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### Weeds of Western Australia—Cape tulip

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## ONE-LEAFED CAPE TULIP

[*Homeria Breyniana* (L.) Lewis]

Two species, the one depicted above and the Two-leaved Cape Tulip (*H. miniata* Sweet) are perennial weeds of major importance occurring over an extensive area in Western Australia.

Besides reducing the carrying capacity and value of land they are poisonous to stock.



# WEEDS of Western Australia

By **G.R.W. MEADLY** M.Sc.

Officer in Charge, Weeds and Seeds Branch

## CAPE TULIP

(*Homeria Breyniana* (L.) Lewis\* and *H. miniata* Sweet)

**S**OUTH Africa has provided us with a number of undesirable weeds including double-gee, Berkheya thistle, Guildford grass and stinking roger, but outstanding among the weed introductions from that country are two species of *Homeria* known as Cape Tulip. The salmon-coloured flowers and long grass-like leaves are known to farmers in many localities extending from Geraldton to Albany and as far east as Bruce Rock and Merredin. Beyond the metropolitan area the largest infestations occur in the Northam, York, Beverley and Williams districts where thousands of acres of good land are affected.

Cape Tulip provides one of the many examples of a plant cultivated for ornamental purposes soon becoming a serious weed. As early as 1859 it was included in the first catalogue of garden plants issued by the Adelaide Botanical Gardens and was probably introduced some time before that date. By 1890 both species were established as weeds in South Australia, Victoria and Western Australia and their appearance in New South Wales was not long delayed.

Although probably first introduced to this State as a garden subject it has since been distributed in several other different ways. Hay and chaff cut from infested paddocks have been responsible in many cases and Cape Tulip occurs on a number of old camp sites where horses were fed. Stock and farm machinery have played their part along with subterranean clover burr and ungraded lines of clover seed. The weed has been distributed with gravel used for ballast, also with packing material and in balled fruit trees. It favours moist situations and has been spread along gullies by running water.

### DESCRIPTION

The vernacular name is derived from the country of origin, South Africa, where species of *Homeria* are referred to as "tulps." *H. Breyniana* is known as One-leaved and *H. miniata* as Two-leaved Cape Tulip.

*Homeria Breyniana* has a single, ribbed, grass-like leaf 12 inches or more long arising from a corm (the so called bulb) which is surrounded by brown fibrous material. The stem is shorter than the leaf and produces a few flowers which are, at first, enveloped by green spathes. Each flower has six segments which are usually predominantly pink with a green or yellow base, but are sometimes entirely yellow. The flowers often exceed an inch in diameter. The narrow cylindrical seed vessel opens at the top to liberate numerous brown seeds.

*Homeria miniata* has two, or sometimes more, grass-like leaves and in consequence is often referred to as Two-leaved Cape Tulip. These arise from a corm around which are formed numerous cormils (small

\* *Homeria Breyniana* (L.) Lewis was formerly known as *Homeria collina* Vent.



