Season of the Caterpillar

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Chard – Better Beta Mix

The weather is not normal; winter wasn't normal and neither is the spring. Spring is supposed to have warmer weather than winter, with misty rains, but it's still cold. Must be 'Global Chilling'. We've had more than our share of rainy days, and it's sure to influence the outcome of our summer. First it was weeds, and now its insects. I'm still dealing with the weeds, and they seem to be growing behind me as I hoe. We still have large winter surf, so that tells you the storms are still brewing up north. I see that in the avocado flowers as well; there's too much of them and my grandfather used to tell me if you have a lot of flowers, the bad weather is yet to come.

Da Bugs

When it's good weather for the veggies, it's usually better weather for the insects, and this year is an epic one to say the least. This spring will be remembered as the Season of the Caterpillar. It appears that the cold weather triggered many things. One was the hatching of caterpillars, while the second was probably a drop back in parasites due to either less than ideal weather or a flare up of super- and hyper- parasites. The third was more than adequate rain to provide a lush environment for a population explosion of plant eaters. Caterpillars are especially numerous, and chomping away on an assortment of veggies. The first ones to come along were the Cutworms, a ground dweller waiting to chop off seedlings at ground level. They usually hang out just under the surface of the soil so they're hard to detect. The Black Cutworm is especially dangerous because they're not choosy or discriminate and will eat a host of veggies, cleaning out a row of young seedlings in short order. They belong to a group of caterpillars called Noctuids. These guys work the night shift or are nocturnal. Some farmers and gardeners will think that their seeds didn't germinate, but it's those cutworms eating up the seedlings. Sometimes they leave evidence, but sometimes they don't leave anything.

Croton Caterpillar after falling from a defoliated Kukui Nut tree

The next pest to show up were the Imported Cabbage Worms, that pretty white butterfly fluttering around the garden especially near the cabbage family. It's like the leaves were machine-gunned, and now they're starting from the bottom of my very large cabbage heads, and working their way up. Another group of caterpillars are the Loopers, and these can be identified by their tendency to loop their body, and stand up on their back legs. They can easily disguise themselves as a twig, turning brown, and then switching to green

when they start eating leaves. They are probably the most numerous right now and are even working on the lettuce.

Water Needs

I was visiting one of our beginning farmers recently, and we were talking about water needs of plants. He told me that he didn't need to water that much because it rained a lot, and he only needed one inch of water a month. I told him it was one inch of water per week, so he immediately turned his water on. These kinds of miscalculations can be costly if we were in the middle of summer, but luckily it was in the middle of a fairly wet spring. One inch of water or an acre-inch is the average amount of water a crop needs, and is calculated at 27,154 gallons, although some water-loving plants like taro and banana may take more. This averages to about 4,000 gallons a day. In crop production, you're trying to maintain a certain moisture level, so it doesn't make sense to give the plants all the water at one time. Plants need as much air as water, and drowning them causes all kinds of problems, such as anaerobic (lacking oxygen) conditions that lends itself to root rots, and other fungus and bacteria. You don't eat your daily intake of food at one meal, or you shock the system; the same with plants.

Searching for New Crops

A few weeks ago, I received blueberry plants from Fall Creek Nursery, the largest blueberry plant producer in the world. I've been trying to get my hands on these for a couple of years now, and a fellow extension agent tipped me off to the source. Problem is you gotta contact the right person at the right time of the year. Most of the plants are gone by spring since this is peak planting season, but I was able to get my hands on the last of four varieties. The majority will be planted in the field at the Demonstration Farm, but I'm playing with some of them in pots at home because I think they have potential as ornamentals. In Honolulu, there were two garden shops selling them, and they're different varieties from the ones I received, so I bought a couple of them. Some were even fruiting already! (See below)

Well, the first step after unpacking them was making a special potting mix. Blueberries are acid-loving plants, so they require media with a low pH. Hydrangea, Gardenia, and Azalea have similar requirements. You actually have to acidify the soil by adding Sulfur or you can use a peat-perlite mix with no lime or dolomite and they should do alright. Blueberries require good drainage, so I put a lot of perlite into the mix, probably 25% by volume. I used some Osmocote 14-14-14, a time-release fertilizer that lasts for about 3 months. I transplanted them in two different sized pots to see how they'll do, a 2 gallon and 3 gallon pot. After a couple of days and a big rain, something didn't look right about those in the larger pots. Turns out the larger pots had no drainage holes in them!! In a couple of days, I would have lost them all to drowning. I got a battery-operated drill with a large bit and drilled several holes on the sides of each pot. The lesson learned is 'Don't assume ANYTHING!' I expected the pots to have holes. Maybe that's why they were so cheap. The holes are extra and they cost more.

I waited to see what pest was going to find the blueberries first. Turns out those darn loopers were waiting for them, jumped off the weeds upwind and started eating half circles in the leaves

in less than a day after I transplanted them. By the time I saw them, there were about nine loopers, each with their own individual plant, eating away! Some caterpillars are cannibals, so you'll only find one on a plant. Corn earworms are this way also. I was able to pick off most of them, but I know they'll be others. That's how they operate. Watching and observing plants to see what's going to show up next is critical to your plant's survival. If you know where to look for certain insects, you might find them because they all have their special niches.

