To zero in on my options, I developed a selection criteria based on performance capabilities, time efficiency and cost. I scout over 35,000 acres of dry-land crops a year - requiring an imagery data solution that’s capable of capturing a large number of acres, and easily transforming it into something actionable. The selected option would also have to be capable of drone-to-tractor data integration, to create an operation-ready precision ag system. I continually debated between the ease of a quad-copter and flight time capability of a fixed wing. However, many fixed wings have drawbacks in how the drone is launched and its return landing. Some systems require a launch ramp, which is another piece of equipment I don’t want to haul from field to field. All of the ones that I’ve researched also return by a skid landing. In SW ND the terrain is very uneven, creating risk for equipment failure with a hard landing. Additionally, most fields don’t have large enough areas available for a skid landing, adding another layer of potential damage to a traditional fixed wing drone.

Taking the initiative to try and test a system, I originally purchased a quad-copter, but it was very limited in practical use. I could get a nice aerial view of something happening in the field, but it wasn’t easy to take the data captured to the next level. In addition, time and resources were also negative factors. With the quad-copter, I would have to plan for 3-4 battery changes to complete a survey. Then I would have to upload the images into a separate online system to stitch them together and convert to NDVI. Trying to make it all work ended up being too complex and time consuming to realistically use on a regular basis.

With Quantix & AV DSS, I found an integrated drone & data analytics system that meets all of my needs. I am able to fly 400 acres in just 45 minutes, on a single battery, with the ease of both a vertical take-off and landing. At the field edge, I can view “Quick-Look” true color and NDVI maps on the operating tablet as soon as drone lands. That gives me the ability to immediately investigate an issue while still at the field. After surveying

**“With Quantix & AV DSS, I’ve finally found an integrated drone & data analytics system that meets all of my needs.”**

Josh Hammond  
Certified Crop Advisor  
FarmAssist Consulting  
Dickinson, ND

FarmAssist provides pre-plant to post-harvest consulting services to row, small grains, oil seed and pulse crop producers. Advisory services range from soil testing & fertility recommendations, crop rotation planning, variable rate seed and fertilizer maps, to crop scouting and post-harvest evaluations.

**Quantix™ & AV DSS™**  
Complete End-to-End Ecosystem  
On-Demand Field Intelligence For Every Growing Season

As a Certified Crop Advisor working with row crops, small grains, oil seeds and pulse crops, my goal is to assist growers in maximizing production as efficiently as possible through practices that also improve soil health and long term sustainability of resources. For years I’ve searched for a drone & data analytics system that would provide a level of insight that would benefit both my growers and efficiently integrate into my workflow process.

“A CERTIFIED CROP ADVISOR’S VIEWPOINT:  
Creating a Drone-to-Tractor Precision Ag System

**As a Certified Crop Advisor working with row crops, small grains, oil seeds and pulse crops, my goal is to assist growers in maximizing production as efficiently as possible through practices that also improve soil health and long term sustainability of resources. For years I’ve searched for a drone & data analytics system that would provide a level of insight that would benefit both my growers and efficiently integrate into my workflow process.**

**“With Quantix & AV DSS, I’ve finally found an integrated drone & data analytics system that meets all of my needs.”**

Josh Hammond  
Certified Crop Advisor  
FarmAssist Consulting  
Dickinson, ND

FarmAssist provides pre-plant to post-harvest consulting services to row, small grains, oil seed and pulse crop producers. Advisory services range from soil testing & fertility recommendations, crop rotation planning, variable rate seed and fertilizer maps, to crop scouting and post-harvest evaluations.

**Quantix™ & AV DSS™**  
Complete End-to-End Ecosystem  
On-Demand Field Intelligence For Every Growing Season
the field and returning to my office, the imagery collected is uploaded into AV DSS and automatically processed into NDVI and other maps within 24 hours. Having the whole operation seamlessly connected from flight planning to delivery of a processed NDVI is extremely convenient.

I purchased Quantix after the growing season had begun but wanted to experiment with it as much as possible. I conducted flights ranging from chemical damage investigation and plant stand evaluation, to side-by-side fungicide trials and plant health observations. All of these flights provided real time data that could be further investigated on the ground, and compared against yield data.

What I found to be one of the most useful applications for Quantix & AV DSS was taking early season NDVI imagery of corn fields and creating variable rate maps for additional nitrogen applications. The area I service is almost entirely composed of dry land farms, so we rely completely on rains. June was a perfect combination of growing conditions and rain that created beautiful corn fields. The field’s potential appeared ready to exceed the initial fertilizer that was applied. Flights were made late June to early July to capture field variability. The NDVI images were then exported for use into ADMS software to create variable rate maps. These variable rate maps were built to apply between 10-20 gallons of 28-0-0 through a Y-DROP system on a sprayer. In addition, 25 gallons check strips were also included to evaluate our applied rates later in the season, to form a complete drone-to-precision ag to application check system.

With a successful first season behind us, we will build upon what we have learned and better plan for next year. We are already making adjustments to more fully utilize Quantix & AV DSS to better manage fertilizer inputs. Check strips of higher and lower nitrogen rates will be built across all zones at planting. This will give us the ability to better evaluate NDVI maps in season. As a Crop Advisor, I can’t control the weather but I can help manage risk and make educated plans. Multiple flights throughout the year will also be used for monitoring, in-season verification and creation of application maps when necessary.

“What I found to be one of the most useful applications for Quantix & AV DSS was taking early season NDVI imagery of corn fields and creating variable rate maps for additional nitrogen applications.”

– Josh Hammond

Growers are continually being pushed to be more efficient in all aspects of their operation. But you can’t address problems if you don’t have a way to measure them. Using drone imagery provides another layer of information, with insights into key performance indicators like plant stand or plant health long before they get to a yield map. Quantix & AV DSS provide the drone-to-tractor precision ag capability, and performance efficiency I was looking for. It allows me to capture real-time, high resolution field data and translate that directly into application plans when appropriate – saving time, effort and money. Quantix & AV DSS allows me to get in-season information to evaluate how well our plans and applications have translated into the current growing season. We can then either confirm how well we’ve done, or make additional applications to push yield further. Having this additional window to evaluate the season assists my growers in maximizing their efficiency, productivity and ROI.

“We are already making adjustments to more fully utilize Quantix & AV DSS to better manage fertilizer inputs.”

Anomaly Layer
Based on NDVI - provides indication of the overall uniformity of the field. Quickly identify areas that preforming or worse than average.

This image shows the Quantix & AV DSS generated Anomaly Layer after import to ADMS software

Variable Rate Layer
Identifies zones within a field based on their NDVI. Easily import into Farm Management Software to create geo-referenced application maps and prescriptions for use with variable rate controllers and hardware systems

For more information, visit www.AVdroneanalytics.com