TOPS AIM Community Garden Lesson - Planting Cold Weather Veggies (Spinach-Carrots-Lettuce)

Why don't cold weather crops freeze?

Cold hardy plants acclimatize by shifting the contents of their cells and changing how they make their energy or by altering their metabolic processes as temperatures drop. Water content is shifted out of cells so freezing crystallization is done outside of the cell. Protective stress induced proteins that alter enzyme function in cold are expressed. They have special antioxidants that are are expressed. They also have special genes to regulate acclimation and de-acclimation as the plant goes into winter dormancy and comes out of dormancy.

Fun facts about cold loving veggies

Carrot Fun Facts

- Carrots are a root vegetable that originated in Afghanistan. They were purple, red, white, and yellow, but never orange.
- They are a member of the Umbelliferae family, which also includes celery, parsley, dill, cilantro, caraway, cumin, and the poisonous hemlock.
- Both the Ancient Greeks and Romans cultivated carrots.
- China, Japan, and India were cultivating carrots by the 13th century.
- In the 16th century, Dutch carrot growers invented the orange carrot in honor of the House of Orange, the Dutch Royal Family. They did this by cross breeding pale yellow carrots with red carrots.
- Newly orange, carrots traveled England with Dutch travelers during the reign of Queen Elizabeth I.
- The carrot soon caught on in England as both a food and a fashion accessory. Ladies would often use carrot tops to decorate their hats.
- The settlers at Jamestown in 1607 introduced carrots to North America.
- China is the world's top carrot producer. The country produced 35 percent of the world's carrots in 2004. Russia is the second top producer and the United States the third.
- Carrots ranked as the seventh most valuable crop produced in the United States in 2004.
- California is the top fresh carrot producer in the United States, while Washington is the top

producer of carrots meant for canning and other processing.

- Carrots are about 87% water.
- Orange carrots get their color from beta carotene.
- They have more beta carotene than any other vegetable. One cup of carrots has 16,679 IU of beta-carotene.
- Eating too many carrots can cause a person's skin to turn yellowish orange, especially on the palms or soles of the feet. This is called *carotenemia*. It is completely reversible once the consumption of carrots is reduced.
- One cup of raw carrots contains about 52 calories.
- The longest carrot ever recorded was nearly 17 feet long.
- The largest carrot ever recorded weighed 18.985 pounds.

Spinach Fun Facts

- Spinach is a native plant of Persia (modern day Iran). It was introduced to China in the 7th century. It was most probably brought to Europe in about the 12th century and to the US in 1806.
- Spinach has an undeserved reputation for being high in iron. In 1870, Dr. E von Wolf measured the iron content of spinach, but placed the decimal point in the wrong position. This overstated the iron content of spinach ten-fold. The mistake was not discovered until 67 years later, by German chemists. The myth of the high iron content of spinach is still being wrongfully yet widely circulated today.
- Oxalate, found in spinach, may cause kidney stones in some predisposed individuals. Not all kidney stones are oxalate based. People who suffer from kidney stones should check with their medical practitioners as to whether oxalate is a factor in their condition and therefore whether they should eliminate spinach from their diet.
- Spinach is best eaten fresh. It loses nutritional properties with each passing day. Although refrigeration slows the deterioration, half of the major nutrients are lost by the eighth day after harvest. (For long term storage, freeze while fresh.) When fresh, it has crisp leaves. As they deteriorate, the leaves turn limp.
- "Florentine" is a common part of names of recipes where spinach is a significant ingredient. Florence in Italy was the home town of Catherine de Medici, a lover of spinach, who married the King of France in the 16th century.
- In the 1930's U.S. spinach growers credited Popeye with a 33% increase in domestic spinach consumption - a welcome boost to an industry during the depression era.
- The spinach growing town of Crystal City, Texas, erected a statue of Popeye in 1937.
- 'Birds Eye' was the first company to advertise frozen spinach. It did so in "Life" magazine in 1949.

- California is today the US's #1 grower/supplier of spinach, accounting for almost three quarters (3/4) of national production. Other spinach-growing states include Arizona, New Jersey, Texas, Colorado, Maryland and Arkansas.
- In 2005, the national yield of commercial spinach was approximately 350,000 tons and is growing annually.
- In March 2005, Bon Appétit magazine's annual survey showed that 56% of respondents said that spinach was their favorite vegetable.
- The U.S. is only the world's second largest producer of spinach, producing a mere 3% of global production. China is the world's largest spinach producer with 85% of global production.
- Spinach grows best in cool (not freezing) moist conditions, such as spring and autumn, and grows well in sandy soils.
- Spinach leaves are a mild diuretic and mild laxative.
- Medieval artists extracted green pigment from spinach to use as an ink or paint.

