



Organic hops – the niche within a niche

GROWTH POTENTIAL | Hops are an inherently specialized agricultural crop. The area under cultivation is extremely small compared to other crops. Yet, within this niche, there is another that has been developing in recent years and has potential for growth: organically grown hops. Cultivated without fertilizer and pesticides? Can it be done? Yes, it certainly can. BRAUWELT International visited *Franz Friedrich*, the largest organic hop farmer in Europe, at home in the region of Bavaria known as Little Switzerland in Franconia. We also spoke with *Patrick Leavy*, president of the American Organic Hop Grower Association (AOHGA).

PERHAPS IT WAS THE DOUBTERS, who provided Franz Friedrich with the impetus to first attempt to grow hops organically thirty years ago. His father and grandfather also grew hops on the family farm in Little Switzerland near the Franconian town of Gräfenberg. “Even as I took over the farm from my father, I viewed the pesticides, fertilizers and other agrochemicals sprayed on the hops, with which we come into contact when farming corn, grain or even hops, with a certain amount of skepticism. They can still be found on the crops they’ve been sprayed on once they’ve been harvested. They don’t just disappear.”



Sonja and Franz Friedrich – pioneers in the cultivation of organic hops

exclaimed Friedrich. After attending a training program on “organic farming” in 1976, the seed was planted. He first began with potatoes, and in 1981, he started growing hops organically. In 1989, he completely shifted his farm to organic production, which is now certified organic according to Bioland, USDA and ISO regulations. Today, he farms a total of 180 ha with his wife *Sonja* and one full-time employee. At peak times, like the hop harvest, eleven seasonal laborers also work on the farm. Aside from 24 ha of hops, he also grows 3 ha of apples and cherries as well as 130 ha of agricultural crops and 20 ha of hay to feed his cows. The cows, in turn, create the organic fertilizer for his crops.

Diversification is a must

“There are no organic hop farmers who exclusively grow hops,” according to *Dr. Florian Wehrauch* of the Hop Research Center in Hüll, who is an expert in the cultivation of organic hops at the Bavarian State Research Center for Agriculture. “All farmers have a second crop to fall back on, for organic farming is associated with too much risk not to do so.” Perhaps this is the reason that there are still only eight organic hop farmers in Germany – five of them in the Hallertau, two in the Hersbruck region and one in Tettngang. All of the farms are relatively small and are exclusively dedicated to organic production. The total cultivation

area for organically grown hops amounts to 81.1 ha, an area that constitutes one-half of one percent of the total hop cultivation in Germany.

The largest organic hop production area in the world is found in Germany – at least at present. The USA follows Germany at 51 ha, then the UK at 16.7 ha, Belgium at 13.9 ha and New Zealand at 10 ha. Including the small number of hectares in Austria, Poland, Canada, Switzerland and Denmark, there are a total of 183 ha certified for organic hop cultivation worldwide (119 ha in Europe).

The Friedrich family is in possession of the largest area in Europe and probably the world with 24.2 ha, where they grow eight different varieties. “With bittering hop varieties, you encounter problems with the fertilizer. They are never completely satiated with only organic fertilizers,” explained Friedrich, who is very proud to have a few special varieties among the hops he cultivates. He primarily cultivates the variety *Hersbrucker*, followed by *Spalter Select*, *Saphir*, *Smaragd*, *Perle*, *Hallertau Mittelfrüh* and *Hallertau Tradition*. However, he is the only organic farmer to offer *Hersbrucker Pure*, a variety with a wonderful citrus aroma. In addition, he also grows organic *Opal* and *Tettnanger*.

The yield at harvest cannot compare with that of conventionally cultivated hops. Friedrich is able to harvest 1.25 t

of raw hops per hectare: “This is compensated to some degree by the alpha acid content, which is on average 1 % higher than that of conventionally grown hops.” In Germany, the total yield of the 2010 harvest was 93 t; in the EU it was 134 t, and worldwide 228.5 t.

Knowledge gained from personal experience

When Friedrich started by planting one-half of a hectare of organic hops in 1981, he proudly harvested 650 kg of hops. “We had a lot of luck that season,” recalls Friedrich, “And the next year, too. The third year we had a peronospora infection and only harvested 150 kg.” Protecting organic hop vines is a considerable challenge. At that time, no one had any experience with organic hops, and what Friedrich knows now, he had to teach himself by experimenting on his own.

