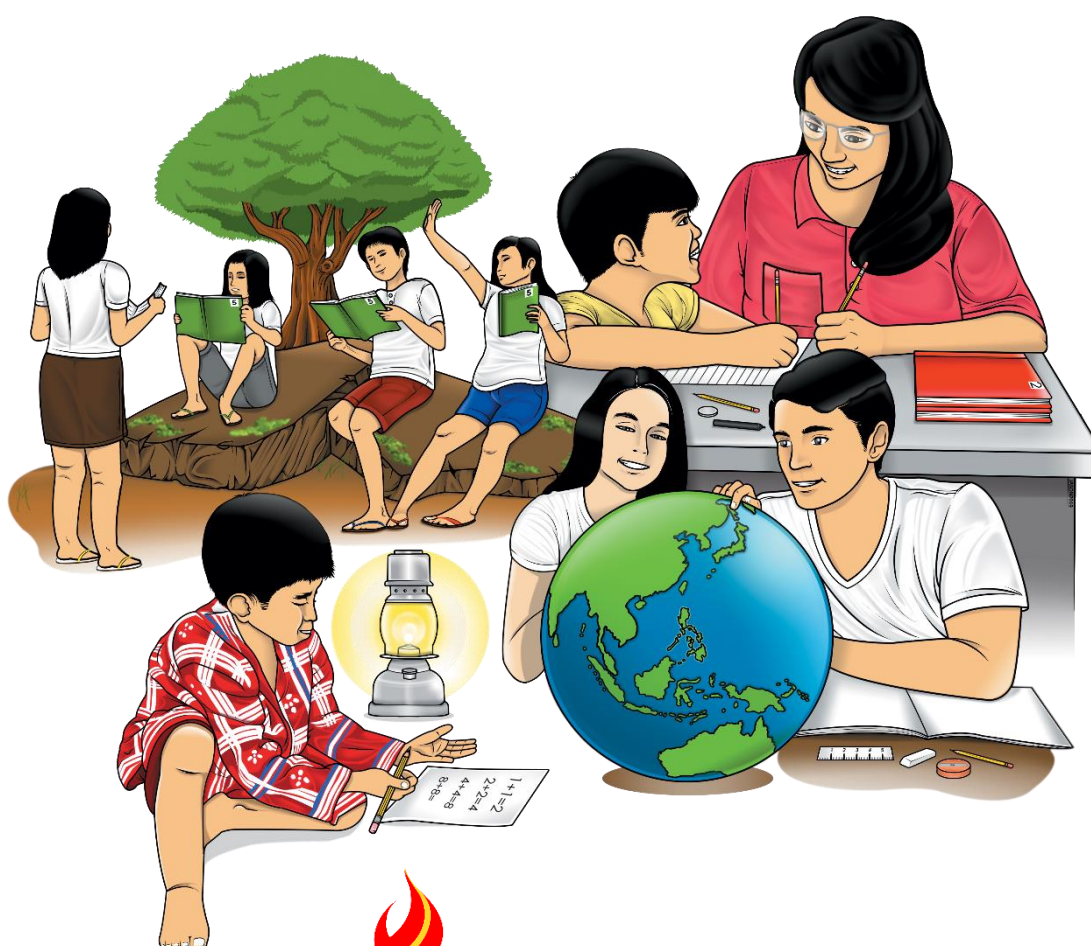


Technology and Livelihood Education

Agri-Fishery Arts

Module 8: Plan for Expansion of Planting Trees



TLE – Agri-Fishery Arts – Grade 6
Alternative Delivery Mode
Module 8: Plan for Expansion of Planting Trees
First Edition, 2020

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Technology and Livelihood Education

Agri-Fishery Arts

**Module 8: Plan for Expansion of
Planting Trees**

Introductory Message

This Self-Learning Module (SLM) is prepared so that you, our dear learners, can continue your studies and learn while at home. Activities, questions, directions, exercises, and discussions are carefully stated for you to understand each lesson.