Fun with Adhesive: Aluminum Duct Tape Garden Markers- Make the Garden Beautiful.

Instead of using the mirrors, this time we're doing mirror writing!

Have students plant an annual or a perennial, and then create a marker for it!

Traditional Copper garden markers range widely. Fancy shops sell beautiful hand pressed picks for $2.50 each, and alternatives in seed catalogs are selling at 50 for $12.00. Not bad, but students can easily make several hundred, for about $5.00 using plastic knives and aluminum duct tape.

Materials

Aluminum Tape: This can be found in the hardware store. It is traditionally used to seal the seams between ductwork and ventilation units. It is super sticky and waterproof. Runs around $5.00 for an 50 yard roll. You can also buy copper tape at the hardware store, closer to the electrical section, but it comes a little more expensive and I have not found the adhesive to be as sticky as I like it. You try and see for yourself.

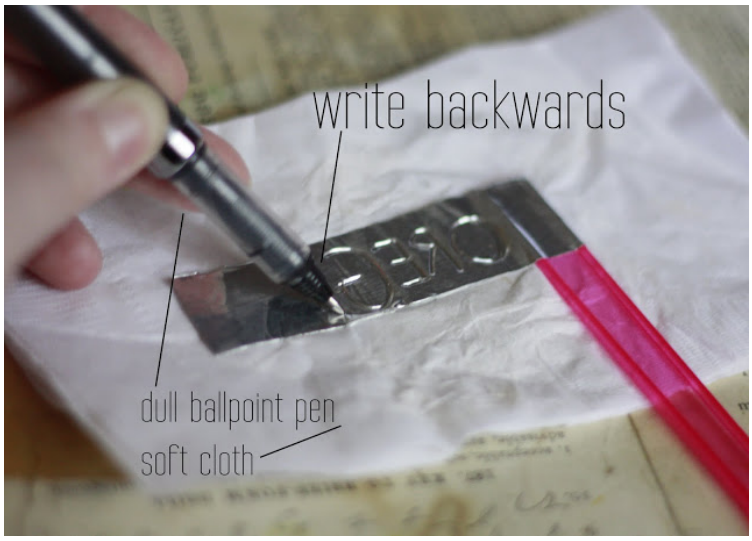
Important: This needs to be aluminum duct tape, not just silver duct tape -- these are two different things. The aluminum duct tape is made from thin strips of metal sheeting and has removable paper backing.

Plastic Knives or craft sticks

Options: Printouts of plant names backwards to help students

Dull ballpoint pens or pencils

Have students Start by slicing your tape to size and sandwich the dull end of the knife or craft stick in between. The tape is *very* sticky, so don't have students use good scissors.



Have them use the pen or pencil to write the plant name backwards. This might take a little practice on scratch paper first. (Printouts of words written backwards may help some students)

Now they can flip it over and admire their work. The letters may be a little wonky, but reverse embossing like this is impressive!

Now they can stick it in place by their plant. Have them stand back and admire their handy work.

Mini Carrot Piñatas (These look like jalapenos but don't be fooled. Make them into carrots.)

Modeled after traditional piñatas, these personal-size candy holders tear open easily, revealing a cache of seeds inside (just like real veggies and fruits). And since they're a cinch to put together, they make great garden gifts.

What you'll need

- Toilet paper tubes or card stock
- Tissue paper (green)
- Paper streamers in orange for carrots.
- Scissors
- Glue/Tape
- Candies, fruits, nuts or seeds, ex. chocolate covered sunflower seeds

How to make one:

1. 

Make a cut along the length of a toilet paper tube, then roll the cardboard or cardstock (in the same approximate size as a toilet paper tube) into a cone and secure it with tape. (this will create your template).

2. 

Roll the cone in green tissue paper, taking care to fully cover the tip, and tape the tissue paper in place.

3. 

Remove the cardboard or cardstock template and fill the paper cone with small candies.

4. 

Tightly twist closed the top to create the chili's stem.

5. 

For the fringe, accordion-fold a 25-inch length of red paper streamer and cut slits ¼ inch apart along one side, stopping ¼ inch from the edge.

6. 

Unfold the streamer and place the chili's bottom point at one end of the fringe. Slowly wrap the fringe around the chili in a tight upward spiral, sticking it in place with a glue stick as you go. Trim any excess fringe and allow the glue to dry. Come fiesta time, partyers can simply tear the tissue paper to break open the piñata.