



AGRICULTURAL USE OF UAS TECHNOLOGY STUDY GUIDE

The certification standards for the Agricultural use of Unmanned Aerial Systems (UAS) Technology exam are based on the standards and benchmarks taught in the Florida's Agricultural use of UAS Technology program at the secondary level. Each standard is weighted based on industry needs and feedback and are noted below. The number of questions per standard is determined by the industry weight. A complete listing of Florida's Agricultural Use of UAS Technology standards and corresponding benchmarks are available from the Florida Department of Education.

Standard	Description	Weight
15	Explain new careers that have emerged using technology in agriculture.	10%
16	Determine uses for Unmanned Aircraft Systems (UAS) to monitor plant growth.	15%
17	Describe how UAS can be used to evaluate soil conditions.	15%
18	Develop an integrated pest management (IPM) plan using information from UAS technology.	10%
19	Develop fertilizer recommendations by interpreting multiple data sources.	15%
20	Determine uses for UAS to monitor animal operations.	5%
21	Determine the applications of UAS to provide data for forage producers.	10%
22	Determine the applications of UAS to provide data on agricultural crops.	15%
23	Determine the applications of UAS to provide data to foresters.	5%

AGRICULTURAL USE OF UAS TECHNOLOGY

STANDARD 15

10 QUESTIONS

Students should be familiar with trends related to career shifts related to UASs.

Sample Question: What agricultural operation would be most likely to benefit from using UASs?

Students should be able to calculate acreage given dimensions of a field.

Sample Question: A producer measures a citrus grove that is currently in production to determine the acreage. The producer measures 4070 feet by 3000 feet. How many acres is in the section? (43,560 square feet in 1 acre)

Students should know the difference between active and passive sensors and provide examples of each.

Sample Question: What is a passive sensor that can be used to observe animal behavior?

STANDARD 16

15 QUESTIONS

Students should be familiar with imaging tools used to monitor plant growth.

Sample Question: What tool can be used to estimate photosynthesis rates in plants?

Students should understand the chemical reaction of photosynthesis.

Sample Question: What is the main product of photosynthesis?

Students should be able identify common nutrient deficiencies.

Sample Question: What nutrient is deficient in a plant that has lighter colored older leaves?

STANDARD 17

15 QUESTIONS

Students understand the relationship with soil particle size and other soil properties.

Sample Question: What soil particle holds the largest amount of water?

Students should be able to recommend irrigation systems and diagnose problems with irrigation systems.

Sample Question: What system distributes water from a single nozzle to an entire field?

Students should be familiar with UAS imaging that can help identify irrigation issues.

Sample Question: What type of UAS imaging can detect the effectiveness of an irrigation system by measuring the temperature of the plant?

STANDARD 18

10 QUESTIONS

Students should be able to identify common pests from pictures.

Sample Question: Identify the pest pictured.



Students should understand the factors that go into Integrated Pest Management.

Sample Question: How could a producer increase the amount of pollinators in their field?

STANDARD 19

15 QUESTIONS

Students should be examine a soil sample and make recommendations to producers.

Sample Question: How many pounds of a 12-10-17 fertilizer should be added to this field?



Waters Agricultural Laboratories, Inc.
 P.O. Box 382 257 Newton Hwy Camilla, GA 31730
 (229) 336-7216 FAX (229) 336-7967

