



Drone Exploring: Career Spotlights

Agriculture — Club

Overview: Farmers use drones to check on crops across huge fields in minutes instead of hours, spotting sick or thirsty plants long before they'd notice from the ground. In this session, youth explore how drones help farmers scout fields, learn how special cameras can spot unhealthy plants, and practice a hands-on crop-scouting activity using a mapped field grid.

OBJECTIVES

- Introduce youth to the career of drone-based crop scouting and precision agriculture.
- Explain how special cameras can spot healthy versus stressed or unhealthy plants from the air.
- Practice mapping and scouting a field grid through a hands-on activity.
- Build awareness of safety and precision needed when drones are used for spraying crops.

SUPPLIES

- Flip chart or whiteboard and markers
- Rope, cones, or chalk to mark a grid representing a field
- Colored cards or markers (green for healthy, yellow or brown for stressed) to place around the grid
- Clipboards and the Crop Scout Log handout
- Printed handouts: How Drones Help Farmers and Crop Scout Log

ADVISOR NOTES

- If outdoor space is limited, shrink the grid and use a tabletop version with a printed field diagram and paper markers.
- Explain that farmers use a special kind of image (often shown in false colors) to see plant health that isn't visible to the human eye.
- Emphasize that spraying pesticides or fertilizer by drone requires extra training and rules beyond basic flying, since it affects food and the environment.
- Consider inviting a guest speaker (a local farmer, agronomist, or agricultural drone operator) to share how they use this technology. See Optional Extensions.
- If no guest speaker is available, Advisors can run the entire session using this outline and the resource links below.

SESSION OUTLINE

- **Welcome and Icebreaker** (10 min)
 - “Farm Detective.” Ask youth how they'd check on a huge field of crops without walking every row.
- **Safety Moment (Careful Flying Over Crops and Animals)** (10 min)
 - Drones flying over farms must watch for livestock, farm workers, and equipment below.
 - Spraying drones must stay precise to avoid drifting chemicals onto the wrong area.
 - Ask: “Why do you think farmers need extra training before using a drone to spray crops?”
- **Mini-Lesson: How Drones Help Farmers** (15 min)
 - Explain how drones scout fields for crop health, check irrigation, and can precisely spray fertilizer or pesticide only where needed.
 - Introduce the idea of special cameras that reveal plant stress before it's visible to the human eye.
- **Activity: Crop Scout Challenge** (20–25 min)

- Mark off a grid representing a field and place colored cards representing healthy (green) and stressed (yellow or brown) plants around it.
 - Teams “fly” a scouting route across the grid row by row, recording what they find on the Crop Scout Log.
 - Compare which team’s scouting route found and recorded the most accurate map of plant health.
- **Discussion: What Would You Do Next?** (10 min)
- Discuss what a farmer might do after finding a stressed area: water it, check for pests, or add fertilizer.
- **Wrap-Up Share-Out** (10 min)
- Groups share their Crop Scout Logs and discuss how a drone made scouting faster than walking the whole field.

REFLECTION SECTION

Advisor Note: Some sample questions are below. They are designed to help the participants apply what they have learned to their own interests. You are welcome to use these questions or develop your own.

Focusing Questions

- What was tricky about scouting the whole grid carefully?
- What did you notice about how a map of the field could help a farmer?

Analysis Questions

- Why is it useful to spot a sick plant early, before it spreads to others?
- How does scouting by drone compare to a farmer walking the whole field by hand?

Generalization Questions

- Where else could “checking a small sample to understand the whole” be a useful skill?
- What’s one thing you’d like to learn next about farming or plant science?

Challenge: This week, look closely at a plant at home or in your neighborhood and describe one sign that would tell you if it’s healthy or stressed.

OPTIONAL EXTENSIONS

Guest Speaker: Invite a local farmer, agronomist, or agricultural drone operator to share how they use drone technology on real farms, in person or by video call.

Advisor-Led Option: If a guest speaker isn’t available, Advisors can run this session using the outline above and the resource links below. No outside expert is required.

Resource Links: Search “precision agriculture drones explained” on a video platform for kid-friendly explainer videos.

Group Extension: Sketch a map of a garden or field and mark where you’d expect plants to need the most water or sunlight, and why.

Handout: How Drones Help Farmers

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Read through the key ideas below before starting the Crop Scout Challenge.

Crop Scouting

Drones fly over fields to check plant health, spot pests, and find dry or flooded areas much faster than walking on foot.

Special Cameras

Some drone cameras capture light our eyes can't see, revealing plant stress days or weeks before it's visible to a person.

Precision Spraying

Drones can apply fertilizer or pesticide only where it's needed, reducing waste and protecting the environment.

Why It Matters

Catching problems early helps farmers grow more food using less water, fertilizer, and chemicals.

Handout: Crop Scout Log

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As your team scouts each row of the field grid, record what you find.

Row #	Healthy or Stressed?	Notes
1		
2		
3		
4		