

Control Methods

Where land can be cultivated no great problem exists. Not only can the plants themselves be destroyed but, more important, on such land the soil fertility can normally be raised readily to prevent re-infestation.

Afforestation through tree planting or natural reversion is a possible alternative use for land infested with Spanish heath. However, if grazing of stock is the aim, some positive action is required to maintain these areas in production.

Chemical Control

Trials for killing existing heath were begun in earnest about the time that hormone-type weedkillers became available and in November 1947 and March 1948 trials with the ethyl ester of 2,4-D and the sodium salt of MCPA were laid down. The 2,4-D was applied as a spray at 1 lb acid equivalent per acre, and the MCPA at 1 lb and 3 lb per acre as a 1 per cent dust. Though a kill to ground level was secured, regrowth soon appeared at the bases of all plants. A second similar application to one trial gave equally poor results. Subsequent trials illustrated that a complete foliage kill could be secured by the application of any one of a number of herbicides, but great variation occurred in the amount of regrowth which followed their use.

In March 1952 a trial with the butyl and butoxy-ethanol esters of 2,4,5-T and mixed esters of 2,4-D and 2,4,5-T was laid down. The rates of application were 1, 2, and 3 lb acid equivalent per acre applied in 120 gallons of water. These rates as applied to the mixed esters refer to the total of the two ingredients which were present, in the proportion of 2 parts of 2,4-D to 1 part of 2,4,5-T.

The usual foliage kill followed application, but next spring a disappointingly large amount of regrowth appeared from the bases of plants on all 2,4,5-T plots. The regrowth was sprayed in autumn, but even this second application failed to kill all plants, though the number surviving on the 2 lb and 3 lb plots was considerably reduced. On the other hand plots treated with the mixture of 2,4-D and 2,4,5-T gave much better results. A good deal of regrowth appeared on the 1 lb plot, and little on the 3 lb one. A single re-treatment cleared the 2 lb and 3 lb plots of Spanish heath, this being in marked contrast to the pure 2,4,5-T treatments. An identical trial established a year later gave similar results.

CONTROL OF SPANISH HEATH



The effectiveness of spraying is shown by the treated area in the foreground compared with the untreated area in the background.

Weedkillers Used

The superiority of the mixture over the straight 2,4,5-T suggested that further investigation into the use of 2,4-D might be worth while. Trials were accordingly laid down to test 2,4-D and a number of other materials which had become available since the original 2,4-D trials were established. Included were materials derived from the parent acids 4-CPA, MCPA, 2,4-D, 2,4,5-T, and 2,4,5-TP, among them being the mixture of 2,4-D and 2,4,5-T esters already mentioned.

Each material was applied at 2 lb and 4 lb acid equivalent per acre, one series being applied with water at 125 gallons per acre, and a second series with a similar amount of water plus diesel oil at 10 gallons per acre. Some regrowth appeared on all plots, and a year after the first application each was treated with its original material at 2 lb acid equivalent per acre, diesel oil only at 10 gallons being used as the diluting agent. In all cases the addition of diesel oil gave a greater kill than that obtained on the corresponding plots where water alone was used as the spreader.

The ethyl ester of 2,4-D emerged as the material to be recommended for killing Spanish heath, and diesel oil as a diluent to increase effectiveness. This ester is readily available, relatively low in cost, and gave a kill of heath equal to the best obtained in the trial.

The success of 2,4-D on Spanish heath may appear surprising, but the results of these trials agree with work in the United States and England on related species. There, too, 2,4-D was more effective than 2,4,5-T.

Time of Application of Spray

The tip immersion technique was used in an effort to determine the optimum time of application. Results indicated that treatment during October to March inclusive is most likely to give satisfactory results. All the Departmental trials were laid down during this period, the majority being established in autumn.

Soil Fertility

While the trials with herbicides were in progress it was not forgotten that low fertility is the basic cause of heath on farm land. Pilot oversown and top-dressed strips were laid through existing sprayed trials, and in the autumn of 1954 a detailed topdressing and oversowing trial was established on Tuamarina silt loam, the area having been sprayed a month earlier. Fertilisers used included superphosphate, sodium molybdate, and muriate of potash, while lime at 5 cwt and 2 tons per acre was superimposed on the