

WHY AG IN THE CLASSROOM?

In times past, people were very aware of the role agriculture played in their lives. It meant survival! Nearly everyone - men, women and children - worked the land.

Agriculture still means survival. That will never change. But as time goes on, fewer and fewer people have close contact with farming. They're not aware of their own - and the nation's - total dependence on agriculture. Think about it:

- Less than two out of 100 Americans work in production agriculture (farming). This small group meets the food and fiber needs of the nation as well as many people abroad.
- Agriculture, along with its related occupations, is the nation's largest industry. It generates billions of dollars each year; one out of every five jobs depends on it in some way. It has massive impact on the American economy, greatly influences the U.S. international balance of trade and directly affects the number of jobs here at home.

Our citizens must be agriculturally literate in order to make responsible decisions affecting this giant lifeline. Building that literacy in tomorrow's leaders is what Ag in the Classroom is all about.

ACADEMIC STANDARDS CONNECTION

The student Minnesota AgMag and other educational materials from Minnesota Agriculture in the Classroom can meet many of the new academic standards. These materials can serve as a wonderful "real life" connection and supporting piece as you incorporate the standards into your classroom activities. Here are a few examples of potential connections:

SOCIAL STUDIES (History Strand) Standard: The student will know and understand the factors that led to rapid settlement of Minnesota in the 19th Century and the changes the new Minnesotans brought with them.

(Geography Strand) Standard: The student will identify examples of the changing relationships between the patterns of settlement and land use in Minnesota.

(Economics Strand) Standard: The student will understand the concept of interdependence in relation to producers and consumers.

SCIENCE (History and Nature of Science Strand) Standard: The student will understand that science and technology involve different kinds of work and engages men and women of all backgrounds.

LANGUAGE ARTS (Reading and Literature Strand) Standard: The student will use a variety of strategies to expand reading, listening and speaking vocabularies. The student will read with accuracy and fluency.

ABOUT YOUR AGMAG

Your AgMag is distributed primarily to teachers in grades studying Minnesota (usually fourth or sixth). If the magazine fits better into the curriculum program at another grade level, we encourage you to pass the material on to the appropriate teachers.

Offered at no cost to you, the AgMag is a product of Minnesota Agriculture in the Classroom. You'll receive three issues this school year: October, December and March.

This second issue of your AgMag is designed to help you:

- introduce a basic agricultural production cycle: producing, processing, distributing, marketing, consuming
- highlight the plant and animal connection
- offer expanded information about turkeys and show how turkeys move through the agriculture cycle
- present information about world population and world hunger, and the challenges they present to agriculture
- offer insights about immigration of settlers in Minnesota and how railroads impacted development of Minnesota and of agriculture
- expand agricultural career knowledge (Teacher Guide, page 4).

HELLO OUT THERE

MINNESOTA AGRICULTURE IN THE CLASSROOM

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Go to www.mda.state.mn.us/maitc and find:

- * Student answer to AgMag Mystery Photo on AgMag Page 8
- * Great Teacher Resources
- * Ag Literacy Grant Program Application
- * Teacher Education Workshop Opportunities



Visit the National Ag in the Classroom web site to find great educational resources available from other state programs.
www.agclassroom.org

MINNESOTA TURKEY COUNCIL

108 Marty Drive
Buffalo, MN 55313
Telephone: 763-682-2171
www.minnesotaturkey.com

Check this site for all kinds of information about turkeys ... production, nutrition, facts and trivia

MINNESOTA HISTORICAL SOCIETY REFERENCE LIBRARY

E-mail: reference@mnhs.org
www.mnhs.org/collections

Looking for great historical pictures on elevators, flour milling, transportation, people and places? You'll find plenty in the library's Photo and Art Database. Check them out!

INTEGRATION

Your AgMag materials are created by experienced classroom teachers. An Editorial Review Committee provides content ideas and reviews each issue.

Some teachers use the magazine as a separate lesson; others integrate magazine content into specific areas of the curriculum. The subject matter and skills listed will help you select appropriate agriculture activities to integrate into other curriculum areas.

