



The Huma Gro® Farmer, Episode 2: Strawberries Part 2

Larry: This is Part 2 of our discussion of all things strawberry. Last time we talked about pre-plant and transplant, and today we'll talk about flowering, berry-sizing, and strawberry care through harvest. With us in the studio are Doug Greer, our senior director of U.S. domestic sales, and Barrett Smith, Eastern U.S. sales manager and agronomist. On the phone we have Jason Garcia, Florida regional agronomist, and Silvano De Luna, certified crop advisor and pest control advisor for WRT Ag in California. We're also pleased to have a special guest on the phone today, Dustin Grooms of that great strawberry growing dynasty, Fancy Farms of Plant City, Florida. Before we get started, I direct our listeners to go to humagro.com and, on the homepage, click on the slider image that says, "Huma Gro: Practically Perfect in Every Way for Strawberries." That will take you to a strawberry blog post that has links to product documents, field studies, and other background information that we'll be discussing during this podcast. Now here's Doug Greer to continue the conversation.

Doug: Now we are at that point in the life cycle of a strawberry where it all happens, or at least we're building to this point. That's flowering and berry-sizing. We have some strawberries right in front of us on the table and they smell wonderful. We're doing all this to try to get these beautiful, very great smelling and nutritious berries to market. So, Jason go ahead and share with us what that looks like. You've already touched a little bit on that, but give us a little bit more on the flowering and the berry-sizing stage of the strawberry plant.

Jason: When we get into what we "quote-unquote" call reproductive—when we're getting into harvest is what I'll call it—Vitol®, Breakout®, and Calcium are the big players. Vitol®'s going to help with fruit size, Breakout®'s going to help with bloom production, and Calcium. Just let me say one thing about our Calcium, it is the only calcium that I know of that will translocate throughout the vascular system of a plant. Most calcium products, such as calcium nitrate, usually get fixated at one point wherever that plant needs it. It's not mobile once it fixates there. So, Calcium plays a huge, huge role. If I can say anything to anybody, it is if you're going to do just one thing, apply Calcium and Super Phos®. You need to keep applying it throughout the season and it depends upon your ratio of applications as far as you're spraying foliar applications. We can adjust those rates to meet plant needs. Once we get to that point, it's game on and it's all hands on deck. I know Dustin does a really, really good job monitoring his spray program, and he's one of the best at monitoring his program and figuring out what needs to be done nutritionally. There're things we can add and things that we can take out to make sure that we're pushing that plant to its potential.

Dustin: Something I'd like to add on top of that is, whenever we start seeing all-in blooms out there, well out here in Florida were always at 10% bloom. So, timing is the key, but what's really important at this time and at different stages is to do your leaf samples and check your leaf samples and see what the plant needs. You can get a lot better at what you do if you really pull some leaf samples, and then you'll know the right product or what to actually plug in at the right time.

Doug: Dustin, a question for you: How often do you typically do those samples?

Dustin: So, on leaf samples, I typically do them about twice a month. I wish I could do it every week, but you know, about twice a month. Which I'm doing on the 1st and the 15th.

Doug: Is that common practice in Florida, with most of the growers?

Dustin: Well, I'll tell you, my dad never pulled a leaf sample until he had a problem, and he's been farming for about 45 years. So it's not common practice, but more and more people are starting to do it because, I guess you can say, you learn from your mistakes and you can actually get ahead of a problem and fix it before it starts.

Doug: Sure

Larry: Is there something that perhaps surprises you sometimes? I mean, you've been doing strawberries a long time you probably can look at a field and have a pretty good idea of what's going on, but then you do a leaf sample and something comes up. Is there anything that surprises, that you may not have been able to see just by looking at the plant?

Dustin: Yeah, when you see a problem at the plant level, it probably started 2 weeks ahead of that time. So you're not behind the eight-ball at that point and you need to adjust fire on that.