Testing new crops takes a lot of effort and due diligence to understand all the parameters of growing them. There are different varieties for different seasons, there are cultural requirements, there are pests to consider, and after all of this, you need to determine if there's a viable market for the product and if you can get a decent return on your investment. I've been receiving reports from other extension agents that the new low-chill blueberry varieties are fruiting in Hilo on the Big Island, and more recently even in Hawaii Kai and Kapolei on Oahu. If they can produce fruit in Hawaii Kai and Kapolei, we shouldn't have any problems fruiting them in Hoolehua. I was able to view a few varieties at the Volcano Research Station a couple of years ago, and even tasted a bunch of them. Some varieties, like O'Neal were so large, they looked like miniature strawberry guavas with a similar taste, but with no hard seeds. Knowing that blueberries can fruit in our climatic conditions, especially for a temperate season crop, is an important step in this whole process.

Will this plant stand the test of time and become one of our crops of the future? It's too early to tell, but I'm already anticipating who's coming to dinner, including mites, fruit flies, birds, aphids, and possibly even deer. After all this work, it might not pan out, and it costs you time and money. You could be spending time on a keeper, but 'you never know if you never go.' The key to growing a global crop like blueberries is whether the plant can fruit before the other areas of the world, especially your close competitors. This is the key to the success of many seasonal crops such as strawberries, peaches, apples, and many others.

Blueberry - South Moon

Even the Oregon nursery guys were telling me they had their own misconceptions about blueberries. They assumed it couldn't grow in plastic mulch because it would be too hot under there for the plant roots because blueberries are a cool season crop. That was until they saw fields of it growing in plastic mulch in Southern California, and the plants were growing like crazy. Everyone is getting into blueberry growing fever, even the Chinese!

Two years ago, I attended the American Society of Horticulture Science annual convention at Waikoloa on the Big Island. The event features four tracks of workshops on all the crops and the latest cutting edge research. There were also poster sessions where researchers would feature their research and answer

questions. Researchers from around the world participated in this great event, and it was a real privilege to attend this stellar event.

At a poster session, I was able to meet and talk story with Dr. Paul Lyrene, plant breeder from the University of Florida. He was there to receive the Lifetime Achievement Award for his work in breeding low-chill blueberries. A very soft spoken and humble man, he told me of the challenges, and the opportunities, of growing low-chill blueberries. He stated that with a crop like blueberries, there are lots of wild relatives out there to make improvements to blueberries by gleaning traits such as low-chill genes, or genes for disease resistance or earliness. This was a big plus, but it also took many generations of breeding to do this.

He also mentioned that growing and developing crops in the tropics allow researchers to experiment year-round, and this was a distinct advantage over researchers in temperate areas. This charged me up because this was the second time I heard this comment lately. The other was in a tomato research report written almost 50 years ago which included research from Hawaii! Dr. Lyrene mentioned that a rust fungus is going to be a challenge in Hawaii. This was exactly the case on the Big Island at the Mealani Research Station in Waimea with too much rain. They put the plants in a greenhouse and the rust disappeared.

If this cold weather becomes a trend each winter, we may have the perfect weather for blueberries, especially for upper Hoolehua. There are so many variables that have to be tweaked before a crop becomes viable. The bottom line is you have to make money, so you need to push your pencil to determine this. Labor is usually the big challenge, and if you have the labor force to harvest it, and can keep your costs down, you may have a solid crop. The plays and the players keep changing, and again, this is global crop with global competition. Our edge is freshness in our local market. So many variables, so little time. I'm already thinking of breeding my own varieties! The question I always ask is what about the pests? We have to wait and see, and be vigilant that the next pest doesn't eat it right to the ground. Everyone has to eat, and your main crop might be someone else's main dish.

Troubleshooting

On the lighter side of things, who said life on Molokai is boring? There's never a dull moment! My brother-in-law gave me a 1979 Ford F-150 a couple of years ago and I've been using it occasionally. I was concerned about the gas mileage, being an 8-cylinder, but I found out it's the smallest 8-cylinder made and is very fuel efficient. I figured I'd use around Hoolehua only, as well as an occasional cruise to Mo'omomi Beach after work.

I had a hard time getting it started recently, so I bought a new battery, and set out to diagnose the problem. There's a systematic process of getting to the root of the problem by eliminating all the possible causes, and we use this process in diagnosing crop problems all the time. My theory was that gas wasn't getting into the fuel injector. This could be a broken fuel pump or a clogged fuel filter. To confirm my theory, I opened the air filter hose and poured gas into the injector. Sure enough, it started up, so I surmised that if I can get it to run just a while longer, I might just give the fuel pump enough time to pump the gas and the truck will run normally. This

is called priming the engine; I've seen my father do it many times. So I put more gas in a soda bottle and proceeded to pour more gas in while my wife turns on the ignition and gasses the engine.

All of a sudden, the engine backfires and flames come shooting out the fuel injectors, and before I could respond, the engine was on fire. When you panic, you cannot think rationally and all this diagnostics stuff goes out the window. I gain my composure after yelling to my wife, "the truck is on fire!" Looking around, I see a 55 gallon plastic barrel near the truck. With all this rain we've been having, I'm sure there's gotta be water in there. Sure enough, I lift the barrel and it has 6 inches of water in it, more than enough to put the fire out with no damage to the engine.

My wife leaves to visit her sister next door soon after I extinguish the fire and shakes her head. The lesson learned is to make sure you identify all the possible outcomes or consequences of your actions before you proceed. I didn't see this one coming. Fifteen minutes later, my wife calls me up and says, "Stay away from that truck!" Well, live and learn, and try not to make the same mistake twice; make new mistakes instead. Stay tuned for more drama, and some sound advice, next time…