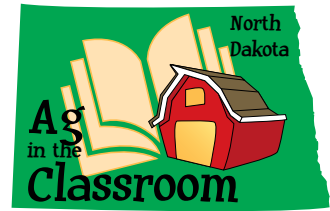


# NORTH DAKOTA Ag Mag

A Magazine about Agriculture for North Dakota Students

Fall 2016



This issue of the North Dakota Ag Mag focuses on livestock and land stewardship. The information and activities are geared primarily toward the state's third, fourth and fifth graders. The Ag Mag is distributed three times per year. Subscriptions are free, but if you're not on the mailing list or if you know someone else who wants to be added, contact the North Dakota Department of Agriculture at 1-800-242-7535 or [ndda@nd.gov](mailto:ndda@nd.gov). The magazine also is on the Web at [www.ag.ndsu.edu/agmag](http://www.ag.ndsu.edu/agmag) or through the North Dakota Agriculture in the Classroom website at [www.ndaginclassroom.org](http://www.ndaginclassroom.org).

This magazine is one of the N.D. Agriculture in the Classroom Council activities that helps K-12 teachers integrate information and activities about North Dakota agriculture across the curriculum in science, math, language arts, social studies and other classes. It's a supplemental resource rather than a separate program.

**The North Dakota Agriculture in the Classroom Council's mission is to cultivate an understanding of the interrelationship of agriculture, the environment and people by integrating agriculture into K-12 education.**

## Livestock and Land Stewardship

**Idea:** Discuss with students what "stewardship" means and who "stewards" are. How might farmers and ranchers be stewards for their livestock and land?

**Idea:** Have students write a letter to a farmer or rancher to say thank you for being a good steward. Have them practice addressing the envelope, too. Discuss how punctuating between a city, state and ZIP code is done correctly. Go to [www.readwritethink.org](http://www.readwritethink.org) and search for "letter generator" to help teach letter writing.

### Stewards: Yes or No?

Write YES or NO if it's something farmers and ranchers do to be good stewards.

- YES** Provide the dairy cows with comfortable bedding made of sand, rubber, foam, sawdust or clean straw.
- NO** Sing lullabies to the sheep.
- YES** Provide nutritious feed for their chickens and pigs.
- YES** Get veterinary care for a calf when it's not feeling well.
- YES** Ensure the cattle have plenty of clean water.
- NO** Plant rose bushes to reduce soil erosion.

**Idea:** Have students identify farm nouns with a SmartBoard lesson. Go to <http://exchange.smarttech.com> and search for Identifying the Farm Nouns.

**North Dakota's Livestock**  
Beef cattle, bison, rabbits, pigs, llamas, dairy cattle, alpacas, sheep, goats and elk are all raised in North Dakota. Not camels, moose or water buffalo.

Teacher's Guide

# The 1930s: Farm Depression

North Dakota's population in 1930 was 680,000 people. About 121,000 people moved out of the state during the 1930s. What was the state's population in 1940? **559,000 people**

In 2016, North Dakota's population was 739,000 people. How many years passed from 1930 to 2016? **86 years**

Are there more or fewer people in 2016 compared to 1930? How many?  
**59,000 more people**

In 1933, North Dakota had 86,000 farms. In 1940, there were 73,692 farms in the state. How many North Dakota farms were lost due to the Great Depression and drought from 1933 to 1940?  
**12,308**

**Idea:** Today North Dakota has about 30,000 farms. Discuss with the students why there are so many fewer farms today – equipment and technology have allowed farmers to farm more land, farmers have become more efficient, etc.

**Based on the story above, underline the statements you think are accurate.**

Encourage students to use critical thinking skills and make inferences from the story. Talk about some of the causes and effects.

Farmers faced low prices.

Some farmers lost their farms.

Drought caused many problems.

Without crops, the land turned to dust.

**Idea:** Learn more about agricultural history with the interactive multimedia program Growing a Nation at [www.agclassroom.org/gan/](http://www.agclassroom.org/gan/).

