Ethiopian Fulbright Hays Curriculum Project 2017

University of Pittsburgh

**Farm to Table in Wolaita Curriculum Unit:** Ethnobotany in Wolaita and Indigenous Ethiopian Technology & The Modern Maker Movement

***Abstract: Ethnobotany in Wolaita***

Grade Levels: 5, 6, 7

***Focus***

Students will develop an understanding of the cultural identity of the Wolaita people and their indigenous knowledge and relationship of their environment. Students will specifically learn the cultural beliefs; traditions; gardening techniques and experience; the nutritional and medicinal value of plants and trees and their usage for survival within the Wolaita culture that has been passed on from one generation to another.

There are 3 lessons included in this section, **Farm to Table in WolaitaCurriculum Unit:** *Ethnobotany in Wolaita.* The background information and resources for both teachers and students contained in each lesson is interchangeable as it can be used for each of the asssigned project-based learning activities:

**Lesson 1: Importance of Home Gardens**

**Lesson 2: Indigenous Traditions Associated with Foods**

**Lesson 3: Wolaita Livestock and Environmental Challenges**

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***Lesson Plans***

PA Core Standards: 3.3 (Earth & Space Sciences); 4.1 (Ecology); How People Use Tools & Techniques to Help Them Do Things and How Creative Thinking & Economic & Cultural Influences Shape Technological Development: 3.4.5.A1; 3.4.3.E1; 3.4.6.A1; 3.4.7.A1-A2; 3.4.5.B2-4; 3.4.6.B3-4; 3.4.7.B2-4; 4.4 (Agriculture & Society); 4.5 (Humans & The Environment)

***Technology***

Attachment A: The Powerpoint, **Farm to Table in Wolaita Curriculum Unit:** *Ethnobotany in Wolaita and Indigenous Ethiopian Technology & The Modern Maker Movement,* coordinates with this lesson plan.

***Expectations/Goals (for Lesson Plans 1-3)***

Students will develop an understanding of protecting and conserving plants that grow in both urban and rural areas of Wolaita and how farmers are challenged to promote sustainable management and conservation of natural resources within their communities. Students will also understand the importance of preserving indigenous knowledge of plants including methods of preparing traditional foods and associated communal practices.

***Essential Questions***

Each section and lesson plan poses questions and discussions for the student/class.

**Lesson 1: Importance of Home Gardens**

(Duration: 5-7 days)

Background Information

The teacher should review the following articles and share this information with students to acquire a deeper understanding of indigenous species of plants in Wolaita, Ethiopia and their function in daily life. It is also helpful for both the teacher and student to research and familiarize yourselves with indigenous, herbaceous plants and vegetables that grow within your community, their maintenance requirements and their uses as students will be referencing these in the students’ activities included in the lesson plans. A Master Gardener or expert on local plants can be invited to the class as a guest speaker and provide information on indigenous plants. These individuals can usually be contacted through a local garden club, community library or nursery/garden center.

Research the “The Gullele Botanical Garden” located in Addis Ababa, Ethiopia. <https://www.bgci.org/garden.php?id=4538>.

This is a newly created botanical garden and research center where endangered plants are grown. It provides information on diverse species in Ethiopia and sustainable gardening, horticulture, floriculture and urban agriculture.

International Journal of Sciences: Basic and Applied Research (IJSBAR)(2013) Volume 10, No 1, pp 63-99. Information on indigenous plants of Ethiopia and sustainability measures for indigenous plants and trees.

Income Generating Activities of Women on Home Garden Farming in Damot Gale District (Woreda) of Wolaita Zone, Southern Ethiopia. International Journal of African and Asian Studies [www.liste.org](http://www.liste.org/). ISS 2409-6938: An International Peer-reviewed Journal, Vol. 23, 2016. This article highlights conservation and sustainable utilization of the resources of the Wolayta community and the role of women in designing and maintaining home gardens.

Talemos S, Sebsebe D and Zemede A (2013). *Home gardens of Wolayta, Southern Ethiopia: An ethnobotanical profile*. Acad. J. Med. Plants. 1(1): 014-013. <https://www.academiapublishing.org/journals/ajmp/abstract/2013/Jan/Seta%20et%20al.htm>. This article provides information on sustainable use of resources in the Wolayta culture.

Kloman, H. *Mesob across America*. [https://ethiopianfood.wordpress.com/2014/06/01/the-ethiopian-spice-rack**/**](https://ethiopianfood.wordpress.com/2014/06/01/the-ethiopian-spice-rack/). This article highlights Harry Kloman’s book on various indigenous spices grown and used in Ethiopia.

*Solving Hunger in Ethiopia by Turning to Native Crops*<http://www.newsweek.com/2014/12/26/solving-hunger-ethiopia-turning-native-crops-291558.html>. This article highlights the importance of sustaining Ethiopia’s indigenous crops for today’s generation and in the future as well.

*False Bananas: The Potential for Food Security in Ethiopia* <http://populationgrowth.org/false-bananas-the-potential-for-food-security-in-ethiopia/>. This article discusses the importance of preserving and propagating the false banana, an invaluable indigenous resource, for food supplies.

