

UNIVERSITY OF MINNESOTA

K-12 Education

Bouncing Corn

Adapted by

Susan Anderson

K-12 Education Specialist - Life & Natural Science

Objective: Students will experiment with different recipes that create different forms of biodegradable plastics made from corn. They will be introduced to polymers both natural and synthetic, and will gain an understanding of the products, which can be made from natural polymers like cornstarch

Introduction: Discuss how important it is for our environment to use products that will decompose in landfills. Talk about the fact that many of our plastics derive from petroleum products that can eventually be depleted and that decompose very slowly in landfills. Discuss ways that biodegradable plastic might be made from natural renewable resources and how that would be better for the ever-increasing world population. Show the students some of the biodegradable products made from corn. Tell them that they are going to have the chance to work with this natural renewable resource to make their own plastic today. (Contact www.mncorn.org or visit www.biocorpaavc.com for more information on plastics made from corn.)

Input and Procedure: Use Unit 7, Lesson 4 from the NCGA Corn Curriculum found at www.mncorn.org, click on Resource Room and then Corn in the Classroom. Pick and choose the pieces that work best for your students and their ability level. When you make the plastic in the microwave, be sure to model good safety techniques. Use oven mitts or potholders as you handle the hot bags, and do not let the students handle the bags of plastic until they have cooled down. Safety in science is extremely important!

Closure: Put some of the plastic that was made into a glass of water so the students will be able to observe it over the next few days to see how quickly it will dissolve in water. Discuss the ingredients that went into the plastic that they made today. Could they see the evidence that cornstarch is made up of polymers as they stretched and formed their plastic? Talk about some of the concerns that scientists might be working with as they continue to develop more ways to use biodegradable plastic or resin, (such as clothing, milk jugs, etc.) considering that the goal is to have it decompose quickly in a landfill, but needs to stand up to holding liquids, or being wearable. Review the need for biodegradable plastics to help maintain a healthy environment, and discuss uses for this biodegradable plastic. Think about investigating other by products of corn.

EXTENSION ACTIVITIES:

- Arrange a field trip to a corn processing plant to see first hand the processing of corn into its many products.
- Invite a corn producer to visit your classroom to talk about the production of corn and perhaps discuss the need to continue to develop value added, by products to increase the profitability of raising corn.
- Investigate other by products of corn such as ethanol, and their effect on the environment.
- Investigate how much of the corn produced in Minnesota or the nation is exported to other countries and which countries use our corn.
- Do some of the other lessons and activities included in the corn curriculum, such as making your own corn starch - Unit 9, Lesson 3 (Entire curriculum can be downloaded from the National Corn Growers web site www.ncga.com)
- Investigate and contact companies such as BioCorp USA www.biocorpaavc.com that produce biodegradable products made from corn. How did the company get started? What products do they make? Where do these products get sold? (Biodegradable utensils made from corn were used at the 2000 summer Olympics) Could you set up a program at your school to use these products and eliminate waste?
- Contact the Minnesota Corn Growers Association in Shakopee, Minnesota www.mncorn.org , to gather information about corn production in Minnesota, invite speakers to the classroom, etc.
- Investigate other commodities produced in Minnesota. Use the MN Ag in the Classroom commodity cards as one resource in this effort. What are they? Who can you contact to learn more information? What are some of their unique by products?
- Be creative and get the help you need from MN Ag in the Classroom, your regional Extension Office, your area Research and Outreach Center, web searches, your school's ag ed department if you have one, local commodity groups and the list just goes on and on. There are so many resources out there for you to tap into.

Partnering:

University of Minnesota
College of Agricultural, Food and Environmental Sciences
Research and Outreach Centers*
Minnesota Ag Education Leadership Council
Extension Service
Minnesota Ag in the Classroom
Minnesota Pork Board
Minnesota Soybean Research and Promotion Council
Midwest Dairy Association
Martin County Corn and Soybean Growers
Redwood Area Schools

* Centered at Southwest Research and Outreach Center