

# GROWING QUEENSLAND-MAPLE ON LAVA ROCKLANDS IN HAWAII

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Queensland-maple (Flindersia brayleana F. Muell) is a valuable timber species comparable in quality to mahogany and walnut. It is native to Australia. Few trees of this species have been planted in Hawaii; consequently, knowledge of its survival and growth here is scant. If a large quantity of Queensland-maple could be successfully introduced, it would be an important addition to the State's reforestation program. Thousands of acres of rough or as lava rockland now support low-value native species, but this land can produce valuable stands of timber. In October 1961, the Hawaii Division of Forestry planted Queensland-maple seedlings on 2-1/2 acres in the Waiakea Forest Reserve, near Hilo on the island of Hawaii. Their performance is providing valuable information on their adaptability to local conditions.

## Site Conditions

The seedlings were planted in a typical Hawaiian rain forest area, 980 feet above sea level. Plants grow throughout the year. The major overstory species was ohia (Metrosideros collina (Forster) Gray), a tree of poor form on the Myrtaceae family. The most numerous understory species were treeferns (Cibotium spp.), which often exceed 20 feet in height.

Annual rainfall varies greatly but averages about 180 inches. There is no pronounced dry season. Mean annual temperature is about 72° F.

The soil is Puna extremely stoney silt loam, one of the Rockland types (lithosols). The shallow surface layer consists of organic matter mixed with mineral soil derived from volcanic ash deposits. This layer infiltrates the underlying as rocks to depths of 15 to 30 inches. Inherent fertility is low.

Most of the native vegetation was knocked down and crushed by bulldozers just before planting (fig. 1). No effort was made to windrow the downed trees. As usual, no more of the humus and surface soil than necessary was moved. A few large ohia trees were left standing to reduce clearing costs.

## Establishment

The seedlings were grown in wooden flats, 12 by 15 by 3 inches, from seed collected on the island of Oahu. They were 6 to 10 inches high when outplanted as 1/2 + 0 stock in October 1961. The seedlings, planted by Hawaii Division of Forestry personnel using small hand picks, were spaced about 10 feet apart. The competing vegetation was cut back with machetes in July 1963.

## Growth and Survival

Fifty-five trees were selected at random in a typical section of the plantation and measured in December 1964. Tree heights were recorded to the nearest 1/2 foot.

Growth of Queensland-maple on this site after 3 years is impressive (fig. 2). Heights averaged 14 feet, and ranged from 1-1/2 to 28 feet. Nearly three-fourths of the trees were more than 10 feet tall; almost one-fourth exceeded 20 feet. Distribution, by class heights, was as follows:

<u>Height class</u> (feet)	<u>Distribution</u> (percent)
1- 5	9
6-10	20
11-15	31
16-20	16
21-25	22
26-30	2

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Figure 1.--Native Hawaiian ohia-treefern rain forest area prepared for tree planting.

Diameters at breast height ranged from less than 1/2 inch to 3 inches.

Survival was estimated at about 80 percent after 3 years. Most of the tree mortality probably resulted from impervious rocks underlying shallow soil. Where cracks in the

lava rocks permitted root penetration, the seedlings became established and grew rapidly. Those seedlings that did not suffered from drought and from competition from fast-growing shrubs.



Figure 2.--Three-year-old Queensland-maple growing on lava rockland in Hawaii.