



# Pathfinder Honour: Trainer's Notes

## Palms



### Instructions to Trainers / Instructors of this Honour

Thankyou for being involved with this Honour. These notes have been developed to assist in teaching / instructing this honour. We recognise that there is much more information available and we are grateful that you should share your expertise.

Please remember that Honours are designed to develop our Pathfinders in many ways; their interests, their knowledge and their relationship with their Saviour and Creator. Your enthusiasm and creativity will have a huge impact on those doing the honour.

To complete an Honour, the following (where applicable) must be completed satisfactorily:

- Physical and Practical Requirements.
- Honour Workbook.
- Honour Assessment Sheet. *(On SPD Honour Website but Leader's level access is required)*

### Additional Reference Material

Please refer to the text of these Trainer's Notes

### Acknowledgements

These honour notes were initially developed by Lavinia Tiko (Fiji Mission) primarily for use in Fiji and, with some adjustments, for use in the tropical islands of the South Pacific. The honour has been expanded for all the SPD with the aim of extending cultural awareness and knowledge of this fascinating subject.

Wikibooks has been a very useful source (please see text for citations), but be aware that material on any Wikibooks website is beyond the control of the SPD.

# Palms Honour

## **REQUIREMENT 1: Give the general characteristics of palms referring to the following parts:**

The Trainer's Notes for Requirements 1,2 and 3 are from the following source:

[http://en.wikibooks.org/wiki/Adventist\\_Youth\\_Honors\\_Answer\\_Book/Nature/Palm\\_Trees](http://en.wikibooks.org/wiki/Adventist_Youth_Honors_Answer_Book/Nature/Palm_Trees)

### **a. Stem or trunk**

A palm trunk are usually a straight, unbranched stem, though rarely the trunk will divide into two branches. Unlike other trees, palms add new growth to the inside of the stem. Other trees add new growth to the outside of the trunk. Thus, on a palm, the living wood is at the heart of the trunk and the old, dead wood is on the outside. In non-palms, the opposite is true.

### **b. Roots**

Palms are monocots, belonging to the same family as grass and bamboo. As such, their roots do not gain much diameter once the plant reaches maturity. Roots of dicots, on the other hand (that is, broadleaf plants such as oaks and maples) continue to grow and get fatter as long as the plant lives. Thus, the roots of a dicot will destroy a sidewalk as it heaves up the concrete, while a palm will do no damage.

Palm roots are usually called "rootballs" because they form round structures. Rootballs will branch a bit but do not grow larger once the tree is mature.

### **c. Leaves**

Palms have large evergreen leaves that are either palmately ('fan-leaved') or pinnately ('feather-leaved') compound and spirally arranged at the top of the stem. The leaves have a tubular sheath at the base that usually splits open on one side at maturity.

### **d. Inflorescence or Flowers**

The inflorescence is a panicle or spike surrounded by one or more bracts or spathes that become woody at maturity. The flowers are generally small and white, and radially symmetric. The sepals and petals usually number three each and may be distinct or joined at the base. The stamens generally number six, with filaments that may be separate, attached to each other, or attached to the pistil at the base.

### **e. Fruits**

The fruit is usually a single-seeded drupe (ie a fleshy fruit in which the seed is separated from the outer flesh by a hard inner layer of bony, woody or fibrous tissue), but some genera (e.g. Salacca) may contain two or more seeds in each fruit.

## **REQUIREMENT 2: What happens when the crown of a palm is cut out?**

New growth comes from the crown, so if the crown is out, the tree will die.

## **REQUIREMENT 3: What happens when the trunk of a palm is damaged?**

The outer layers of a palm's trunk consists of dead tissue, and as such, it will not heal (just as your fingernails and hair do not "heal").

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## REQUIREMENT 4: Describe how to plant a palm tree.

Planting Palm Trees is not much different from the way you would plant other kinds of trees.

Nursery-grown palms should be potted, balled or burlapped at the root.

Try to plant your palm tree shortly after uprooting the shoot, making sure that the palm tree's root ball is kept moist but not soaking.



## REQUIREMENT 5: Draw (or photograph) and name six different palms which grow in your area showing clearly the leaf formation, flowers, seed shape and fruit.