Language Arts, Reading Literacy: Use the articles and activities to develop a variety of skills: webbing, outlining, non-fiction reading, reading for the main idea, vocabulary development (bold words throughout, pretest/post-test, activities throughout the AgMag, reproducible pages in Teacher Guide).

Social Studies, History: Social Studies appear everywhere in the AgMag. See Agriculture in a Hungry World and More Mouths to Feed, page 6 and the history information on page 7. In the Teacher Guide, see pages 3, 4 and 5.

Creative Writing: Examples: Stories from the points of view of plants or animals that depend on humans; predictions for the future of agriculture; letters to children in other countries, with descriptions about life here and questions about life there.

Geography, Map Skills: See page 8 and Teacher Guide page 5.

Science: See Meet a Turkey, page 3 and Tracking a Turkey production/processing cycle pages 4 and 5.

Math: See graphs pages 6 and 8.

IN THIS GUIDE: DON'T MISS

- SHOW WHAT YOU KNOW pretest and post-test on page 6. Check your students' knowledge of key agricultural concepts before and after reading the AgMag!
- Discussion prompters, background information, extended activities and answers.
- Four reproducible activities: Inventors and Inventions (page 3); Name the Career (page 4); Minnesota Connections (page 5); Show What You Know (page 6).

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: **interdependent** (cover); **raw materials, natural and renewable resources, agriculture cycle, livestock, adaptations** (pages 2-3); **poults, hens, toms** (pages 4-5); **malnutrition, developed country, less-developed country** (page 6); **biomass, infer** (page 8).

DISCUSSION PROMPTERS

Cover (Social Studies)

1. What makes "From the Land to You" a good title for this article? *(Each of the products mentioned started out with a connection to the land, the soil.)*
2. How does each of these photos show a connection to agriculture? *(Most are obvious—tree lot, clothing from cotton and other fabrics, sod playing fields, food, etc. The old depot photo shows boxcars, which often haul agricultural crops, newspapers (from trees) in the foreground and more.)*

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

1. How many things in your classroom came from agriculture?
2. 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? Corn or soybeans?

3. Why do we say agriculture depends on natural and renewable resources? *(The agricultural products 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.)*
4. What foods do NOT come from plants and animals? *(Mushrooms and yeast are fungi, not plants.)*

Student Pages 4 and 5 (Science, Social Studies)

1. Turkeys are part of Minnesota's livestock agriculture. Farm livestock are grown for meat, milk, fiber (wool), eggs and other products. What other livestock can you name? *(Cattle, hogs, chickens, ducks, geese, goats, sheep, bison, etc.)*
2. What makes Minnesota a good state for livestock? *(Thanks to our rich soil, good climate and other natural resources, we are able to grow the foods livestock need. Good technical knowledge helps our farmers grow healthy animals. Our good transportation systems allow livestock producers to get their products to market quickly and effectively, etc.)*
3. Food safety is a huge part of animal agriculture. What do turkey producers and processing plants do to make sure their products are safe and healthy for you to eat? *(Flocks are inspected for good health every day on the farm. The birds are checked again for good health when they arrive at the processing plant and meat is inspected many times for quality. Processing plants are carefully managed and sanitized to keep the equipment and meat clean at all times. Employees must wash their hands frequently and wear clean, protective clothing. Products are properly refrigerated and frozen to keep them fresh and wholesome.)*
4. Why is it helpful to know which farms, flocks and processing plants turkeys come from? *(If there are any problems, going to the source can quickly help solve them.)*
5. What must customers do at home to make sure their turkeys are safe to eat? *(Keep properly frozen and refrigerated. Wash hands thoroughly before and after handling raw turkeys. Don't allow juices from raw turkeys to come into contact with cooked meat. Make sure turkeys are cooked to the proper temperature.)*

Student Page 6 (Social Studies)

