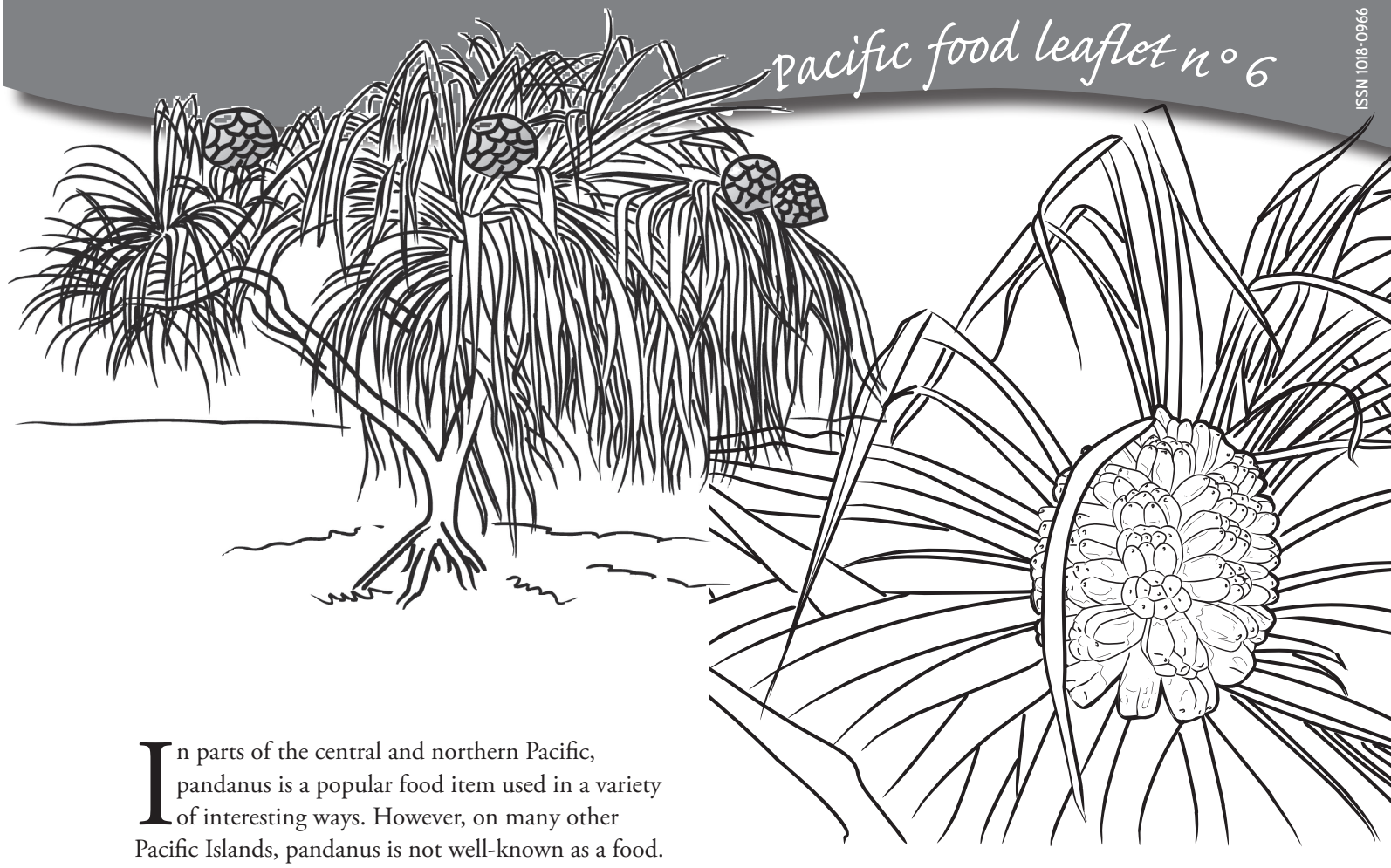
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Pandanus

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In parts of the central and northern Pacific, pandanus is a popular food item used in a variety of interesting ways. However, on many other Pacific Islands, pandanus is not well-known as a food.

There are many varieties of pandanus, but only some have edible fruits and nuts. The plants have a distinctive shape and the near-coastal species, *Pandanus tectorius*, is found on most Pacific Islands. The bunches of fruit have many sections called 'keys', which weigh from around 60 to 200 grams each. (The botanical term for these keys is phalanges, which means 'finger bones'.) People often eat the keys raw, but the juicy pulp can also be extracted and cooked or preserved. The nuts of some varieties are also eaten. In some countries, a number of pandanus varieties are conserved in genebank collections.

