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Weeds of Western Australia - Wild turnip (*Brassica Tournefortii* Gouan.)

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WILD TURNIP

(*Brassica Tournefortii* Gouan.)

Wild turnip is the most widespread and extensive weed of cereal crops in Western Australia. The mature plants break off at ground level and as they are blown around, the seeds are scattered. The advent of the hormone-like herbicides has reduced the significance of Wild turnip as it is easily controlled by these chemicals.

WEEDS of Western Australia

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WILD TURNIP

(*Brassica Tournefortii* Gouan)

ALTHOUGH wild turnip has had a comparatively short history in Western Australia, it is one of the most widespread weeds in this State. Like many of our other annual weeds it is native to the Mediterranean region, but there is no information in literature to suggest that it has become a similar problem in any other country.

The plant was first recorded officially in 1928 when a specimen was received from the Merredin Research Station. There is no doubt that it had then been present in the Merredin and Kellerberrin districts for a number of years and had been confused by many with similar plants such as wild radish and charlock. The manner of introduction is not known with certainty but apparently wild turnip first became established here about 1916 and quite possibly was introduced with fodder imported following the severe drought of 1914.

Prior to 1928, the weed appears to have been restricted to the eastern wheatbelt area already mentioned but in subsequent years its spread was very rapid. Within a short period, besides increasing enormously in extent in the original area, it had become thoroughly established in many other districts as far apart as Salmon Gums, Lake Grace, Bonnie Rock, Kulja and Carnamah. Much of this spread can be attributed to the movement of grain, chaff and hay from infested areas, and wild turnip now occurs in most agricultural districts. Its development in the Eastern States followed that in Western Australia and only recently, it was recorded for the first time in New Zealand.

DESCRIPTION

Brassica Tournefortii belongs to the same genus as the garden turnip and the common name is derived from the well-developed taproot which has a decided turnip flavour. In South Australia it is referred to as long-fruited wild turnip while the related *Rapistrum rugosum* is known as short-fruited wild turnip. In Western Australia the latter plant is called Rapistrum weed.

Wild turnip is a winter-growing annual plant which produces a basal rosette of leaves, sometimes exceeding two feet in diameter. Each leaf has a short, wide base and is deeply divided as shown in the illustrations. The stem leaves are much smaller than the basal leaves but, like them, are clothed with conspicuous hairs. The stems, usually about 3 ft., but sometimes reaching 6 ft. in height, are flexuose and branch freely from the base. They are round in section and covered with stiff hairs towards the base. The colour varies from green to violet.

The numerous flowers are small and pale yellow, sometimes with a trace of violet. The narrow, cylindrical pod may reach three inches in length. The two rows of small, spherical, brown seeds are separated by a thin septum and the pod



WILD TURNIP (*Brassica Tournefortii* Gouan).

A—A leaf showing the deep lobing; B—Seedling; C—Flowering and fruiting branches; D—Silicle or pod; E and F—Showing seeds attached to the pod partition.

is terminated by a beak usually containing one or two seeds. Flowering normally occurs between July and November.

In the rosette stage Wild Turnip can be confused with Capeweed (*Cryptostemma calandulaceum*) but differs in several features. The young Wild Turnip has a decided taproot, along with bristly hairy leaves of an even colour on both sides. The succulent rather turgid leaves,

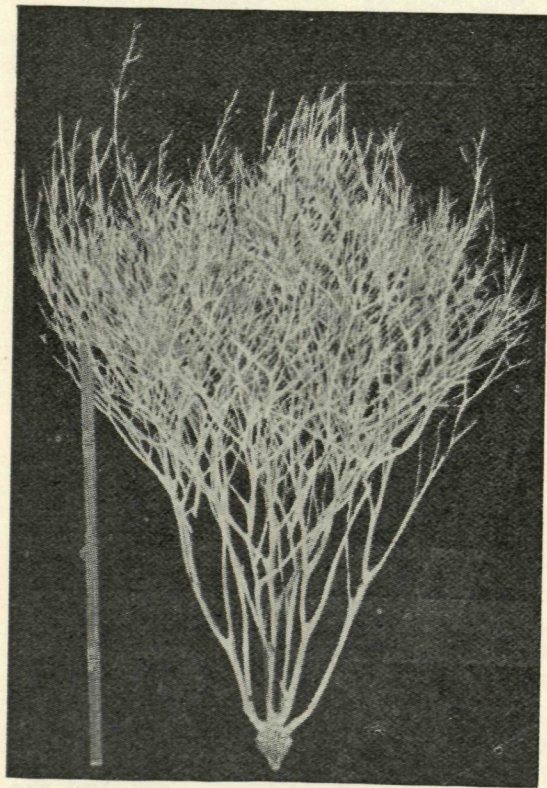


Fig. 1.—Mature plant of wild turnip, in seed. In this condition the plants break off and are blown about the paddocks shedding seeds over wide areas

as well as the roots, have a decided turnip flavour. On the other hand, Capeweed has soft, hairy leaves, dark green above and grey below. Besides not having the turnip flavour, the roots are more fibrous and numerous. When the flowering stem appears the plants are quite distinct.