1. What does the population trend of the future (more people in cities and underdeveloped countries) mean for agriculture? *(Production must keep increasing in order to feed everyone. Transportation and distribution will be even more important than they are today. Growing urban populations will use resources in greater quantities than their fewer rural neighbors who produce the food. Conserving land, water and energy resources and using new technologies to increase production will grow in importance. Marketing new products will continue to be a growing business.)*

Student Page 7 (Social Studies, History)

1. Imagine yourself to be a settler in western Minnesota in the 1870s. Carts, wagons, horses and your own two feet have been the ways you move from place to place. Now a train track has been laid from the Twin Cities through your town and here comes the first train. How will your life change?
2. In 1881, Minneapolis was the flour milling capital of the world, producing more flour than any other city. Its location by the Mississippi River offered waterpower for grinding wheat into flour and also created a great waterway to ship flour to the world. How did railroads contribute to the flour business? *(Wheat from huge fields in the Midwest was shipped by rail to be ground at mills in Minneapolis. Flour was moved to customers across the country by rail.)*

Inventors & Inventions

Word Bank:

Thomas Edison
 Louis Pasteur
 Charles Birdseye
 John Deere
 Cyrus McCormick
 Samuel Morse
 Charles Goodyear
 Alexander Graham Bell
 Rudolph Diesel

Circle which came first

pasteurized milk or tv dinners
 gasoline engine or steam engine
 telephones or tractors
 canned foods or frozen foods
 electric lights or telegrams
 vacuum milkers or pasteurized milk

Many inventors and inventions have changed agriculture. Fill in the missing inventors. How is the name sometimes the clue? How can you find answers you do not know?

Invention	Inventor	Year
Canned Foods	Nicolas Appert	1787
Cotton Gin	Eli Whitney	1793
Steam Locomotive	Richard Trevithick	1804
Reaper	_____	1834
Refrigerator	Jacob Perkins	1834
Steel Plow	_____	1836
Vulcanized Rubber	_____	1839
Telegraph	_____	1840
Gas Engine	Jean Lenoir	1860
Pasteurization	_____	1864
Margarine	Hippolyte Mourles	1869
Barbed Wire	Joseph Glidden	1873
Telephone	_____	1876
Vacuum Milking Machine	Anna Baldwin	1878
Electric Light	_____	1879
Internal Combustion Engine	_____	1892
Tractor	Benjamin Holt	1904
Frozen Food Process	_____	1925

NOTE: Lay a piece of plain paper across the answers to block off the lower part of this sheet before photocopying. Tell kids to use the space to write about things they think are really cool inventions or things they wish could be invented.

ANSWERS: AgMag

Agriculture Cycle, p. 2

- Producing
- Processing
- Distributing
- Marketing
- Consuming

Think and Discuss, p. 2

Sun, air, water and soil are the resources from which all agricultural products develop.

Photos top to bottom: 1, 4, 2, 5, 3

Meet a Turkey, p. 3

- G;
- C;
- B;
- E;
- A;
- D;
- F

Why Are They Hungry? p. 6

Across:

- transportation;
- crop;
- drought;
- spoiling.

Down:

- stealing;
- wars;
- government;
- poverty;
- storage;
- trade;
- processing;
- floods;
- pests.

The Railroad Connection, p. 7

Railroads made it possible for settlers to claim land farther away from rivers, towns, and other settlers.

Who's This?, p. 8

James J. Hill

We're Top Turkey, p. 8

Turkeys are grown in areas where the food they need (corn, soybeans, other grains) can be grown nearby.

