



SPINY COCKLE BUR

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Spiny cockle bur, *Xanthium spinosum* L., family Asteraceae, is a weed that could cause severe losses because of the spiny burs that contaminate sheep's wool and such wool has to be sold cheaply at auctions.

Spiny cockle bur is also known as burweed, dagger cockle bur, thorny burweed, bathurst bush, clotbur and daggerweed. Common Afrikaans names are 'boetebossie', 'boeteklits', 'vaalboetebossie', 'vernietbossie', 'speldebossie', 'pinotiebossie', 'dolkonkruid' and 'dolkoringroos'.

MORPHOLOGY

Spiny cockle bur is a sturdy, upright, annual herb with many lateral branches and reaches a height of between 0,3 and 1,2 m. The stems are striate, yellowish to greyish-brown and pubescent. The 60 to 100 mm long leaves are alternate, blueish-green and shiny, with a distinct white midrib above and a grey, woolly underside. Most leaves are three-lobed, with the middle lobe being longer than the other two. Leaf bases are usually armed with a yellow three-pronged spine, 20 to 50 mm long.

The flowers are inconspicuous and greenish; the male flowers are borne above the female flowers on the tips of the stems. This arrangement promotes self-pollination so that the plants are mostly inbred. Each female flower develops into an egg-shaped, pale yellow, striated, glandular fruit or bur, about 10 mm long and 4 mm wide, and it is covered with numerous fine, orange-yellow, hooked spines and one or two locules each containing a flat, dark-brown to black seed with a thick testa. One plant can produce up to 150 such fruits.

DISTRIBUTION

Spiny cockle bur is probably indigenous to South America although some sources suggest that it may have originated in Central America or the Mediterranean area. It is now a cosmopolitan weed. It grows between latitudes 43°S. and 50°N. and occurs wide-spread in the Mediterranean countries, Europe, Australia, certain coastal states of Africa,

the southern parts of South America and the USA. It is rarely found in the tropics, but is regarded as a serious problem in Australia, Tasmania, Spain, Argentina, South Africa, Zimbabwe, Morocco and Egypt.

Spiny cockle bur was probably imported to South Africa from Europe, most likely in sheep's wool. Apparently it already occurred in the Cape in 1692. At present it is found in the Transvaal, OFS, Natal, the Cape Province, South-West Africa (Namibia), Botswana and Lesotho.

It flourishes on open, warm, rich, moist soil, e.g. pastures, neglected lands and any disturbed soil,



The narrow, three-lobed leaves and small burs covered with fine spines are typical of spiny cockle bur

especially around livestock kraals. It does not like shade, dense vegetation or strong competition. Spiny cockle bur grows mainly in temperate or subtropical summer and winter rainfall regions and areas where rain occurs throughout the year. It also occurs on the Highveld where it is killed by frost in winter.

PROPAGATION

Its thorny burs are the main method of distribution. The plants usually first occur along roads from where the burs are distributed by clinging to animals, vehicles or clothes. Sheep carry the burs to kraals, water-holes, auction pens and wool-processing factories where the wool is often found to be badly infested. Because the burs are also carried away by water the weed is often found on river banks, along irrigation furrows and on flooded land. When it contaminates hay or seed, or adheres to feed bags, it can be transported over vast distances to create new points of infestation.

The seeds germinate late - from November to March - and the two seeds in the same bur do not germinate simultaneously. The lower seed is bigger and less dormant than the upper one. The lower one germinates first while the upper one may germinate a season or two later. This extended germination of seeds means that some plants will still be very small when they flower and bear fruit. The plants flower late in summer once the days are shorter than 14 hours. The seeds mature during autumn and usually drop off in winter when the plant is killed by frost.

Because the seeds can germinate at virtually any stage over a period of a few years, it is very difficult to control the weed. The seeds germinate with the first summer rains, or at any time when the soil is damp. High temperatures (34° to 38°C or higher) and an increased oxygen concentration accelerate germination.

ADVERSE TRAITS

Buyers find bur-contaminated wool unattractive and are reluctant to pay high prices for it. The burs make it difficult to handle the wool and they damage the machinery. The wool therefore has to be cleaned at considerable cost. The heat process that sometimes has to be used to clean the wool could damage it. The burs also become entwined in the

tails, manes and other hairy parts of horses and cattle, causing the animals much discomfort.

In the seedling stage spiny cockle bur contains a toxic substance, hydroquinone, which affects cattle, sheep, horses and poultry. It causes symptoms like vomiting, listlessness, muscular deterioration and convulsions in animals.

Moreover, spiny cockle bur is an invader in pastures and because animals do not readily ingest it, it multiplies at the expense of the indigenous plants. In some overseas countries it infests cotton, grains, vineyards, potatoes and vegetables, while it is a common pest in sugar-cane plantations in South Africa.

The plant has no known beneficial uses, except that it is used as a medicinal plant in Argentina.

LEGISLATION

Under the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983), spiny cockle bur is a proclaimed weed throughout the Republic. This means that no-one may distribute the weed or permit it to be distributed. The weed must also be controlled in all parts of Natal.

It is interesting to know that spiny cockle bur was the first plant to be proclaimed a weed in South Africa, namely during 1860 in the OFS. The Afrikaans name 'boetebossie' ('bush for which one is fined') is a direct result of this proclamation and the concomitant fines.

CONTROL

To prevent infestation, any animals purchased or which enter the farm must be examined for burs. Any burs found must immediately be destroyed.

Germinating plants can be pulled up by hand, but a farm must be inspected at least three times during the growing season because of uneven germination of the seeds.

The following chemicals have been registered for the control of spiny cockle bur: amitrole/simazine; bromoxynil; metribuzin; MCPA-K; 2,4-D(T) and 2,4-D(A). The directions on the label should be followed closely.