SEED LEAFLET

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Acacia aneura Benth.

Taxonomy and nomenclature

Family: Fabaceae (Mimosoideae)
Synonyms: *Racosperma aneurum* (Benth.)Pedley.
Varieties: *Acacia aneura* var. *aneura*; *A. aneura* var. *conifera* Randell; *A. aneura* var. *latifolia* J. Black; *A. aneura* var. *stenocarpa* Randell.
Vernacular/common names: mulga.

Distribution and habitat

Indigenous to central and southern Australia where it is a dominant species in open woodland or shrubland in arid and semi-arid zones. It occurs from sea level to about 1000 m altitude in areas with annual rainfall of 100-500 mm, hot summers and cool winters with light frost. It is drought tolerant, but very sensitive to fire. It has been introduced to a number of tropical countries in Asia, Africa and Latin America.

Uses

The leaves that contain 11-16% crude protein are used for fodder and in many parts of Australia it forms a significant part of sheeps diet. However, in dry areas excessive grazing may result in the death of the trees. The seeds are rich in protein and can be ground and used as flour. In arid areas the species is used to provide shelter and shade and the attractive foliage makes it a popular ornamental. It is an excellent pollen producing species that is important to beekeepers. The nitrogen-fixing capacity and the tolerance to drought makes it suitable for erosion control and soil improvement. The wood is very hard (850-1100 kg/m^3) and durable in the ground, and has been used extensively for fence posts. It turns well and takes a high polish, but a log size that rarely exceeds 5 x 25 cm restricts its use to small turnery items. It also makes excellent firewood and charcoal.

Botanical description

In higher rainfall areas it is a single stemmed tree, 10-15 m tall, but on dry locations or on very shallow soils a stunted low shrub 2-3 m tall. The trunk is short and brown, fissured and sometimes twisted; bark is thin, less than 3 mm. Leaves (phyllodes) are extremely variable, ranging from short and needle-like to long, broad and flat. They are 2-25 cm long, leathery and with very fine hairs that give a silvery-grey appearance. Flowers are small and yellow, borne in 1.5-2.0 cm long, dense inflorescences.

Fruit and seed description

Fruit: the fruit is a pod; it is thin and flat, 2-5 cm long and 7-15 mm wide. It usually has a narrow but prominent winged margin.
Seed: seeds are oval and flat, 3-5 x 2-4 mm, shiny dark brown and with a hard seedcoat. At the base of the seeds is attached a small pale aril. There are 50.000-100.000 seeds per kg.

Flowering and fruiting habit

Flowering can occur several times over the year but with two principal flowering periods in spring and early summer. The amount of flowers depends on weather conditions, when the rainfall is high more flowers are produced. Also fruit setting is strongly influenced by rainfall and only late summer flowering followed by winter rain leads to seed setting. Because of these climatic requirements seeds do not set every year and only once or twice in a decade can a good crop be expected. The mature fruits are shed about 10 months after flowering. However, the length of the ripening period can vary significantly both within and between provenances. The flowers are pollinated by insects and the seeds are dispersed mainly by ants, termites and birds.

Acacia aneura at Arkaroola, northern Flinders Ranges, Australia. Photo: Horst Weber, Society for Growing Australian Plants.

Harvest

When the pods begin to open it indicates that the seeds are mature. Many of the seeds remain attached inside the open pod until the pod itself is shed. As the time of ripening is difficult to predict it may be necessary to monitor the progress regularly. The ripe pods are collected either from the tree using pole pruners or from the ground after dispersal. When collecting from the ground, a sheet should be spread out on the ground under the tree and the seeds gathered on a daily basis. An alternative that is used in Australia is a large funnel, metal or plastic, that is mounted on the tree. This has the advantage of minimising seed predation. Especially birds can cause significant losses. The pods are frequently eaten by parrots before they are fully ripe and this can result in the loss of the whole crop from individual trees. Both flowers and fruits are also an important source of food for emus. During transport the pods should be loosely packed in hessian sacks and given adequate air ventilation especially if the pods are green. Extracted seed can be packed in clean cotton bags.

Acacia aneura: flowering branch, leaf variation and fruits. From: Simmons (1981).

Processing and handling

Pods that are fairly dry when harvested can be spread out on a sheet and dried directly in the sun. If the pods are green, the seeds inside have a high moisture content and must first be allowed to dry slowly in the shade for some days otherwise their viability can be affected. As green pods are likely to ferment it is recommended to place them on a screen to allow ventilation. After drying, the seeds are extracted by beating the dry pods with a flail or a pole or by crushing the pods between canvas sheets by trampling underfoot. With small seed lots the pods can simply be broken up by hand. Finally the seed is cleaned by winnowing or using a sieve.

Storage and viability

The seed is orthodox and if dried to a moisture content below 10% and stored in air-tight containers it will remain viable for several years even at ambient temperature. At low temperatures the seed can be stored for more than 10 years. Seed that has been stored for some months often germinates better than fresh seed.

Dormancy and pretreatment

The seeds are hardcoated and must be scarified in order to allow water to enter. The recommended method is to dip the seeds in boiling water for 5-30 seconds or pour boiling water on the seeds and let them remain in the water until it has cooled down.

Sowing and germination

Mulga is propagated by seeds and it does not resprout after cutting. Germination is normally good, about 80%. The seeds are sown directly in containers or in germination trays or seedbeds and after 10 days transplanted into containers. The potting mix needs to drain freely but has good moisture holding capacities. Nursery growth is slow with seedlings often taking 6-8 months to reach 20 cm tall. When they are transplanted to the field, the seedlings require several months without severe moisture stress to survive but once established they can withstand severe drought. They develop a long tap root and an extensive lateral root system in the top 30 cm of the soil. The young trees must be protected from browsing animals.

Selected readings

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