Each SLM is composed of different parts. Each part shall guide you step-by-step as you discover and understand the lesson prepared for you.

Pre-tests are provided to measure your prior knowledge on lessons in each SLM. This will tell you if you need to proceed on completing this module or if you need to ask your facilitator or your teacher's assistance for better understanding of the lesson. At the end of each module, you need to answer the post-test to self-check your learning. Answer keys are provided for each activity and test. We trust that you will be honest in using these.

In addition to the material in the main text, Notes to the Teacher are also provided to our facilitators and parents for strategies and reminders on how they can best help you on your home-based learning.

Please use this module with care. Do not put unnecessary marks on any part of this SLM. Use a separate sheet of paper in answering the exercises and tests. And read the instructions carefully before performing each task.

If you have any questions in using this SLM or any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator.

Thank you.

Module 8

Plan for Expansion of Planting Trees



¹Mango Plantation



²Plant Nursery

¹ Raveesh Vyas, Saturation Adjusted, Free Royalty,
<https://www.flickr.com/photos/32392356@N04/3362736130>

² Harold Roberts, Saturation Adjusted, Free Royalty, <https://www.wallpaperflare.com/nursery-forest-plants-seedlings-green-forestry-sirsi-wallpaper-zlfis>



What I Need to Know

This module will teach you how to develop plan for planting trees and seedling production.

After going through this module, you are expected to:

1. Identify the things to consider in planning for expansion of planting trees and seedling production; and,
2. Plan a possible design and layout on the expansion of planting trees and seedling production.

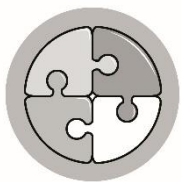


What I Know

As you start this module, you are going to check your previous knowledge regarding the topics by answering the questions herein. Select the correct answer from the box given below. Write your answer on a separate sheet of paper.

availability of resources	contour system	equipment
fertilizer	kinds of trees	money
quincunx system	square system	sunlight
time	triangular system	water

1. _____ is a system which refers to the most common and basic arrangement of orchard trees.
2. _____ is composed of three essential requirements for the growth and development of trees and seedlings.
3. _____ refers to a representation on how far out into the future you want to plan your business.
4. _____ is a system which gives growers the opportunity to use areas that are vulnerable to erosion like hillsides.
5. _____ refers to the capital needed to produce goods and services for the trees and seedling production.
6. _____ refers to enriching materials used on land to increase its productivity.
7. _____ is a system which is consisted of four trees at the corners of a square with one tree in the middle.
8. _____ refers to a set of tools or other objects used to achieve a goal and objective.
9. _____ is one of the most important requirements for plant growth, it is the main component in plants cells, used in photosynthesis, and transports nutrients throughout the plant.
10. _____ is a system which requires fertile soil, because the plants are planted at the corner of equilateral triangle.



What's In

In our previous lessons, we learned about the different layout designs of an orchard garden. In this activity, you are tasked to find the word or words being described by the statements below it. Please write your answer on separate sheet of paper.

R	T	Y	U	G	D	C	Q	A	B	R	N	C	M	D
W	Q	A	F	G	S	Q	U	A	R	E	B	O	C	H
F	B	M	Y	T	P	L	I	I	S	C	X	N	A	Z
S	C	V	O	T	F	N	N	J	G	T	K	T	D	W
A	B	M	J	G	D	K	C	R	T	A	H	O	L	V
C	B	E	Y	I	P	H	U	K	S	N	X	U	C	S
V	Y	O	P	W	Q	G	N	B	J	G	K	R	D	N
Z	H	K	L	R	P	G	X	G	D	U	T	H	N	B
G	J	K	L	D	S	B	V	M	B	L	P	I	O	S
Q	E	Y	I	C	J	F	S	K	L	A	P	F	V	X
W	T	R	I	A	N	G	U	L	A	R	D	Z	H	L

1. This refers to the most basic and common arrangement of orchard trees where tree stand in each corner of the square or rectangle, essentially forming very regularly spaced rows.
2. This design is used to set trees at unequal distances. It accommodates more plants in rows.
3. This system is also known as filler or diagonal system.
4. In this system, trees are planted in parallel rows that contour around a landscape.
5. The plants are planted at the corner of equilateral triangle.