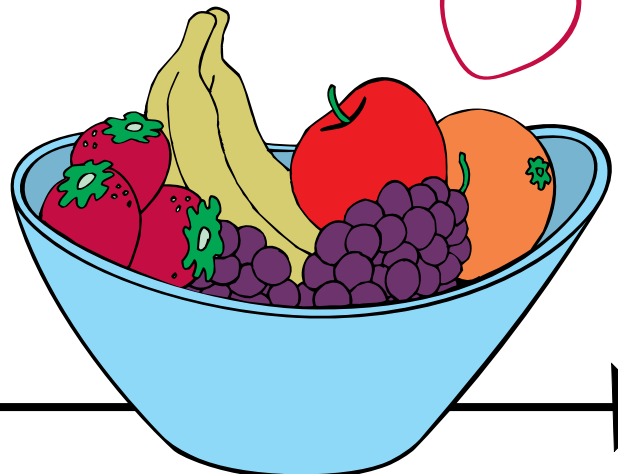
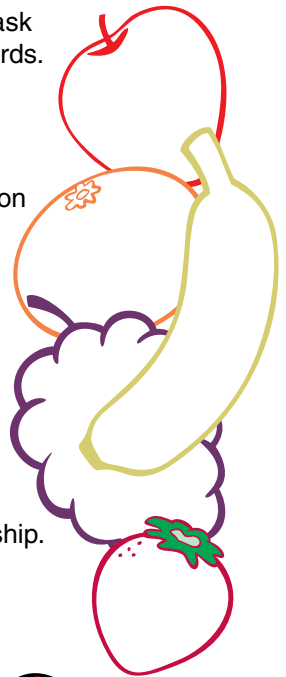


## Tossing Around What Stewards Do

Discuss the main ideas of this paragraph with students, and ask them to identify the various words.

**Idea:** Instruct your students how to collect main ideas and supporting details. Show them how to organize their information in outline form to detail the information read. Use [www.crlsresearchguide.org/NewOutlineMaker/NewOutlineMakerInput.aspx](http://www.crlsresearchguide.org/NewOutlineMaker/NewOutlineMakerInput.aspx) to teach outlining.

**Idea:** Discuss other Who, What, Where, When, Why and How situations while telling or reading stories about stewardship.



**Idea:** Talk about science and salads. Why are some salads considered a mixture and not a compound? The components of the salad can be separated, but the components in a compound can't be separated except by scientific methods.

What is a mixture? Mixtures are substances held together by physical forces, not chemical. That means the individual molecules enjoy being near each other, but their fundamental chemical structure does not change when they enter the mixture. Mixtures are the form for most things in nature, such as rocks, the air and oceans. There are an infinite number of mixtures. Anything you can combine is a mixture. Think of everything you eat. Just think about how many cakes there are. Each of those cakes is made up of a different mixture of ingredients.

Solutions also are mixtures. If you put sand into a glass of water, it is considered a mixture. You can always tell a mixture because each of the substances can be separated from the group in different physical ways. You can always get the sand out of the water by filtering the water away. A solution also can be made of two liquids. Even something as simple as bleach and water is a solution.

**Idea:** Have students list as many fruits as they can that could be put into a fruit salad and vegetables for a lettuce salad. Discuss where these fruits and vegetables were grown. Identify the areas on a world map. Discuss the possible careers that may be responsible for getting those fruits and vegetables to your table. Discuss ways these fruit and vegetable producers can be stewards. Put a list of fruits and vegetables on the board, and have students put the words in alphabetical order.

**Idea:** Have students write new words to songs so they relate to livestock and land stewardship. Example:

**The Eencey Weency Seeds**  
Tune: Eencey Weency Spider

The eencey weency seeds germinated from the ground.  
Out came the rain, seeds were sprouting all around.  
Out came the sun, the plants said, "Hip-Hip Hooray!"  
It's fun to grow and grow, bringing food to kids someday.

**Idea:** Sing and add movement to your lessons with the Hokey Pokey with each student having a different pack of vegetable seeds. Discuss how we can be stewards of the earth when we garden. (examples: save rain water, have a compost bin, use grass clippings or bark chips to serve as moisture basins around plants)

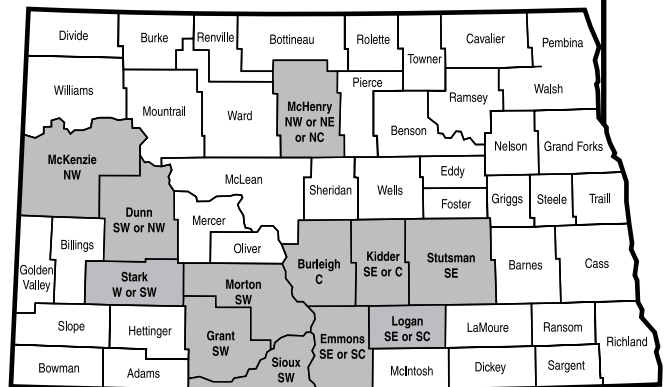
**Hokey Pokey**

Put a "seed packet" in,  
Put a "seed packet" out,  
Put a "seed packet" in,  
And shake it all about.  
Do the Hokey Pokey  
And turn yourself around.  
That's what it's all about!

