still, all the ingredients are in place to truly brew a beer using crops from local farmers.
Fast Facts

- Hops are sold in 200-pound bales. One bale will yield from 4,185 to 24,800 gallons of beer.
- The first commercial hops production in North America was a 45-acre garden planted in 1648 to supply a brewery in the Massachusetts Bay settlement.
- Hops and hemp are related plants

Scott Pell, brewer.

Amount of hops per beer style

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Snow-Making Machines

The view looking south from just above the ski resort of Aspen reveals two different Colorado drainage basins, each of which flows into the Colorado River. In the foreground is the southern edge of the Colorado Basin, where Castle Creek (lower left) and Maroon Creek (lower right), join the Roaring Fork River, among others, on its course to Glenwood Springs and the Colorado River. In the background is the Gunnison Basin, whose Taylor River drains into the Taylor Park Reservoir (visible at the top left corner). This river flows into the Gunnison River, which in turn runs into Blue Mesa Reservoir, through the Black Canyon of the Gunnison and joins the Colorado River at Grand Junction. Not far from this location the Middle Fork of the South Platte River begins near Fairplay and drops toward Denver, through Greeley and on into Nebraska, creating the South Platte Basin. Also nearby, the Arkansas River gathers itself together northeast of Leadville and rushes down through the Royal Gorge, past Pueblo, and into Kansas. Tourism and agriculture depend on these “snow-making machines.”
How did you get involved with the River District?

The first time I really bumped into the district was through a project they were doing with the Grand Mesa, Uncompahgre, and Gunnison forests about travel plans and access to reservoirs for ditch companies. I was impressed by the work that they did. Also, in the 1990s the river district was involved in the Black Canyon Water Rights Settlement and I was very impressed with how they handled working with very different interests. I began to see them as an organization that really made a difference on water matters. So, I told Pete Casper, my predecessor, that I wanted to succeed him when he left.

In simple terms, what does the Colorado River District do?

The River District represents the water interests of the water rights owners of the Colorado River Basin counties. It advocates for the interests of water users, and for the West Slope in general on statewide matters. We also do a myriad of other things: for example, we own and operate several reservoirs; we are involved with programs to improve efficiency and improve infrastructure; and we’re involved with litigation in defense of Western Slope water rights. We have a legal staff that does a great job protecting our water rights. We’re also involved on the policy level state-wide, helping to determine what state policy will be. We provide a Western Slope perspective on matters such as demand management, the state water plan, and other issues that arise. Since 541,000 acre-feet of Colorado River water goes to the Front Range, we have a lot to communicate and discuss with them.

Last year was a devastating year in so many ways, and this year is uncommonly good in terms of snowpack. Can you give me a current snapshot of the Colorado River?

We have an exceptional snowpack and an exceptional runoff. The runoff has come slowly and uniformly. We’ve had some minor flooding, but nothing major. Reservoir storage will rebound dramatically. It’s now expected that Blue Mesa Reservoir will fill and use the spillway. Earlier in the year, no one thought that was possible because of the amount we’d drawn it down. So, all the principle reservoirs of the Upper Basin will be filled this year. It will make a small difference in the amount of water in Lake Powell, but even there we’ll benefit. It’s going to improve things from the near crisis that we found ourselves in last year that promoted long-range planning in terms of demand management programs and the upper basin drought contingency plans, because Lake Powell was dropping dangerously low.

How has the conversation changed around demand management and long-term planning?

We hope it hasn’t, but obviously, nothing focuses everyone’s attention like an extreme drought. We’ve gotten a little reprieve, but the message from everyone – from the feds through the states, through the locals – is one good year doesn’t end a drought, and one good year shouldn’t take our attention away from the necessity of long-term planning for
when the drought conditions return. We’d like to hope that’s not coming soon, but the likelihood is that it will.

