

Year 9 Science

Term 1 Study Notes

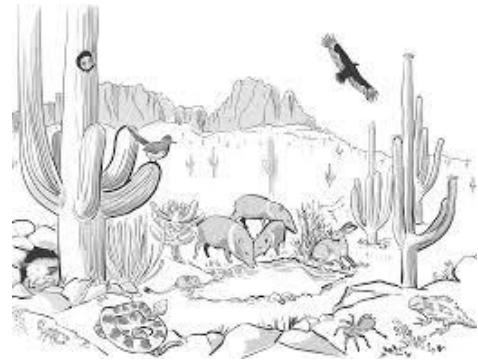
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God is Love: Ecosystems

Introduction

Questions about the Creation



If God is a God of love, why did He create animals to kill one another?

God did not design the world to operate the way it does. Death wasn't even a thing until Adam chose to sin against God. Before sin came into the world. The Earth was perfect. Humans and animals were perfect. It was Paradise. There was no diseases or genetic defects. There were no weeds, thorns or thistles.

The wolf could lay down with the lamb. You could walk right up to a lion and stroke it. Basically, everything bad in the world, like pain and suffering, are a result of man's sinful behaviour.

God, in His great love for us, sent His Son Jesus to pay the price for our sin. To repent of your sin and give your life to Jesus does not mean that you will be free from pain and suffering in this life, but you will be free from the penalty of sin. That is, you will be no longer separated from God in the next life.

After Jesus returns, the whole Earth will be restored to its original state of perfection, and once again the wolf will be able to lie down with the lamb. Animals will be vegetarian again, the way God originally made the.

Isaiah 11:6-8 The wolf shall dwell with the lamb, and the leopard shall lie down with the young goat, and the calf and the lion and the fattened calf together; and a little child shall lead them. The cow and the bear shall graze; their young shall lie down together; and the lion shall eat straw like the ox. The nursing child shall play over the hole of the cobra, and the weaned child shall put his hand on the adder's den.

Revelation 21:1-5 Then I saw "a new heaven and a new earth,"[a] for the first heaven and the first earth had passed away, and there was no longer any sea. 2 I saw the Holy City, the new Jerusalem, coming down out of heaven from God, prepared as a bride beautifully dressed for her husband. 3 And I heard a loud voice from the throne saying, "Look! God's dwelling place is now among the people, and he will dwell with them. They will be his people, and God himself will be with them and be their God. 4 'He will wipe every tear from their eyes. There will be no more death'[b] or mourning or crying or pain, for the old order of things has passed away." He who was seated on the throne said, "I am making everything new!" Then he said, "Write this down, for these words are trustworthy and true."

If God is a God of love, why did he create animals with stings and poisonous bites, like bees and snakes?

The whole creation is affected by sin, it is likely that bees and snakes had stingers and fangs when God created them, but they were not venomous and meant to cause harm. When Adam and Eve sinned, a curse was put on the world, which changed things.

Questions and Answers

Unit 1 Page 51

1. What is an ecosystem?

Ans: An ecosystem is a living system where there are these components:

- Energy (heat and light the sun)
- Chemicals (such as chemicals in soil and water)
- Producers (plants, which produce food)
- Consumers (living things that eat food)

2. What Are Producers and Consumers?

Producers are organisms that produce their own food. Producers include plants, bacteria, algae and phytoplankton. (Phytoplankton are small floating organisms that contain chlorophyll.)

What are consumers?

These are organisms that eat producers. Organisms that consume dead organisms are called decomposers.

Two types of consumers are primary consumers and secondary consumers. An example of Primary producers would be herbivores such as cows.

Animals that eat other animals are considered secondary consumers.

Decomposers are the organisms that break down dead organisms. Examples of decomposers include fungi and bacteria. Decomposers essentially recycle matter, which becomes available for producers to absorb via their root systems.

3. What kind of ecosystems are there?

- Terrestrial ecosystems (on the ground) such as grasslands, forests and gardens
- Aquatic ecosystems (in water) such as a coral reef, a creek or a coastal ecosystem

4. What are corals?

Corals are colonial animals, meaning that they live in a colony. Each coral is cylindrical in shape, has a mouth usually surrounded by tentacles at one end, and is often attached to something at the other end.

