

Activity 6.01.01

Agroforestry Learning Logs 6.01

Fill this document using Cornell's Agroforestry Notes publication as a guide about Agroforestry. (Search "Cornell an overview of agroforestry" for the .pdf)

I've been learning about:

Knowing about this topic helps me:

This topic reminds me of:



The part I know the most about is:



The part that is the most confusing is:



I'd like to know more about:

Activity 6.01.02

Agroforestry Answers All Around Us

Groups or individuals will write review questions for this unit. Students have the answers, not the questions. Students should work in groups or by themselves to write appropriate questions for the answers given. Some answers may have more than one correct questions.

1. Intentional
2. Intensive
3. Integrated
4. Interactive
5. Agroforestry
6. Productivity
7. Profitability
8. Environmental Stewardship
9. Silvopasture
10. All cropping
11. Forest farming
12. Windbreak
13. Riparian Forest Buffers
14. USDA Agroforestry Strategic Framework
15. Adoption

Write questions that begin with the following words or phrases:

Level	Prompts
Remembering	Where is What did Who was When did How many
Understanding	Tell me in your own words What does it mean Given me an example of Describe what
Applying	What would happen to you if How would you solve the problem If you were there, would you.
Analyzing	What other ways could What things are similar or different What caused
Evaluating	Rank the events Select the best Would you recommend
Creating	What if What would it be like if What would have happened if Pretend you are a Design a

Activity 6.01.03

Prescribed Burns in Agroforestry Critical Thinking

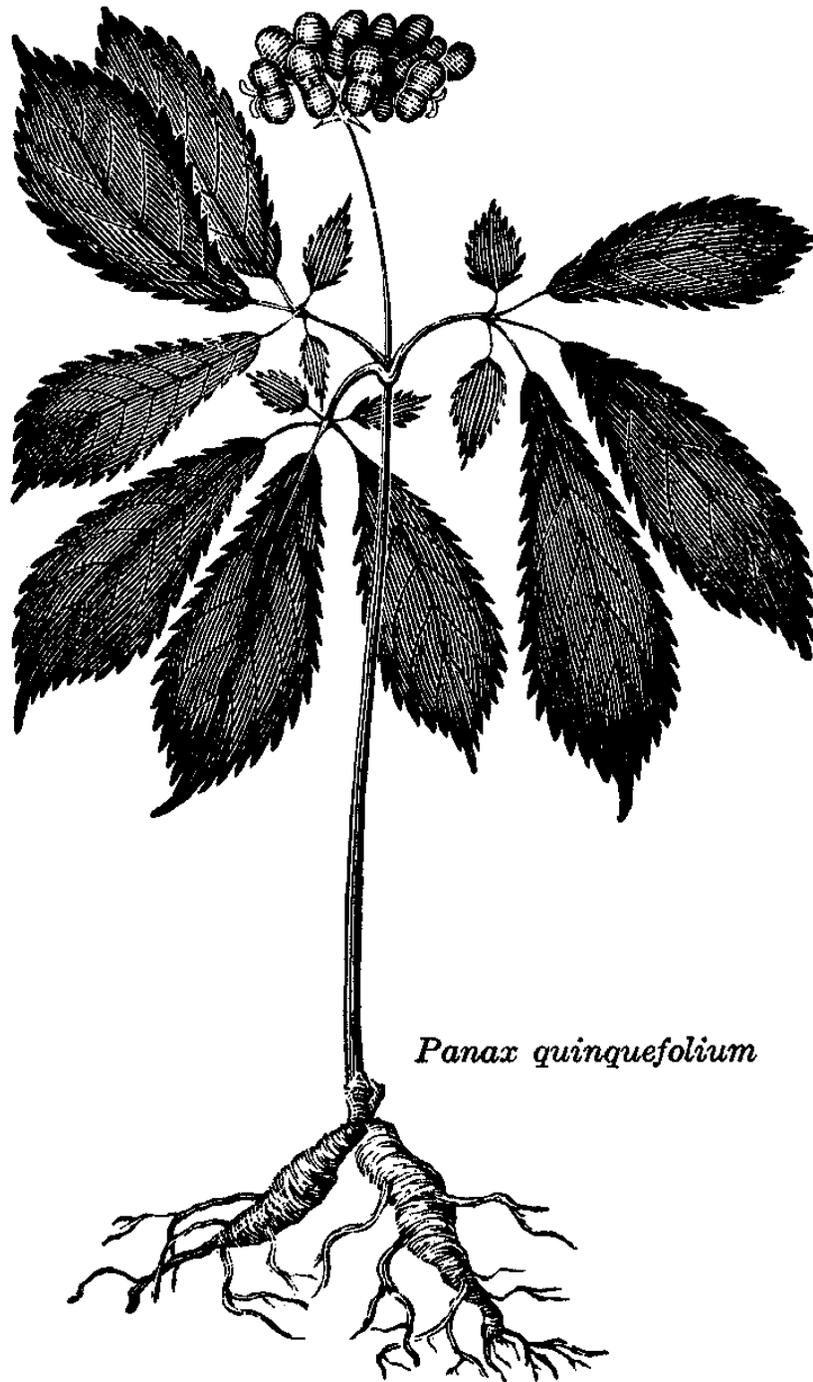
Go to <https://www.fws.gov/southeastfire/images/FireInSoutheast.pdf>

