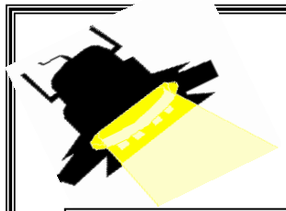

Career Spotlight

Food Engineer - Food engineers are employed by food companies and government agencies to analyze the process of manufacturing food. They look at regulations and apply them to food systems in addition to creating new and enticing food creations.

Future FEs Take:	**How Food Engineers Benefit Agriculture:**
• Food Science • Health	• Norman Borlaug and the Green Revolution • Use products from farms in their work

Farm Facts

Sugar is added to chocolate liquor to make chocolate…

- Sugar cane and sugar beets are grown in the US as a source of sugar.
- Sugar cane stalks can reach 30 feet high!
- Some plants make their own sugar—when a banana ripens, it changes starch into sugar, making it sweeter

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From Pod to Candy Bar

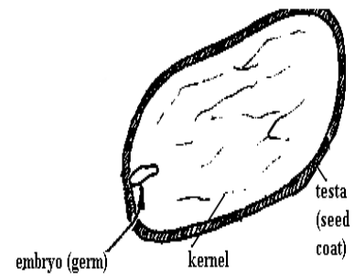
Many foods that you eat grow within pods. Pods are the containers that grow from the plant and hold the seeds. Soybeans, vanilla beans, and cocoa beans used in chocolate candy bars grow within pods. The main ingredient for chocolate is the cocoa bean, which grows in a pod.

The cocoa bean comes from the cocoa tree, which is grown in tropical climates. Most trees are located twenty degrees north or south of the equator, which is sometimes called the "Cocoa Belt". The pods are brownish yellow in color and contain about 20-40 seeds. The pods are cut from the tree and the seeds are removed to begin the process of becoming chocolate.

After the pods are removed from the trees, the seeds are removed from the pod and laid out in the sun to dry. After several days the beans are ready to be packed up and shipped to the factories. Many cocoa beans arrive in factories around the world every day. At the factory the first step they undergo is roasting. The beans are roasted at a high temperature for a short time. Next the beans will move to the winnowing machine, which removes the outer shell. The cocoa nibs, which are used to make chocolate, are left behind.

After this the nibs get ground up and turned into a chocolate liquid, called "chocolate liquor". Milk and sugar are added to the mixture and stirred until smooth. Other ingredients will be mixed into the chocolate to make your candy bar!

Seed Part	Purpose
Embryo	The living part of the seed that becomes the new plant
Kernel	The inner part of the seed that provides food for the embryo
Seed Coat	The hard protective covering



What Do You Remember?

Draw and Label the parts of the Cocoa Bean

Embryo
Kernel
Seed Coat

Using the front page for help, put the steps in order, from pod to candy bar.

Pod

_____ Beans are removed from the pod and laid out to dry.

_____ Milk and sugar are added to chocolate liquor.

_____ Shells are removed by a winnowing machine

_____ Cocoa pods are harvested from the cocoa trees.

_____ Cocoa nibs are ground and turning into liquid called chocolate liquor.

_____ Cocoa beans are roasted.

_____ Dried beans are shipped to factories.

_____ Cocoa beans grow in pods on a cocoa tree.

Candy bar

Melting times

Directions:

1. Take 3 small pieces of chocolate that are the same size and place each on an individual paper plate.
2. Place each in a different location- outside in the shade, in the sun, on a sunny windowsill, or any place it may melt or soften.
3. Check each plate every 30 minutes.
4. Record the time that it takes for each to melt. If it doesn't melt record the time it took for it to soften.
5. Record all observations in the chart below.

Location			
Did it melt (Yes or No)			
If it melted, how long?			
If it softened how long?			
Other Observations:			

- What location melted the fastest? Why?
- Which location melted the slowest? Why?