SIGNIFICANCE

In its younger stages of growth, Wild Turnip is eaten by stock but has little value for forage purposes. It grows rapidly and the basal rosette of leaves has a

smothering effect on other plants. Experiments with hormone-like herbicides described later show clearly the reduction in grain yield brought about by heavy infestations of Wild Turnip. Undoubtedly competition for nutrients and moisture play an important part.

The weed is also very troublesome at harvesting time as the stems are then quite fibrous and approximately the same height as the crop. Repeatedly removing stems from the choked comb of the machine is an arduous job and much cereal grain can be lost in the process. Wild Turnip is a prohibited weed seed impurity in agricultural seeds and reduces the value of cereals as milling grain. When eaten by dairy cows, it can cause a taint of milk.

The rapid spread of the plant has been due to a number of characteristics common to many weeds. Being relatively unpalatable, stock are not a very significant control factor. Each plant produces large numbers of seeds, and, when mature, the main stem tends to break at the base. The spreading and rigid nature of the branches cause the plants to tumble and they are readily blown about the paddocks, scattering seed as they go. Until recent years when more effective control has been possible, plants piled to the height of a fence were a fairly common sight. The seeds do not all germinate the following year, although they are not such a problem as wild radish in this respect.

Besides being spread by such natural means, the distribution of Wild Turnip has also been associated with the movement of farm commodities including stock, machinery and used sacks. Owing to the sticky nature of the seed, used sacks in particular have been an important agency.

CONTROL

Prompt attention when the plant first appears is the only way to be sure of keeping a property free from Wild Turnip. Once established, eradication is extremely difficult, but much can be done to control the weed and minimise its effects.

As with most annual weeds, cultivation is the first line of attack. When fallowing is practised, paddocks should be stocked heavily prior to ploughing in order to take

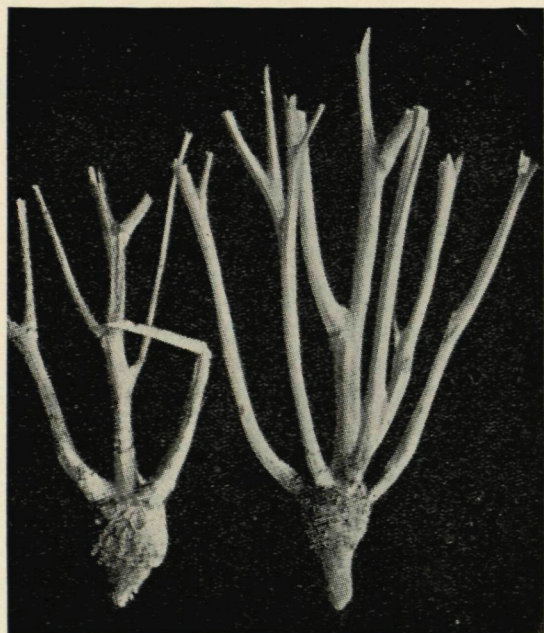


Fig. 2.—Base of mature plant showing how stems branch separately from the roots

advantage of the fact that sheep will eat the young plants if forced on to them. The fallow should be carried out early before the weed has made much growth and should be further worked if necessary. The following season further control can be obtained by delaying the sowing of the crop until after a free germination of the weed has been induced by autumn rains.

The advent of hormone-like herbicides has reduced considerably the significance of Wild Turnip as a weed. It is now possible for farming operations, including seeding, to be far more elastic, and in a late season it is even practicable to sow dry on infested land in the knowledge that chemical methods can be used later.

The first trials on Wild Turnip in this State with such herbicides were undertaken on light land at Wongan Hills and Dalwallinu in 1950 using the sodium salts

of 2,4-D and M.C.P.A. The results were quite spectacular and showed clearly that Wild Turnip is highly susceptible to the hormone-like herbicides. At Wongan Hills, 4 oz. acid equivalent per acre of either formulation gave complete control and increased substantially the yield of the wheat crop. The average yield of the treated plots was 13.2 bushels per acre compared with 8.5 bushels for the untreated control. Corresponding figures for a trial at Dalwallinu were 11.6 and 5.7 bushels respectively. These figures were based on random sampling, but at Dalwallinu where the plots were harvested with a header, the treated sections yielding 12 bushels and the controls 3 bushels per acre. Fifteen per cent. of the yield from the untreated plots consisted of Wild Turnip seed. A relatively high degree of control was also obtained with 2 oz. acid equivalent per acre of both chemicals.

Based on further experimental work and field observations, 4 oz. acid equivalent per acre of any 2,4-D or M.C.P.A. formulation—ester, amine or sodium salt—is recommended. Good results can be expected from somewhat lower rates, particularly of 2,4-D ester, but the level recommended provides a margin of safety for unfavourable conditions. If the crop is undersown with clover M.C.P.A. should be used as the risk of affecting the clover with 4 oz. acid equivalent per acre of this chemical is negligible.