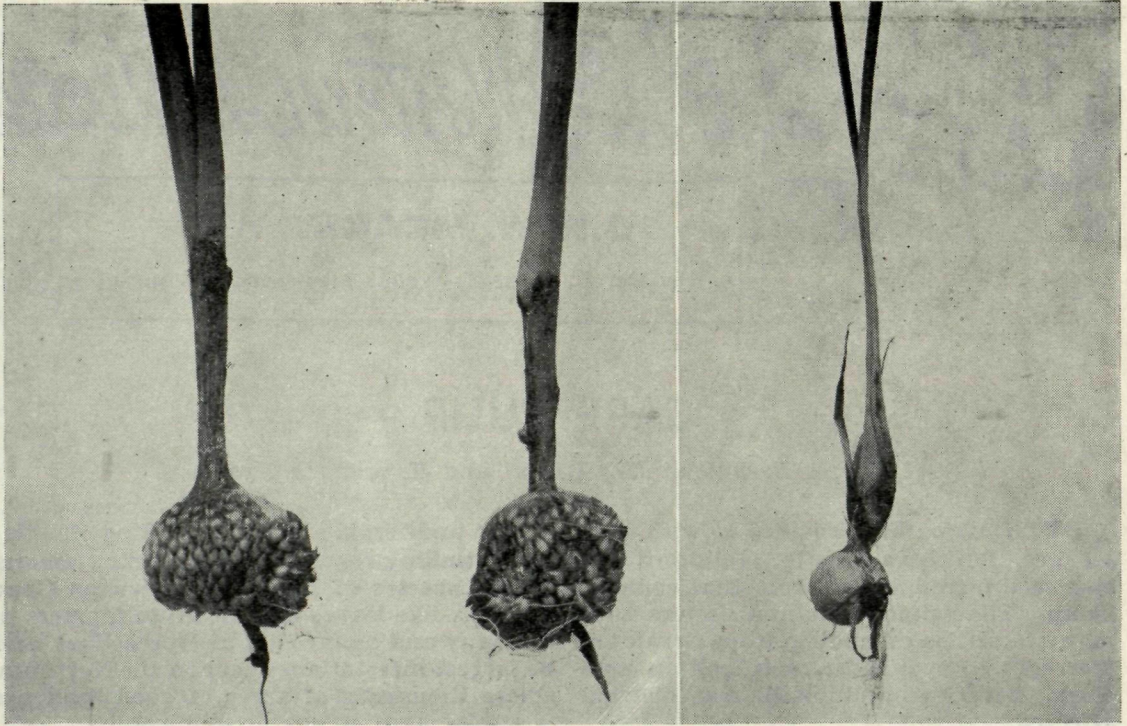


Fig. 1.—Two-leaved Cape Tulip from Cuballing August 30. Cormils have developed freely on the untreated plants on the left, while the plant on the right sprayed with 2, 4-D ester on July 13 is unthrifty, has no cormils and has the characteristic swelling immediately above the corm.

“bulbs”) the whole being surrounded by dark fibrous material. The flowering stem gives rise to a number of flowers which emerge from green spathes. Each flower has six segments, pink in colour with the exception of the yellow base which is often blotched with green. The diameter of the flower seldom exceeds one inch. During the later stages of growth, groups of cormils are formed in the angles formed by the leaves and the stem. Although *H. miniata* flowers freely, no plants bearing seed have been noted in this State.

### SIGNIFICANCE

Where the growth of Cape Tulip is dense, especially in parts of the Avon Valley, desirable plants are largely crowded out and in many cases the carrying capacity has been reduced by at least 50 per cent. Besides being a weed of major importance it is also a poisonous plant which has caused toxic effects even when dry.

South African natives have been poisoned by eating the corms of Cape Tulip and there are many references to losses of animals. Deaths are reported most frequently among cattle, although horses and sheep are also affected, and there is no reason to believe that pigs are immune. There is evidence to show that the poison occurs in all parts of the plants irrespective of whether fresh or dry, and an alkaloid, homeridine, has been isolated.

Animals accustomed to grazing in areas where Cape Tulip is prevalent are seldom affected, probably because they avoid eating the plant. Even under these circumstances, however, deaths occur from time to time. The most serious mortalities have been experienced among stock brought from a district free of Cape Tulip to one where the weed is present in quantity. On a number of occasions deaths have occurred in a few hours.

Further details concerning toxic properties and symptoms can be obtained from an article by C. A. Gardner and