***Lesson Procedure***

Students will view Slides 1-10 of Attachment A: the Powerpoint, **Farm to Table in Wolaita Curriculum Unit:** *Ethnobotany in Wolaita* which coordinates with this lesson plan. As students proceed through this section, encourage them to reflect on sustainability measures that Ethiopians are utilizing such as gardening practices (selection of plants, aesthetics of the garden, maintenance of the gardens).

After viewing the slides, pose the following questions as a class discussion or as an individual assignment:

Compare the biodiversity of the urban and rural home gardens. Note any similarities and differences in terms of plant species contained in both of these types of gardens.

Observe the design of the gardens. How are herbs, vegetables, fruit trees and other trees arranged in the gardens? What is the significance of arranging these plants and trees in this manner?

What practices are evident from the photos that ensure the plants are healthy and well maintained?

Activity: Here’s an opportunity for students to design their own home garden that will yield successful crops! This is a 5-7 day project-based learning activity that begins with an inquiry-based directive.

**A Sequential Family Garden**

How would you design a home garden on paper that provides fresh vegetables, herbs and fruit for you and your family during one season of the year (winter, spring, summer or fall)? A sequential garden is one that provides a consistent supply of vegetables, herbs and fruits for the family. You’ll be considering ideas such as: how long it takes for specific varieties of vegetables, fruits and herbs to grow; the maintenance required for these plants and trees; pests that may plague your plants and trees and prevent them from growing successfully, and the quantity each plant and tree will yield for your family’s needs.

Procedures for completing your home garden design:

Items you will need: 9” x 12” piece of cardstock; ruler; colored pencils; current *Farmer’s Almanac*; sketchbook for recording information and illustrations of species of vegetable plants, herbs and fruit trees.

1. Observe your natural environment (outside) where you live. Choose a location suitable for a garden that will be conducive and spacious for growing selected herbs, vegetables and one or more trees. Measure the length and width of the space you can utilize for your garden and record these dimensions in your sketchbook.

2. Interview family members to determine which vegetables, herbs and fruits they enjoy eating. Some of the plants and trees may be dependent on your family’s favorite recipes they prepare for meals. Include at least 2-3 indigenous plants in your garden (plants that are commonly found in your area). After you have acquired your selection, research the plant and tree characteristics to determine how much space is necessary for each plant and tree—the width and height for each. You can gather this information from seed catalogs, by contacting a local nursery or from a family member or neighbor who has created a garden and has experience to share with you—possibly, this individual has seeds that he/she can share with you for a future garden that you’d like to create!

3. In your sketchbook, list all of the growing requirements for each of the plants and the tree(s) you selected: width/height of plants and trees; soil conditions; amount of light required; climatic conditions; water requirements for each and any recommended fertilizers. The *Farmer’s Almanac* will provide information on predicted weather conditions.

4. Use the width and length measurements you recorded for the size of the proposed garden (Step 1 dimensions) and begin drawing the perimeter for your garden on the paper. Suggestion: allow 1” on your paper for every 8’ of space in your garden. Your garden may be developed in a square or perhaps it will be constructed in a corner of your outdoor space.

5. Refer to the growing characteristics for each of the plants and tree(s) that you’ll include in your garden. Keep in mind that some plants vine and need a trellis to climb as they grow (i.e. beans), and some taller plants or a tree will prevent sunlight from reaching plants that grow lower to the ground and sprawl. On the paper, begin to sketch in where your plants and tree(s) will be located within the perimeter of the garden. Be sure to write the names of the plants and tree(s) as you fill in the schematic of the garden.

6. After you have completed your drawing, reflect on the urban and rural gardens that you observed in the Woliata culture. Note that people planted both vegetables, herbs and trees all together in their gardens so that they would have a constant supply of food for their families. Look at your garden and determine if you have considered all of the requirements to successfully grow a sequential garden for your family. Ask yourself:

 Could you change your methods of designing your garden to yield

 more vegetables, herbs and fruits for your family?

 What would happen if some of your plants or trees were troubled by

 pests that prevent successful growth in your garden? Do you have an

 alternative plan to provide a constant supply of food for your family?

7. Share your sequential garden design with your classmates and discuss the positive features of each of your garden schematics and any suggestions they may have to improve their garden designs.

**Lesson 2: Indigenous Traditions Associated with Foods**

***Lesson Procedure***

Students will view Slides 11-14 of the Powerpoint, **Farm to Table in Wolaita Curriculum Unit:** *Ethnobotany in Wolaita* which coordinates with the lesson plans. As students observe the photos and illustrations in this section, ask them to consider the importance of hand-crafted items representative of the Wolaita culture that accompany food servings.

After viewing the slides, pose the following questions as a class discussion or as an individual assignment:

How have you developed an understanding and appreciation of the depth of the process and indigenous meaning involved in food traditions of the Wolaita culture?

The Wolaita culture has perpetuated traditions of preparing and symbolizing specific foods for ceremonies for centuries. Reflect on your family’s traditions of celebrating special occasions and/or holidays and complete the following activity:

This project-based learning activity is intended to be completed over 2-3 days. Encourage students to interview family members to acquire an in-depth understanding of why they repeat certain traditions on special occasions. These traditions can include favorite family recipes that are prepared; what family members prepare foods; where celebrations are held; who is invited to participate in the celebrations, etc.

