

Pre-Ad-hoc Package of Practices

for

Macadamia Nut (*Macadamia integrifolia*)



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MACADAMIA NUTS

Macadamia nuts, native to Australia, are cherished for their rich, buttery flavour and numerous health benefits. These nuts are now cultivated in various parts of the world, including Hawaii, South Africa, and Latin America. Nutritionally, macadamia nuts are rich in healthy monounsaturated fats, which help reduce cholesterol levels and promote heart health. They also support weight management due to their high fiber and protein content, despite being calorie-dense. Furthermore, macadamia nuts have a low carbohydrate content, making them beneficial for blood sugar control. They are packed with antioxidants, such as flavonoids and tocotrienols, which protect against oxidative stress and inflammation, and their oil is prized in cosmetics for its moisturizing properties.

Climate:

For successful cultivation, macadamia trees require a subtropical climate with temperatures ranging from 15°C to 29°C. They can withstand short periods of frost, but extended cold spells can be detrimental. An annual rainfall of 1,200 to 2,000 mm is ideal, with irrigation necessary in drier regions. Moderate humidity levels are preferable, as excessive humidity can lead to fungal diseases, while too little can cause the trees to desiccate. Full sunlight is essential, requiring at least six hours of direct sun daily, and wind protection is beneficial since strong winds can damage the trees and reduce yields.

Soil:

Macadamia trees thrive in well-drained, deep soils, such as sandy loam, loam, or sandy clay loam, with an optimal pH of 5.5 to 6.5. Good drainage is crucial to prevent root rot, and raised beds or mounds can be employed in areas with heavy soils.

Varieties:

Solid blocks of a single variety are not recommended as macadamias do better when various types are mixed to allow cross-pollination, thus increasing yields. Some important varieties of macadamia nut are given below:

Beaumont, Burdick, Cate, Dorado, GT 1, James, Keaau, Keauhou, Maroochy, Nelmac II, Own Choice, PA 39, Renown, Vista, Waimanalo

Propagation:

For obtaining uniform plants wedge grafting and chip budding are the ideal methods of propagation. The ideal rootstock for grafting should be 9-12 months old with at least a diameter of 1-1.3 cm. The recommended

rootstock is *Macadamia tetraphylla* which is resistant to both macadamia trunk canker and anthracnose.

Cultivation

Planting density:

Grafted plants are set out in the field at a spacing of 9 to 10 m apart. Different planting densities, viz. low density – 10m x 5m (200 trees/ha), medium density 8m x 4m (312 trees/ha), medium – high density -7m x 3m (476 trees/ha) and high density -5m x 2m (1000 trees/ha) though was recommended, majority of the new orchards are planted at medium – high densities.

Pollination:

Macadamia is pollinated by insects, as most cultivars are at least partly self-incompatible. Planting pollinizer trees and introducing bees are both important for good fruit set. After flowering, the nuts take about 6-8 months to mature. Some grafted varieties of macadamias begin bearing within 2-3 years.

Training and pruning:

Pruning is the most commonly practiced method of training the Macadamia into the desired form. During the early growth much of the formation of the tree may be controlled by hand pruning, that is by pinching out, with the thumb and finger, from time to time all buds which would become undesirable branches. By this method and with the aid of the pruning shears the framework of the future top may be developed and excess terminal growth retarded.

Fertilization:

When the trees are established, fertilizer must be applied regularly according to the leaf and soil nutrient analysis report. A bearing Macadamia tree should receive 450 g N, 150 g P₂ O₅ and 500 g K₂O / plant/ year for satisfactory production.

Maturity and harvesting:

Grafted plants start bearing fruits on commercial scale at the age are 7-10 years old, but once established, may continue bearing for over 100 years. Nuts mature in 6-7 months after flowering and must be allowed to ripen on the trees. Usually the nuts fall to the ground when mature, but in some cultivars remain on trees and must be harvested. Harvesting macadamia nuts typically occurs in late autumn to early winter when the nuts mature and fall from the tree. They can be collected manually or mechanically from the ground.