

DIFFERENT USES OF FIELD CORN AND SWEET CORN

Objective: After the lesson and activity, students should be able to give examples of products of sweet corn and field corn.

Materials Needed:

- kernels of field corn for each student
- kernels of sweet corn for each student
- pictures of corn products, both field corn and sweet corn
or
- actual examples of corn products, both field corn and sweet corn
- pictures or examples of products NOT made by corn
- Uses of Field Corn handout (PDF on Illinois Corn website)
- Math Activity worksheet (PDF on Illinois Corn website)
- Corn Products sheet (PDF on Illinois Corn website)
- “Uses of Corn” video by Illinois Corn Marketing Board (available on YouTube or TeacherTube)
- if you would like to use a coloring page about corn uses, under Education on the Illinois Corn website and then under the “coloring sheets” link, the “booklet” coloring sheet talks all about field corn uses. **put under this folder**
- if you would like to do the Biodegradable plastic make sure you have all ingredients, worksheets, and a microwave if you go in depth in the experiment

Interest Approach:

Give each student a kernel of field corn and a kernel of sweet corn. Ask them if they can eat both kinds of corn. If you have done the “Physical Differences” lesson, they should be able to tell the difference between the kernels. Then, have them “taste test” each kernel and see whether they think they can eat both. After that discuss what they think each kind of corn is used for. Also, do a quick recap of the differences between the two.

Lesson:

- As we have already discussed, there is more than one type of corn out there. The two main types of corn are sweet corn and field corn and they are used for completely different things.
- The makeup of each kind of corn is different. Since sweet corn is harvested when it is immature and still in the milk stage, when the kernel is squishy, it is used primarily for human consumption.

-When sweet corn is harvested, it is picked from the field and then sold by the grower at local markets or sent to packers where it is processed.

-Sweet corn is used for human consumption but in different forms. It can be eaten fresh right off the cob, from a can, or even frozen.

-Field corn, on the other hand, has many different uses. After it is harvested, it is usually stored at a local grain elevator or on a farm's bin site, which holds the corn and dries it. -

-From storage at either the elevator or a bin site, corn is taken to many different places depending on what it is going to be used for.

-Some corn is taken to feed mills and other locations where livestock feed can be made.

-Also, a lot of the corn goes to ethanol plants so that it can be made into fuel for people to use.

-Some corn is also sent to barges on local rivers where it travels down rivers and may eventually end up on its way to other countries.

-The rest of the corn is sent to various processing plants where it can be made into all kinds of products and many of which you would never think of. For example, corn can make crayons, chips, vitamins, paint, plastic, and it also can be made into high fructose corn syrup, which is in MANY foods.

****Show "Uses of Corn" video to students so they can see some of the different products corn is in as well as some of the different uses.****

Activity:

For this activity you will need pictures of items made from corn or the actual items, as well as items not made from corn. Make two bags or designate two areas in the classroom and have one be "Made from Corn" and the other be "Not made from Corn". Get very obvious items and then not so obvious items and have students determine whether they think they are made from corn or not. For food products, have students look at the labels and see if they see the word corn anywhere. There is a worksheet that has a list of many different corn products that you can handout after the activity.

Illinois Learning Standards: 15.C.1a, 19.A.1, 19.A.2, 21.A.1a, 21.A.2a

Additional Activities:

****Science Experiment (Any Grade) :** You can also make biodegradable plastic using instructions made by Illinois Ag in the Classroom. The instructions are on our website as a PDF file. You can use this activity and incorporate the environment and science.

Illinois Learning Standards: 11.A.2b, 11.A.2e, 12.E.2c

Illinois Assessment Frameworks: 11.4.01, 11.4.02, 11.4.03, 12.4.30, 12.4.31

****Coloring Activity:** Also, you can use the coloring sheets as an activity and they give many different examples of corn products. ****change PDF name and move it****

****Writing Exercise (Any Grade):** To help students prepare for standardized tests or to just work on the writing skills, have students write about how corn is in their life, in food as well as other not so obvious products. Modify what you want written depending on what age group you teach. For elementary students, have them do a Expository writing with simple, well-organized paragraphs and also focus on correct grammar. For upper elementary and middle school students, have them write a narrative about corn in their lives. Have them plan what they are going to write and then write a draft and do peer editing and have them make revisions.

