ANTS

CHALLENGE

FIND OUT HOW ANTS RESPOND TO DIFFERENT SITUATIONS.

Ants, ants, ants! When they invade a kitchen, picnic area, or other territory that humans think is theirs, trouble is near. We think of any invasion of ants as a personal insult, yet they are only trying to make a living. Some variety of ant is found in nearly every part of the world.

Ants are colonial insects living together and cooperating in nearly all aspects of their lives. They communicate directly by touching various segments of their antennae together and indirectly by releasing chemicals onto the surfaces on which they walk. The effectiveness of communication between ants is responsible for those long and busy ant trails you see so often.

Food and water are of prime importance to ants, just as they are for other animals. You have probably seen ants carrying pieces of food to their nests. Ants eat such diverse foods as peanut butter, fruits and other insects.

In dry areas of the country ants may burrow deep into the ground for moisture but may been seen scurrying about with their eggs whenever their nest becomes wet. Ants, like most animals, must make living adjustments several times a year to remain in an acceptable environment. Inadequate food or water, or excess water, may cause them to enter human homes where they can often find both food and water or escape flooded soil.

In this activity, instead of screaming “Ants! Ants!” the children investigate the behavior of ants and discover what kinds of food excite and attract ants, how ants respond to water, if “lost” ants can find their trail again and where nests are located.

MATERIALS

The materials listed include everything necessary for a group of eight. Add extra materials for larger groups.

For the group:

30 cotton swabs
1 to 2 liters of water
1 sprinkler can or bottle (as used for ironing)
12 small paper cups
12 popsicle sticks
Paper or transparent tape
2 medicine droppers
Assorted possible ant foods (peanut butter, sugar, ice cream, cereal, nuts, flour, crackers, soda pop, popsicles, and honey).
3 pieces of cardboard (to create wind by waving)
5 soda straws
1 master each of three sheets of Action Cards
1 duplicated Action Card for each student or team of two (plus a few extra)

PREPARATION

Time of year: You will find more ants above ground during warm weather.

Group size: This activity works best with small groups of four to eight students.

Site: Find an area that has ants, preferably lots of ants and ant trails. Look along building edges, outdoor walks, paths, and straight boards. You will be most successful with this activity if you work with the common house ants that typically invade kitchens, picnic areas, and other places where human food is available. You will not have as much success with the larger carpenter or red ants.

Foodstuffs: All the foodstuffs you or the students bring will get dirty, so don't bring a full jar of anything. Instead, place an amount equal to about two tablespoons into paper cups or sandwich bags. Bring extra sugar or sweet substances such as jam, jelly, or sweet soda pop.

ACTION

Introduce the activity by calling the students over to an active ant trail and asking them what they know about ants. After listening to their ideas, suggest that they experiment with ants and find out how the ants respond to water, different foods, disturbances, and other situations.

1. In full view of the youngsters prepare a flour solution in a cup by adding one-half teaspoonful of flour to about ten teaspoonfuls of water. Emphasize that only a SMALL amount of food or bait should be offered to the ants.
2. Stir the solution with a cotton swab and dab a little next to an ant trail.
3. Observe the responses of the ants for a minute. (They may appear to investigate the solution, but probably will not eat it, and may avoid it altogether.)

4. Express your disappointment at the failure of the ants to eat your flour solution. Ask the students for some suggestions on foods ants will eat, or on how you could change the solution to make it more appealing to the ants.

Discovering Super Food

1. Suggest to the students that they use the foods you brought to find one that is a "super" food for these ants.
2. Inform the students that the ants may not eat some undiluted food such as jam, but may eat the jam after it has been diluted with water.
3. Point out the boundaries of the study site, and tell the students to use tiny amounts of food. Divide the group into teams of two and begin.
4. Encourage the students to share their super-food findings with the others.

Discover Other Ant Responses

1. After the students have discovered a super food for the ants in your area, invite them to do some other experiments with ants.
2. Distribute one of the duplicated Action Cards to each team.
3. As the students work on their experiments, visit each of the youngsters to see how they are doing. Encourage them to show or tell you what they have discovered. Encourage the teams to try other ideas they may have that are not on any of the Action Cards.
4. After a student completes an experiment, offer her another Action Card.
5. Before you have to stop the activity, gather students for some idea sharing.

Communicating About Ants:

- After gathering the students, ask some of them to read their Action Cards and tell the group what they discovered.
- What techniques could you use to keep your home free of ants without using poisons? (Providing food *outside* the house, cleaning *inside* the house, blocking entrance holes, etc.)

Further Antics:

- Try to get some of the ants from a colony to start a new one by providing them with lots of food at another location.
- Carefully carve away the opening to an ant nest *without tearing up the nest*. Are there many tunnels? Other exits? Cross tunnels?
- Discover what kinds of materials, e.g. wood, metals, plastic, water, or concrete, ants avoid or refuse to use as pathways.

- Find out how ants around their nest respond when a different kind of live ant, or an ant from a different nest, is placed there.
- Find out what ants do at night.

WHAT TO DO NEXT

Follow the Scent
Sticklers
Isopods
Junk-in-the-Box
A Better Fly Trap
Attract a Fish
Hopper circus

ANTS
ACTION CARD

Fanned Ants

Create a wind or an ant trail to determine what they do.

Materials: piece of cardboard to wave, or soda straw to blow through.

ANTS
ACTION CARD

Ants Sometimes Get Lost

"Lose" an ant by letting it crawl onto a leaf and setting the leaf down close to, but not right on, the trail. What does the ant do?

Place an ant from one trail or colony onto another trail or colony.

No materials needed.

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ACTION CARD

Ant Trail Making

Which is the best way of changing an ant trail?

1. By providing rewards such as laying down a new trail of food? OR
2. /by blocking the old trail with some object? (Rocks, sticks)

Materials: Super food, rocks, soil, sticks, rope, cans.

ANTS
ACTION CARD

Block an Entrance

Find the entrance to an ant nest (if you haven't located a nest yourself, check with a team that is following ant trails to the nests.) Using a pencil or a small stick, partially block the entrance. What do the ants on the outside do?

Materials: stick or pencil