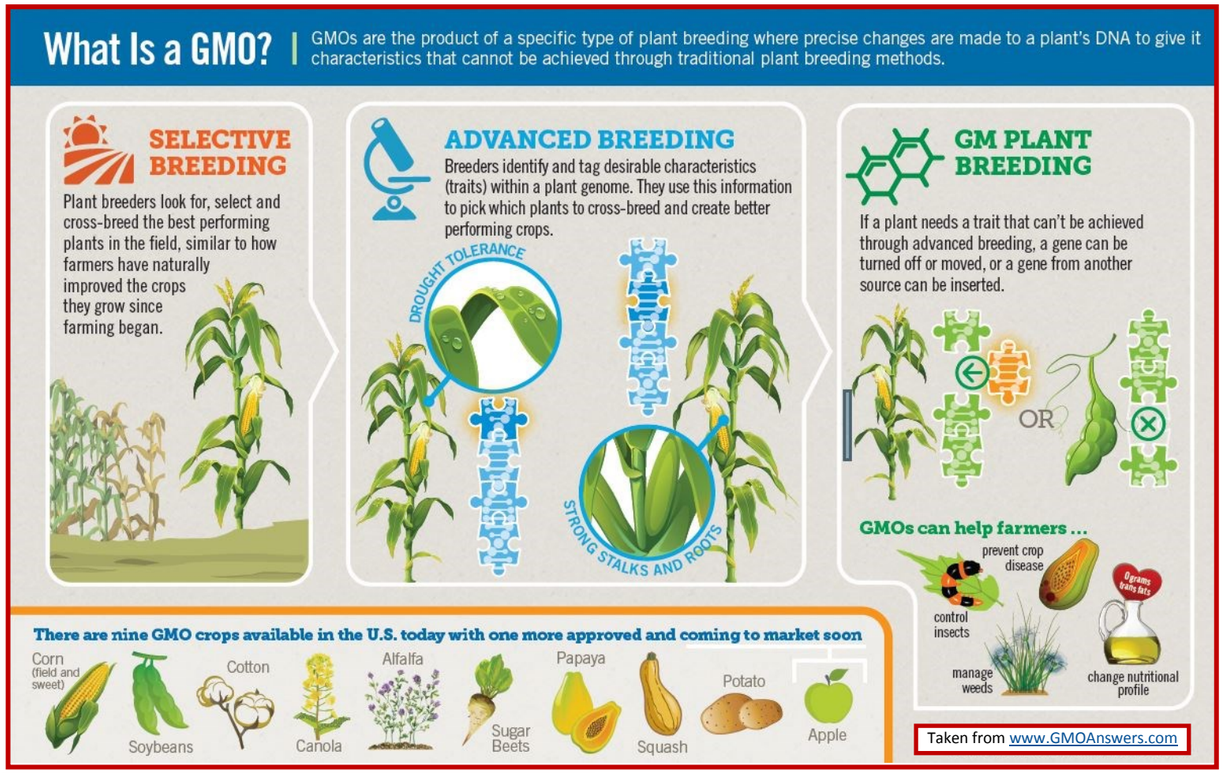
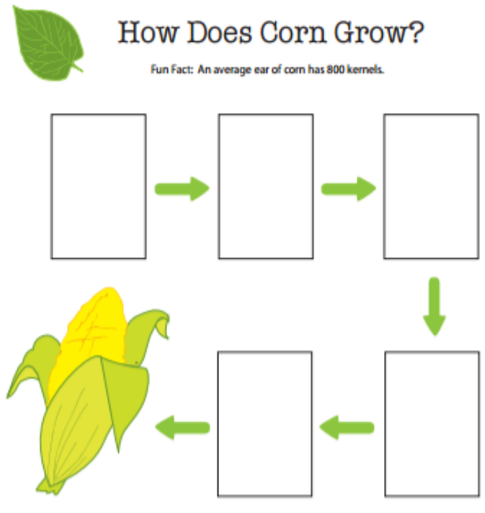




Taken from Education.com (click here for printable worksheet)

Watch A Corn Plant Grow

1. wet a paper towel completely, wring out excess water
2. put 5 corn kernels on the center of the paper towel
3. put the kernels and paper towel in a zip-lock bag
4. put the bag in direct sunlight or under a grow lamp
5. observe for the next few weeks . . . what do you see?

New Hampshire Agriculture in the Classroom

Contact us to:

- Find an online version of this guide with clickable links.
- Discuss curriculum materials
- Receive our monthly newsletter
- Learn about upcoming educator workshops
- School-to-Farm Field Trip information
- Borrow materials from our resource library

www.agclassroomn.org/nh email: nhaitc@nhfarmbureau.org

New Hampshire Agriculture in the Classroom

Annual Agricultural Literacy Program

2017 Educator Resource Guide

Dear Friends and Educators,

The mission of New Hampshire Agriculture in the Classroom is to help students increase their understanding and appreciation of the role that agriculture plays in their daily lives. We strive to achieve this through teacher workshops, school to farm field trips, a monthly newsletter and more.