Illinois Learning Standards: 3.A.1, 3.A.2, 3.A.3, 3.B.1a, 3.B.2a, 3.B.3a, 3.B.1b, 3.B.2b, 3.3.3b, 3.B.2c, 3.B.2d, 3.C.1a, 3.C.2a, 3.C.3a

Illinois Assessment Frameworks:

3rd Grade: 3.3.01, 3.3.02, 3.3.03, 3.3.04, 3.3.05, 3.3.06, 3.3.07, 3.3.08, 3.3.09, 3.3.10, 3.3.11, 3.3.12, 3.3.13, 3.3.14, 3.3.15, 3.3.16, 3.3.18, 3.3.19, 3.3.20, 3.3.21, 3.3.22, 3.3.23, 3.3.24, 3.3.25, 3.3.26, 3.3.27, 3.3.28

5th Grade: 3.5.01, 3.5.02, 3.5.03, 3.5.04, 3.5.05, 3.5.06, 3.5.07, 3.5.08, 3.5.09, 3.5.10, 3.5.11, 3.5.12, 3.5.13, 3.5.14, 3.5.15, 3.5.16, 3.5.18, 3.5.19, 3.5.20, 3.5.21, 3.5.22, 3.5.23, 3.5.24, 3.5.25, 3.5.26, 3.5.27, 3.5.28

6th Grade: 3.6.01, 3.6.02, 3.6.03, 3.6.04, 3.6.05, 3.6.06, 3.6.07, 3.6.08, 3.6.09, 3.6.10, 3.6.11, 3.6.12, 3.6.13, 3.6.30, 3.6.31, 3.6.32, 3.6.33, 3.6.34, 3.6.35, 3.6.36, 3.6.37, 3.6.38, 3.6.39, 3.6.40, 3.6.41, 3.6.42, 3.6.43

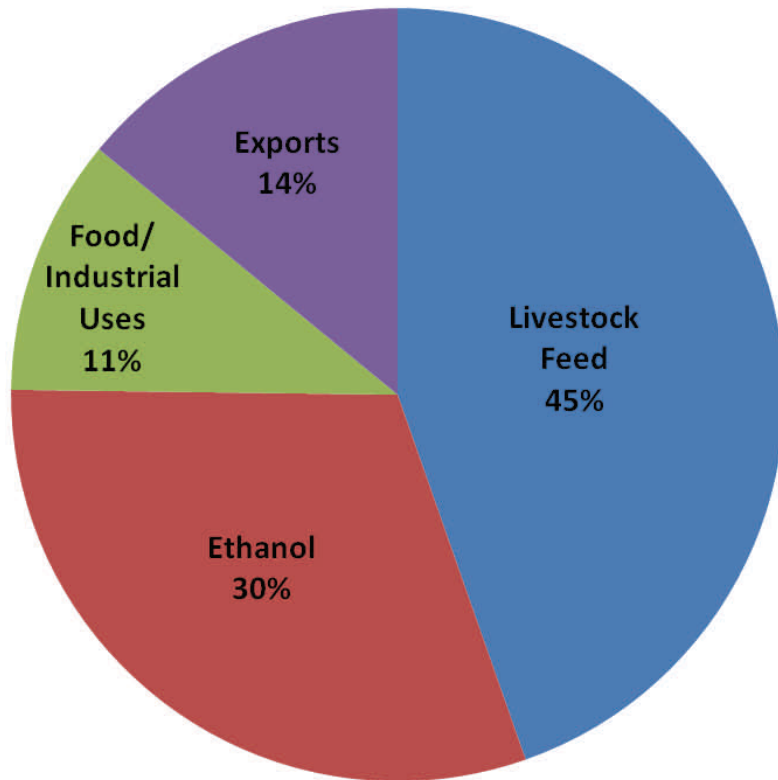
8th Grade: 3.8.01, 3.8.02, 3.8.03, 3.8.04, 3.8.05, 3.8.06, 3.8.07, 3.8.08, 3.8.09, 3.8.10, 3.8.11, 3.8.12, 3.8.13, 3.8.30, 3.8.31, 3.8.32, 3.8.33, 3.8.34, 3.8.35, 3.8.37, 3.8.38, 3.8.39, 3.8.40, 3.8.41, 3.8.42, 3.8.43, 3.8.44, 3.8.45

****Uses of Corn Math Activity (5-8):** For middle school or junior high students (grades 5-8), you can use the “Uses of Corn Math Activity” sheet which goes over percentages, fractions, as well as the four common operations. The activity has students look at how much corn is used for different industries and compare those to each other. For this activity, you will also need “Uses of Field Corn” handout that has a pie chart as well as a table with information that students will need to complete the activity.