What's New

Grow Seedling by Pulling

Once upon a time, there was an old farmer planting lands of crops. Every day, he went to the field to watch the crops grow. He noticed the seedlings growing little by little each day. He thought they were growing too slowly and got impatient with the young plants. "How could these plants grow faster?", he thought. Bothered by this question, he couldn't fall asleep. Suddenly he hit upon an idea which he couldn't wait to practice. He jumped from the bed and rushed to the field immediately. One by one, he pulled up the seedlings by half an inch under the moonlight. He did not finish pulling until the next morning. Straightening his back, he said to himself, "What a wonderful idea! Look, how much taller the plants have grown in one night!" With great satisfaction, he went back home. He told his son what he had done in a triumphant tone. His son was shocked. Now the sun had risen. The young man was heart-broken to see all the pulled-up young plants dying.

After reading the story, please answer the following questions:

1. What did the old farmer notice about the seedlings?
2. What was the old farmer's idea of growing his seedlings faster?
3. Do you think the farmer's idea was good? Why?
4. What are the things a person should consider if he/she plans to have seedling production?



What is It

A successful orchard grower should have a plan for future expansion. Tree plantation means planting trees more and more. To develop plans for the expansion of planting trees and fruit-bearing trees, we must consider the different factors: identify the things to consider in planning for expansion of planting trees and seedling production, plan a possible design and layout on the expansion of planting seedling production.

I. Things to Consider when Planning for Expansion of Planting Trees and Seedling Production:

1. Area of the Property

To ensure the development of the project, one's must secure that there is enough space for the expansion of planting trees and seedling production. It is needed to know the area if it is still available for the development and expansion of the project. It is very helpful to know and identify which area of the property will be utilized and is suitable for the expansion of seedling production.

2. Kinds of Trees to be Planted

It is advisable to plant trees that are indigenous to the place or locality. This allows for easy adaptation and ensures growth. Species of trees considered for tree farming possess the following qualities: fast-growing, resistant to pests and diseases, deeply rooted, stay green during dry months, resistant to strong winds, have commercial and economic value.

Trees suitable for reforestation of hills and mountains, deeply rooted, and have extensive branching root systems such as Narra, Acacia, Apitong, and Yakal have heavy foliage, resistant to strong winds, never completely defoliate.

Trees suitable for city planting must be tolerant of city dust, able to withstand the rigors of the initial planting, resistant to smoke, gasses, and other pollutants.

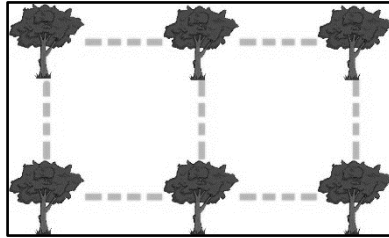
3. Design and Layout of the Existing Orchard

A blueprint or a diagram should be prepared when doing a plan for a specific purpose. Systematic planting of fruit trees in the orchard must have a blueprint to serve as guide in how seedlings are to be laid in the farm.

Some of the methods of planting include the following:

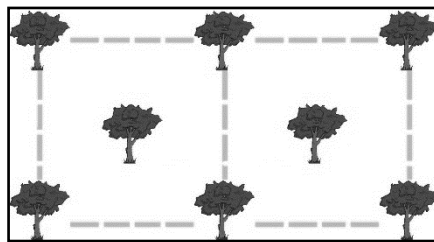
a. Square System

We use the square design for a fair level site. Plants are kept on similar distances either row to row or plant to plant forming a right angle at each corner. Thus, every four plants make one square.



