Pasqueflower (*Anemone patens*) seed head

Plants on the move—testing wind-dispersed seeds in the classroom

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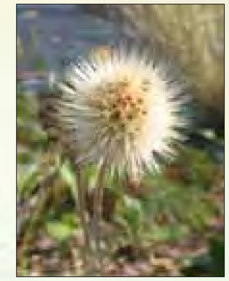


Blanketflower (*Gaillardia aristata*) seed head

Introduction

As a plant ecologist serving as a scientist in residence at an elementary school this year, I wanted to ensure that students learned some of the fascinating ecology and adaptations of plants. This article describes an investigation I designed to help students appreciate the relationships between the form and function of plant structures, and lets them experimentally test a plant adaptation. In this lesson the students examine and compare different types of seeds and investigate which seeds travel farthest on the wind in a simple classroom experiment. This lesson has been used successfully with both fifth and sixth grade students.

Background:

Seeds are a very important stage in the life cycle of a plant. A plant is most mobile as a seed, and the movement of seeds is what allows plant populations to spread geographically, and to colonize new areas.

Many plant are adapted for various different kinds of dispersal (animals, wind, water, etc.). Seeds that are moved by wind often have fluffy hairs (called a "pappus" in some families) or winged appendages as part of their fruit.

In this inquiry, students will consider the following questions:

•How are seeds of different plant species different?

•Which of these species' seeds travel best on the wind?

1. Materials needed:

•1 Small electric fan per testing station

•1 Measuring tape and 1 ruler for each testing station.

•Datasheets for each group (see Figures 1 and 2).

•Seeds of 4 different plant species, with varying types of structures that may help with wind dispersal.

Note: Having seeds with a wide variety of structures will help, as will having one clearly non wind-dispersed seed for contrast.

Examples of seeds used in this investigation. From top to bottom, seeds came from:

•Goatsbeard (*Tragopogon dubious*)

•Arnica (*Arnica latifolia*)

•Houndstongue (*Cynoglossum officionale*)

•Pasqueflower (*Anemone patens*)

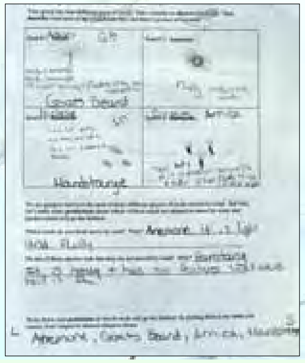


Figure 1. Observation and predication worksheet, filled out by 6th-grade students.

2. Observations and predictions:

•Discuss with the class why it is important for seeds to move around, and the different ways that plants can accomplish this task (wind, birds, mammals, ants, etc.)

•Explain that the experiment today tests how well different types of seeds to at traveling on wind.

•Pass out samples of each type of seed to groups.

•Students observe and draw the different seeds, and predict which will travel best on the wind.

3. Measuring and testing

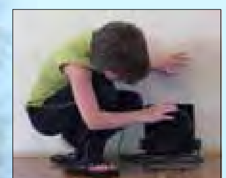
•Set a small electric fan on the floor, blowing at low speed.

• Stretch a meter tape out in front of the fan.

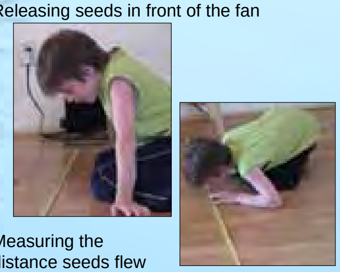
•Have each group of students drop one seed at a time of each species in front of the fan, dropping all seeds from the same height.

•The students will watch how far each seed travels, and record the distance on their data sheets. (Figure 2).

Figure 2. Students record the distance the seeds flew, rank the different types of seeds by distance, and compare this with their predictions. (6th-grade example)



Releasing seeds in front of the fan



Measuring the distance seeds flew

4. Working with data

The approach to interpreting the data will depend on the age and math skills of the class. At the most basic, students can report the distance each seed traveled, record the distance on a chart on the board, and a teacher can help them average and make a graph. More advanced students can calculate the averages for their group and create their own bar graphs (Figure 3). Groups can also compare their individual results to an overall class average to discuss variability.

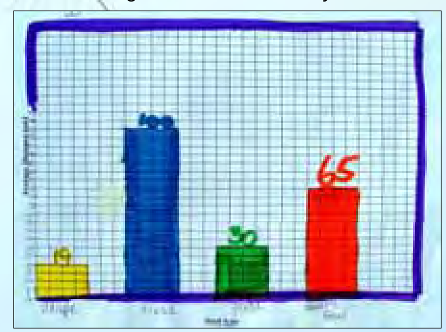


Figure 3. 6th-grade students presented their results as bar graphs.

5. Extending the concepts

Encourage students to think about these ideas in science journals or class discussions with questions such as:

- How did your results compare to your predictions?
- When you made your predictions, what did you think would make seeds travel well on the wind?
- Do your results change what you think is most important for seeds to travel on wind?
- How might you do this experiment differently if you did it again?
- Can you design a way to test how well seeds get around by a different method, like water or animal fur?

Acknowledgments

Special thanks to the 5th and 6th grade teachers and students at Hellgate Elementary and Target Range schools in Missoula, Montana. Thanks also to C.l Brewer, M. Machura, R. Wahl, and the ECOS staff. This lesson was developed through an ECOS fellowship from an NSF GK-12 to the University of Montana