**Where is the conversation on demand management currently heading?**

Well, the first thing to consider is that demand management is part of the larger drought contingency planning that both the Upper Basin and Lower Basin are engaged in. The Lower Basin has made some major concessions and agreements to reduce the amount of overuse that they’ve historically had. That’s a huge improvement on our current situation. But as well as the Lower Basin making changes, the Upper Basin states of Colorado, Wyoming, New Mexico, and Utah have had to agree to an Upper Basin contingency plan. This plan has three prongs. First, it involves as needed, moving water from the Colorado River storage project reservoirs in the Upper Basin downriver to Lake Powell to prevent the latter from losing power generation capacity or the ability to deliver our required amount of water under the Colorado River Compact.

The second part of the contingency plan is cloud seeding and control of invasive species. And the third part is demand management. That’s where the rubber really meets the road, and that’s where water users would have to agree to actually use less water – which is what demand management means: that we will reduce our consumptive use of the water that we currently take out of the Colorado River. The big questions is, how do you administer some sort of an agreement to cut back on consumptive use, and who’s in charge, and how would we actually physically do it?

The Colorado Water Conservation Board (CWCB) is the agency in Colorado that would have to be in charge of such a program. The board has come out with a policy describing what they see as the way to get to demand management, which is that it will be voluntary, temporary, and compensated. They’ve set-up working groups covering several issues such as law and policy, administration, and agricultural interests. Those working groups are supposed to advise the board to develop a program that would actually promote demand management.

The starting place for any program is who out there wants

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**Snowpack on Colorado’s Rocky Mountains are the lifeblood of tourism, agriculture, and development for a growing population. Fly-fishing, white water rafting, and downhill skiing thrive as the snowpack increases. So, too, does crop production on the Eastern Plains where ditches deliver water to fields.**

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to cut back their consumptive use temporarily in exchange for some amount of money. There are probably lots of irrigators that, for some amount of money, would be willing to not irrigate for a year or two. The target originally was on row crops: you fallow your fields for a few years, you get the credit, and move on. The Grand Valley did a few experimental programs to try to fallow some fields and see how the project would work, and it worked fine. There were more people interested in doing it than they had money. The word that we’ve heard from the Uncompahgre Valley is that with commodity prices as they are, there would probably be interest from farmers down there too.

Finding the money is one of the problems. One of the work groups is focusing specifically on that, and there have been several other efforts under the State Water Plan to figure out where the money is going to come from. It’s possible that the new ballot issue about gambling could pass and funnel money from that income stream into a demand management program.

But it’s going to be a huge issue figuring out where that money’s coming from, and if we can get enough to get people interested.

The other part of the demand management program that is important is getting folks to participate so this unused water actually ends up in Lake Powell. Then we have established by legislation a special pool in Lake Powell that would allow that water deposited there to be credited to us, only to be used against a compact call at our discretion and our direction, ‘ours’ being the Upper Basin states. And that’s a 500,000 acre-foot pool. Demand management, if it comes into existence, would be to fill that special pool, although it represents a tiny part of Lake Powell’s actual storage capacity. There’s a serious question about if it’s even worth the trouble. Our commitment is to not allow the flow at Lees Ferry in Arizona to go below 7.5 million acre-feet. So now we could have 500,000 acre-feet that we’re going to chip in, even if it’s not going to make a huge difference. On the other hand, it could be just enough to
keep a call off the river, and if you keep the level high enough the dam can continue power generation. That 500k acre pool could be strategic just for keeping the elevation slightly higher. It’s not totally insignificant, but it’s not totally clear that it’s going to be enough to really do anything. And it’s certainly easier than building another 500k acre-feet reservoir.

And it’s important to remember that not all of those 500,000 acre-feet would come from Colorado. In fact, it probably will need to be apportioned among the Upper Basin states. Colorado’s contribution would be close to 50 percent. One of the big criteria for the demand management program we’re concerned with is that contributions to it need to be equitable, meaning that Front Range water users and the trans-mountain diverters who have a significant portion of our post-compact water use have to be involved in contributing actual water use reductions in some ways, probably on a pro-rata scale. That’s going to be a large issue as well.