**Idea:** Have students write their own books about agricultural stewardship. See <http://studenttreasures.com/>.

**North Dakota's Beef Cattle**

In what part of North Dakota is each county? Since there are no specific lines to determine these areas of the state, answers are flexible. Encourage students to justify their responses.



**Idea:** Have students learn about the efficient use of renewable resources to meet human needs in the Project Food, Land & People lesson Amazing Grazing.

# It All Adds Up

1. Beef calves weigh about 80 pounds at birth. When they reach one year, they weigh about 800 pounds. To be a good steward, farmers and ranchers care for their cattle to help them grow. About how much weight will they gain in that one year? **720 pounds**
2. North Dakota has about 1.64 million beef cattle. What does the number 1.64 million look like? **1,640,000**
3. Dairy cows get lots of feed and water to produce milk, and they're milked two or three times per day. Ten cups of milk are needed to make one pound of cheese. How many cups of milk does it take to make 5 pounds of cheese? **50 cups**
4. If one quart of milk weighs 2.15 pounds, how much does a gallon of milk weigh? **8.6 pounds**
5. With improved breeding, better nutrition and good care, more milk is produced today with only 9 million dairy cows in the U.S. than with 26 million cows in 1944. How many fewer cows are there today than in 1944? **17 million**
6. A farmer provides about 30 gallons of water every day for each dairy cow. If there are 90 milking cows in the herd, how many gallons of water does the herd get? **2,700 gallons**
7. In a comfortable environment, a chicken can gain 1 pound for every 3 pounds of feed it eats. How many pounds of feed would the chicken have to eat to gain 5 pounds? **15 pounds**
8. Mother pigs called sows often are in stalls so they won't lie down on their baby piglets. If the 50 sows in the pig house have an average of 9 piglets each, how many piglets are in the house? **450 piglets**
9. By keeping their pigs indoors, farmers can keep them cool in the summer and warm in the winter. In part of North Dakota, the average January temperature is 17 F and the average July temperature is 73 F. What is the difference between the high and low averages? **56 degrees F**
10. A sow's gestation (pregnancy) lasts for about three months, three weeks and three days. If the sow got pregnant on Jan. 1, about when would the piglets be born? **April 25**
11. A piglet weighs about 3 pounds when it's born. With good nutrition and proper care, the pig can increase its weight by 20 times in 8 weeks. About how much would the pig weigh in 8 weeks? **60 pounds**
12. Samantha's flock has 300 ewes (female sheep). Half of the ewes give birth to single lambs and half of them have twins. How many lambs does she have? **450 lambs**
13. If the average sheared sheep has 8 pounds of wool and a compressed wool bale weighs 380 pounds, how many sheep's fleeces does it take to make a bale? **47.5 fleeces**
14. Nature requires about 500 years to produce 1 inch of top soil. How many years are needed to develop 1/2" of top soil? **250 years**
15. In North Dakota, about 2/3 of soil erosion is caused by wind, and the rest is caused by water. What fraction is caused by water? **1/3**

**Idea:** Teach students about the breeds of dairy cattle with a SmartBoard lesson. Go to <http://exchange.smarttech.com> and search for Dairy Breed Presentation.

## Are You a Steward?

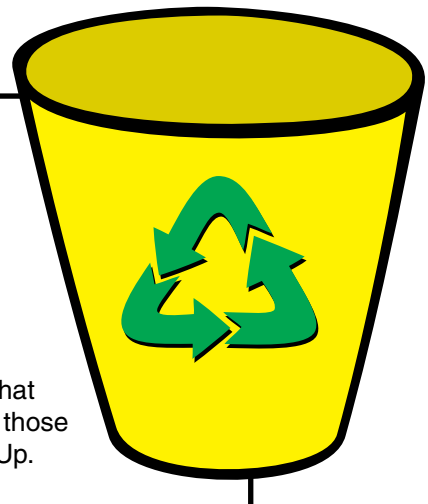
All **except**:

Buy birthday presents for your neighbors.

Watch TV until you have red eyes.

**Idea:** Brainstorm with students other ways they can be stewards.

**Idea:** Have students participate in a sponge demonstration to discover that people are consumers of resources and explore methods of conserving those resources with the Project Food, Land & People lesson Don't Use It All Up.



