Capital Area Ag Report
January 25, 2019

Announcements
Friday, February 1, 2019 - 5th Annual Hudson Valley Value-Added Grain School – Developing Markets for Local Grains - at Pegasus Restaurant, 10885 Rte 9W, Coxsackie, NY, Registration at 9:00 am, Program: 9:30 am to 4:00 pm. Dairy, vegetable and grain farmers, this meeting is for you. How can grain diversify your operation or your rotation. Be introduced to new grain markets and marketing. Topics include how to develop your own local direct markets, finding buyers of local grains, developing a grain processing enterprise, grain quality, assessing capital and enterprise budgets. Speakers include farmers that are milling and marketing their grains, buyers of local grains, and speakers from CCE, Organic Growers Research and Information-Sharing Network, and Center for Agricultural Development and Entrepreneurship. $40 registration due by 5 pm Tuesday, January 29th, $60 thereafter. Register at http://ulster.cce.cornell.edu/events/2019/02/01/5th-hudson-valley-value-added-grain-school-developing-markets-for-local-grains.

Tuesday, March 12, 2019—registration begins at 7:30 am, program from 8:30am - 4 pm—Capital District Pesticide Applicators Recertification Day—held at The Century House in Latham, New York. Get up to six recertification credits. Registration is available online at https://tinyurl.com/PesticideRecertDay2019, or call 518-765-3518 or email cce-caahp@cornell.edu for assistance with registration.


Building Strong and Vibrant New York Communities
Cornell Cooperative Extension provides equal program and employment opportunities
FYI

The 2018 NY Hybrid Corn Grain Performance Trials results are now available at https://plbrgen.cals.cornell.edu/research-extension/crop-variety-trials/corn-variety-testing/


From Ken Wise, NYS IPM Program
We have new online video resources on IPM for field corn and cattle that you can use.

FIELD CORN
We developed an online PMEP course on IPM for Field Corn Insect Pests (1 DEC Pesticide Credit)
Integrated Pest Management for Field Corn Insect Pests-PMEP Online Course.
You can watch this course for free without DEC pesticide credits at Integrated Pest Management for Field Corn Insect Pests-NYS IPM YouTube
The next course we will be working on is IPM for Alfalfa Insect Pests.

CATTLE IPM
We are also in the process of developing some short videos (2 to 3 minutes) relative to flies on cattle. Currently, we have developed 4 videos that are available at our NYS IPM YouTube Channel.
Face Flies on Cattle
Non-Toxic Pasture Fly Traps for Cattle
Horn Flies on Cattle
Stable Flies on Cattle

If you do not get Dairy Business magazine, then here is a good article you missed: “Managing the Challenging 2018 Corn Crop through Feed Out”

NY OSHA LEP Has Renewed
Message from the NY Dairy OSHA Team
In December, we reported that the NY Dairy OSHA LEP (Local Emphasis Program) would not be renewed, as that was our understanding based on communications with NY OSHA Staff. Today, we learned that the NY Dairy LEP was renewed for an additional year and is currently in effect. What that means is that the unannounced inspections can still take place for dairy farms with more than 10 employees. The LEP can be renewed beyond 2019 in yearly increments again if OSHA deems that necessary. OSHA is working on an updated webinar which will be available mid-March

We advise all farms with more than 10 employees to review your safety programs and make sure you are up to date on safety training, have all of your Safety Data Sheets (SDS), and reach out to your resources like NYCAMH and others to schedule any safety trainings you need to meet compliance.

We have also reached out to NMPF to ask when the safety program they are designing
will be released. We will send another update when we have more information. The **directive** is posted on the US Department of Labor OSHA website.

**Sign-up Now for a Dicamba Training/Certification for 2019**

BASF is holding live dicamba training webinars. This training is intended to fulfill the 2019 mandatory dicamba training requirements. BASF is committed to promoting stewardship and helping dicamba applicators follow the label and spray on-target.