ANSWERS: Teacher Guide

Show What You Know, PreTest/Post-Test

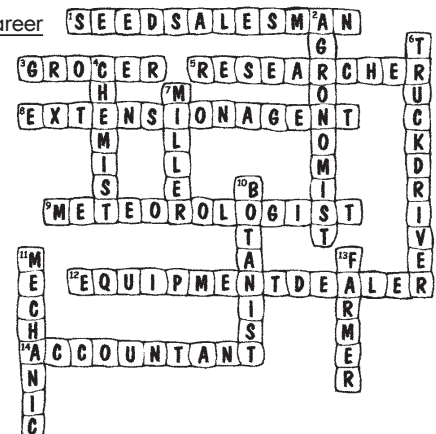
- producing, processing, distributing, marketing, consuming
- b
- c
- b
- c
- a
- c
- b
- b

Inventors and Inventions

Missing inventors, in order: Cyrus McCormick, John Deere, Charles Goodyear, Samuel Morse, Louis Pasteur, Alexander Graham Bell, Thomas Edison, Rudolph Diesel, Charles Birdseye.

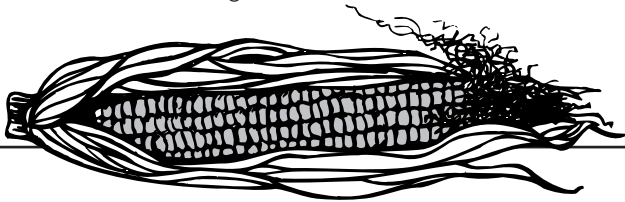
Which came first: pasteurized milk, steam engine, telephones, canned foods, telegrams, pasteurized milk.

Name the Career



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.

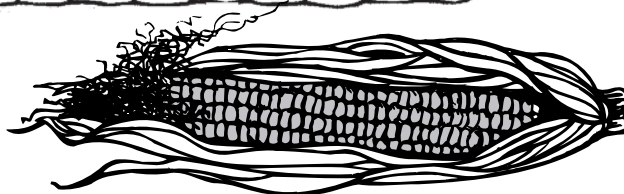
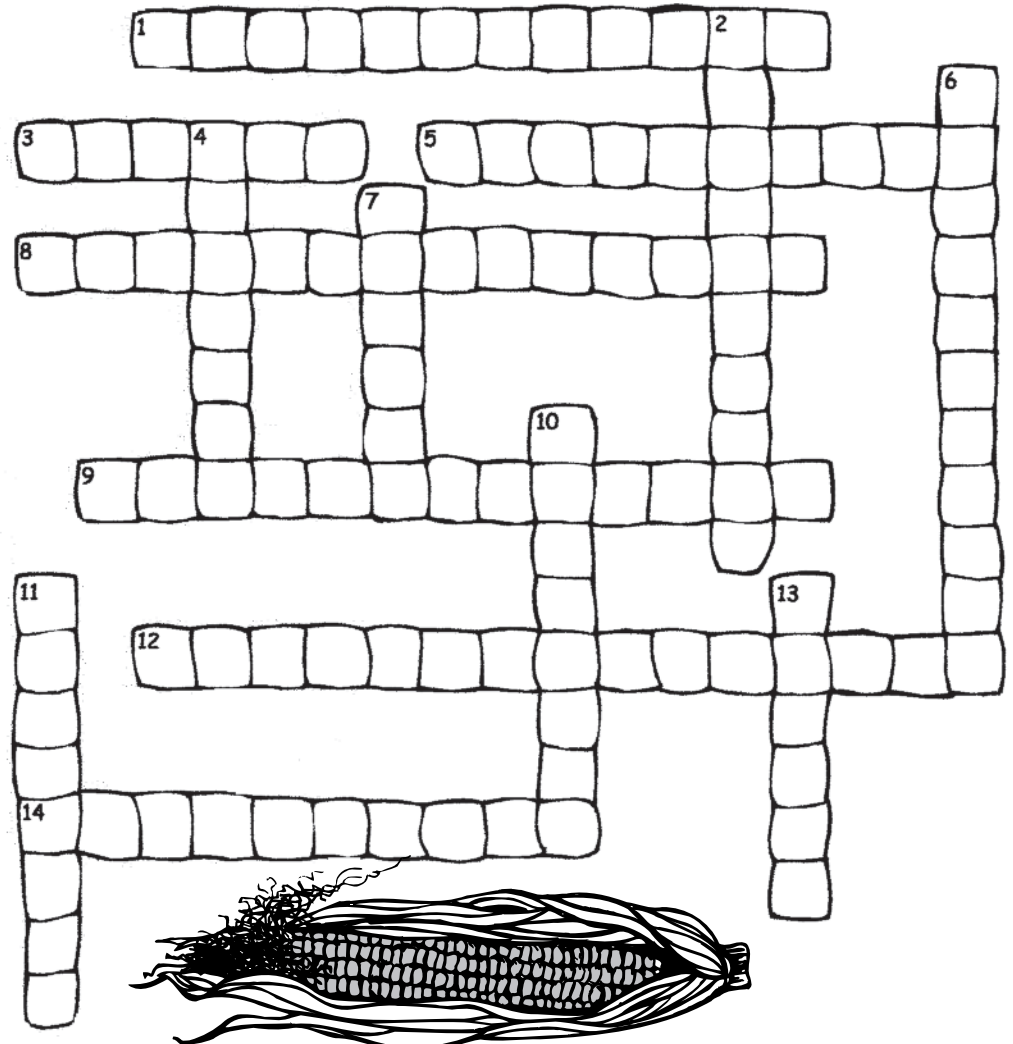
- | | | | |
|-------------------|-------------------------|----------------------|----------------------|
| accountant | equipment dealer | grocer | researcher |
| agronomist | extension agent | mechanic | seed salesman |
| botanist | farmer | meteorologist | truck driver |
| chemist | | miller | |

