

## References

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## Appendix

Vouchers for inflorescences:

*Dichelachne crinita* AK 171983 Auckland City waterfront, infl. 12 cm long  
*Dichelachne inaequiglumis* AK 234432 Wairere Road, Rodney, infl. 22 cm long  
*Dichelachne micrantha* AK 340308 Norfolk Island, infl. 19 cm long  
*Dichelachne rara* AK 306865 Pakatoa Island, infl. 13 cm long  
*Dichelachne sieberiana* AK 295038 NW Nelson, infl. 16 cm long

Vouchers for spikelets and florets:

A, *D. crinita* AK 169212, Waitakeres  
B, *D. inaequiglumis* AK 294700, Windy Ridge, Rodney Co.  
C, *D. micrantha* AK 161350, Takatu Point  
D, *D. rara* AK 1524, Auckland  
E, *D. sieberiana* AK 278537, Whangaroa

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## Arrowroot (*Maranta arundinacea*, Marantaceae) on Norfolk Island

Rhys Gardner

This article concerns the original, West Indian "arrowroot", a name familiar from the biscuit but probably not from the plant itself, which is a slender, erect-stemmed monocot, the type species of a family confined to the New World tropics (Fig. 1). Thousands of years ago the Amerindians discovered that its "roots" (rhizomes) could be processed to give a fine-grained starch (composed of minute but distinctively shaped grains, a boon for archaeologists). This could be eaten, but for a long time seems to have been used mainly in medicine, as a poultice for drawing out infections and allaying fevers, and also, for negating arrow-poisons—something important in that part of the world, and hence the common name; see Appendix, Note 1.

From about the 18th century *M. arundinacea* entered world trade. The value of its very digestible starch to invalids, children and the old became well-recognized and made it a high-value commodity. Plantations were established in the West Indies, which were advanced technologically (because of their experience with sugar-cane) and thus could handle the intensive processing required. The market was good enough, however, to encourage the trial of arrowroot elsewhere in the hopeful 19th century colonial world, including the Pacific Ocean region.

For example, the Expositions of material wealth held in Melbourne and Sydney in the 1880s contained samples of arrowroot from Fiji, and, in planters' writings from there, arrowroot was regarded as a likely viable alternative to copra, bananas, cotton, tobacco, etc. (Horne 1881: 105, Reeve 1989, Mitchell 2009).

In the mid-19th century Norfolk Island too was growing arrowroot. Several things were in its favour: deep, fertile loam soils, a climate that was warm enough, and sufficient clean water for processing. The Melanesian Mission, established there in 1867, seems to have been a major producer: not only did it have numerous willing workers, but the work itself was of a familiar kind, since Melanesians and Polynesians had for centuries processed their own kind of 'arrowroot' (Pollock 1990), from the tubers of the Indo-Pacific monocot *Tacca leontopetaloides* (Taccaceae).

A paragraph from the diaries of Elizabeth Colenso (Appendix, Note 2) who assisted at the Mission in the late 19th C., gives a good idea of the scale there of arrowroot production. A hand-operated arrowroot-grinding machine of that era, now in the No. 10 Quality Row house of the Norfolk Island Museum, is shown in Fig. 2.