BASF training sessions feature:

- 2019 label and record keeping requirements
- Temperature inversion
- Spray system hygiene best practices

Much more

**Live webinars** will be held on the following dates:

Register Here for Saturday, January 26 @ 9:00 a.m. – 11:00 a.m. EST

Register Here for Monday, January 28 @ 8:00 a.m. – 10:00 a.m. EST

These webinar trainings are intended to satisfy the US EPA label requirement for mandatory dicamba-specific training for individuals planning to use any of these three restricted use pesticides: BASF’s Engenia herbicide, Monsanto’s Xtendimax herbicide or Corteva’s FeXapan herbicide. Only certified applicators may purchase and use Engenia herbicide. Per the Engenia herbicide label (US EPA Reg No 7969-345): "Prior to applying this product in the 2019 growing season, all applicators must complete dicamba or auxin specific training.” Check with your state pesticide regulatory authority for additional training requirements or application restrictions.

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**Agronomy—Aaron Gabriel**

Agriculture and the market place are always changing. One opportunity that is developing is our local grain economy. New York has a grain deficit for feed grains and food grains. Markets for local food grains are developing and opportunity exists to grow more feed grains—if we can meet the quality standards. We hold the Hudson Valley Value-Added Grain School each year to help farmers become part of the local grain economy.

One area that farmers express a need is for education on grain storage. My work plan for the next couple of years includes educating farmers on how to properly store grains. To begin this education I am establishing the Stored Grain Evaluation Program. See the notice in this issue.

Storing grain properly requires a lot of management and a lot of technical knowledge. You have to know fan capacities; know the volume of grain in a partially filled bin; know the amount of air per bushel to move; know the time it takes to move that air; know how temperature and humidity affect the equilibrium moisture content of the grain; measure grain moisture and temperature throughout a bin; and monitor pests. Plus, you need to evaluate your stored grain at least every month. I have thermometers, grain probes, grain sieves, a portable moisture meter, and a drying oven to help you evaluate your stored grain. Please give me a call today. We can check your moisture meter for accuracy and evaluate your stored grain.

**What should the grain temperature be during the winter?** The rule of thumb is no more than 15°F difference than the average daily temperature. Table 1 gives some examples of
daily temperature averages and highest grain temperature for the scenario.

Table 1. Warmest grain temperature for a given daily temperature average.

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<th>Daily High Temp</th>
<th>Daily Low Temp</th>
<th>Daily Average</th>
<th>Grain Temp Should Be Less than or equal to</th>
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**Don't Neglect Stored Grain this Fall and Winter**

Tom Dorn  
Extension Educator, Lancaster County  
University of Nebraska

As most dryland corn producers know, you cannot assume that the 2012 corn in the bin has not been contaminated by molds, including mold species capable of producing mycotoxins. The only defense against mycotoxin contamination in corn is to manage the grain moisture content and grain temperature to minimize mold growth in the grain.

In an *August 31, 2012 CropWatch* story, (archive/-/asset_publisher/VHeSpfv0Aqju/content/4979457) I made several recommendations to help you protect your stored grain:

- **Dry dryland corn down to 13% moisture if it's to be stored for more than a month.**

- **Run aeration fans whenever the air temperature was 10 degrees cooler than the grain temperature since the rate of mold growth is slower at cooler temperatures.**

- **Cool stored grain down to 30°F (plus or minus 5 degrees) to stop mold growth. If you have not cooled the grain to the recommended temperature for late fall and winter, do so soon, especially if you plan to keep the grain into the new year.**

![Figure 1. As temperatures drop in winter, convection air currents can develop in grain bins. Grain along the exterior wall will cool and warmer air in the center of the bin will rise and hit the cold air in the top of the bin, often leaving moisture on top of the grain.]
In fall and winter, grain next to the bin wall will be cooled while grain in the center of the bin will stay warmer. The difference in temperature can result in convection air currents migrating through the grain (*Figure 1*).

The warmer air in the center of the bin rises and the grain next to the cold bin wall sinks. When the warm rising air encounters the colder air at the top of the bin, the escaping air can go below the dew point temperature of the rising air and deposit moisture on the grain. This can create a wet spot in the top-center of the bin.

