**Norman Borlaug Curriculum**

The first part of the program will include a teacher’s training that will increase the teacher’s knowledge on Dr. Borlaug and his importance to mankind.

The Norman Borlaug Curriculum was created to give teachers the opportunity to present five days worth of pre-field teaching before going to the Norman Borlaug childhood home and then five days of lessons after the visit. This gives the students a better understanding for what Norman Borlaug did for the world. This curriculum gives the students different activities in which to participate in to better understand agriculture and Norman Borlaug heritage. This curriculum incorporates activities in Science, Math, History, Reading, and Writing and corresponds with the Iowa Core Curriculum development. The curriculum can be changed to meet the needs of the teacher.

The following are the topics for the eleven days.

1. Agriculture
2. Wildlife
3. Gardening
4. History of Schools
5. Norman Borlaug’s Childhood
6. Visit to the Norman Borlaug Childhood home
7. Norman Borlaug’s University Days
8. Norman Borlaug’s Work
9. Nobel Peace Prize
10. World Food Prize
11. How can you be like Norman Borlaug?

The overall objectives of this curriculum are:

1. Students should gain background knowledge about Agriculture, Gardening, and History of School houses.
2. Students should gain knowledge about Norman Borlaug, and what he did for the world through his wheat projects.
3. Students will also learn about how they can be like Norman Borlaug.

Through this curriculum, there are activities that can be selected to the amount of time a teacher has. These activities are very self-explanatory and are fun and educational.

The Curriculum should be read thoroughly before presenting to the students. Teachers have information and activities that help students develop their analytical skills and also their communication
skills. On each day the teacher has the option of doing either the activity first or talking about the topic of the day.

The Norman Borlaug Heritage Foundation would like to thank the teachers and students for their participation in this curriculum. We hope this curriculum will be fun and educational for the teacher and the students. If you have any questions or comments, check out the Norman Borlaug Heritage Foundation at http://normanborlaug.org/.

If you would like to schedule a visit to the Norman Borlaug Childhood Home, contact the Norman Borlaug Heritage Foundation.

Curriculum developed by Mary Foell,

2010 Norman Borlaug Heritage Foundation Summer Intern

And Iowa State University Student
Norman Borlaug
Educational Curriculum

Day 1: History of Iowa and Agriculture
Day 1: History of Iowa and Agriculture

**Background**
This unit is Day 1 in the Norman Borlaug Curriculum from the Borlaug Heritage Foundation. In Day 1 of 11 days, the students will get an understanding of Iowa, agriculture, and then end up learning about Norman Borlaug’s life and impact on all of us. After the first five days, the students also will have the opportunity to visit the boyhood home of Norman Borlaug in order to get a true understanding about Norman Borlaug. This unit will have the student reviewing the history of Iowa as a state, famous people in Iowa, and state facts. Also in this unit through statistics, the student will get an understanding of the importance of agriculture and also the definition of agriculture related terms. This unit is comprised of different activities that will help the student develop their core skills. These activities correspond with the Iowa Core Curriculum development.

**References**
The following are references used in this unit:
- State of Iowa Governmental Pages
- 2000 Census (Will Change due to the 2010 Census)
- Des Moines Register

**Objectives**
- Students will be able to understand a brief history of the state of Iowa through history and reading.
- Students will have an understanding of what agriculture is through science.
- Students will be able to understand some changes in agriculture in Iowa through history, math, and writing.

**Time Allotment**
Depending on the number of activities selected the time could range from thirty minutes or more.

**Resources Needed**
- Map of Iowa
- Internet or Encyclopedias
- Computer
- Paper
- Pencils or Pens
- Printed Timeline of Iowa history
- Fact or Fiction Page

**Procedures**
The following questions should be asked as soon as you start the lesson:

What is the state of Iowa’s flower? Wild Rose
Is Iowa’s tree the Oak or Maple? Oak
When did Iowa become a State? December 28, 1846 as the 29th state of the union
What is the capital of Iowa? Des Moines.

Lesson on History of Iowa

This is about the history of Iowa, some Iowa facts, and a few famous people in Iowa. This part of the unit can be redone to match any state in the United States and around the globe. This information can be looked up in any encyclopedia or governmental web source.

Iowa Facts:
1. Date of Statehood: December 28, 1846; 29th state
2. Capital: Des Moines
3. Nickname: Hawkeye State
4. State Tree: Oak
5. State Flower: Wild rose
7. State Rock: Geode

Brief History of Iowa
• 1803: United States acquires Iowa in the Louisiana Purchase.
• 1804: Sergeant Floyd dies south of present day Sioux City; he is a member of the Lewis and Clark Expedition. He is the first white American buried in Iowa. He was the only soldier to die on their expedition.
• 1838: Congress created the Iowa territory.
• 1844: Convention in Iowa City to draft a constitution.
• 1846: Iowa becomes the 29th state with Ansel Briggs being Iowa’s first governor.
• 1847: University of Iowa was created.
• 1857: Capital of Iowa is moved from Iowa City to Des Moines due to population density.
• 1858: Land Grant College was established. It is now known as Iowa State University.
• 1876: Iowa State Teachers College is established, now known as University of Northern Iowa.
• 1910: first federal census that declined in population. The Census numbers would not decline again in Iowa until 1990.
• 1918: Farm Bureau was formed in Iowa.
• 1928: The First Iowan, Herbert Hoover, was elected as president of the United States. Hoover is originally from West Branch, Iowa.
• 1930’s: Great Depression hits Iowa, United States, and the World.
• 1941-1945: World War 2.
• 1970: Norman Borlaug wins the Nobel Peace Prize, first agricultural scientist to win the award.

Have student create his or her own Iowa history timeline. Have the students share with the class their timeline with any other interesting dates they found during their research.

Ten Largest Cities in Iowa (From 2000 Census- Changes may be needed from 2010 Census)
1. Des Moines
2. Cedar Rapids
3. Davenport
4. Sioux City
5. Waterloo
6. Iowa City
7. Council Bluffs
8. Dubuque
9. Ames
10. West Des Moines

*If time allows, have a map of Iowa and allow the students to find the different cities on it and history of the cities’ names. A map with no marking of any town or county can be found to print off at http://www.eprintablecalendars.com/maps/state-of-iowa/*.

http://data.desmoinesregister.com/famous-iowans/

*One idea is to have the students pick a famous person on this list or the list from the Des Moines Register and find out some information about them. Give the students the opportunity to develop their public speaking skills by presenting a 1-2 minute presentation about their famous Iowan.*

1. Norman Borlaug- Plant Pathologist, geneticist (Nobel Peace Prize): Cresco
2. Herbert Hoover- President of the United States: West Branch
3. Grant Wood-Painter: Anamosa
4. William Buffalo Bill Cody- Scout: Scott City
5. Edwin Perkins- Inventor of Kool-Aid: Lewis
6. Russell Stover- Candy maker and Eskimo Pies: Iowa City
7. John Wayne-actor: Earlham
8. Johnny Carson-TV host/entertainer: Corning
11. George Washington Carver- wasn’t born in Iowa, schooling at Iowa State University, started at Winterset as a cook, first African American graduate and faculty at ISU, most famous for his works in Peanuts
12. Carrie Chapman Catt- age 7 moved to Charles City, League of Women Voters and Women Rights

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Iowa Trivia Facts
http://www.50states.com/facts/iowa.htm

