

"The New Cultivars of New Zealand Flax"
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Introduction

My interest in flax had its roots in a childhood of seeing large green or bronze New Zealand Flax, paired with Tree Ferns and Philodendron, gracing the front of modern early 60's landscapes. In structure and form this plant had no equals but by the 1970's its use had become so prevalent that, quoting Bob Hornbach in Fall 1994 issue of *Pacific Horticulture*, "flax was so commonplace that it was at the risk of becoming downright boring". The author goes on to note that the "New" cultivars making their way into the horticultural trade here in California have in a way rescued New Zealand Flax from this mediocrity. It is the history of the introduction of New Zealand Flax, and in particular the new cultivars, that I wish to address with this presentation.

What is New Zealand Flax

The common name "flax" is applied to several very different plants that have in common a fibrous nature and are used for items such as rope and clothing. Thus such unrelated plants as the "true" or Asian Flax (*Linum usitatissimum*) and Yellow Flax (*Reinwardtia indica*), both in the Linaceae, are often confused with New Zealand Flax (*Phormium* sp.) in the Phormiaceae. As the common name implies *Phormium* come from New Zealand, although there is a population of *Phormium tenax* on Norfolk Island of Australia. The name *Phormium* comes from the Greek word for basket after its usage by the Maori, the Polynesian people who inhabited New Zealand since the 13th century. The 2 species in the genus are both variable in growth form and each can be found growing throughout the other's range. The primary differences between the two are in the growth form, flower, color and position of the fruit. *Phormium tenax* grows vertical in habit and has erect stems of dull red flowers and upright 3 angled fruit. *Phormium cookianum* (*P. colensoi*) is typically smaller, usually has arching foliage and radiating stems of greenish yellow flowers, although it too can have red flowers. The drooping seen pods are cylindrical and often spiraled.

Discovery of Phormium

It was on Captain Cook's second expedition to the South Pacific in 1773 that *Phormium tenax* was first collected. It was probably one of the first plants noted upon landing as it can be found on the beach, in river mouths, on coastal cliffs and along alpine lakes. *Phormium cookianum* was discovered later and named by Auguste Francois Le Jolis in 1848. In 1864 the name *Phormium colensoi* was applied to what is now called properly called *Phormium cookianum* ssp. *hookeri*. Many continue to reference *P. cookianum* as *P. colensoi*.

It was the early traders arriving in New Zealand that noted the similarity between *Phormium* fiber and that of true flax. These traders observed the usage of *Phormium* by the Maori, who called *Phormium* by the names "harakeke" for *Phormium tenax* and "wharariki" for *Phormium cookianum*. The Maori tribes used the leaves for weaving baskets, mats, headbands, and the fibers of the leaves for making clothing, fishing nets, and ropes. The roots yielded the material to make medicine and nectar was obtained from the flowers as was pollen to make face powder. Even the spent flower stalks were used to make rafts to cross rivers and lakes. The Maori cultivated flax and many selections were made and named. These initial cultivars were primarily selected for fiber quality and strength as opposed to the current selections for form, size and color. Several of the Maori plants were variegated and lacked strong fiber however, leading to speculation that they were strictly for ornament.

It did not take the New Zealand settlers of European heritage long to recognize the value of flax as an ornamental plant. In 1888 one of the first, and still one of the finest of the cultivars, *Phormium cookianum* 'Tricolor' was discovered and named. The new cultivars of *Phormium* are either selections from one of the two species or are hybrids between the two species. Since both species are highly variable, the determination of parentage for the hybrids is difficult. Generally the form can give an indication of lineage with the upright plants coming from *Phormium tenax* while the arching and weepy plants take after *Phormium cookianum*. Walter B. Brockie, at Christchurch Botanic Gardens in the 1930-40's, first advocated hybridizing these plants. He created 20 hybrids, naming several including *Phormium* 'Smiling Morn' which remains today as one of the most popular in New Zealand.

U.S. Introductions

Peter Reidel in his monumental manuscript *A Catalog Of The Plants that Are, Have Been, Or Might Be Grown Where the Orange and the Avocado Thrive, Including a Brief Mention of Others Every Plantsman Should Know* documents the appearance of *Phormium tenax* into San Francisco in 1871. The busy port city on the Pacific was a Mecca for new plants and Reidel again found the first reference to the cultivation of *Phormium cookianum* as being Golden Gate Park in San Francisco in 1947.