If the grain is warm enough for microbial activity, a hot spot can form and molds can grow, even in winter. This includes molds that can produce mycotoxins.

Run the aeration fan(s) at least once a month when the humidity is low and the ambient air temperature is 30 to 35 degrees. To conduct a preliminary check on grain quality, start the aeration fan(s), then climb up and lean into the access hatch. If the air coming out of the hatch is 1) warmer than you expected, 2) has a musty order or 3) If condensation forms on the underside of the bin roof on a cold day, continue to run the fan(s) long enough to push a temperature front completely through the grain.

A rule of thumb is, the time (hours) to push a temperature front through a bin of grain is 15 divided by the airflow-cubic-feet per minute per bushel cfm/bu.

For example, a bin used for drying grain should be able to produce about 1.0 cfm/bu so it would take about 15 hours to push a temperature front through the grain (15/1 = 15). In another example, a bin equipped with a fan able to push only 0.3 cfm/bu could push a temperature front through in 50 hours (15/0.3= 50).
Stored Grain Evaluation Program

Is Your Grain Properly Conditioned For Winter Storage???

What is its temperature?
Are there pockets of moisture?
Does it have insects or molds in it?

For the six county CAAHP region
Have your grain evaluated at NO CHARGE!
Samples of your stored grain taken.
Printed resources and a hand lens available for $15.

Protect Your Harvest
All stored grain must be at the proper moisture and temperature to maintain quality.

If you have a couple of totes or several grain bins, make an appointment now before a small issue ruins your entire harvest.

Contact Aaron Gabriel, 518-380-1496, adg12@cornell.edu
**Hemp Meeting Recap**  
Aaron Gabriel  
Cornell Cooperative Extension  
Capital Area Agriculture and Horticulture Program

About 100 people attended the meeting “Growing Industrial Hemp – An Update and Growers’ Experiences” on January 17, 2019. This article is a summary of what was said. Anyone with interest in industrial hemp will find most of the information they need at two websites:

**NYS Ag & Markets,** [https://www.agriculture.ny.gov/Pl/PlHome.html](https://www.agriculture.ny.gov/Pl/PlHome.html)  
Here you will find the “Industrial Hemp Program Guidance” and the grower and processor applications

**Cornell Hemp Website,** [https://hemp.cals.cornell.edu/](https://hemp.cals.cornell.edu/)  
Here you will find information on growing hemp (“Resources” in upper right corner of the page) as well as recordings of previous hemp meetings.

The **Cornell Hemp Extension Team** has an educator in each part of New York. **Here in eastern NY, Maire Ullrich is our hemp educator.** Maire’s focus is on hemp for CBD. Since she could not attend the meeting, she was broadcast in via ZOOM to introduce herself and share the following cautions to new hemp growers:

- Starts small especially with CBD – it is like tomatoes  
- Do the math. Growing CBD hemp is expensive ($10,000/acre or so)  
- Permit – S-I-M-P-L-E – Your research results need to be related to agricultural production, not medical benefits  
- Beware of strangers with gifts/contracts - do homework on anyone claiming they have tons of money or name-drop partners  
  * Be more wary of those who ask you to pay  
- Contracts & Lawyers – Have contracts reviewed by a lawyer and only work with ethical people. It is very expensive to hire a lawyer to settle contract disputes.  
  * Relationship with buyer and genetic material provider are very important  
    - Real feminized vs. “fake” feminized, germination is not always good  
    - THC & genetics – what if its “hot”, in the contract, who is liable?  
- It’s still farming – no magic bullets. Anything can happen in farming with weather, pests, machinery, poorly adapted variety, etc  
- CBD falls under oversight for FDA