**At this point, what role can the farm and ranch community play in the future of the river?**

The farm and ranch community as irrigators need to make their voices heard by talking to their legislators at the state level, to the Colorado Conservation Water Board, and being involved in discussions at the local level through the river district and any other organizations such as Farmers Union and other groups. They need to be sure that whatever plan comes around for demand management is something that they think will work and that won’t hurt them. The problem with a plan like this is that there are always unintended consequences. For example, if you take a ditch company and they say they’ll let you use 50 percent of their water shares, what does that do to the remaining water users on that ditch? Does this mean the flow is reduced even more? Does it mean that return flows are interrupted? Does it mean that communities suffer because there’s not crop production? There’s a lot of questions, and these are questions that need input from the farm and ranch communities.

**Is there any part of this process that inspires you?**

I guess the inspiring part is the number of interests that are finally recognizing there’s a problem with the river, with the amount of water we’re currently using, and with the problem of any further development. The awareness has never been greater of the problems that we face with our irrigation water. It’s inspiring that you have so many groups, factions, and segments of the water community coming together to look at what we can do to ensure we can maintain our water uses into the future. We’re faced by an uninspiring situation, which is climate change. It’s going to make our uses more and more difficult. In all likelihood we’ll have less water in the future. We need to be doing this kind of planning now to figure out how we can maintain what we have going into a drier future.
The Upper and Lower Colorado River Basins are shown at left. For consideration, the map above shows all the major river basins across America, including the Colorado River (in yellow). The Colorado River encompasses seven U.S. states and two Mexican states. In total, the Colorado River and its tributaries provide water for 40 million people and it is integral in the settings of 11 national parks, including the Grand Canyon. The Mississippi River (in purple) drains the most square miles of any watershed in the United States from the Rocky to Appalachian Mountains, thanks to tributaries such as the Missouri and Ohio rivers. The Mississippi River generates power, provides flood control, creates vast recreational areas, and its lock-and-dam system allows bulk barge transportation from Minneapolis to the Gulf which benefits Midwestern farmers.
The Mobile Farm Workforce (MFW) pilot project—a collaborative effort between Rocky Mountain Farmers Union, Veterans to Farmers, The Good Food Collective, and UpRoot Colorado—is seeking farmer and rancher partners for the second year of the pilot.

Labor shortages in the agriculture sector are an urgent problem that negatively affects our food system both nationally, and here in the Rocky Mountain West, and the Mobile Farm Workforce pilot project has already shown great promise as a potential solution to this crisis.

Last year, farm workers in two MFW pilots—along the northern Front Range and in southwest Colorado—harvested hundreds of thousands of crops for farmers, ranchers and orchardists. In 2019, these same two projects will again be in operation, from September to early November—or as long as needed.

The vision for the pilot projects is a transition into a statewide worker-owned labor cooperative as early as next year, initiating the benefits and responsibilities of business ownership to farm workers while addressing the labor gaps on both farms and ranches in the Rocky Mountain West.

For inquiries about the northern Colorado pilot and farm-labor co-op, please contact David Laskarzewski, dave@uprootcolorado.org, 720-560-0825.

For inquiries about the southwest Colorado pilot and farm-labor co-op, please contact Rachel Landis, rachel@goodfoodcollective.org, 970-403-5347.
A few Qs for Kate

Editor’s Note: RMFU Director of Communications Robert Kjelland visited with Colorado Commissioner of Agriculture Kate Greenberg about her ongoing initiative to get out and meet farmers, ranchers, community leaders, and agribusiness owners across the state. Commissioner Greenberg has been listening and learning from the Coloradans who make their living from the ground up. Greenberg is well-versed and experienced in the economic, social, and historical values of family farm agriculture.

What have you learned during your “Meet N Greets” across Colorado, that helps guide your approach as Commissioner of Agriculture?