Top 50 Facts about Iowa
1. Ripley’s Believe it or Not has dubbed Burlington’s Snake Alley the most crooked street in the world.
2. Strawberry Point is the home of the world’s largest strawberry.
3. The state’s smallest city park is situated in the middle of the road in Hiteman.
4. Scranton is home to Iowa’s oldest water tower in service.
5. Dubuque is the state’s oldest city.
6. Crystal Lake is home to a statue of the world’s largest bullhead fish.
7. Rathbun Dam and reservoir is the largest body of water in the state.
8. Spirit Lake is the largest glacier-made lake in the state.
9. West Okoboji is the deepest natural lake in the state. It is 136 feet deep.
10. Imes Bridge is the oldest of Madison county’s six bridges.
11. Iowa longest and highest bridge crosses Lake Red Rock.
12. Elk horn is the largest Danish settlement in the United States.
13. At 16 miles, East Okoboji is the longest natural lake in the state.
14. Kalona is the largest Amish community west of the Mississippi river.
15. The state’s lowest elevation point (at 480 feet) is in Lee County.
16. The Holliwell Bridge is the longest bridge in Madison County.
17. Francis Drake was 66 years old at his inauguration and Iowa’s oldest governor.
18. Iowa’s oldest continually running theater is in Story City.
19. The Cedar Rapids Museum of Art houses the largest collection of grant Wood artwork.
20. Fenlon Place Elevator in Dubuque is the world’s steepest and shortest railway.
21. Wright County has the highest percentage of grade A topsoil in the nation.
22. Quaker Oats in Cedar Rapids, is the largest cereal company in the world.
23. The Saint Francis Xavier Basilica in Dyersville is the only basilica in the United States situated outside a major metropolitan area.
24. Clarion is the only county seat in the exact center of the county.
25. Dubuque is home to the only county courthouse with a gold dome.
26. Cornell College is the only school in the nation to have its entire campus listed on the National register of Historic Places.
27. The Sergeant Floyd Monument in Sioux City honors the only man to die during the Lewis and Clark expedition.
28. Maynard Reece is the only artist to win the Federal Duck stamp competition five times.
29. A bronze life-sized sculpture of a Norwegian immigrant family (circa 1860) is located on a six acre restored prairie site located at the east entry to Lake Mills on Highway 105.
30. Iowa’s only operating antique carousel is located in the city of Story City.
31. Knoxville’s National Spirit Car Hall of Fame and Museum is the only museum in the country dedicated to preserving the history of Sprint car racing.
32. Iowa’s only fire tower is situated in Yellow River State Forest.
33. Sabula is Iowa’s only town on an island.
34. Herbert Hoover, a West branch native, was the 31st President of the United States and the first one born west of the Mississippi.
35. Mamie Doud Eisenhower’s birthplace is located in Boone and includes a restored frame house, complete with summer kitchen and original furniture from the family.
36. Van Meter is the hometown of baseball’s Bob Fellar, and Iowa boy who went to greatness with the Cleveland Indians, during the golden Age of Baseball.
37. Born Donnabelle Mullenger in Dension, Oscar Award-winning actress, Donna Reed, started her career at young age of 16.
38. Born Marion Robert Morrison in Winterset, John Wayne was the son of a pharmacist and grew up to become one of Hollywood’s most popular movie stars.
39. Meredith Wilson, who played with the famous John Philip Sousa and the New York Philharmonic before launching his career as a famous composer and lyricist, is a Mason City native.
40. Glenn Miller, noted trombonist and orchestra leader, was born in Clarinda located in Southwest Iowa.
41. The town of Fort Atkinson was the site of the only fort ever built by the United States government to protect one Indian tribe from another.

42. Campers and motor homes are manufactured in Winnebago County. They’re called Winnebagos.

43. Iowa is the only state whose east and west border are 100% formed by water. Missouri and Mississippi Rivers.

44. The highest double track railroad bridge in the world, the Kate Shelley Bridge, is located at Boone.

45. Iowa is the only state name that starts with two vowels.

46. The famous actor John Wayne was born in Winterset on May 26, 1907.

47. Iowa State University is the oldest land grant college in the United States of America.

48. Decorah hosts Nordic Fest a three-day celebration of Decorah’s Scandinavian heritage.

49. The National Balloon Museum in Indianola chronicles more than 200 years of ballooning history.

50. Sheldon High School Summer Theatre, the only high school repertory in Iowa and one of just a few in the nation, presents a different play for each week during June and July.

This information can be used to create a Fact of Fiction page that would test the students on their understanding of the information that is given. This could be used before they start learning about Iowa as an introduction.

What is Agriculture?

Agriculture can mean different things, such as growing crops and animals.

Farming: the occupation, business, or science of cultivating the land, producing crops, and raising livestock.

Synonyms: Farming, cultivation, crop growing, food production, agricultural science, husbandry, agronomy.

Definition of Agriculture from Iowa State University Extension: Agriculture is the production of food, feed, fiber, and other goods by the systematic growing and harvesting of plants and animals. It is the science of working land and using it to raise plants and animals.

United States Department of Agriculture-Agriculture in the Classroom

- **Ag-Knowledge**: this portion has over 50 questions about agriculture that a teacher could read some of them to the student, or hand out a paper to see how well they know agriculture topics.

- Ag Facts about Iowa Agriculture

  - Students: [http://agclassroom.org/kids/index.htm](http://agclassroom.org/kids/index.htm)
  - Virtual Tours
  - Ag Facts
  - Farm and Food
Title: Your Role, with Norman Borlaug speaking
Talk about Biotechnology, and how one person can accomplish a whole lot.

Wheat Harvested compared to Corn Harvested based on the 2007 Census for the State of Iowa.

<table>
<thead>
<tr>
<th></th>
<th>Wheat</th>
<th>Corn</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acres Planted</td>
<td>28,000</td>
<td>13,700,000</td>
</tr>
<tr>
<td>Acres Harvested</td>
<td>22,000</td>
<td>13,400,000</td>
</tr>
<tr>
<td>Bushels per acre (Yield)</td>
<td>45.0</td>
<td>182</td>
</tr>
<tr>
<td>Bushel Production</td>
<td>990,000</td>
<td>2438800000</td>
</tr>
<tr>
<td>Dollars/Bushel</td>
<td>3.950</td>
<td>3.750</td>
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<tr>
<td>Value of production dollar</td>
<td>3,911,000</td>
<td>9,145,500,000</td>
</tr>
</tbody>
</table>

Farm Characteristics in Howard County and the State of Iowa

<table>
<thead>
<tr>
<th>Farm Characteristics</th>
<th>Howard Co</th>
<th>Iowa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farms</td>
<td>887</td>
<td>92,856</td>
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<tr>
<td>Farmland (acres)</td>
<td>278,635</td>
<td>30,747,550</td>
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<tr>
<td>Avg Acres per farm</td>
<td>318</td>
<td>331</td>
</tr>
<tr>
<td>Median size farm (acres)</td>
<td>150</td>
<td>151</td>
</tr>
<tr>
<td></td>
<td>Howard Co</td>
<td>Iowa</td>
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<tr>
<td>Avg Acres per farm</td>
<td>______</td>
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<tr>
<td>Median size farm (acres)</td>
<td>150</td>
<td>151</td>
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<tr>
<td>Market Value of land/building</td>
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<td>$1,112,023</td>
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<tr>
<td>Market Value of mach/equip.</td>
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<tr>
<td>Sales per Farm</td>
<td>$198,889</td>
<td>______</td>
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<tr>
<td>Total Land area</td>
<td>36,013,737</td>
<td>36,013,737</td>
</tr>
<tr>
<td>Percent in land in farms</td>
<td>______</td>
<td>______</td>
</tr>
</tbody>
</table>

Average/Mean: add all the numbers and then divide by the number of numbers
Median: Middle value in the list of numbers
Mode: value that occurs the most often

This information could be put into a word document and have gaps left for the students to find and fill out. Students could learn how to calculate acres into feet, to compare Howard County and the State of Iowa. An example of this activity is available in the Appendix under Example 1.

Iowa totals for Hogs/Pigs and Cattle
Hogs/Pigs sold= 47,279,443
Cattle Sold= 3,635,880

Assessments
Students should be able to list five facts about Iowa and Howard County.
Students should understand the importance of agriculture.
Students should be able to research and communicate the importance of one Iowan to the world.

Appendix

**EXAMPLE 1: Fill in the Blanks**
Norman Borlaug
Educational Curriculum
Day 2: Wildlife
Day 2: Wildlife

Background
This unit is Day 2 of the Norman Borlaug Curriculum from the Borlaug Heritage Foundation. In Day 2 of 11 days, the students will get an understanding of wildlife and biomes in Cresco and Howard County. This unit will have the students reviewing science terms such as biomes, prairie, fen, and forest. Students should remember what they learned during this lesson when they go out to the Childhood home because the home area has the different wildlife. The unit is comprised of different activities that will help the student develop their core skills. These activities correspond with the Iowa Core Curriculum development.

References
The following are references used in this unit:

- http://campsilos.org/
- http://www.mbgnet.net/fresh/wetlands/index.htm
- https://www.epa.gov/wetlands
- http://www.worldbiomes.com/biomes_forest.htm
- http://www.blueplanetbiomes.org/deciduous_forest.htm
- www.agclassroom.org/ok
- http://www.cast-science.org/

Objectives
- Students will be able to understand the different biomes in Cresco; that are located on the Borlaug farm.
- Students will understand the difference between Prairie, Fen, and Forest.
- Students will understand and able to identify the rare wildflower species located at the Borlaug Farm.

Time Allotment
Depending on the number of activities selected the time could range from thirty minutes or more.

Resources Needed
Wildlife Worksheet
Possible Supplies for activity listed in procedures

Procedures
The following questions could be asked as soon as you start the lesson:

- What is a biome?
- How many types of biomes do you think there are at the Borlaug farm?
- Why are biomes important?
Biome: major ecological community, a division of the world's vegetation that corresponds to a defined climate and is characterized by specific types of plants and animals.

Wildlife

http://www.campsilos.org/mod1/students/index.shtml

Introduction to Exploring the Prairies

Prairie is land characterized that has mostly grasses with deep rich soil that is cover with tall coarse grasses and few trees.

They were and are located from Indiana to Dakota and from Canada to Texas.

19th Century pioneer settlers arrived; prairie grasses covered approximately three-fourths of the state of Iowa. The other parts had woodlands and forested areas, mainly by rivers and streams.

