

YELLOW BEACH PEA

Botanical name: *Vigna marina* (Fabaceae)

Location specific common names: te kitoko, te biin, te ruku (Kiribati), saketa sama (Tuvalu), drautolu (Fiji), dune bean, beach cowpea, beach pea, notched cowpea, nanea. There is some confusion with another common beach-growing vine, *Ipomoea pes-caprae* (beach morning glory, a sweet potato relative with long tendrils, large shiny leaves and purple flowers), which is usually called *te ruku*.

Plant Characteristics: The origin of this creeping legume is unknown, but it is now found on tropical shorelines around the world. Its distribution has been aided by the resistance of its seeds to degradation by seawater. It has trifoliate leaves and yellow flowers which distinguishes this species from other vines. It nodulates readily: this refers to the root nodules that contain rhizobia, bacteria able to fix atmospheric nitrogen, which is then available for plant nutrition, mainly to build proteins/enzymes. This is valuable not only for *Vigna* itself but also for increasing available nitrogen in the soil for other crops grown afterwards.

Uses: Yellow beach pea leaves are more fibrous (and thus chewier) than the leaves of the other recommended nutritious leafy vegetables, thus it is best to use young leaves, which can be cooked in soups, stews and curries, ideally with coconut cream to increase carotenoid availability and conversion to vitamin A. The green pods are particularly nutritious and can be steamed or cooked in coconut cream. Foliage of *Vigna* is also useful for livestock feed. The relatively high nitrogen, iron and zinc levels in the leaves make it a valuable component of “green manure” and compost, and when grown as a “cover crop” it can suppress weeds. Other leguminous cover crops including *Mucuna*, *Centrosema* and *Pueraria* are not well adapted to the salty, alkaline atoll soils. **Medicinal:** In some South East Asian and Pacific countries (e.g. Hawaii) yellow beach pea is used to help heal wounds, boils and ulcers; softened leaves/stalks are applied directly to the affected area.

Availability: Yellow beach pea is salt tolerant and common on most atolls of Kiribati and Tuvalu.



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Propagation methods: It can be propagated by cuttings or seed, but the best way to establish it quickly is to dig up plants and transport them with root nodules intact to the new location. This ensures that the nitrogen-fixing rhizobia accompany the plant and get it off to a good start. Legume seeds are often “hard” and require nicking with a knife or abrasion (e.g. with sandpaper), then soaking for 24 hours to facilitate germination.

How to grow: Ensure adequate water is provided until the plants are established. They are then quite drought tolerant and grow well in both sun and shade.

Threats: Fungi, including *Cercospora canescens* and *Colletotrichum* species, and legume-eating caterpillars such as *Euchrysops cnejus* and *Lampides boeticus* can cause problems. It is sensitive to frost, although this is not an issue at low altitudes in the tropics.

Harvesting: As noted above, it is advisable to use young leaves (for example the five newest fully formed leaves) for eating, due to *Vigna marina*'s fibre content. The green pods are also highly recommended.

Post harvest and storage: The leaves should be washed with clean water and stored in a cool, shady place, and ideally eaten within a day of picking.

Project findings/nutritional value: Samples were collected in Kiribati and Tuvalu and were notably high in iron, zinc and protein. Although the manganese and copper levels in the *Vigna* sample featured in the table are higher than those in the other species, their levels in most of the other 6 samples collected from other locations were not noticeably higher than for other species growing on the same soil. About two handfuls (100 grams) per person for a meal serving will provide useful nutrition. Yellow beach pea is strong in:

Iron: Important for healthy blood and energy.

Zinc: Important for immunity, growth, carbohydrate metabolism, and DNA and protein formation. Humans have around 600 different Zn-containing enzymes/proteins.

Protein: This is important in forming muscle, cell membranes, enzymes, blood components, antibodies, DNA and RNA.

This table compares selected mineral nutrients in leaves of yellow beach pea, taro and *Gliricidia sepium* (a legume tree) grown together at ALD Central Nursery, Bikenibeu, South Tarawa, Kiribati in 2014 and English cabbage (average of samples bought from Honiara market, Solomon Islands and Nukualofa market, Tonga in 2012) (concentration in mg/kg dry weight, except N: % dry weight).

	Fe	Mn	Cu	Zn	Ca	Mg	K	S	N %
Yellow beach pea	88	59	10	49	13800	4200	18400	2700	4.5
Taro	84	21	2	21	11800	2300	41000	4900	4.3
Gliricidia	50	26	2	10	30000	8200	19400	2800	3.5
Cabbage	40	23	2	20	5700	1450	29000	3750	2.8

Fe: iron; Mn: manganese; Cu: copper; Zn: zinc; Ca: calcium; Mg: magnesium; K: potassium; S: sulphur; N: nitrogen
Analyses conducted by Waite Analytical Services, University of Adelaide, South Australia

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