### References for Fiji Palms

Please see Palms, Fiji Honour Trainer's Notes.

### References for Australian Palm Trees

There are approximately 57 palms native to Australia. With the exception of the climbing lawyer vines or wait-a-while (*Calamus*), they all look palm-like. Palms are wide spread; in rain forests, woodlands and even in some desert gorges.

Please refer to any reputable book on Australian Flora. Specific books are as follows:

- Cronin, L. *Key Guide to Australian Palms, Ferns & Allies*. Reed, 1989. (192 pp.) [Detailed, non-technical descriptions, with good quality colour paintings].
- Jones, D.L. *Palms in Australia* (3<sup>rd</sup> edition.) Reed, 1996. (278 pp.) [Extensive information on all aspects of native and exotic palms. Many colour plates].

The Australian Plant Image Index, (Australian National Botanic Gardens, Australian National Herbarium) website has some excellent pictures. Check out the following:

<http://www.anbg.gov.au/photo/apii/genus/Livistona>  
<http://www.anbg.gov.au/photo/apii/genus/Lepidozamia>  
<http://www.anbg.gov.au/photo/apii/genus/Calamus>  
<http://www.anbg.gov.au/photo/apii/genus/Archontophoenix>

### References for New Zealand Palms

There is only one palm, The Nikau Palm, which is considered to be native to the mainland islands of New Zealand. It grows in the lowland forests on the North Island and in the northern coastal areas of the South Island. It is also found at 44 degrees south on the Chatham Islands. This is the most southerly of any of the native palms.

The Palm and Cycad Society of New Zealand has useful information on its website:

<http://www.nzpalmandcycad.com/>

## Palms Honour

**REQUIREMENT 6: By writing short paragraphs or notes, either:**

- (a) **Describe the role palms play in your culture:**
- (i). **Their significance to your culture.**
  - (ii). **Their uses for food and how to prepare that food**
  - (iii). **Other uses besides that of food.**

**Or;**

- (b) **Describe the role palms play in a culture which is not your own:**
- (i). **Their significance to that culture.**
  - (ii). **Their uses for food and how to prepare that food**
  - (iii). **Other uses besides that of food.**

Note: For information on Palm Trees and Fiji, please see:  
Palms, Fiji Honour Trainer's Notes

### **Coconut Palm (*Cocos nucifera*)**

These notes on coconut palms are based on the following.

[http://en.wikibooks.org/wiki/Adventist\\_Youth\\_Honors\\_Answer\\_Book/Nature/Palm\\_Trees](http://en.wikibooks.org/wiki/Adventist_Youth_Honors_Answer_Book/Nature/Palm_Trees)

The coconut palm is grown throughout the tropical world, for decoration as well as for its many culinary and non-culinary uses; virtually every part of the coconut palm has some human uses.

#### **Significance to cultures**

Nearly all parts of the coconut palm are useful, and the palms have a comparatively high yield, up to 75 fruits per year; it therefore has significant economic value. The name for the coconut palm in following languages describes its role in that culture

- Sanskrit: *kalpa vriksha*; "the tree which provides all the necessities of life".
- Malay; *pokok seribu guna*, "the tree of a thousand uses".
- Philippines, the coconut is commonly given the title "Tree of Life".

It is theorized that if you were to become stranded on a desert island populated by palm trees, you could survive purely on the tree and coconut alone, as the coconut provides all of the required natural properties for survival.

#### **Uses as food**

The white, fleshy part of the seed is edible and used fresh or dried in cooking.

A delicious, syrupy, sweet-tasting 'desert' called *macapuno* is commonly made in the Philippines from the soft kernel of the coconut. It is also used to flavour ice-cream of the same name.

Coconut water. The cavity is filled with coconut water which contains sugar, fibre, proteins, antioxidants, vitamins and minerals. Coconut water provides an isotonic electrolyte balance, and is a highly nutritious food source. It is used as a refreshing drink throughout the humid tropics and is also used in isotonic sports drinks. It can also be used to make the gelatinous dessert *nata de coco*. Mature fruits have significantly less liquid than young immature coconuts; barring spoilage, coconut water is sterile until opened.

