George Washington Carver – An Original Conservationist

Lesson 2 - Sharing the Soil - Teacher Instructions

The background information about sharecropping and soil depletion are included in the student assignment sheet.

Primary Focus
In your class discussion you should focus on the need for nutrients (primarily nitrogen, phosphorus and to some extent potassium) by plants as they grow. You can also extend the discussion to explain the impact of the lack of these nutrients on the health of a plant and on the ability of land to be used repeatedly for the same plant.

Students need to understand soil must be replenished to be useful. Some good analogies to help them understand may be:

- Reusing the same piece of paper over and over after erasing and rewriting. Eventually the paper will rip and tear or you won't be able to read what you wrote, and you will need to get anew sheet of paper
- Wearing a hole in the bottom of your shoe or in an article of clothing because of wearing them too much
- Gasoline in a car - eventually you run out and have to refill the tank or your car won't be able to go anywhere

Option 1: Pamphlet

The activity is written to be done individually by students. Their end goal is to create a pamphlet or brochure that could be used for farmer education.

Option 2: Mini-Project

Instead of doing a pamphlet, students could create a digital presentation of the information which may be presented in class.

Option 3: Problem Based Learning

This assignment could be used as a part of an ongoing PBL. This assignment could be given to a group of students to create a presentation about one of Carver's ideas for the improvement of agriculture. You could also expand it to ask students to research the crops grown in soil locally and the impact those crops have on soil.

Accommodations for younger or lower level students

To simplify the assignment for younger students, lower level students or to fit a different time frame the questions can be changed or reduced to only those bolded below or focus on one or two crops.

Pamphlet Directions

1. Take 3 pieces of blank paper and fold them to make a booklet (hamburger style).
2. Staple the folded edge 2 or 3 times to hold the papers together.
3. Starting with the cover number each page in the bottom outside corner (away from the fold).
4. Add information to each page as follows (Remember to be neat, organized and creative)

Page 1 - Cover

1. Make a title for your booklet and write it in the center of the page (you can come back to this after you have done the rest if you want to think of a creative title).
2. At the bottom of the page write your name, the date, the class period

Page 2 – Cotton

1. **What is cotton?**
2. **Describe the type of plant (is it a tree, a grass, a shrub, etc.)**
3. **Draw a picture of the plant (be sure not to make it so big you cannot fit the rest of the information on this page)**
4. **Where is cotton typically grown?**
5. What type of weather best suits cotton? (Ex.: dry, lots of rain, rain at the start of the growing period then dry, etc.)
6. How much land does cotton need? (Should plants be spaced out or can they be pushed together)
7. What type of soil is best for cotton?
8. **What nutrient(s) does cotton drain from the soil?**
9. How much cotton does one plant yield? (This is an approximation)
10. **What are the symptoms of cotton being grown in nitrogen poor soil?**
11. **What are symptoms of cotton being grown in potassium poor soil?**

Page 3 - Cotton Uses

1. **What is the primary use of cotton?**
2. **Draw a picture.**
3. **You need to find 3 alternative uses for cotton. [Remember you don't have to focus on one part of the plant (ex. Cotton seed is used as feed for cattle or even to make oil used in cosmetics)]. <u>(<-- to adapt reduce to 1 or 2)</u>**
4. **For each of these uses include the following:**
    a. **The part of the plant**
    b. **A brief explanation of the use**
    c. **A picture of the product created**

Page 4 – Tobacco

1. **What is tobacco?**
2. **Describe the type of plant (is it a tree, a grass, a shrub, etc.)**
3. **Draw a picture of the plant (be sure not to make it so big you cannot fit the rest of the information on this page)**

4. **Where is tobacco typically grown?**
5. What type of weather best suits tobacco? (Ex.: dry, lots of rain, rain at the start of the growing period then dry, etc.)
6. How much land does tobacco need? (Should plants be spaced out or can they be pushed together)
7. What type of soil is best for tobacco?
8. **What nutrient(s) does tobacco drain from the soil?**
9. How much tobacco does one plant yield? (This is an approximation)
10. **What are the symptoms of tobacco being grown in nitrogen poor soil?**
11. **What are symptoms of tobacco being grown in potassium poor soil?**

