QUANTUM AGRICULTURE

THE SCIENCE OF ORGANIC FRUIT FARMING ON OYLER'S ORGANIC FARMS

By Zoe Brittain

Organic agriculture takes time, money, and science.

And huge amounts of stress and passion.
And even then, it's not easy.

Bill Oyler, along with his wife Mary Ann and their three grown children, Sara, Jacob, and Katrina, farms about 360 acres of certified organic land in a rolling valley of Biglerville, Pennsylvania. There they produce certified organic apples, a full complement of apple products, peaches, pasture-raised chickens and eggs, grass-fed beef, and vegetables. The Oylers also have a farm market where they sell all of these items plus organic and local goods ranging from locally made soaps to organic cacao nibs.

The land has been farmed by the Oyler family for five generations, and is in its seventh year of being certified organic. The Oylers have a strong belief in being good stewards of the land, and as such, strive for healthy soil and subsequently healthy plants.

When we visited Oyler's Organic Farms, one question in particular we had was this: If Oyler's is successfully producing organic tree fruit, why aren't more people doing it locally? Virtually everything that we learned during our visit illustrated exactly why.

The Quantum Approach

"In real life, here on the farm and out in the orchard, it's very challenging. Things are expensive and there are only so many hours in the day. You don't get it all done in one day or one year. We are trying to do the whole farm on a nutritional approach—to build the soil with nutrients," Bill explained.

"An area we're exploring is to understand quantum physics—the sub-molecular level of things—and we're trying to extend that into quantum ag," says Bill.

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"If your fruit trees, or you and I, or a milk cow has a certain level of nutrition and a certain level of minerals, you have molecules rotating and giving vibrations and an infrared signature off. And if it's lacking minerals it would be giving off different type of vibrations." Insects can "read" the signature of a vulnerable organism and will attack an unhealthy plant before they'll attack a healthy plant that is nutritionally balanced.

Bill and Mary Ann walked us through the challenges and techniques of an organic fruit grower on the East Coast. Pests, diseases, and weather conditions throw up a never-ending array of trials that the Oylers meet with a combination of low-tech/high labor solutions and cutting edge technology.

Low tech practices include hand thinning apple trees, mowing and weed whacking between rows and around trees (instead of spraying herbicides), pressing cider by hand, and hanging pheromone traps to disrupt insect mating cycles.

High tech solutions include UV-light treatment to kill pathogens (instead of pasteurization) in apple cider, Brix and pH testing of sap, and sap tissue testing.

Blazing a Trail

"A lot of what we're doing is cutting edge research," says Bill. "The conventional tree fruit grower has Penn State's tree fruit production guidelines—an excellent resource a grower can go to for just about anything—any insect, any disease," says Bill. "With us, the learning curve is really steep. There are different resources you can go to, but on the commercial level that we're trying to do, we're sort of writing our own resource guide."

Organic growers have to be at least one step ahead of insects, diseases, and even the weather. Bill says the organic grower really needs to know the life cycle of pests and diseases. "It becomes a part of your psyche," Bill told us. The Oylers must proactively protect trees prior to an invasion or infection.

Conversely, conventional growers have the luxury of using sprays that have back action—the ability to go back two or three days and burn out the infection period. "It's very intense," says Bill, "and some years are much harder than others."

To Spray or Not To Spray

The Oylers spray, too. Bill says "the act of spraying itself is not wrong or immoral." The difference is in what they're spraying. The Oylers are spraying nutrients like dissolved sea salt and seaweed extract to get the trees strong. They also spray beneficial microbes to consume the infectious spores or to disrupt sporulation. "Conventional growers have very strong sprays that are systemic, " says Bill, "so [the chemicals] go into the sap and the leaves and the apples and actually burn out or kill the spore. Problem is that then we consume that."

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One of the most popular chemicals sprayed by conventional growers is glyphosate—the active ingredient in the herbicide Round Up. Bill tells us, "They're finding out that glyphosate is really nasty stuff, though Monsanto's adamantly defending it. The long term detrimental effects are being well documented." El Salvador imposed a complete ban in February 2013, linking glyphosate herbicides to an epidemic of chronic kidney disease that has struck the region. Bill notes that glyphosate was initially developed as a pipe cleaner which binds to minerals/nutrients.

Mary Ann said that they are very conscious not to harm beneficial organisms with what they spray. "Lady bugs are real important to us; they eat the aphids. We spray with things like virgin neem oil from the neem tree."

The materials they spray are very short lived and biodegrade quickly. "We can't use the crutches of conventional growers" says Bill. Conventional growers can rely on consultants to tell them when to spray [pesticides] and how much. It's a lot easier."

Of the combination of tools and techniques that the Oylers employ, Bill says, "It's labor intensive and expensive. But it does work. Any of our fixes other than nutrition eliminate 5% or 10% of the problem. But you do 10 or 12 of them, and you can really make a difference."

So, how do the Oylers do it when it's so difficult? It helps to have an aptitude for "the science end of things," and an encyclopedic capacity to keep track of multiple, simultaneous biological and meteorological cycles, the gumption to innovate, and a supportive, involved family. And even then, it's not easy.

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