

Unit 9: Crop Pests

Unit Summary: This unit focuses on two major plant pests, insects and weeds. As climates change the ecological lifecycles of these two groups of pests will change. Scientists are currently studying these changes to determine how they may impact future agricultural production. This unit provides an overview on weed and insects and their identification.

Teaching Time: It is anticipated that this unit and its related activities will take a minimum of five 50-minute class periods to complete. Depending on the number of readings utilized and the time devoted to the collection and identification of plant pests, this could be longer. Also the depth of utilization of the laboratory activities and the desired level of student mastery of identification and preservation techniques can add considerable time to the length of the unit. While five class periods are the recommended minimum, this unit could easily take 10-15 periods if student collection and identification activities are conducted primarily during class-time.

Audience: 9-12 Science & Agriculture Students

Unit's placement in the overall course: While this unit can stand alone, it is recommended to use this unit following the GPS unit so that students can utilize the skills acquired in that unit to create pest maps displaying the location and photographs of the pests they are collecting.

Goals: The primary goal of this unit is to identify plant pests and how climate change may change their impact on agricultural production. A secondary goal is for students to collect and identify common agricultural pests.

Description of the unit: This unit consists of three presentations and two collection lab activities. Teacher notes are supplied with most slides to help guide class discussion. Several readings related to pests and climate change are included.

Using this unit: Within the PowerPoint for this unit are hidden slides. On these slides are embedded Microsoft Word Documents. These documents provide the additional resources needed to deliver this unit. A standards document is provided which includes the relevant Next Generation Science Standards, Common Core State Standards for Math and ELA, and Agriculture, Food, & Natural Resources Standards. The standards included may be only introduced through this curriculum, and the teacher will need to decide the level at which they want to augment the provided instruction in relation to these standards. Readings associated with the unit are in a separate zipped PDF file. This document includes all the readings in one zipped file so teachers can select those readings most appropriate for their classrooms.

Related Readings for Meeting CCSS in ELA: These readings are not overly technical, however teachers reported some difficulty using them with students on IEP's. To accommodate these students it is recommended teachers choose a portion of the readings and run it through an application like <http://www.rewordify.com> which can adjust the reading levels as needed.

Required Supplies:

Weed Collection & Identification Lab Activity:

- Plant press
 - Cheap presses can be made from plywood and cardboard collected from the school recycling. Using an old blade on a table saw makes for uniform sizes and clean edges.
 - Two Compression straps per press are recommended. These are obtainable from the camping section of most department stores. For longer lasting straps look for straps $\frac{3}{4}$ -1" wide with metal buckles.
 - Newspaper or drying paper
 - Cardstock (for mounting plants)
 - Contact Paper or Laminating film (for sealing in plant specimens)
 - Plant/Weed Field Guide
- Optional:
 - GPS (Student Cell Phones may be able to do both GPS and photos)
 - Digital Camera

Insect Collection & Identification Lab Activity:

Many pre-made versions of school insect collection kits are available commercially.

Ordering items individually or manufacturing them yourself can save significant money.

- Bug Nets
- Aspirators
- Collecting/Kill Jars
- Magnifying lenses
- Insect Pins
- Display boxes or foam core poster board
- Wax paper (for butterflies and moths)
- ID Key
- Insect Field Guide