PASTURE MANAGEMENT AND WEED CONTROL

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THE discovery of the hormone type weedkillers has opened a new era in farming the world over—it has made it possible to substitute the spray gun for implements of eradication and cultivation. It is not, however, on the many obvious successes of these modern materials that I want to dwell, but rather to attempt to evaluate them in terms of pasture production. I want to focus attention on some of the old-fashioned things which we were told were necessary in weed control and to see if these things are still necessary.

In order to understand them we have to ask a number of questions like "Why do weeds ever get into pastures" and "What conditions favour their persistence when they are established?"

I think it is fairly true to say in general that most weeds start to make their presence felt through some weakening of the pasture, and that this makes it easier for the weed to compete in the struggle for existence. It is not always the same factor which causes the pasture to weaken. It may be a long spell of hot, dry weather, it may be a spell of cold, wet conditions, it may be a gradual lowering of fertility, or it may be something else.

If one accepts the hypothesis that some weeds do gain entrance into pastures through the pasture being weakened, then obviously there are two things to be done about it. The first is to ensure the strength of the pasture, and the other is to employ methods which weaken the weed.

There are at least two periods in nearly every year when many pastures open up and give weeds a chance to develop and compete on a favourable basis. These are winter and summer. In wet winters it is almost impossible on many dairy farms to avoid a certain amount of poaching, and this is usually reflected as a weak and open pasture in spring. These are conditions particularly favourable to buttercup, whose seedlings seem able to develop when the grass and clovers are putting up a hard fight for survival. Rushes are another weed which will thrive under the cold, wet conditions of winter. Now although both buttercup and rushes can be controlled, the former quite spectacularly, by the use of hormones, these conditions will occur time after time unless good drainage is provided, and the thrill of seeing the weed magically destroyed before your eyes by the use of hormones becomes an unpleasant annual burden both on your pocket and your time.

Spring is usually a time of plenty, a time when grasses and clovers are growing vigorously and whose bounty the farmer seeks to conserve as hay or silage for use in winter or other periods of shortage. For the most part the common pasture weeds are unable to compete successfully with strongly growing grass and clover and yet the very act of conserving this fodder, if unwisely practised, may result in the multiplication of pasture weeds.

The removal of a crop of hay from a given area of a farm means a very considerable removal of plant nutrients, which if continued several times on the same piece of ground, may well deplete soil reserves of plant food unless generous applications of fertiliser are made to replace them. Also growing plants to the height necessary to obtain a good crop of hay causes a shading of the lower-growing species and may ultimately

cause their elimination. All these factors combine to produce a weak and open pasture, ill-equipped to combat the speedy invasion by flat weeds and lower-fertility grasses which inevitably follows.

Summers are frequently dry, and can cause the opening up of the pasture just at the time when many weeds, if allowed to grow unchecked, are ready to cast their seeds upon the receptive earth. All we can do under these circumstances is to attempt to minimise the effect of the dry weather by refraining from hard grazing and thus keeping as much cover on the ground as we can. If we possess an irrigation system, it too can be used for the same purpose and the stimulation of the pasture cover through the water will do much to enable the pasture to compete successfully with the invading weeds.

So far I have dealt with the weeds which commonly invade pastures in what one might describe as epidemics. Such weeds as catsear, buttercup, plantains, and many others; and the particular point I want to make about them is that although hormones appropriately applied will kill them, you cannot keep them out unless you do the things and adopt the management which will strengthen the pasture and enable it to fight the weed.

There are a number of important weeds of grassland which are much more difficult to deal with and I would like to say a few words about each of these.

DOCKS

Docks are difficult weeds to deal with effectively in a pasture. Fundamentally they are weeds of high-fertility areas such as round cow-sheds and barns. They can retain their place in well-managed vigorous pastures, but it must be remembered that they come from seed and that before the seed can develop freely the pasture must be temporarily opened up to allow it to develop.

I cannot help feeling that a good deal of dock infestations are the result of carelessness. If we were as keen to stop docks from seeding as we are to stop ragwort, docks would be less common weeds. Pasture management to control docks should be aimed at keeping the pasture as dense as possible and at preventing dock plants from flowering and setting seed. A few well-rung pigs are not averse to docks at some stages of growth.

CALIFORNIAN THISTLE

Perhaps continuous mowing will go some distance to control Californian thistle, but in spite of the mixed reports one gets on the effectiveness of hormones, I still regard this latter method as well worth persisting with. Although results may at times be discouraging, there is no doubt that a very considerable measure of control can often be achieved and that at times a real clean-up is made. Apart from mowing I do not think pasture management has much to offer in Californian thistle control—except this. Make sure you buy clean seed, and avoid introducing it into places where it did not exist before. I imagine that one of the most fertile sources of Californian thistle seed is from hay, and here again one should be careful what one buys.

