

JAS and Drone Safety



Current UAV's

- Dumb machines
 - Fly routes really well, but no obstacle avoidance!!!



Keep in Mind These Guys are Also Flying:



Issues with Agricultural Aircraft:

- Flying at very similar altitudes
- Still no alert or avoidance systems
- Many are colored for good visuals from the ground, not the air (black)
- Most UAV's have a small profile in the air

Two Main Types of UAS Systems and Other Safety Issues:

- Note the Following:
 - Multi-rotors:
 - Built-in Geo Fence
 - Very hard to see for pilots though!!!
 - Airplanes:
 - Most don't have a built in Geo-fence
 - Many made of styro-foam



Plane hitting UAV:

- https://youtu.be/_ieyM1JmXJc
- <https://search.yahoo.com/yhs/search?p=uav+hit+airplane&ei=UTF-8&hspart=mozilla&hsimp=yhs-004>

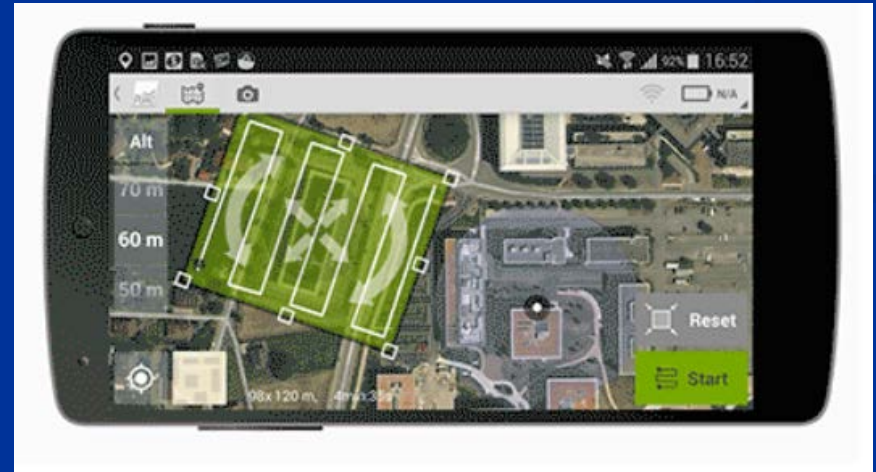
Newer Drone Systems:

- DJI Phantom 3 Advance or Professional (\$799 - \$1,000)
 - High end Wi-Fi transmitter
 - Receives both video and controls UAV functions
 - Rated for 3.1 miles
 - 1.6 miles in testing
 - Full HD quality video
 - Extremely easy-to-fly
 - Stronger Motors (to fight wind)
 - Longer flight times (20 minutes)
 - Multiple software available with good autopilot and mapping functions
 - 15 to 30 acres per battery, but fast and can use multiple batteries



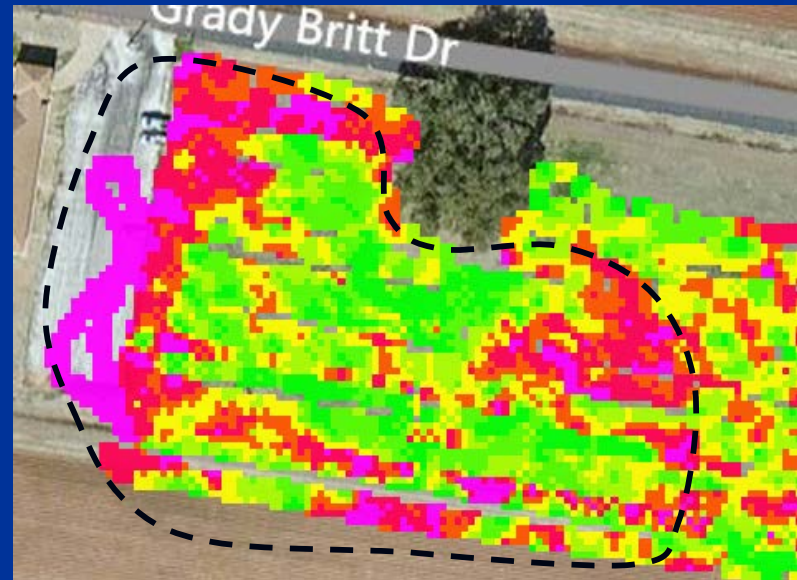
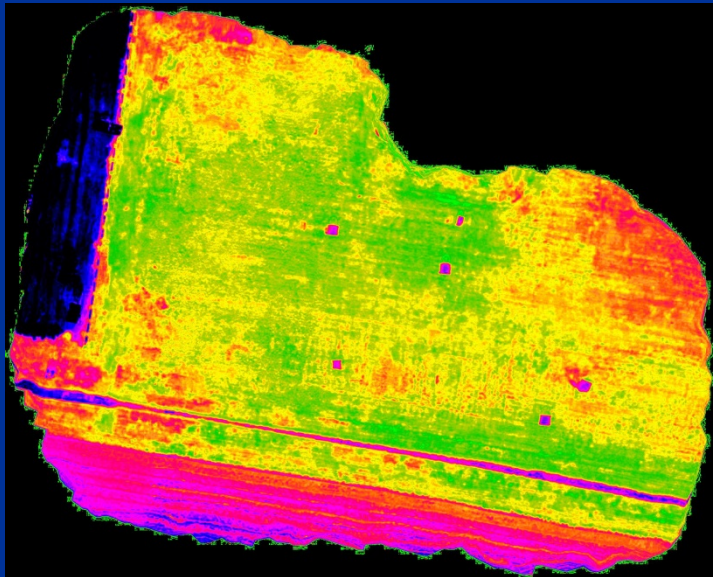
Newer Software (on Tablets):

- Low priced software for automatic flights and mapping with these units:
 - Pix4DMapper App
 - Plans and executes automated flights
 - Works on tablet / download from store
 - Automatically offloads images and sends to Pix4D, and an geo-orthomosaic is returned to tablet
 - Low price: \$500 per yr.:
 - Others: Drone Deploy; Litchi, etc.



Field Mapped with UAV Using Converted Consumer Camera To Greenseeker:

- NDVI green UAV NDVI red Greenseeker



Legend	
0.576 - 0.794	0.000 - 0.392
0.529 - 0.575	0.435 - 0.464
0.497 - 0.528	0.393 - 0.434
0.465 - 0.496	

New FAA Rule:

- Every drone or UAV (including remote control toys – anything over 0.55 lbs) have to be registered with the FAA by Feb 21st, 2016.
 - Under thirteen won't be able to register
 - Impedes congressional Law with the AMA for recreational remote control hobbies
 - Still has a review and comment period, but will be retro-active law on Feb 21st.

UAV Sprayers:

- DJI Crop Sprayer:
 - Carries 22 lbs. of liquid for spraying
 - Cover 7 to 10 acres per hour
 - Microwave ground sensing sensor
 - Auto path
 - Special force air cleaning system
- \$15,000?



UAV Sprayers:

- Yamaha RMAX
 - Sanctioned for use in the US
 - 10 ft. in length
 - 20 hp engine
 - Carries 61 lbs. of material
 - Setups for liquid or granular



The End

Questions?