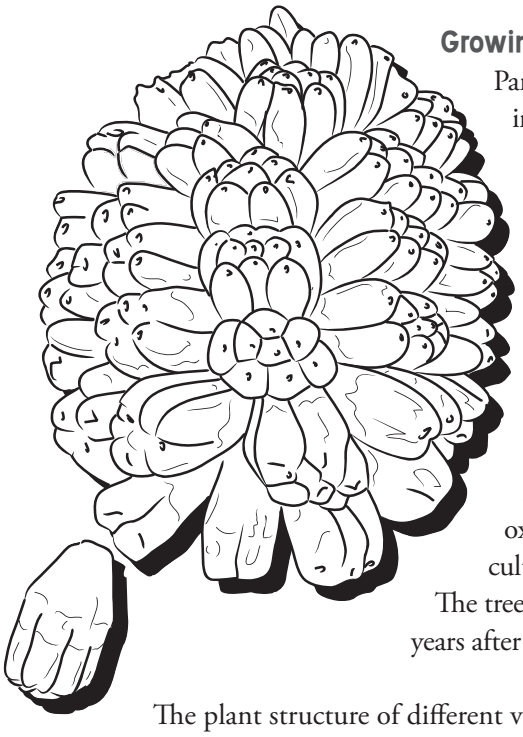
The pandanus plant plays an important role in everyday life in the Pacific. The leaves are used for weaving and thatching and the wood for construction. The bark and flowers are used to scent body oils and the roots are used in making medicines, paintbrushes and rope.

In Kiribati, pandanus is called the 'tree of life' as it provides food, shelter and medicine. In the Marshall Islands, it is called the 'divine tree', like coconut, because of its important role in everyday life. Pandanus is also an important staple food in the Federated States of Micronesia (FSM), Tuvalu, Tokelau and Papua New Guinea. Dried pandanus was once an important food for voyagers on outrigger canoes, enabling seafarers of long ago to survive long journeys.

This leaflet focuses on the *Pandanus tectorius* species of pandanus. However, other species, such as *Pandanus conoideus* and *Pandanus jiulianettii*, which are grown in Papua New Guinea, are also used for food. *Pandanus conoideus* (*marita* or red pandanus) is used to make a sauce and *P. jiulianettii* (*karuka* or highland pandanus) is eaten raw or the nuts are cooked.

Design and layout: Muriel Borderie. Illustrations: Jipé Le-Bars

Some local names for edible pandanus fruits and nuts: *bōb* (Marshall Islands), *choi, fach, far* (Yap, FSM), *deipw, fach, far* (Chuuk), *epo* (Nauru), *fala* (Tokelau, Tuvalu), *te kaina* (Kiribati), *kipar, deipw* (Pohnpei, FSM), *marita, karuka* (Papua New Guinea), *mweng* (Kosrae, FSM), *ongor* (Palau)



Growing pandanus

Pandanus grows well in coastal areas and once established can withstand drought, strong winds and salt spray. It also grows and fruits at higher altitudes. Pandanus can grow from seed, but cultivars with edible fruits (with low levels of irritating oxalates) must be cultivated from cuttings. The trees fruit about 2 to 4 years after a cutting is planted.

The plant structure of different varieties varies greatly. Some trees grow to a height of about 4 metres and others to 10 to 12 metres. The leaves differ in width, length, longevity and softness. The bunches of fruit may be rounded or long and weigh from 1 to 15 kilograms; the outer parts of the keys may be flat or have sharp edges. They also vary in colour, with deeper coloured varieties having a higher nutrient content.

Different varieties also have different fruiting seasons, usually lasting just a few months with lighter fruiting at other times of the year.

Depending on their characteristics, pandanus varieties are prepared in different ways for eating. Hard keys are cooked before being eaten, while soft keys are eaten raw. There are also differences in texture and sweetness and the amount of mouth and throat irritation they cause. Those that cause itching must be cooked.