Title of Publication- Include who published the title.	
Predict- What you think will happen or what this publication is about.	
Wonder- What you wonder about this publication. List 3 questions you have about this publication.	
Observe- List five things that you notice while reading this publication.	
Clarify- Recap or summarize what this publication means to you.	
Question- Write three questions about this publication. Write questions with words like: who, what, where, when, why, and how.	
Make Connections- What did this publication remind you of or how does this relate to your life or world.	

Ginseng in North Carolina- What you need to know

Access the publication at <http://www.ncagr.gov/plantindustry/plant/plantconserve/sangno.htm>

Use the botanical illustration as a graphic organizer. Include main ideas on the roots and stems and details on the leaves and flowers/seeds.



Activity 6.02.01

Truax and Lorax Debate

Directions:

1. There are two children's stories that have to do with trees. One is the traditional The Lorax book by Dr. Seuss. This story depicts the life of a tree and how sad it is to have them cut down. The newer story The Truax was written to have students understand the benefits of a tree once it is cut.
2. Go to your media center or another library and get a copy of The Lorax. You can also view this by video, new version (86 minutes) or old version is on YouTube (25 minutes).
3. To download a copy of The Truax go to: <http://woodfloors.org/truax.pdf>. You can also purchase this on Amazon.com.
4. The teacher or a selected student should read The Lorax. Try to be expressive and read it just like when reading to children. Even though the students are in high school, they will be attentive and listen and do love children's books (again, this is very easily done as independent work, as well). At the end of the story, give each student a copy of the Lorax and Truax Debate.
5. Have the students answer The Lorax portion of the questions.
6. Now, either print enough copies of The Truax for groups of students or once again, read the story aloud or make this independent work and give the students the web address for the PDF.
7. Have students answer The Truax portion of the questions from the Lorax and Truax Debate.
8. Once the students have completed the questions, separate the class into two groups. One group will be the Lorax and the other group will be the Truax, have the student sit with their assigned group. The students are supposed to assume the role of the character and will answer the following questions according to how that character would respond. Have the students simply raise their hand, perhaps stand up, and answer the question as they feel their character would.
 - a. Is cutting down trees a good or bad idea and why?
 - b. Should clear cutting a forest be outlawed? Why or why not?
 - c. How is forestry changing our world for the better or the worse?
 - d. What would happen to all of wildlife in a clear cut forest?
 - e. Instead of clear cutting a forest, could anything else be done to make everyone happy- the Lorax and the Truax?

Activity 6.02.01

The Lorax and Truax Debate

The Lorax

1. What type of harvest was done to the Truffula trees?
2. What did the Lorax warn would happen if you cut down the trees?
3. What did the Lorax promise if you were to plant the Truffula seeds?
4. What was the moral of The Lorax?
5. What could one do to harvest the Truffula trees to make all of the tree products but ensure there would be trees for the future? Give your advice to the narrator to sustain the Truffula forest while still using the trees.