5. What kinds of coral are there?

– according to where they are found:

1. Fringing Reef - border the shores, surrounding the islands. (Commonly found in Fiji).

2. Lagoon - enclosed flat-topped reefs

3. Barrier Reef - Found at some distance off-shore

4. Platform Reef - accumulated small patches found inshore of the barrier reef.

According to their structure:

There are hard corals and soft corals.

6. Why are coral reefs important?

- Homes/Habitats to a variety of marine organisms, e.g. Fish, worms, clams, starfish, crustaceans
- Protect island shorelines from strong waves
- Important part of the ocean food web
- Income Earner (Families/Country – revenue)
- Tourist Attraction
- Contributes to the formation of islands

7. What are *abiotic* and *biotic* factors affecting the environment?

Abiotic factors are the non-living features of the environment.

- Physical factors include temperature, light, landform, tides, and shelter
- Chemical factors include amount of water, salinity, soil nutrients

Biotic factors are the living organisms that occur in the environment. An organism may be affected by:

- Activities of members of the same species: competing for resources or competing for a mate for reproduction.
- Activities of members of different species, such as predators or parasites
A predator is an organism that primarily obtains food by the killing and consuming of other organisms

A parasite is a disease-causing organism that lives on another species.

8. What are 3 types of interactions that occur within an ecosystem?

- Competition – an organism struggles to survive as they compete for limited resources such as food, water or shelter
- Predation - One organism, called the predator kills another organism called the prey for food.
- Symbiosis – 3 types of symbiosis -

A) Mutualism – both species benefit. EXAMPLE: Goby fish and shrimp demonstrate an elaborate and highly responsive mutual relationship. Shrimp

build burrows that they allow goby fish to live in. In return, the goby fish use their superior eyesight to warn the shrimp of nearby predators.

B) Commensalism – one species benefits, but the other is neither helped nor harmed. EXAMPLE: The pilot fish follows the shark and feed on the leftovers of its meals.

C) Parasitism – one organism (parasite) lives in or on another organism (the host) and it harms it. EXAMPLE: Fleas are parasites that live on the skin of animals, hiding in the fur and causing viruses.

9. What is a food chain?

Within an ecosystem, animals eat organisms and are in turn being eaten. The food relationship among organisms in an ecosystem is called a food chain. Every plant and animal in a food chain is called a link. The number of links may vary from one food chain to another. Food chains start with the sun, and then green plants. EXAMPLE:

THE SUN - CABBAGE LEAF – CATERPILLAR – BIRD

10. What is a food web?

This is the formation of a network of interconnected food chains. It involves producers and consumers. EXAMPLE: Squirrels eat a variety of foods, including nuts, fruits, seeds, fungi, and insects. Similarly, squirrels are prey for not only foxes but also hawks, owls, and other predators.

11. How do plants respond to external stimuli?

- Phototropism is a plant's growth response to light.
- Geotropism is a plant's response to gravity, e.g. plants use the earth's gravitational pull for orientation. The roots grow downwards into the soil while the shoots grow into the opposite direction towards the light.
- Hydrotropism is a plant's response to water concentrations.
- Thigmotropism is a plant's response to physical contact, e.g., Climbing plants with coil- like structures (tendrils),

Year 9 Science Test

Ecosystems Unit 1

1. What is an ecosystem?
2. What are Producers and Consumers?
3. What kind of ecosystems are there?
4. What are corals?
5. What kinds of coral are there?
6. Why are coral reefs important?
7. What are abiotic and biotic factors affecting the environment?
8. What are 3 types of interactions that occur within an ecosystem?
9. What is a food chain?
10. What is a food web?
11. How do plants respond to external stimuli?

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Ecosystems Unit 1

12. What is an ecosystem?
13. What are Producers and Consumers?
14. What kind of ecosystems are there?
15. What are corals?
16. What kinds of coral are there?
17. Why are coral reefs important?
18. What are abiotic and biotic factors affecting the environment?
19. What are 3 types of interactions that occur within an ecosystem?
20. What is a food chain?
21. What is a food web?
22. How do plants respond to external stimuli?

Unit 2 - Biodiversity Page 64

1. What is biodiversity?

Biodiversity comes from two words Bio meaning *life* and diversity meaning *variability*. Biodiversity is the variety of all living things; the different plants, animals and microorganisms, the genetic information they contain and the ecosystems they form.

