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Farming in South Africa

TRIFFID WEED

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Chromolaena odorata (L.) R.M. King and H. Robinson (= *Eupatorium odoratum* L.), commonly known as triffid weed (Fig. 1), belongs to the family Asteraceae. Invasion by this species has reached alarming proportions in the Natal coastal region. The growth of this perennial is extremely vigorous, resulting in extensive infestations typically comprised of dense, and largely monospecific, thickets. These infestations occur in conservation areas, indigenous and commercial forest plantations, rangeland and any land which is not regularly cultivated.

The growth habit of this species is such that it is able to scramble up and over other vegetation, resulting in suppression and eventually, death of other species. The resultant dense thickets also reduce accessibility to the infested areas and considerably reduce grazing in rangeland. The presence of oils in the leaves of this weed makes it particularly inflammable when dry. Consequently this species is sometimes also referred to as paraffin weed (Afrikaans: "paraffienbos"). It is also suspected that triffid weed produces substances (phytotoxins) which are detrimental to, and therefore suppress, growth of desirous plant species.

Morphology

The growth form of triffid weed is dependent on whether the plant is growing in association with trees or in grassland. In grassland conditions both young and mature plants are typically upright bushy shrubs up to 3 m in height. Mature plants are usually much branched, forming a dense mass of growth. Where it occurs amongst trees, it assumes a scrambling habit with elongated and comparatively thin stems, reaching up to 10 m in length.

The leaves are attached in pairs, and are ovate to triangular in shape with a tapering point (Fig. 1). The 3 to 10 cm wide leaves have serrated margins, are light green in colour and have three conspicuous veins. When crushed, the leaves have a characteristic pungent odour caused by the oils contained in small glands located on the under surface of the leaves.

Triffid weed flowers from June to December.

FIG. 1 - The inflorescences of triffid weed

FIG. 2 - A dense stand of triffid weed in a plantation in Natal

The typical composite flowerheads (capitula) are small (± 5 mm in diameter), white to cream in colour and borne in clusters (Fig. 1). Each flowerhead bears about 18 seeds (achenes). The mature seeds are narrow, linear (± 4 mm in length) and dark brown to black in colour, closely resembling those of the common khaki weed (*Tagetes minuta* L.). Each seed has feathery white bristles at one end. These bristles are collectively known as the pappus. The pappus forms a 'parachute' which causes the seeds to float slowly down to the ground. This results in a prolonged time in the air, thereby aiding long distance dispersal of the seeds by wind.

There are three plant species in Natal which resemble triffid weed. Firstly *Ageratina adenophora* (Spreng.) R.M. King and H. Robinson (= *Eupatorium adenophorum* L.), commonly known as crofton weed, occurs predominantly in the mist belt region of Natal. Crofton weed is similar to triffid weed in leaf shape, growth habit and flower colour. Crofton weed is, however, not as woody as triffid weed, the leaves are dark olive-green and do not have a pungent smell when crushed, and the flowers and seeds are considerably smaller with approximately 62 seeds, 1,5 mm long, per flowerhead.

The second species resembling triffid weed is *Mikania natalensis* DC which also has leaves with three prominent longitudinal veins and flowers which at first glance are similar to those of triffid weed. The major differences are, however, that *M. natalensis* is a vine-like creeper, the leaf base is rounded and the flowers have fewer, longer bracts.

Ageratum houstonianum Mill. is the third species resembling triffid weed. However, the leaves only have one prominent longitudinal vein and the plants are considerably smaller. An additional difference is that *A. houstonianum* is an annual, bearing purple flowers.

Therefore, although there are a number of species which could be confused with triffid weed, there are distinct features which can be used to positively identify this weed.

Origin and distribution

Triffid weed is a native of Central and tropical South America and the West Indies. It is thought to have been mistakenly introduced into Natal in seed contaminated packing materials off-loaded at Durban harbour during the Second World War. The plant soon (*ca.* 1950) became conspicuous as a weed and by 1962 was spreading 'virulently' along the Natal coastal area.

A recent survey (1983) has shown that this weed has infested the warmer, moister regions of Natal, an area stretching from the Transkei border in the south to the Pongola region in the north, and as far inland as Pietermaritzburg and Melmoth. Reports also indicate the presence of this species in the Eastern Transvaal Lowveld. Therefore, aided by wind dispersal of the seeds, this weed has spread rapidly and the possibility exists that larger areas may become infested in the future unless prompt action is taken to control this weed.

Triffid weed is also a serious weed problem in other countries. The majority of these are in East and South East Asia and also such countries as the Philippines, Nigeria, Sri Lanka and the Ivory Coast.

Reproduction

Reproduction is by seed production. Up to 1 300 000 seeds annually per plant have been recorded. Of these 34% to 78% are viable depending on the suitability of the growing conditions. After release from the dried flowerheads, the seeds are wind-dispersed. The efficient dispersal mechanism, combined with the enormous reproductive potential, has provided this weed with the ability to rapidly encroach large areas.

Germination of the seeds is controlled by a combination of dormancy mechanisms. The predominant mechanism involves a requirement for a specific quality of light. As a result, germination of buried seeds and those shielded by a dense vegetation canopy is inhibited. The light requirement can, however, be substituted by the removal of the seed-coat. Therefore natural degradation of the seed-coat, which occurs during prolonged burial, stimulates germination during conditions of suitable temperature and moisture. An after-ripening period of several months is also required for optimum germination.

Large numbers of triffid weed seeds are present in the soil in the region of areas currently infested. Although many of these seeds are usually non-viable, the number of germinable seeds in some soil samples represents a potential of 12 000 seedlings/m^2. These seeds, which remain viable in the soil for at least one year, therefore form a substantial propagule source for re-infestation.

Rapid seedling growth follows germination, and a height of 2 m may be attained within the first year. Seeds are sometimes produced during the first year. The vigorous growth and prolific seed production results in the formation of dense thickets in a comparatively short time.

Legislation

In the regulations made under the Conservation of Agricultural Resources Act (Act 43 of 1983), triffid weed has been declared a weed throughout the Republic of South Africa. In terms of this Act no plants, seeds or any part of the weed which could reproduce asexually, may be transported or dispersed from one place to another. Furthermore, triffid weed must be controlled on farm units to the extent that these farm units must be free of this species. The same applies to land units in urban areas.

Control

See leaflet No. A.18 in this series for the control of triffid weed.

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