


Ideas for ECHO Post-Field Trip Activities

Thank you for visiting ECHO Global Farm with your students. This document contains an “Idea Bank” from which you may feel free to “copy and paste” into your own worksheet format, SmartBoard page, or digital document to be projected on a classroom screen. We hope that these materials will support your curriculum and continue the ECHO learning experience after you return to your classroom. 

Math

Gone Fishing

(Source: Inside Echo Newsletter, June 2019)

At ECHO-Florida the annual intern fish harvesting training brought in 246 fish. In four passes with a net, 170 tilapia (80 pounds) were harvested from the Duck Pond along with invasive species. Forty-six tilapia (35 pounds) were harvested from the aquaponics system (in the Appropriate Technology Center).

What was the combined total of tilapia from both systems?

What was the total number of pounds of tilapia from both systems?

How many fish could not be used from the harvest?

What was the percentage of fish that could not be used from the total harvest?

What are some possible reasons why they were not used?

Why would it be important for ECHO-Florida to keep track of this percentage from year to year?

Which system produced the largest size fish? Prove it by showing your calculations.

What factors might have contributed to the differences in fish weight between the two systems?



Aquaponics system at the Appropriate Technology Center, ECHO-Florida June, 2019

The black covering over the fish tanks is shade cloth that protects the fish from the summer sun.

Water from the fish tanks is pumped through filters and then into the hydroponic growing beds. The plants remove the nitrogen from the water, and then it is pumped back into the fish tanks.

Science – Experimental Design -Activity 1

(Source: Inside Echo Newsletter, June 2019)

ECHO-Florida initiated a multi-year gliricidia intercropping trial. Researchers are trying to determine if the shade produced by gliricidia trees, spaced six meters apart, will affect the yield of maize and cowpea crops over time. Alternating rows of maize and cowpea were planted. The experimental design included the following: maize and cowpea planted under widely-spaced gliricidia trees, maize and cowpea planted under 30% shade cloth, and maize and cowpea alone. *(The description of the study has been modified for middle school classroom use.)*

What is intercropping? (See photos of plantings in other countries, below).

What are legumes?

Which plants in this study are legumes?

Why are legumes frequently used for intercropping?

Questions continued below images-

Images are from plantings in other countries.

Gliricidia-Maize intercrop



Fig. 2a. Coppiced fertiliser tree (Gliricidia)-maize intercrop. Fig. 2b. Coppiced fertiliser tree (Gliricidia)-maize intercrop at harvest



https://www.google.com/search?q=gliricidia+intercropping&tbs=isch&tbs=ring:CQ11pJzv28tOlijHagbuQBz8XEaQy--NZSGn183-CDBLkjemniUnfMa9DyYPufcgC0g-d2w9XaAiQ183--4oa4CavioSCYdqBu5AHPxcEUGOE8D2K6hEKHJRpDL741llacRb2t1BLwog6iqEgnXzf4IMEuSNxE-RA4KQHMKTIoScaaeJsD8xr0PEXvAArVSDy_1bKhIJg-59yALSD4RzMbYCFxLdiwqEgl3bD1doCjDXxHwoohSIIY7oSoSCTf77ihrgJrKERpj7XBWkN0&tbo=u&sa=X&ved=2ahUKewj7pP6uuN3iAhWEm1kKHekTDX0Q9C96BAgBEs&biw=1517&bih=748&dpr=0.94#imgrc=6MynOtg1ajX-VM: (Image source)

Cowpea-Maize Intercropping



https://www.google.com/search?q=images+cowpea+intercropping&tbs=isch&source=iu&ictx=1&fir=Avqn73Y3l8tF6M%253A%252C0loZLzqV3fePxM%252C_&vet=1&usg=AI4_-kQTbDKXeftbBnFoz-76SNBkBMkotw&sa=X&ved=2ahUKewie0fmd3eHiAhVH1VkkHTOoDR0Q9QEWa3oECAcQCg#imgrc=Avqn73Y3l8tF6M: (Image source)

Questions continued:

Why is 30% shade cloth being used in one plot with maize and cowpea?

Why are only maize and cowpea planted in the third plot?

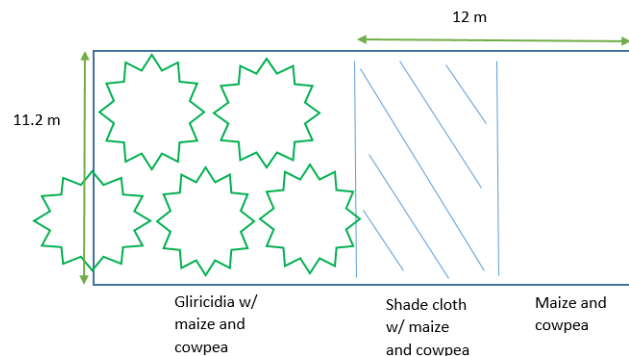
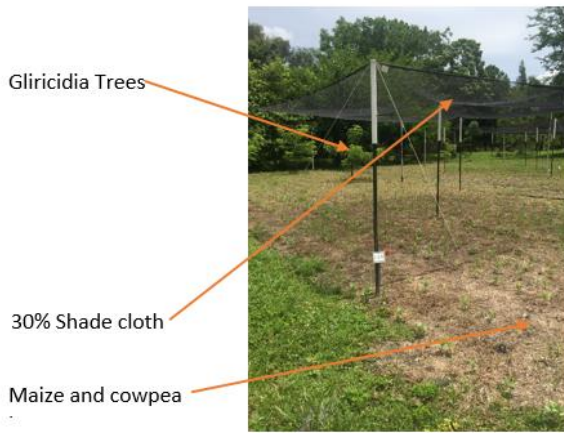
Discuss the experimental design: investigative question, variables

Using the description of the study, design an experimental plot map. Compare your completed map with the actual field trial (photos and map below).