Today, the eight organic hop growers meet in Plankstetten once a year to exchange the knowledge they have gained from their experience by organically growing hops. “The others – mostly younger colleagues – don’t have to repeat the mistakes I’ve made in the past.” Friedrich has also learned to how protect his plants by speaking to vintners, since conventional pesticides are out of the question and organic preparations must be used in the vineyards. A product made from quassia, a South American shrub, is effective against aphids. It is three times the cost of conventional pesticides and has to be applied to the vines by hand. Friedrich sprays whey on the plants to fight spider mites, which is also helpful against different fungi. Moreover, it strengthens the hop plants. Spraying copper on the plants for protection against peronospora has been allowed since 1987. Predatory mites are also allowed, but Friedrich has yet to utilize them on his farm.

“They don’t like to play second fiddle”

Much of the work in organic hop fields is still done by hand. Friedrich believes that organic farming requires 30 to 40 percent more work than conventional farming. In his fields, he manually culls leaves from the growing vines three times, in order to keep the lower part of the vines free of growth and to make life difficult for the flea beetle.

Keeping this pest at bay is especially problematic. Friedrich knows that they do not care for whey or acidic soil. As a result, he has altered not only the protective substances he applies to the hop plants but also the conditions in the soil so that they are somewhat acidic. This represents great deal of work for a crop that already requires more effort than most when cultivated conventionally; however, "if hops sense that they are playing second fiddle then they give up on you."

Earlier he would attack the weeds with a hoe, but now he uses a torch to burn them off. Between the rows, he sows plants in the spring, which according to his experience are good for the hop plants. He has already experimented with several different ones. These plants are members of the family Brassicaceae and are cabbage-like plants, such as mustard or rapeseed. However, they are detrimental if a flea beetle infestation is present. This season Friedrich is testing a mixture of herbs. The cost of planting them is 170 EUR per hectare on average or around five times the amount to sow them conventionally. He has also experimented with hemp, crimson clover, hollyhocks and buckwheat. He treats the strips of land between the rows of hops as if they were individual fields, meaning that he rotates the plants so that over the years each strip is sown with a different plant in a specific sequence. Friedrich is convinced: "If we already have a perennial plant – the hops – as a monoculture, then the plants sown between the rows should be a mixed culture."

Quality is a balancing act

The harvest and drying also require a certain amount of intuition. "It would be better for the plants if we could delay the harvest, but then the quality would decline, and quality is our primary goal," explains Friedrich. From time to time we receive specifications from breweries pertaining to the drying process. The temperature in the kiln should never rise above 60 °C, which is quite difficult to maintain consistently. Friedrich is considering a new thermostat for his kiln because this step, which takes place immediately prior to selling the hops, is of great importance.

There are also appreciable differences between selling organic and conventionally cultivated hops. While the quotas for the hop futures contracts for conventionally grown hops are often higher than 90 per-



In organic farming, those who react early when an infestation appears are the only ones who stand a chance. A thorough inspection of the hop fields is extremely important

cent, organically grown hops are at most 60-70 percent. "We need reserves," adds Friedrich. "With harvests highly dependent on the amount of vegetative growth, we have to ensure that we have a certain level of surplus for the following year, in order to be confident that we can deliver what we promise. All of us have at least 30 percent in storage for the next year. Even if all of us organic hop farmers help one another, there aren't many of us. And if we harvest

only half of what we expected due to dry weather, as happened in 2003, then we're all in the same boat!" Providing for oneself is therefore absolutely necessary.

Specialty beer brewers as customers

Friedrich has fifteen breweries as regular customers in Germany but also ones in Belgium, Denmark, Japan and the USA. He is pleased to see the growing trend towards more unique beers. Friedrich views brewers creating specialty beers as future customers, because beginning in 2013, the laws governing the production of organic beer in the US will change (see the following interview on p. 38). They will require that organic beer, which can currently be brewed using conventional hops if no organic hops are available, will only be certified organic when brewed using organic hops.

In the United States, there are now 27 farms producing organic hops. Of these, 20 are small, completely organic farms. According to Dr. Weihrauch, the other seven are large operations, where organically and conventionally grown hops are planted next to each other. Once the laws change in 2013, Dr. Weihrauch expects that the area under organic cultivation will increase significantly in the US from 51 ha to a maximum of 147 ha. In 2012, France



Dr. Florian Weihrauch of Hüll: "With the pending change in the regulations governing the production of organic beer in 2013, which stipulates that only organic hops may be used, an increase in demand is expected"

(19 ha), the Czech Republic (7 ha) and the Netherlands (1.2 ha) will be entering the organic hop-growing market. Organic varieties such as Saaz and Strisselspalter will then become available. The area of organic hop cultivation around the world will increase to 312 ha. Friedrich hopes that these developments will also result in a noticeable boost for the German organic hop market.