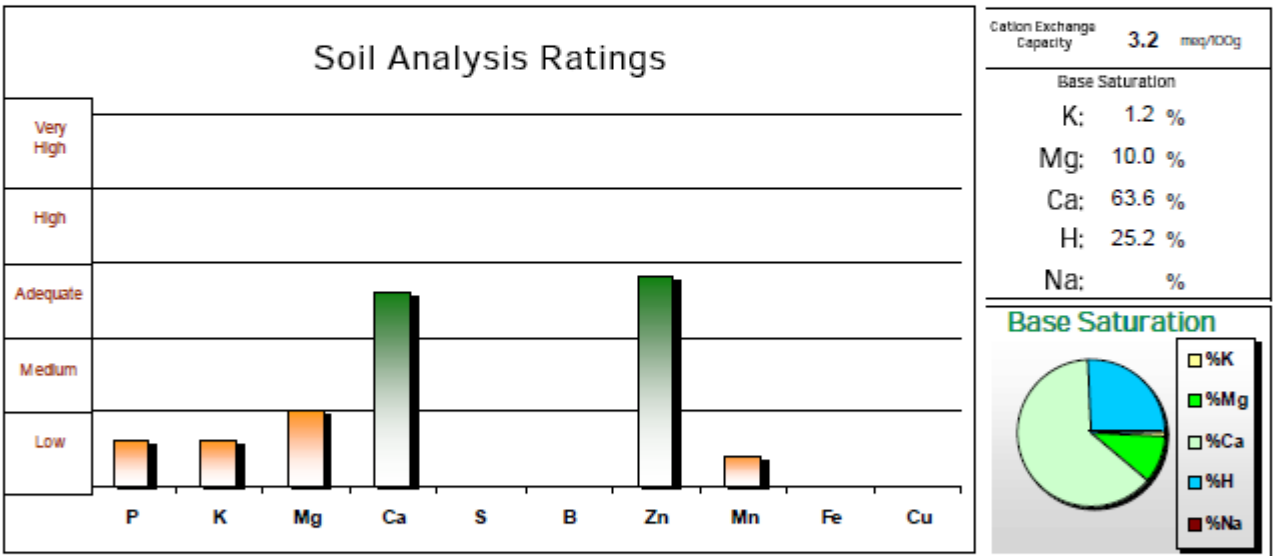
*"Improving Growth...
 With Science"*

Soil Analysis

83 FARMS	Grower: 83 FARMS LLC	Received: 09/02/2010
6510 N HWY 129	Farm ID:	Processed: 09/07/2010
BELL, FL 32619	Sample ID: LINSEY 2 WEST	Account #: 5397

Lab Number: 8728861C **Lab Results** Target pH: 6.5
 lbs. per Acre Test Method: Mehlich I

P	K	Mg	Ca	Soil pH	Buffer pH	S	B	Zn	Mn	Fe	Cu
Phosphorus	Potassium	Magnesium	Calcium			Sulfur	Boron	Zinc	Manganese	Iron	Copper
21 L	30 L	76 L	807 A	6.4	7.90			7.3 A	8 L		
Aluminum	Sodium	Nitrate N	Soluble Salts	Organic Matter							
			meq/100g	%							



Fertility Recommendations

Crop: SNAPBEANS Yield: MAX

Lime	Gypsum	N	P2O5	K2O	Mg	S	B	Zn	Mn	Fe	Cu
Tons/Acre	Tons/Acre	Nitrogen	Phosphate	Potash	Magnesium	Sulfur	Boron	Zinc	Manganese	Iron	Copper
0.0		120	100	170	10				10		

Comments:

* = Maintenance Recommendation

SPLIT APPLICATIONS OF NITROGEN AND POTASSIUM RECOMMENDED. PLANT SAMPLES SHOULD BE TAKEN DURING THE GROWING SEASON. ADDITIONAL OR SUPPLEMENTAL NUTRIENTS MAY BE NEEDED. If Dolomite Lime has been applied recently - Magnesium recommendation can be cut in half.

Students should understand fertilizer addendums and the problems associated with common amendments.

Sample Question: Which nitrogen supplement is most likely to cause foliar burning?

STANDARD 20

5 QUESTIONS

Students should be able to identify uses of UAS for animal producers.

Sample Question: Which producer is most likely to benefit from the use of UAS?

Students should be able to identify breeds of animals from pictures.

Sample Question: What is this breed?



Students should be able to calculate calving percentages.

Sample Question: A cow/calf producer has 400 cows. During a UAS flight conducted during calving season, they count 750 animals in the herd. What is the calving percentage?

STANDARD 21

10 QUESTIONS

Students should be able to identify common forages from pictures.

Sample Question: Identify the forage pictured.



Students should know the stages of forage grasses and the result of nutritional quality.

Sample Question: Which stage of grass will have the highest nutrient content?

Students should be familiar with the relationship between environmental conditions and forage diseases.

Sample Question: Which condition is most likely to cause fungal growth on forages?

STANDARD 22

15 QUESTIONS

Students should be able to identify common weeds from pictures.

Sample Question: Identify the pest pictured.



Students should understand how UASs can be used to detect pest pressure and harvest times.

Sample Question: What do lower Normalized Difference Vegetative Index (NDVI) values indicate?

Students should be able to calculate yields based on information given to them.

Sample Question: A producer uses UAS data to determine that there are 59,000 corn plants per acre. His samples indicate that it takes 200 ears of corn to make a half bushel. What is the best estimated crop yield in bushels? (each corn plant typically has one ear of corn).

STANDARD 23

5 QUESTIONS

Students should be able to identify trees.

Sample Question: Identify the tree species pictured.



Students should be able to identify forest pest.

Sample Question: Identify the forest pest picture here.

Students should be able to calculate forest value.

Sample Question: Which forest has the highest value of timber?