Jason: To chime in on what Dustin just said, Dustin nailed it. When you see a deficiency in a plant, it's definitely been there for 2 weeks. So, it is time to make a correction and things of that nature. That's the importance of leaf tissue testing. Some of the growers in Florida are getting a little bit better at seeing the importance of it a little more. That's why I love working with Dustin, because he's progressive and he manages the farm the way that it should be managed. It's just kind of one of those deals that once you see a problem, it's been there for a while. We're already not meeting the plant's nutritional need, so now we just affected yield. My point on meeting the plant's demand is, how come we can have 30 blooms on a plant, but we only harvest 10% of it? Because the plant part is aborting them or there were weather issues, or whatever the case may be. Yes, there could be some weather issues or whatever, but you know if that plant is showing 30 blooms initially, then it has the capability. With the Huma Gro[®] products, if we're doing what we need to do and making the correct recommendations, then we can harvest more than what we're currently harvesting. That's why some of the yield data that we will go over later are showing such an increase in yield.

Doug: Thank you Jason. So with that said, Barrett has a lot to share during this stage of the plant. Tell us about some of the products that have shown very exciting results. We'll go over some of the specific strawberry field trials a little later on in the podcast. Barrett?

Barrett: Yeah, I think y'all have nailed it on the head. I think we're all on the same page there and the research that we've done out of California is showing some great results, especially with Vitol[®] and Breakout[®]. At any time it is going to be great if it's just the Vitol[®], or if it's just the Breakout[®]; if it's a combination of both, then yes to all the above, they work. A lot of times we'll throw in some Calcium as well. Like what Jason was talking about earlier, they all mix beautifully. If the grower is going in with the pesticides, they're going over with a fungicide, we can piggyback in with the Vitol[®], Breakout[®], Super Phos[®]—whatever it needs to be, any of the micronutrients that are needed. The nice thing about our Huma Gro[®] and our Fertilgold[®] products is that they tank mix very well, and they help the pesticides to be able to get in that plant and work a lot better because our Micro Carbon Technology[®] complexes with all of them. So, the thing we try to recommend to growers and to retailers to understand is that as

we put our products in their tank mixes, to make sure they back down and use the lower label rate so that we don't burn the plant and make sure we don't spray in the middle the day when the temperatures are the highest. The data that we have back on the Vitol® and Breakout® looks very promising: great yield increases, great ROI there. Some other tricks that we like to do include Max Pak®, which is a great micronutrient blast we just kind of shotgun effect it and take all the micronutrients all in one shot. Super Potassium® is a great fruit sizer. If we need some nitrogen there, our Super Nitro® works great. A lot of the stuff has been tested and tried on a lot of crops. We've got some data on the California strawberry field trials as well for the Supers (Super Phos®, Super Potassium®, and Super Nitro®), Lucky 7®, and I think a little bit of Max Pak® and Calcium. So, those are some fun things that we can just put in. We just do a couple of ounces per acre, and we see a great response. So, we've got the Vitol® for vegetative growth, plant health, and vigor. Breakout® for the female, the reproductive side of things. We get more blooms, stronger blooms, stronger anthers, great physiological response there with the Breakout®. Golden Pro® is a product that we like to recommend more. I say Vitol® and Breakout® are more focused on the plant, whereas Golden Pro® is more focused on the fruit itself. It's got high phosphorus, high calcium, NPK, a couple other micros in there, and it's more for the berries to help with brix, with color, with fruit sizing. I know that in Florida last year, every year that I've seen strawberries, we struggle with, what are they called, "bullet berries," Jason and Dustin?

Dustin: Yes

Jason: Yes, and that's due to the heat, mainly soil temperatures. The berries are ripening, and they do not have the capability of fully developing, so yes, we do call them bullets.

Barrett: Yeah, so Golden Pro® might be a good response there. With any of these products, the nutrients with Vitol® and Breakout®, what's really fun about these products is that we see strong responses both in the drip as well as a foliar application. I've seen growers where we've told them, "Hey, apply Vitol® and Breakout; you'll get the best response if you foliar feed them." Then they don't have a sprayer or maybe there was a small 5-acre plot or 10 acres here and they can't get a foliar application in because it's raining or whatever it is. They'll put it through the drip and even through the drip I've had growers say, "Hey, I just used Vitol®, Breakout® out of my drip system and this is the best crop I've ever had and I've been growing strawberries for 20 years!" So, they have really great responses with any of our products, either through the drip or through the foliar aspect. Last, but not least definitely, but when we do a tissue or sap analysis and ask the plant what it really needs, and as we push all the micronutrients and we don't have anything lacking—especially with our Micro Carbon Technology®—we don't see just a greater yield or just stronger flowering. What we're seeing is better health for the plant, better quality, and better nutrition value of the fruit. That's what gets really exciting about using our products; everything else just skyrockets—not just the yield, but also the quality in the in the fruit as well as in the plant itself.