Illinois Learning Standards: 6.A.3, 6.B.3a, 6.C.3a, 6.C.3b, 6.D.3, 10.A.3a, 3.A.3, 3.B.3a

Illinois Assessment Frameworks: 6.5.04, 6.6.04, 6.7.03, 6.8.03, 6.5.07, 6.5.08, 6.5.09, 6.6.07, 6.6.08, 6.6.09, 6.7.05, 6.8.06, 6.5.12, 6.5.13, 6.6.12, 6.6.13, 6.6.14, 6.7.08, 6.8.09, 3.5.01, 3.5.06, 3.5.08, 3.5.10, 3.6.01, 3.6.04, 3.6.06, 3.6.08, 3.6.10, 3.8.01, 3.8.04, 3.8.06, 3.8.08, 3.8.10

Uses of Field Corn



Use	Amount in billion bushels
Livestock Feed	5.4
Ethanol	3.7
Food/ Industrial Uses	1.3
Exports	1.7
TOTAL	12.1

Various Products Made from Corn

- toothpaste
- rubber tires
- medicines
- vitamins
- makeup
- soap
- pudding
- soup
- baby food
- powdered sugar
- batteries
- diapers
- plastic toys
- paint
- wallpaper
- cookies
- cakes
- pies



- chips
- pretzels
- corn on the cob
- canned vegetables
- frozen corn
- crayons
- pop
- fruit drinks
- cereal
- salad dressings
- ice cream
- crackers
- yogurt
- mustard
- ketchup
- pickle relish
- gum
- gas
- jelly
- peanut butter



Uses of Corn Math Activity

Directions: Use the "Uses of Field Corn" handout to do the following math problems that relate to the uses of field corn. You will have to figure out percents, fractions, as well as add and subtract. Good Luck!

1. First, begin by figuring out the percentages for each use of corn using the chart given.



Livestock Feed

Ethanol

Food/Industrial Uses

Exports

2. Which uses more corn, exports or food uses? _____
3. How many more bushels of corn does ethanol use compared to exports?

4. Which category uses more corn than ethanol and food/industrial uses combined? _____
5. How many more bushels does that category use? _____
6. Using the amount of bushels chart, how many times larger is the livestock feed category compared to each of the other categories (in percents)?

Ethanol

Food/Industrial Uses

Exports



7. Using the pie chart, what fraction represents each category?

Livestock feed _____

Ethanol _____

Exports _____

Food/Industrial Uses _____

8. What fraction of corn is used for food/industrial uses and exports combined?

9. If one million bushels of corn was taken away from livestock feed and used for ethanol, what would those percentages change to?

Livestock feed _____

Ethanol _____

10. Which category do you think will use more corn in the future and why?

Uses of Corn Math Activity

Directions: Use the "Uses of Field Corn" handout to do the following math problems that relate to the uses of field corn. You will have to figure out percents, fractions, as well as add and subtract. Good Luck!

1. First, begin by figuring out the percentages for each use of corn using the chart given.

Livestock Feed	<u>45%</u>
Ethanol	<u>30%</u>
Food/Industrial Uses	<u>11%</u>
Exports	<u>14%</u>

2. Which uses more corn, exports or food uses? exports
3. How many more bushels of corn does ethanol use compared to exports?
2 billion bushels
4. Which category uses more corn than ethanol and food/industrial uses combined? livestock feed
5. How many more bushels does that category use? 400 million bushels
6. Using the amount of bushels chart, how many times larger is the livestock feed category compared to each of the other categories (in percents)?

Ethanol	<u>146%</u>
Food/Industrial Uses	<u>415%</u>
Exports	<u>318%</u>

7. Using the pie chart, what fraction represents each category?

Livestock feed 9/20

Ethanol 3/10

Exports 7/50

Food/Industrial Uses 11/100

8. What fraction of corn is used for food/industrial uses and exports combined?

1/4

9. If one million bushels of corn was taken away from livestock feed and used for ethanol, what would those percentages change to?

Livestock feed 39%

Ethanol 36%

10. Which category do you think will use more corn in the future and why?

Ethanol will use more corn in the future because the government is trying to use more renewable fuel sources so there isn't not as much of a need to import oil from other countries.

****Just make sure they have a thoughtful answer that makes sense and discusses renewable fuels.**

Making Biodegradable Plastic

Follow the recipe to make your own biodegradable plastic from corn and answer the questions below.

Directions:

1. Place a tablespoon of cornstarch in a plastic, resealable bag.
2. Add two drops of corn oil to the cornstarch.
3. Add one and one-half tablespoons of water to the corn oil and cornstarch.
4. Add two drops of your favorite food coloring to the mixture.
5. Seal the bag and knead well to a uniform consistency.

Discussion Questions:

1. What do you notice about your biodegradable plastic?
2. Is your biodegradable plastic the same as the other students? How is it different?
3. What could you make with the biodegradable plastic if you let it harden? (Remember, it will eventually dissolve.)

Heat the plastic in a microwave oven for 20-25 seconds on high power.

1. What happens to your plastic now?
2. Form your plastic into a ball and describe what it will do.
3. Name three things that could be made from corn plastic in the future.

