PRODUCTION GUIDELINE FOR FEVER TREE

agriculture, land reform & rural development

Department:
Agriculture, Land Reform and Rural Development
REPUBLIC OF SOUTH AFRICA

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VACCINATE TO SAVE SOUTH AFRICA
TOGETHER WE CAN BEAT CORONAVIRUS

PART I: GENERAL ASPECTS

1. Classification

Kingdom: Plantae
Family: Fabaceae (Mimosoideae)
Scientific name: Vachellia xanthophloea (Acacia xanthophloea)
Common names: Fever tree/Sulphur Bark (English); koorsboom (Afrikaans); mooka-kwena (Sepedi); More o Mosetlha (Setswana); umHlosinga (isiZulu); nkelenga (xiTsonga); munzhelenga (Tshivenda)

2. Origin and distribution

The tree was previously called *Acacia xanthophloea*. The genus name *Vachellia* is named after George Harvey *Vachell* (1789 to 1839) from British East India company in Macoa who collected plants in China. The species name xanthophloea is derived from the greek words xanthos meaning yellow and phloi-os meaning bark. *Vachellia xanthophloea* (formerly known as *Acacia xanthophloea*) is native from tropical and subtropical climates, in southern and eastern Africa, including Botswana, Kenya, Malawi, Mozambique, Somalia, South Africa, Eswatini, Tanzania, Zambia and Zimbabwe. It was introduced as a landscaping tree into Taiwan, India and California.

3. Production levels and areas

3.1 International

The fever tree from U.S. amounted to about 58,5 million British pounds (1161.31 SA rand) in 2020. The fever tree's bark is traded on local markets in South Africa, with an estimated trade volume of 7 500 kg in 1988. It is also imported from Mozambique.

3.2 South Africa

The fever tree is cultivated in the cooler areas of the highveld such as certain parts of Johannesburg and Pretoria. Fever trees are also produced in low lying swampy parts of the Western Cape, Limpopo, KwaZulu Natal and Mpumalanga provinces. There is no statistical information on fever tree production in South Africa.

4. Cultivars

Vachellia xanthophloea belongs to the pod bearing family Fabaceae. There are 40 species with sub-species and varieties of *Acacia* present in South Africa. Many species such as the fever tree have leaflets which fold up at night.

5. Description

5.1 Mature plants

The name '*Xanthophloea*' means "yellow bark" and refers to the characteristic yellow-green bark of the tree. The tree's bark has a striking appearance, which is smooth, slightly flaking and greenish-yellow to yellow in colour. The fever tree is an attractive, semi-deciduous tree approximately 15 to 25 m tall and 10 m wide. It has an open, rounded to spreading or flattish crown, which is sparsely foliated. If the powdery surface is rubbed away with a finger, it reveals a green bark beneath.

5.1.1 Twigs

Young twigs have a reddish-brown bark, which when peeled off, reveals sulphur yellow colour.

5.1.2 Bark

It is smooth yellow-green. The sulphurous, powdery film is visible before the lime-greenish internally. The luminous bark can be peeled off in thick, which leaves sculptured patterns on the tree.

5.1.3 Leaves

Leaves are bipinnate, with 4 to 7 pairs of pinnae and 12 to 40 pairs of leaflets per pinnae. The bipinnate leaves are bright green and small. The leaves are opposite elliptic with smooth margins. Each leaf is approximately 100 mm while leaflets are 2,5 to 6,5 mm x 0,75 to 1,75 mm long. Spines are white, straight, strong, and arranged in pairs.

5.1.4 Thorns

The long, slender, straight and white thorns are arranged in pairs and although they are very significant on young trees, they often become barely noticeable on mature specimens. The thorn is 7 mm in length.

5.1.5 Flowers

The flowers are sweetly scented golden yellow balls and are formed during spring. Flowers are pollinated by insects. The blossoming time is between September and November.

5.1.6 Roots

Fever tree has a nitrogen-fixing bacteria in its root nodules, which enriches the soil and makes it have a positive impact on the plants surrounding a fever tree. There are cultivars of fever tree with small and large size taproots. Fever tree cultivars with large size taproots are aggressive and should not be planted close to buildings. If planted for ornamental purposes, trees should be planted in groups of up to five, for best effects.

5.1.7 Fruit

The fruit are thin within 13 x 1,4 cm papery pod. The pods are brown to yellowish, straight and hairless. The pods appear in clusters on tree in late summer (between January and April). The pods dry and shed from tree which then break up into smaller segments to reveal small, hard brown seeds.

5.1.8 Seeds

Fever tree seeds are small and brown in colour which attracts variety of wildlife and birds to the tree and in turn enhances biodiversity.

