



A.3 BRAMBLE

by D.J. ERASMUS
Subdivision Weed and Pesticide Research
Plant Protection Research Institute, Pretoria

Bramble, American bramble or Sand blackberry (*Rubus cuneifolius* Pursh; family Rosaceae) is considered one of the most serious weeds in the mistbelt region of the Natal interior and the Eastern Transvaal. Not only does this plant infest large areas with dense stands, it also has unpleasant thorn-covered stems. Furthermore, bramble has an efficient reproductive system to ensure further spread.

It is believed that bramble was originally imported into South Africa from America *ca* 1900 for the purpose of making jam from the ripe berries. However, the environmental conditions in Natal and the lack of its natural predators and competitors has resulted in this *Rubus* species becoming a naturalised weed. At present there is considerable confusion in the taxonomy of the genus *Rubus* in South Africa. Taxonomic evidence

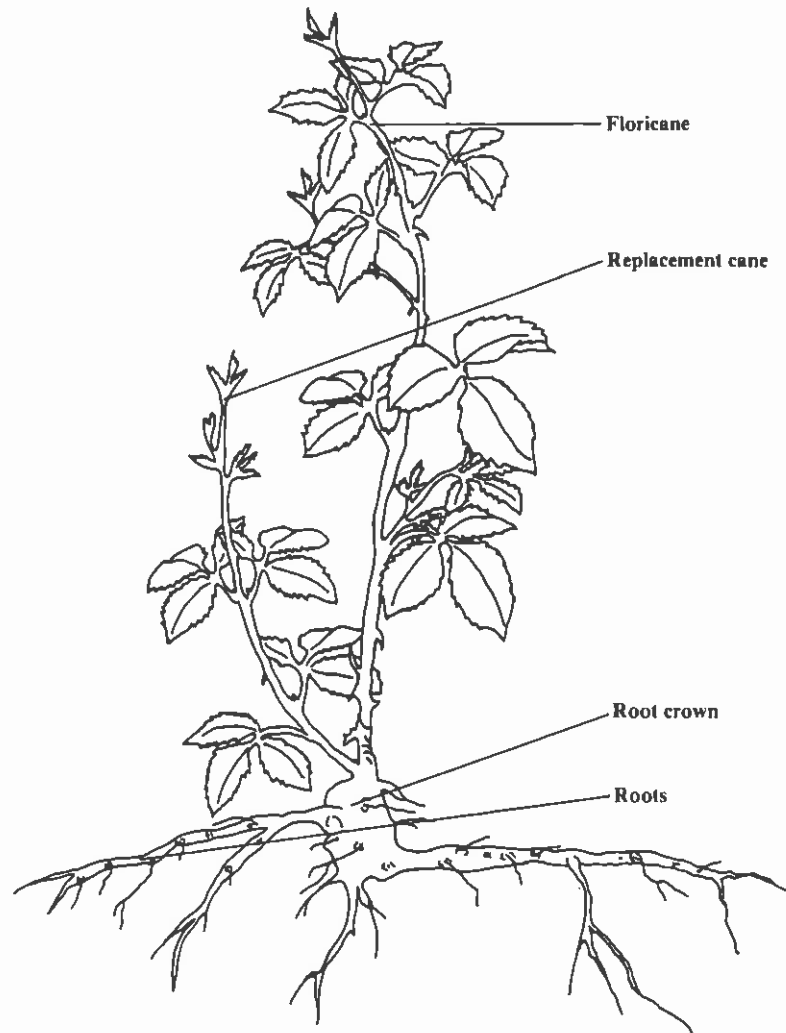


FIG. 1 - A typical bramble plant, showing the biennial growth stages of the top growth and the morphology of the root system



FIG. 2 - Bramble can invade pastures and form dense stands



suggests that hybridisation between indigenous South African and exotic *Rubus* species, such as *R. cuneifolius*, may have occurred. Furthermore, it is also possible that segregation of new *Rubus* forms has occurred in areas surrounding cultivated blackberries. As a result *R. cuneifolius* is not a uniform species. It would seem that in Natal there are at least two varieties of bramble, namely the 'Richmond' and 'Hilton Road' varieties. The only difference between these two varieties is that the 'Richmond' variety plants grow well in shade and have relatively long canes while the 'Hilton Road' variety plants grow well in more exposed areas and have shorter canes.

