

# Check for Understanding

**Plants**

**Animals**

Animals need plants for survival because: \_\_\_\_\_

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Plants need animals for survival because: \_\_\_\_\_

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# Scenario 2: Weed Infestation

## Summary

A sugarbeet farm near Powell is working to control an infestation of lambsquarters, a fast-growing weed. Sugarbeets are plants whose roots contain a high concentration of sugar. When weeds and crops are both growing in the same space, it can be problematic for the crops because they are competing for resources. In particular, the plants may be competing for light. Sugarbeets are a plant that doesn't grow very tall, so if there is lambsquarters near it, the sugarbeets' light quantity and quality might be compromised.

## Summary of Impacts

Sugarbeets growing near weeds produce significantly fewer leaves. Plants surrounded by weeds produced about two-thirds less leaf area than sugarbeets surrounded by soil. Because of the limited leaf area, those plants are less able to convert light energy into carbohydrates through photosynthesis. This results in roots that are significantly (70%) smaller than beets grown without weeds nearby. Since the root is the part of the plant that is harvested, it means that the lambsquarter is significantly reducing the farmer's yield.

## Scenario 2: Options

Farmers:

- ◆ **Apply a herbicide to the weeds to kill them.** - The herbicide has been carefully chosen to target the lambsquarter. Pre-emergent herbicides are sprayed early in the life cycle of the plant to prevent germinating seeds from becoming established. Post-emergent herbicides are applied to kill the weeds after the seedlings have emerged but before they become large enough to shade the crop.
- ◆ **Pull the weeds by hand.** - Lambsquarter has a short taproot, so it pulls up easily when it is small. The goal is to remove the weed before it can shade the sugarbeet crop or produce seeds.
- ◆ **Till the field to uproot the lambsquarters.** - Tilling is the process of turning over and stirring up the soil. As the soil is disturbed, the lambsquarter's roots will be cut or pulled out of the soil. Tillage for weed control is done by pulling a heavy piece of field equipment with a large tractor. This will get rid of most of the lambsquarters but may increase the chance of erosion since small soil particles are more likely to blow with the wind or be moved with water.



# Student Recording Sheet

## Scenario 2

Place the components of the ecosystem described in the scenario on the graphic.

**Plants**

**Physical Attributes**

**Animals**

**Humans**

What is the problem in this scenario?

What impact does it have on the ecosystem?

Which potential solution are you selecting?

How does your choice change the ecosystem described in the scenario (positive and negative)?

How does it support the plant in meeting its needs?

How does it show good stewardship of the agricultural resources?