Levels of biodiversity:

Genetic diversity

Genetic diversity is the variety of genes within a species. Each species is made up of individuals that have their own particular genetic composition. This means a species may have different populations, each having different genetic compositions. To conserve genetic diversity, different populations of a species must be conserved. Genes are the basic units of all life on Earth. They are responsible for both the similarities and the differences between organisms.

Species diversity

Species diversity is the variety of species within a habitat or a region. Some habitats, such as rainforests and coral reefs, have many species. Others, such as salt flats or a polluted stream, have fewer.

2. Why is biodiversity in an ecosystem important?

- Provides humans and organisms with food, medicine and shelter
- Helps to keep our water clean – Natural vegetation around water catchment areas, help maintain healthy water systems, regulate and stabilise water runoff, and help to prevent extreme events such as flood and drought.
- Helps to form and maintain soil structure and helps to keep the soil moist and rich in nutrients. Dead and decaying organic matter breakdown with the help of fungi and bacteria leaving nutrients in the soil.
- Nutrient storage and recycling
- Breaking down and absorption of pollutants created by human activities such as oil spills, rubbish and waste water.

3. How can the changes in the ecosystem cause threats to the biodiversity of that ecosystem?

- Using up of natural resources before they can be renewed e.g. overfishing in oceans, over-harvesting of trees on land.
- Habitat destruction like clearing forest or draining wetlands for new developments or agricultural purposes.
- Releasing invasive species into foreign ecosystems like African tulip in forest, tilapia in Rewa river etc.
- Use of pesticides- they kill plants and animals

4. How does the Biosecurity Authority of Fiji help protect our ecosystems?

- Protects Fiji's agricultural sector from the introduction and spread of animal and plant pests and diseases.
- manages quarantine controls at our borders to minimise the risk of exotic pests and diseases entering the country.
- provides import and export inspection and certification to help retain the health of Fiji' animals, plants and people.

5. How does the introduced American Iguana affect Fiji's environment?

- They eat agricultural crops such as dalo leaves and cassava tops, bele, tomatoes, cabbage, beans and yam vines
- They eat native plants, bird eggs and nestlings.
- They may transmit disease to Fiji's native iguanas
-

6. What is Sustainability?

Sustainable means taking no more from nature than is naturally replaced in the long run. Sustainable use can keep going for a long time.

7. What is Conservation?

Conservation is the protection of valuable resources and management of forests, oceans, swamps and many more. It includes protection of wildlife, (especially endangered species), soil and energy.

8. Which area of Fiji has been identified as a priority for the conservation of Fiji's birdlife?

Since 2005, the forest of the Natewa Peninsula, part of the island of Vanua Levu was identified as a site of National Significance in the National Biodiversity Action Plan and the area was also designated as an Important Bird Area.

Year 9 Science Test

Biodiversity Unit 2

1. What is biodiversity?
2. Why is biodiversity in an ecosystem important?
3. How can the changes in the ecosystem cause threats to the biodiversity of that ecosystem?
4. How does the Biosecurity Authority of Fiji help protect our ecosystems?
5. How does the introduced American Iguana affect Fiji's environment?
6. What is Sustainability?
7. What is Conservation?
8. Which area of Fiji has been identified as a priority for the conservation of Fiji's birdlife?

Year 9 Science Test

Biodiversity Unit 2

1. What is biodiversity?
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Unit 3 - Plant Structure Page 71

1. What is anatomy?

Anatomy is the study of the internal structure of plants or animals.

2. What is morphology?

Morphology is the study of the external structure of plants or animals.

3. What are the functions of: leaves, stems and roots?

Leaves: to obtain light and make food for the plant.

Stems: to hold the rest of the plant by supporting the leaves, flowers and fruit.

Roots: to provide anchorage in the soil, absorption of water and minerals and transport these upwards for the plant.

4. Describe the following categories of green plants: algae, mosses, ferns, flowering plants.

Green plants are put into groups depending on certain features they possess.

Algae are the simplest plants. They grow in water, e.g. seaweed

Mosses live in moist, shady places, e.g. on rotting logs in the forest. They are very small plants and grow very close together. Sometimes they make a soft green mat on the forest floor.

Ferns mainly live in moist, shady places. Some even live on water. Most ferns have underground stems which grow horizontally. The back of the leaflets contain spores. The spores are scattered and grow into new plants.

