THE CAPE ALOE

Aloe ferox and its uses.

by Ernst van Jaarsveld, Kirstenbosch

To me the aloe, a true endemic of Africa and its islands, reflects South Africa more than any other plant. Its succulent nature reflects the dry climate, its thorns and bitter antibiotic sap speak of past struggles with herbivores and diseases, and its bright racemes of nectar-filled flowers speak of its urge to attract the attention of sunbird pollinators.

There are about 150 aloe species in South Africa (about 350 in the whole of Africa). They belong to the Aloaceae family, which also includes the other smaller aloe-like species such as Haworthia, Gasteria, Poellnitzia, Astroloba and Lomatophyllum. The aloe range from the small Aloe albida a few centimetres high, to the tall arborescent tree aloe, Aloe bainesii. They are monocotyledons with adventitious roots and simple linear lined leaves with trimerous (the parts of each whorl are inserted in threes) flowers. The older leaves are persistent and remain on the stem as a dry skirt which protects the living inner tissue from damage and fire. Even under the most severe drought the moisture in the leaves is recycled from the base upwards.

Their habitat includes renoster-weld, dry fynbos, succulent karoo, Nama karoo, eastern Cape noorsveld (thickets) and grassland. They can be found on a variety of soils including mineral-poor quartzitic sandstone, shale, ranite, conglomerate, limestone and dolerite. The plants are common in many areas and in some localities leaves are regularly harvested without posing any threat to the plants.

The Cape aloe, with its erect divided candles, can perhaps be regarded as most typical. (Ferox means fierce and refers to its thorns.) It occurs from the western Cape to southern KwaZulu/Natal and in parts of the Free State and Lesotho, with exceptionally dense stands along the national road between Caledon and George. During June their striking bright, orange-red candles appear at a time when few other plants are in flower. The flowers are usually orange-red but yellow and white ones have been recorded.

Aloe ferox was described by Miller in the Gardeners Dictionary in 1768 and was first figured by Commelin in his Praeludia Botanica in 1793 from seeds sent to Holland by Simon van der Stel. The plants were among the first indigenous plants to be cultivated on the Cape Peninsula. It was grown in the Dutch East India Company’s garden in the Cape and appeared in Oldenlands Kruid Boek. The common name, bitteralwyn, was in use from the earlier part of the 18th century.

Medicinal uses

Throughout history aloe plants have been used for their beneficial properties: early sailors used them for the treatment of skin injuries by salt, rough ropes and canvas, and exposure to the elements. Missionaries from Mediterranean countries spread aloe for their soothing properties along with their faith among indigenous communities in the Americas. African slaves took aloe with them into an unknown future. Ancient Egyptians, Greek and Roman physicians and Bushmen have left records or drawings of this amazing plant. More recently, the observation that aloe derivatives were used for the treatment of radiation burns in Japan in 1945 with great success excited the interest of the western world.

Twentieth century scientific literature refers to the aloe plant’s diverse biological properties as a fungicide, cancer cell growth inhibitor, an anti-inflammatory, and an anti-ageing agent. Aloe derivatives were also found to stimulate the growth of various cells such as skin and normal lymph cells and recent tests show that aloe gel increases blood flow to area of application which is significant for the regeneration of skin cells.

The medicinal use of Aloe ferox was first reported by Thunberg in 1772. Aloe leaves were cut at the base and placed in a circle with the cut surfaces facing inwards over a hollow in the ground which was lined with animal skin.
The bitter sap was collected in this hollow and later boiled to form a thick syrup which later coagulated and crystallized. The bitter sap, either liquid or crystallized, as well as juice or pulp of whole crushed leaves, was used by indigenous people and settlers for a variety of medicinal purposes, as well as being exported to Europe. The healing properties of Aloe vera have been documented since Ancient Greek and Roman times and is widely known today, but few people realize that Aloe ferox is similarly used on a commercial scale. The leaves are harvested for two components: bitter sap which drains spontaneously and is still produced as crystals in the traditional way, and gel or juice which is expressed from the inner fleshy part of the leaves. For this purpose a factory was established at Albertinia in 1986. Leaves, which traditionally were left to rot after collecting the bitter sap, are now processed to produce aloe gel powder which forms the basis of a multi-billion dollar Aloe Vera Gel Powder industry.