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Coconut milk is made by processing grated coconut with hot water or milk, which extracts the oil and aromatic compounds. It should not be confused with the coconut water discussed above, and has a fat content of approximately 17%. When refrigerated and left to set, coconut cream will rise to the top and separate out the milk. The milk is used to produce virgin coconut oil by controlled heating and removing the oil fraction. Virgin coconut oil is found superior to the oil extracted from copra for cosmetic purposes.

Apical buds of adult plants are edible and are known as "palm-cabbage" or heart-of-palm. It is considered a rare delicacy, as the act of harvesting the bud kills the palm. Hearts of palm are eaten in salads, sometimes called "millionaire's salad".

*Ruku Raa* is an extract from the young bud, a very rare type of nectar collected and used as morning break drink in the islands of Maldives. It is reputed for its energetic power keeping the "raamen" (nectar collector) healthy and fit even over 80 and 90 years old. Bi-products are sweet honey-like syrup and creamy sugar for desserts.

Newly germinated coconuts contain an edible fluff of marshmallow-like consistency called coconut sprout, produced as the endosperm nourishes the developing embryo.

In the Philippines, rice is wrapped in coconut leaves for cooking and subsequent storage - these cubic-shaped packets are called *puso*.

### **Other Uses Besides That as a Food**

Coconut water can be used as an intravenous fluid.

Coir (the fibre from the husk of the coconut) is used in ropes, mats, brushes, caulking boats and as stuffing fibre; it is also used extensively in horticulture for making potting compost.

Coconut oil can be rapidly processed and extracted as a fully organic product from fresh coconut flesh, and used in many ways including as a medicine and in cosmetics, or it can be processed into bio-fuels.

Copra is the dried meat of the seed and, after further processing, is a source of low grade coconut oil.

Palmwood comes from the trunk and is increasingly being used as an ecologically-sound substitute for endangered hardwoods. It has several applications, particularly in furniture and specialized construction (notably in Manila's Coconut Palace).

Hawaiians hollowed the trunk to form drums, containers, or even small canoes.

The husk and shells can be used for fuel and are a good source of charcoal.

Dried half coconut shells with husks are used to buff floors. In the Philippines, it is known as "bunot", and in Jamaica it is simply called "coconut brush"

In the Philippines, dried half shells are used as a music instrument in a folk dance called maglalatik, a traditional dance about the conflicts for coconut meat during the Spanish era. They are also used as the bodies of musical instruments, including the Chinese yehu and banhu, and the Vietnamese đàn gáo.

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Shirt buttons can be carved out of dried coconut shell. Coconut buttons are often used for Hawaiian Aloha shirts.

The stiff leaflet midribs can be used to make cooking skewers, kindling arrows, or are bound into bundles, brooms and brushes.

The roots are used as a dye, a mouthwash, and a medicine for dysentery. A frayed-out piece of root can also be used as a toothbrush.

The leaves provide materials for baskets and roofing thatch. They can be woven to create effective roofing materials, or reed mats.

Dried coconut leaves can be burned to ash, which can be harvested for lime

Coconut is also commonly used as a herbal remedy in Pakistan to treat bites from rats.

Coconut trunks are used for building small bridges, preferred for their straightness, strength and salt resistance.

The leftover fibre from coconut milk production is used as livestock feed.

The smell of coconuts comes from the 6-pentyloxan-2-one molecule, known as delta-decalactone in the food and fragrance industry.

### Sago Palm (*Metroxylon sagu*)

This section on Sago palms is based on: <http://en.wikipedia.org/wiki/Sago>  
[http://en.wikibooks.org/wiki/Adventist\\_Youth\\_Honors\\_Answer\\_Book/Nature/Palm\\_Trees](http://en.wikibooks.org/wiki/Adventist_Youth_Honors_Answer_Book/Nature/Palm_Trees)

The sago palm, is found in tropical lowland forest and freshwater swamps across Southeast Asia and New Guinea. It is the primary source of sago flour.

It tolerates a wide variety of soils and may reach 30 meters in height.

Sago palms grow very quickly, up to 1.5m of vertical stem growth per year. The stems are thick and either are self-supporting or have a moderate climbing habit. The palms will only reproduce once before dying; they are harvested at the age of 7 to 15 years, just before flowering, when the stems are full of starch stored for use in reproduction.