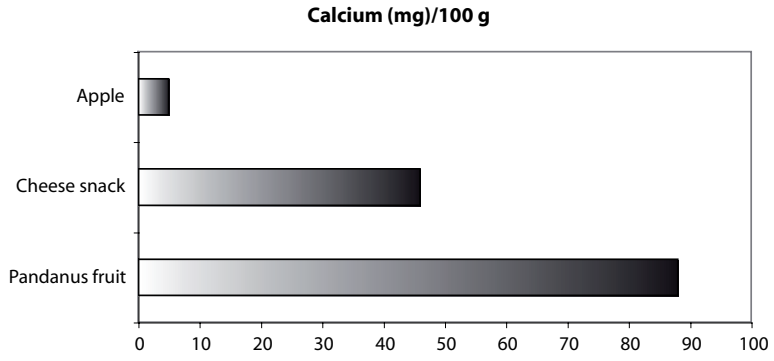
Nutrient content

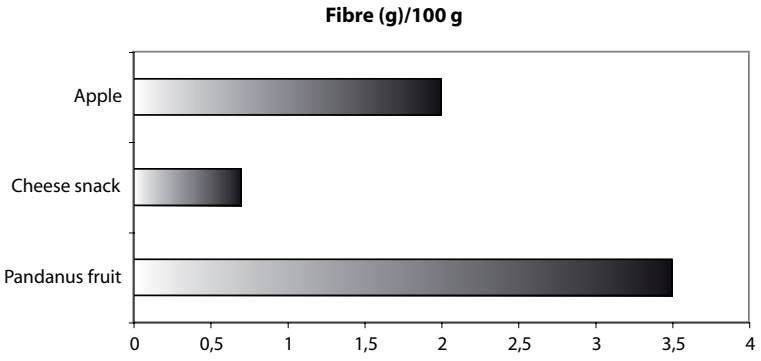
Pandanus fruit is a valuable source of many nutrients, particularly for people living on atolls where only a limited number of food crops can grow due to poor soils and harsh dry climates. The table below compares the nutrient content of pandanus fruit to that of cheese-flavoured snacks and imported apples.

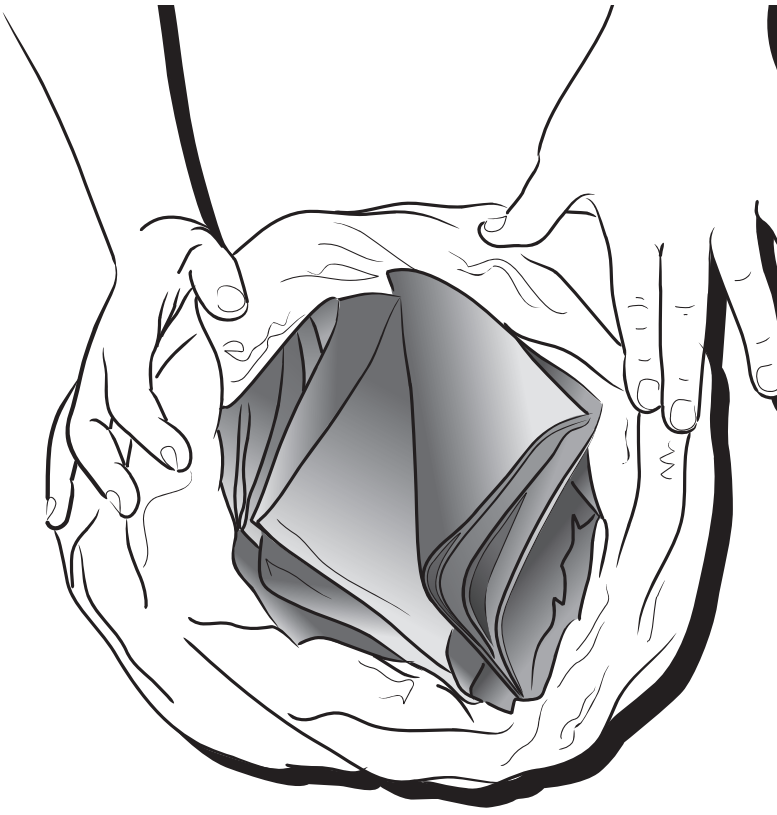
Comparison of 100 gram (g) edible portions of pandanus fruit, cheese snacks and apples.

