



Lesson Plan

From Drone to Tractor

Created: 07/2015 by the National FFA Organization

STUDENT LEARNING OBJECTIVES

After completing these activities students will...

1. Understand the uses of Unmanned Aerial Vehicles in agriculture.
2. Compare and contrast conventional methods of agriculture to precision agriculture.

TIME REQUIRED: 30 minutes

RESOURCES: FFA.org – My Journey

EQUIPMENT AND SUPPLIES NEEDED:

1. A copy of the "It's a Bird, It's a Plane, It's a... Farm Tool?" worksheet for each student.
2. Internet access to play the video in real time or embed it in a PowerPoint ahead of time.

THIS QUICK LESSON PLAN WOULD WORK WELL AS:

1. Part of a unit on production agriculture.
2. An introduction to a lesson or unit on precision agriculture.
3. An activity about innovations in agriculture.

THESE ACTIVITIES ARE ALIGNED TO THE FOLLOWING STANDARDS:

AFNR Performance Element

- PST.05. Use control, monitoring, geospatial and other technologies in AFNR power, structural and technical systems.

FFA Precept

- PG-J. Mental Growth: Embrace cognitive and intellectual development relative to reasoning, thinking, and coping.

Common Career Technical Core

- AG-PST5 Use control, monitoring, geospatial and other technologies in AFNR power, structural and technical systems.

NASDCTEc

- AGPD04.03 Examine and summarize applications of geospatial technology to demonstrate a broad knowledge of technologies influencing the industry.

AFNR Cluster Skills

- CS.01. Analyze how issues, trends, technologies and public policies impact systems in the Agriculture, Food & Natural Resources Career Cluster.

Common Core- Science & Technical Subjects

- CCSS.ELA-Literacy.RST.9-10.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9-10 texts and topics.

Common Core- Math Practices

- CCSS.MP3: Construct viable arguments and critique the reasoning of others.
- CCSS.MP5: Use appropriate tools strategically.
- CCSS.MP6: Attend to precision.

Next Generation Science

- HS-ESS3-2. Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.
- HS-ESS3-4. Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.
- HS-ETS1-3. Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.

AFNR Career Ready Practices

- CRP.02. Apply appropriate academic and technical skills. Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive.
- CRP.05. Consider the environmental, social and economic impact of decisions. Career-ready individuals understand

the interrelated nature of their actions and regularly make decisions that positively impact and/or mitigate negative impact on other people, organizations and the environment.

- CRP.08. Utilize critical thinking to make sense of problems and persevere in solving them. Career-ready individuals readily recognize problems in the workplace, understand the nature of the problem, and devise effective plans to solve the problem.

Partnership for 21st Century Skills

- Critical Thinking and Problem Solving
- Information Literacy
- Information, Communications, and Technology Literacy

LESSON PLAN:

1. *Introduction:* Have students share what they think of when they hear the word “drone.” Discuss how Unmanned Aerial Vehicles (UAVs) have many uses, and one of those is in agriculture.
2. *Activity:* Each student needs a copy of the handout “It’s a Bird, It’s a Plane, It’s a... Farm Tool?”
 - a. Show the video *From Drone to Tractor*. This video is available on the August 2015 Explore page of My Journey. The direct url is <https://youtu.be/du7wJX6hEP4>.
 - b. The worksheet is based on students having a basic knowledge of the differences between conventional and precision agriculture methods.
3. *Follow-up:* Have students share their thoughts on the advantages and disadvantages of using a UAV in agriculture.

NAME: _____

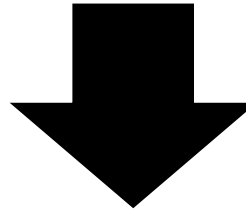
It's a Bird, It's a Plane, It's a... Farm Tool?

DIRECTIONS:

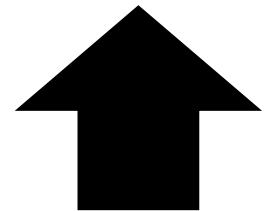
Watch the video *From Drone to Tractor*, available on the August 2015 Explore page of My Journey. Complete this worksheet using information from the video, your own knowledge and any other resources available to you.

Name and describe the steps from drone to tractor.	
Name	Description

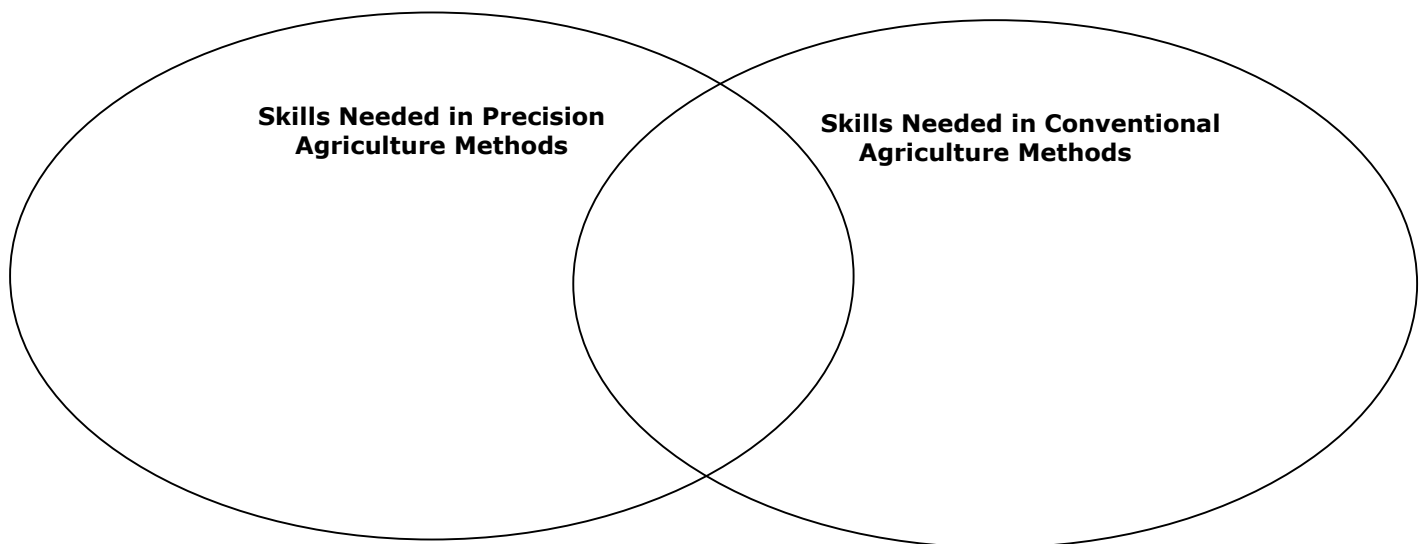
What are advantages of using precision agriculture methods?



What are disadvantages of using precision agriculture methods?



Complete the Venn diagram below to compare and contrast the skills needed by someone who uses conventional agricultural practices and those who use precision agriculture techniques.



Aligned to the following standards:
PST.05; FFA.PG-J; AGPD04.03; CS.01; CCSS.RST.9-10.4; CCSS.MP3;
CCSS.MP5; CCSS.MP6; HS-ESS3-2; HS-Ess3-4; CRP.02; CRP.05; CRP.08