Jason: Barrett, keep in mind, you know balanced nutrition is key. We can't continue to do the historical treatment, saying "Hey, I did this 10 years ago and I had X amount of flats per acre and I'm doing the same thing now." You're absolutely right. I love sap samples because you're getting kind of a history of where that plant was at the point of that sample. But I'd like to go back to your comments on Golden Pro®, and this really plays in line as far as increasing brix. We do have some guys that have contracts for processing and their brix has to be at a certain level. So, that would be very beneficial to that group.

Doug: Well, lots of great information there. Thank you, Barrett and Jason and everyone else on the line. One thing I wanted to emphasize again—Barrett, you certainly mentioned it—is we're not asking for the grower to make another pass over the top to apply our products. These products, once again, can be tank mixed with the fungicides or whatever other nutrients that they may already be planning on applying. So, whether it's weekly or if it's every two weeks, or every 3 weeks, we're not asking that they do anything different. That way it's just adding to those mixes, is that correct?

Barrett: Yes

Doug: Silvano, anything you'd like to add about maybe how things go on during this period of time in California or anything else you've seen that you would like to add?

Silvano: So, out here in California, to kind of touch on what they were talking about with tissue analysis. So out here, typically I make adjustments with lysimeters. What I do is it similar to the tissue analysis. When I see the results of the lysimeter, then it kind of tells you why things are being tied up or what's wrong, and then that's when you're able to make some adjustments. So, if you're not using them in Florida, you guys should consider using them. That will help you to be better able to pick the products that are needed. In California, I use Breakout® as a foliar, then I started playing with D-Fend® and Activol®, and so far, I've seen some pretty nice stuff. Next time we gather together I should have some feedback on that.

Doug: Perfect, I'm glad you mentioned those two products, those are two exciting products that I would love to see used more and with all of our crops, but especially here with strawberries they have a place, certainly. So, I appreciate that. I do want to mention here that as we get toward the back half of this growing season, if the grower went ahead and fumigated and we were maybe using Zap® early on for the first few months to help continue to build up that the soil, at this point toward the back half is when we would want to start Promax® again. As we add Promax® towards this back half, we don't see what I call the “tailing off effect” toward the end of the strawberry growing season. With Promax® being applied, we see harvests continuing in an upward direction. The yields are there, the quality is still there, where we are continuing to add some Vitol® and Breakout because the nutrients are still needed then. Promax® and Zap® together continue to do their part toward the back half when the fumigation has worn off. Anyway, with that said let's move forward to what we have listed here as pre-harvest. That's probably not the best way to say it, but toward the back months or the last month—the back end here of this growing season. Jason, tell us what we have going on here during the last month or so of the strawberry growing season.

Jason: That's kind of like rolling the dice. Depending on where the market is at that point, to be honest with you, is what we're going to do. We'll start cutting blocks off if the market's not there. There're some guys who will double crop, whether it be cucurbits or something of that nature, that will be planted behind it. It really depends on what the growers want to do coming behind that strawberry crop. If we decide to keep that berry crop in the ground, there's a lot of times for example with watermelons and cantaloupe, the plant grows right in the middle of the strawberries and we're kind of in starving mode. And when we cut the berries off then it's like we want that secondary crop to go and we have products that we can use to make them go but it's really the market that really determines what we're going to do as we get to the back half. Dustin, I'd love for you to chime in on this one.

Dustin: Typically toward the back half of season things start falling apart here pretty rapidly, and you've got to make an educated guess on which ones are your weakest blocks. If you think you can maybe turn some around, what we typically do during that time is if it's real hot, we like to put a lot of calcium out to firm the strawberries up and we like to supplement the potassium. Our potassium was actually low last year at that point and we were able to use some Buffer K®. I believe I used some Super Potassium® on some other blocks to get the levels back up to where they needed to be. There's product out there, and you just need to find where they fit accordingly.

Doug: Great, thank you Dustin. I appreciate those remarks. Barrett, what can you share with us as far as the Huma Gro® products that should be used toward the back end here?