**Regulations** – presentation by Christopher Logue, NYS Ag & Markets  
Last December, in the Farm Bill, industrial hemp was removed from the definition of marijuana in the Controlled Substances Act and is now called “hemp”, rather than “industrial hemp”. This will change how hemp will be regulated, since it now is not classified as a narcotic. The 2018 Farm Bill directs USDA to set up a framework for hemp regulation. States can continue to regulate hemp under the provisions of the 2014 Farm Bill until the new program is rolled out by USDA. In the future states will be able to submit a plan to USDA to continue to take primary regulatory authority over hemp production. The program in New York will continue under the current system. Because the THC levels in hemp are not consistent and can get too high, it will continue to be regulated and tested for THC/THCA. The “decarboxylation” method will be used, which is more sensitive to the total THC in the plant. Farmers must file a harvest report with Ag & Markets to test all their hemp varieties for THC. Plantings over 0.3%
need to be destroyed with the destruction witnessed by a New York State Department of Agriculture and Markets inspector. It is good practice for growers to test for THC on their own through the season. If the level rises and it is expected to reach the 0.3% at the usual harvest time, the crop could be harvested early but a regulatory sample is still required. If you are growing hemp plants for resale you would also need to register as a nursery grower with the department and your sales would be restricted to other registered hemp growers.

In the past, procuring seed from foreign sources required a permit from the Federal Drug Enforcement Administration. The Department of Agriculture and Markets has inquired whether this permit will still be required with the changes in the Farm Bill. There has been no direction so far, from the Drug Enforcement Agency on this issue. If you are a research partner in the program and are planning to get seed from a foreign source contact us for guidance on how to proceed. The Ag & Markets “Industrial Hemp Program Guidance” has the current ways hemp seed can be procured. Go to the NYS Ag & Markets website for any updated policies.

The US Food and Drug Administration continues to regulate cannabidiols (CBD’s). The FDA does not allow CBD’s or THC to be added into foods and does not allow them to be sold as dietary supplements. NY does not allow CBD’s to be added into human or animal foods. It does allow CBD products to be manufactured, labelled, and marketed as dietary supplements. Good Manufacturing Practices for Dietary Supplements must be followed – regulations at 21 CFR 101, 111, 201.

NYS Ag & Markets continues to accept applications for grain and fiber production and processing on a continuing basis. Applications are not currently being accepted for CBD production or processing. When CBD applications were being accepted from December 4 to December 28, 2018, three hundred forty-eight applications were received.

**Research Update** – presentation by Dr. Larry Smart, Cornell University

There is a NYS Working Group for hemp, established by NYS Ag & Markets. Members represent all sectors of the hemp industry. The task is to develop the hemp industry. The current $700 million hemp market in the US is being supplied by foreign product. About one-fourth of the market is for personal care products that use hemp oil from the grain. Other slightly smaller markets are for CBD’s, food, industrial applications, and consumer textiles. Currently, China is the main producer of hemp fiber and Canada is the main producer of hemp grain. Markets are changing and developing very quickly.

Hemp is mostly a dioecious plant (male and female plants) and some monoecious plants (male and female flowers on the same plant). For fiber, having male and female plants is inconsequential. For grain, mostly female plants are wanted for the grain and a few male plants for pollen. CBD is best from un-pollinated female flower buds. Male plants are not harvested for CBD and pollination reduces CBD content in the female flower buds.

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**Female hemp flower**

**Male hemp flower before pollen shed**

Pictures from https://sway.office.com/0L8e00CFkwFFJ4LU, by Matt Chartrand, Cornell student
Since CBD growers want only female plants, male plants are removed once they are noticed. There is “feminized” seed. The plant is tricked (using plant hormones) to just produce female seed. However, not all seed sold as feminized, really is, or was successfully feminized. The major theme throughout the night was “buyer beware” of your seed. Not all sources are trustworthy. Not all seed is what they say it is. Not all seed will produce plants with a low THC content. Not all seed is properly bred. There is a lot of variability from plant to plant within a variety, not only in plant quality but also THC levels. Beware. Research your source. Understand plant genetics. Keep good records of seed sources and of variety performance.

Most of the Cornell research on hemp is found on the Cornell Hemp Page. Research is focusing on varieties and economics. Over a dozen faculty at Cornell are researching hemp. There are over 1700 acres of hemp planted for research at five sites. (I will not discuss the research results in any detail in this summary, since it is all at the Cornell Hemp Page.)