Flowering plants (Angiosperms)

Flowering plants are the most common of all plants. They have roots, stems, leaves and flowers. They reproduce by seeds which are formed from flowers. The seeds are found inside a fruit.

5. What is Transpiration?

Transpiration is the evaporation of water into the atmosphere from the leaves and stems of plants. Plants absorb soil water through their roots and this water can originate from deep in the soil. Plants pump the water up from the soil to deliver nutrients to their leaves. This pumping is driven by the evaporation of water through small pores called "stomata",

which are found on the undersides of leaves. Transpiration accounts for approximately 10% of all evaporating water.

6. Why is transpiration important?

1. It helps to keep the plant cool when temperature and sunlight cause the rapid evaporation of moisture.
2. Helps to draw more water and minerals upwards from the soil.
3. Allows for photosynthesis to occur by helping the plant obtain the carbon dioxide it needs from the atmosphere as it releases oxygen contained in water vapour.

7. Which environmental factors affect the rate of transpiration?

1. Light

Plants transpire more rapidly in the light than in the dark. This is largely because light stimulates the opening of the stomata. Light also speeds up transpiration by warming the leaf.

2. Temperature

Plants transpire more rapidly at higher temperatures because water evaporates more rapidly as the temperature rises.

3. Humidity

The rate of diffusion of any substance increases as the difference in concentration of the substances in the two regions increases. When the surrounding air is dry, diffusion of water out of the leaf goes on more rapidly.

4. Wind

When there is no breeze, the air surrounding a leaf becomes increasingly humid thus reducing the rate of transpiration. When a breeze is present, the humid air is carried away and replaced by drier air.

5. Soil water

A plant cannot continue to transpire rapidly if its water loss is not made up by replacement from the soil. When absorption of water by the roots fails to keep up with the rate of transpiration, loss of turgor occurs, and the stomata close. This immediately reduces the rate of transpiration (as well as of photosynthesis). If the loss of turgor extends to the rest of the leaf and stem, the plant wilts.

9. What is Photosynthesis?

Photosynthesis is the process by which plants use light, carbon dioxide from the air, and water from the soil, to make food.

Photosynthesis can be summed up like this:

carbon dioxide + water + light → sugars + oxygen

9. What is the green part of plants called, necessary for photosynthesis:

Chlorophyll

10. Name some factors that affect the rate of photosynthesis.

Light Intensity; The Concentration of Carbon Dioxide; Temperature; Chlorophyll; Water; Polluted Atmosphere

11. What are the two types of reproduction in plants?

asexual reproduction and sexual reproduction.

12. List some ways that stems can reproduce plants (asexual reproduction)

Runners: Roots spread along the ground and form new plants.

Rhizomes: These stems grow horizontally under the ground.

Bulbs: Bulbs have very short stems with closely packed leaves arranged in concentric circles around the stem. These leaves are swollen with stored food. e.g. onion.

Corms: Corms also have short stems which swell and stores food. As with bulbs, the terminal bulb grows into a flowering shoot and the lateral buds produce new plants

13. List some artificial ways that plants can reproduce.

Grafting -A bud or shoot from one plant is inserted under the bark on the stem of another closely related variety.

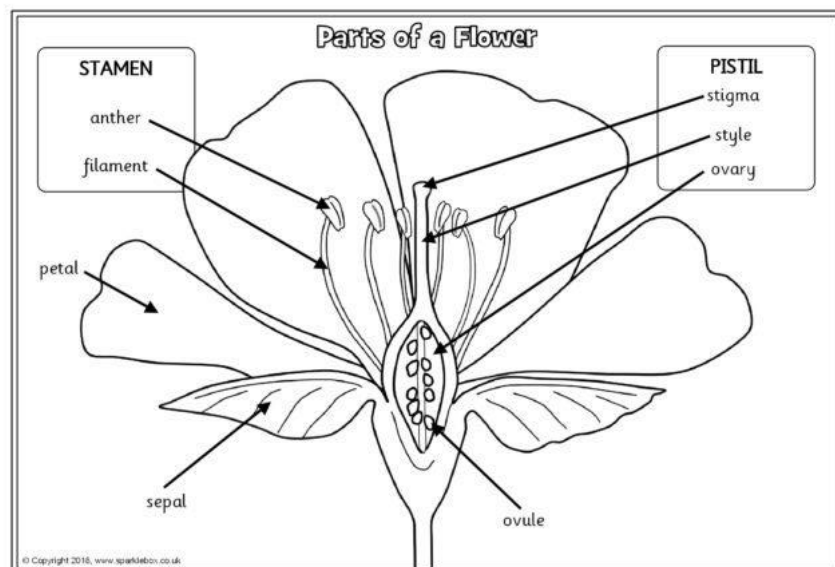
Cuttings - This method produces new individuals from certain plants by putting the cut end of a shoot into water or moist earth.