Phormium tenax migrated from the collector's garden into mainstream gardening world, thanks in part to landscape architects such as Thomas Church, who used the dark leaved cultivars extensively in 1950's and 60's gardens. Unfortunately *Phormium* became so common that it took on the aforementioned banality of the overused plant. With the introduction of the new cultivars, with a range in color, size and form that is nearly overwhelming, *Phormium* popularity got an immense boost. The collective name Rainbow Hybrids has been aptly applied to this group which includes such now well known cultivars as 'Maori Maiden', 'Maori Queen', 'Dazzler', 'Sunset' and 'Sundowner'.

These new cultivars spawned interest in *Phormium* but there were certainly popular and showy cultivars circulating among the avid gardeners and their friends several years prior to the introduction of the Rainbow Hybrids. A very fine cultivar had been in the Bay Area under the name *Phormium* 'Rubra' (now called 'Wildwood') and there were a number of the older cultivars that were available in the mid 1960's from Oakhurst Gardens, the renowned nursery of James Giridlian. Giridlian listed 2 variegated flax and dwarf red flax in his 1966 catalog. The first reference to the newer hybrids in the U.S. is from *Plants People Grow and Show: 1947-1984* which mentions that Mr. Jack Catlin brought *Phormium* 'Maori Sunrise' to the July 1983 meeting of the Southern California Horticultural Institute. He described the plant as "A new and very colorful dwarf form. It should be very popular as soon as it becomes more readily available".

In 1983 San Marcos Grower, in partnership with the late Mr. Fred Meyer imported 50 plants of 10 different cultivars from Margaret Jones nursery, New Zealand Flax Hybridizers. These were planted out in 100 feet long rows in May of 1984. This planting was intended for cut foliage production but in 1985, San Marcos Growers began containerized production of the Rainbow Hybrid Series. Initially we relied on our planted field for propagation stock but the demand became so great that additional plants were purchased from New Zealand Flax Hybridizers and Duncan and Davies Nursery in New Zealand to supplement the nursery's stock. Once adequate quantities were obtained, San Marcos Growers was able to propagate and sell plants without the need to import additional plants, except to obtain new cultivars. Although the initial stock plants were planted in the ground, more recently all propagation stock is grown in containers. This has allowed for better cultural control and is more efficient when dividing.

Propagation of New Zealand Flax

Seed propagation is easy and yields the greatest number of plants but is limited to the species unless a certain amount of variability is tolerable. Much of what is grown in the nursery trade as *Phormium tenax* 'Atropurpureum' is from seed and the resulting plants are variable in stature and color. We currently collect seed from the cultivar *Phormium* 'Dark Delight' as plants produced from this seed appear very uniform and have deep rich colored foliage. *Phormium* seed is collected in late summer and fall and should be sowed fresh, germinating in 3-4 weeks. Growing large batches of *Phormium* from seed and then making selections is one of main techniques for developing new cultivars.

Propagation by division is by far the most common and reliable method used in propagation of the cultivars of New Zealand Flax. We divide *Phormium* crops from fall through spring in a cool greenhouse or under saran, in some cases with bottom heat. Care must be exercised that the soil medium is well drained and the crown of the plant is exposed. The size of the division differs greatly with the different cultivars and some cultivars will have both very large to small divisions. The smallest divisions are rooted into 2¼ inch rose pots and the largest into 1 gallon containers. Rooting out in liner container can take 4 weeks to 3 months depending on the cultivar, division size and weather conditions. Following this it takes an additional 2 to 4 months to root out a 1 gallon container from a liner and it may take another growing season to fill out the fans in container. Considerable nursery stock must be held back to assure an adequate supply of mother stock for division. Sometimes a division fan will be markedly different from the mother plant. This division may lack the foliage color of the parent and in this case will be rouged out. Sometimes the division fan has a different variegation that may prove to be a beneficial mutation or sport of the original cultivar. The wonderful cultivar 'Cream Delight' was one such sport from *Phormium cookianum* 'Tricolor'.

Propagation by tissue culture has been used to dramatically increase many plants, often making a rare and difficult to reproduce plant a common item. This has yet to happen to the new cultivars of New Zealand flax, although several attempts have been made. Several years ago Monrovia Nursery tissue cultured *Phormium* 'Dazzler' but lost the bold red stripes in the foliage in the process. The resulting plant, dubbed *Phormium tenax* 'Atropurpureum Compacta' by Monrovia Nursery or *Phormium* 'Monrovia Red' is an outstanding small red New Zealand flax, but is not P.'Dazzler'. Tissue culture may remain a viable method of propagation for non-variegated forms of *Phormium* but may prove illusive on the showy colorful cultivars that are highly sought after.