

Pine
River

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SGAP CYCAD, ZAMIAD & PALM NEWSLETTER NO. 76

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Hi friends,

Some of you observant people will have noticed a gap in newsletters; well the hiatus was due to my having a stroke in May. I am now out of hospital, & mobile on a stick, but have handed the bulk of work over to Kerry. Please cooperate by sending in any overdue subs, due June 1st, & any articles or even the briefest of observations. Kerry, an animal geneticist now semi-retired to a plant nursery specialising mainly in natives--- Rathie's Rare Plants --- has long been studying & collecting cycads. It has been an interesting 15 years, & I intend to still write many articles, & keep Kerry up to the mark, even if my field activities have to be curtailed for quite a while. I also have a bit of double vision which the medicos say will clear eventually, but makes reading difficult. Len P. Butt.

~~OVER TO KERRY.~~

Cultivation of northern Australian cycads in the Brisbane area --- some personal observations.

I live at Greenbank, half way between Brisbane & Beaudesert, & far enough inland so that I usually have 30 or so frosts each winter. Those northern cycads which are normally deciduous in their native habitat (includes all N.T. Top End & Kimberleys species, & some N.Qld. spp.) usually have frost totally defoliate them by mid-June at the latest. In the wild they withdraw moisture & nutrients from their leaves as the dry season sets in, & the leaves wither. Most have a flush of new leaves just before the 'wet' arrives, although there is a considerable spread (about a month) between the date of flushing onset among plants of a given species in a given area.

I am writing this note on Sept.4th, after an almost frost-free winter. Some Cycas species regularly go fully dormant well before the really cold weather, & have been consistent since I've been keeping records (1989). So I suspect these are cued by reducing day-length. Cycas conferta, C. calcicola, C. pruinosa & C. furfuracea have regularly defoliated by the end of April. C. conferta can yellow in mid-March! I have no plants of C. basaltica. C. maconochie (8 plants) & C. armstrongi (15 plants) are usually frost-defoliated by late June, but this year & last year have kept green leaves until early September, although they get steadily yellower & tattier from late June onwards. My sole C. canalis acts similarly. C. megacarpa from central

Qld. (6 plants) has leaves yellow a bit during winter, but they don't defoliate until just before the new flush of leaves arrives around Sept.-Oct., unless frosted, when they go briefly dormant. *C. ophiolitica* (8 plants) & *C. kennedyana* (40 plants) behave similarly to *C. megacarpa*. Ken Hill from the Sydney Herbarium advocates abolition of *C. kennedyana* as a group, on the grounds of their probable hybrid origin (*C. ophiolitica* x *C. media*). They come from around Proserpine to north of Mackay, & are distinct enough that a tag name seems useful to me. It is still used in the nursery trade, & some botanists retain botanical names for known hybrids (or coin new ones). Examples include *Dendrobium superbians* & *Brachychitons roseus*, *turgidulus*, & *incarnatus*.

Another group act irregularly. I have 15 *C. angulata* aged about 10 years, & 20 or so aged about 7 years. The older ones currently include 7 which are fully dormant, 5 which are semi-dormant (a few yellowy, tatty leaves), & 3 which are fully active. This latter 3 flushed in mid-April, after a dormant spell in mid-summer. The younger plants mostly go dormant in winter, & flush in October, as did those older ones now fully dormant.

My 20 surviving (out of 55 that germinated) *C. cairnsiana* plants are about 6 years old, & all go very tatty from late June until October, but few lose all their leaves. This year all have at least 1 healthy leaf at present (& several dead ones). My 7 *C. couttsiana* behave similarly.

The 9 *C. silvestris*, 15 *C. platyphylla*, 8 *Macrozamia macdonnellii* (very frost-resistant) & southern W.A. spp. (*M. riedlei*, *dyeri*, *enneabba*) do not show any winter dormancy. *M. riedlei* is notorious for having a high percentage (up to 90%) of tatty-looking seedlings, & some losses, until plants are 10 years old or so. They seem prone to scale & fungal attack. (Is this also so in W.A.?). *M. dyeri* & *M. enneabba* seem OK.