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BRAUWELT International spoke with Patrick Leavy, president of the American Hop Grower Association (AOHGA) about the US market, the future of organic hops and the organization itself.

BWI: Patrick, what is the market like for organically grown hops in the USA?

Pat Leavy: The US market for organic hops is relatively small but is important for the organic hop growers in the US. Up until five years ago, the vast majority of the organic hops used in the US were supplied by Germany and New Zealand. At that time, there were no domestically grown organic hops. That meant that within the framework of the National Organic Program of the United States Department of Agriculture (USDA-NOP) conventionally grown hops may be used to brew organic beer, if it can be proven that no organic hops are available. In the last few years, the US organic hop industry has made up for it. US organic hop growers from the Northwest across to Maine now produce ten thousand pounds (approx. 80 t) of a number of different American hop varieties which were not previously produced organically. The USDA-NOP was able

to begin adjusting their standards on the basis of this increase in organic hop farming. As of January 1st, 2013, organic beer must be brewed using organically produced hops. We hope that this results in a considerable rise in the cultivation of organic hops as well as a lively and sustainable organic hop industry.

BWI: In contrast to Germany, organic hop farmers already have their own organization, the AOHGA...

P. Leavy: Five families of hop growers, who live on the north Pacific coast of the US, founded the American Hop Grower Association (AOHGA) in 2009. It is a non-profit organization for promoting organic hops. Every certified organic hop farmer as well as colleagues from related industries, such as brewers, can join the organization. The AOHGA provides brewers with information about organically grown hops and also offers training for hop growers. Communication is the primary objective. We are not a hop trading organization. We meet four times a year to exchange information and share our experiences. At the moment, we are chiefly working on the topic of shifting from conventional to organic farming. Since January, we have been distributing the Hop Market Report and the Brewers' Survey (a poll taken among breweries).

BWI: How do the organic and conventional methods of hop production differ in the United States?

P. Leavy: Organic cultivation methods are very different from conventional ones.

Generally speaking, in organic farming only natural pesticides and fertilizers are allowed with a few exceptions, should no alternatives be available. Methods of organic cultivation require much more time, and the organic pesticides and fertilizers are also more expensive. Farming organic hops makes you a better farmer. A lot that is currently known about organic hops the organic farmers had to learn on their own through experimentation. And many aspects of organic hop farming have already been applied to conventional hop farming, above all their experience with fertilizers and pesticides. However, the fact that a portion of the area under cultivation is organically farmed will pay for itself in the long run. With this knowledge, we can react more quickly if the current conditions change to a significant degree. Many of the families in the US, who now grow organic hops, have been cultivating hops for four or five generations. These families have plenty of experience and have always had to adapt to changing conditions.

BWI: How do you think that organic hops will fare in the future?

P. Leavy: The future of organic hops is directly linked to the future of organic beer, and this lies unequivocally in the hands – or more precisely – in the mouths of beer drinkers. The destiny of organically produced hops will be determined by conscientious consumers as well as by brewers, who want to produce wholesome, high quality beer. Now, it is not only up to the hop farmers to provide a correspondingly high quality ingredient but also up to the brewers to brew good beer, which will satisfy these kinds of customers.

Currently, organic beer is produced exclusively by craft brewers in the US. Some brew only organic beers while others offer a choice. Most of these organic beers are sold locally or regionally. We are aware of 20 organic breweries in the US, among them brewpubs but also large regional breweries. Because the majority of US hops are exported, we expect that our branch of the industry will one day develop into its own market.

BWI: Then we wish you the best of luck in the future. Thank you very much for your time!

This interview was conducted by
Dr. Lydia Winkelmann



Patrick Leavy: The future of organic hops is directly linked to the future of organic beer

Organic beer in the US may be brewed using conventionally cultivated hops until the end of 2012. This was only possible due to the scarcity of organic hops on the market. However, because an increasing number of hop farmers have decided to shift their crops to organic production, the National Organic Standards Board (NOSB) used this as impetus to change the regulations governing organic beer in 2010, a law which is now in effect, but allows a two-year grace period for shifting from conventional to organic production. Beginning in 2013, only organic hops can be used to brew organic beer.