Barrett: I think, again, that we should just give the plant what it needs: the calcium, the potassium—either through the Super Potassium® or the Buffer K® as Dustin shared have good results. As Jason was talking about, we can't give up on the crop or the market. For example, there're going to be a lot of farmers that pull out when sometimes it's better to hold off for the long run and take a ding at first and then when the market need jumps out you've still got strawberries in the ground and you can take a good market. I'm not here to discuss about that because I'm not a market analyst, I'm an agronomist, but anyway there're some things that we need to keep in mind and make sure that whatever we're doing we've got a good ROI or potential for ROI there for the strawberries. As you know, in Florida it's common practice—like Jason was talking about—to go in with the next crop before the strawberries are completely finished. What's nice about Promax® and Zap® is we don't have to worry about planting a watermelon plant in a disease-filled field. With Promax® and Zap® you can come in at any time and replace whatever we're doing there and keep the plant healthy and keep the soil healthy, and really keep everything strong and healthy as we get going with the next crop.

Jason: And we saw that, Dustin, when we decided not to do the last application of Promax® on that block and then you decided to put squash in the ground. I remember your dad brought over a plant and it showed we had nematode pressure, and the first thing we did was shoot Promax®.

Dustin: Yeah, that's absolutely right. That was one of the blocks I cut off, and we got busy with pepper, squash, you name it. It's organized chaos there at the end of the season in terms of what we're going to do and how we're going to do it. I decided not to shoot that Promax® because it was on strawberries, and then at the last minute I decided to plant squash there in that block. And sure enough, nematodes came right up we shot that Zap® and the Promax® out and we checked them right away and it worked out well for us.

Doug: I appreciate everybody's comments. If there's nothing else to add, we'll wrap this up with some comments on some of the studies that we've done. I first want to begin by asking anybody who's listening to this, if you have access to the blog post that is up on our website at humagro.com I'm going to refer to some of these field studies and other studies that have been done. If I say field study one, I don't think it's listed in there as that, but it'll be the first one, going right down the list. Number one and number three were two studies that we did, and we spent a lot of time and money over the last few years in California doing a lot of these strawberry studies. So, we love the results: they really point toward what our products can do. Specifically, in field study number 1 and number 3 we were looking at just basically Vitol® and Breakout® more specifically as a foliar application as we had talked about. One of these were with applications every 3 weeks; that's what the grower was doing out there in California—going over the top every three weeks with her fungicides and some other nutrients—and so we just

piggybacked that a foliar spray every 3 weeks. The other one had applications every two weeks, which is probably more the norm. Correct me if I'm wrong, Silvano, but it seems like about every two weeks or so that they're going over the top, and so with those we looked at Vitol® and Breakout® and in those cases that was either a pint per acre of each or sometimes it was a quart per acre. We've looked at a pint and quart in other studies, so we feel very confident that a quart per acre of Vitol® and Breakout® every two weeks—or if they're going over the top maybe a pint then of each of those every week—shows tremendous results. Calcium is important, of course, as we mentioned the importance of calcium earlier. The yields were quite tremendous in these studies. We also incorporated some of the Supers, as Barrett mentioned earlier: Super Nitro® at times, or Super Phos®, or our Super Potassium®. As well as on one of the studies we used Lucky 7®, which is a triple 7 combination of the three NPKs and then also some micronutrients in it. That's a really good product to use if you have a grower that's not taking tissue samples every week or two. They all work, that's what is really exciting about Huma Gro® products: they work in different ways. There's maybe not always a wrong way to do it, there's often maybe a better way we could do it, but there're multiple ways in which we can get the job done. As we look at field study number one, we had a 13% increase in yields, which was approximately \$3,400 more per acre to the grower. In field study 3 it was even more than that: we're at \$5,000 back per acre as a return-on-investment to the grower. That's tremendous. I mean we've got another study that was done at field study number two, which we looked at, that's where we added the Promax® and Zap® over the top of fumigation. These other studies—the number 1 and number 3—we didn't look at Promax® and Zap® on those. But when we looked at Promax® and Zap®—and then with these foliar nutrient applications—we certainly got similar types of results and even better results as the Promax® and Zap® were doing their parts, especially toward the back half of that growing season. And then we come across our last trial that we did here. We finished it up in December of last year; it was in the Santa Maria area of California. That trial, number 4 on the page, has some exciting information. We looked at Promax® and Zap® basically by themselves versus fumigation, and we also used some of our nutrition that we call Ultra-Precision® blending—which is taking a combination of all of our nutrients based on exactly what that plant needed on that field. We'd be happy to talk about Ultra-Precision® more on a future podcast. But as we looked at Promax® and Zap® versus fumigation it was pretty much off the charts, it's one of those trials where when you look at the data, you're almost are a little bit worried because the results were so high. We almost doubled the yield at a 97% increase, and what we see on the graph tells the whole story. We see, back about three months or so into that growing season, wherever we had the Promax® and Zap® in it kept moving the yield forward. The yields just didn't tail off as they did in the case where only fumigation was applied. We feel like we really made up a big part of the difference, not only on the front half but also, even more so, in the back half. So, that was huge. We've got more we can share, but these studies have been great for sharing the Huma Gro® message, specifically on strawberries. Whether it's the foliar nutrient applications or especially what happens with Promax® and Zap®, on top of or instead of fumigation. The last thing I'll talk about is an important study that was conducted through Plant Sciences up in Watsonville, California. They looked at Promax® against these main 8 pathogens: Macrophomina, Fusarium, Verticillium, Phytophthora, Botrytis, Colletotrichum, Cylindrocara, and Rhizoctonia. Take a look at that as well and we see the great control that Promax® had, not only as a nematocide—we know it will take care of nematodes, it will kill them—but also on these pathogens that certainly affect strawberries and other crops, not just strawberries. So, those are field trials we'd love to have you look at, as you listen to this or maybe afterward. There's also a great video that was put together by our marketing team that explains the trial that was done last December

