

Middle School Ag. Challenge

Featuring 3-D Vertical Farms

The attached packet outlines the scoring of the vertical farms with a total of 70 points.

Please evaluate the student for their oral and non-verbal communication skills and ability to respond to questions with a total of 30 points.

Add the totals together to formulate their final score.

The contestants will not be given a first, second, third placing.

The Advisor wishes to present them with a gold, silver, bronze standing based on what the judges determine.

Thank you,

Vertical Farm Baltimore

FFA 3-D Vertical Farm Ag Challenge

Project Requirements

Purpose of Project:

Vertical Farming activities are becoming a reality in small and large cities. Currently over ½ of all people on earth live in cities and rely on traditional farming methods to produce food to meet their needs. New ways are being looked at to provide food economically to people living in cities. This project will explore the concept of vertical farming in cities and provide students an opportunity to develop a building designed for vertical farming out of recycled items at home. Students are expected to use recycled materials around the home and are NOT expected nor encouraged to purchase special items to complete the project. Students are building a model out of various items that will 'represent' real-life structures and plants. *It is not a working model!*

On the day the projects are due we will be doing an activity exploring each of the designs and each student will complete a self-evaluation before the teacher grades the project. Do not wait for the last day to work on this project. Time is being given to do a little bit each day. A quality project takes time and can't be rushed.

Use resources: You may use the following terms for doing an Internet search for ideas of vertical farm designs: Vertical Farming, Urban Farming, Vertical Gardening. We also have a book on vertical farming in the school library that can be checked out.

Due date for vertical farm project:

All vertical farm projects must be brought in on the designated date. Any projects turned in late will receive a reduction in points earned. Any projects turned in over a week late will not be accepted for credit. If you are absent from school on the due date, then it is due the next day you are in class for full credit.

Set by the teacher

The Ag Challenge will be at the FFA Spring Judging Contest

Grading Scale for each of the Criteria Elements:

Each of the elements of the design will be graded using the following scale. Grading is based on the quality of the finished product which includes neatness and accuracy. The project is worth a total of 70 points and the oral presentation and question is 30 points for a total of 100 points.

- 5 - **Outstanding** – work is neat, accurate, high quality and exceeds basic standards
- 4 - **Very Good** – work is well done and meets basic standards
- 3 - **Good** – work is completed, average quality, and meets basic standards
- 2 - **Unsatisfactory** – poor quality on work completed and/or standards partially met
- 1 - **Poor** – very poor quality work, and/or none of the standards
- 0 - Did not compete or include in design

*An extra credit point may be given on an area if the teacher feels the students has excelled far beyond expectations in completing the requirements.

Grading Criteria Requirements

1. Structure (10 points total)

Size: 5 points

- The highest point on the project when measured from the top of the base to the highest point of the building should be no taller than 2 feet. *This is to insure easy transport of your project into the school.*
- The building should not extend beyond the base of foam core provided, which is 9" x 9". If you choose to used an alternate base, you may, but it must be 9" x 9". *The building needs to be SMALLER than the base to allow room around the OUTSIDE of the building for the required landscaping.*
- The building should have a minimum of three '3' levels or floors inside the building. The roof of the structure does not count as a level.

Sturdiness of Design: 5 points

The building should be securely attached to the base and be sturdy enough to move without the building or pieces of the building collapsing or falling off. *Note: Hot glues are not always the best glue to use an can come apart with changes in temperature – especially for the structure itself.*

What recycled materials can I use for my structure?

2. Growing Area (10 points total)

Plants / Crops: 5 points

A minimum of three different types of crops must be shown growing in the growing area and they must be labeled so anyone looking at the model knows the type of crop. Crops that would typically be found in a vertical farm building would be vegetables and fruits. Try to select materials which when completed with in some way represent the plant you are including in your design.

What recycled materials can I use to represent plants?

Planting Beds: 5 points

All plants and crops are planted in some type of planting beds or containers. Soil would not be placed on the floor of a building to grow plants. A suitable container must be shown.

What recycled materials can I use to represent planting beds?

3. Public Area in Building (5 points total)

Farmers Market or Restaurant: 5 points

Since the products grown or raised in this building are to be used for human food, you will need to design a farmers market or restaurant so people can go to the building the purchase the food products that were grown in the building. For ease of access to the general public, this should be located on the first floor of the building. This area should showcase the products grown in your vertical farm.

What recycled materials can I use for making a farmers market or restaurant?

4. Power (10 points total)

Source of Power on outside of building: 5 points

An energy efficient building is a must when looking at designs for future buildings. Your building should show on the outside of the building how it will generate energy – wind power or solar power would be the best way to show this. It should be labeled.