MANUKA

Manuka is usually a weed which causes trouble under low fertility conditions. Under more fertile soil conditions and provided a seed-bed can be prepared, pastures are usually strong enough to prevent re-invasion. One of the critical points in its control is through the use of large mobs of sheep held tightly on to a given area by good fences. Under these

conditions it is quite possible to make a clean sweep of the pest before it gets to the stage of becoming a nuisance. Of course at present the spread of manuka blight is doing a great deal to clean up established infestations, so it is not unlikely that manuka will be as unfamiliar to future generations as the hansom cab is to the present.

FERN

Both bracken and hard fern are important weeds in many parts of New Zealand. Where a good seed-bed can be prepared and a good pasture established it is usually not difficult to effect a good measure of eradication of bracken with cattle and/or wethers. Thorough cultivation and putting the land through a root crop as a preliminary will help to break the back of the problem. On the other hand the job is rather more difficult on steep unploughable hill country, and perhaps hard fern or ring fern presents the most difficult problem.

I do not really think that even if an effective hormone for fern eradication existed, it would be of great use. It is almost certain that it would cost too much applied, and the farmer would tend to fall back on older methods.

Hard fern can be satisfactorily controlled by really effective burning with the flamethrower, oversowing, and topdressing, and probably the biggest step forward in handling the country where this weed is a problem came with the bulldozer and the opening up of tracks in to previously inaccessible country.

BLACKBERRY AND GORSE

Blackberry and gorse are not alike in any other feature that I can think of except that they are both controllable by the use of 2,4,5-T.

I suppose that of all the weeds, the farmer has been most pleased to see more or less effective materials developed for their control. But here again the hormones alone will not eliminate the weed and prevent its re-invasion.

Perhaps the biggest curse of 2,4,5-T is that it produces, particularly from gorse and to a less extent from blackberry, the most spectacularly inflammable mass and sorely tempts the firebug in us all. There is no doubt in my mind that to give way to this impulse is largely to negative the value of spraying.

To get best results from gorse and blackberry spraying I am certain that it pays well to oversow with grasses and clovers and to throw some fertiliser on to the areas previously densely covered with the weed. It is, however, an unfortunate fact that 2,4,5-T is very toxic to clovers and when one resprays to clean up regrowths this means killing out some of the clover one has been careful to sow.

The point, however, is clear once again that nature abhors a vacuum, and that unless we provide the seed of plants we want to grow, nature will see to it that a host of weeds step in to take the place of the weeds we have destroyed.

It is obviously impossible for me to go right through the whole list of weeds and to show in each case what appropriate form of management can be adopted to control the weed. Enough has, however, been said to show that in nearly all cases the use of the hormone type weed-killer alone is insufficient to eliminate the weed and to build a strong weed-free pasture for the future.

One must, however, be fair in considering a question like the present, and therefore it should be pointed out that most of the means I have suggested as helping in the control of weeds have been known for a very long time and presumably have often been found wanting in

practice. This is most probably through inertia on the part of the farmer, and what really amounts to a real lack of interest in his weed problems.

The discovery and field use of modern weedkillers has reawakened interest and hope that weed problems can be overcome in the future and have undoubtedly effected a measure of control which seemed impossible of achievement in the past. The control of buttercup in the Hauraki Plains is a case in point. It was a problem which puzzled and defeated even the best farmers, and no amount of good pasture management on its own would have made possible the changes wrought by the use of hormones.

I therefore come to the conclusion that there are instances where the application of even the best pasture management methods will not eliminate certain weeds. They may, however, be easily removed with weedkillers. I feel, however, that it is equally true that under most circumstances weedkillers alone will not result in the eradication of weeds from pastures unless all the principles of good pasture management are applied. It is not a case of pasture management versus weedkillers. It is a case of good pasture management plus weedkillers. In fact the judicious use of weedkillers is a part of good pasture management, and times have not changed when we consider the value of good cultivation, thorough seed-bed preparation, good grazing management, and the choice of weed-free seeds.

DISCUSSION

Q.—Has the speaker any ideas on the control of weeds such as ragwort, docks, and barley grass by pasture management practices?

A.—Management alone is not of much general value against ragwort, as odd plants still survive. Docks are weeds of high fertility conditions and as this is associated with good farming practice, management can hardly be of much use. Stocking with pigs is possibly the only practice of value, but this, of course, may be quite inconvenient. With barley grass, if infestation is heavy, renewal of pasture is suggested.

Q.—Can blackberry be controlled by management practices alone, especially in the young stages?

A.—The only places where the blackberry can be controlled in the pasture are as follows:—

1. Where land is ploughable.
2. Where the area can be fenced well and stocked heavily to crush the regrowth.
3. Where high fertility can be maintained.

Q.—Has the use of the electric fence resulted in greater weed infestation of the pasture?

A.—This is not in general true though possibly correct for certain weed species. The more even distribution of droppings should give better pasture growth and therefore more resistance to invading weeds. However, overshadowing of the clover by the ranker grass growth could weaken the pasture. Docks would be likely to occur under these conditions.

Comment: Ranker growth results from strip grazing and the pasture is opened up after heavy stocking, therefore weed infestation is encouraged; for example, buttercup.

Q.—Of what value is the repeated cutting of docks in its control?

A.—Cutting must result in prevention of seeding and therefore partial control, but this method cannot be the final word.