

Science Trail

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Introduction to the Trail:

You are going to go on a science trail where we will learn how corn and soybeans can be made into fuel. You will get to pick your own ear of corn and start the process to make it into ethanol, a type of fuel that can be burnt in place of gasoline in our vehicles. Also, you will get to pick your own soybean plant and will learn about everything that can be made from soybeans. Lastly, you will go to a grain drying and storage area where you will get to see how farmers dry their corn to make it so it can be used to make ethanol. So get your farmer hats on and let's go to the field! ☺



Stop #1

- Objective** After shelling out soybeans off a soybean plant, the students will make a list of by-products that come from soybeans.
- Activity** Each student will pull a soybean plant out of the ground at the roots. They will then take that plant and shell out all the soybeans to see what soybeans look like. After they have done this they will make a list of the different by-products that come from soybeans. (They should know a few from class discussions at school.) If this list doesn't include Soy-Biodiesel the teacher should add it and talk about how soybeans can be used to make a type of oil called soy-oil. This oil can then be used to make a type of diesel fuel which is used in tractors and big trucks.
- Assessment** Students will be held accountable by handing in their list of by-products to the teacher.



Stop #2

- Objective** Given the necessary materials at the corn field, the students will shell enough corn to smash as if they are completing the first step of creating ethanol with 100% accuracy.
- Activity** Each student will individually pick one ear of corn and shell it into a small pan. Once they have it completely shelled the teacher will ask them to name some of the by-products of corn that they talked about in class. Once they have named several by-products, they will smash the corn into a very fine powder. This is the first step in turning corn into ethanol. A short mini-lesson will then be taught on how corn is turned into ethanol. The remainder of this lesson will be taught at the grain set-up. The lesson will include a poster that shows major steps that take place.
- Assessment** Students will be held accountable for this objective and the second objective with the culminating activity at stop number three.



Stop #3

- Objective** After a discussion about a grain set-up, the students will draw a diagram of the steps corn goes through from the field to the ethanol plant with 80% accuracy.
- Activity** Before the students do their activity at the grain set-up, they will first have a short mini-lesson or review session (depending on whether the material was taught before arriving on the farm in the classroom.) This lesson will go over the steps of what happens to corn at the grain set-up. (Transferred into wet storage, dried, transferred into dry storage, and then hauled out to the ethanol plant.) After this mini-lesson, the students will draw a diagram showing all the major steps that take place between the harvesting of the corn and the production of ethanol using the corn harvested.
- Assessment** Students will be held accountable for both the objective from this stop and also the one from the stop before at the corn field. The diagram they draw here at the grain set-up will include the steps that take place at the corn field. These diagrams will be handed in following the activity at the grain set-up.