The Truax

1. Why did Guardbark want people to not disturb the trees?
2. Why did Truax think that it was okay to harvest some of the trees?

Forest Management Plan



A beautiful 600-acre hardwood forest near the Raleigh State Farmer's Market has just been given to the City of Raleigh. The donor did not dictate what had to be done with the forest, so there are many options. Now, at today's City Council meeting, it is your job to research with your group and create a management plan. It is suggested that you use the material provided and find additional resources to help your case.

What can you do to prove your case and win the 600-acres?

Think of ways that you can manage the forest to make the people of Raleigh, the government, universities, schools, and industry happy in creating a management plan and a live graphic recording to support your arguments. Convince the City Council to choose your plan!

History of the Stand: This 600-acre forest stand is a mature forest. There are a number of hardwoods and softwoods in the forest. There are Oaks, Beeches, Hickories, Loblolly pines, Sweet gums, Tulip Poplars, Persimmons, Dogwoods, and Maples- just to name a few. This land was handed down for generations and was never managed or logged. The soil is rich in organic material and hosts a number of plants. In the forest under story, there are huckleberries, raspberry thickets, ferns, wild orchids and gingers, wild roses, and a number of mushrooms. The under story supports rabbits, squirrels, foxes, deer, raccoons, opossums, and there has even been a report of a bobcat. In the trees, there are a number of birds ranging from wrens to woodpeckers, owls to mockingbirds, and bluebirds to sparrows. People have been enjoying the woods for recreational uses for years. The family that owned the land allowed people to camp, hunt, and hike the woods. Those people reported some endangered Goldenrod, orchids, and there were a few old Long Leaf Pines. The plethora of native plants, animals, and the great habitat has made this plot an excellent resource for the local universities and schools to teach about forestry and wildlife.

Group Proposals:

USDA Forest Service- This team wants to manage the land for recreational use, while preserving the habitat. They plan to incorporate controlled or prescribed burning in the forest to manage the land.

NCSU CALS- The College of Agriculture and Life Science is a group would like to use this site primarily for educational purposes. This is close to NCSU and students and staff could perform research on this site.

Weyerhaeuser Corporation- This company is proposing to harvest the timber, take a portion of the proceeds, give the rest of the money to city for their use, and then reforest the land.

North State Forestry- This smaller group of foresters wants to help manage the forest and cut some of the timber for sale today and put a harvest and reproduction plan that will sustain the forest for centuries to come.

USDA Forest Service

The USDA Forest Service has great plans for these 600-acres. The Forest Service would like to see the area become a park. They would work with the Raleigh City Parks to create a park that would use prescribed fire to maintain the vegetation of the under story to prevent wildfires that could ultimately affect surrounding neighborhoods.

Prescribed Fire is used to approximate the natural vegetative disturbance of periodic fire occurrence. This vegetative management tool is used to maintain fire dependent ecosystems and restore those outside their natural balance. Generally, low intensity prescribed fire, is applied by trained experts to clear ground of dangerous fuels like dead wood and brush. This low-intensity fire is vital to the life cycles of fire-dependent range and forest lands. Through centuries of frequent fire influence, certain plant species and forest communities became adapted to cope with - and even benefit from - wildfire. Many plants now inhabit areas where fire does not mean destruction - it means survival.

Most prescribed fires are lit by crews using the drip torch, a hand-carried device that pours out a small stream of burning fuel. Other fires or burns are ignited by helicopters carrying a gelled fuel torch (helitorch) or a sphere dispenser machine that drops material to ignite the surface fuels in forest and range types. Exactly how each unit is ignited depends on weather, the lay of the land, and the intensity of the fire needed to meet the goal of the burn. Fire causes some important changes in forest systems. It creates openings in the forest, and converts mineral-storing parts of plants (the stems, leaves, bark, and duff) to ash. In ash form, most of these essential mineral nutrients are dissolved by rain and snow and returned to the soil - recycled for use. Plants in forests born of fire take full advantage of these changes.