Pictured: Sago palms in New Guinea

The Sago Palm (*Metroxylon sagu*) should not be confused with the Sago Cycad, *Cycas revoluta*, which is also called the 'Sago Palm' or the 'King Sago Palm'. This cycad is a slow-growing wild or ornamental plant which is loaded with toxins. It is poisonous until the toxins have been removed by special processes.

# Palms Honour

## Significance to cultures

Sago forms a major staple food for the lowland peoples of New Guinea and the Moluccas where it is called sago and traditionally is cooked and eaten in the form of a pancake served with fish.

Sago flour (from *Metroxylon*) is nearly pure carbohydrate and has very little protein, vitamins, or minerals. However, as sago palms are typically found in areas unsuited for other forms of agriculture, sago cultivation is often the most ecologically appropriate form of land-use, and the nutritional deficiencies of the food can often be compensated for with other readily available foods.

## Uses as food

Sago is a starch extracted from the pith inside stems of the sago palm *Metroxylon sago*.

Sago looks like many other starches, and both sago and tapioca are produced commercially in the form of pearls. Tapioca, however, is extracted from the root of the plant species *Manihot esculenta*. This species, which is native to South America, has many names - cassava, bitter-cassava, manioc etc. These two kinds of pearls are similar in appearance and may be used interchangeably in some dishes. This similarity causes some confusion in the names of dishes made with the pearls.

Sago is made through the following steps:

1. Felling the sago palm tree;
2. Splitting the trunk open lengthwise;
3. Removing the pith;
4. Crushing and kneading the pith to release the starch;
5. Washing and straining to extract the starch from the fibrous residue;
6. Collecting the raw starch suspension in a settling container.

The sago starch is then either baked (resulting in a product similar to bread or a pancake) or mixed with boiling water to form a kind of paste. Sago can be made into steamed puddings such as sago plum pudding, ground into a powder and used as a thickener for other dishes, or used as a dense glutinous flour.

In Indonesia and Malaysia, sago is used in making noodles, white bread. Pearl sago, a commercial product, closely resembles pearl tapioca. Both typically are small (about 2 mm diameter) dry, opaque balls. Both may be white (if very pure) or coloured naturally grey, brown or black, or artificially pink, yellow, green, etc. When soaked and cooked, both become much larger, translucent, soft and spongy. Both are widely used in South Asian cuisine, in a variety of dishes, and around the world, usually in puddings. In India, pearl sago is called sabudana ("whole grain") and is used in a variety of dishes.

## Other Uses Besides That as a Food

The leaves and spathe of the sago palm are used for construction materials, for thatching roofs, and the fibre can be made into rope.

The starch is also used to treat fibre to make it easier to machine. This process is called sizing and helps to bind the fibre, give it a predictable slip for running on metal, to standardize the level of hydration of the fibre, and to give the textile more body. Most cloth and clothing has been sized. This leaves a residue that is removed in the first wash.

# Palms Honour

## Oil Palm (*Arecaceae Elaeis*)

This section on Oil Palms is based on: [http://en.wikipedia.org/wiki/Oil\\_palm](http://en.wikipedia.org/wiki/Oil_palm) and [http://en.wikipedia.org/wiki/Palm\\_oil](http://en.wikipedia.org/wiki/Palm_oil)

The oil palms (*Elaeis*) comprise two species of the *Arecaceae*, or palm family. The African Oil Palm *Elaeis guineensis* is native to tropical west Africa, while the American Oil Palm *Elaeis oleifera* is native to tropical Central and South America.

Mature trees are single-stemmed, and grow to 20m tall. The leaves reach between 3-5 m long. The flowers are produced in dense clusters; each individual flower is small.

The fruit is reddish and about the size of a large plum. It grows in large bunches weighing up to about 40 kilograms. The fruit comprises an oily, fleshy outer layer (the pericarp), with a single seed (kernel), also rich in oil.



Pictured is the African Oil Palm (*Elaeis guineensis*)

## Significance to cultures

Palm oil (from the African Oil Palm, *Elaeis guineensis*) was long recognized in West African countries, and among West African peoples it has long been in widespread use as a cooking oil.

