

Observations on Native Trees in Cultivation

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To grow native plants in a garden is to have a constant opportunity of watching their changes throughout the seasons. If time permits there is special satisfaction in growing trees, to observe closely their slow but steady progress towards maturity, with its flowering and seed-bearing.

For a good many years I grew all five of the native species of *Nothofagus*. As they were planted in ground that had not previously carried beech forest some of the following effects showed up more clearly.

In July, on the ground around each tree, appeared many pale tan-coloured toadstools, members of the genus *Laccaria*. It was noticeable that they increased annually at the perimeter of the tree's root area, and in each case it was many years before they became really numerous, till the tree became mature in fact. An annual crop of *Laccaria* flourished around a fine tree of *N. truncata*, but eventually the tree was wrenched so badly in a storm that it died. For two successive seasons a diminishing number of the toadstools appeared as usual; after that they came no more. This suggests that the fungus is not concerned only with the living tree but also with the environment it creates. Some products might remain in the ground for a limited period after the death and removal of the tree.

In July 1948 I collected a small seedling of *Nothofagus solandri* from Silverstream and planted it at Levin. It made rapid growth, soon becoming mature and bearing a spectacular crown of flowers on a number of occasions. It is the very brilliant red of the anthers that makes the flowering of *Nothofagus* a conspicuous sight, small though the individual flowers are. Leaf fall from this tree was greatest after heavy flowering. This did not occur every year, but in seasons following a hot dry summer. The flowers are borne on the young wood of outside branchlets at the top and sides of the tree. When flowering is heavy there is a general loss of leaves from the branchlets concerned, making a heavy carpet of dead leaves beneath the tree. (Many of the leaves that die at this time do not fall to the ground immediately but are caught up in the lower branches, falling to the ground later when winds shake the tree). New leaves then immediately erupt amongst the fading flowers. In a season when flowering is sparse or absent most of the old leaves remain; in years of good flower-

ing, therefore, the tree is put to the added strain of also renewing all leaves on the young (flowering) growth. The following year seems to be usually a resting period, with few or no flowers.

Leaf fall could not be ignored, for the tree was beside the back door and the dead leaves had to be swept aside. When they fell on to damp concrete they made a metallic ring of stain which dried to a light tan colour, like spilt tea. As an experiment, a handful of dead leaves was steeped in cold water which soon became amber-coloured with a strong smell of turpentine. This brew was left in the jar for some weeks, during which time much of the water evaporated, leaving a thick brown deposit on the glass. The deposit washed off easily with cold water. It is easy to see that frequent light rain showers, by freely dissolving this substance out of the cast leaves, would materially alter the chemical composition of the soil around the tree. The slow appearance of *Laccaria* could be connected with a need of the fungus for soil conditions produced by considerable quantities of beech litter over a number of years. Logically, an increase in *Laccaria* should follow a heavy flowering season of the beech. Such an increase was noted in July 1964, after heavy flowering and leaf fall commencing in October 1962. (In 1963 there was sparse flowering and scant leaf fall.) The time lapse would allow for a break-down of nutrients from the beech, also for copious growth of mycelium before the fungus became conspicuous above ground by its numerous fruiting bodies at the appropriate time of year. The lawn near drifts of the fungus showed an improvement in the colour and quality of the grass.

A tree of *Nothofagus fusca* did not flower so freely as *N. solandri*. Its very wind-swept situation caused the topmost branches to be completely bare of leaves in autumn and winter, which may have limited the production of flowers; what flowers there were grew more generally over the tree and therefore were more mixed with foliage. The colour of the individual flowers is much less brilliant than in *N. solandri*. In the course of a long season *N. fusca* had an initial burst of bloom followed by two later periods with much fewer flowers. When the last were blooming (March, 1963) it was possible to find at the one time a few flowers, fully grown green cupules, and brown empty cupules which had dispersed their early seeds. No cupules were ever seen on the tree of *N. solandri*, even after seasons of heavy flowering.

Leaf fall and flowering are related in mahoe (*Melicytus ramiflorus*) also. Though never leafless, the trees change much of their foliage in spring by gradual stages. In September they begin to have a very ragged appearance. Many of the leaves on the previous year's shoots turn yellow and hang downwards before dropping off, while at the same time an elongated shoot of new growth extends from the tip of each branch, the new leaves being

at first a shining yellow-green. By the time these leaves are well developed, bundles of flower buds are appearing on the previous year's wood. When the flowers are mature (in the middle of October) most of the old leaves have gone, leaving the flowering branchlets uncluttered but sheltered overhead by the expanded crown of new leaves on the young shoots. Viewed distantly in September and October, mahoe trees have a characteristically yellowish appearance caused by the fading of the old leaves and the later growth of pale new ones on young outer branches. Thus it is possible, even at a distance, to predict the presence of flowers by observing the stage of leaf development.

Note on the Growing of *Xeronema callistemon*

FROM a sowing of 1966/67 seed, Mr John Moreland has at this date some 50 plants about a year and a quarter old, 4 or 5 inches high, with seven leaves in a fan. They take $2\frac{1}{2}$ to 3 months to germinate, have grown most noticeably in the last six months and are still growing slowly. These seedlings are in boxes, some under glass, some in the open. Both are growing even at this time of year, but slowly. More than 100 of the plants that germinated were lost, possibly through damping off. They need water, but very good drainage is absolutely essential.

Mr Moreland also sowed some 1967/68 seed in May and is looking for "heads" pushing up through the soil any day now. In his experience, seeds sown within four or five months of ripening are more likely to germinate than those left till the following spring.

Incidentally, in the Begonia House in the Lady Norwood Rose Garden, a plant is growing well in a copper tub with 20 fans and 3 or 4 old flower stalks.

The plant at 26 Ventnor Street had 31 flower heads in 1966/67. In 1967/68 there were only about 20.

Several young specimens of *Xeronema callistemon* are being grown at Otari Museum but, because of the frost hazard there, positions have had to be specially chosen. The *Xeronema* has proved difficult to grow from divisions, is liable to be killed by frost and may take up to 20 years for its flowering. There are records of its flowering at 22 years at Te Aroha, and at 12 years in Auckland.

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