Quick facts about Tall Grass Prairies

- Tall grass prairie once covered 142 million acres.
- Prairies once covered about 40% of US.
- Prairies are one of the most recently developed ecosystems in North America.
- About one percent of North American prairies still exists.
- Iowa had the largest percentage of its area covered by tall grass prairies around 30 million acres.
- In Iowa, 99.9 % of the historic natural landscape is gone.

http://www.campsilos.org/mod1/teachers/r_index.shtml

This gives resources for teachers about prairies and webliography for information in which people can go and find more information about on the Internet. This gives them information about general prairie information, prairie vegetation, prairie animals, bison, prairie fire, photograph collections, bibliography, and biographical information about Albert M Lea, Iowa District of Wisconsin territory, Memoir by Albert M Lea.
Biomes-Wetlands-Fens

http://www.mbgnet.net/fresh/wetlands/index.htm
https://www.epa.gov/wetlands

Wetlands=swamps, marshes, bogs, prairie potholes, flood plains and fens. Covered or soaked for at least part of all year.

Wetlands Important

- The role of wetlands in an ecosystem
- Erosion control
- Wetlands and water purifications

Fens are peat-forming wetlands that receive nutrients from sources other than precipitation. They are less acidic and have higher nutrient levels than bogs. Grasses, sedges, rushes, and wildflowers cover these areas.

Fens and watersheds help by preventing floods, water quality improvement providing habitat for unique plants and animals

Idaho public television
Wild about wetlands: Dialogue for kids
http://idahoptv.org/dialogue4kids/season6/wetlands/classroom.cfm
Lesson plan activities: Hold the Load, Clean Machine, Shrinking wetlands, and where have all the wetlands gone?

Biomes-Forests
http://www.worldbiomes.com/biomes_forest.htm
Forests are the largest and most complex biome in the world.
1/3 of all the land on the earth is forests.
Forests cover all four corners of the globe.
Boreal or Taiga biomes are found where there is shorter warm summers and long winters and these are found in Europe, Asia, Siberia, and North America.

http://www.blueplanetbiomes.org/deciduous_forest.htm
Deciduous Forest
Eastern half of the United States.
The Average Temperature for the deciduous forest region is 50 degrees Fahrenheit.
The average rainfall amount for the deciduous forest region is between 30 and 60 inches.
This location to the forest has four seasons—spring, summer, autumn/fall, winter. Autumn time allows the change in color for the leaves.

*Creation of one of these biomes is an activity that could be done on the children's free time and depending on if the teacher wants to do the activities.*

*An activity that could be incorporated into the lesson plan if resources and time permit includes:*
Oklahoma Ag in the Classroom
Food and Fun Booklet
www.agclassroom.org/ok

*Beeswax Balm*

1 ½ cups vegetable oil
½ teaspoon almond extract, vanilla extract, or other flavoring
½ stick beeswax

1. Place beeswax in a plastic bag and smash into small pieces with a hammer.
2. Put pieces of beeswax in pan and melt over low heat.
3. Add oil and flavoring.
4. Pour into film canister with screw on lid. Cover tightly.

Optional activity:
South Dakota Ag in the Classroom

Painting with SOIL

Materials:
2-2 ½ cups of each Color of Soil (dried in the air)
Re-sealable plastic freezer bags
Rolling Pin
Sifters- 3 different mesh sizes
Paper plates
Plastic cups
Stir sticks
Water
5 oz clear acrylic medium
Watercolor paper
Fine point permanent black markers
Variety of paintbrushes

Procedures:
1. Gather a variety of soil samples, with a variety of colors and textures.
2. Place the dried soil in a re-sealable freezer bag.
3. Use the rolling pin to break down the large mounds of soil.
4. Pour the contents of the bag into the sifter with largest mesh.
5. Sift the soil through onto a paper plate. Put the large particles that are separated out to the side.
6. Pour the contents from the paper plate into the sifter with the medium mesh.
7. Sift the soil through onto a paper plate and set aside the large particles.
8. Pour the sifted contents from the paper plate into the sifter with the smallest mesh.
9. Sift onto a paper plate and set aside the large particles.
10. Pour the finest particles of soil on the paper plate into a plastic cup-you will need ½ cup of powdered soil.
11. Add enough water to make a mud brownie. Stir until combined.
12. Add 1 to 3 teaspoons acrylic medium. Stir until combined and smooth. You want the consistency of craft paint.

Assessments
Students should be able to distinguish between the different biomes that are located in Howard County and Cresco.
Students should be able to understand the difference between forests, prairies, and fen.

Appendix
http://www.cast-science.org/publications/?agricultural_productivity_strategies_for_the_future_addressing_us_and_global_challenges&show=product&productID=2951
Agricultural Productivity strategies for the future: Addressing US and Global Challenges
Number 45: January 2010
Norman Borlaug
Educational Curriculum

Day 3: Gardening
Day 3: Gardening

**Background**
This unit is Day 3 in the Norman Borlaug Curriculum from the Borlaug Heritage Foundation. In Day 3 of 11 days, the students will get an understanding of gardening and healthy living. This unit will have the student reviewing gardening procedures, products, different types of vegetables and fruits, and healthy living. This unit is comprised of different activities that will help the students develop their core skills. These activities correspond with the Iowa Core Curriculum development.

**References**
The following are references used in this unit:
- [www.agclassroom.org/ok](http://www.agclassroom.org/ok)

**Objectives**
- Students will be able to understand gardening and the process to garden.
- Students will be able to talk about different fruits and vegetables and what to do with them.
- Students will have an understanding on the different types of fruits and vegetables and their names of each.
- Students will know how they can eat healthier after talking about fruits and vegetables in their diets.

**Time Allotment**
Depending on the number of activities selected the time could range from thirty minutes or more.

**Resources Needed**
Possible Supplies listed in the Procedures
Pen and/or Pencil
Paper

**Procedures**
The following questions should be asked as soon as you start the lesson:
- Why should we garden?
- What kind of different vegetables and fruits have you tasted?
- Which kind of vegetable or fruit do you not like? Favorites?

Day 3: Gardening


Top Ten Reasons Why We Should Garden?
1. Garden for safe, healthy foods.
2. Garden for exercise.
3. Garden to add beauty.
4. Garden to learn.
5. Garden to make money.
6. Garden to meet people.
7. Garden to be creative.
8. Garden to win.
9. Garden for emotional needs and spiritual connection.
10. Garden for lasting memories.

*Have the students develop a list of ten reasons why they should grow a garden. Above are a few examples that could be examples of why we should garden.*

How the process of gardening works?
1. Find vegetables and fruits that you like to eat.
2. Buy seeds of your favorite vegetables.
3. While buying the seeds make sure the seeds will grow in your area.
4. Read packages to determine planting and harvesting dates.
5. Determine a site to put your vegetables and fruits.
6. Develop a garden plan with rows of where you want to put your seeds.
7. Plant the seeds.
8. Weed and Water as needed through the growing cycle.
9. Harvest when the crops are mature.
10. Enjoy!

What to do with the Produce once you have harvested the crops?
1. Wash the dirt off the produce and eat it plain.
2. Cut the vegetable or fruit up and freeze them.
3. Cut the vegetable or fruit up and preserve them in a jar.
4. Cut the vegetables up and mix and make a meal.
5. If you have excess, give some away to family and friends.

Healthy Living/Eating
http://www.helpguide.org/life/healthy_eating_diet.htm

10 steps for Healthy Eating
1. Set yourself up for success.
2. Moderation is key.
3. It’s not just what you eat, it’s how you eat.
4. Fill up on colorful fruits and vegetables.
5. Eat more healthy carbohydrates and whole grain.
6. Enjoy healthy fats and avoid unhealthy fats.
7. Put protein in perspective.
8. Add calcium and vitamin D for strong bones.
9. Limit sugar, salt, and refined grains.

Activities:
1. Balloon Plants-from Oklahoma Ag in the Classroom (Food and Fun Booklet)
   www.agclassroom.org/ok
Large, clear balloons, markers, ribbons, funnels, measuring cups, towels, radish seeds, ¼ cup potting soil (per student) and ½ cup water (per student).

1. Insert a funnel into the neck of a balloon.
2. Pour the soil and water into the balloon. Be sure the soil is not soggy.
3. Drop the seeds through the funnel into the balloon.
4. Clean the balloon off with the towel.
5. Inflate the balloon. Add the tie.
6. Hang the balloon from the ceiling.
7. Have the students check their balloon daily and chart the plant’s growth for ten days.

2. Garden in a Glove-from Oklahoma Ag in the Classroom (Food and Fun booklet),
   www.agclassroom.org/ok.
Surgical gloves, yarn, cotton balls, and beet, radish, lettuce, and carrot seeds
1. Give each student a glove, and have each student write their name on the thumb of the glove and the names of the seeds on the remaining fingers.
2. In each finger, place a moistened cotton ball and a few of each kind of seeds.
3. Students will tie off their gloves with yarn.
4. Wait for the finger to sprout.

3. Design a Garden-Have students create a school garden by measuring off the width and length of their proposed garden. Using graph paper, have the students design a garden using the seeds and determining the amount of space needed for each vegetable or fruit. Students will each need to research a particular seed or plant and design a timeline for planting and harvesting of the crop.

4. Students may need to start some of the plants indoors for planting. As they watch them grow, have math lessons on determining the germination rates.