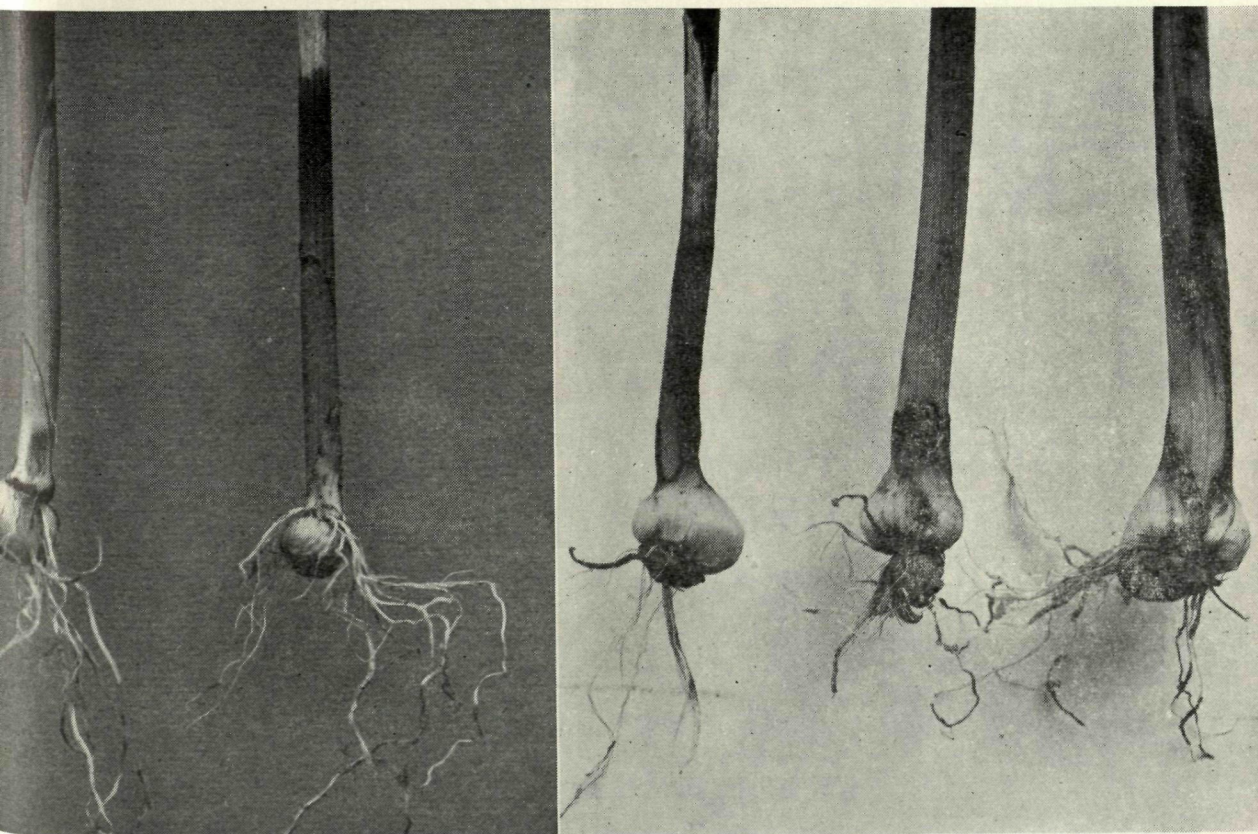


Fig. 2.—One-leaved Cape Tulip showing stages of corm development. On June 26 the old (lower) corms of the two plants on the left had commenced to shrivel but the new corms above them were only at an early stage of formation. At this stage or a little later the weed is most vulnerable to ploughing. By August 20 the three plants on the right from York and Williams had new corms nearing maturity. At this stage ploughing is not fully effective although the plants are still susceptible to 2, 4-D.

H. W. Bennetts—"Poison Plants of Western Australia—The Cape Tulip" in the November-December, 1952, issue of this journal.

Both species are declared primary noxious weeds for the entire State.

### CONTROL

As already mentioned Cape Tulip was present in Western Australia before the beginning of this century and during the past 50 or 60 years has been allowed to establish itself with little opposition. We cannot hope to overcome the problem in a few years, in fact Cape Tulip along with many other weeds will always be with us but there is much we can do to reduce its impact on agricultural production.

The present policy is to concentrate on those areas which are relatively small but are acting as foci for distribution. In such

cases eradication is possible. With large infestations the primary objective is to prevent further spread at the same time systematically tackling the area with a view to reducing its extent.