6. Climatic requirements

6.1 Temperature

The fever tree prefers moist and warm growing conditions but does well in drier areas, if given adequate amounts of water. It can only tolerate moderate frost and is completely intolerant to drought. It is able to survive moderately low temperatures. Exposure of six or more hours of sunlight a day to fever tree plants are favourable. It also grows in selective bushveld areas; but mainly lower altitude.

6.2 Soil requirements

The fever tree prefers sandy soil and it is often found in black cotton soils. Seeds can be sown in seedling trays using a well-drained seedling medium which covers the seeds lightly. The plant has root nodules containing nitrogen fixing bacteria, which allows for the nitrogen enrichment of soils and has a positive impact on the growth of the tree.

6.3 Rainfall requirements

The fever tree occurs mainly in depressions and shallow pans where underground water is present or surface water collects after summer rains. It is also found in low-lying swampy areas, along the margins of lakes and on river banks.

PART II: CULTIVATION PRACTICES

1. Propagation

The fever tree is propagated through seeds and seedlings. Fever tree can be propagated through cuttings as well.

1.1 Seedling production

Seed needs scarification to achieve maximum germination. Prior to sowing, the seed should be soaked in hot water overnight. This causes the seeds to swell and prepares them to be sown by the next morning. Seeds can be sown in seedling trays using a well-drained seedling medium and then covered lightly. Germination is generally fair, reaching about 70% after two weeks. Seeds should be stored in a dry place to sustain its viability. Seeds are susceptible to insect damage.

The seedlings can be transplanted from seedling trays into nursery bags when they reach the two-leaf stage which can take place in approximately 6 to 8 weeks after sowing. Care should be taken not to damage the long taproot. Seedlings and young trees transplant well.

2. Soil preparation

Vegetation and weeds should be killed-off by the use of pre-sprouting herbicides, be removed or smothered (buried) before any work on the soil of the planting area is done.

3. Planting

The seedlings are normally planted in the ground after 6 to 12 months when they are 1 m tall. Owing to its mature dimensions, it is recommended not to plant it close to the buildings. It can be planted 2 m away from the building/wall.

A hole of 6 cm deep should be dug and filled with compost to the soil that was removed from the hole. The tree should be placed in the centre of the hole and the soil at the top of the root ball must be level with the surrounding soil surface. The hole should be filled with soil mixture. Firm it well and make a basin around the tree. It should be planted in late spring to early summer season. The fever trees should be planted in 4 m of inter-raw spacing.

4. Fertilisation

It requires plenty of compost at the juvenile growth stage. Fertilisers are not yet specified. Fever tree root improves soil fertility by nitrogen fixation.

5. Irrigation

The fever tree requires regular deep watering because it is indigenously grown in swampy areas.

6. Weed control

The best way to control weeds is to prevent further growth. Weeds should be controlled when they are still at juvenile stage.

7. Pest and disease control

7.1 Pest control

Insects such as bees, are attracted by the yellow colour and sweet scent of the flowers and perform a pollination role. The information on pests that infest the fever tree in South Africa has not yet been documented.

7.2 Disease control

7.2.1 Vachellia xanthophloea canker

This is a very common disease to the fever tree. It is generally seen as a fungus infection. When the pathogen is active, it occurs on a wide distribution of fever trees over a short period (1 to 3 months). The infection is caused by maintained moist and dark environment in the infected area. The cambium of fever tree died and becomes black to the level of xylem.

Prevention measure: The infected areas should be kept as dry as possible. Drip irrigation method should be used instead of sprinklers. All plants casting shade on the base of the fever tree stem should be removed. The more the sun exposed to the field of fever tree, the better. Effective deep watering is the most important treatment.

8. Harvesting maturity and method

The bark is removed with a knife and bark collectors usually focus on larger-sized trees. Fever tree's tolerance to damage is high and trees usually recover from bark removal as well as from elephant damage. However, excessive destructive harvesting is domestically common.

PART III: UTILISATION

The fever tree is becoming a popular tree to be planted in gardens, parks and parking lots. It offers plenty of light shade, which is advantageous as it does not prevent the growth of lawns and plants. Fever tree encourages wildlife and attract different birds which lead to biodiversity.

The Zulu people use powdered bark and roots as an emetic to treat malaria and to also treat eye diseases. The leaves and pods of fever tree can be used to feed livestock. The gum, which occurs in large quantities on the trunk, is reportedly edible and is eaten by monkeys. The wood is hard and heavy and makes excellent general purpose timber. The wood is also a good source of firewood and charcoal.

PART IV: REFERENCES

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