European merchants trading with West Africa occasionally purchased palm oil for use in Europe, but as the oil was bulky and cheap, palm oil remained rare outside West Africa.

Palm oil became a highly sought-after commodity by British traders, for use as an industrial lubricant for the machines of Britain's Industrial Revolution, as well as forming the basis of soap products, such as Lever Brothers 'Sunlight Soap', and the American 'Palmolive' brand. In the 1870's, palm oil constituted the primary export of some West African countries such as Ghana and Nigeria.

In the mid 1800's palm plantations were established in Java by the Dutch. In the early 1900's the British established palm plantations in what is now Malaysia. Since then, plantations have been established in many 'tropical' countries by internationally-owned 'palm' companies.

From the 1960s a major oil palm plantation scheme was introduced by the government of Malaysia with the main aim of eradicating poverty. Settlers were each allocated 10 acres of land (about 4 hectares) planted either with oil palm or rubber, and given time to pay off the debt for the land

In Malaysia, Palm Oil Research Institute of Malaysia (Porim) is one of the premier centres for oils and fats research in the world.



# Palms Honour

## Social and environmental impacts of palm oil

The social and environmental impacts of oil palm cultivation are a highly controversial topic.

Oil palm is a valuable economic crop and provides a major source of employment. It allows many small landholders to participate in the cash economy and also often results in the upgrade of the infrastructure (schools, roads, telecommunications etc) within that area.

However, there are cases where native customary lands have been appropriated by oil palm plantations without any form of consultation or compensation, leading to social conflict between the plantations and local residents. In some cases oil palm plantations are dependent on imported labour or illegal immigrants, and there are some concerns about the employment conditions and social impacts of these practices.

Biodiversity loss and the potential extinction of native species is one of the most controversial issues in oil palm cultivation. Large areas of already threatened tropical rainforest often need to be cleared to make way for plantations. Open burning of plantation wastes and the release of palm mill pollutants are also issues. Environmental legislation and its enforcement vary from place to place. Some of these states have recognised the need for increased environmental protection and this is resulting in more environmental friendly practices. .

Demand for palm oil has increased in recent years due to its use as a biofuel, but recognition that this increases the environmental impact of cultivation as well as causing a food vs fuel issue has forced some developed nations to reconsider their policies on biofuel to improve standards and ensure sustainability.

## **Uses as food**

Palm oil is one of the few vegetable oils relatively high in saturated fats (like coconut oil) and thus semi-solid at room temperature.

Oil that is extracted from the pulp of the fruit (the pericarp) is used mainly as an edible oil which is used for cooking, as an ingredient in margarine and a component of many processed foods.

The pericarp is also used as a food ingredient itself such as in the Middle African palm butter, (*moambe*).

## **Other Uses Besides That as a Food**

Oil that is extracted mainly from the kernel (palm kernel oil) is an important component of many soaps, washing powders and personal care products. It is used to treat wounds.

It is also uses controversially as a feedstock for biofuel.

Palm fronds and kernel meal are processed for use as livestock feed.

# Palms Honour

## Date Palm (*Phoenix dactylifera*)

This section on Date Palms is based on: [http://en.wikipedia.org/wiki/Date\\_palm](http://en.wikipedia.org/wiki/Date_palm)

The Date Palm, is a palm in the genus Phoenix, extensively cultivated for its edible sweet fruit.

Due to its long history of cultivation for fruit, its exact native distribution is unknown, but probably originated somewhere in the desert oases of northern Africa, and perhaps also southwest Asia.

It is a medium-sized tree, 15–25 m tall, often clumped with several trunks from a single root system, but often growing singly as well. The leaves are 3–5 m long, with spines on the petiole and about 150 leaflets; the leaflets are 30 cm long and 2 cm broad. The full span of the crown ranges from 6–10 meters.



Pictured are Date Palms, Merzouga, Morocco

### Significance to cultures

Dates are an important traditional crop in Iraq, Arabia, and North Africa west to Morocco and are mentioned in many places in the Quran.

In Islamic countries, dates and yogurt or milk are a traditional first meal when the sun sets during Ramadan.

Palms (believed to be date palms) were mentioned in the Scriptures. Please see Requirement 7.

