

CONTROL OF NUT-GRASS

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Nut-grass (Cyperus rotundus) is a troublesome weed in most warm countries. Control is difficult because of the persistent rhizomes and tubers. The methods most commonly employed have been digging and removal of tubers and rhizomes, deep cultivation to bring tubers to the surface and cut them off from their feeding roots, repeated shallow cultivation to exhaust the underground parts, intensive grazing with pigs or poultry, the planting of vigorous summer-growing hay or grain crops to compete with the weed and treatment with soil sterilants or contact weedicides such as common salt, sodium chlorate or arsenic. The effects and limitations of these methods are well known and they will not be recapitulated here.

In recent years other chemical methods have been employed. Chloropicrin and methyl bromide have been used as soil fumigants to kill the whole plant. Both these substances are toxic to man. They are costly and not easy to apply. For best results it is necessary to cover the soil with impervious material such as kraft paper for 24 to 48 hours after treatment. These fumigants are useful for treating small areas such as seed-beds or nursery plots but for farm use they are too costly and too inconvenient.

In Queensland it has been found in practice that 2,4-D and M.C.P.A. can be used to control nut-grass. The effectiveness of the treatment depends upon proper timing and adequate preparation of the land. The method depends upon two main facts:-

1. In nut-grass there is pronounced apical dominance in each rhizome-chain. Dormant tubers will not produce new shoots until the terminal tubers in the chain are dead or until the rhizome connections are broken.
2. 2,4-D or M.C.P.A., if applied to vigorously growing nut-grass during warm weather, will kill the vegetative shoots and the tubers from which they arise. Translocation to dormant tubers appears to be slight.

The action of 2,4-D or M.C.P.A. is slow and death of the vegetative shoot often does not take place until three or four weeks after treatment. During this period, other tubers in the same rhizome-chain remain dormant so that generally there is no appearance of new shoots until three or four weeks after spraying. This is in marked contrast to the rapid regrowth which follows treatment with contact weedicides which kill the apical shoot very quickly.

In practice, the most successful system is to cultivate the land thoroughly during the period when the nut-grass is dormant. This breaks up the rhizomes and results in wholesale germination of tubers when temperature and moisture conditions become favourable. Two to three weeks after emergence of the new shoots, i.e. when the vegetative shoots are fully developed, 2,4-D or M.C.P.A. is applied at the rate of 2 to 3 lb. acid equivalent per acre. Provided they contain adequate wetters, sodium salts and amine salts of 2,4-D are generally more effective than the ethyl ester and they are much less costly.

There is generally a very great reduction in density of the nut-grass following the first spraying. In sugar cane, satisfactory control can be achieved by a single treatment. The vigorously growing sugar cane competes quite successfully with any regrowth of the nut-grass. The same applies to a vigorous hay crop such as Sudan grass sown three or four weeks after the first spraying. If the land is allowed to lie undisturbed a second treatment should be given after regrowth appears. Experience in southern Queensland indicates that it is better to wait for two or three weeks after the appearance of new shoots before spraying the second time. This gives time for the new shoots to finish drawing on reserve food material in the tubers and allows some translocation of 2,4-D downward. Nearly always a small percentage of tubers will survive a whole season so that this method does not eradicate the nut-grass completely. It does offer a practicable method of control at reasonable cost.

T.C.A. has been used to only a limited extent in Queensland. Good kills have been reported with sodium T.C.A. at 100 lb. per acre applied either to the young plants or to newly cultivated moist soil. I am not familiar with the results of work with this chemical at present being carried out by C.S.I.R.O.