MORPHOLOGY

Bramble is a woody perennial shrub with vine-like stems known as canes. The young canes are usually erect but with increased height bend over and become scrambling and/or half climbers. At the base, the angled canes are approximately 1,5 cm in diameter, while toward the tips, the canes

FIG. 3 - The young bramble shoots usually grow upright, but bend over as they extend and start rambling



FIG. 4 - The white bramble flower is about 20 mm in diameter and is borne mainly on the lateral branches of the reproductive shoots

are only about 0,2 cm in diameter. The canes are armed with downward curved thorns up to 6 mm long. In the first year's growth the canes which are known as primocanes, are vegetative and are usually erect (up to 1,5 m in height) and vigorous growing. Towards the end of summer these canes tend to bend towards the ground. The trifoliate leaves (i.e. comprising three leaflets) are borne alternately on the primocanes. The leaflets have serrated margins and are covered with fine hairs on both the upper and under leaf surface. A few sharp thorns about 4 mm long are also borne on the under leaf surface. The majority of these leaves are lost from the primocanes during autumn and winter. In spring new leaves and lateral branches grow from the canes. The lateral branches developing on the canes during the second year may be vegetative and/or flower bearing. In its second year the cane becomes known as a floricanes because of its flowering and fruiting capacity. The floricanes are usually curved and vine-like up to 2,5 m in length.

When lateral branches grow on the floricanes, other canes grow from nodes at the base of the canes or from the root crown, which is a woody region from which the roots grow (Fig. 1). These new canes are known as replacement canes because they replace the floricanes which senesce and die back after the completion of fruiting. The replacement cane undergoes the same biennial cycle and is therefore a sterile primocane in its first year's growth and a lateral branch, flower and fruit bearing floricanes in its second year's growth.

The root system of bramble plants can be extensive. The root crown, the woody structure at the base of the canes, develops from the continuous biennial cycle of cane growth. From the root crown

a small tap-root and vigorous growing horizontal roots develop. The horizontal roots grow just below the soil surface and reach lengths of 10 m. In contrast to the hard, woody root crown, the horizontal roots tend to be fleshy and softer, with diameters of 30 mm having been recorded.

DISTRIBUTION

In Natal bramble is a severe problem in the cool, moist areas in the region extending from Harding in the south to Melmoth (Zululand) in the north, and west as far as Estcourt and Underberg. The Natal coastal region appears to be relatively free from bramble infestations. Bramble is also recognised as a weed in the moist mist belt region of the Eastern Transvaal. In these regions bramble stands are found in valleys, gullies, hillsides, open veld and along water courses; it grows well in both wild and cultivated habitats. As previously mentioned, it also grows well in both exposed and shady areas.

REPRODUCTION

Bramble reproduces both sexually and vegetatively, both methods ensuring the survival of this noxious weed.

In sexual reproduction white flowers, about 20 mm in diameter, are produced mainly on the lateral branches of the floricanes. The flowers give rise to berries which consist of 40 – 50 tightly packed one-seeded fruits. The berries are green when immature and succulent, glossy black when ripe. The seeds are 3 mm long, lenticular in shape, pale brownish in colour and pitted on both sides.

The ripe fruits are readily fed on by birds. They are edible and make a tasty jam.

The small seeds in the berries have a hard, resistant seed coat which ensures the survival of the seed through the digestive tract of either birds or humans. As a result the seeds can be spread over large areas by the faeces of both birds and man. Consequent germination of the seed leads to bramble infestations under roosting trees, along fences, telephone and electricity cables and footpaths.

Vegetative reproduction in bramble occurs naturally by (a) tip-rooting and (b) sucker formation on the roots. Cane tip-rooting occurs when, in autumn, some canes become positively geotropic, that is, grow downwards until the tip reaches and penetrates the soil surface. Roots are produced on this tip and in spring a new plant grows from the rooted region. On senescence of the cane joining the parent and daughter plant, an independent daughter plant is produced. In this way the diameter of the infestation is increased without sexual reproduction.

Suckers are predominantly produced from the horizontal roots and also from the root crowns. Both these root types bear numerous dormant buds. These buds develop sporadically to form subterranean suckers. Sucker development will also be induced when top-growth of canes has been destroyed by fire or after mowing or inadequate herbicide application. The suckers elongate and emerge above the soil surface at which stage leaf and root development takes place. Consequently,

should the horizontal root be severed, the sucker forms an independent daughter plant.

The establishment of bramble thickets either by sexual or vegetative reproduction causes numerous problems which makes this an undesirable species. The thorn-covered canes form a dense impenetrable barrier restricting access to forest plantations for replanting, thinning, fire-fighting and felling operations, while infestations in the veld limit accessibility to grazers and also results in the suppression of grass production and a reduction in the carrying capacity. Once established in grasslands, bramble is extremely difficult to control because mechanical control measures such as frequent ploughing and mowing adversely affects the grazing quality of the veld.

LEGISLATION

American bramble has, in the regulations made under the Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) been proclaimed a weed throughout the Republic.

Under the Act, no person may disperse or cause or permit the dispersal of this weed from any place in the Republic to any other place in the Republic.

This weed may not occur on any land within an urban area, while it is also compulsory for all land users throughout the Republic to control this weed wherever it may occur on a farm unit.