Spraying should be carried out when the crop is 6 to 8 in. high and stooling. The weed is then easier to kill and has had little opportunity to compete with the crop. Furthermore the cereal is at a safe growth stage for spraying and the equipment causes little or no mechanical damage. With low-volume booms the usual volume of application is 5 to 8 gals. per acre, and extensive areas are also being sprayed by aircraft.

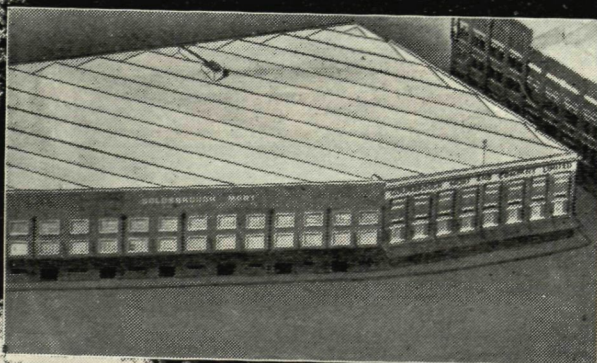


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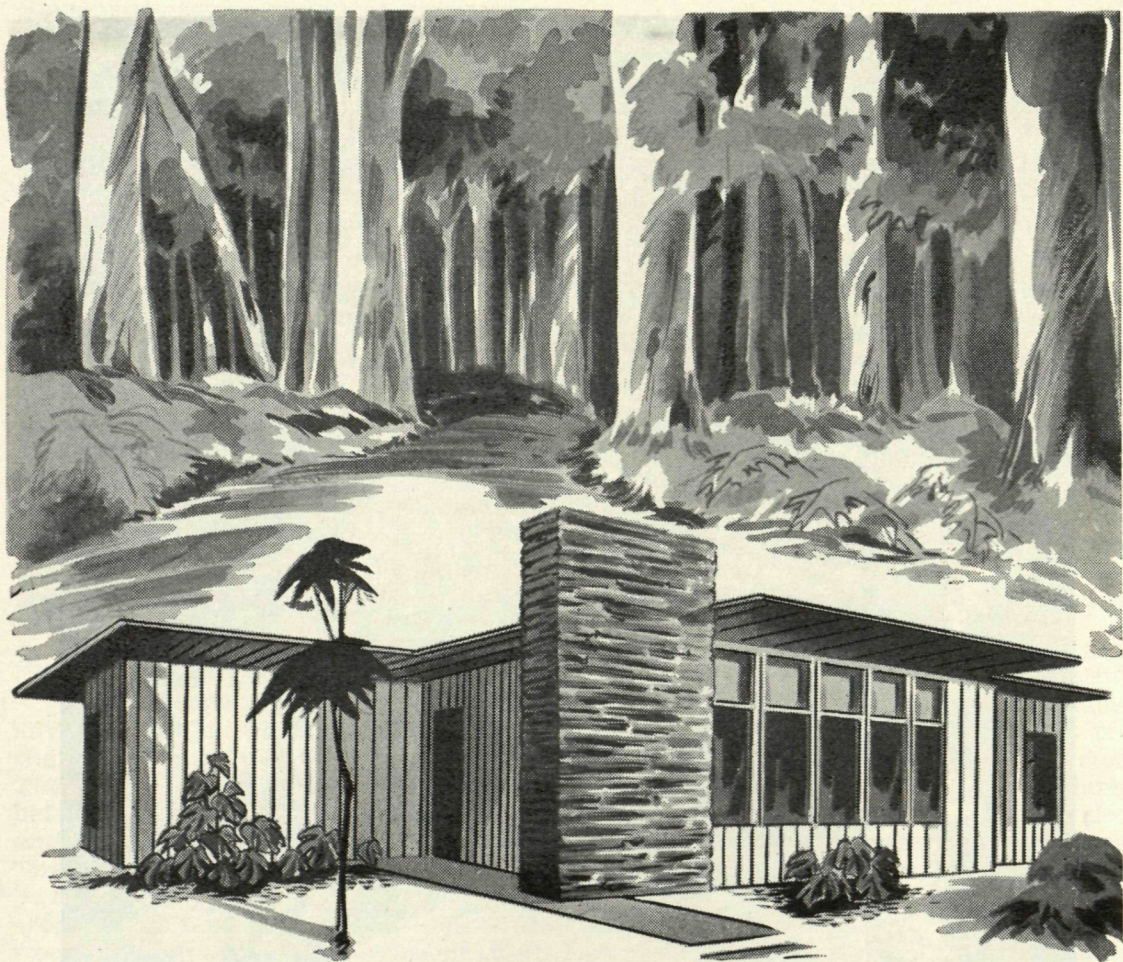
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