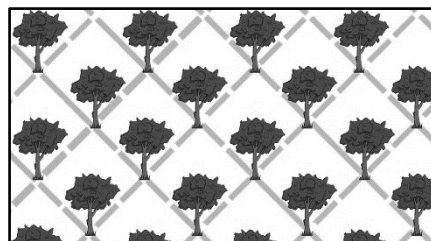
b. Quincunx Method

This system is also known as filler system. Planting another plant in the center of each square makes use of the empty space. Trees with shorter life space are chosen for the center and are called *filler crop*. Trees planted in the four corners of the square are the *main crops* that upon reaching their full-grown size, the central trees have already finished their life cycle



c. Triangular System

This system requires fertile soil because the plants are planted at the corner of equilateral triangle. Therefore, six trees are planted making a hexagon and the seventh tree is planted in the center. Since trees in this planting method are concentrated, a fertile land is required to produce better results of the orchard.

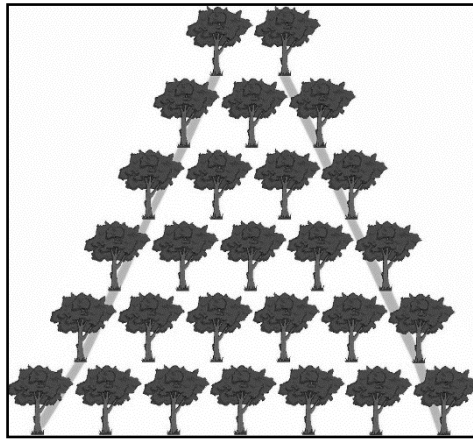


All illustrations done by Learesa G. Amban

d. Contour System

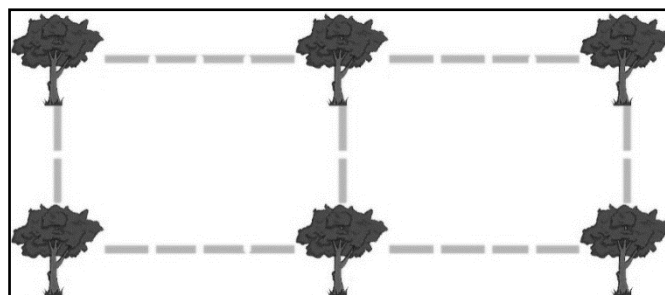
There are instances that orchard areas are located on hills such that the slope may cause soil erosion and irrigation system becomes difficult. In this situation, contour system should be the design to use in planting trees. It minimizes land erosion, conserve soil moisture and make the slope fit for growing fruit trees.

The flow of water in the irrigation channels should be made slow to allow soil penetration without causing erosion.



e. Rectangular System

The square and rectangle are the most commonly used systems for laying out possible plantation expansion. The rectangular design is used to set trees at unequal distances, because the plants get proper space and sunlight for their growth and development. This is also used by other farmers to be able to work easier in their farm.



4. *Availability of Resources*

Money is the capital needed to produce goods and services in order to purchase assets and maintain operations.

Time represents how far out into the future you want to plan your business. If you want to grow your business successfully for years, you need to have a plan of your current business, like expansion of your seedling nursery.

All illustrations done by Learesa G. Amban

Equipment refers to a set of tools or other objects used to achieve a particular goal and objective.

In order to ensure that our money, time, and equipment will not be put in vain we should consider the following:

a. Site and Location. To identify site and location is a vital requirement in plantation expansion. This includes the water resources to sustain the water requirement of the plant to grow healthy and abundantly.

b. Type of Soil. The soil must be suited to the type of seeds to be planted. Trees and fruit trees grow best according to the type of soil they were planted. Trees and fruit trees require more space for growth and development therefore, it is advisable to prepare the soil before planting

c. Preparation of Seedlings. Mortality is high during transplanting if the seedlings are not given proper care. The use of high-quality seeds results in high productivity. High quality seeds have a high percentage of germination and correct moisture content and are free from seed pests, diseases, and other physical impurities.

