

Course	Agricultural Science II
Unit	Crop Science
Lesson	Certified Seed and Variety Selection
Estimated Time	Two 50-minute blocks

Student Outcome

The student will be able to identify characteristics of quality seed.

Learning Objectives


1. Describe the characteristics of quality seed.
2. Identify the four classes of seed certification.
3. Describe the requirements for seed certification.
4. Describe the benefits of using certified seed.
5. Identify factors that should be considered in selecting a crop variety.

Grade Level Expectations

SC/EC/3/B/09-11/a

Resources, Supplies & Equipment, and Supplemental Information

Resources

1. Activity Sheet
 -  AS 1 – Seed Information and Germination Test
2. *Crop Science* (Student Reference). University of Missouri-Columbia: Instructional Materials Laboratory, 1992.
3. *Crop Science Curriculum Enhancement*. University of Missouri-Columbia: Instructional Materials Laboratory, 2003.

Supplies & Equipment

- ☐ Tin pie plate (need 1 for each student or group of students)
- ☐ Two paper towels (for each student/ group of students)
- ☐ Twenty seeds (for each student/ group of students) – instructor determines variety
- ☐ Seed tag information from the variety selected
- ☐ Masking tape

Supplemental Information

1. Internet Sites
 - ☐ Certified Seed. Ag Websites. Accessed January 15, 2008, from <http://www.certifiedseed.net/>.
 - ☐ Producing Certified Seed. Agriculture and University Extension, North Dakota State University. Accessed January 15, 2008, from <http://www.ag.ndsu.edu/pubs/plantsci/crops/a1125w.htm>.
 - ☐ Seed Certification. Electronic Data Information Source, Institute of Food and Agricultural Sciences, University of Florida. Accessed January 15, 2008, from <http://edis.ifas.ufl.edu/NFREC22>.


Interest Approach

Use AS 1 (Seed Information and Germination Test) to generate interest in the process of seed quality testing and germination rates found on certified seed tags. Students will need to be responsible for their seed germination tests.

Communicate the Learning Objectives

1. Describe the characteristics of quality seed.
2. Identify the four classes of seed certification.
3. Describe the requirements for seed certification.
4. Describe the benefits of using certified seed.
5. Identify factors that should be considered in selecting a crop variety.

Instructor Directions	Content Outline
Objective 1 <i>In order to ensure an adequate crop stand, quality seed should be used when planting the crop. Crop yields can be affected by the seed used. Agronomists estimate the yields from the use of good seed to be 10% to 20% greater than yields resulting from poor quality seed. There are several characteristics of quality seed.</i>	Describe the characteristics of quality seed. <ol style="list-style-type: none">1. Good genetic potential2. Good germination3. Proper size and development4. Uniformity in size and shape5. Absence of seed-borne diseases and insects6. Absence of prohibited, noxious, and other weed seeds7. Absence of other crop seeds and other varieties8. Absence of inert materials
Objective 2 <i>The objective of seed certification is to ensure the quality of seed used by farmers. Seed certification also assures the buyer that genetic purity of the variety is maintained. There are four classes of certified seed.</i>	Identify the four classes of seed certification. <ol style="list-style-type: none">1. Breeder seed – this seed is used to produce foundation seed. Small quantities are produced by commercial seed companies.2. Foundation seed – Foundation seed is the parent line for registered seed and/or certified seed. (white tag)3. Registered seed – This seed is produced from foundation seed; it may be used to produce certified seed or sold directly to farmers. (purple tag)4. Certified seed – Certified seed is produced from foundation or registered seed; it is sold directly to farmers. (blue tag)
Objective 3 <i>Many states have seed laws that are designed to control the quality</i>	Describe the requirements for seed certification. <ol style="list-style-type: none">1. The seed is grown from registered or foundation seed stock.

Instructor Directions	Content Outline
<p><i>of seed sold within the state. Seed associations work to produce quality seed with strict requirements.</i></p>	<ol style="list-style-type: none"> 2. The crops produced pass an inspection for mixtures, weeds, and diseases in the field. 3. The harvested crops attain the standard of quality set by the seed association.
<p>Objective 4</p> <p><i>Research has shown marked benefits from using certified seed. Although the cost of certified seed may be higher than uncertified seed, the benefits outweigh the cost difference.</i></p>	<p>Describe the benefits of using certified seed.</p> <ol style="list-style-type: none"> 1. Guaranteed to be the variety advertised 2. Guaranteed minimum germination rate 3. Guaranteed to meet weed, mechanical injury, disease, and insect contamination standards
<p>Objective 5</p> <p><i>When selecting a crop variety, there are many factors to consider. Environmental factors such as growing season length, soil type, and annual precipitation are important considerations. However, many of these factors cannot be controlled by the farmer. One factor that the farmer can control is the choice of seed to be used.</i></p>	<p>Identify factors that should be considered in selecting a crop variety.</p> <ol style="list-style-type: none"> 1. Cost 2. Adaptability of the variety to local growing conditions 3. Yield potential 4. Purity of variety 5. Quality of crop (protein content, resistance to lodging) 6. Disease and insect resistance 7. Maturity date
<p>Application</p> <p> AS 1 – Seed Information and Germination Test</p>	<p>Answers to AS 1 Answers will vary and should be determined by the instructor.</p> <p>Other activities</p> <ol style="list-style-type: none"> 1. Have students run some germination tests on different seed lots/varieties to see if the stated germination rate is met. 2. If possible, visit a certified seed processing operation. 3. Invite a certified seed producer to visit with the class about the production of quality seed.
<p>Closure/Summary</p>	<p>Through the use of certified seed, farmers can be assured that the seed is guaranteed in yield ability, purity, quality, and ability to resist diseases and insects. The first step to ensuring a quality crop is selecting quality seed.</p>

Instructor Directions	Content Outline
Evaluation: Quiz	Answers: 1. a 2. b 3. a 4. c 5. d