

NAME: _____

Aligned to the following standards:
CS.02; CS.04; FFA.PL-A; FFA.PL-F; FFA.PG-J; AG2; AGC10.04; CCSS.RI.9-10.4; CCSS.SL.9-10.2; MP2; MP5; MP6; CRP.02; CRP.04; CRP.05; CRP.06; CRP.07; CRP.08

Appendix 5: I Can Grow Food Without Soil?

Created: Winter 2018 by the National FFA Organization

DIRECTIONS:

Watch the video "Hydroponics—A Short Introduction" and complete the following activities. The video is available at <https://youtu.be/Y7cGd0JHrs4>.



Hydro



Ponos



HYDROPONICS

What do plants rely on instead of soil?
(Hint: It is found in the water.)



(Draw a picture)

What are the benefits of replacing soil? Circle all that apply.



What is conventional farming?



Compare and contrast hydroponics and conventional farming in three sentences or more.

Describe why hydroponics can be such a powerful resource for food production.



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Appendix 6: Climb out of the Box ... or Is It In?

DIRECTIONS:

Read the article "Out-of-the-Box Agriculture" in the Winter 2018 issue of *FFA New Horizons*. Once finished, complete the following activities.

Bryan High School took advantage of the materials and resources they had to create and develop a hydroponic system that works for them. Utilizing the website <https://www.greenandvibrant.com/hydroponic-gardening>, design a hydroponic system that would work at your school.

1. Type of system: _____
 - a. Why? _____

2. Where will this system be housed at your school? _____

3. Growing media selected: _____
 - a. Why? _____

4. pH needed: _____

5. Grow light selected: _____
 - a. Why? _____

6. Select two types of plants to produce: (1) _____ and (2) _____
 - a. Why did you select these plants? _____

7. Draw your finished hydroponic system. Include colors and labels.

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Appendix 7: Putting Our Knowledge to Work

DIRECTIONS:

Create your own hydroponic system in a two-liter bottle by following these instructions. You will use the table below to keep track of your plant's growth.

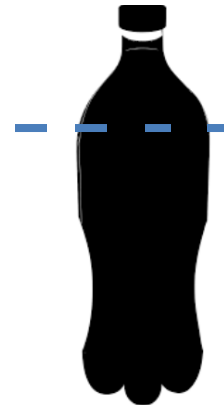
Materials Needed:

- Clean 2-liter bottle
- Growing medium (Ex: perlite)
- Wicking material (felt or cotton material)
- Drill with bit
- Box cutter
- Duct tape
- Seeds (lettuce and herbs do well)
- Aluminum foil
- Warm, sunny environment



Directions:

1. Clean your bottle and remove label.
2. Drill a hole in the center of the cap.
3. Cut the plastic bottle at the "shoulder."
4. Thread your wick through the cap so that it can reach into the top as well as reach the nutrient solution.
5. Mix your nutrient solution, and place it in the bottom of the bottle.
6. Flip the top portion of the bottle over and set it in the bottom portion with the cap inside the lower part (see picture above, next to the materials).
7. Add two pieces of duct tape to hold the top and outer wall together if the plastic is flimsy. You do not want the top to fall into the water below!
8. Place growing medium in the top half of the bottle, making sure the wick is stretched throughout,
9. Plant your selected plants in the growing media,
10. Wrap aluminum foil around the bottle.



**Original concept adapted from Bottle Biology.

Date	Plant Height	Additional Notes:

What conclusions can you draw about hydroponics after completing this activity?