Food item	Kcal*	Fibre (g)	Calcium (mg)	Iron (mg)	ß-carotene equivalents**(µg)	Thiamin (mg)	VitaminC (mg)
Pandanus fruit, fresh, colour unspec.[1]	86	3.5	88	0.4	60	0.09	5.2
-light-yellow coloured[3,4]	na	na	na	na	19-102	na	na
-deep orange-coloured[3,4]	na	na	na	na	472-941	na	na
Pandanus paste[1,2,4]	293-321	3	134	5.7	155-1080	0.04	2
Pandanus flour[2,4]	196	14	797	1.7	100	0.06	na
Cheese snack[1]	542	0.7	46	0.5	14	0.07	1.0
Apple[1]	54	2.0	5	0.2	10	0.02	5.0

[1]Dignan et al. 2004; [2]Murai et al. 1958; [3]Englberger et al. 2003; [4]Englberger et al. 2005 (a, b); na= not available
*Energy expressed as kilocalories. ** Sum of ß-carotene plus half of the µ-carotene.
Note: The edible portion of one pandanus key weighs 35–100 grams, and a heaped tablespoon of preserved paste weighs 50 grams. One packet of cheese snacks may weigh 100 grams; an apple may weigh 130 grams.







Pandanus contains significant amounts of vitamin C, which is important for fighting infection and for absorbing some forms of iron (needed for building blood). On some islands, eating 10 keys a day is very common, even among children. This would provide more than the estimated daily requirement of vitamin C for most adults or children.

Pandanus also contains significant amounts of provitamin A carotenoids, the most important of which is ß-carotene. Provitamin A carotenoids are converted in the body to vitamin A, which is important for good vision and eye health and helps to fight against infection and build blood. Eating carotenoid-rich food may also help protect against diabetes, heart disease and cancer.

Different types of pandanus contain different levels of provitamin A carotenoids; generally, the deeper yellow or orange (or red) the flesh, the higher the level. Consuming 10 keys of a carotenoid-rich variety in a day would provide more than the estimated daily requirement of vitamin A for a child or adult.

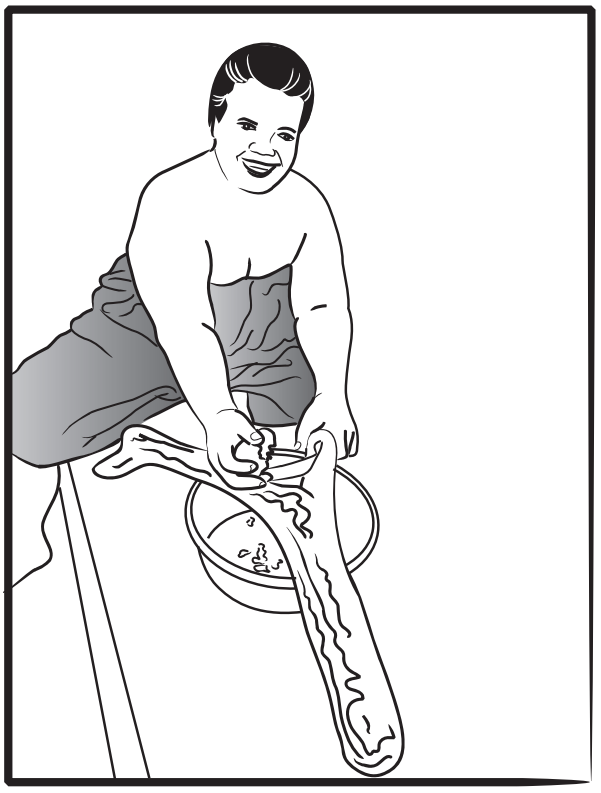
Fresh pandanus fruit are rich in fibre, which is important for a healthy gut. A diet high in fibre also helps to control blood sugar in diabetics, reduce blood lipids (a risk factor for heart disease) and prevent excessive weight gain.

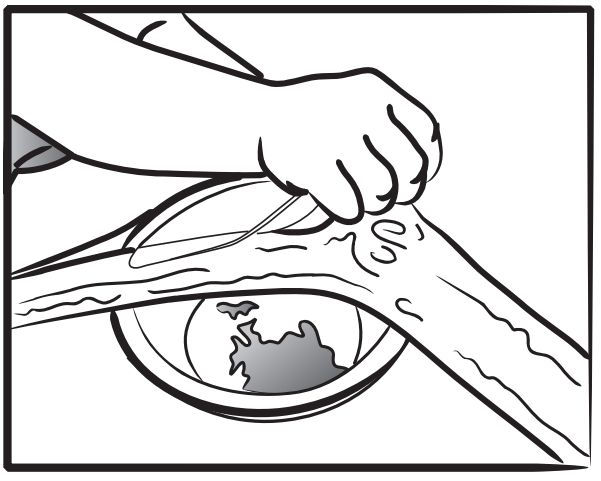
Many people in Micronesia believe that pandanus is a health food and that eating it while ill helps people recover more quickly.

