
SYNOPSIS:

Some people think of ants simply as nuisances, but the leafcutter ants of South America are considered terrible pests by those who share their land, because leafcutter ants destroy the vegetation around them. Yet, watching leafcutter ants in action is like watching thousands of tiny farmers and engineers at work. These tiny insects have amazing skills as builders, farmers, and even chemists. They grow their own food in a complex maze that is controlled with precision and kept free of impurities.

In this program get a close-up look at these amazing insects and tour their underground chambers and fungus farm. Witness a rare sight, the amazing marriage flight, in which 40,000 ants take off in the hopes of starting new colonies. Discover some of the leafcutter ants' secrets that are helping farmers grow healthier crops.

CURRICULUM UNITS:

Agricultural Science	Chemistry
Animal Behavior	Entomology
Biology	General Science
Botany	Life Science

CAREER OPPORTUNITIES:

Architect	Horticulturist
Biochemist	Mycologist
Biologist	Naturalist
Botanist	Nature Photographer
Entomologist	Pharmacologist
Farmer	Zoologist

BACKGROUND INFORMATION**& PROGRAM OVERVIEW:**

Scientists estimate that there are about 8,000 different kinds of ants. Among them are the various leafcutter ants of South America, feared and hated by those who live near them because their powerful jaws slice through leaves, stripping trees bare.

The largest leafcutter workers harvest and carry to their nests leaves on which to grow a fungus that is the colony's only food. The ants do not eat the leaves themselves, because their digestive systems lack the enzymes to break down the cellulose of leaves, the fungus they cultivate does that for them.

Like all ants, leafcutters are social insects who live together in colonies. Their society is divided into 3 classes: males, workers, and queens. Using close-up photography, this program will detail the life cycles of the leafcutter ant.

In learning about these tiny creatures, your students may encounter some unfamiliar terms. The leafcutters use leaves to cultivate a certain FUNGUS as their only food. If the fungus gets too dry, they will IRRIGATE, or bring water to it. These clever farmers control the growth of this fungal CULTURE and keep it free of impurities using chemicals produced in a GLAND within their bodies.

You may want to discuss and review the ant life cycle, including the LARVAL and PUPAL stages. When ant eggs hatch, the larvae are usually wingless and worm-like, and do not resemble the adult insects very much. The larvae eat, grow, and then go into the PUPAL stage before emerging as adults and joining the colony.

ISSUES AND CRITICAL THINKING:

- 1) After showing the program, ask your student the following questions
 - a) What do leafcutter ants do with the bits of leaves they cut and carry to their nests?
 - b) How do leafcutter ants start their new colonies?
 - c) What do leafcutters do when water isn't readily available?
 - d) How do the leafcutter ants protect their food fungus from disease and control its growth?
 - e) How can the scientific study of these ants help farmers grow their crops?
- 2) Draw a leafcutter ants' nest, including the underground chambers and the fungus gardens
- 3) There are thousands of species of ants. How many different species can students find in you area? Are they all the same size, shape, and color? Do all of them live in colonies? Do they all live underground? Do they have special diets?
- 4) A scientist tried to raise leafcutter ants in the United States. The scientist placed maple and oak leaves in a container and observed the ants. After a relatively short time, the ants died. Can the student explain why that happened?
- 5) Some people compare an ant colony to a factory assembly line. Why?
- 6) Why must young queen ants leave the colony to start new colonies?
- 7) Ants are known as "social insects". What does that mean? Talk about other insects that live in colonies.

8) Discuss how ants communicate and are able to follow a trail to food. How do other insects communicate?

9) Scientists tell us that all living things, even those that appear to be harmful, can teach us about life, and be beneficial to other living things. How is that true about leafcutter ants?

GLOSSARY:

Architect- A planner, designer or supervisor of construction.

Culture- A nurtured growth of plants or other organisms.

Colony- A group of ants that live in the same nest. One reason why ants are called social insects.

Fungus- A spore bearing organism that cannot make its own food. A certain type of fungus is the only food of leafcutter ants.

Gland- An internal body organ that produces and secretes substances such as hormones.

Irrigate- To bring water to places where it's needed.

Larva- The form of some insects just after hatching from the egg, in which they are wingless, usually wormlike, and generally unlike the adult form.

Petri dish- A shallow, flat glass dish with a cover in which biologists can grow, or culture, microorganisms for study.

Pupa- The form of some insects, just after the larval stage, in which they go motionless and undergo many changes before emerging as an adult.

Wonders of Biology – Animals,
Insects, Plants & Fungi



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ENTOMOLOGY: LEAF CUTTER ANTS -PESTS OR PALS



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