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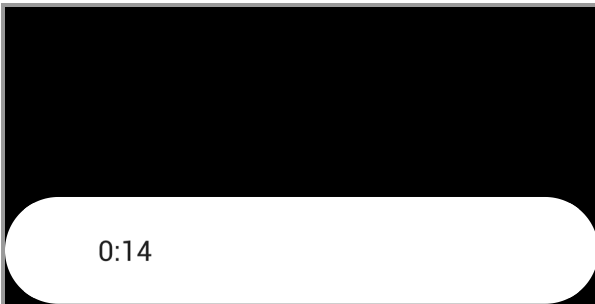


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Podcast: Big Data for Little Farms with AgSky Technologies

- In [AERIAL PHOTOGRAPHY](#)
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Big data may have been a thing only available to large farms in the past, but not anymore. We're talking today to an expert in agriculture and a new player in the aerial photography field. He and his company collect huge quantities of information using their drones, and then specialize in analyzing that data quickly

 [AgSky Technologies - NDVI image](#) Big data may have been a thing only available to large farms in the past, but not anymore. We're talking today to an expert in agriculture and a new player in the aerial photography field. He and his company collect huge quantities of information using their drones, and then specialize in analyzing that data quickly and affordably so that it's available to farms of any size.

DroneFutures.org:

Maryruth: Hello there and welcome to SightLines, a talk show by DroneFutures.org in which we speak with the leaders in the drone sector to learn what's on the horizon and how to make the most of this rapidly growing industry. We love our farmers and like to see them advance in terms of their technology so today we're going to be chatting with somebody who knows a lot about that. Warren Genik is the President and CEO of [AgSky Technologies](#), a company that is looking to radically modernize the farming industry by giving little operations access to big data. Welcome Warren and thank you for joining us on SightLines.

Warren Genik:

Thank you very much.

DroneFutures.org:

Maryruth: We also have with us today Eric Clare, publisher of DroneFutures.org and he will be offering some great insights to drone technology in general and asking some great questions as well.

Eric: Well thank you.

Maryruth: So, Warren, it sounds like you've got very interesting technology that you are using in order to help farmers; really interesting ideas on how you can go even beyond precision agriculture by providing data that farmers would not have normally access to. So why don't you start by just telling me about all the very exciting ways that you are working with farmers?

Warren Genik:

Yes, I provide custom aerial imaging for farmers by using UAV and drones because we can give them an eye view of their fields at a very affordable rate. But much more than just looking at a simple view of the field, we can capture levels of data that they wouldn't normally have access to, especially not as a small farm or even a medium-sized farm. So we are able to tell them much more detail about their field than they might be able to tell from the ground.

We can show them crop health indexes across their entire fields and compare one end of the field to another, which would be very difficult to do from the ground. We can also capture elevation data, that has been something that's really been a key success for a lot of guys as they have been able to find out the topography of their fields. And see that across an entire quarter-section or more and be able to really see what water's going to be doing and with those different pieces of data they can really improve their fields and improve their yields at the end of the day, which is the end goal of everything.

DroneFutures.org:

Maryruth: So when you work with farmers, I assume you are working with a mix of small family farms and larger businesses, but when you work with the smaller ones, are they surprised by how much information you can get to them, at a cost that is presumably lower than satellite data?

Warren Genik:

Very much so and it's not necessarily that our cost is a lot less than satellite data because there is a lot of affordable, inexpensive satellite data available there. However we provide a much greater resolution, a better temporal resolution, meaning that we can capture at any specific time instead of having to wait for a satellite orbit. And we can really provide a greater level of detail and then do a lot more with that data that is customized to that farmer, not just what the satellite company thinks that they might want to see.

 [AgSky Technologies - agriculture elevation report](#)

DroneFutures.org:

Maryruth: OK, so what sort of data points are you finding are the most interesting to farmers?

