

Executive Summary of DEFRA funded project BD1437 Effects of grazing management on creeping thistle and other injurious weeds and integration of grazing with weed control.

1. In April 2000, two replicated factorial experiments were established to determine the optimum combination of grazing management and mechanical/chemical treatments to control creeping thistle within extensive, continuous beef cattle or sheep systems which are typical of land under agri-environment agreement in the UK.
2. The most effective means of controlling creeping thistle at both sites was a combination of lenient autumn grazing with weed wiping in two consecutive growing seasons. This reduced creeping thistle density from 10.8 (± 4.1) shoots per m² to 0.1 (± 0.1) per m² at Bronydd Mawr and from 11.7 (± 1.3) to 0.2 (± 0.2) at Marsh Gibbon. Lenient autumn grazing in combination with cutting also gave good control at Marsh Gibbon, reducing thistle shoot density from 10.3 (± 0.6) to 2.2 (± 0.9) shoots per m².
3. After three full seasons of implementation tight autumn and over winter grazing by sheep significantly increased the number of creeping thistle shoots emerging in the following spring compared with lenient grazing. It was also found that cattle grazing reduced thistle numbers more than sheep grazing.
4. Tight spring grazing did not have any effects on thistle numbers, but was desirable in achieving a large differential between the elongating thistle stems and the associated forb species prior to weed wiping.
5. There was evidence that some lenient grazing regimes might be effective in preventing the re-invasion of patches where thistles had been successfully controlled by weed wiping.
6. Demographic studies showed that the mechanism of increase in thistle shoot numbers at both sites was predominantly through increased ramet (vegetative shoot) rather than genet (seedling) recruitment.
7. To date none of the grazing or weed control measures reduced non-target forb diversity. However, some grazing treatments resulted in an increased frequency of individual non-target species, for example, tight spring grazing benefited *Leontodon autumnalis*, and cattle grazing resulted in an increased frequency of *Ranunculus acris*. These positive effects, if continued over time, will reinforce environmental benefits of controlled grazing management in agri-environment schemes.
8. *Synthesis and applications.* The project has shown that certain grazing systems can complement intensive application of cutting and/or herbicide treatments to give very effective control of creeping thistle populations in the short term (3 years). However, what cannot be predicted is the likely duration of thistle control by grazing management alone following the decoupling from these weed control measures. Lack of such knowledge will encourage frequent recourse to the more rapid and yet environmentally damaging weed control techniques.

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