

use for control of scattered plants.

Stem applications of 2,4-D and 2,4,5-T result in little more than corking of the epidermis. Application of 2,4-D (sodium salt) to cut tuber surfaces gives complete kills and is also effective as a soil surface application. Sodium 2,4-D is used for scattered plant control.

Of the stem sprays tested, 2,4,5-TP as the butyl and isobutyl ester is best. Applied as a 1.0% a.e. emulsion at the rate of 16-32 lb. per acre (17.92-35.84 kg. per hectare) it gives average total kills of 62%, and is effective over a wide range of seasonal conditions on all types of *Harrisia* growth.

Glasshouse trials show 2,4,4-TP is absorbed by roots and high percentage kills in the field may be attributed to the technique of spraying the soil at the plant bases as well as the stems.

Absorption and activity may be linked with the pH of spray solutions. Esters of 2,4,5-TP, (P.H. 2.9), are highly active, while the amine salt, (P.H. 9.5), is almost inactive.

From the studies of emulsifiable acid, amine, and ester formulations of 2,4-D, 2,4-DP, 2,4,5-T, 2,4,5-TP, and MCP, it appears the propionic acid group is most effective. Absorption rate of the butyl and isobutyl ester formulation of 2,4,5-TP is increased by solubilizing with 4.0% v/v of a commercial non-ionic surfactant, but rate of stem kill is not increased.

During the financial years 1967/1968 and 1968/1969, 15,000 gals. of butyl ester 2,4,5-TP were used to treat *Harrisia cactus* in Queensland.

2,4,5-TP has gained wide acceptance by landholders, who are pleased with its rapid rate of kill and lack of mammalian toxicity. It has little effect on spraying equipment.

THE DISTRIBUTION AND CONTROL OF SILVER-LEAFED NIGHTSHADE
(*SOLANUM ELAEAGNIFOLIUM*) IN SOUTH AUSTRALIA

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Silver-leafed nightshade (*Solanum elaeagnifolium*), known also as tomato weed or white-horse nettle, has been present in South Australia for about 25 years. It was not recognized as being different from several native *Solanum* spp. until 1958. Characteristics of the weed and identification features have been recorded by Tideman (1960).

During the summer of 1968-69 a survey was carried out to determine the extent of this deep-rooted perennial weed in South Australia. A questionnaire was sent to all district councils for the weeds officer to complete. A 71% response was obtained and the information as to distribution verified by personal observation where possible.

The ecological limits of the weed appear to be the 12 in. (30.5 mm) and 20 in. (50.8 mm) annual rainfall isohyets and the weed can be found growing equally well on deep sand or heavy red-brown earth soils. Within the rainfall limits given, infestations vary from small roadside patches to large paddock or whole farm areas of 1,000 acres (405 hectares) at Bute, Rhynie, and Cleve, 200 acres (80 hectares) at Blyth, 700 acres (280 hectares) at Lameroo, and 400 acres (160 hectares) at Barmera.

Forty per cent of the replies regarded the weed as a serious problem and 47% thought it was spreading. Variable results had been obtained with the use of Tordon 50-D on this weed.

Previous work by the Department of Agriculture suggested that even high rates of soil sterilants, such as 2,3,6-TBA and picloram, were only effective for up to 2 years before regrowth was back to the initial level. For example, even 16 gal. Tordon 50-D per acre (180 litres per hectare) gave 50% regrowth after 3 years. Later work suggests that 2 gal. Tordon 50-D in 200 gal. of water per acre (22.5 litres in 2240 litres per hectare) is an effective spot spray treatment but requires continuous follow-up work. To suppress growth of the plants, ester 2,4-D applied before flowering at the rate of 2 lb a.e. per acre (2.24 kg a.e. per hectare) appears to be the best treatment. Long-term trials using various 2,4-D and picloram formulations (including split applications) are in progress.

Deep ripping when the soil is very dry in late summer can give 95% reduction in the following year. Any cultivation when the soil is moist breaks the very extensive vertical and horizontal cross-linking root system. Segments of root as small as 0.5 in. (1.27 cm) are capable of regrowing and so cultivation through patches should be discouraged.

Early identification and eradication of silver-leafed nightshade infestations is essential, particularly as an effective broad acre control measure is not yet available.