Wisconsin Fast Plants®: Irradiated Seed Kit

TEACHER'S MANUAL
AND STUDENT GUIDE

CAROLINA
World-Class Support for Science & Math

Wisconsin Fast Plants®: Irradiated Seed Kit

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Cover photos:

Nuclear plant cooling towers ©2010 Jupiterimages Corporation

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NOTES

Wisconsin Fast Plants®: Irradiated Seed Kit

Overview

This kit demonstrates how the subsequent growth, development, and productivity of Wisconsin *Fast Plants*® is affected by exposure of the seeds to various levels of ionizing radiation. Students can observe growth over the full 45-day life cycle if your schedule permits. This kit includes materials for a class of up to 32 students.

Objectives

Students will

- germinate seeds of Wisconsin *Fast Plants*®.
- observe the growth of seedlings into mature plants.
- observe the effects that different levels of ionizing radiation applied to the seeds have on the growth, development, and productivity of plants.

Content Standards

This kit is appropriate for middle or high school students and addresses the following National Science Education Standards:

Grades 6–8

Science as Inquiry

- Abilities necessary to do scientific inquiry
- Understandings about scientific inquiry

Life Science

- Structure and function in living systems
- Reproduction and heredity
- Regulation and behavior

Science and Technology

- Understandings about science and technology

Grades 9–12

Science as Inquiry

- Abilities necessary to do scientific inquiry
- Understandings about scientific inquiry

Life Science

- The cell
- The behavior of organisms

NOTES

Time Requirements

The initial planting and setup will require a full class period. Students make regular observations over a 45-day period to observe the entire life cycle. Once the initial setup is underway and the plants have begun growing, each observation takes no longer than 5 minutes. If time allows, and if some students are interested, you may want to plant any seeds produced by the irradiated plants and observe the development of that generation.

Materials

Included in the kit:

- watering trays
- Wisconsin *Fast Plants*® seeds (control, and 4 treatments: 50, 150, 500, and 4000 kilorads)
- quads
- potting soil
- quad wicks
- water mats
- slow-release fertilizer pellets
- plant labels
- watering pipets
- dried bees*
- anti-algal squares
- plant support stakes
- plant support rings
- Wisconsin *Fast Plants*® Growing Instructions

*If dried bees are unavailable, we may supply pollination wands instead.

Needed, but not supplied:

- toothpicks
- light source (cool-white fluorescent)
- white glue
- cardstock for pollination barriers
- rulers
- water
- forceps
- waterproof markers
- containers for collected seeds

Safety

Ensure that students understand and adhere to safe laboratory practices when performing any activity in the classroom or lab. Demonstrate the protocol for correctly using all materials necessary to complete the activities, and emphasize the importance of proper usage. After referring to the relevant MSDS, use personal protective equipment when appropriate. Model proper laboratory safety practices for your students and require them to adhere to all laboratory safety rules at all times.

Note: Some students may harbor the notion that because the seeds have been irradiated, they are radioactive. If that idea surfaces, point out that radiation has passed through the seeds but is not contained within them.

Preparation

1. Assess students' prior knowledge. For the best outcome, students should begin with a basic understanding of normal plant germination and growth.