Warren Genik:

It depends on the area for sure; in my local area access moisture is traditionally always been a big issue so the elevation reports. And then the further drainage analysis reports that I can provide have been very useful to a great number of farmers and being put to practical use already in the past couple of years that we have been providing these reports, with immediate effects being shown. So, that's been a real big thing in an area that has been traditionally quite a lot wetter than some other ones.

Now, some of the other provinces that's not much of an issue and that's where the crop health reporting during the growth season becomes very crucial, because they can see a lot more detail as to where they need to perhaps do a spray of top dressing or do something also with their variable rates. Technology can be a big boost to a lot of farmers but if they do not have the proper data to put into their variable rate controller, it's basically a useless technology. So, we're able to provide that data to them and it makes it very powerful again and very cost effective and at the end, again, increasing that yield for them.

DroneFutures.org:

Maryruth: So, it looks like you have been around for a couple of years, is that right?

Warren Genik:

I have been involved in the farm industry for about 9 years, mostly on the financial side. I have about 15 years of computer consulting background as well, but only in the last couple of years have I been involved in the UAV in agriculture industry. So, that's really where I have found the opportunity to merge my two interests and bring something relatively new to the table and really make it available to all sizes of farms.

DroneFutures.org:

Maryruth: And, heading into your second year, did you find that going back to the people you originally helped, was it easy to sell them on using your services again, given the results they received?

Warren Genik:

Very much so, actually the first calls I got this spring were from guys that I had done a fair bit of work for the previous years, saying "are you ready to start flying again yet?" So we have got new quarters ready to go and it's very exciting to see that repeat businesses really in the first calls of the new season.

 [AgSky Technologies - aerial farming elevation report](#)

DroneFutures.org:

Maryruth: Right, and so have you needed to grow in terms of how much equipment you have, how many pilots you have?

Warren Genik:

I have about 3 part-time employees that I work with, and we still have just the one main UAV and then we also have a secondary one now that we have added as well as we now have a full set of survey equipment and vehicle for adding an additional level of accuracy to our reports. So, we have done some expansion in the last couple of months, yeah.

DroneFutures.org:

Maryruth: Can I ask what kind of equipment you use?

Warren Genik:

Our primary drone is the [SenseFly eBee](#), the agriculture model that is offered and that's been originally designed and produced out of Switzerland through SenseFly's company there. They provide a very well established platform and they have this particular model that is very well suited particularly for the agriculture market. So that's what we are using as our primary operating

equipment. Also, we are using a [3DRobotics Iris+](#) as well, which is for our multirotor use, so that provides a lot of our videography and other aerial photography, when we are not doing mapping missions.

DroneFutures.org:

Maryruth: And so your main UAV is fixed-wing, is that right?

Warren Genik:

Yes, that is correct. Yeah.

 [AgSky Technologies - UAV videography](#)

DroneFutures.org:

Maryruth: What kind of advantages does that (fixed-wing) offer over the other one (multicopter)?

Warren Genik:

There are pros and cons to both types of platforms. The multirotor platforms, which are a lot more of what people would think of on the consumer level, because that's what you see all over and on the shelves. (They are) ideal for getting very specific angles, hovering, getting very close to the ground, that kind of thing. However, they do have relatively limited battery life and endurance. They can't cover a large amount of area in a short period of time and that's where the fixed-wing format really shines. So when we need to cover large amount of acres in a short period of time, there is really no comparison to having a fixed-wing drone, and so that is our primary mapping tool.

DroneFutures.org:

Eric: If I can jump in here quickly Maryruth, I am curious from the business side, from the business point of view. Has growth depended on your future pilots or piloting skills or has the system become so automated that the pilots or the piloting skills are not that necessary?

Warren Genik:

It's very important to have an operator that is familiar with the software and the hardware so that they can make decisions at the right time, but at the end of the day, everything is autopilot and the system manages pretty much everything so even changes in wind gust are all entirely handled on board on the plane itself and that makes it a very safe and a very secure platform to be using. But at the same time, you do still need to have a trained operator that knows how to react to other situations and is available onsite to manage that. So, both are important, but the autopilot certainly makes thing much easier. And SenseFly has, in my opinion, one of the best autopilots on the market right now.