Another Optional Activity for students to do.

Name that Produce: This game is to test the students on different types of fruits and vegetables. The rules of the game are to guess the names of the 25 fruits and vegetables that are provided. The materials needed for the game are: 25 different fruits and vegetables (make sure some of the items are things students don’t know about), paper plates with a number system on them, list of all the items with a blank so that the student can fill in with the number or letter of which vegetable or fruit that they think it is. After having the students take a try at naming that produce go through each and give the correct answer. Then talk about eating healthy and using fruits and vegetables in your meals. Maybe in the end the student could try some of the fruits and vegetables.

Assessments
Students should be able to list four reasons why they should garden.
Students should be able to understand what to do with produce after it has been harvested.
Students should be able to tell the difference between some fruits and vegetables.

Appendix
Norman Borlaug
Educational Curriculum
Day 4: History of Schools
Day 4: History of Schools

Background
This unit is Day 4 in the Norman Borlaug Curriculum from the Borlaug Heritage Foundation. In Day 4, of 11 days the student will learn how schools have evolved and changed over the years. Students will use this knowledge on Day 6 when they take their field trip to the Norman Borlaug Childhood home and school. This unit is comprised of different activities that will help the student develop their core skills. These activities correspond with the Iowa Core Curriculum development.

References
The following are references used in this unit:

http://www.pbs.org/kcet/publicschool/evolving_classroom/index.html
http://edsitement.neh.gov/view_lesson_plan.asp?id=319

Objectives
• Students will obtain the knowledge about one room school houses and the history behind these schools.
• Students will learn information about different rules and items used in a school house.
• Students will learn that students had to go outside for bathroom, and schools had no electricity.

Time Allotment
Depending on the number of activities selected the time could range from thirty minutes or more.

Resources Needed
Pen and Paper

Procedures
The following questions should be asked as soon as you start the lesson:

  What do you think schools were like back in the 1920’s?
  Is it the same as now?
  Did people have electricity back then?
  What do you think discipline was like? Then? Now?

History of Schools

Day 4 lesson is on the history of one room school houses similar to the one that Norman Borlaug went to when he was young.

http://www.pbs.org/kcet/publicschool/evolving_classroom/index.html
**History of Schoolhouses- Mainly One Room School Houses**

**Building**
*Sparsely decorated and furnished in the 19th century.*
*Farmers supplied wood for the stove to keep the school warm.*
*Wood burning stove was the only thing in the one room school to keep the teacher and the students warm. The fuel used in these stoves could be anything from wood, coal, corncobs, straw, and cow chips.*
*There was very little lighting in a one-room school house. The only lighting that they did have was from windows at the school and possible lamps made from Kerosene. There was no electricity in school houses so everything had to be done before daylight ended and chores had to be done on the farm.*
*Bells a small bell was rung for students to come in from recess. Students needed to be close by so could hear the bell—otherwise there was punishment.*
*Many people didn’t have indoor plumbing in their homes or even at schools, so they had to use outhouses. Outhouses are usually wooden structures that have seats with holes allowing urine and feces to go to the ground. Students would use these in place of today’s modern restrooms.*

**Teachers**
*Students of all ages and abilities.*
*The older children would help the younger kids out on their schooling since the books were mostly toward younger kids.*
*One teacher; usually an unmarried woman, sometimes students were older than the teacher.*
*Teachers most of the time lived with local families during the year, going from home to home.*

**Classes and Students**
*Slate and chalk were the writing tools and usually very few books as the only thing that they could afford.*
*Used blackboards with chalk and erased with eraser made of felt or a cloth rags.*
*Quill Pens were used in school houses for writing tasks or written work that would be exhibited.*
*The ink in Iowa were made of “lampblack or tannic acid from oak tree galls mixed with light oil or from swamp maple bark and copperas.”*
*Writing could be messy for students so they had to blot the excess off so not to make smudges on the paper and making it hard to read.*
*The subjects that they taught were literacy, penmanship, and arithmetic, the materials were recited, drilled, and the students had oral quizzes.*
*Memorization was done in school because there weren’t enough supplies for written tests. Some of the memorization was done on slate with chalk. Until the manufactured lead pencils that were created after the Civil War. The school and townspeople didn’t have any electronic devices so mail had to come through a mail carrier or horse.*
*Very little homework was given to the students in the one room school house because they had so much responsibility on the farm and to their parents working that they didn’t have much time for it.*
*1890’s was the first introduction of the wooden paddle, this was used for discipline purposes and to make sure students behaved in school.*
*School lunches were brought to school in lunch pails by students because it was a long walk from home. There was no refrigerator at the school so the students had to pack items that would not spoil. An example of lunch could be “Bread with Jam or Meat Sandwiches, hard boiled eggs, and dill pickles.”*
How do we learn today?

Talk about one room school houses. How are they alike and different from today’s class and buildings?

What kinds of equipment do we use today to learn? How do we differ from earlier in the one room school?

What kinds of games are learned at recess today?

Games if time and space permit

- Spelling bee
- Math time tables
- Tag
- Duck Duck goose.

**Assessments**

Students should be able to understand what it was like to go to a one room schoolhouse.

Students should be able to tell the difference of past and present ways of doing things in schools.

Students should be able to understand that there was no electricity back then.

**Appendix**
Norman Borlaug
Educational Curriculum
Day 5: Norman Borlaug’s Childhood

Background
This unit is Day 5 in the Norman Borlaug Curriculum from the Borlaug Heritage Foundation. In Day 5 of 11 days, the students will get a broad overview of who Norman Borlaug is and what he accomplished. This unit will have the students reviewing the life of Norman Borlaug and then going in depth into his childhood. This gets the students wondering what it was like on the childhood home and this unit gives a background on it. This unit is comprised of different activities that will help the student develop their core skills. These activities correspond with the Iowa Core Curriculum development.

References
The following are references used in this unit:
- Hero in a Hurry by Lora Swanson
- Borlaug: The Mild Mannered Maverick who fed a Billion People Volume 1: Right off the Farm 1914-1944. By Noel Vietmeyer

Objectives
- Students will learn about Norman Borlaug life from childhood to the World Peace Prize.
- Students will be given the opportunity to visit the Childhood Home of Norman Borlaug the next day.

Time Allotment
Depending on the number of activities selected the time could range from thirty minutes or more.

Resources Needed
- Hero in a Hurry book (Optional)
- Pen and/or Pencil
- Paper
- Fallen Phrase Puzzle (Optional)

Procedures
The following questions should be asked as soon as the lesson starts:
- When do you think Norman Borlaug was born? 1914
- If he was alive today how old would he be? 96 years old in 2010.
- Where did he go to school at?

The following is a summary of key points from Hero in a Hurry

Norman’s Early Years
- Born in Cresco in 1914.
• Went to a one room country school- was always curious about plants.
• Captain of the football team, member of the wrestling team.

University
• Went to the University of Minnesota, was going to be on the football team but was too small so decided to go be apart of the wrestling team.
• Bachelors degree in Forestry.
• Masters and PhD in Plant Pathology.

Family
• Married Margaret Gibson
• Norma Jean -Daughter
• Billy-Son
• Started Little League in Mexico City

Work
• DuPont Chemicals-chemical fungicide
• Mexican Project
  o Wheat specialist
  o Grow almost anywhere
  o Worlds food supply
  o Oldest domesticated crop
• Japan Dwarf Wheat-Norin 10

Inventing Shuttle Breeding
• Shuttling wheat seeds from one location to another.
• Great yield and immunity: Mexico had two climates and different elevations.
• 1956 Mexico became self sufficient in wheat.
• 1963 harvest was six times that of 1944.
• Green Revolution was named of Norman Borlaug works.

Green Revolution Moves On
• India and Pakistan-Mexipak-Mexican commercial seeds

Nobel Peace Prize
• King of Norway presented Norman Borlaug with his prize.
• World known prize.
• Speak for undernourished and for the Role food played in world peace and stability.
• First agricultural scientist to receive award.
• Greatest pride isn’t in honors or prizes, but in training young scientists to solve food production problems and to see big changes they achieve.

Controversy
• Riots in India-got red wheat instead of rice.
• DuPont chemicals-targeted by environmental groups.
• Testified before Congress about DDT to eradicate Malaria.

Sasakawa
• Wanted Borlaug to Help Africa.
• Norman Borlaug was 71 years old at the time that he undertook saving Africa.

World Food Prize
• Fight hunger and poverty.
• Des Moines, Iowa.
• Youth Institute.
• You have the opportunity to have an eight-week internship.

Borlaug- information from Borlaug: The Mild Mannered Maverick who fed a Billion People Volume 1: Right off the Farm 1914-1944. By Noel Vietmeyer

The following is key points:

Borlaug went to school at the New Oregon Rural District School Number 8

Many diseases were widespread in Borlaug’s childhood days these diseases included:
• Scarlet Fever
• Diphtheria
• Measles
• Mumps
• Whooping Cough
• Croup
• Grippe
• Chicken Pox
• Small Pox
• Tonsillitis
• Tuberculosis
• Infantile paralysis
• Appendicitis

Out of every one thousand American babies born in 1915, one hundred never enjoyed a single birthday.