When considering the control of weeds, particularly perennial weeds such as Cape Tulip, it is important to take into account their life-history. This is underlined by the two closely related species of Cape Tulip. The two-leaved type, although flowering freely, does not produce mature seeds but these are replaced to a large extent by a considerable number of small cormils which form around its basal corm or bulb and also in the angle between the leaves and the flowering scape. On the other hand the one-leaved type seeds freely and also multiplies by the formation of a few corms at the base but does not produce the characteristic cormils of the





A to I—ONE-LEAFED CAPE TULIP (*Homeria Breyniana* (L.) Lewis); A and B—Habit; C and D—Corms (D in section showing development of lateral corm); E—Flower; F—Flower in lateral view; G—Ovary, stamens and styles; H—Fruit (capsule); I—Seeds (much enlarged).

K to L—TWO-LEAVED CAPE TULIP (*Homeria miniata* Sweet); K—Habit; L—Corms.  
Metropolitan District. Icon. origin.

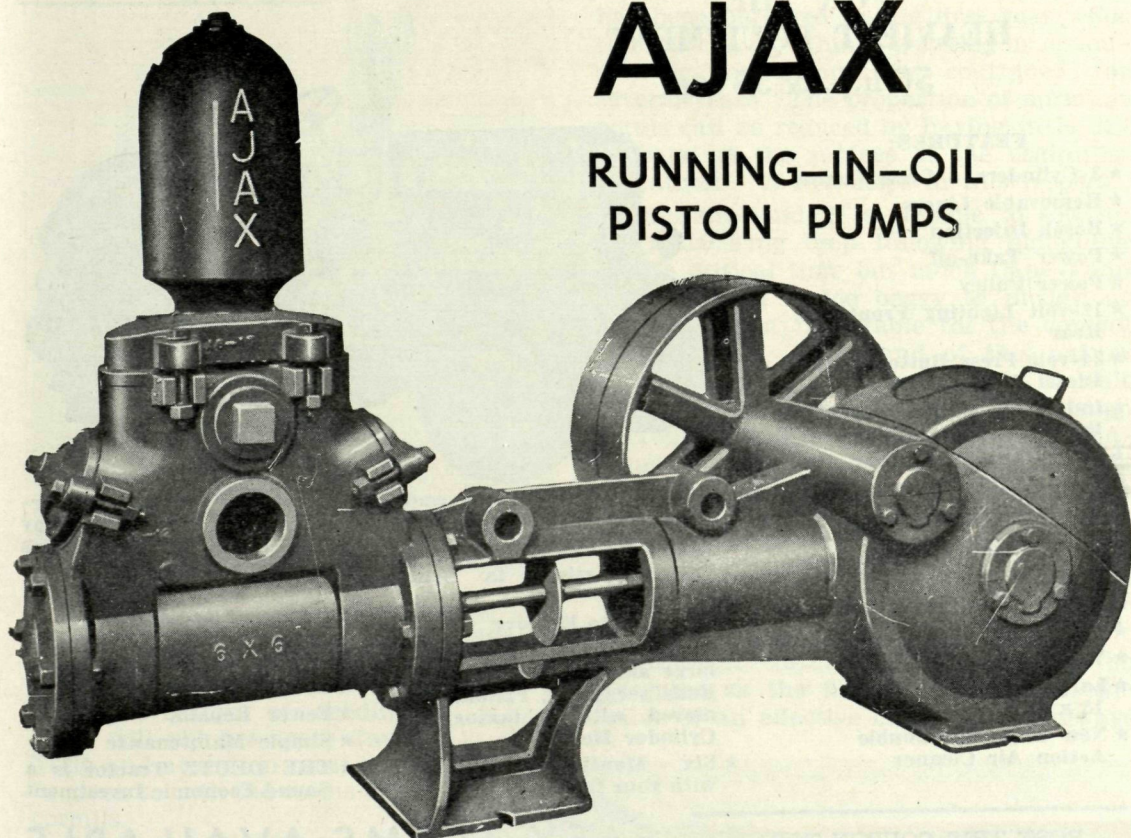
(Drawing by the Government Botanist, Mr. C. A. Gardner. From the series "Poison Plants of Western Australia.")



