

Why Ag in the Classroom?

Agriculture means survival. Over time, fewer and fewer people have close contact with farming and the total agricultural sector. They're not aware of their own and society's total dependence on agriculture. Our citizens must be agriculturally literate in order to make responsible decisions affecting this giant lifeline.

Teaching students to be agriculturally literate brings their learning to life! Helping students understand the farm to table connection is important in our consumer-driven society. That is what the student Minnesota AgMag Series is all about.

About Your AgMag

The AgMag is a great supplement to your social studies, science or language arts curriculum. The AgMag has particular appeal to the study of Minnesota history and geography. You'll get three issues per school year: October, January and March. Major highlights of your three 2013-14 issues include:

October AgMag Theme: Agriculture is Everywhere

- Overview of Agriculture
- Major Minnesota agriculture crops/growing areas
- History Strand: Minnesota's Powerhouse Crops

January AgMag Theme: Agriculture, the Land and You

- The production/processing/distribution cycle (featuring pork)
- Global Connections
- History Strand: Animal Agriculture

March AgMag Theme: Caring for Our Natural Resources

- Care for Water, Soil and Air
- Gardening for Youth
- Pollination and Pollinators
- History Strand: Water

Integration Ideas

Social Studies

- Investigate how Minnesota land has changed over time. Challenge students to find historical accounts and photos.
- Find additional maps. A good source to locate crop and livestock production areas, cities, rivers, major highways, etc. is <http://www.mda.state.mn.us/en/kids/food4thought.aspx>.

English Language Arts

- Ask students to identify key ideas and details and build their vocabulary through the AgMag's informational text.
- Use agriculture as an inspiration for creative writing activities and group discussions. Ideas: trace family history to agriculture roots, life in an early Indian village or on a settler's farm.

Science and Math

- Use the careers listed on page 2 to draw connections between agriculture and science.
- Identify the STEM involved in producing Minnesota's Powerhouse Crops (page 7) and using these plants as food and other products we rely on each day.

Glossary

Some words in your AgMag may be unfamiliar to your students. These words often appear in bold type or in italics. Many are defined in the articles. Words you might wish to pre-teach are: **agriculture**, **by-products**, **tallow** (cover); **livestock**, **industry**, **food**, **fiber**, **turf** and **landscaping materials**, **production**, **processing**, **distribution** (pg. 2); **logo**, **meteorologists** (pg. 3); **soil types**, **terrain**, **rainfall**, **growing season** (pg. 4); **precipitation** (pg. 5); **legumes** (pg. 7).

Minnesota K-12 Academic Standards

Subject	Standard Code	Benchmark
Social Studies	4.3.4.10.2	Analyze the impact of geographic factors on the development of modern agricultural regions in Minnesota and the United States.
Social Studies	6.3.3.6.1	Locate, identify and describe major physical features in Minnesota; explain how physical features and the location of resources affect settlement patterns and the growth of cities in different parts of Minnesota.
Social Studies	6.3.4.10.0	Describe how land was used during different time periods in Minnesota history; explain how and why land use has changed over time.
Science	5.1.3.4.2	Create and analyze different kinds of maps of the student's community and of Minnesota.
Science	5.3.4.1.3	Compare the impact of individual decisions on natural systems.
English Language Arts	4.2.3.3	Explain events, procedures, ideas or concepts in a historical, scientific or technical text, including what happened and why based on specific information in the text.
English Language Arts	6.13.2.2	Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.

Discussion Prompters

Cover (Social Studies)

1. Agriculture is everywhere. What are the agriculture connections on this page? (*Food, milk, pencil, soap, flower, shoe, clothes, couch, pizza box, paper on header, bus tires and fuel, cotton boll, T-shirt, kitchen cabinet.*)
2. Why is it important for all people to know about agriculture? (*We all depend on agriculture for food, clothing and shelter. It's important to understand how our needs are supplied as we make decisions about using land, protecting resources, keeping food safe and much more.*)

Student Pages 2 and 3 (Social Studies, Economics, Science)

1. What have you eaten or worn today that came from an animal? A tree or plant? The soil? Which came from beef or dairy cattle? Hogs? Poultry?
2. Why do we say agriculture depends on natural and renewable resources? (*The things that are produced, processed and distributed all are dependent on soil, sun, air and water in some way. Animals and plants are considered renewable resources.*)
3. After students match the jobs to Production, Processing and Distribution, discuss some of the careers that are unfamiliar to them. Guide students to see that each category includes many different and some overlapping roles.
4. Why are logos important? (*They provide a quick visual way to identify companies and products.*) What Minnesota products are often advertised?
5. In what weather situations can farmers do things to protect their crops and animals? (*Farmers carefully plan when to plant crops to avoid weather that is too cold or wet. They might irrigate crops during dry conditions. They harvest ripe crops quickly to avoid damage to crops that can be harmed by fall frosts. They control the temperature in animal barns and shelter animals from inclement weather.*) When do they have no control at all? (*Violent winds and hail, extreme heat and drought, flooding, wildfires, late spring and early fall frosts, etc. are all beyond human control.*)