In a spacious area on your school campus, measure out a distance of six meters, the spacing of the gliricidia trees. A research plot includes two rows of trees (5 total) and an additional 12 meters for the shade cloth with maize/cowpea and maize/cowpea alone. Try measuring out this area.

Research other uses for cowpea and gliricidia.

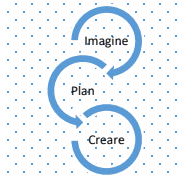
Newly planted research plots at ECHO FL June 2019



Science – Experimental Design -Activity 2

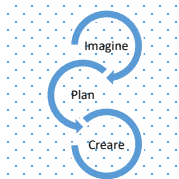
ECHO-Asia Regional Impact Center would like to set up a study comparing the growth performance of pigs fed with fermented banana stalk silage and pigs fed with commercial pig food as a supplement to their regular forage (farm harvested plants) diet.

(Source: Inside Echo Newsletter, July 2019)



Design an experimental study comparing the effect of these two diets on pig growth. Include a description of the study, investigative question, variables, charts for recording data, etc.

<https://www.echonet.org/the-echo-update-blog/raising-hogs-on-banana-silage-in-myanmar>



Design your own experimental study to evaluate the effectiveness of two farming techniques which ECHO uses on the Global Farm.

Science / ELA – Farm Animals (Elementary level)

During the ECHO tour, you saw several members of the animal kingdom which play an important role on small-scale farms. Use the chart below to list ways they help.

<u>Ways they help</u>	Produce manure for fertilizer/compost	Clear fields, till soil, consume unusable plant material	Produce fur or feathers	Foods they provide	Animal products to sell	Pollination
Pigs						
Goats						
Sheep						
Rabbits						
Worms						
Tilapia						
Ducks						
Chickens						
Bees						

Use the information from the chart to complete one of the activities listed below:

- Write a story about a tropical farmer, and tell about his/her animal helpers.
- Compose a poem about animal helpers on tropical small-scale farms.
- Create a poster or mural about animal helpers and what they do at ECHO.
- Design an illustrated brochure or information sheet describing “How to Raise” your favorite farm animal. Include information on food, shelter, exercise, veterinary care, and ways in which a farmer could benefit by raising the animal.

ELA

ECHO-Florida intern, Elena in Tanzania, wrote about how many Tanzanians own land that is not optimal for farming. “The best land has been taken for development and poor farmers are left with the marginal, sometimes barely inhabitable, land... steep slopes, erosion, infertile soil, and lack of water. All of these things create immense challenges for farmers who depend on the land for their health and even survival.”

(Source: Inside Echo Newsletter, June 2019)

From what you have observed during your field trip to ECHO, write a letter to Elena describing three farming techniques or ideas that you think would be most helpful to improve the lives of these farmers and their families.

ELA

“Forests precede a civilization, deserts follow.” François-René de Chateaubriand

Using this quote as a thesis statement, support or refute it based on evidence that you have gathered during the field trip to ECHO.

Social Studies

<https://www.echonet.org/where-we-work>

ECHO operates Regional Impact Centers (RIC) strategically located around the world to bring much needed agricultural resources within reach of the small-scale farmers that need them. Regional Impact Centers are located in the following areas:

ECHO-Asia RIC - Chiang Mai, Thailand

ECHO-East Africa RIC - Arusha, Tanzania

ECHO-West Africa RIC - Ouagadougou, Burkina Faso

ECHO-Florida - International Headquarters and RIC for Latin America and Caribbean – North Fort Myers, Florida

Using a [world map](#), find the latitude and longitude coordinates of each RIC.

For the [country](#) in which each center is located, find the following information: (modify for your grade level)

- Climate
- Geography
- Type of government
- Major religions
- National language
- Etc.

Using the information above, write an essay comparing two of the countries where Regional Impact Centers are located.

Design an illustrated travel brochure describing the country and city of one of the RIC locations. What important facts would a visitor like to know?

	Thailand	Tanzania	Burkina Faso	United States
Climate				
Geography				
Type of Government				
National Languages				
Major Religions				

ART

Using the information from the essay, create an illustrated poster comparing two of the countries where Regional Impact Centers are located.

<https://www.echonet.org/where-we-work>

Illustrate an area of the Global Farm and show at least one technique or idea that was used to help small-scale farmers.

Construct a diorama depicting one area of the Global Farm and show at least one technique or idea that is used to help small-scale farmers.

