Case study

Integrated Pest Management case study: **Chemical-free forestry management in the Elan Valley**

Integrated Pest Management (IPM) across a sensitive drinking-water catchment

Llywodraeth Cymru
Welsh Government

Organisation overview

Dŵr Cymru Welsh Water is a utility company operating across most of Wales and some adjoining parts of England. It provides essential public services to its 3 million customers by supplying their drinking water and cleaning wastewater.

Welsh Water owns some land around its many reservoirs, including the 45,000-acre Elan Valley estate in Mid Wales. This upland estate has a network of reservoirs surrounded by a mosaic of habitats such as ancient woodland, peatland and forestry. It is essential that any vegetation and pest control actions safeguard the water quality and these sensitive designated sites.

Why explore alternatives to chemical pesticides?

Welsh Water's primary role is to provide safe, clean drinking water to its customers and delivering this starts at source. Reducing the use of pesticides, reduces the risk of pesticide losses into water, which helps avoid the need for additional resources and energy during water treatment.

The organisation is exploring how it can reduce its reliance on pesticides and implement Integrated Pest Management (IPM) approaches which can deliver multiple benefits.

The alternative approach

Welsh Water has trialled non-pesticide control methods on its forestry operations in the Elan Valley and is extending this approach across the estate. New methods include:

Manual weeding and mechanical vegetation control

Instead of blanket herbicide spraying, staff undertake manual brush-cutting and mechanical mulching around restocks. These techniques remove tall grass and bracken that compete with young trees, giving them space to establish.



Before manual weeding and mechanical vegetation control



After manual weeding and mechanical vegetation control

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Rydym yn croesawu gohebiaeth a galwadau ffôn yn Gymraeg / We welcome correspondence and telephone calls in Welsh

Using older restocks (2–3 years old)

Welsh Water increasingly plant older restock trees, which have stronger roots and thicker bark. This natural resilience reduces early mortality and the need for later interventions.

Leaving land fallow before restocking

Clear-fell sites are left fallow for two or more years before replanting. Allowing vegetation to stabilise soil and reduce pest pressure improves conditions for restocking and reduces the need for weed control.

Non-chemical INNS management trials

Control of invasive non-native species (INNS) pose the greatest challenge.

- **Rhododendron:** Teams cut stems and winch stumps out to remove the root plate, placing stumps on open ground to dry out and prevent regrowth.
- **Japanese knotweed:** Trials involve repeated cutting to exhaust root reserves and testing mechanical and thermal options, though no chemical-free method guarantees success yet.

Benefits and early results

Manual and mechanical control methods have allowed heather, bilberry and other native understory plants to recover. Staff assess improvements through the return of native species and reduced bare ground, supported by ecological monitoring. Reducing herbicide use also protects water quality and supports long-term treatment-cost reduction.

Awareness of Welsh Water's approach is increasing. Conservation partners, forestry contractors and community groups on guided walks have been briefed on the programme, strengthening shared responsibility for land stewardship.

Future plans

Challenges remain, particularly managing INNS and the increased labour demands of non-chemical methods. However, Welsh Water plans to continue expanding this approach across priority catchments and conservation sites. Work will focus on refining INNS techniques, collaboration with partners such as NRW and RSPB, and playing its role in delivery of sustainability and environmental objectives for Wales.

Sites which are remote or difficult to access can be successfully managed using manual weeding and mechanical vegetation control, preventing pesticide run-off into surrounding water sources