Out at the farm, Norman Borlaug’s family raised a garden. They also had a root cellar that held carrots, turnips, cabbages, potatoes, and onions in tubs of sand to make sure that they had food for the winter time because of the snow killed all plants. In the garden the Borlaug’s planted: radishes, potatoes, sweet corn, tomatoes, carrots, peas, string beans, lettuce, and more.

During the warm season, the Borlaug’s picked blackberries, raspberries, chokeberries, currents, and goose berries. During the fall, they picked apples, cherries, and plums. To preserve the fruits and vegetables for the harsh wintertime, they boiled big pots of produce and sealed the fruit and vegetables
in Mason Jars. This was called cold packing. But sometimes-cold packing failed to eliminate a powerful poison called Clostridium Botulinum.

Back in 1910-1920’s, the average American Man was 5 foot 7 inches and weighed one hundred and thirty five pounds.

Norman Borlaug’s Parents worked tirelessly and without complaint. His mother Clara was five foot tall and was even tempered and kind. His father, Henry was 6’1” about six inches above the average. He was private soft-spoken self-effacing farmer without envy or ambition. He had two sisters Palma born in 1916, and Charlotte born in 1919.

When Norman was seven years old, he had to move out of the houses that he lived with his grandparents and parents because of the lack of room. He moved in with his father’s younger brother Ned and his wife Nettie. They were like surrogate parents to Borlaug because of the tight family. But this didn’t last long, a year later; his parents took out all their life savings from Cresco bank and built a two-story house, and had 56 acres that were next to the ancestral homestead. This was in 1922 when Henry built a six-room farmhouse. The land was low hills and had shallow valleys with a tiny stream through timbered hollow.

The place has a two-story house that had a hedge of spirea and bed of peonies. The house had no family room, dining room, or bathroom. Their bathroom was an outhouse. On the property, there was a long squat barn that held three horses, ten beef cattle, and twelve dairy cattle in the wintertime. There was also a slat sided structure that was used partly as a granary for oats and part crib for corn. There was also a rough coop for the chickens and a boxy shed for smoked bacon and ham.

The Borlaug’s main income was from selling pigs and cattle every year, along with cans of cream to Saude. They also sold butter that ended up on Chicago dinner tables.

In 1932, not one farm in ten was electrified, because the power companies refused to hook up more. The invention of individual packaging in 1920s was an innovation that helped saved people’s lives because kept out the insects and pest off the food, and stopped the storeowner from giving you less than you deserve.

Muscle power (muscles of humans or animals) accomplished the cooking, heating, cooling, lighting, lifting, pumping, chopping, vacuuming, spreading, ironing, washing, or drying. For food, the common summer days consisted of dinner, which was the main meal of the day. Most of the time, it was fried chicken, boiled potatoes, fresh peas, lettuce, and radishes. Supper was mainly leftovers from dinner.

In 1915, 6.5 million American farmers owned more than 21 million horses and mules.

There were competitions in seven different states because Henry Wallace helped create this event. The event was called Corn Husking Championships. They even had a National Corn Husking Championship with the winner receiving a gold medal, $50 and bib-overalls donated by Osh Kosh B’ Gosh.

Borlaug’s sophomore year, they got a Vocational Agriculture teacher by the name of Harry Shroder from the Iowa State College and he was presenting the idea of using fertilizer to the students. Most students didn’t think that it was possible to get more yield out of the corn, so Harry had trial plots in order to show the kids the differences. The difference was remarkable.
Borlaug competed in wrestling, football, and was even a member of a baseball team.

*Have the Children write on a piece of paper two questions that they would want to know about Norman Borlaug. Also you can have the children write about what they are most excited to see at the Childhood home of Norman Borlaug.*

**Assessments**
Students should be able to understand a brief history about Norman Borlaug.
Students should be able to understand Norman Borlaug’s childhood.

**Appendix**
Norman Borlaug and Gardening

This is a horizontal message, read left to right, will come out with a saying about Norman Borlaug. This message has no vertical (up and down) message.
Answer Key

Norman Borlaug and Gardening

IN THE GARDEN THE BORLAUG'S PLANTED: RADISHES, POTATOES, SWEET CORN, TOMATOES, CARROTS, PEAS, STRING BEANS, LETTUCE, AND MORE.
Norman Borlaug
Educational Curriculum

Day 6: Visit to Norman Borlaug Childhood Home
Day 6: Visit to Norman Borlaug Childhood Home

Background
This unit is Day 6 in the Norman Borlaug Curriculum from the Borlaug Heritage Foundation. In Day 6 of 11 days, the students will finally get the chance to visit the Norman Borlaug Childhood home and experience things the way he did. During this visit the students should remember what they had learned through the first five days of this curriculum. They will discover different things about Norman Borlaug and even what they can do in the future. Places they will visit include the one room schoolhouse, Borlaug’s home, and barn. This unit is comprised of different activities that will help the student develop their core skills. These activities correspond with the Iowa Core Curriculum development.

References
The following are references for this unit:
Teachers and Tour Guides at the Norman Borlaug childhood home

Objectives
• Students will be able to visit the Norman Borlaug childhood home and the school house.
• Students will be able to see wildlife and be able to define the biomes.
• Students will be able to make a connection on what they learned about five days prior to the Borlaug visit.

Time Allotment
Depending on the number of activities or station at the Norman Borlaug Childhood Home, this event could take between a half-a-day or a full day depending on the schools, teachers and presenters needs.

Resources Needed
Teachers and Tour Guides
Paper
Pencil or Pens

Procedures
The Norman Borlaug Heritage Foundation would like to welcome you to the Childhood home of Norman Borlaug. They have planned an eventful day that will encourage learning for the students. There are many different stations to be involved in and each has a different aspect of agriculture and Norman Borlaug.

After the visit, the students should reflect on their experience by writing two things that they didn’t know before coming out to the farm and then their favorite station. The students can also write poems about their time at the Borlaug Farm or make a drawing about their favorite thing at the farm.
**Assessments**
Students should learn more about Norman Borlaug through his childhood home and schoolhouse.
Students should have been able to recognize different biomes.

**Appendix**
Norman Borlaug
Educational Curriculum
Day 7: Norman Borlaug’s University Days
Day 7: Norman Borlaug’s University Days

Background
This unit is Day 7 in the Norman Borlaug Curriculum from the Borlaug Heritage Foundation. In Day 7 of 11 days, the students will get a more in depth look at Norman Borlaug after his childhood days in Cresco, Iowa. The Students will learn about his college days and also about his first job at DuPont Chemicals. This unit is comprised of different activities that will help the student develop their core skills. These activities correspond with the Iowa Core Curriculum development.

References
The following are references used in this unit:
- Borlaug: The Mild Mannered Maverick who fed a Billion People Volume 1: Right off the Farm 1914-1944. By Noel Vietmeyer

Objectives
- Students will research more in depth information about Norman Borlaug.
- Students will be able to finish a word search about Norman Borlaug and key items related to him.

Time Allotment
Depending on the number of activities selected the time could range from thirty minutes or more.

Resources Needed
- Word Search Puzzle
- Pencil or Pen
- Paper
- Double Puzzle (Optional)

Procedures
The following questions should be asked right after you start the lesson:
- What did you learn at Borlaug Childhood home?
- Do you think Norman Borlaug had a rough childhood?
- Could you live without electricity and radio?

The following is a summary of the book Mild Mannered Maverick who fed a Billion People Volume 1: Right off the Farm 1914-1944, by Noel Vietmeyer.

One degenerate plant was mated with another degenerate plant and that lead to a powerful hybrid, that Henry Wallace and Pioneer seeds started selling, many people didn’t buy the seeds the first year because then they would have to buy seeds every year and couldn’t plant their own. (Degenerate means become inferior to other plants.) The average yield for corn went from a normal 30 bushels per acre to 75 bushels per acre. Also helping was the Ford car that could go up to five miles per hour and carry
more load than horses could carry. Next a tractor was invented that helped double food and grain production and then later came an attachment to help pick corn.

Norman Borlaug was enrolled in Teachers College but didn’t go instead he went to Minnesota University due to some of his classmates that were going to be playing football at Minnesota. The Twin Cities were located about one hundred and sixty miles from Iowa and Cresco. Had to go to Minnesota Junior College, because he flunked the entrance exam, but after a year Borlaug got to be in the University of Minnesota and in the college of agriculture as forestry major.

Eleanor Roosevelt and Franklin D Roosevelt help create the National Youth Administration that helped needy students stay in school. Borlaug was one of those students who got a job that would help pay for tuition and food through this program. He worked 15 hours per week, eighteen cents per hour. So his work was 21 hours at the sorority for all the food he could eat and then 15 hours at the National Youth Administration.

He got strep throat and it was hard to cure because there were no drugs. He finally got better after a while. But a member of the wrestling team died from strep throat after a wrestling match. He helped recruit a wrestling coach after theirs quit and it was his old Cresco wrestling coach. Then they traveled around the state of Minnesota.