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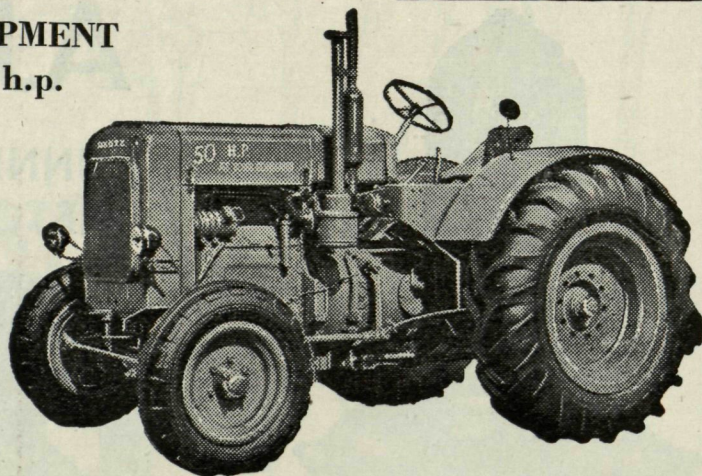
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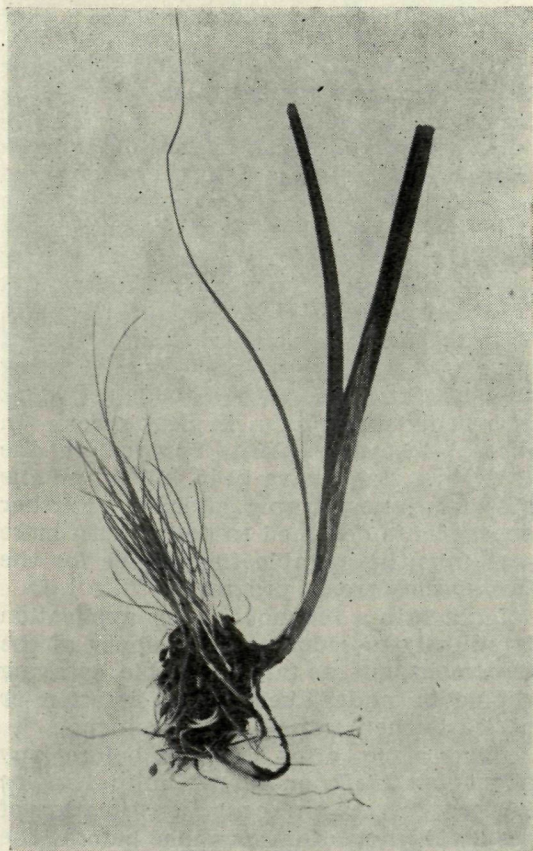


Fig. 3.—Two-leaved Cape Tulip showing young plants developing from cormils surrounding the corm. The photograph was taken on July 18.

other species. It is obvious that prevention of seeding alone will not eradicate Cape Tulip and attention must also be given to both the corms and cormils.

Although well adapted for propagation and not easy to control, good results have been obtained with both cultural and chemical methods.

Ploughing should be carried out with a disc or mouldboard, or a rotary hoe used when the corms are at the transition stage. This stage, which is dependent to a certain extent on the season and soil conditions, usually occurs in July. The old or lower corm has shrivelled appreciably and the new or upper corm or corms have only partially formed.

In order to be effective, ploughing must be done thoroughly to the depth of the corms. Half turning the plants will allow many of them to continue growing and a cultivation following the ploughing is often necessary.

Owing to the presence of dormant corms, complete destruction with one operation is not possible although a big reduction, at times more than 90 per cent. has been obtained in the first year. For this reason, ploughing, grubbing or chemical treatment must be continued for several years. The proportion of dormant corms can be reduced by having little dry herbage on the surface at the beginning of autumn. A fire helps in this respect.