Student Pages 4 and 5 (Geography, Map Skills)

1. What geographical features of Minnesota make it a good state for agriculture? (*Variety of terrain and soil types, climate, rainfall, weather.*)
2. What makes the Red River Valley (Northwest area) such a high-producing crop area? (*Rich, fertile soils, adequate moisture, large flat areas for mechanized agriculture.*)

3. Which of the four regions has a main crop that people may not always think of as agriculture? Explain your answer. (*The Northeast area. In the past, natural forests were cut down and not replanted. Today, forests are replenished and trees are considered a renewable crop.*)
4. Discuss annual precipitation as an average of data collected over many years. Remind students of weather events such as drought and flooding. What effect do these have on farmers? How could deviations eventually impact our food supplies and prices?

Student Page 6 (Social Studies, Science, Environmental Education)

1. A panel of state horticultural experts was asked to identify which plants most changed Minnesota; you see their choices here. Do any of their choices surprise you? What other plants do you think should be on the list?
2. How is purple loosestrife different than every other plant in this group? (*Purple loosestrife is a wetland plant that was brought in from Europe and Asia to be ornamental. It is an invasive species that quickly spreads and crowds out desirable plants in wetlands and waterways throughout the state. It can destroy native plants that are wildlife habitat for ducks, geese, beavers, frogs, toads and turtles.*)

Student Page 7 (History, Social Studies, Cultural Diversity)

1. Why is wild rice so important to many native peoples? (*Wild rice has been central to the culture of native communities in the northern lakes areas for centuries. It's high nutrition meant survival to many communities.*)
2. Why are different crops eaten in different locations of the world? (*Food crops need different soils, climate and terrain in order to thrive. People use their local grains in most of their meals.*) Major food crops worldwide are corn, wheat, rice, potatoes, cassava and soybeans.
3. How is your life changed by the variety of grains grown here as well as imported (grown, purchased and brought in from other countries)? This is a good time to assess what students understand about world trade, the global marketplace and the interdependence of producers and consumers everywhere.

Student Page 8 (Social Studies and Current Events)

1. Do all countries have bread? (*All countries and cultures have a staple food that is some form of bread. Shapes and ingredients vary from country to country. Bread is made by grinding local grains into flour, adding liquid to make dough and then baking. As people move from country to country, they bring their breads with them. Today we can find all of the Dozen Breads on this page in our grocery stories.*) Which of the breads have students tried? Which come from their own family cultures?

ANSWERS: AgMag

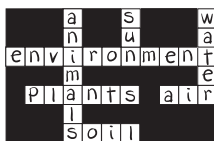
Cover
Connections to agriculture: See Discussion Prompter number 1 on page 2.

AGRICULTURE: MORE THAN FARMING, Pg. 2

List labels: Photos: C; B; A

1. Production;
2. Processing;
3. Distribution

Crossword



CELEBRATING MINNESOTA AGRICULTURE, Pg. 3

1. Gold'n Plump – chicken – packaged chicken
2. Hormel – hogs – pepperoni and ham
3. Minn-Dak Sugar – sugarbeets – sugar
4. John Deere – steel – farm machinery
5. Boise – trees – paper
6. Kemps – milk – ice cream
7. Pioneer – corn seed – ethanol
8. Old Dutch – potatoes – potato chips
9. Malt-O-Meal – oats – cereal and snacks

GROWING AREAS, Pgs. 4 and 5

1. C (Northwest) 2. B (Southwest)
 3. D (Central/Southeast)
 4. A (Northeast)
- Leading sugarbeet county: Polk
Name the animal: Alpaca

FIND IT ON THE MAP, Pg. 5

soil types, weather, rainfall, terrain, growing season

MINNESOTA RAINFALL, Pgs. 4 and 5

1. Least rainfall: Northwest; Most rainfall: Central/Southeast.
2. Specific crops need different amounts of moisture.
3. Above normal: Crops drown out or wash away. Yield is reduced. Below normal: Drought causes crops to wither or die. Yield is reduced.