In the 1930s, farmer and other rural residents received electricity and therefore changed the world.

Helped with the Civilian Conservation Corps that President Franklin D Roosevelt help create in order to make help people that were hurting from the great depression. Kids were given thirty dollars per month in which twenty-five dollars went to the parents.

Borlaug got a job in Connecticut in New Haven for $100 per month. He was assigned to the Northwest corner of Massachusetts. Then Borlaug went to fight fires in the forest and then he came back for his senior year of college at the University of Minnesota undergraduate. He married Margaret Gibson. Then he happened to go to Dr Stakman’s lecture on rust in wheat varieties. He had a job offer as a junior forester but they didn’t have any funds to provide for him so he stayed in Minnesota.

He did his postgraduate degree from the University of Minnesota in plant pathology because he was told by Dr Stakman to get a wide range of education. He got a job with Stakman looking through microscope for the stem rust spores this lead to him getting permanent damage in his right eye. He was then an instructor at general college for basic biology and natural resources. He was also a wrestling coach at the University Farm School.

Borlaug then went on to do research in flax seeds for his PhD, because he didn’t want anything to do with rust and wheat. But through his research with flax, he learned more about the rust and Stakman lectures helped too. He then was approached by a forestry professor about taking a job at DuPont Chemicals in which he was researching about Lactic Acid. He also got to be involved in the use and testing of DDT that helped fight diseases and pests through the war. He was also a Boy Scout leader, because the leaders had gone to war.

While working at DuPont chemicals, he did a lot of testing on different packaging and materials and how molds, fungus, and other things break them down. He found that cellulose acetate was a packaging that didn’t break down as fast.
He and his wife Margaret had a daughter Norma Jean. He went to some classes at the University of Pennsylvania to get some chemistry lessons. In the end, he was offered to help fight hunger and poverty in Mexico. So he left his post at DuPont.

**Assessments**

Students should receive an understanding about Norman Borlaug’s University days through his job at DuPont. Students should be able to recite some information about Norman Borlaug that they find interesting.

**Appendix**
Unscramble each of the clue words.  
Copy the letters in the numbered cells to other cells with the same number.
Unscramble each of the clue words.  
Copy the letters in the numbered cells to other cells with the same number.
Norman Borlaug
Educational Curriculum

Day 8: Norman Borlaug’s Work
Day 8: Norman Borlaug’s Work

Background
This unit is Day 8 in the Norman Borlaug Curriculum from the Borlaug Heritage Foundation. In Day 8 of 11 days, the students will continue to get a better understanding of who Norman Borlaug is and what he did for the world. This unit is comprised of different activities that will help the student develop their core skills. These activities correspond with the Iowa Core Curriculum development.

References
The following are references used in this unit:

Objectives
• Students will be able to recite some history about Norman Borlaug.
• Students will be able to finish a crossword puzzle about the history of Norman Borlaug.

Time Allotment
Depending on the number of activities selected the time could range from thirty minutes or more.

Resources Needed
Pencil and/or Pen
Paper
Crossword Puzzle
Puzzle #2 (Optional)

Procedures
The following questions could be asked as soon as you start the lesson:
   Where do you think Norman Borlaug went to after working for DuPont Chemicals.
   What do you think his work conditions were like in Mexico?
   Would you leave everything and go to another country?

The following information is from Borlaug: Wheat Whisperer 1944-1959 Volume 2 by Noel Vietmeyer
What follows is a summary of what the book said.

Borlaug’s future worksite had no greenhouse, lab, equipment, technicians, field hands, or even fields. All it had was a crude adobe cabin that was built in 1943.

Borlaug had to clean up shrub brush, level planting areas, smooth exposed earth, install roads, fences, waterlines, and drainage ditches. During this time they were laborers and not scientists.

Borlaug had a son named Scott, but the son had health problems with the spine. Margaret told Norman to go back and she would come.
He took care of corn and beans; next he was asked to take care of the wheat. He went against Harrar for wanting to travel to Yaqui Valley. He did trials of corn and soybeans and kept all the good seeds to be planted later. He also kept detailed information in notebooks about each plant. There was a storm and he lost all the papers and the seeds that he had kept.

McFadden sent seeds from his test, there were six different seed packets that he sent, only two survived and Borlaug called them Frontera and Supremo.

He went to Sonora and had no help, no tractor, no equipment, no sanitation, no running water, and no stove. But he got to have two growing season with the wheat per year and two climates with ability for the rust to get the plants twice. Borlaug had some bird problems with the wheat so he hired the Bird Patrol of small boys to scare the birds away from the wheat.

Margaret gave birth to William Gibson soon to be named Billy Borlaug.

Borlaug got help from a cattleman, because his cattle were destroyed due to disease throughout Mexico. He also got one of his bird patrol boys to help breed wheat. This young man helped Borlaug with breeding and even found a more efficient way of breeding that didn’t take them as long. The other scientists didn’t like how he was shuttling wheat from one place to another; they thought he should just do it in one place.

Borlaug’s wheat varieties will prove the greatest producers under the greatest range of conditions any wheat had ever faced because he shuttled the wheat seeds around and planted in different areas and different seasons. Soon there came a new rust form in the United States from the New York area. Borlaug began looking for a new wheat plant to breed to his rust resistant plants because the seeds were getting to heavy for the plant and lodging (falling to the ground before ready) too fast.

Borlaug was very concerned about the new rust form that was coming from the United States, it was 15B and it finally came to Mexico, some of the plant Borlaug had to start again with disease resistance.

He found out that there was a wheat plant that would only grow very short and it was dwarf. He was skeptical at first because it was from Japan. But he sent for some seeds to hopefully breed with his disease resistance varieties that had survived the new rust.

He helped create Little League in Mexico that started out with four teams and they were dubbed the Aztec Little League. The season stretched from March through June. After the first season they found sponsors for the four teams.

In Mexico, Borlaug helped scientist and people in the United States by housing the International Stem Rust Nursery in which he planted the wheat seeds so that the individuals would have another generation before planting. He did this for no charge and it was unmentioned in his papers.

250 acres were available for research within ten days because of the former governor and wanting to help because of what he was shown that day by Borlaug in the fields. Then later the farmer-support group “patronato” purchased six hundred more acres for future expansion.
There was another new strain of rust coming; it was Rust Race 139 and a combination of 15B so Borlaug had to begin to breed his plants to stop these new rusts. He came up with the Fabulous 5 (Chapingo 52, Mexe 52, Chapingo 53, Bajio 53, and Bonza 55).

Borlaug acted as an extension agent to many of the local farmers to help the betterment of Mexico’s food supply in wheat. He taught them how to do things such as plant, fertilization, and other things. When he returned he found magnificent facility known as Centro de Investigaciones Agrícolas del Noroeste. (CIANO). Borlaug started in confinement in a cooler the last eight Norin seeds that he had gotten and grew them under grow lamps deep inside the building so that the rust couldn’t get to these crops because those were the last petite plants.

The Second American Stem Rust Conference was move to Sonora Mexico, and people saw what Borlaug and others were doing with the wheat varieties and rust. It came one thousand miles from Minnesota.

The little league that he created now had fourteen teams. That was up from the four teams that he started with. At first, the league was mostly Americans that came to Mexico. During this time, one-half of the players were Mexicans.

Borlaug was still looking for the wheat plant that was fast maturity, climate adaptability, and immunity to rust and was a small stalk to not have lodging from the seeds. Next in this area they created the Wheat Quality Laboratory that tested Borlaug’s wheat in its bread making ability.

The International Stem rust Nursery expanded to fourteen locations between Canada and Argentina. In 1958 University of Manitoba hosted the First International Wheat Genetics Symposium and Borlaug attended. The national production of Mexico had increase 14 fold since his arrival on wheat production. Most important ingredient in uplifting food supplies for a whole country is research. When he arrived Mexico had twenty two million now they have about one hundred million people so it is harder to feed all of those that are hungry.

**Assessments**
Students should be able to recite facts about Norman Borlaug from his days to DuPont up to his Mexican projects.
Students should be able to understand the hardships that Norman Borlaug had to endure through the lack of trust and lack of equipment.

**Appendix**
Norman Borlaug

Across
3. Borlaug started working in _____ chemicals, before his work in Mexico
6. During Borlaug early years he was involved in football and _____
8. Name of Norman Borlaug's work
9. This prize is given to those who fight hunger and poverty
10. Borlaug went to the University of ______
13. This was the degree that Borlaug received from the University.
14. Name of Borlaug's wife
15. Norman Borlaug was born in ______, Iowa
16. In the Mexico project, Borlaug was known as a _____ specialist
17. Borlaug went to a ______ schoolhouse.