Preparation

Most edible pandanus fruit turns from green to yellow and then orange, or orange-red, when ripe, although the ripe, edible portion of one variety in Kiribati remains greenish. The fruit is ripe when the keys are easy to pick or when they fall from the bunch. For some varieties, the bottom keys fall off the bunch when ripe. The bunches have a characteristic sweet smell when ripe.

The fruit should be washed before being eaten. Sometimes, bunches are infested with scale insects and these should be brushed off before washing the keys well.





Food uses

Pandanus is eaten in many different forms:

- Fresh and raw
- Boiled, steamed, baked or roasted
- As pulp extracted and used in traditional or modern recipes
- As one of the first infant foods, from six months of age
- Seeds, cooked or raw
- As a preserved snack
- As a drink made from either fresh juice or from flour made from the dried pulp

Cooking

Some varieties of pandanus have soft keys that can be eaten raw. The keys of tougher varieties can be boiled in water or baked and then chewed. The pulp can be scraped out of the cooked keys and then used in different recipes.

Storage

Once ripe, a whole bunch will keep for around a week. Individual keys do not keep well and should be refrigerated after they are separated from the bunch. In the Pacific Islands, a number of techniques are used to make pandanus products that can be stored for long periods. These include baking, boiling, drying and/or pounding into a paste or flour.

Dried pandanus paste

This paste called *te tuae* in Kiribati, *mokwan in* the Marshall Islands and *sehnikun in kipar* in FSM will keep for many years without refrigeration. Certain varieties are known to be best for making this paste. Traditionally, the keys are cooked (boiled or baked) and the pulp is scraped out. It is then spread in a thin layer (about 0.5 centimetres) on a clean surface to dry in the sun for five or more days. The finished product is either rolled tightly and bound in pandanus leaves or folded and kept in an air-tight container. The paste is used in other recipes (as *te roro* in Kiribati) or mixed in water to make a drink or thick custard (as *jennōb* Marshall Islands).

Dried pandanus chips

These chips *te kaka* in Kiribati or *jekaka* in the Marshall Islands are prepared by cutting slices of the edible part of the pandanus and drying them in the sun. The dried slices can be stored in airtight containers and eaten as a snack or used in other recipes.

Dried pandanus flour

Pandanus flour is still made in Kiribati (but rarely) in the Marshall Islands and FSM is prepared from thin slices of the edible part of the pandanus keys. The slices are boiled or baked, pounded into a single sheet about 2 centimetres thick (called *te karababa*), placed in the sun for 2–3 days until almost dry, baked further in an oven and finally pounded into a powder. The powder must be stored in an airtight container and is traditionally used to make a drink.

Recipes

Pandanus pudding

(*peru* from the Marshall Islands)

- Fresh ripe pandanus fruit
- Coconut cream
- Syrup prepared from sweet toddy or imported refined sugar

1. Boil pandanus keys
2. Scrape out the pulp (a special tool is available for this, see drawing on previous page)
3. Mix the pulp with coconut cream
4. Add sweet toddy syrup or sugar and combine well
5. Put in a pan and bake for about one hour
6. Cut in slices and serve

Pandanus paste in coconut cream

(*te roro* from Kiribati)

- Preserved pandanus paste *te tuae*
- Coconut cream

1. Lay sheets of pandanus paste on a clean surface
2. Squeeze over thick coconut cream
3. Fold and squeeze over more thick coconut cream and repeat
4. Cover and leave overnight to allow the cream to soak into the paste
5. Serve with the main meal, or spread as jam on bread or biscuits

Pandanus with taro

(*maitahlik* from Mwoakilloa Atoll, Pohnpei, FSM)

- Fresh ripe pandanus fruit
- Coconut cream
- Syrup prepared from sweet toddy or imported refined sugar
- Giant swamp taro (*Cyrtosperma*), boiled or baked

1. Boil pandanus keys
2. Scrape out the pulp
3. Add coconut cream
4. Add sweet toddy syrup or sugar and mix well
5. Grate the cooked giant swamp taro
6. Form the grated taro into balls and put into a baking tin
7. Add the pandanus mixture
8. Bake and serve.



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