What recycled materials can be used for making the exterior power source?

Growing Lights: 5 points

Plants need plenty of light to grow so you need to include grow lights above the planting beds inside building for planting beds. Other lights should be shown as needed in a building

What recycled materials can be used for making the exterior power source?

5. Water (10 Points total)

Source of water for building: 5 points

The building should include a collection system for capturing rainwater to be used in the building for helping in reducing water usage for growing plants.

What recycled materials can be used for making the exterior water source?

Water Continued:

Irrigation for plants in planting bed: 5 points

You will need to show how the water will get from the exterior collection system to the planting beds. Some type of an irrigation system should be

What recycled materials can be used for making the irrigation system?

6. Exterior Landscaping (10 Points total)

Hardscape: 5 points

The hardscape or structural elements of the landscape surrounding the building must include the following items:

- Appropriate walkways – there should be sidewalks going all the way around the building as well as a sidewalk to the main entrance of the building.
- Bench(s) – there should be one or more benches to people can rest and relax in the landscape.
- Building Sign – there should be a sign place near the entrance naming the building and helping people know why they should visit the structure.

What recycled materials can be used for making hardscape items?

Softscape: 5 points

The softscape must include the plant materials to add decoration and functionality to the landscape. You must include ALL of the following: trees, shrubs and flowers.

What recycled materials can be use for making softscape items?

7. Creative use of materials and building style: 5 points

This is a subjective grade by the teacher on how creative the student designer was in completing the project in both design of the building and the materials used for each part.

8. Overall Effectiveness of Project Design: 5 points

This is a subjective grade by the teacher on the overall effectiveness of all the design elements working together to create an attractive and functional design.

9. Artist Statement: 5 points

Your artist statement should be typed on fit on single sheet of 8 ½ x 11 piece of paper and turned in with your project. The statement must include:

- a. Your name and school
- b. The purpose of your project (tourism or food production)
- b. A written description of your project and why you chose your specific crops you chose
- c. A description of your method for delivering your food to the public (restaurant or food market)

10. Oral Presentation and Questions by Judges: 30 points

Use judging criteria for creed contest.

Key points to remember

- Have fun with this creative project
- Don't purchase items – recycle items around your home
- Complete the project on time
- Remember all the requirements
- Don't wait till the last minute to work... do a little bit each night

3-D Vertical Farm Model Grading Rubric

Grading Scale for each of the Criteria Elements:

- 6 - **Extra Credit Opportunity** – work far exceeds expectations – exceptional work!
 5 - **Outstanding** – work is neat, accurate, high quality and exceeds all basic standards
 4 - **Very Good** – work is well done and meets all basic standards
 3 - **Good** – work is completed, average quality and meets all basic standards
 2 - **Unsatisfactory** – poor quality on work completed and/or standards partially met
 1 - **Poor** – very poor quality work and/or none of the standards are met
 0 - Did not compete or include in design

Structure

- Size – max of 2' tall and does not extend beyond base, min. of 3 levels 0 1 2 3 4 5
 Sturdiness of design – sturdy and securely attached to base 0 1 2 3 4 5

Growing Area

- Plants / Crops – at least five (5) crops grown 0 1 2 3 4 5
 Planting Beds – plants are planted in planting beds 0 1 2 3 4 5

Public Area in Building:

- Farmers Market or Restaurant so people can purchase food products 0 1 2 3 4 5

Power

- Source of Power on outside of building 0 1 2 3 4 5
 Growing Lights inside building for planting beds 0 1 2 3 4 5

Water

- Source of water for building – collection system 0 1 2 3 4 5
 Irrigation for plants in planting bed 0 1 2 3 4 5

Exterior Landscaping

- Hardscape: appropriate walkways, benches, signs 0 1 2 3 4 5
 Softscape: trees, shrubs and flowers to decorate landscape 0 1 2 3 4 5

Creative use of materials and building style – subjective 0 1 2 3 4 5 6

Overall Effectiveness of Project Design – subjective 0 1 2 3 4 5 6

Artist Statement:

Includes: Name, Section, purpose, description of food chosen and delivery.. 0 1 2 3 4 5 6

Total for Project (70 Pts) _____

Oral Presentation and questions by judges:

Oral communication: pace, tone, volume _____ (10 Pts)

Non-verbal communication: eye contact, gestures, poise _____ (10 Pts)

Response to questions and knowledge of subject _____ (10 Pts)

Total for Presentation (30 Pts) _____

Overall Score _____

NAME _____ Ag Section _____

Award given: (circle) Gold Silver Bronze

Comments:

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.