

# THE CONTROL OF CAPE TULIP (*Homeria* spp.) IN WESTERN AUSTRALIA

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The necessity for taking into account the life history of weeds, when considering control measures, is underlined by the two closely related species of Cape Tulip. The two leaved type (*Homeria miniata*) 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 and also in the angle between the leaves and the flowering scape. On the other hand the one-leaved type (*H. Breyniana* Syn. *H. collina*) seeds freely and also multiplies by the formation of a few corms at the base but does not produce the characteristic cormils of the 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 mould board 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 then 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% 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.

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

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.

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% 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.