d. Storage box for tools and equipment. Complete tools and equipment help in carrying out nursery activities. Tools and equipment should be clean and returned properly to the storage place to avoid accident and harm. Make sure that the tools and equipment are in good condition and are ready to use.

e. Pots and Plots. These are used for the individual transplanting of seedlings from the seed box. In transferring the seedling individually, we should use a careful pricking to avoid bruises of the young stem and leaves. Some damaged seedlings affect the growth of the plant and would result to stunted growth and death.

5. Sunlight, Water and Fertilizer Supply

The vital needs of a plant are sunlight, water, and fertilizers. The relative importance of each of these needs differs widely among plants. Plants grown in direct sunlight are typically compact, whereas those in shade are taller and elongated. Seeds may start to grow without light, but the plant growing from it must have light if it continues to grow.

Water is essential for life; it is one of the most important requirements for plant growth. Water is the main component in plant cells; it keeps the plant stiff; it is used in photosynthesis; and it transports nutrients throughout the plant. We need to water the plant regularly to keep them healthy. Keep the soil moist by watering the trees and seedlings early morning and late afternoon.

Fertilizers are enriching materials used on land to increase their productivity. Organic fertilizers can be made through composting such as weeds, manure, grasses, leaves, rice hulls, and corn stalks. The right time to

put fertilizer depends on the kind of crop and the period of propagation. It helps to sustain the trees and seedlings with nutrients from the soil.

II. Sample Layout of an Orchard for Expansion



³Modern Mango and Banana Farm



⁴Plant Field

III. Sample Layout of a Tree Nursery for Expansion



³ Department of Foreign Affairs and Trade, Saturation Adjusted, Free Royalty, <https://www.flickr.com/photos/106853342@N04/10697906555>

⁴ Green, Plant Field, Saturation Adjusted, Free Royalty, <https://www.pxfuel.com/en/free-photo-emigt>



What's More

Independent Activity 1:

You are to complete the puzzle by identifying what is being described by the statements found in the Independent Assessment. Guide questions are provided below. Use a separate sheet of paper for your answers.

1.			4.								
			2.								
3.	5.										

Independent Assessment 1:

Here are the questions that will lead you to complete the puzzle above.

Cross

1. This design is used to set trees at unequal distances, because the plants get proper space and sunlight.
2. This system requires fertile soil, because the plants are planted at the corner of equilateral triangle.
3. It is the most easy and popular method of planting fruit plant.

Down

4. This system is usually applied to a sloping area.
5. This system is also known as filler system.

⁵ Nursery, Greenhouse, Saturation Adjusted, Free Royalty, <https://www.pxfuel.com/en/free-photo-xfrfz>

Independent Activity 2:

Read and understand the paragraph written below and answer the following questions asked.

Mang Jaypee saves seeds of fruit trees during the summer months. He grows them in tin cans so that when the rainy season starts, seedlings are already three months old and ready to be transplanted into the ground and where roots are already intact. He also plants trees that are indigenous to the place or locality, because this allows the seedlings to adapt to the climate and ensures growth. He was advised to use species of trees that possess good qualities.

Independent Assessment 2:

Put a check (✓) before the number if the statement talks about the good qualities that a tree possesses and (x) if it is not.

- _____ 1. Resistant to pests and diseases.
- _____ 2. Cannot resist to strong winds.
- _____ 3. Stay green during the dry months.
- _____ 4. Have commercial and economic value.
- _____ 5. Fast growing and deeply rooted.

Independent Activity 3:

Directions: In this activity you are tasked to identify the words given based on their meanings. Write your answer before each number.

sunlight	money
water	time
fertilizer	equipment

Independent Assessment 3:

- _____ 1. It is essential for life; it is one of the most important requirements for plant growth.
- _____ 2. It is the capital needed to produce goods and services in order to purchase assets and maintain operations.