Students can share their interviews with the class in a roundtable discussion or as a formal presentation.

Students should complete **Attachment** **B: Traditional Knowledge + Modern Practices** individually or in a group setting within the classroom.

**Lesson 3: Wolaita Livestock and Environmental Challenges**

***Background Information***

The teacher and students should review the following articles to provide information on the importance of livestock in the Wolaita culture and in other areas of Ethiopia and the environmental challenges that farmers must overcome and manage for the future.

Alemu, M.M. (2016) Eucalyptus Tree Production in Wolayita Sodo, Southern Ethiopia. *Open Access Library Journal*, **3**, 1-10. http://dx.doi.org/[10.4236/oalib.1103280](http://dx.doi.org/10.4236/oalib.1103280). This article discusses a study conducted on the importance, utilization and management of the eucalyptus tree in the Wolayita Sodo area.

Review the following articles about Ethiopia’s land management among farmers and current sustainability measures to ensure successful crops:

[The multiple benefits of livestock are in focus this week as experts meet in Ethiopia](https://news.ilri.org/2017/05/09/the-multiple-benefits-of-livestock-are-in-focus-this-week-as-experts-meet-in-ethiopia/). <https://news.ilri.org/tag/ethiopian-ministry-of-livestock-and-fisheries/>.

For Ethiopia’s farmers, landscape management and tenure lead to more resilience and income. <http://www.worldbank.org/en/news/feature/2017/06/22/land-tenure-for-ethiopia-farmers-leads-to-building-drought-resilience-and-improved-income>.

This article will provide general information on the growth rate of the eucalyptus tree. Eucalyptus citriodora Hook. <http://www.worldagroforestry.org/treedb/AFTPDFS/Eucalyptus_citriodora.PDF>

***Lesson Procedure***

Students will view Slides 17-22 of the Powerpoint, **Farm to Table in Wolaita Curriculum Unit:** *Ethnobotany in Wolaita* which coordinates with the lesson plans.

Review the above articles with students and ask them to record notes on key points about sustainability measures being implemented in Ethiopia to preserve land for livestock.

Pose the following question to students and encourage a class discussion:

What is the importance for Ethiopian farmers to conserve grassland areas for their livestock?

What measures are being taken to ensure that livestock have sufficient areas for grazing?

What environmental challenges are farmers facing in terms of protecting their farmland from drought and flooding?

What land management measures are being implemented to prevent soil erosion?

Students should read the recently published article below (July 29, 2017), “Ethiopia Allocates 3,000 Hectares of Land for Flower Investment”: <http://www.satenaw.com/ethiopia-allocates-3000-hectares-land-flower-investment/T>.

The following articles will familiarize students with the climatic conditions for the flower industry in Ethiopia:

“Investing in Ethiopia: Floriculture” <http://www.ethiopianembassy.org/PDF/InvestingFlower.pdf>

“Ethiopian flowers attract foreign investment” <http://www.hortibiz.com/item/news/ethiopian-flowers-attract-foreign-investment/>:

“Parts of the country south of Addis Ababa are 2,000 meters (6,561 feet) above sea level, and this makes it an ideal environment for floriculture, according to Shiferaw Mitiku, a researcher and agricultural marketing consultant in Addis Ababa.”

Ask students to reflect on the above articles and class discussion of the Powerpoint slides, and complete **Attachment C: A Blooming Investment in Ethiopia.**

Teacher’s note: The attached article is referenced in Attachment C for the students’ activity:

“ADDIS ABABA, July 29 (Xinhua) -- The Ethiopian Horticulture and Agricultural Investment Authority has announced that it has allocated 3,000 hectares of land for investors who want to engage in Ethiopia's flower farming sector. A huge international interest in Ethiopia's horticulture development sector is said to be the major factor for the Ethiopian government to allocate the reported 3,000 hectares of land dedicated to the floriculture investment, according to the Ethiopian Horticulture and Agricultural Investment Authority. Investors from various countries, via their respective embassies and also in person, have shown interest to invest in Ethiopia's floriculture sector, Ethiopian state news agency ENA quoted Adugna Debele, Authority Deputy CEO, as saying on Friday. According to Debele, the Ethiopian government would give priority for interested investors who have come with their own initial investment capital. The east African country has also put in place various initiatives to lure large number of foreign investors in the horticulture development sector. According to the Ethiopian Horticulture Producers and Exporters Association, Ethiopia, the fourth largest supplier of flower to the world market, is endowed with suitable weather condition for flower and other horticultural products. Amongst these initiatives put in place by the Ethiopian government is a mechanism to provide 70 percent of the capital required for investment from the Development Bank of Ethiopia on loan, based on the initial 30 percent financial amount provided. Ethiopia's flower industry sector has registered a steady growth over the past decade, making the country one of the top flower producers and exporters in the African continent.” (<http://www.satenaw.com/ethiopia-allocates-3000-hectares-land-flower-investment/>)