

Acacia mearnsii De Wild.

V.M. NIETO and J. RODRIGUEZ
Corporacion Nacional de Investigacion of Forestal
Santafé de Bogotá, Colombia

FABACEAE (BEAN FAMILY)

Acacia decurrens Wendl, *Acacia mollissima* De Willd.

Acacia

The *Acacia mearnsii* is a fast-growing but short-lived tree that can reach 25 m in height and 30 cm d.b.h. The crown is wide when the tree is isolated. In closed plantations, *A. mearnsii* grows straight. It has a dark green foliage of persistent nature and compound leaves. The folioles are tightly packed, small, and less whitish in the inferior part. The species requires deep soils with good drainage. It grows in soils with a clayey, loose clayey, loose sandy, or sandy texture. The tree tolerates slightly acid soils with a tendency toward neutrality. It tolerates poor soils but not stagnant waters; the schists and ferruginous subsoils must be avoided. Excessively sandy or lateritic soils must also be avoided. In Colombia, *A. mearnsii* grows between 1800 and 3000 m, where average temperature ranges between 12 and 17 °C and annual precipitation ranges between 500 and 2000 mm. It is a heliophyte species that does not tolerate prolonged droughts (Montana and others 1974). According to the classification of life zones by Holdridge (1978), *A. mearnsii* grows in the vegetal formations of the Low Mountainous dry forest (bs-MB), Low Mountainous wet forest (bh-MB), and Low Mountainous very wet forest (bmh-MB).

Because *A. mearnsii* has limited uses, its physico-mechanical properties have not been obtained. The wood has been used as round wood, props for mines, spikes, firewood, and charcoal and in construction. Additionally, it has been used for short fiber pulp and in tannins. The species fixes nitrogen in the soil, making it useful in soil recovery. The shape and anchoring of its radicle system make it useful in controlling erosion. Occasionally, it has been used as forage, especially in zones and seasons of shortage (Serrato Patiño 1985).

The flowers are light yellow and the fruits are legumes. The seed is rounded, black, shiny, hard, and smooth with a yellow funiculus, 5 cm long, 4 mm wide, and 1 to 2 mm thick. Seeds average 65,053 per kg.

When seeds are stored at a temperature of 4 °C in hermetic containers, their viability can be maintained for several years. The seeds require a post-ripening period of 2 to 4 months in dry storage before good germination can be obtained. Appropriate pregermination treatment involves mechanical scarification with sandpaper until the seeds lose their shine and appear completely porous. Secondary pregermination treatment consists of submerging the seeds in boiling water for 1 minute, leaving them in the same water for 24 hours, and washing the mucilaginous pulp thoroughly. They may also be immersed in nitric acid at 4 percent for 24 hours.

Germination in a laboratory occurs in 2 to 19 days. In the nursery, germination occurs on the 16th day. About 20,000 plantules are obtained per kg of seeds in nurseries (Trujillo 1996).

Because the species is difficult to propagate by stem cuttings, reforestation by using seeds from trees (in groups larger than 30) with desirable phenotypic traits is recommended. Seeds must be sowed in a substrate consisting of two parts sand and one part soil, previously disinfected with a commercial product, such as formol or Basamid, or simply with hot water. They should be sowed deep enough to prevent uncovering when watered. Seeds may be sowed in rows 10 cm apart to obtain 500 plantules per m, or by scattering, using 20 g of seeds per m² (Trujillo 1996).

Plantules are lifted when they are 3 to 5 cm in height at approximately 3 months of age. To reduce mortality during transplantation, plantules must be lifted in the shade, avoiding heat and excessive wind. All existing vegetation should be removed from the site. If the soil is very compact, it should be scarified to a depth of 25 cm in a radius of 0.5 cm around the plantule. The initial planting distance between trees is usually 2.5 by 2.5 cm. In agroforestry systems, distances of 6 to 10 m between trees must be used. When the plantules are 30 to 40 cm they can be transplanted to the field.

ADDITIONAL INFORMATION

Acacia mearnsii does not withstand floods and strong winds, which can bend or overturn it. Fungal attacks by *Corticium salmonicolor* occur, and ants can cause serious damage. The tree is susceptible to physiological disorders that manifest themselves as gummosis.

