

**Penang Sangam High School**  
**P.O. Box 44, Rakiraki**  
**Year 12 Agriculture Lesson Notes Week 15**

<b>Strand</b>	<b>AS 12.3 Agronomy</b>
<b>Sub-Strand</b>	<b>AS 12.3.2.4: Ornamental Horticulture</b>
<b>Content Learning Outcome</b>	<b>Research and elaborate on the production of tree crops.</b>

**Lesson 1: Introduction**

**Lesson Outcome:** Differentiate among the main uses of trees in Fiji.

<u>Arboriculture</u> - the study of the selection, planting, care, and removal of individual trees, shrubs, vines, and other perennial woody plants  <u>Tree</u> - woody perennial plant with a single stem or trunk bearing lateral branches.	In Fiji, trees are valued for: -source of food -non-food materials such as wood and medicine -horticultural purposes - aesthetic value & preservation of wild life -shade -boundary markers -environmental purposes - preventing erosion and landslides
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**Lesson 1: Tree Crops in Fiji**

**Lesson Outcome:** Differentiate among the types of tree crops in Fiji

**2018 – Why majority of fruit trees in Fiji are not cultivated in orchards?**

Although some tree crops are planted in forests and orchards in Fiji, many valuable trees are found growing naturally or are planted as single trees on homesteads and farms.

**2017 - Differentiate**

Hardwood – the wood of an angiosperm tree and is relatively heavy and hard.

Softwood - the wood of a coniferous tree and is relatively light and soft.

Trees can be divided using many criteria but will be studied under the following categories.

<b>Category</b>	<b>Family of Tree</b>	<b>Example</b>	<b>Scientific Name</b>
1. Food and beverage producing trees	Moraceae family	Breadfruit	<i>Artocarpus altilis</i>
		Jackfruit	<i>Artocarpus heterophyllus</i>
	Arecaceae/Palm family	Coconut palm	<i>Cocos nucifera</i>
		Betel nut palm	<i>Areca catechu</i>
	Rutaceae/Citrus family <b>2017</b>	Sweet orange	<i>Citrus sinensis</i>
		Grapefruit	<i>Citrus paradise</i>
		Lemon	<i>Citrus limon</i>
		Lime	<i>Citrus aurantifolia</i>
		Shaddock	<i>Citrus maxima</i>
		Tangerine	<i>Citrus nobilis</i>
		Mandarin	<i>Citrus reticulata</i>
		Kumquat	<i>Citrus sensu lato</i>
	Other fruit trees <b>2018 - Diagram</b>	Mango	<i>Mangifera indica</i>
		Avocado	<i>Persea Americana</i>

		Pawpaw	<i>Carica papaya</i>
		Malay apple (kavika)	<i>Syzygium malaccense</i>
		Tahitian chestnut (Ivi)	<i>Inocarpus fagifer</i>
		Coffee	<i>Coffea arabica</i>
		Cocoa	<i>Theobroma cacao</i>
		Soursop	<i>Annona muricata</i>
		Dragon plum	<i>Dracontomelon vitiense</i>
		Oceanic lychee (dawa)	<i>Pometia pinnata</i>
		Cutnut (vutu kana)	<i>Barringtonia adulis</i>
		Polynesian plum (wi)	<i>Spondias dulcis</i>
	Musa family	Banana	<i>Musa acuminata</i>
	2018 - MC	Plantain (vudi)	<i>Musa paradisiaca</i>

## 2. Wood Producing Trees

Types of Trees	Common Name	Scientific Name	Uses
Endemic hardwood trees	Yasiyasi 2017	<i>Cleistocalyx ellipticus</i>	-heavy construction -decking, flooring and stairs -door and window sills
	Coconut	<i>Cocos nucifera</i>	-flooring and furniture -carving and construction
	Vesi	<i>Intsia bijuga</i>	-heavy construction/beams -doors and window sills -wharves and bridges -boat framing -heavy duty flooring
	Damanu	<i>Calophyllum neo-eudicium</i>	-general construction -interior stairs -house frames -weatherboards

Types of Trees	Common Name	Scientific Name	Uses
Endemic softwood trees	Dakua makadre	<i>Agathis vitiensis</i>	-household items like tanks, carvings and furniture -decking
	Dakua salusalu	<i>Decussocarpus vitiensis</i>	-interior finishing, window frames, doors -furniture, cabinets and weather boards
	Yaka	<i>Dacrydium nidulum</i>	-furniture, lining, decorative paneling -polished flooring, plywood -sliced veneer
	Kauvula	<i>Endospermum macrophyllum</i>	-interior finishing, furniture, joinery -fruit crates, weatherboard
	Rosawa	<i>Gmelina vitiensis</i>	-boat building, decking -diving boards, carving -food manufacturing equipment
Exotic hardwood trees	Mahogany	<i>Swietenia macrophylla</i>	-general joinery work and furniture -carvings and construction
	Anthocephalus	<i>Anthocephalus chinensis</i>	-interior finishing and matches -linings, plywood and boxing
	Cordia	<i>Cordia alliodora</i>	-furniture, cabinet making and joinery