Page 5 - Tobacco Uses

1. **What is the primary use of tobacco?**
2. **Draw a picture.**
3. **You need to find 3 alternative uses for tobacco. [Remember you don't have to focus on one part of the plant (ex. Tobacco may be used as an insect repellant.)]. <u>(<-- to adapt reduce to 1 or 2)</u>**
4. **For each of these uses include the following:**
    a. **The part of the plant**
    b. **A brief explanation of the use**
    c. **A picture of the product created**

Page 6 – Peanut

1. **What is a peanut?**
2. **Describe the type of plant (is it a tree, a grass, a shrub, etc.)**
3. **Draw a picture of the plant (be sure not to make it so big you cannot fit the rest of the information on this page)**
4. **Where are peanuts typically grown?**
5. What type of weather best suits peanuts? (Ex.: dry, lots of rain, rain at the start of the growing period then dry, etc.)
6. How much land do peanuts need? (Should plants be spaced out or can they be pushed together)
7. What type of soil is best for peanuts?
8. **What nutrient(s), if any, do peanuts drain from the soil?**
9. What nutrient(s) do peanuts replenish in the soil?
10. **How many peanuts does one plant yield? (This is an approximation)**
11. **What are the symptoms of peanuts being grown in poor soil?**

Page 7 - Peanut Uses

1. **What is the primary use of peanut?**
2. **Draw a picture.**
3. **You need to find 3 alternative uses for peanut. [Remember you don't have to focus on one part of the plant (ex. Peanut hulls may be used in paper.)]. <u>(<-- to adapt reduce to 1 or 2)</u>**

4. **For each of these uses include the following:**
    a. **The part of the plant**
    b. **A brief explanation of the use**
    c. **A picture of the product created**

Page 8 – Soybeans

1. **What are soybeans?**
2. **Describe the type of plant (is it a tree, a grass, a shrub, etc.)**
3. **Draw a picture of the plant (be sure not to make it so big you cannot fit the rest of the information on this page)**
4. **Where are soybeans typically grown?**
5. What type of weather best suits soybeans? (Ex.: dry, lots of rain, rain at the start of the growing period then dry, etc.)
6. How much land do soybeans need? (Should plants be spaced out or can they be pushed together)
7. What type of soil is best for soybeans?
8. **What nutrient(s) do soybeans drain from the soil?**
9. How many soybeans does one plant yield? (This is an approximation)
10. **What are the symptoms of soybeans being grown in nitrogen poor soil?**
11. **What are symptoms of soybeans being grown in potassium poor soil?**

Page 9 – Soybean Uses

1. **What is the primary use of soybeans?**
2. **Draw a picture.**
3. **You need to find 3 alternative uses for soybeans. [Remember you don't have to focus on one part of the plant (ex. Soybeans may be used in mattresses.)]. <u>(<-- to adapt reduce to 1 or 2)</u>**
4. **For each of these uses include the following:**
    a. **The part of the plant**
    b. **A brief explanation of the use**
    c. **A picture of the product created**

Page 10 – Sweet Potatoes

1. **What are sweet potatoes?**
2. **Describe the type of plant (is it a tree, a grass, a shrub, etc.)**
3. **Draw a picture of the plant (be sure not to make it so big you cannot fit the rest of the information on this page)**
4. **Where are sweet potatoes typically grown?**
5. What type of weather best suits sweet potatoes? (Ex.: dry, lots of rain, rain at the start of the growing period then dry, etc.)
6. How much land do sweet potatoes need? (Should plants be spaced out or can they be pushed together)
7. What type of soil is best for sweet potatoes?
8. **What nutrient(s) do sweet potatoes drain from the soil?**
9. How much does one sweet potato plant yield? (This is an approximation)

10. **What are the symptoms of sweet potatoes being grown in nitrogen poor soil?**
11. **What are symptoms of sweet potatoes being grown in potassium poor soil?**

Page 11 – Sweet Potato Uses

1. **What is the primary use of sweet potatoes?**
2. **Draw a picture.**
3. **You need to find 3 alternative uses for sweet potatoes. [Remember you don't have to focus on one part of the plant (ex. Sweet potatoes may be used in glue.)]. <u>(<-- to adapt reduce to 1 or 2)</u>**
4. **For each of these uses include the following:**
    a. **The part of the plant**
    b. **A brief explanation of the use**
    c. **A picture of the product created**