DroneFutures.org:

Eric: And since the drone is in a sense just a tool, really the hard work and the core value-add that AgSky brings is in the analysis of data that comes back. Or is that just a generic component?

Warren Genik:

Yeah, the reality is that in the flights in the field we can capture quarter sections in as little as 18 minutes, we can be on and off the field in under half an hour, and in some cases with setup times. So, the time that we are actually out in the field is relatively limited compared to the 3-4 hours of processing depending on the type of report that is needed afterwards.

So that's really where I have drawn on my computer consulting background to develop some tools and software to really make a much more efficient data processing system. As well as really being able to quickly produce a variety of reports from a single data set that is going to be useful to a farmer or any kind of user and be able to do that on a consistent basis as well. You're exactly right, the actual capturing in the field, that's the visible part, and that's what a lot of people like to see the process, but the real work is behind the scenes back at the office on the computer servers.

DroneFutures.org:

Eric: That's it. I love the business component that I mentioned earlier. I have been doing reading, I am not a farmer, never farmed in my life, but agriculture is huge. I'm seeing what's happening around the world, it seems like you're in a great growth market. How do you see your organization growing? Do you see yourself personally or teams of people going around the country and around the world? Are you open to the idea or are you working with other organizations that collect the information for you and send it back to you for analysis, wherever they may be. How does that work in the future?

Warren Genik:

Well we are definitely in the early stages of all of this, and so right now I am collecting and processing and delivering all of the data as one crew and as one streamlined process. Definitely the goal is to really establish AgSky as a brand and as a leader in the industry but more so geared towards the data processing.

Ultimately, my goal is to develop and streamline our system down to a point where we can process data coming in from any type of drone and output it to any type of report that the farmer may need. Agriculture has always been the primary focus, but we've quickly come to learn that there are other industries that are very interested in this type of reporting beyond just what the farmers may be using.

So, we have been exploring that as well. By moving back to kind of a data processing focus there, yes, we will be able to have other crews, that are maybe directly AgSky out collecting the data with drones or other technology but we will also be able to extend that to other parties around the world that are collecting data but are having difficulty getting proper processing done on it. So, we have already done some processing for a few different operations around the world actually in Brazil, and so far there those that have been able to provide us with data that we have been able to turn around and have reports back to them that they were very impressed with.

 [AgSky Technologies - drone photography](#)

DroneFutures.org:

Eric: Congratulations, that's going to be a huge growth market for you moving forward because you may not have to hop around the world, there are many organizations that would love to be able to help small and middle-sized farmers collect that kind of data and improve their farming. While we are on the subject of small and mid-sized, maybe you can help us all kind of really define what's the sweet spot? What's when it works best? What is the size of the farm, or is there a best sized farm for this kind of service?

Warren Genik:

It depends on your region and so forth there. If you are talking about some of the more US area market, when you are talking about vineyards and that kind of thing, a large farm may still only be a few hundred acres and so that is not uncommon to be able to capture that with a multirotor or some other type of technology.

Where the fixed wing and the large amount of data that comes in is really in areas where the farms are a lot larger in the thousands of acres range. Because we have really geared things to be really efficient for that range of farms, so in the 1,000-3,000 acre is the ideal farm target that we look at,

which may sound large for some areas. But then again in Saskatchewan and Manitoba where in our primary operating area, that's a relatively common size and that are a lot of people available that are looking at services at that level. A 3,000 acre farm could be operated by just one person or a farmer and his son or relatively small family operation. So they don't have the time to focus on the technology side of things, because they are busy operating the equipment and doing whatever there.

So as compared to a 20-30,000 acre farm where they have got staff and employees, they can assign somebody to be the drone guy. So that's really where we have decided to fit ourselves and 1,000-3,000 acres has been the ideal. But then again we've done work for all sizes of farms for sure.

