



SPEAR THISTLE

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Spear thistle (*Cirsium vulgare* (Savi) Ten.; family Asteraceae) is a troublesome weed which occurs world-wide. Because of its prickly nature, animals cannot graze near the plant; subsequently the value of the grazing is reduced. The weed also rapidly proliferates on abandoned lands and otherwise disturbed soil, and competes with various crops.

Although the name scotch thistle has become generally adopted in South Africa, this creates much confusion since another thistle species, *Onopordium acanthium* L., is also known by the same common name in the USA. Therefore the name spear thistle is strongly recommended - in fact the plant is known as spear thistle throughout the world.

In South Africa it is also variously known as bull thistle, black thistle or plume thistle. Commonly used Afrikaans names are 'speerdissel', 'skotse dissel', 'mak dissel', 'skaapdissel', 'disseldoring' and '(wilde) karmedik'.

MORPHOLOGY

Spear thistle is a herbaceous, biennial weed which forms a large, flat leaf rosette with a well-developed, succulent tap root during the first growth season, and during the second year it produces an upright stem with leaves and flowers.

The firm, grooved, hairy stem reaches a height of 2 m and bears thorny wings. The plant has two types of leaves, namely rosette leaves, growing close to the ground, and stem leaves which occur on the upright stem. The rosette leaves are petiolate and reach a length of some 33 cm, while the stem leaves are sessile and much shorter. Both types of leaves are lobed and very thorny. The upper leaf surface is dark green with scattered thorns and hairs, while the lower surface has a woolly appearance. The leaf arrangement is alternate.

Flower heads are borne singly or in groups of two or three on the tip of the main stem and on short lateral branches. The flower heads are compact and 2,5 to 5 cm in diameter. They contain numerous pink to mauve flowers enveloped by rows of lanceolate bracts, each of which ends in a strong, spreading thorn. The seeds are oblong, 3,5 to 5 mm long, speckled and tipped with a plume of loose,

silky, easily detachable hairs.

Another *Cirsium* species which occurs commonly in South Africa is the canadian thistle, *Cirsium arvense* (L.) Scop. This plant is, however, perennial, with shorter thorns than the spear thistle and it propagates mainly through horizontal roots. Male and female flowers are borne on separate plants, the flower heads are smaller, with fewer spines than the spear thistle, and the flowers are usually purple, although sometimes white. Furthermore the stems lack wings.

DISTRIBUTION

Spear thistle is indigenous to Europe, including



FIG. 1 - Flower of spear thistle

the British Isles and Scandinavia, as well as Western Asia, but it has now spread to virtually all temperate zones of the world. Countries in which it has assumed pest proportions include the USA, Canada, Argentina, Hawaii, Australia, New Zealand and South Africa.

It is assumed that spear thistle was introduced into South Africa for the first time during the Boer War, probably with hay or fodder. It was first reported from Van Reenen in Natal.

In Southern Africa the plant is very abundant in the cooler, high rainfall regions. Most problems are experienced in Transkei and the Natal and Transvaal highlands, while the plant is scarce in the Lowveld areas. It is abundant wherever the soil crust has been disturbed, e.g. along roads, river banks and fences, or on severely overgrazed and trampled grazing. It does not do well on regularly cultivated lands.

Spear thistle grows in a wide variety of soil types and under various moisture conditions and it can tolerate a salt content of 2%. It does, however, thrive best in deep, fertile, well-aerated soil that does not become too hot, and is less common in light, dry soil types.

GROWTH AND PROPAGATION

Spear thistle seeds germinate in autumn. During winter the plant develops an extensive root system consisting of a number of succulent storage roots, while the flat leaf rosette develops through the first spring. During the second spring it gives rise to an upright stem with leaves and flowers. The plant flowers late in spring or early summer and dies back at the end of summer or early autumn.

It is suspected that spear thistle can, under South African climatic conditions, flower during the first summer so that the plant can then be virtually an annual, or last for only 18 months.

Vegetative propagation does not occur, and propagation is by means of seed only. Each flower head produces about 100 seeds, so that a mature plant may produce as many as 4 000 seeds. The hairy seed plume reduces the weight of the seed, making it more suitable for wind dispersal but since the silky hairs are easily detached, this method of seed dispersal is not very effective. Some seeds wash away during floods and then remain on stream banks where they later germinate, or they adhere to the mud on vehicles, animals and implements. Birds eat the seeds, and also collect the silken tassels for their nests. Birds, baboons and other animals spread the seed from open ground to the trees or bushes where

they hide. Another method of seed dispersal is when seeds or fragments of the plant are gathered with the harvest and are then dispersed in bales of stockfeed, hay or in grain crops.

Spear thistle seed remains viable for a long time - it has even been known to germinate after being buried in a forest for 36 years. After germination the seedlings initially grow slowly and they are not very resistant to competition or shading by other plants. This factor is significant in the control of spear thistle.

DANGER

Spear thistle is so prickly that animals cannot graze near the plant. Since a fully grown leaf rosette can cover an area of 0,35 m², the presence of the plant drastically reduces the carrying capacity of the veld. In lands it competes with crops, but does not cause such serious losses as in the case of grazing.

LEGISLATION

Under the Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) spear thistle has been proclaimed a weed throughout the Republic. This implies that no-one may spread the plant or allow it to be spread, and that the plant may not occur on land within a urban area.

CONTROL

To prevent spear thistle infestation, good veld management is of cardinal importance. The weed will rarely assume problem proportions in areas with a normal soil cover, but it readily invades areas where the surface has been disturbed and exposed, e.g. by overgrazing. In fact, spear thistle infestation in veld is usually a barometer for poor veld management.

No chemicals have been registered for spear thistle control, but progress has been made with biological control.

Successful biological control of the weed is being applied in Canada, and two insect species (from Europe) have recently been imported into South Africa for this purpose. The first insect, *Urophora stylata*, is a fly which forms galls in the flowers, thus preventing seed formation, while *Rhinocyllus conicus*, a weevil, destroys the seeds. The objective of biological control is not to eradicate the plant, but to reduce seed formation, thereby suppressing the aggressiveness of the plant.