I’ve been working with farmers and ranchers across the state for years. These listening sessions reinforce what I’ve seen in my work to-date that Colorado agriculture is a unifying community. From Delta to Limon, Lamar to Cortez it is clear that there is a common thread that ties us together. That’s hard work, love of the land, strong business sense, and a deep tie to our communities. I’ve been to at least 20 communities in the last six months and have had the chance to visit farms, ranchers, veterinary offices, lenders, local employers and county commissioners. Together, we have a strong voice, as leaders both in business and stewardship.

Can you speak to the diversity of agriculture in Colorado?

Agriculture is the second top economic driver in the state. Not many people know this. We have incredible diversity in ag, from our top commodities like cattle, corn and wheat, to our lesser-known powerhouses like millet, potatoes, onions, sugar beets, sunflowers. Then we have the regional crops like Pueblo chile, Rocky Ford melons, Palisade peaches, and Olathe sweet corn. We have farmers operating on rooftops in the city and ranchers running livestock on large acreages on the plains. We have more women and farmers of color entering the business; we celebrate farmers whose families have grown food here for generations while welcoming in the next generation of producers. Farmers and ranchers are building out new markets, from direct sales at farmers markets, community supported agriculture, and sales to craft breweries and cideries, to value-added products, specialty grain, hops, grapes, quinoa and more, all of which we celebrate through our Colorado Proud program. Colorado’s farmers and ranchers are resourceful, creative, and have a unique ability to persevere.

Beyond the initial ag policy priorities of Governor Polis and yourself, what do you see as emerging or underappreciated challenges and opportunities facing Colorado farm and ranch families?

The Colorado Department of Agriculture is ensuring we are doing our part to support the next generation of farmers entering the business. We see real possibilities in the further expansion of high-value agriculture to support farmers bottom lines. Farmer-led, incentive-based efforts to step up stewardship around soil health, water conservation, and climate mitigation will position us well for short- and long-term growth. We are growing our outreach in support of farmer mental health, letting producers across the state know they have a confidential resource to lean on when they are struggling by calling Colorado Crisis Services at 844-493-TALK (8255) or texting the word TALK to 38255.

Of course, there are so many other challenges and opportunities facing agriculture. Who is going to grow our food? How can they make money doing it? Bottom line economics and federal policy are a big part of this. Technology is advancing rapidly and we need to ensure these advancements benefit farmers and ranchers directly. Climate change and the increasingly unpredictable future it brings poses a huge challenge for all of us, one which farmers and ranchers are poised to help address with support from all of us who depend on them for our food. And of course there are issues of labor and immigration, trade, commodity prices, ag education, waning availability in technical assistance, farmland access and transition, and more.

Closing comments?

RMFU staff and board members have hosted me for many of these field visits. I’m grateful for all the work RMFU has put in and for all the hospitality of the members.

I also want to highlight the incredible Ag Commission we have at the department right now. The Commission is comprised of nine farmers and ranchers, all appointed by the Governor. We have five previously appointed, two reappointed, and three newly appointed members. These include Brant Harrison of Palisade, Segundo Diaz from Alamosa, Marty Gerace of Golden, Michael Hirakata of Rocky Ford, Gerge Whitten from Saguache, Colleen Peppler of Palatteville, Brett Rutledge from Yuma, Kathryn Bedell from Grand Junction, and Steve Young from Holyoke. These members are the department’s farmer and rancher advisory board and, in addition to the nine other boards and hundreds of other stakeholders we work with everyday, they help ensure the department remains on track to serve farmers and ranchers across the state.
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The Farmer’s Share

Did you know that farmers and ranchers receive only 14.6* cents of every food dollar that consumers spend? According to the USDA, off farm costs including marketing, processing, wholesaling, distribution and retailing account for more than 80 cents of every food dollar spent in the United States.

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Retail prices based on Safeway (Seattle) brand except where noted. *Figure according to U.S. Department of Agriculture Economic Research Service.

July 2, 2019

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