14. Which part of the plant is responsible for sexual reproduction?

The flower

15. Label the parts of the flower:

- sepal
- petal
- stamen (the male part)
- the anther
- filament
- pistil (the female part)
- stigma
- ovary
- ovule



16. What is pollination?

Pollination is the transfer of pollen grains from the anther of one flower to the stigma of another flower or to the same flower.

17. What is fertilization?

Fertilization in plants involves the fusion of the male and female flower parts to form the fruit and seeds.

18. Explain how insects help with pollination.

Insects collect pollen from one flower and when they get to another flower of the same type, some of the pollen rubs on to the stigma of the flower.

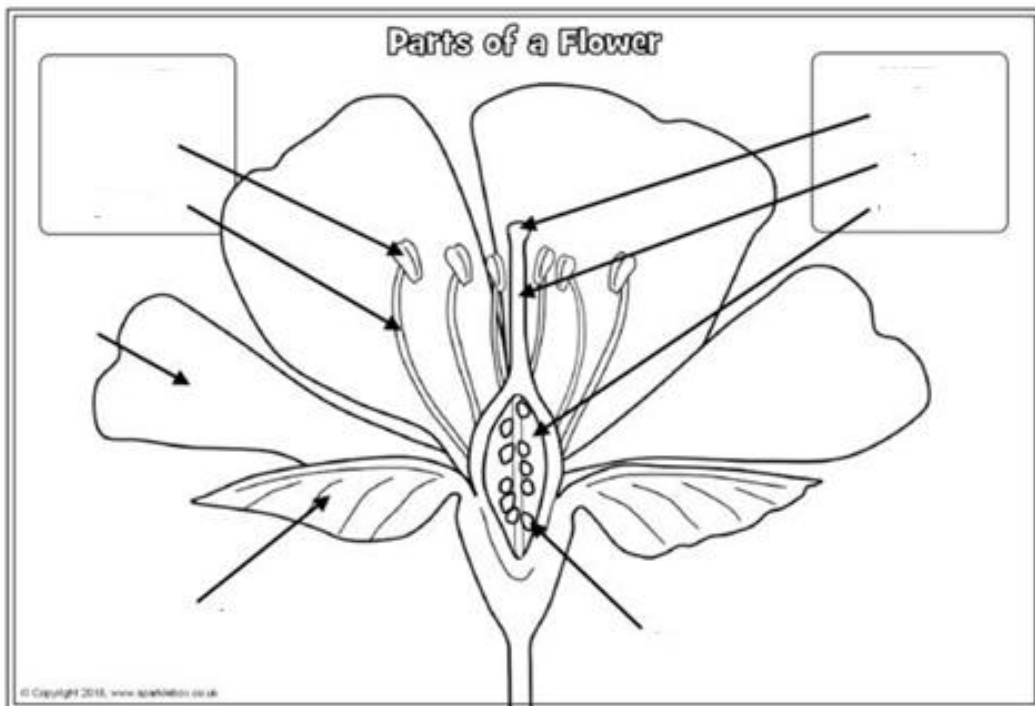
19. How are seeds dispersed?

1. Wind – this method of dispersal is for seeds that are light or have wings, eg grass seeds, invasive species like African Tulip.
2. Water – The seeds in this mode of dispersal may float away, e.g mangrove and coconut.
3. Animals – the seeds may stick to the coat of animals or go through the digestive system. If it goes through the digestive system, it must provide a food source eg pawpaw, tomatoes.
4. Explosive Mechanism – the seeds are contained in pods and are thrown away at a distance from the parent plant when the pods dry and open. They could also be helped by wind currents in dispersal.