Across

- Supplies hybrid seed to the farmer
- A person who sells food products
- Scientist who investigates future uses of grains
- Provides current information from university research to the farmer
- Forecasts the weather
- Sells the tractors, planters, tillage equipment and combines
- Keeps the financial records

Down

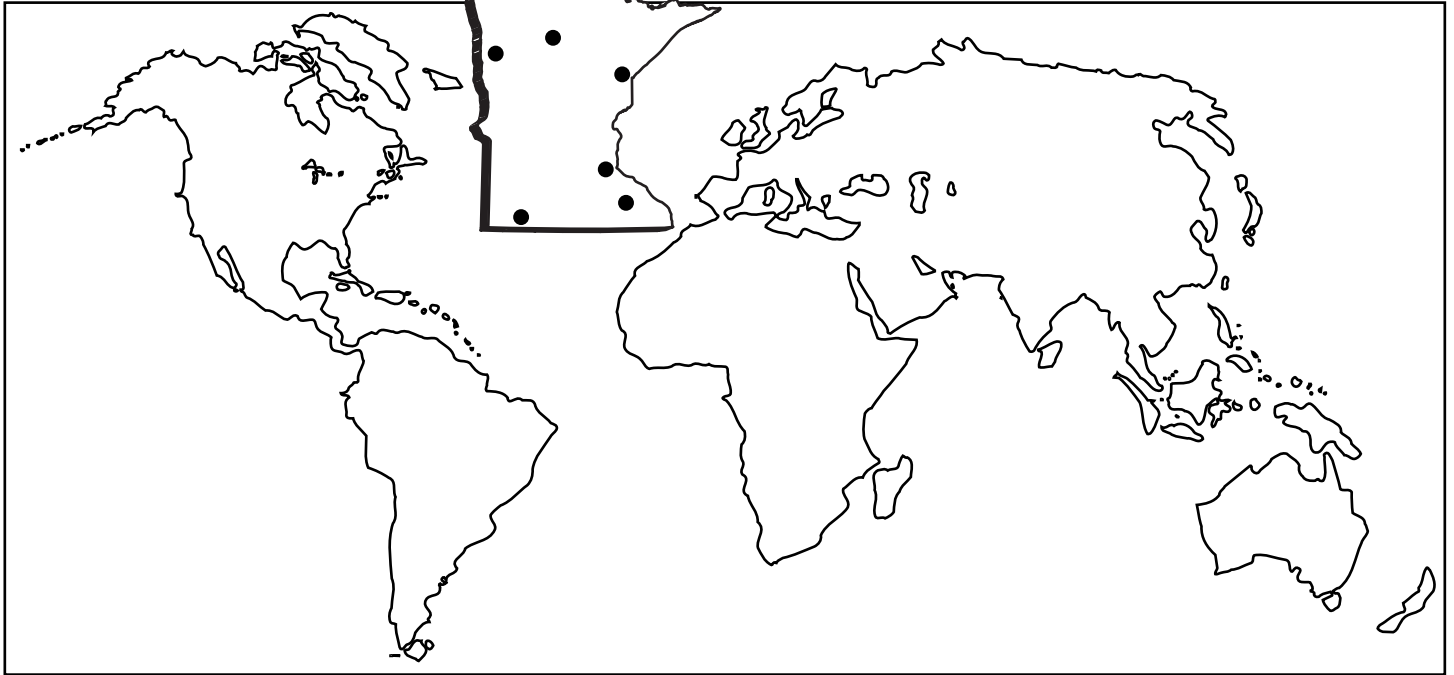
- Scientist who deals with crop production and soil management
- Scientist who develops new and effective herbicides and pesticides
- Hauls the crop from the farm to the processing plant or elevator
- Grinds the grains into meal
- Scientist who studies plants
- Repairs and maintains the farmer's machinery
- Responsible for planting, cultivating and harvesting the crop