Date palm leaves are used for Palm Sunday in some Christian religions.

### Uses as food

Dry or soft dates are eaten out-of-hand, or may be pitted and stuffed with fillings such as almonds, walnuts, candied orange and lemon peel, tahini, marzipan or cream cheese.

Pitted dates are also referred to as stoned dates.

Dates can also be chopped and used in a range of sweet and savoury dishes, from tajines (tagines) in Morocco to puddings, ka'ak (types of Arab cookies) and other dessert items.

Dates are also processed into cubes, paste called "ajwa", spread, date syrup or "honey" called "dibs" or "rub" in Libya, powder (date sugar), vinegar or alcohol.

Recent innovations include chocolate-covered dates and products such as sparkling date juice, used in some Islamic countries as a non-alcoholic version of champagne, for special occasions and religious times such as Ramadan.

Young date leaves are cooked and eaten as a vegetable, as is the terminal bud or heart, though its removal kills the palm.

The finely ground seeds are mixed with flour to make bread in times of scarcity.

## Palms Honour

The flowers of the date palm are also edible. Traditionally the female flowers are the most available for sale and weigh 300-400 grams. The flower buds are used in salad or ground with dried fish to make a condiment for bread.

In India and Pakistan, North Africa, Ghana, and Côte d'Ivoire, date palms are tapped for the sweet sap which is converted into palm sugar (known as jaggery or gur), molasses or alcoholic beverages.

### **Other Uses Besides That as a Food**

Dates can also be dehydrated, ground and mixed with grain to form a nutritious stockfeed. Dried dates are fed to camels, horses and dogs in the Sahara.

Date seeds are soaked and ground up for use in soap and cosmetics. They can also be processed chemically as a source of oxalic acid.

The seeds are also burned to make charcoal for silversmiths, and can be strung in necklaces. Date seeds are also ground and used in the manner of coffee beans, or as an additive to coffee.

Stripped fruit clusters are used as brooms.

In Pakistan, a viscous, thick syrup made from the ripe fruits is used as a coating for leather bags and pipes to prevent leaking.

Date palm sap is used to make palm syrup and numerous edible products derived from the syrup

In North Africa, they are commonly used for making huts. Mature leaves are also made into mats, screens, baskets and fans. Processed leaves can be used for insulating board. Dried leaf petioles are a source of cellulose pulp, used for walking sticks, brooms, fishing floats and fuel. Leaf sheaths are prized for their scent, and fibre from them is also used for rope, coarse cloth, and large hats.

Date palm wood is used for posts and rafters for huts; it is lighter than coconut and not very durable. It is also used for construction such as bridges and aqueducts, and parts of dhows. Leftover wood is burnt for fuel.

Where craft traditions still thrive, such as in Oman, the palm tree is the most versatile of all indigenous plants, and virtually every part of the tree is utilized to make functional items ranging from rope and baskets to beehives, fishing boats, and traditional dwellings.

## Palms Honour

**REQUIREMENT 7: Identify and briefly describe some Bible references that relate to palms.**

The palm tree was an important part of life in Biblical times. The Hebrew name for it was 'tamar'.

Scholars generally agree that the palm referred to in the Scriptures was *Phoenix dactylifera*, the date palm. Growing from 18 to 24 metres tall, it was an impressive tree with long feathery leaves growing from the top. These leaves (growing from 1.8 to 3m long) were referred to as 'branches' in the Bible.

The fruit (dates) was used for food. The leaves were used to provide shelter, thatch, fencing, decoration and matting material. The shoots which sprouted at the bottom of the trunk were used for ropes, sandals and baskets.

Ex 15:27, Num 33:9	On their flight from Egypt the Israelites came to Elim with its grove of 70 palm trees and 12 springs
Lev 23:40, Neh. 8:15	Palm branches were used to make booths for the Feast of Tabernacles
Deut 34:3, 2 Chron 28:15	Jericho was known as the city of palms
1 Kings 6:29, and 32,35	Carvings of palm trees decorated Solomon's temple
Psalms 92:12	The symbol of the righteous – They shall flourish like a palm tree
John 12:13	Palm branches were spread before Jesus on His triumphal entry to Jerusalem