My largest *C. kennedyana*, about 20 years old, had a second flush of leaves in 1995, with the first batch dying in March 1996, & the second batch lasting until the new flush in October '96 ('96 frosts were very light). The largest *C. armstrongi*, one of the less common "blue" form, also had a second flush on 30-12-95. The 13 first-flush leaves were dead by March '96, while the 19 later leaves lasted until the July '96 frosts, although tatty by June. It was probably adversely affected by a -6 degrees C frost in August '95. It had had 25 or more leaves for several years previously. Autumn leaf flushes are common in some of my exotic cycads, especially *C. thouarsii* & *Encephalartos arenarius* & *E. ferox*.

Seedling survival varies greatly among the northern cycads. I get high survival rates with *C. silvestris* & *C. angulata* & *C. kennedyana*, reasonable (50% or so) with *C. cairnsiana*, *C. couttsiana*, *C. platyphylla*, *C. maconochie*, *C. media*, *C. ophiolitica*, *C. sp.* Paluma Range, *Macrozamia riedlei*, *M. dyeri*, *M. enneabba*, & *M. sp.* Jurian

Bay, & abysmal with *C. calcicola* (both the Katherine & Litchfield forms; germination near zero) & *C. conferta*. I am told that *C. calcicola* is very difficult even in Darwin. *C. armstrongi* seeds germinate well, but I then lose up to 80% in the following winter---- the survivors then do well. In May '96 the drought ended with 495 mm of continuous rain over 8 days, & this killed a lot of baby *C. armstrongi* & 2 teenage *C. conferta*. Knowing how touchy they are, I should have moved all *C. conferta* to a dry spot, & shall in future unseasonal downpours. Some *C. cairnsiana* seedlings also succumbed at this time.

I germinate & grow all cycad seedlings in an exceptionally well-drained mix of 60% furnace ash (actually an inert clinker of high internal surface area--- a sort of rocky analogue of activated charcoal) & 40% aged ovine/bovine manure. When young, I find they seem to do better if crowded together, usually in a deep polystyrene box. Possibly growth hormone signals pass between seedlings.

Small numbers of seeds of *C. orientis*, *C. sp. Port Keats*, *C. perneri*, *C. sp. Kimbolton*, *C. arnhemica*, *C. basaltica* & *C. furfuracea* have all given poor germination. The New Guinea spp. *C. apoa* & *C. campestris* have given good germination.

Flushing times. *M. macdonnellii* flush in late Sept. The largest *C. armstrongi* has started to flush from Oct. 21st to the first week of November every year since 1989, & takes 3 weeks for fronds to get to full size (30 leaves in '96). Most *Encephalartos* & *ceratozamia* spp. flush in early to mid October, as do large *C. maconochie* & *C. canalis*. *C. calcicola*, *C. basaltica*, *C. furfuracea*, *C. pruinosa* & small *C. maconochie* & *armstrongi* flush in late December. Most *C. angulata* flush in mid-November. Most *C. kennedyana* flush in Sept.-Oct., but my largest waited until Jan. 1st in 1997 (after no frost damage the previous winter). Incidentally, it suckered after severe frosts in 1995; cause & effect or coincidence? Most suckering in northern cycads in the wild appears to be induced by fire or termite attack. In '95, *C. conferta* did not flush until late February, one of 3 even waiting until late March. I presume this indicates the species is not too keen on my climate! The exotic *C. revoluta*, *C. taitungensis*, *Dioon edule* & *Dioon sp. Palma Sola* flush in late Oct. through to November. Incidentally, I don't believe the latter is, as usually reported, just a form of *Dioon edule*. It is at least twice as fast growing, & more importantly, quite frost-susceptible; about the same as *C. thouarsii*, while all forms of *Dioon edule* are frost tolerant to at least -7 degrees C.

A note on dormancies in a few non-cycads. The Asian *Curcuma inodora* this year began to yellow on 31-5-97 (early April in '96), with leaves stone-dead by 12-6-97. This is the near-identical look-alike of Australia's *C. australasica*, which had some plants non-dormant until late August. The commonly-seen overseas *Amorphophallus bulbifera*

(40 plants) went fully dormant by late April, & A. variabilis (10 plants) by late May, while the Qld.-N.T. A. paeonifolius varied between 17-5-97 & 3-8-97 (20 plants; the largest lasted longest). A few small plants of a Zimbabwe Amorphophallus sp. lasted until early September. To digress even further, a flowering Amorphophallus cost my friend Merv Hodge \$45 for a house call to fix a non-existent gas leak a couple of years ago.

SUBS : A handwritten X below this line indicates the current subscription of \$5 (overseas \$10) is unpaid according to Len's records.