Down
1. World Food Prize event is located in ______
2. During his early years, Borlaug was curious about ______
4. Japan Dwarf Wheat
5. Borlaug help create this in Mexico City, for a way to get his young son involved.
7. Mexican commercial seeds used by India and Pakistan for wheat production
11. This type of breeding is shuttling wheat seeds from one location to another.
12. Borlaug was the first agricultural scientist to receive this prize
Across
3. Borlaug started working in ____ chemicals, before his work in Mexico.
6. During Borlaug early years he was involved in football and ____.
8. Name of Norman Borlaug's work
9. This prize is given to those who fight hunger and poverty
10. Borlaug went to the University of ____.
13. This was the degree that Borlaug received from the University.
14. Name of Borlaug's wife
15. Norman Borlaug was born in ____ Iowa.
16. In the Mexico project, Borlaug was known as a ____ specialist.
17. Borlaug went to a ____ schoolhouse.

Down
1. World Food Prize event is located in ____.
2. During his early years, Borlaug was curious about ____.
5. Borlaug help create this in Mexico City, for a way to get his young son involved.
7. Mexican commercial seeds used by India and Pakistan for wheat production.
11. This type of breeding is shuttling wheat seeds from one location to another.
12. Borlaug was the first agricultural scientist to receive this prize.
Norman Borlaug

Norman Borlaug’s work is called the Green Revolution and he won the Nobel Peace Prize. He also is credited with establishing the world food prize.
Norman Borlaug
Educational Curriculum

Day 9: Nobel Peace Prize
Day 9: Nobel Peace Prize

Background
This unit is Day 9 in the Norman Borlaug Curriculum from the Borlaug Heritage Foundation. In Day 9 of 11 days, the students will get an understanding of the Nobel Peace Prize. The students will also get an in depth look at who are the youngest and oldest people to receive the Nobel Peace Prize, United States citizens and people in the country that received this award, and when Norman Borlaug received his award. This unit is comprised of different activities that will help the student develop their core skills. These activities correspond with the Iowa Core Curriculum development.

References
The following are references used in this unit:

http://nobelprize.org/nobel_prizes/peace
http://nobelprize.org/nobel_prizes/peace/laureates/

Objectives
• Students will learn about the Nobel Peace Prize.
• Students will research and present to the class about different Nobel Peace Prize winners.

Time Allotment
Depending on the number of activities selected the time could range from thirty minutes or more.

Resources Needed
Pencil/Pen
Paper
Nobel Peace Prize worksheet
Internet

Procedures
The following questions should be asked as soon as you start the lesson:

Have you heard about the Nobel Peace Prize before?
When do you think Norman Borlaug received the Nobel Peace Prize?
Do you think you will ever win the Nobel Peace Prize?

Nobel Peace Prize

http://nobelprize.org/nobel_prizes/peace

Created by Alfred Nobel as a special engagement in peace movement; this prize for peace was the fifth and final prize area. Nobel mentioned in his last will and testament on 27 November 1895. The five areas are:

1. Physics
2. Chemistry
3. Physiology or Medicine
4. Literature
5. Peace

**Nobel Peace Prize Calendar Year**

- **February:** Deadline for submission of nomination.
- **March-May:** Preliminary candidates are chosen.
- **June-August:** Writing of reports with recommendations.
- **September:** Committees submit final candidates. Nomination forms for next year are sent out.
- **October:** Nobel Laureates are chosen.
- **December:** Nobel Laureates receive their prize.

The first Nobel Peace Prize was given to Henry Dunant, who was the founder of the Red Cross, and he shared the first prize in 1901 with Frederic Passy, a leading international pacifist of the time.

**Peace Prize:** 61 individuals; 28-2 Laureates; 1-3 Laureates
90 Prizes given out and 19 years without prizes
120 Laureates, 23 organizations and 97 individuals


**Nobel Peace Prize Women**
- 1905: Baroness Bertha Sophie Felicita von Suttner, nee Countess Kinsky von Chinic und Tettau
- 1946: Emily Greene Balch
- 1976: Mairead Corrigan/Betty Williams
- 1979: Mother Theresa
- 1982: Alva Myrdal
- 1991: Aung San Suu Kyi
- 1992: Rigoberta Menchu tum
- 1997: Jody Williams
- 2003: Shirin Ebadi
- 2004: Wangari Muta Maathai

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<td>1976</td>
<td>27 January 1944</td>
</tr>
<tr>
<td>33</td>
<td>Betty Williams</td>
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<td>22 May 1943</td>
</tr>
<tr>
<td>33</td>
<td>Rigoberta Menchu Tum</td>
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<td>Joseph Rotblat</td>
<td>1995</td>
<td>4 November 1908</td>
</tr>
<tr>
<td>85</td>
<td>Ferdinand Buisson</td>
<td>1927</td>
<td>20 December 1841</td>
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Le Duc Tho- 1973 declined the Nobel Peace Prize. Le Duc Tho got the prize with United States Secretary of State Henry Kissinger for negotiating Vietnam peace accord. He declined the prize because he was not in position to accept the prize due to citing situation in Vietnam as his reason.

The Nobel Peace Prize Award Ceremonies are located in Oslo.

The Nobel Peace Prize winners can be looked up on this website: http://nobelprize.org/nobel_prizes/peace/laureates/

United States Nobel Peace Prize Winners
This list is over Nobel Peace Prize winners that were either born in the United States or were United States of America residence at the time of the award.

1906: Theodore Roosevelt
1912: Elihu Root
1919: Woodrow Wilson
1925: Charles Dawes
1929: Frank Kellogg
1931: Jane Addams
    Nicholas Murray Butler
1945: Cordell Hull
1946: Emily Greene Balch
    John R Mott
1947: American Friend Service Committee (Quakers)
1950: Ralph Bunche
1953: George C Marshall
1962: Linus Pauling
1964: Martin Luther King Jr
1970: Norman Borlaug
1973: Henry Kissinger
1985: International Physicians for the Prevention of Nuclear War
1986: Elie Wiesel
1997: International Campaign to ban Landmines
    Jody Williams
2002: Jimmy Carter
2007: Al Gore
2009: Barack Obama

Nominations for Nobel Peace Prize in 2010 were 237 names with 38 different organizations. Nominations aren't given out to the public for fifty years.

Assessments
Students should be able to understand how the Nobel Peace Prize was created.
Students should be able to recite when Dr. Norman Borlaug received his Nobel Peace Prize.
Students should be able to find and tell people about their Nobel Peace Prize winner.

Appendix
The following information can be found on http://nobelprize.org/nobel_prizes/peace and http://nobelprize.org/nobel_prizes/peace/laureates/

Question 1: Who created the Nobel Peace Prize along with four other prizes to give to the best in each area?

Question 2: Who was the first person to receive the Nobel Peace Prize in 1901?

Question 3: Who are some of the Nobel Peace Prize Winners that are women? (Give 3 examples)

Question 4: Who is the youngest Nobel Peace Prize Winner?

Question 5: Who is the oldest Nobel Peace Prize Winner?

Question 6: Who are some of the Nobel Peace Prize Winners from United States? (Give 4 examples)

Question 7: When did Norman Borlaug win the Nobel Peace Prize? Why did he win?

Now that you have completed the questions pick one of the Nobel Peace Prize Winners and write 3 or 4 sentences on who he/she is, and why he/she is important. (Write on the back if more space is needed).
Norman Borlaug
Educational Curriculum

Day 10: World Food Prize
Day 10: World Food Prize

**Background**
This unit is Day 10 in the Norman Borlaug Curriculum United States Borlaug Heritage Foundation. In Day 10 of 11 days, the students will get an understanding of the World Food Prize. In this unit, students will get an understanding of who has received the World Food Prize, what country they are from and how the prize got started. This unit is comprised of different activities that will help the student develop their core skills. These activities correspond with the Iowa Core Curriculum development.

**References**
The following are references used in this unit:
http://www.worldfoodprize.org/index.cfm?nodeID=25293

**Objectives**
- Students will learn about the World Food Prize.
- Students will be able to find out about different World Food Prize winners; the country they represent and their contributions to the world’s food supply.

**Time Allotment**
Depending on the number of activities selected the time could range from thirty minutes or more.

**Resources Needed**
Pen and/or Pencil
Paper
World Food Prize worksheet
Internet

**Procedures**
The following questions should be asked as soon as you start the lesson:
Have you heard about the World Food Prize?
Where do you think the World Food Prize is located?
Who created the World Food Prize?

**World Food Prize**
http://www.worldfoodprize.org/index.cfm?nodeID=25293

The World Food Prize was created with the vision of Norman Borlaug to advance human development by improving the quality, quantity, or availability of food in the world. Any field related to world food supply is looked at for this award, possible fields are:
- Food and agricultural science and technology
- Manufacturing
- Marketing
- Nutrition
This prize emphasizes the importance of a nutritious and sustainable food supply for all people. The World Food Prize was created in 1986, and the event and buildings are located in Des Moines, Iowa.

World Food Prize also has a youth institute that was established in 1994 by the World Food Prize Foundation in order to get youth involved. This institute is for Iowa youth and is conducted for three days in October. The youth also partner up with a mentor.

The Winners of the World Food Prize since its creation in 1986, the first year of the award was giving out in 1987.