Flowering plants successfully establish themselves on burned areas, flourishing in full sunlight and thriving in the lack of competition from other vegetation. Many seeds will not sprout when they fall in a shaded or crowded area. Wildlife often "pioneer" a recent burn; many birds and small mammals depend on the seeds they find there after a fire.

This forest and its use of prescription burning will be one of the greatest educational tools for people and students in the community. Community members will be able to see the differences between a wildfire and a prescribed burn and see the beneficial results. The USDA Forestry Service wants to prevent future wildfires by educating society about the benefits of prescribed fire.

The goal of the USDA Forest Service and the Raleigh City Parks is to create a space that will allow a number of recreational uses. The park would include hiking trails, space for camping, biking trails, and an outdoor educational classroom. The outdoor educational classroom would be under the direction of the Raleigh City Parks. Students from local high schools and universities will be able to learn about the park and its management techniques.

NCSU CALS

North Carolina State University is just miles from the proposed site. Here students and staff from the university can complete research that is close to the school, so close that students could even walk to the site if needed. Just like Schenck Forest, near the NC State Fairgrounds, this site could be used to further study effects of environmental factors, disease, and the economics of timber harvests, animals, plants, and other organisms.

NCSU is very aware of the future challenges of forestry. They are also keenly aware of the need to be sustainable foresters. Americans use forest products throughout their day and trees must be managed like any crop. The major difference between corn and trees is simply the length of the growing cycle. Americans have no problem with using corn products or seeing corn being harvested, trees are just the same. Trees just have a longer life cycle and will be harvested every 30 years.

If NCSU does research on the trees and then does harvest the trees, every 30 years, the school will also benefit from the harvest and receive money from that harvest. This is a great situation to further study and manipulate production, harvesting, and marketing of trees. There is no doubt that trees will continue to be used in products and there is no doubt that the population of the US and world continues to grow. NCSU needs to find methods to meet the production demands and a site of 600-acres can help to make that a reality.

In addition to the testing, management, and production of timber for research and profit, there are other departments at NCSU that would like to have a piece of the pie. The Animal Science program has been promised a place to house some cattle for grazing. Since real estate is of prime value, there is a need to place the cattle somewhere and allow them to graze. The students and staff will use this site for teaching and research. Again, the university will profit from the sale of the cattle.

Aside from the cattle, the Department of Horticulture would like to manage some of the land that will be used for the production of medicinals and mushrooms, like Ginseng and truffles. There will be room in the understory of the trees for research and production of these very valuable crops. They will work with the Animal Science and Forestry departments to ensure that all of these departments can cohabitate, learn, and benefit from the use of these areas.

Lastly, because this is a state run institution, there will be opportunities for the public to interact and learn from this land laboratory. Every semester, there are plans for the site to be open for educational and recreational purposes. There are limited spaces in Raleigh for interaction with nature in its purest form and this site will provide the platform for this enriching experience.

Weyerhaeuser Corporation

The Weyerhaeuser Company is a sustainable forestry company that is based in North Carolina and Washington. This international company provides paper products for millions of Americans and people throughout the world. Weyerhaeuser is responsible for putting toilet paper in your bathroom and paper for your printer.

Weyerhaeuser manages millions of acres of timberland throughout the country. They use sustainable timber harvesting practices to ensure that this renewable resource is saved for future use and can be harvested for centuries to sustain the life on earth. People would have difficulty living without their daily paper products. Those products like boxes, paper, medicines, tapes, and sodas are made possible by harvesting and using trees. Unlike petroleum, trees will grow again and can be replanted to ensure future harvests, products, and revenues.

Weyerhaeuser is a company that would like to help the city of Raleigh. They propose to clear cut the acreage and replant this with Loblolly Pines that would be ready for harvest in 30 years. Many people are afraid of clear cutting the land, but this can be extremely beneficial for the forest stand. Once all of the trees are removed, species that could not grow there and wildlife that did not flourish before can. This forest stand will be a habitat for a young forest where meadowlarks and a number of other birds and animals can thrive. Additionally, plants that could not grow in the mature forest will now be able to flourish.