## Career Corner

**Idea:** Have students write a short essay on what they think life would be like if they lived on a farm or ranch.

**Idea:** Have students write letters to Lisa Pederson, asking her about her work and ranch.

**Idea:** Talk about the students' parents' careers. Are any of them related to agriculture? What other careers are they aware of related to agriculture?

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## Farmers and Ranchers Know Best

1. To avoid overgrazing, farmers and ranchers practice wise land and (**herd**) management.
2. To improve (**their**) knowledge and practice, farmers work closely with soil conservationists.
3. Farmers must (**know**) how to rotate crops for best results.
4. Ranchers (**choose**) to work closely with veterinarians to ensure that their livestock remain healthy.
5. Farmers learn to manage (**noxious**) weeds to have greater crop yields.
6. A ewe can recognize the “baa” of (**its**) own lamb.
7. Farmers and ranchers care for their livestock because it's the right thing to do (**ethically**).
8. Caring for their livestock also makes good business (**sense**).
9. (**Conservation**) means taking care of something to prevent loss – the same as stewardship.
10. Soil conservation can improve water (**quality**).

**Idea:** In North Dakota, Arbor Day is the first Friday in May. Learn more at [www.arborday.org](http://www.arborday.org). Talk about how trees help conserve soil. Show the students the Flash program “Trees are Terrific... Travels with Pierre” at <http://urbanext.illinois.edu/trees1/flash/>.

**Idea:** Have students read “The Good Garden: How One Family Went from Hunger to Having Enough” by Katie Smith Milway and learn about food security for kids at [www.thegoodgarden.org](http://www.thegoodgarden.org).

## An Acrostic Poem about Stewards

**Idea:** Use [www.readwritethink.org/files/resources/interactives/acrostic/](http://www.readwritethink.org/files/resources/interactives/acrostic/) to teach about acrostic poems.

## Suggested Reading for Students

- 1,001 Ways to Save the Earth by Joanna Yarrow
- I Can Save the Earth! by Alison Inches
- The Adventures of a Plastic Bottle by Alison Inches
- The Lorax by Dr. Seuss
- Recycle by Gail Gibbons
- Earth Day Hooray! by Stuart J. Murphy
- Earth Book for Kids by Linda Schwartz
- Farewell to Shady Glade by Bill Peet
- 50 Simple Things Kids Can Do to Save the Earth by The Earth Works Group
- The Adventures of an Aluminum Can by Alison Inches
- Easy to Be Green: Simple Activities You Can Do To Save the Earth by Ellie O’Ryan
- What Do You See? A Lift-the Flap Book About Endangered Animals by Stephen Krensky
- Santa Claus Is Green! How to Have An Eco-Friendly Christmas by Alison Inches
- Don’t Throw That Away! A Lift-the Flap Book about Recycling and Reusing by Lara Bergen
- The Good Garden: How One Family Went from Hunger to Having Enough by Katie Smith Milway
- This Is Our World: A Story about Taking Care of the Earth by Emily Sollinger
- I Can Save the Ocean!: The Little Green Monster Cleans Up the Beach by Alison Inches
- Common Ground: The Water, Earth and Air We Share by Molly Bang
- Miss Rumpius by Barbara Cooney
- The Man Who Planted Trees by Jean Giono
- The Wump World by Bill Peet
- Linnea in Monet’s Garden by Cristina Bjork
- The Curious Garden by Peter Brown
- Walk When the Moon Is Full by Frances Hamerstrom

# North Dakota Agriculture in the Classroom Activities

This **Ag Mag** is just one of the North Dakota Agriculture in the Classroom Council projects. Each issue of the Ag Mag focuses on an agricultural commodity or topic and includes fun activities, bold graphics, interesting information and challenging problems. Send feedback and suggestions for future Ag Mag issues to:

Becky Koch  
NDSU Agriculture Communication  
(701) 231-7875  
becky.koch@ndsu.edu

Another council teacher resource is **Project Food, Land & People** (FLP). Using the national FLP curriculum, N.D. Ag in the Classroom provides 600-level credit workshops for teachers to instruct them in integrating hands-on lessons that promote the development of critical thinking skills so students can better understand the interrelationships among the environment, agriculture and people of the world. Teachers are encouraged to adapt their lessons to include North Dakota products and resources.

Project Food, Land & People's 55 lessons include:

- Amazing Grazing
- Cows or Condos?
- By the Way
- Seed Surprises
- Schoolground Caretakers
- Could It Be Something They Ate?
- What Piece of the Pie?
- and many more.