and shares that story in just a couple of minutes in a nice way. So that's all I have. Barrett, have you got any closing remarks of things you would like to share?

Barrett: The only other thing I can think of is that we kind of did a similar test with Dustin. He was kind of a guinea pig and I assured him many times that his crops weren't going to die as we looked at some of his nutrients. Jason walked this field with me a couple times. Maybe Dustin or Jason, would you mind sharing some of your experiences with this trial and maybe some other thoughts you had about this field trial where we had the Ultra-Precision® blended nutrients as well as the Promax® and Zap®?

Dustin: So, the Ultra Precision®, we used it and compared it to our standard liquid fertilizers over here and it matched up just fine. Towards the end there were a few issues with the potassium and, like I said, we used the Buffer K® and the Super Potassium® which pretty much corrected the problem right away. So it worked fine. The Promax® and Zap® worked really well, like I said. We're going to continue to actually use that this coming season and we're going to increase our acreage use to just under 25% of the farm. That's a that's a big leap of faith, if that tells y'all anything that, I the farmer, I do believe in it so I am going to use it again, and we're excited for it.

Jason: One of the things that I'll add, I think it was the first day I had actually met Barrett, we went and looked at that block. I can say this, the uniformity of bloom size and bloom count on that block versus a block with conventional products. I did note the difference right off the bat and Barrett started explaining to me what was going on with that particular block. I will say this if I were the grower, I would have Promax® and Zap® on 100% of my acres and save the money I would have spent on conventional fumigation, because you're putting money in your pocket right off the bat. With Promax® and Zap® you can order it as you need it versus having to pay for all the fumigation up front. The biggest thing is, it works.

Doug: I appreciate those remarks, Jason and Dustin. What I wanted to share is that leap of faith that Dustin is taking, we all understand that. What you mentioned early on at the beginning of the podcast that your dad, or maybe it was your granddad, they've been doing this for 40–50 years. I mean fumigation has been used for all those years and it's one of those things where you know it works. Then we come along and we share with you about what Promax® and Zap® can do, and it's kind of a better mousetrap idea. We feel we have a better way of doing it and that we can get you to where you want to get better, as well as saving you some dollars as you're doing it. So we appreciate you taking that leap of faith with us and trusting in in what we have to share with you as well.

Larry: That concludes part two of our two-part podcast on strawberries. Thank you everyone, and special thanks to Dustin Grooms of Fancy Farms for spending time with us today. I'll take a moment here to remind everyone to go to humagro.com and, on the home page, click on the slider image that says "Huma Gro: Practically Perfect in Every Way for Strawberries." That will take you to a strawberry blog post that has links to product documents, field studies, and other background information that was discussed today. Thank you for listening. Keep following the Huma Gro® Farmer podcast for the latest information on enhancing your crops using Huma Gro® products. Grow healthy!

Publication No. HG 190828-02