There is no doubt that clear cutting alters the forest site, but most changes are minor and temporary. Also, it can be the most financially efficient source of forest harvesting and regeneration of stands. One of the largest benefits of clear cutting is the reduction of high operating costs of logging machinery and labor, which can make selective cutting and other processes more costly. In addition to harvesting and regeneration efficiencies, the changes from clear cutting can also be used to manage for other positive results including, reduction of wildfire hazards and providing habitat for wildlife. One of the biggest myths about clear cutting is that it creates more soil erosion and compaction than other harvesting methods. In reality clear cutting is less damaging to site in terms of erosion and compaction, because you only disturb the site once during the life of the stand.

The initial shock of the removal of the trees will be offset by the hundreds of thousands of dollars that will be brought to the city. Also, along with the money, this forest will grow again and will not make way for a mini-mall or parking lot. The money will again be brought to the community in another 30 years when the next scheduled harvest will occur.

The city of Raleigh will enjoy the revenue and can take pride in knowing that thousands of the products that its community members depend upon will be made possible by the harvest of their trees. This harvest can contribute to the building of homes, the production of paper, and also serve to fabricate thousands of other products that are used daily.

North State Forestry

North State Forestry is a small company owned by a forester, who has practiced sustainable forestry for over 20 years. This company prides itself in making decisions for a land that puts the owner and the land's best interest at heart.

Sustainable forestry is a forest management concept. The basic tenet of sustainable forestry is that the amount of goods and services yielded from a forest should be at a level the forest is capable of producing without degradation of the soil, watershed features or seed source for the future. It differs from Sustained Yield Forestry and Sustainable forest management according to the sets of forest goods and services that we attempt to "sustain."

Sustainable forestry includes, clean water, wildlife, recreation natural cover and forest where seed trees are left for natural regeneration. The sensitive ecosystems are not all about the tall trees but rather the whole mosaic of forest entities. The potential natural vegetation, annual growth and the basal area, combined with the amount of trees per stand to develop a management plan for area sizes from a stand to an ownership through the entire forest, as well as considering the landscape and position of the forest within it are considered.

North State Forestry plans to harvest some of the timber at the beginning of the project. The sale of the timber will provide revenue for the city of Raleigh. All of the trees will not be cut, however. The initial phase of the forest management plan includes a thinning cut. The goal of [thinning](#) is to control the density, composition, and quality of tree stands and to improve [tree](#) growth, especially of the diameter, by providing additional growing space for the remaining trees. It also provides an opportunity to cull the commercially less desirable, usually smaller and malformed, trees.

Trees that are diseased and damaged will be removed at the initial phase. The thinning of select trees will promote increased light into the forest, which will promote new under story growth and the promotion of new wildlife species and habitats.

In this proposal, North State Forestry wants to ensure that there is a healthy forest that will be managed for a lifetime and will be readily available for the people of Raleigh to use and enjoy. Since not all of the trees will be removed, there will still be several trees for people to use recreationally. Meanwhile, the initial harvest will result in some economic gains for the city of Raleigh.

The method of sustainable silviculture (the art and science of controlling the establishment, growth, composition, health, and quality of [forests](#) to meet diverse needs and values of landowners and society on a [sustainable](#) basis) will be employed in this forest stand and will undoubtedly promote the best use for this site and the people of Raleigh. It will provide economic gains, social learning and recreation, and environmental securities for today and tomorrow.

Forest Management Plan Questions

1. List those organizations that you feel had the best environmental interests for the Agroforestry. Explain your answer.
2. Which organization and their proposal do you feel is the most appropriate use for this site? Why do you think that this would be the best plan?
3. If this forest were in your backyard, would you react any differently to question #2? Why or why not?
4. Do you believe that clearcutting would be considered a sustainable method of forestry? Why or why not?
5. How do you feel that this activity could help you become a better citizen?