1987: MS Swamination (India)
1988: Dr. Robert Chandler, Jr (Ethiopia)
1989: Dr. Verghese Kurien (India)
1990: Dr. John S Niederhauser (United States)
1991: Dr. Nevin S Scrimshaw (United States)
1992: Dr Edward F Knipling (United States)
    Dr Raymond C Bushland (United States)
1993: He Kang (China)
1994: Dr Muhammad Yunus (Bangladesh)
1995: Dr. Hans Rudolf Herren (Switzerland)
1996: Henry M Beachell (Ethiopia)
    Dr. Gurder Singh Khush (Ethiopia)
1997: Dr. Perry L Adkisson (United States)
    Dr. Ray J Smith (United States)
1998: BR Barwale (India)
1999: Dr. Walter Plowright (United Kingdom)
2000: Dr. Evangelina Villegas (Mexico)
    Dr. Surinder K Vasal (India)
2001: Dr. Per Pinstrup Andersen (Denmark)
2002: Dr. Pedro A Sanchez (United States)
2003: Catherine Bertini (United States)
2004: Professor Yuan Longping (China)
2004: Dr. Monty Jones (Sierra Leone)
2005: Dr. Modadugu Gupta (India)
2006: Edson Lobato (Brazil)
    Dr. A Colin McClung (United States)
    Alysson Paolinelli (Brazil)
2007: Dr. Philip E Nelson (United States)
2008: Hon. Robert Dole (United States)
    Hon. George McGovern (United States)
2009: Dr. Gebisa Ejeta (Ethiopia)
2010: David Beckmann (United States)
    Jo Luck (United States)
Assessments
Students should be able to list two names of past World Food Prize Winners.
Students should be able to understand why the World Food Prize was created.
Students should be able to tell who created the World Food Prize.

Appendix
Name: _______________________
Date: ________________________

The following information can be found on http://www.worldfoodprize.org/index.cfm?nodeID=25293

Question 1: Who created the World Food Prize?

Question 2: Who was the first person to receive the World Food Prize in 1987?

Question 3: Who are some of the World Food Prize winners? (Give 3 examples)

Question 4: When was the youth institute founded at the World Food Prize?

Question 5: What fields that related to the world's food supply are looked at for the World Food Prize? (Give 2 examples)

Now that you have completed the questions pick one of the World Food Prize Winners and write 3 or 4 sentences on who he/she is, and why he/she is important. (Write on the back if more space is needed).
Norman Borlaug
Educational Curriculum

Day 11: How are you like Norman Borlaug?
Day 11: How are you like Norman Borlaug?

Background
This unit is Day 11 in the Norman Borlaug Curriculum United States Borlaug Heritage Foundation. In Day 11 of 11 days, the students will understand the difference between themselves and Norman Borlaug. In this unit, students will also see how they are like Norman Borlaug and how they can plan a course of action to be just like him. Students will also get the opportunity to develop their career interests through various activities. This unit is comprised of different activities that will help the student develop their core skills. These activities correspond with the Iowa Core Curriculum development.

References
The following are references used in this unit:

Objectives
• Students will be able to understand the differences and similarities between Norman Borlaug and themselves.
• Students will plan a course of action on how they can be like Norman Borlaug.
• Students can discover what careers they are thinking about in the future.

Time Allotment
Depending on the number of activities selected the time could range from thirty minutes or more.

Resources Needed
Pencil/Pen
Paper

Procedures
The following questions should be asked as soon as you start this lesson:
What was your favorite lesson?
How do you think Norman Borlaug would have handled today’s problems?
Why do you think Norman Borlaug never gave up?

Hunger Fighters-Norman Borlaug: His Life and Times
Lesson 3-5: Do you have what it takes?

How are you like Norman Borlaug?
How are you not like Norman Borlaug?

Have the students write two to three sentences on how they are like and not like, have them share with the class about their findings.

What kind of traits and qualities do you think Norman Borlaug possessed?
Come up with three to five traits that Norman Borlaug had to have in order to get things done. These words can be anywhere from cooperative to respectful to caring. Then have the students create a list of five traits that describe themselves. Next the students should compare their two lists in order to see what kind of similarities and differences are on their lists.

Have the students determine what the issues that are happening right now are. Have the students determine issues for the following:

- Local
- State
- United States
- World

Then have them determine what they could do to help these issues. Were these issues back when Norman Borlaug was your age?

Everyone can be like Norman Borlaug, you just need to find what best suits you as a person and take action. Fighting hunger and poverty can be done on a small scale as well as a big scale. For example, you can be like Norman Borlaug and fight disease that will affect the whole world, or you could just donate some food or money to a local food pantry. Saving one person at a time. You have the tools that will help you set out and you will be the next little Norman Borlaug.

World Food Programme
According to the latest Food and Agriculture Organization (FAO) statistics, there are more than one billion hungry people in the world and 915 million of them are in developing countries.

They are distributed like this;

642 million in Asia and the Pacific
265 million in Sub-Saharan Africa
53 million in Latin America and the Caribbean
42 million in the Near East and North Africa.

Each year, almost 11 million children die before reaching the age of five, malnutrition is associated with 53 percent of these deaths.

By 2001-2003, the total number of undernourished people worldwide had risen to 854 million and the latest figure is 1.02 billion.

http://www.wfp.org/hunger/stats

Global Hunger (FAO)

- 1.02 billion people do not have enough to eat-more than the populations of USA, Canada, and the European Union.
- 907 million people in developing countries alone are hungry.
- Asia and the Pacific region are home to over half the world’s population and nearly two thirds of the world’s hungry people.
- More than 60 Percent of chronically hungry people are women.
- 65 percent of the world’s hungry live in only seven countries: India, China, the Democratic Republic of Congo, Bangladesh, Indonesia, Pakistan and Ethiopia.

Child Hunger (UNICEF)

- More than 70 percent of the world’s 146 million underweight children under age five years live in just 10 countries, with more than 50 percent located in South Asia alone.
- 10.9 million Children under five die in developing countries each year. Malnutrition and hunger-related diseases cause 60 percent of the deaths.
- The cost of under nutrition to natural economic development is estimated at US $20-30 billion per annum.
- One out of four children—roughly 146 million— in developing countries are underweight.
- Every year WFP (World Food Program) feeds more than 20 million children in school feeding programs in some 70 countries.
Malnutrition

- It is estimated that 684,000 child deaths worldwide could be prevented by increasing access to vitamin A and zinc.
- Under nutrition contributes to 53 percent of the 9.7 million deaths of children under five each year in developing countries.
- Lack of Vitamin A kills a million infants a year.
- Iron deficiency is the most prevalent form of malnutrition worldwide, affecting an estimated 2 billion people. Eradicating iron deficiency can improve national productivity levels by as much as 20 percent.
- Iron deficiency is impairing the mental development of 40-60 percent children in developing countries.
- Vitamin A deficiency affects approximately 25 percent of the developing world’s preschoolers. It is associated with blindness, susceptibility to disease and higher mortality rates. It leads to the death of approximately 1.3 million children each year.
- Iodine deficiency is the greatest single cause of mental retardation and brain damage. Worldwide, 1.9 billion people are at risk of iodine deficiency, which can easily be prevented by adding iodine to salt.
- WFP- supported deworming reached 10 million children in 2007.

Food and HIV/AIDS

- In the countries most heavily affected, HIV has reduced life expectancy by more than 20 years, slowed economic growth, and deepened household poverty.
- In sub-Saharan Africa alone, the epidemic has orphaned nearly 12 million children aged under 18 years.
- WFP and UNAIDS projects that it will cost on average US $0.70 cents per day to nutritionally support an AIDS patient and his/her family.
- Assistance for orphans and vulnerable children is estimated at US $0.31 per day.

Aid Spending

- In a 1970 UN resolution, most industrialized nations committed themselves to tackling global poverty by spending 0.7 percent of their national incomes on international aid by 1975. Only Norway, Sweden, Luxembourg, the Netherlands, and Denmark regularly met this target.
- The 22 member countries of the OECD (Organization for Economic Co-Operation and Development) Assistance Committee, the world’s major donors provided USD 103.9 billion in aid in 2006-down by 5.1 percent from 2005.
- The largest donors were the United States (US $24 billion), Japan (US $18 billion), the United Kingdom (US $13 billion), Germany and France (US $12 billion each), the Netherlands (nearly US $6 billion), Spain and Italy (just over US $4 billion each) representing 80 percent of the total.
As of July 29, 2016 there are 7.34 billion people in the world and 324,119,200 in the United States.


World Vital Events Per Time Unit: 2010

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Top ten countries and areas ranked by population in 2010
1. China: 1,330,141,295
2. India: 1,173,108,018
3. United States: 310,232,863
4. Indonesia: 242,968,342
5. Brazil: 201,103,330
6. Pakistan: 184,404,791
7. Bangladesh: 156,118,464
8. Nigeria: 152,217,341
9. Russia: 139,390,205
10. Japan: 126,804,433

Assessments
Students should be able to define some issues facing local, state, national, and world today.
Students should be able to create a list of words that describe Norman Borlaug.
Student should be able to compare words about themselves and Norman Borlaug

Appendix