

RAGWORT AND CALIFORNIAN THISTLE - MOST IMPORTANT WEEDS IN DAIRY PASTURE?

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The setting of research priorities in weed science in New Zealand is difficult owing to the large number of species that cause problems in agricultural systems. One way to judge the relative importance of weeds is by surveying the opinions of those whose livelihoods are directly affected by their presence. Such surveys have been conducted only rarely in New Zealand. The first was by Cockayne (1917) who from a postal survey of approximately 800 North and South Island farms, determined that Californian thistle (*Cirsium arvense*) was the most important weed over all South Island districts and that in the North Island, blackberry (*Rubus fruticosus* agg.) was the most important weed. More recently Bascand and Jowett (1982) conducted a postal survey of weed occurrence and problem status on agricultural and pastoral land in the South Island. This survey ranked as the most serious weeds; nodding thistle (*Carduus nutans*) in Canterbury, gorse (*Ulex europaeus*) in Marlborough, Nelson and Westland, and barley grass (*Hordeum* spp.) in Otago. Just as rare as these subjective opinion surveys are more objective surveys based on measurements of weed cover or density (Bascand and Jowett 1981; Bourdôt and Kelly 1986).

Current requirements of science funding bodies in New Zealand have increased the need for information on the relevance of proposed weed research. It was with this in mind that dairy farmer clients of ten livestock improvement consultants were asked to complete a questionnaire in November 1993. The purpose was to attempt to define, in a non-rigorous manner, the dairy industry's perceptions of the problem status of weeds in dairy pastures. We report here on the results of one of several questions. In this question the respondents were first asked to list the weed species that they believed to be creating problems for the dairy industry. They were then asked to rank these weeds in order of importance in terms of perceived research requirements.

The questionnaire was completed by 137 dairy farmers and the 10 consultants; a total of 147 respondents. Most of the respondents were from the North Island (137), with the remainder (10) from the South Island.

The analysis of the results from the first part of the question are given in Table 1, which gives those weeds listed by five or more respondents as creating a problem for dairy farmers. The species listed most often was ragwort (*Senecio jacobaea*) - listed by 77% of the respondents. The next most often listed weed was Californian thistle (*Cirsium arvense*) (47%). Buttercups (*Ranunculus* spp.) and gorse (*Ulex europaeus*) were next in order both being listed by 29% of the respondents. These results indicate that ragwort and Californian thistle were considered the main problems.

The results from the second part of the question are given in Table 2. The ranks assigned by the respondents to the seven species listed by 20 or more farmers as problematic, were analysed as follows. For each questionnaire the ranks 1 - 8 were assigned to each of these seven species and another eighth category "all other weeds" containing those species listed by less than five of the respondents. For example if a respondent assigned ranks 1, 2 and 3 to ragwort, buttercups and gorse, the remaining species were assigned the rank 6, the average of the remaining ranks. The mean ranks thus calculated are given along with the Least Significant Difference (LSD) for comparisons between species in Table 2. The analysis shows firstly that ragwort was ranked significantly higher than all other species. This species was apparently

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considered by the dairy farmers as being more important than any other weed in terms of its research requirement. The next most important weed in this regard was Californian thistle; whilst considered to be less in need of research than ragwort, it was nevertheless considered to be significantly more in need of research than any of the other species.

TABLE 1: Number of questionnaire respondents listing various weed species as important problems in dairy pasture. Species listed by less than five respondents are included together in "other weeds".

Species	Number of respondents listing species
ragwort (<i>Senecio jacobaea</i>)	113
Californian thistle (<i>Cirsium arvense</i>)	69
nodding thistle (<i>Carduus nutans</i>)	33
Scotch thistle (<i>Cirsium vulgare</i>)	29
other thistles	39
buttercups (<i>Ranunculus</i> spp.)	43
gorse (<i>Ulex europeaus</i>)	42
blackberry (<i>Rubus fruticosus</i> agg.)	16
fescue (<i>Festuca</i> spp.)	15
docks (<i>Rumex</i> spp.)	11
barley grass (<i>Hordeum</i> spp.)	9
turnip (<i>Brassica rapa</i> spp.)	9
rushes (<i>Juncus</i> spp.)	7
other weeds	25
Total respondents	147

TABLE 2: Mean ranks with respect to research needs assigned by questionnaire respondents to individual weed species listed as problematic by 20 or more respondents.

Species	Mean rank
ragwort (<i>Senecio jacobaea</i>)	2.6
Californian thistle (<i>Cirsium arvense</i>)	4.0
nodding thistle (<i>Carduus nutans</i>)	5.0
Scotch thistle (<i>Cirsium vulgare</i>)	5.3
other thistles	5.0
buttercups (<i>Ranunculus</i> spp.)	4.9
gorse (<i>Ulex europeaus</i>)	4.9
all other weeds	4.3
LSD (P<0.05)	0.6
LSD (P<0.01)	0.7

The results from this questionnaire indicate that a significant number of dairy farmers (surveyed mainly from the North Island of New Zealand), believe ragwort and Californian thistle are the two most important weeds. This does not necessarily mean that these two weeds cause the greatest economic losses in the industry. The perceptions of farmers will be based not only on the direct costs they incur in controlling these species but also on popular opinion and the effects of noxious plants legislation. The latter will result in weeds which are deemed to be "noxious", such as ragwort, being considered serious problems, even in areas where their rarity precludes any economic loss.

Despite the above difficulty, and the non-random nature of the sampling, the results of this questionnaire do allow us to generate the hypothesis that ragwort and

Californian thistle are the two most serious weeds nationally for the dairy industry. We can do this because we know that both species are widely distributed in New Zealand (Webb *et al.* 1988). For confirmation, this hypothesis would need to be tested rigorously by a random survey which should include both measurements of economic losses and sampling of farmer opinion.

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REFERENCES

- Bascand, L.D. and Jowett, G.H., 1981. Scrubweed cover of South Island agricultural and pastoral land. *N.Z. J. Expt. Agric.* 9: 307-327.
- Bascand, L.D. and Jowett, G.H., 1982. Scrubweed cover of South Island agricultural and pastoral land 2. Plant distribution and managerial problem status. *N.Z. J. Expt. Agric.* 10: 455-492.
- Bourdôt, G.W. and Kelly, D., 1986. Density and cover estimates of some non-palatable herbaceous pasture weeds. *Proc. 39th N.Z. Weed and Pest Control Conf.*: 183-186.
- Cockayne, A.H., 1917. Noxious weeds in New Zealand. *N.Z. J. Agric.* 14: 339-344.
- Webb, C.J., Sykes, W.R. and Garnock-Jones, P.J., 1988. Flora of New Zealand. Volume IV Naturalised Pteridophytes, Gymnosperms, Dicotyledons. Botany Division, D.S.I.R., Christchurch, New Zealand.