Year 9 Science Test

Biodiversity Unit 3

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2. What is morphology?
3. What are the functions of: leaves, stems and roots?
4. Describe the following categories of green plants: algae, mosses, ferns, flowering plants.
5. What is Transpiration?
6. Why is transpiration important?
7. Which environmental factors affect the rate of transpiration?
8. What is Photosynthesis?
9. What is the green part of plants called, necessary for photosynthesis:
10. Name some factors that affect the rate of photosynthesis.
11. What are the two types of reproduction in plants?
12. List some ways that stems can reproduce plants (asexual reproduction)
13. List some artificial ways that plants can reproduce.
14. Which part of the plant is responsible for sexual reproduction?
15. Label the parts of the flower:



16. What is pollination?
17. What is fertilization?
18. Explain how insects help with pollination.
19. How are seeds dispersed?

Additional information

Fijian Medicinal Plants

Fijian name: Tavola

English name: Beach Almond Tree

Botanical name: *Terminalia catappa*

The Tavola tree grows near the beach but can be found inland as well.

It grows into a very tall tree with one main trunk from which the branches stand straight out, like an umbrella.

The leaves are large and pear shaped, dull green in colour which turn gold and red before falling from the tree making them completely bare, once a year.

Mainly used as a general tonic or pick-me-up after illness and commonly given to children who are lethargic.

Headaches and migraine may be remedied by squeezing the juice of the leaf into the nostrils.

The leaves may also be chewed and their juice swallowed as the treatment of a simple cough, and can be applied directly to aid healing of wounds and burns.

The Tavola seed is edible, but you must get through the fibrous outer layers before finding the kernel inside.

The kernel is delicious roasted and can be used as a substitute for pine nuts in pesto.

Fijian name: Quwawa

English name: Guava

Botanical name: *Psidium guajava*

This is a renowned medicine of the tropics and a fruit that most people should be familiar with.

The guava tree has become an invasive species in Fiji and you can find one almost anywhere. It is commonly used to treat diarrhea and dysentery.

The juice of the leaves can also be used in treatment of coughs and stomach ache. The juice can be squeezed into salt water and used to treat tooth aches.

The young leaves are pounded and soaked in water, this mixture is then drunk or alternatively the leaves can be chewed and the juice swallowed, spitting out the dry remains.

Sometimes you may find that if you eat too many of the fruit, especially green; you end up with constipation or a very sore tummy. I'd recommend not eating too many. Another interesting fact about the guava is that it is believed to alleviate a hangover when tender guava leaves are chewed before taking intoxicating drinks, so before overdosing on Fijian Bounty Rum, have a chew on some guava leaves!

Fijian name: Wa Bosucu

English name: Mile-a-minute

Botanical name: *Mikania micrantha*

Called by this name because that is just what it does given half the chance.

It can cover and ruin a garden in a very short space of time. Has rather pointy leaves and when in flower has clumps of very small white blossoms.

The juice of the leaves may be used for the treatment of wounds and is valued as a remedy to stop bleeding, including nose bleeds. Crush up the leaves in your palms and apply directly to the wound.

Also great to apply to stings of any sort.

Fijian name: Vau

English name: Beach hibiscus

Botanical name: Hibiscus tiliaceus

Very common by the seaside, the Vau has many uses, not only medicinal. Has heart shaped papery leaves and yellow or dark red flowers very much like hibiscus bloom.

The stringy bark can also be used for rope.

For sprained limbs, the leaves are placed over the swelling and strapped on overnight.

By the next morning the swelling has usually disappeared and the limb is massaged with oil, to strengthen it. This treatment works surprisingly well.

Fijian name: Totodro

Botanical name: Centella asiatica

This is a ground creeper that has leaves very similar to a violet, which are small and round with crinkly edges.

The leaves have antiseptic as well as antimicrobial properties.

Leaves can be used to stop bleeding of wounds by acting as a clotting agent and are also pounded up and the juice drunk for severe stomach ache and/or period pains.

Fijian name: Niu Damu

English name: Coconut Palm

Botanical name: Cocos nucifera

Coconut is highly nutritious and rich in fiber, vitamins, and minerals. It is classified as a “functional food” because it provides many health benefits beyond its nutritional content. Coconut oil is of special interest because it possesses healing properties far beyond that of any other dietary oil and is extensively used in traditional medicine among Asian and Pacific populations.

Pacific Islanders consider coconut oil to be the cure for all illness. For the treatment of fish poisoning or seafood poisoning, grate the coconut flesh and squeeze the milk from this to make nearly a cupful, drink as much of the liquid as is possible and repeat often.