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

Minnesota Connections

Imports are everywhere!



Your Ag Mag has shown you many of the great food, fiber and forest products agriculture produces right here in Minnesota. Still, millions of tons of agricultural products are brought into our state each year from other places. Why? They bring variety and many more choices. Through imports, we can have and use things that are not produced in Minnesota. We can enjoy fresh fruits and vegetables from tropical areas during the long, cold winter months when our own fields and gardens are buried beneath the snow. Do the activity below and you'll get the picture!

You may need a Minnesota map and a World map to locate these places. The dots on your Minnesota map mark each of the cities named below. How many of the Minnesota city locations do you know before you look at the state map? Getting to know our state is fun and interesting!

- a. Fresh strawberries from Mexico end up in your strawberry sundae in Duluth. **Draw a red arrow from Mexico to Duluth.**
- b. Coffee from Columbia (South America) is served at a restaurant in Bemidji. **Draw a red arrow from Columbia to Bemidji.**
- c. Wool from Australia is blended into blankets sold in Rochester. **Draw a red arrow from Australia to Rochester.**
- d. Olive oil from Spain is used in salad dressing made in Minneapolis. **Draw a red arrow from Spain to Minneapolis.**
- e. Apples from New Zealand are sold in supermarkets in Worthington during the months fresh apples aren't available in Minnesota. **Draw a red arrow from New Zealand to Worthington.**
- f. Cotton from China is sold at a fabric store in Moorhead. **Draw a red arrow from China to Moorhead.**
- g. Your family is building a garage. The lumber comes from Canada. **Draw a red arrow from Canada to your part of Minnesota.**

These are just a few of the things that are *imported* into our state. While imported products are coming in, what's happening to many of our own Minnesota products? We are busy *exporting* them to other nations, where people want and need what we produce.

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. Name five steps in an agriculture cycle.
a. _____ b. _____ c. _____ d. _____ e. _____
2. These are the source of food for every other living thing.
a. animals b. plants c. fungi
3. More than half the world's population depends on this plant for a daily meal.
a. wheat b. corn c. rice
4. How many people are living in the world today?
a. over three million b. over six billion c. over twenty million
5. What state leads the nation in producing turkeys?
a. Texas b. California c. Minnesota
6. Trains first arrived in Minnesota during the time of
a. the Civil War.
b. George Washington's presidency.
c. the building of Fort Snelling.
7. Minnesota was once the milling capital of the world for
a. steel.
b. cotton.
c. flour.
8. The world's less-developed countries include
a. Japan and Australia.
b. Bangladesh and Uganda.
c. United States and Canada.
9. Benson, Minnesota has a power plant that runs on
a. diesel fuel. b. turkey manure. c. corn pellets.

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