Each year we offer an Annual Literacy Program where we select an agriculturally accurate book, then send volunteers into schools throughout the state to read the book and to share related information with the students. Following the presentation, the book is donated to the school for continued enjoyment and learning. We also provide lesson materials to help supplement the school visit. Teachers are encouraged to utilize these resources to round out the lessons with activities based in science, language arts, social studies, etc. You can find those resources, plus additional information pages, worksheets and activities on our website, www.agclassroom.org/nh. Upon completion of the program, we ask that both teachers and volunteers complete a brief survey to evaluate our effectiveness. A hard copy is enclosed or you may complete it online at https://goo.gl/RY6Q6X.

The book selected for this year's program is *Corn* by Gail Gibbons. This colorful book explores the history of corn, production from planting to harvest and the uses of corn. This year, we are thrilled to have support from the Concord Farmer's Market, Hubbard Farms and Northeast Earth Mechanics. Please visit their websites for additional information about their work. We hope that you find this material useful and that your students enjoy learning about corn. If you are interested in integrating other agricultural topics or programs into your curriculum, please don't hesitate to contact us at (603) 224-1934, email nhaitc@nhfarmbureau.org or visit our website at www.agclassroom.org/nh.

Sincerely,

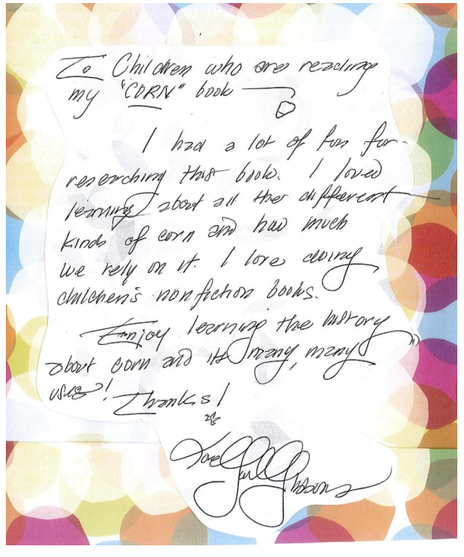
Debbi Cox
State Coordinator

Hubbard — YOUR CHOICE, OUR COMMITMENT

EARTH — NORTHEAST EARTH MECHANICS, INC.
In memory of Tom Locke

Concord Farmers' Market

A Note from the Author



Thoughts from the Contributor

University of New Hampshire's own Becky Grube Sideman reviewed the book for the author. Take a look at the top of page 2! Becky is excited to have New Hampshire students learning more about corn and she shared some of her thoughts:

"Corn is a wonderfully versatile crop, providing feed for our livestock and so many delicious foods for us, too. It's hard for me to imagine not having corn on the cob, tortillas, and popcorn! Here in New Hampshire, we can easily grow many kinds of corn, including sweet corn, flint and dent corns for making cornmeal and flour, and popcorn, not to mention field corn for cattle feed.

To me, each ear of corn is really miraculous. Every single kernel is linked to a silk, and a pollen grain has to land on that silk in order for the kernel to develop. When you think about the ear of corn, and how many kernels there are, imagine how much pollen needed to land on those silks to make that ear!"

Types Of Corn

Sweet

Grown for human consumption found at grocery stores and farmers' markets - has lots of sugar and is harvested before it matures

Popcorn

Always a favorite, popcorn kernels have a hard outer shell covering a dense pocket of starch that will pop when heated

Field or Dent

Also called field corn, a dent forms in the middle of the kernel as it begins to dry out - contains more starch and less sugar than sweet corn - used for animal feed, to make corn syrup and corn starch, fuel and biodegradable plastics

Flint Corn

Also known as Indian Corn, flint corn is used for similar things as dent corn - kernels come in a range of colors - mostly grown in South and Central America

What's Inside That Seed?

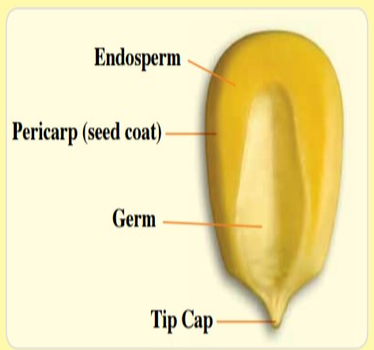
Corn seeds are called kernels. One ear of corn averages 800 kernels in 16 rows.

Endosperm—Holds the energy and protein the new plant will use to begin to grow. This area is full of starch, which is used the most in corn processing.

Pericarp (seed coat)—Outside cover of the seed. It protects the inside of the seed from cold temperatures, moisture and insects until the seed is ready to germinate.

Germ—Only living part of the seed. It will become the new plant. It has all of the genetics, vitamins and minerals for a new plant to be created. There is also oil inside of the germ, which is the most valuable part of the corn kernel when it is processed.

Tip Cap—Where the kernel was attached to the cob. As the kernel grew on the cob, it took in water and nutrients from this area.



Courtesy of Illinois Ag in the Classroom
Link to Smart Board resource: http://
www.agintheclassroom.org/TeacherResources/AgMags/

Find the Corn

OBJECTIVE: To examine the different products that contain field corn and its by-products. Students will understand the impact field corn has on their daily lives. It is estimated that 1/4 of the items found in a grocery store contain corn in some form.