There are several pests of hemp. *Sclerotinia* white mold can be serious. The propagules of this fungus (sclerotia) survive several years in the soil. Crop rotation is critical. Soybeans, beans, sunflower, canola, and legumes are hosts for *Sclerotinia*. So do not plant these crops after each other or the same crop in consecutive years. Another fungus, an unknown species of *Bipolaris*, causes Hemp Leaf Spot. Another serious fungus is *Fusarium*, which can infect the grain and contaminate it with vomitoxin. Only 1 ppm of vomitoxin is allowed in human food grains. A common mold, *Botrytis* gray mold can also infect plants. Several insects feed on hemp including *Lygus* bugs (feed on flower buds), flea beetles (leaf feeding), Japanese beetles (leaf feeding), leaf hoppers (feed on sap, weakening the plant), and European corn borer (worms tunnel up the stalk). Do not grow hemp near corn, so as not to attract the European corn borer. Of course, weeds are an issue.

There are no pesticides registered for use on hemp. The pesticide label must list the pest you want to control and the crop to which it will be applied. If it doesn’t, then you are breaking the law. Hemp is tested for pesticide residues by processors. Cornell tested hemp grain varieties at five sites. Anka was a good grain variety. Yields ranged from 800 to 1200 lbs/acre among all the grain plots. Canada averages about 800 lbs/acre, so there is a possibility New York production can compete. The omega-3 and -6 oils were in good ratio and protein ranged from 25 – 27.7% in the whole grain. Protein cake (the meal left over after the oil is extracted) is not yet allowed in animal feeds. Grain should be tested for vomitoxin to be sure it is safe. Harvesting hemp seed is problematic with our usual combines. Axial (rotor) combines do not work. Here are some websites with some grain harvest machinery information:


[https://www.youtube.com/watch?v=GJKnz9hLB3Q](https://www.youtube.com/watch?v=GJKnz9hLB3Q) (grain harvest plus windrowing stalks with one machine)

Hemp seedlings are weak until they are about three weeks old, then they grow very fast. For grain and fiber, seed is planted directly into the soil. A uniform seeding depth (1/4 inch) and uniform moisture is critical to a good stand. Many planters (grain drills) will work well. Crop, soil, and weed management in the previous years are important to a good hemp crop. Hemp needs a fertile, well-drained soil. It takes a lot of nitrogen. For CBD, too much nitrogen late in the season will reduce flower development.

Fiber crops are cut with a sickle bar mower and laid in direction. Plants are “retted” in
the field. That is, they are left in the field for microbial action to breakdown the pectin that binds the fibers together. The windrow may have to be turned to maintain uniform moisture and properly control the decomposition. This website explains the process for Canada (where it can be much drier than in New York), [http://www.hemptrade.ca/eguide/fibre-production/retting-of-hemp-fibre](http://www.hemptrade.ca/eguide/fibre-production/retting-of-hemp-fibre). Typically our challenge is having too much rain, so that the crop rots in the field and does not dry out so it can be baled. Having all the stalks lying in one direction facilitates the baling process.

While hemp for grain and fiber is grown like a field crop, hemp for CBD is more like growing tomatoes. It is a very interesting horticultural crop because it is a short-day plant (flowers when days shorten to a certain day-length); you want it to produce a lot of flower buds without pollinating; you want only female plants; it needs a lot of fertility, but not too much nitrogen at flowering time; variety genetics is important; and there are no registered pesticides for it. Hemp for CBD plants are started inside. Feminized seed can cost $1/seed. “Buyer beware” that not all feminized seed will give female plants. Plants are also propagated by cloning plants. **Since hemp seed is not certified by government agencies like other crop seed, you need a reliable seed source.** Plants are spaced five feet apart within rows and between rows or even further to grow a bushy plant with lots of flowers. It requires a lot of labor to hand cut each plant and dry the flowers. CBD accumulates in the trichomes (glandular plant hairs). (If you do an image search on the internet for “hemp trichomes” you will see several images.) The number of functional CBD genes determines the CBD yield in a variety. CBD content is very variable within a variety, within the same field, and also depends on plant stresses (too wet, too dry, sun, etc). Some seed that Cornell sourced from Arizona had low THC, but when grown in NY, the level was 2.0%, far above the 0.3% allowable level. CBD content is usually around 5%. Plants can lodge (fall over). Some growers trellis their plants so they do not lodge. Establish the plants early (within reason for a warm-season plant) to get a lot of vegetative growth before the flowering stage in July.