Your turn:

Hay and Pastureland: Central/Southeast
Sugarbeets: Northwest
Corn and Soybeans: Southwest
Forest and Pine Trees: Northeast
Wheat: Northwest

NAME THE CROP, Pg. 5

green peas; Main Growing Area: Southeast

NAME THE PLANTS, Pg. 6

1. Wild Rice 2. Wheat 3. White Pine
4. Corn 5. Alfalfa 6. Soybeans 7. Turf Grass
8. Apples 9. Purple Loosestrife
10. American Elm Tree

MINNESOTA POWERHOUSE CROPS, Pg. 6

Mahnomon
A DOZEN WAYS TO SAY BREAD, Pg. 8
1. Italy 2. India 3. Ireland 4. Greece
5. United Kingdom 6. Ethiopia 7. Mexico
8. Norway 9. France 10. Poland
11. China 12. United States

FUN AND FOOD AT THE FAIR, Pg. 8

agriculture

CORNY COUNTING, Pg. 8

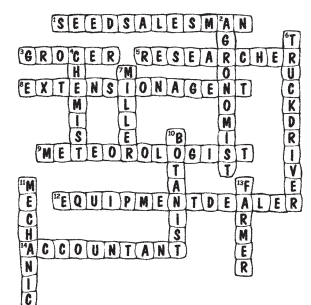
Corn ears have an even number of rows unless something has caused malformation. An average ear of corn has about 800 kernels in 16 rows.

MINNESOTA AGRICULTURE, Pg. 8

Biggest Ag Customers: China, Canada, Mexico, Japan.

ANSWERS: Teacher Guide

Name the CAREER



SHOW WHAT YOU KNOW

1. b 2. a 3. b 4. b 5. a 6. c 7. b 8. c 9. a

Note to Teachers:

You are encouraged to send the Pretest and Post-test results to Ag in the Classroom to help document student learning. Use the attached postage-paid evaluation card.

Name _____

Check one Pretest Post-test

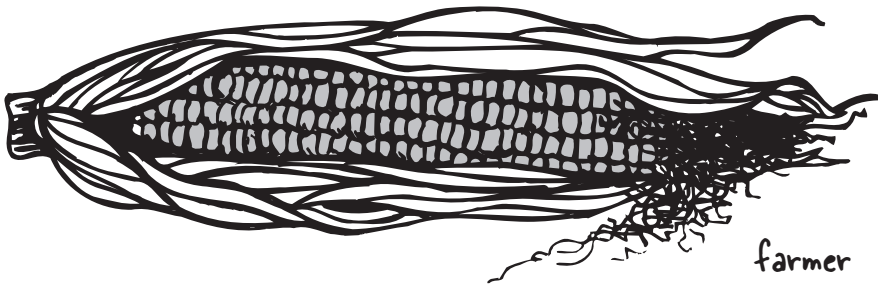
Show what you know!

Take this short quiz before you read your AgMag, then again after reading the magazine. See the improvement!

1. Agriculture involves the growing and harvesting of food, fiber, forests and
a. metals. b. sod. c. plastic.
2. "The Miracle Crop" is a name sometimes given to
a. soybeans. b. corn. c. cotton.
3. The same crops grow well all over Minnesota.
a. true b. false
4. In agriculture, production means
a. getting farm products from farm to consumer.
b. growing of raw food and fiber.
c. packaging products so they're ready for sale.
5. What percent of Minnesotans work in food and fiber industries?
a. 10 b. 40 c. 2
6. Corn has been grown for centuries by
a. early peoples of China.
b. the Pilgrims.
c. Indians of the Americas.
6. Minnesota's first wild rice farmers were
a. Cherokee Indians.
b. Ojibwe Indians.
c. Apache Indians.
8. In 2012, Minnesota ranked first of all 50 states in production of
a. soybeans and wheat.
b. ice cream and butter.
c. sugarbeets and turkeys.
9. Which is Minnesota's state grain?
a. Wild rice
b. Wheat
c. Corn

Name the Career

Did you know that more than 20 million Americans work in some phase of agriculture? But only two million people live and work on farms or ranches. Many of the remaining 18 million people are involved in the processing phase of agriculture. They change crops and livestock into products we can use. Corn doesn't grow in a can and corn oil doesn't suddenly appear in a bottle!