DIRECTIONS:

1. collect a variety of products from the list below that are made from corn as well as other products that are produced without corn.
2. get two large paper bags or plastic boxes, one labeled "CORN' and one labeled "WITHOUT CORN"
3. create start and finish lines where the boxes/bags are on the floor or a table at the finish line and two rows of students are lined up at the start line
4. pile all of the products together for students to see at the start line
5. when it is a student's turn, hand them a product
6. they need to run down to the finish line and place the product in the appropriate container
7. at the end, go through all of the sorted items and discuss which are made from corn

Corn Starch	Corn Syrup	Corn Derivatives
chewing gum	cereal	diapers (absorbency)
salad dressing	fruit drinks	coated aspirin (sweet flavor)
pudding	ice cream	hand soap (25% of ingredi-
ents)		soups
	yogurt	cosmetics
drywall		
toothpaste	Corn Flour	Corn Oil
batteries	Elmer's Glue	potato chips
		mayonnaise

Farmer John's Classroom Corn Maze

Younger students can find things in the classroom that contain corn: check out page 6 at http://www.mocorn.org/wp-content/uploads/2012/09/Entire-Activity-Book.pdf

Fun Facts

1. Only 1% of the corn produced in America is sweet corn that we eat - the rest is field corn.
2. An average ear of corn has 800 kernels arranged in 16 rows.
3. Farmers grow corn on every continent except Antarctica.
4. A bushel of corn can sweeten 400 cans of soft drinks.
5. The United States produces about 40% of the worlds corn making it the largest producer in the world.
6. Corn can be grown in a variety of colors such as black, blue, purple, green, red, white and of course, yellow.
7. 40% of corn is used to produce ethanol.
8. Corn, also known as maize, is a member of the grass family.
9. One acre of corn removes about 8 tons of carbon dioxide from the air during the growing season.

YouTube Videos

Growing Corn: https://www.youtube.com/watch?v=BK8T---RG54

How Does Corn Grow?: https://www.youtube.com/watch?

Make Corn Bioplastic

Materials: *for each student*

1 tablespoon cornstarch
2 drops of corn oil
2 drops of food coloring
1 re-sealable sandwich size bag

Introduce the word "bioplastic" by writing it on the board and breaking it into two parts. "Bio" means that it comes from a living thing. "Bioplastic" is plastic that comes from a living thing.

1. To make the bioplastic, have the students combine 1 tablespoon of cornstarch, 2 drops of corn oil, 1 tablespoon of water, in a re-sealable sandwich-size bag. Squish the mixture around in the baggie until uniform. It will look like milk and should have no lumps or dry areas.
2. Add 2 drops of food coloring to the mixture and mix well.
3. Place the baggie in a mug so that all liquid collects in one corner of the baggie.
4. Instruct students to seal the bag and mix the ingredients by rubbing the outside of the bag with their fingers until the ingredients are thoroughly combined.
5. Open the bag slightly, making sure it can vent, and place it into a microwave oven on high for 20 seconds. The plastic will be VERY hot.
6. Carefully remove the bag from the microwave, and let it cool for a few minutes. While it is still warm, allow the students to form their plastic into a ball. Refer to the *Physical and Chemical Change* PowerPoint * to discuss the chemical change that occurs when the bioplastic is made.
7. Ask the students to complete the *Making Bioplastic* * activity sheet and then discuss their observations as a class occurs.
8. Concept Elaboration and Evaluation: After conducting these activities, review and summarize the following key concepts:
   - Corn is a versatile crop used for human consumption, livestock feed, and a wide range of industrial products, including bioplastics.
   - Renewable resources can be replaced naturally or by human efforts at a sustainable rate.
   - Bioplastics are made from renewable, biological materials produced on farms when the bioplastic is made.

* These resources as well as a full length lesson with vocabulary, additional resources and other activities can be found in the Corn an A-maizing Plant, Food, Fuel and Plastic lesson. You can also find this by visiting www.agclassroom.org/nh and searching "corn" in the Agricultural Literacy Curriculum Matrix.

Corn In New Hampshire

According to the USDA's 2012 Census of Agriculture, 121 New Hampshire farms had 11,779 acres planted in corn. From that, 63,913 bushels of corn for grain were harvested and 224,904 tons were turned into silage for animal feed. In addition, 260 farms grew sweet corn for you to eat on a total of 1,514 acres!

Online Resources

Illinois Agriculture in the Classroom's Exploring Corn: lessons to explore the history and types of corn https://goo.gl/37mvMc
Illinois Corn Ag Mag (Smart Board compatible): https://goo.gl/foJpx6
Corn Kernel Dissection: https://goo.gl/SwKr0J
Create a paper corn plant: https://goo.gl/LpfbbY
Tassel To Tank: help students become more familiar with the process of raising alternative materials for fuel https://goo.gl/fSaQnF (grades 4-12)
National Corn Growers Association Educational Links: https://goo.gl/Xon5Fp
Worksheets: from the author https://goo.gl/ItccgR math and reading https://goo.gl/Y7iVoS