Juice drunk straight from the coconut, and juice squeezed from the roots can help in asthma cases

Fijian name: Botebote Koro

English name: Goat Weed

Botanical name: Ageratum conyzoides

The leaves of this plant have antiseptic properties. The crushed leaves help to stop bleeding (of wounds) by encouraging clotting. The leaves are also crushed and used as a poultice for

boils, sores and swollen feet. Essential oils from this plant have been shown to demonstrate antibacterial properties against a certain strain of bacterium, staphylococcus aureus. The plant has also shown anti-fungal and anti-inflammatory properties

Lemon tree

The leaves can be used for tea. The tender leaves can be chewed or juiced to help with coughs or irritation of the throat.

Musa family (banana and plantain)

Jaina Leka

This is a dwarf banana plant known for its small fragrant fruit. Liquid pressed from the young leaves is used in the treatment of painful urination with small flow. It is also used as a remedy for swelling behind the ears, for stomach ache and to relieve fever. The flowers can be used to treat diabetes.

English name: Lion's tongue or Mother-in-law's tongue

Botanical name: Sansevieria

The leaves are heated and the juice is squeezed out and applied to an ear infection to help ease ear ache.

Fijian name: Kura

English name: Indian Mulberry

Botanical name: Morinda citrifolia

It is found in India, Fiji and other Polynesian islands. Liquid is pressed and snuffed into the nostrils to treat bad breath and a raspy voice. A preparation made by pounding and straining the young fruit is applied directly to mouth ulcers and hemorrhoids. It is also used to treat hernia.

Pain caused by the barbs of poisonous fish such as stone fish and stingray, may be relieved by holding the affected area in the steam of boiling leaves. To aid the removal of splinters, a leaf is held over the cut.

Fluid squeezed from the root is mixed with water and applied to boils while liquid pressed from the leaf is used as a rinse for eye injury and eye infections.

The fruit is used in the treatment of diabetes

Fijian name: WA Ni Lekutu, Yalu, Maca

Botanical name: Epipremnum pinnatum

Pressed fluid of the bark is given for appendicitis.

Pressed liquid of the inner bark is used as a remedy for cold and flu.

Women take pressed liquid of the stem to re-establish menstrual periods and promote fertility

The stem is also used in treatment of swollen stomach and for the bacterial infection thrush, for pain in the bones, and for back pain.

Scrapings from the stem are applied locally to sprains.

The stem is also used for treatment of respiratory ailments, for swelling behind the ear and for hernias

Large wounds are treated with direct application of inner sap.

The leaves are cut up, mixed with coconut oil and applied locally to fractured bones.

Fijian name: Co Qaloqalo

Botanical name: Flagellaria indica

The leaves are crushed and the liquid drunk for stomach upsets

English name: Egg Plant

Botanical name: Solanum melongena

Leaves are used for cuts

Fijian name: Via

English Names: Giant taro, Elephant ear

Botanical name: Alocassia macrorhiza

The young leaves and sap of the stem are used to treat boils and earache

Swollen lymph glands are treated with the roots. The wood is used to treat stomachache and diarrhoea.

Fijian name: Rokete

English name: Chili

Botanical name: Capsicum anuum

Leaves used to help cure boils

Fijian name: Maoli, Weleti

English name: Papaya / Paw paw

Botanical name: Carica papaya

This is the common papaya/paw paw tree cultivated for its delicious fruit found throughout the tropics.

A mouthwash made from scrapings of the inner bark is given for tooth aches.

The juice of the stem is applied directly to boils. A poultice can be made from the bark.

Sap squeezed from the stem can be applied to wounds.

The leaves and seeds can be used by cancer patients; also for asthma and diabetes

Fijian name: Mago

English name: Mango

Botanical name: Mangifera indica

The inner bark is scraped and the pressed juice is given for a bad cough

Pressed juice from the root helps in cases of diarrhea

English Name: Red Ginger

Botanical names: Alpinia purpurata; Zingiberaceae

The fruit is used to treat sores

References:

http://www.centerfortraditionalmedicine.org/uploads/2/3/7/5/23750643/medicinal_plants_in_the_south_pacific.pdf

<http://fijimarinas.com/medicinal-plants-of-the-fijian-sea-shore/>

For Power Point showing coloured photographs, see

<https://beaconmedia.com.au/beaconmedia/secondary/fiji-secondary-curriculum/>