On some land it is possible to sow an early-maturing crop following ploughing at the critical time but much Cape Tulip infested land is too boggy to plough at the time most favourable for the control of the weed. With land of this nature it is better to plough early than to wait until the soil becomes firm in the spring. A cropping and fallowing programme continued for several years has effected a big improvement on several properties in the Avon Valley. Crops should be cut for hay only if no mature seeds or stem cormils are present. At times cropping with peas fits into such a control programme, particularly in the Avon Valley.

Although cultural operations must be accepted as the first line of attack, the value of an effective chemical has always



Fig. 4.—Two-leaved Cape Tulip at Cuballing showing the control on a 30 ft. strip sprayed at the rate of 2 lb. acid equivalent of 2, 4-D amine with a low volume boom on July 14, 1952. Photograph May 27, 1953.



been recognised. Fence lines, rocky situations and uncleared country present difficulties for ploughing, along with boggy areas which have already been mentioned. Many chemicals have been tried over a period of years mainly with indifferent results.

Some degree of control has been obtained by the application of oils including a mixture of old sump oil with kerosene or diesolene at the rate of one gallon per 24 square yards of Cape Tulip. Results have been variable, however, and the treatment is very costly.

Four years ago some encouraging results were obtained with trials with 2,4-D or hormone-like preparations. Comprehensive experiments have since been undertaken over a wide area extending from Geraldton to Cranbrook and a number of farmers sprayed appreciable areas last season. We have learnt much from these experiments and also from the large scale operations.

The highest degree of control and most uniform results have been obtained with 2 lb. of acid equivalent of 2,4-D ester per acre of Cape Tulip. Good results have also been associated with the same rate of both the amine and sodium salt of 2,4-D. On occasions these have been just as effective as the ester, but at other times have been somewhat inferior.

Under favourable conditions, especially in the case of fairly sparse infestations, one pound of acid equivalent per acre has caused a substantial reduction. For reasons of economy this rate may be used to advantage under some circumstances where maximum reduction in the first year is not of primary importance. With spot spraying of scattered growth the higher rate is strongly recommended.

Both high and low volume treatments have proved effective. Application can be made by means of a knapsack, a hand lead from a power unit or a low-volume boom. 100 gallons per acre, i.e., one gallon per 48 square yards is a convenient rate when using a knapsack or a hand lead although some operators prefer considerably less, especially with a hand lead. Complete coverage, however, is important. With low volume boom units eight gallons per acre is a satisfactory rate. Some experimental applications from the air were made last

year but results cannot be assessed until emergence time which will occur shortly.

It is important to ensure that the quantity of chemical required per acre is contained in the volume used.

The most appropriate time for application varies somewhat with the season and is not the same for the two species. With the two-leaved type, July treatments at the corm transition stage favoured for ploughing have proved satisfactory and the work can be continued into August. The optimum time for the one-leaved species is somewhat later, August being the main month, with satisfactory work also being undertaken in September. In several instances plants sprayed at the early bud stage have been killed and the associated new corms affected. Further experiments designed to define with more certainty the suitable time range for the two species are in progress.

Light rain a few hours after application is unlikely to reduce the efficiency of the treatment, but, as far as possible, spraying should be undertaken in fine weather or at least when rain is not imminent.

Some time often elapses before any effect of 2,4-D on Cape Tulip can be noticed, in fact an accurate estimation of results is not often possible before the growing period in the following season. The most obvious symptoms are a twisting of the foliage along with a swelling of the basal portion of the plant above the corm.

With spraying, as with ploughing, the dormant corms are a problem. In many cases more than 90 per cent. control has been obtained in one season but measures must be continued for several years. The most practical programme varies with conditions and often spraying one year can be followed to advantage by ploughing and cropping in the subsequent year or the reverse order may be favoured.

A number of proprietary lines of 2,4-D ester are available, mostly containing about four pounds of acid equivalent per gallon. The cost of one pound of acid equivalent is approximately £1, but the cost of treatment should be considered as a debit against the whole property rather than the affected portion for, if active measures are not taken against this weed when present in small proportions, it will soon become a problem over an extensive area.