DroneFutures.org:

Eric: Does this kind of work? If you do the analysis and you do the 1000 acres and you apply the level of forest fill and you check plant health and you got nitrogen management. You do all the data points that you do; is that one time and you're good or is it once a year or do you do every other year? How often will it be useful for a farmer to use your service?

Warren Genik:

When you are talking about the elevation mapping that is going to be something more on a one-time or every few years I would suspect for a single field because then again, the topography is not going to change. In some cases we have done mapping topography wise and then come back and remap afterwards after they have done some work to show the improvements visually. So that's really the only situation where we probably come back, particularly for that report again.

Whereas on the crop health side that can vary depending on what the farmers need. So, in some cases, the farmers only need to see how the crop health report perhaps rate at the very end of the season, just before harvest just so he can get in mind how harvest are going to go. And for other farmers, they will choose to actually have us fly the field every 2-3 weeks throughout the growth season so that they can watch the improvement as they are trying, perhaps, different types of inputs, either on the chemical side or on the different types of crops, hybrids, etc.

We've worked with a few different seed companies that have even put in pot trials so that we can come back and show on one field how, I think 14 plot trials on one field to show how those varied over the growth season and to be able to show a visual map of that at various stages of the crop. So, it really depends on the type of report that they need and what they are going for. But we certainly have the ability to do it every day if they need it, however, the average would be every 2-3 weeks typically.

DroneFutures.org:

Eric: The particular crop, could you mention one: wheat, but does it also work with citrus trees and walnuts and potatoes? Does the crop itself matter?

Warren Genik:

It depends, again, on what we are looking for. So, if we are looking at a crop that has a lot of green leaf, or has a stage that has a large amount of green leaf, which most crops do, then that is where the near infrared and the NDVI (Normalized Differential Vegetation Index map) will come along very well. At other stages of the growth, or for different types of crops, they may just want a true color image because they can still see visually different features of the crop.

And then we also have access to multispectral cameras that include red edge technology as well as even thermal mapping now. So we are not bound to a certain crop type because there is probably a sensor or available tool that will give us some kind of valuable information about that crop, depending on the stage of it. So, there is a lot of potential there.

DroneFutures.org:

That's excellent, I appreciate that. As you can see I love the business part. I can listen to what's going on and there are lots of places around the world that can use technology and I suspect, even though I'm not a farmer, that the data and the information that you can get back allows them to quickly make a change. So if they see that they have a particular problem, either with elevation or with the amount or type of seeds that they are using so that they can do their test. It's a quick way to get a quick snapshot of what's necessary to make a decision about what changes.

Warren Genik:

Absolutely, because the reality is that the population around the world is growing, we are about 9 billion people already, and that is not slowing down anytime soon. But how many new acres of farmland do we have? And, if anything, they are disappearing, so what's going to change to feed that new population is that we have to increase the yields or be much more efficient and smarter in our farming. So, that's where there is going to be a constant demand for technology to help improve that. And UAV imagery in agriculture is going to be a key part of that in the upcoming years.

DroneFutures.org:

Eric: Outstanding. Wow, all I can say is that I hope you keep DroneFutures.org in mind before you go public, and you'll let us know. I think you guys are going to do great.

Warren Genik:

Thank you very much.

 AgSky Technologies DroneFutures.org:

Maryruth: Speaking of international projects, it sounds like you have got your fingers in a few of them. Just wondering if you have experienced any difference in terms of regulations and restrictions on how to use UAVs?

Warren Genik:

I am very pleased to say that [Canada and the federal government](#) here is very accommodating and well, there is definitely regulations and sometimes they are restrictive. At the same time, they have a very clear and open system on how we can get exemptions and get licenses in place for that. So, it's very easy to work with them. It does take some time because it is government, but there is a clear process available as compared to others.

Still I do believe there's a lot of exemptions available in the US with the [FAA](#), but on whole it is not a simple process from what I have heard. I haven't explored that directly, but it's something that we definitely keep an eye out for.