- _____ 3. This refers to enriching materials used on land to increase its productivity.
- _____ 4. It refers to a set of tools or other objects used to achieve a goal and objective.
- _____ 5. This represents how far out into the future you want to plan your business.



What I Have Learned

- It is advisable to plant trees that are _____ to the place or locality.
- The examples of trees that are suitable for the reforestation of hills and mountains are _____, _____, and _____.
- The five (5) designs and layout of the orchard are _____, _____, _____, and _____.
- _____ is the most easy and popular method of planting fruit plant.
- The system usually applied to a sloping area is called _____.
- _____ is a method wherein four trees are present at the corners of a square with one tree at the middle.
- In availability of resources, we should consider the _____, _____, and _____.
- The vital needs of a plant are _____, _____, and _____.
- _____ is essential for life; it is one of the most important requirements for plant growth.
- _____ refers to enriching materials used on land to increase its productivity.



What I Can Do

Plan by making lay-out a design of your orchard or seedling nursery. Draw it inside the box.



Assessment

Multiple Choice. Choose the letter of the best answer then, write it on a separate sheet of paper.

1. It refers to a blueprint or a diagram showing how your fruit tree seedlings are laid out on the orchard garden.
 - a. area of the property
 - b. availability of resources
 - c. design and layout of existing orchard
 - d. kinds of trees to be planted
2. In this system, the trees are planted in four corners of a square keeping the same distance between rows and from plant to plant in the same row.
 - a. Contour System
 - b. Quincunx System
 - c. Rectangular System
 - d. Square System
3. It is one of the most important requirements for plant growth. It is the main component in plants cells; it is used in photosynthesis; and, it transports nutrients throughout the plant.
 - a. fertilizer
 - b. sunlight
 - c. water
 - d. wind
4. The following are the kinds of trees suitable for reforestation of hills and mountains. Which among the choices is **NOT** correct?
 - a. Apitong
 - b. Coconut
 - c. Narra
 - d. Yakal
5. This system is usually applied to a sloping area. Where soil erosion is a great threat, it can help to prevent soil erosion and preserve moisture in the soil.
 - a. Contour System
 - b. Quincunx System
 - c. Rectangular System
 - d. Square System

6. It is the capital needed to produce goods and services in order to purchase assets and maintain operations.
- equipment
 - labor
 - money
 - time
7. The following are some of the qualities of species of trees for tree farming. Which among the choices is correct?
- Fast growing and deeply rooted.
 - Have commercial and economic value.
 - Resistant to pests and diseases.
 - Cannot resist to strong winds.
- I, III, IV
 - II, III, IV
 - I, II, IV
 - I, II, III
8. It refers to a set of tools or other objects used to achieve a particular goal and objective.
- equipment
 - labor
 - money
 - time
9. This system is also known as filler system. In this way, planting another plant in the center of each square makes use of empty space.
- Contour System
 - Quincunx System
 - Rectangular System
 - Square System
10. _____ is enriching materials used on land to increase its productivity. It contains nutrients that plants and trees need to grow.
- fertilizer
 - sunlight
 - temperature
 - water



Additional Activities

Conduct a survey to identify the design and layout of the existing orchard garden and nursery seedling production in your community.



Answer Key

<div>Assessment</div> <div>1. c 2. d 3. c 4. b 5. a 6. c 7. d 8. a 9. b 10. a</div>	<div>What's More</div> <div>Activity # 1 1. Rectangular 2. Triangular 3. Square 4. Contour 5. Quincunx Activity # 2 1. / 2. X 3. / 4. / 5. / Activity # 3 1. Water 2. Money 3. Fertilizer 4. Equipment 5. Time</div>	<div>What I Know</div> <div>1. Square system 2. Availability of resources 3. Time 4. Contour system 5. Money 6. Fertilizer 7. Quincunx system 8. Equipment 9. Water 10. Triangular system</div>
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