			-paneling, lining, and carving
	Lemon scented gum	<i>Eucalyptus citriodora</i>	-flooring and house frames -posts, poles and general construction
	Rainbow gum	<i>Eucalyptus daglupta</i>	-furniture -interior joinery and paneling
	Raintree	<i>Samanea saman</i>	-furniture and paneling -carvings and slice veneer
Exotic softwood trees	Caribbean pine	<i>Pinus caribea var.hondurensis</i>	-posts and poles -flooring, walls, furniture and joinery -paneling, plywood and boxing
	Slash pine	<i>Pinus elliotti Engelm</i>	-posts and poles
Shrubs/Mulberries	Beach mulberry [Kura]	<i>Morinda citrifolia</i>	-medicinal plant
	Paper mulberry [Masi]	<i>Broussonetia papyrifera</i>	-bark used to produce tapa
	<b>2017 – Main Product?</b>		

#### **AS 12.3.2.4: Tree Crops in Fiji**

**Content Learning Outcome:** Elaborate on the cultivation of tree crops.

#### **Lesson 1: Matching Tree to Site**

**Lesson Outcome:** Discuss factors to consider when matching a tree to a site.

The following must be considered when deciding on a site to plant a tree:

<b>1. <u>Size of the tree</u></b> -area to accommodate number of trees to be planted -soil deep enough to anchor the tree -location of utilities such as electric lines, water and sewage lines, foot paths	<b>2. <u>Life span of tree species</u></b> Land tenure – trees have long life span e.g. 80 or more years for mahogany Inheritance – who inherits if trees outlive the farmer?
<b>3. <u>Main product</u></b> -what is the tree planted for -maturity time -market accessibility	<b>4. <u>Requirements of the tree</u></b> -adapt to environment -will topography affect husbandry and harvesting practices -availability of infrastructure such as roads, shipping services and ports -soil productivity
<b>5. <u>Number of trees</u></b> ✓ enough saplings available for planting ✓ economically viable (profitability of short term crops)	<b>6. <u>Environmental considerations</u></b> -benefit or harm to local species and wildlife -commercial area or protected zone -will husbandry and harvesting operations: <input type="checkbox"/> affect water catchment area? <input type="checkbox"/> cause land degradation like erosion and landslides? <input type="checkbox"/> impact communities nearby?

Once the site has been looked at, the tree species must also be considered:

1. Height - will the tree hinder anything when it is fully grown?
  2. Canopy - how wide will the tree grow?
  3. Deciduous or coniferous - will it lose its leaves in winter
  4. Form or shape - columnar tree will grow in less space. Round and V-Shaped species provide the most shade.
  5. Growth rate - how long will it take for your tree to reach its full height?
  6. Soil, sun, and moisture requirements.
  7. Flowers and fruit - will bloom and attract animals like bees and bats? Eg. Jackfruit
- Will the flowers and fruit fall onto roofs and cause rusting or paths and make a mess?

### **2017 - Problem with growing fruit trees?**

### **Lesson 2: Transplanting Saplings**

**Lesson Outcome:** Discuss land preparation for tree planting.

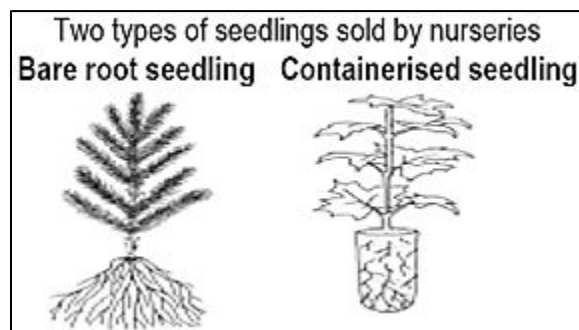
Grove - a group of trees planted and cultivated to bear fruit, nuts, etc.

Sapling - a young tree, especially one with a slender trunk

Land must be carefully prepared before planting trees. Large trees which will damage or compete with the tree crop are removed. Lines along which to plant saplings are marked out and vegetation is cut in a process called brushing down.

The positions of the planting drills are determined along the cleared lines, with the spacing required for the species taken into account.

At each planting drill, the vegetation is cleared and the drill prepared.



### **Methods of Planting Seedlings/Saplings**

1. Hole planting - suitable when transplanting a few saplings

-dig hole twice the size of roots and deep enough to hold all the roots

-place tree seedling or sapling in the planting hole, keeping the roots spread out

-fill in the planting hole with soil around the roots

-mulch

-irrigate