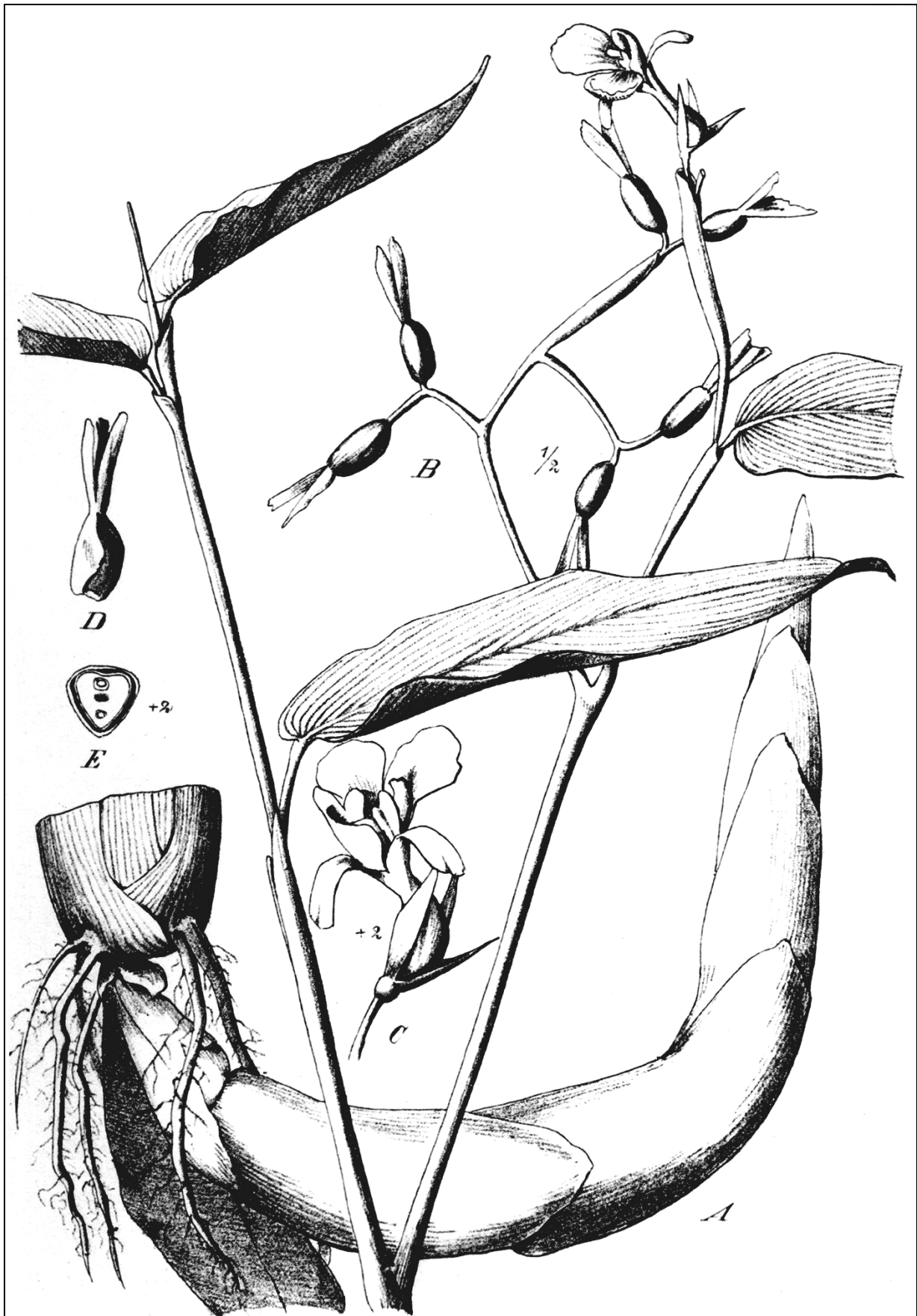


Fig. 16. *Maranta arundinacea* L. A Rhizoma incrassatum. B Inflorescentia. C Flos. D Capsula. E Semen transverse sectum. (Icones originariae.)

Fig. 1. *Maranta arundinacea*. (Schumann 1902, fig. 16).

In his account of Norfolk Island's plants, both wild and cultivated, J.H. Maiden (1904) observed that arrowroot production was then very much in decline (Appendix, Note 3). No subsequent author, including Green (1994), makes even a passing reference to the plant.

I do not know of any specimens from Norfolk Island and have not seen it there myself. But I have been told by Arthur Evans (pers. comm. 2016) that he believes he has the last of the island's arrowroot at his Steel's Point property; he says it dies down each winter, and comes up again in September, but has to be lifted each year or it will die out.

As one of Norfolk Island's heritage species, then, arrowroot should be conserved there: it could be planted at the Botanic Gardens, and also at one or other of the Norfolk Museum properties.

### Acknowledgements

I am grateful for information from Canberra's Robin Hide and Pam Swadling (and for the latter's photo), and from Norfolk Island's Janelle Blucher (Norfolk Island Museum) and Arthur Evans.



**Fig. 2.** Machine for grinding arrowroot, on display in the Norfolk Island Museum. Photo by Pam Swadling, c. 2016

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### Appendix

**Note 1** Writing about "Indian arrow-root" in Jamaica in the mid 18th C. the doctor and naturalist Patrick Browne (1756: 112) says:

"This plant is cultivated in many gardens in Jamaica, where it is considered a warm alexipharmic, and thought to resist the force of poisons very powerfully ... The root, washed, pounded fine, and bleached, makes a fine powder and starch; it has sometimes been known to be used for food when other provisions were scarce, and is frequently administered in infusions to the sick: the plant grows from a thick fleshy root and shoots by a simple foliated stalk to the height of two or three feet, and terminates in a loose and somewhat branched flower-spike ...".

**Note 2** From the diary of Elizabeth Colenso (Swabey 1956) in September 1876:

"At the Mission itself the preparation of arrowroot was in full progress. The root of the plant is ground up by a machine, and the pulp is then put into sieves and laid on bars across tubs of water. Water is then poured over it and the pulp squeezed till all the floury part sinks to the bottom of the tub. It is then left to settle, after which it is scooped out and placed on calico frames which are spread in the sun to dry. The Mission staff and the boys and girls thoroughly enjoyed this work being a change from the usual routine. Arrowroot was much used in times of sickness, and being the pure unadulterated article, any surplus was soon sold in New Zealand."

Note 3 From Maiden (1904: 753):

"Arrowroot. — Downing [C. T. Downing, author of an article in *Proc. Roy. Soc. Tasm.* 3 (1859) 195] wrote in 1851:—'The arrowroot is very extensively and successfully cultivated in Norfolk Island. The starch is separated in the usual manner, in the months of September and October, and is found to be of superior quality'. The plant yielding it is a *Maranta*, and was supplied from the West Indies by Government, through the Sydney Botanic Gardens, many years ago. Very little is now made ... On enquiring why the industry was dying out, I was told "It's too hard work".

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