Pollination reduces CBD content. Pollen will travel 500 meters. Plants were partially pollinated by male plants 1500 meters away. The three mile pollen free zone is a good standard to ensure no pollination.

**Growers Sarah and Iris Rogers, Homestead Hemp, Hebron, NY ([https://www.oldhomesteadhemp.com/](https://www.oldhomesteadhemp.com/))**

Sarah and Iris emphasized the need to have a plan, but be ready to adapt and change the plan. There are many obstacles. Accept it and be determined to overcome them. This is a new crop and a new industry. Nothing is settled or for sure.

They were permitted in March 2018. They planted 5000 seeds May 30th, in a greenhouse that a friend let them use. Seeds need a warm and damp environment for germination. Black paper was laid over the seedling trays to maintain heat and moisture (not too wet). Germination in a day. They used the variety Cherry Blossom and had only one male plant. Seeds have a strong odor and attract every bird and rodent. Four weeks after seeding, young plants were transplanted with a water-wheel transplanter, spaced six feet in the row. They recommend growing seedlings in the greenhouse for 6 to 7 weeks to get stronger seedlings. Some seedlings died in the field because it was dry and they did not have irrigation. An ATV with a cultivator was used to control weeds between the rows. They still had weeds, but accepted it. Other pests were aphids, Japanese beetles, and *Sclerontinia* mold. Deer did not eat the plants, but they did trample them.

Plants grew to four to six feet tall. At harvest, plants were cut by hand. A weed-whacker with a sawblade works well. Plants were hung in their barns to air dry. Some plants molded during the drying process. They highly recommend using heat and ventilation to speed up drying. The flower buds were “hand shucked”. There are machines to strip off the flower
buds, but they are not faster than doing it by hand. It was a tremendous amount of work. They yielded 2500 pounds of buds from five acres. CBD was at 12% and THC was at 0.07%. They ran out of space for drying. They worked with Castetter Sustainability Group who found more drying space for them and helped them find buyers for all their harvest. Some plants were stolen from the field, of enough value to make it a felony. Sarah and Iris made a concerted effort to inform the community of their project. They also had a booth at the County Fair. Educating the public removes their fear and skepticism and gains their support for you. It also helps prevent theft. The thieves were caught and will pay restitution. Sarah and Iris considered 2018 to be a nominal success. They plan to continue and expect greater success as they learn more and more.

Ben Dobson, Stone House Farm, Hudson, NY (www.stonehousegrain.com)

Twenty-one acres were planted in 2018, mostly for CBD and some for grain using organic production methods. Five different seed suppliers were used. Ask hemp seed suppliers/breeders how many generations are in the breeding of the variety. If there are too few generations, the variability within the variety may be very great. Also, ask if there are two CBD producing genes in the variety, rather than just one. Typically there is a consistent ratio of THC to CBD in hemp, being 1 to 30. Varieties that have high CBD content will also have high THC content. So, if you get a variety with high CBD content (12% - 14%), there is a high probability that you will also have high or too high THC levels. Varieties with good CBD levels (6% - 10%) will be more reliably low in THC.

Plants for CBD were started in the greenhouse from May 5th to May 25th and planted in the field from June 1st to June 21st, to stagger the harvest. The greenhouse was kept warm and at 70% relative humidity with good ventilation. Light and wind were added to get stocky plants in four weeks.

CBD plants were transplanted into narrow raised beds with plastic mulch and drip irrigation. A living mulch was mowed between the plastic. Plant into moist soil under the plastic. Drip irrigation is inadequate to moisten all the soil under the plastic. Lay the plastic over moist soil. Plants were spaced five feet within the row and five feet between rows. Next year Ben will use a 6’X6’ spacing. The objective is to grow bushy plants with lots of flower buds. So a good spacing, plenty of nitrogen early in the season for vegetative growth, but just sufficient nitrogen at flowering. Too much nitrogen later in the season inhibits flowering and promotes diseases and some insects.