For information, contact:

Jill Vigesaa  
N.D. Farm Bureau Foundation  
(701) 799-5488  
jill.vigesaa@gmail.com

The N.D. Geographic Alliance conducts a two-day **Agricultural Tour for Teachers**. The tour includes farm and field visits, tours of agricultural processing plants to see what happens to products following the farm production cycle, and discussions with people involved in the global marketing of North Dakota farm products.

For information, contact:

Marilyn Weiser  
North Dakota Geographic Alliance  
(701) 858-3063  
marilyn.weiser@gmail.com

Educators may apply for **mini-grants for up to \$500** for use in programs that promote agricultural literacy. The Agriculture in the Classroom Council, working with the N.D. FFA Foundation, offers these funds for agriculture-related projects, units and lessons used for school-age children. The mini-grants fund hands-on activities that develop and enrich understanding of agriculture as the source of food and/or fiber in our society. Individuals or groups such as teachers, 4-H leaders, commodity groups and others interested in teaching young people about the importance of North Dakota agriculture are welcome to apply.

Examples of programs that may be funded: farm safety programs, agricultural festivals, an elementary classroom visiting a nearby farm and ag career awareness day. Grant funds can be used for printing, curriculum, guest speakers, materials, food, supplies, etc. More ideas and an application are at [www.ndaginclassroom.org](http://www.ndaginclassroom.org).

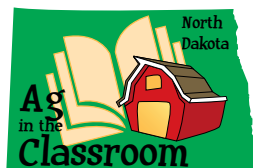
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**Nancy Jo Bateman** – N.D. Beef Commission  
**Sheri Coleman** – Northern Canola Growers Association  
**Kirk Olson** – McKenzie County Farm Bureau  
**Nicole Wardner** – NDSU Extension Service – Sheridan County

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**Kirsten Baesler** (Bob Marthaller, representative)



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## **Common Core English Language Arts Standards for Reading Informational Text**

- Gr. 4, Standard 1: Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.
- Gr. 4, Standard 2: Determine the main idea of a text and explain how it is supported by key details; summarize the text.
- Gr. 4, Standard 4: Determine the meaning of general academic words or phrases in a text relevant to a Grade 4 topic.
- Gr.4, Standard 7: Interpret information presented visually and explain how the information contributes to an understanding of the text in which it appears.
- Gr. 5, Standard 1: Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.
- Gr. 5, Standard 2: Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text.

## **Common Core English Language Arts Literacy Standards for Writing**

- W.4.7 Conduct short research projects and build knowledge through investigation of different aspects of a topic.
- W.4.9 Draw evidence from literary or informational text to support analysis, reflection, and research.

## **Science Standards and Benchmarks**

- Science Standard 1: Unifying Concepts Benchmark 4.1.2: Identify changes that can be steady or irregular, i.e. Erosion
- Science Standard 7: Students understand relations between science and personal, social, and environmental issues, 4.7.1. Science and Environmental Issues: Identify consequences of natural and human-induced environmental changes (e.g., erosion, tsunami, deforestation)

## **Science Standard and Benchmarks for activity Teacher’s Guide page 3 about “Science and Salads”**

- Science Standard 3: Physical Science: Students understand the basic concepts and principles of physical science, 4.3.2. Properties of Matter: Explain the relationship between the mass of an object and the sum of its parts, 4.3.3. Properties of Matter: Explain that matter is made up of parts that are too small to see without magnification
- Science Standard 3: Physical Science: Students understand the basic concepts and principles of physical science, 5.3.1. Properties of Matter: Identify physical properties of substances before and after they are combined

## **ND Math Standards and Benchmarks**

- 4.4. OA Operations and Algebraic Thinking: Use the four operations with whole numbers to solve problems.
- 4.4. NBT Number and Operations in Base Ten: Generalize place value understanding for multi-digit whole numbers.

## **ND Social Studies Standards and Benchmarks**

- Standard 1: Students use social studies skills and resources, Benchmark 4.1.4. Interpret current events using print and electronic media (e.g., newspaper, children’s news magazines, television, internet).
- Standard 2: Students understand important historical events, Benchmark 4.2.10 Explain the significance of agriculture in North Dakota history
- Standard 3: Economic Concepts, Benchmark 4.3.2 Identify ways that natural resources (e.g. soil, people, trees) contribute to the economy of the local community and of North Dakota.
- Standard 3: Economic Concepts, Benchmark 4.3.4 Identify principal exports of North Dakota (e.g., crops, energy, livestock).
- Standard 5: Students understand and apply concepts of geography, Benchmark 4.5.5. Identify different patterns of land use in North Dakota (land use in urban and rural areas, agriculture, manufacturing).