

A trial of deer repellent spray for reducing deer browsing damage to coppiced hazel in an ancient woodland in Cambridgeshire.

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SUMMARY

A replicated, controlled trial in 2023 to test whether Trico[®] deer repellent spray is effective for protecting coppice re-growth from deer browsing found significantly fewer visible signs of browsing and significantly higher average re-growth for sprayed coppice than for an unsprayed control.

BACKGROUND

Trico[®] is a commercial deer repellent made from emulsified sheep fat, which is marketed for preventing damage to a range of plants from deer. There is some published evidence that it is effective (e.g. Curtis and Eshenaur 2022). A search of conserationevidence.com found other products may be beneficial, but no results for Trico[®]. Available evidence is mainly from North America and Europe. This trial tested whether Trico[®] would be effective for protecting hazel *Corylus avellana* coppice on a UK nature reserve where the main deer species are muntjac *Muntiacus reevesi* and fallow *Dama dama*.

ACTION

The trial took place in two plots in Gamlingay Wood nature reserve in Cambridgeshire. Plots were chosen as typical representatives of coppice management on Wildlife Trust nature reserves. Each plot was between 650-750 m². Plot 1 was coppiced in winter 2022-2023 and plot 2 in winter 2019-2020. Plot 1 was within a larger (2000m²) area of coppice surrounded by an old fence, which is no longer deer-proof. Plot 2 was a narrower ride-side coppice strip, which had been protected with brash, but almost all regrowth above the brash had been browsed off each year, mainly by muntjac. Each plot was divided into an area to be sprayed and a control. Plot 1 had 25 sprayed stools and 25 unsprayed. Plot 2 had 18 sprayed stools and 16 unsprayed. Trico[®] was applied in March 2023 but re-applied in May 2023 (due to wet weather – Met Office records for East Anglia recorded 98.5mm of rain in March 2023, as compared to average March rainfall of 39.36mm between 1991 and 2020). However, growth did not begin until May, so the initial spray in March was not needed. Spraying was done with a backpack sprayer via a targeted spray until the whole coppice stool or brash pile had a light coating. Average dose per coppice stool was around 25 mL. Monitoring visits were made once a month between March and August 2023, with an extra visit in May 2024. At each visit the average height of re-growth in cm was estimated and a note made of whether any recent browsing damage was visible for each stool. However, there was some inconsistency in identifying individual stools in plot 1, as the bases of some had gaps between sections, so on some occasions a stool that had been previously counted as one was counted as two separate stools, or vice-versa. The number of stools measured in plot 1 varied between 22-26 for both sprayed and control stools.

CONSEQUENCES

The average height of re-growth at the end of the first growing season (August 2023) was significantly higher for sprayed stools than for the control (plot 1: Mann-Whitney test, $p = 0.0003$, plot 2 Mann-Whitney test, $p = 0.0199$) This difference was consistently observed throughout the growing season and persisted into 2024, even without further application of Trico[®]. The percentage of coppice stools showing signs of browsing was significantly lower at the end of the growing season for the sprayed stools than the control in both plots (chi-squared tests: plot 1 chi-squared value = 29.8875, $p < 0.001$, plot 2 chi-squared value = 11.9163, $p < 0.001$). This difference did not persist as strongly into the second growing season.

COSTS

Based on the purchase price at the time (Dec 2022), the cost of the spray was 46.5p/stool. Staff time was around 30 seconds/stool, plus 1.3 hours for set up, moving around site. Assuming a similar density to the trial plots of between 500-750 coppice stools per hectare, it would take 5.5-7.5 hours to treat 1 hectare at a total cost between £232-349. However, it should be noted this is a low density, and the ideal would be closer to 1,500 stools per hectare.

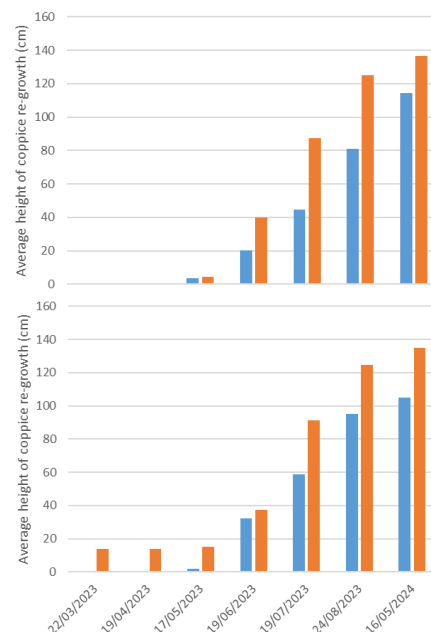


Figure 1. Average height of coppice re-growth in plots 1 (top) and 2 (bottom) for sprayed (orange) and control (blue) at Gamlingay, March 2023 to May 2024.

DISCUSSION

Results of this trial indicate that Trico® deer repellent could be effective in reducing the impact of deer browsing on hazel coppice re-growth. However, levels of deer browsing are known to be lower at Gamlingay Wood than at some other reserves, as there is additional control through deer culling (M. Ricketts, pers. comm.). Ad hoc records from other Wildlife Trust BCN reserves with higher deer pressure measured coppice regrowth of 2-5cm average for unsprayed stools in September 2024. Further trials at sites with different levels of deer browsing and sites where there is no other control would be beneficial. Use of deer repellent in combination with other methods of deer control and/or repeated applications may be preferred where browsing pressure is high.

ACKNOWLEDGEMENTS

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REFERENCES

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