To sustain the commercial harvesting on a wider scale, farmers in the Albertinia district have established Aloe ferox plantations on ground which is not suitable for other cultivation. This eases the strenuous efforts of the harvesters and tappers considerably, and offers an income with little capital and maintenance cost to land-owners. Recently, a much simpler factory process for extracting gel from Aloe ferox was developed and patented. This method avoids exposure to organic solvents and temperatures above boiling point, resulting in a far more natural product. This extract consists mainly of a mixture of aloe polysaccharide polymers, but also contains a variety of minerals as trace elements, amino-acids and biological acids. The gel is included in skin and hair care products for its soothing and healing properties which are effective against superficial traumatic damage such as sunburn, chemical irritation, grazes, insect bites and stings. Gel from A. ferox is also an effective moisturizer.

Oriental uses
Aloe ferox is a characteristic and beautiful South African plant. It is an asset to any garden and will attract birds, bees and a host of other animals and insects. It can be grown in virtually any dry, warm, preferably north-facing spot in rockeries, vertical stone-dressed walls or any warm corner. It thrives in the summer and winter rainfall areas of South Africa, in arid or moist parts, and from the low to highveld regions. It is resistant to frost but under severe conditions, leaves and flowers could be damaged. In Aloe ferox, like all other aloes, new adventitious roots are annually formed at the base, anchoring the plant and feeding it from the upper soil layer. There is no secondary thickening as found in dicotyledonous plants, so the roots are non-aggressive and do no damage.

Cultivation and care
Aloe ferox is easily propagated from seeds sown during spring or summer. It is best to pre-treat the seeds with a fungicide such as Apron C (a systemic fungicide now widely used at Kirstenbosch) to prevent damping off. Sow in a soil mixture of 2 parts sand, 1 part garden loam and 1 part compost. The seed should germinate within 3 weeks and the seedlings can be planted out at a year into containers. In the third year the plants should be strong enough to be planted out into the garden and, under optimal conditions, they can flower in the fourth year after sowing. At Kirstenbosch we have 12-year-old plants of 2 m high that get seepage (with fertilizer) water from a nursery bed above. Some plants from the same batch, but planted in a much dryer situation, are only 30 cm high.

It flowers once a year during winter and seeds itself readily - the capsules ripening during spring and splitting open to release the winged seeds. Seed can be harvested just before ripening by picking the mature inflorescence with pods and placing in a warm, dry situation until all the capsules have opened. Store the seed in a cool place once it has been separated from the capsules. The viability is about a year, or longer if stored under lower temperatures.

Aloe ferox is easy to transplant: either by digging out and trimming back the roots or simply sawing off at the top. It is interesting that the base of an Aloe ferox stem will not resprout. It soon rots away and adds to the organic matter of the soil. Aloe ferox grows rapidly with an annual compost top-dressing and ample bonemeal.

Pests and diseases
Under normal conditions Aloe ferox is virtually disease- and pest-free. However, there are a number of pests and diseases that can become troublesome when large numbers are cultivated (concentration camp effect!). The aloe snout weevil (Brachysomus monachus) is a hard-skinned beetle which sucks the sap of the aloe leaves leaving small scars. The real trouble, however, is its larval stage. The adult females usually lay the eggs in the crowns of the leaves during late spring to mid-summer, the larva tunnels its way to the inner core of the stem and can eventually cause crown rot.
The aloe usually overcomes the pest, but it can be controlled by Ripcord spray or Bexadust in the crowns during October to December when the beetles are active. Unfortunately this kills many other animals and insects such as spiders who often make their webs among the protective arms of the leaves and the geckos, smaller snakes and other lizards benefiting from the aloe's thorny leaves.

White scale is visible as a dense white cover. These are tiny insects hiding below a protective white waxy shield. There are many smaller predator insects that prey on scale and it is worthwhile waiting for the natural enemies to combat the pest before spraying. If infestation is severe it can be removed mechanically by a hard brush and soapy substance. This is usually effective and harmless. The plants can also be sprayed with an oil-based chemical such as Albolium which smothers the pest.

Dwarf flies are occasionally troublesome. These small flies lay their eggs on the leaf and the hatching larvae tunnel on the inside, eventually destroying the tissue to such an extent that the leaf is lost. This is difficult to control, but it is possible with insecticide systematically applied to the roots.

Black spot, a fungal disease, troublesome in wet conditions, can be controlled with copper oxychloride. The aloe ring fungus can present problems when the plants are planted too close together. It is also controlled with copper oxychloride.

All in all, an Aloe ferox will be an asset to your garden, and why not support local industry and buy some Aloe ferox products?

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