A fertilizer mix of calcium nitrate, chicken manure, humates, and other products was used. It is very important to test the soil for heavy metals and micronutrients. Hemp will bio-accumulate heavy metals. So, if a micronutrient (like boron or zinc) are at low levels, the plants will take up heavy metals (lead, cadmium, nickel etc, if they are present) to compensate. CBD processors will test for heavy metals, all well as CBD content, THC, pesticides, and vomitoxin.

Hemp needs a well-drained soil and good air drainage. Orient rows parallel to the prevailing winds to get better drying of foliage to reduce diseases. Stressed plants will produce more THC. Drought, soggy soil, pests, lots of sun, frost, and heat all affect THC levels. Stressed plants should be mowed or removed. Test plants through the season to monitor THC levels. Having plants high in THC is too costly. Regulators will have to destroy the entire crop if it tests high in THC. Simply remove any stressed plants.

Ben got 1039 lbs/acre of CBD buds. Cascade was one variety planted. Plants were hand cut in the field. Laid 500 to 600 in a hay wagon. His crew of six people could harvest three acres in a 12-hour day. Plants were then brought to an insulated warehouse and hung up using a system of netting and furring strips. A dehumidifier was installed. Warm (85°F) and dry air (45 – 55% rh) was pushed up beneath the hanging plants. It took 72 hours to dry the plants. The “munch machines” which de-bud the plants require plants to be at 9% moisture. If
plants are harvested at about 85% moisture, then there is 1520 lbs (182 gallons) of water that must be removed from every ton of fresh plants. A good drying system is essential. Ben is re-thinking his current system. It took only 4 hours to lose one batch of plants to white mold (Botrytis). You need ventilation and dehumidification. Do not harvest plants in the rain. You can use a greenhouse to dry plants, but sunshine will release CBD from the plants. Greenhouses should be covered with shade cloth. Dry buds are put into one-ton nylon sacks.

Ben emphasized that the importance to critically analyze every step of production, harvesting, and drying. There are very many steps and tiny details that make a difference: which direction you lay down the plants; do you take off the branches before stacking them; the direction in which you sharpen the knives on the “munch machine”; how plants are handled and at what moisture since the CBD is concentrated in the delicate trichomes, etc. He is thinking through a process to de-bud the fresh plants in the field. Then you are transporting a much smaller volume to the drying facility and have much less material to dry.

Ben emphasized a few more points about CBD production. Security at the drying and storage facility is important. A person can steal only so many plants from the field. But if someone steals dried buds from your drying facility, the value is considerable. Proper security of the facility and the personnel that work there is critical. Have a market before buying seed and planting. Only grow what you are contracted to sell. Have an agreement (reviewed by a lawyer) for a specified quantity and quality.

Since there are legal and illegal uses of CBD, you must protect yourself from how your CBD is used by those who buy it. Protect yourself so that you are not liable for any illegal activity on the buyer’s part. One method is having buyers sign a sales agreement committing them to NYS rules. It is advisable to use a lawyer not only for ensuring proper sales agreements, but also to look at the partnership agreement you enter into with NYS Ag & Markets.

Ben also grew hemp for grain. This is grown like a field crop, directly seeded into the soil. He used a no-till seeder for grain hemp, but it failed. Seeding consistently at ¼” and using good press wheels is important to a uniform stand. A uniform stand that gets out of the ground quickly is your major defense against weeds. Plant into moist soil. Harvest grain with an old combine, rather than ruining a new combine. Rotor type combines do not work well with hemp.

When baling the stems, they need to be lying on the ground in the same direction. Tedding hemp does not work and makes baling more difficult.

Lastly, the hemp stubble from CBD stems can be very large. After going through the winter, they soften up and are not a problem. Next year Ben is planning on 40 acres of hemp.