Identify the following agricultural careers by fitting them into the crossword puzzle.

accountant
agronomist
botanist

chemist
equipment dealer
extension agent

farmer
grocer
mechanic
meteorologist

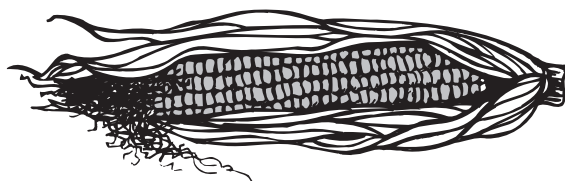
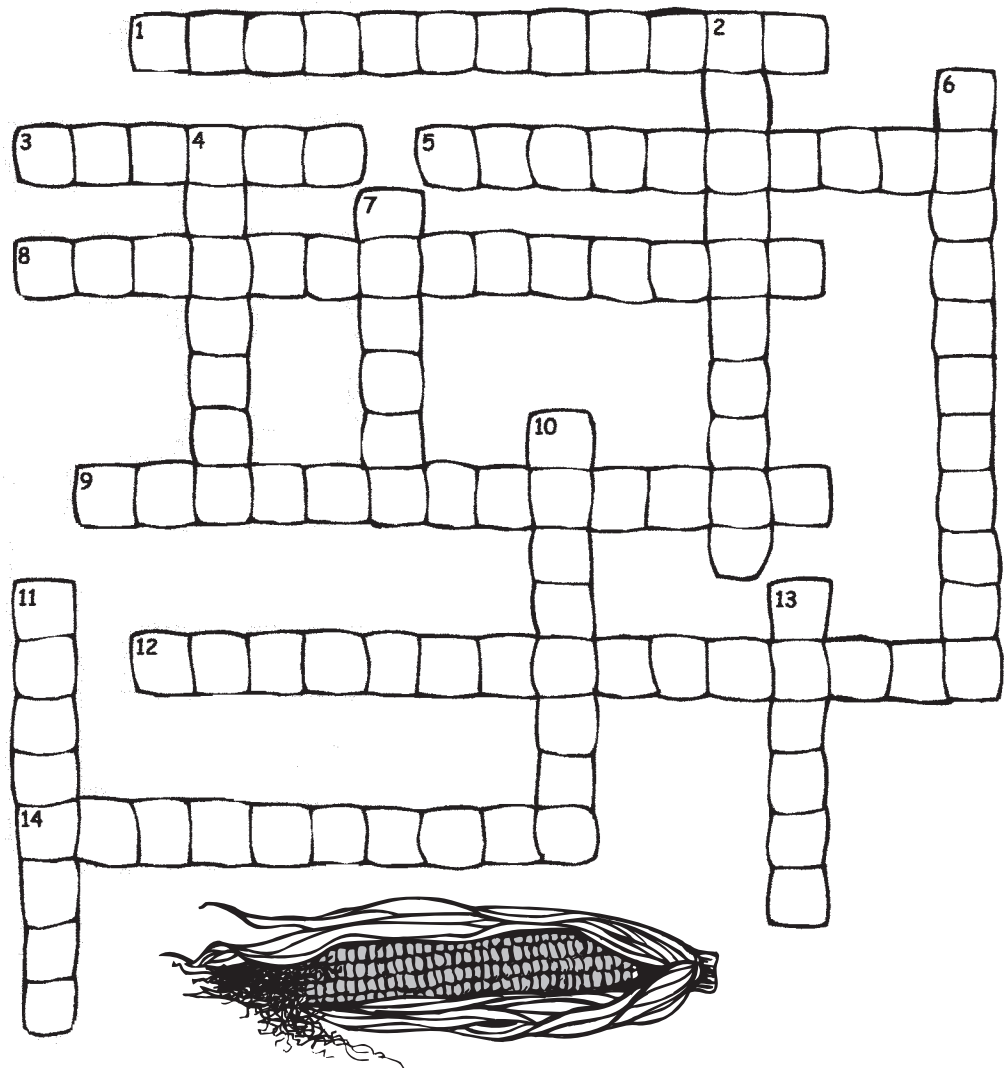
miller
researcher
seed salesman
truck driver

Across

1. Supplies hybrid seed to the farmer
3. Sells food products
5. Scientist who investigates future uses of grains
8. Provides current information from university research to the farmer
9. Forecasts the weather
12. Sells tractors, planters, tillage equipment and combines
14. Keeps the financial records

Down

2. Scientist who deals with crop production and soil management
4. Scientist who develops new and effective herbicide and pesticides
6. Hauls crops from the farm to the processing plant or elevator
7. Grinds grains into meal
10. Scientist who studies plants
11. Repairs and maintains farm machinery
13. Responsible for planting, cultivating and harvesting crops



Source: Adapted from Captain Cornelius Magazine, National Corn Growers Association