



## Key Concept: Plant Stresses

### Key Concept #4: Plant Stresses

#### What are potential issues with growing food?

- 1) Overview
  - a) This investigation introduces students to sources/types of plant stress and how plants deal/combat with stress.
  - b) Also include emphasis on how plant stresses reduce yield quantity/quality; how does this affect the food supply?
  - c) Talk about how growers help plants avoid/combat stress via pesticides/mgmt. practices
    - i) Currently talking to Ohio Corn and Wheat Growers Association to see if they are interested in collaborating and setting up virtual field trips similar to this:
      - (1) <http://www.ohiopork.org/fieldtrip>
- 2) Content
  - a) Two sources of stress
    - i) Abiotic
      - (1) Heat damage
      - (2) Frost/freeze damage
      - (3) Mechanical damage from hail, wind, etc.
    - ii) Biotic
      - (1) Weeds
      - (2) Pathogens
        - (a) Fungi and fungal-like organisms
        - (b) Bacteria
        - (c) Virus
    - iii) Pests
      - (1) Insects
      - (2) Nematodes
      - (3) Vertebrate pests (deer, raccoons, wild boars, etc)
- 3) Logistics
  - a) For the actual experiment, it would be more feasible to focus on abiotic stresses: Demonstrate concepts of acclimation, freeze tolerance, and freeze damage by subjecting plants to periods in freezer at different developmental stages.
- 4) Example from “The Wonder of Seeds” module:  
[file:///C:/Users/verhoff.79/Downloads/WoS\\_TeacherGuide\\_Final%20\(1\).pdf](file:///C:/Users/verhoff.79/Downloads/WoS_TeacherGuide_Final%20(1).pdf)
  - i) <http://plantingscience.org/index.php?module=content&func=view&pid=79>
- 5) Additional Resources:
  - a) APS Illustrated Glossary of Plant Pathology:  
<http://www.apsnet.org/edcenter/illglossary/Pages/default.aspx>
  - b) APS Introduction to Abiotic Disorders in Plants:  
<http://www.apsnet.org/edcenter/intropp/PathogenGroups/Pages/Abiotic.aspx>