And then you get into Europe and that kind of thing, where actually UAVs and even down in Australia they have been used for relatively a long time, so they do have very well established regulations and processes for that. So, all in all, it's a good time to be getting into UAVs and drones, but there is still a lot of laws and paperwork really to work your way through as you go through that, especially on a commercial basis.

DroneFutures.org:

Maryruth: Do you find that there are certain regions, such as Europe or South America or Canada, North America, where the use of UAVs is growing faster?

Warren Genik:

In my backyard here in Canada, I think we are definitely seeing a boom in it, just because, once again, it is a very comfortable climate for it regulation wise. In the US, I see that they are wanting to move ahead but it is difficult. In South America, I see a lot of things happening there and it's very exciting what's going on there. While I haven't seen a lot of it firsthand necessarily, I can see that there is a huge potential there because again, it is a low cost, affordable technology in most cases. And that's what is needed in some of these other nations to be able to provide this data that is really going to help improve everybody's lives down there.

DroneFutures.org:

Maryruth: So, other than the software that it sounds like you are developing in-house, is there anything else that you, as a drone business, need to set yourself apart from your competitors in the your field?

Warren Genik:

Again, I find that by having quick turnaround times and having low minimums for our reports, we have really made it accessible to the smaller farmers. There are obviously more smaller farmers than larger farmers, because other organizations that have been offering this technology in the last little while here, they tend to care more towards large farms. And that's fine, but I am a firm believer that anybody should be able to have access to this technology. Even if they don't have the time or the capital to invest in it themselves, they should be able to at least get the information.

So I've really geared everything to be nice, modular packages that we offer so that a farmer can really pick and choose what he needs. But at the same time, making sure that we're aware of what could be done so that we can consult with them and let them know, because especially the smaller farmers are aware of the technology in general but not the specifics. So we can let them know after discussion, what we feel would be the best fit for them and then go from there.

 [AgSky Technologies - drone business](#)

DroneFutures.org:

Eric: Before you go that our time is up, you'll be at [DroneFest](#) coming up in July, correct?

Warren Genik:

That's correct.

DroneFutures.org:

Eric: People will have the opportunity to meet you and speak to you and ask the dozens of questions that they will probably have. What will you be showing at DroneFest?

Warren Genik:

I will be bringing my SenseFly eBee with me there as well as I will have a variety of previously captured images, some electronic examples of what we can do with the processing, the final reports and results as well as some videos and depending on time, a demonstration or two of the actual technology in the field. But then again, a very big focus is going to be on what we can do with the data when we are back in the office.

DroneFutures.org:

Eric: Outstanding, it looks like it's going to be a great show.

Maryruth: Well, it sounds like you have made a career transition with which you are quite happy. Would that be correct?

Warren Genik:

I am really passionate about the data side of things and also I really enjoy the drones. Truth be told, I'm more comfortable in the office doing the processing and letting somebody else fly it, but either way I very much enjoy working with farmers and helping them better their production and to really improve their operations. So, that's really always been my passion, whether it's been doing through financial institution, or other things as well, so now this is just a new challenge and a new opportunity to help them in another way.

DroneFutures.org:

Maryruth: Sounds like you are doing a great thing and we wish you a best of luck and we look forward to hearing how AgSky grows in the years to come. You can find Warren and AgSky at AgSky.ca. Thanks again for joining us Warren.

Eric: Thank you so much, enjoy your time at DroneFest and you are definitely a friend of the show, so we would love to hear from you in the future. We'll touch base in the not too distant future to see what you got coming up next.

Warren Genik:

I greatly appreciate that I definitely will. Thank you.

DroneFutures.org:

Eric: Thank you!

Maryruth: Okay, thanks again for joining us on SightLines.

AgSky Technologies will be on hand at next month's [DroneFest](#) in Gull Lake, Saskatchewan. Be sure to check them out there!

 [AgSky Technologies - agriculture aerial photography](#)



[Maryruth](#)

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