



Establishing trees in dense bracken

Innovation

PLANTING FOR THE FUTURE

Bracken is a very aggressive plant that can quickly dominate large areas of land if not controlled. The dense canopy makes it very difficult for existing plants to compete and also inhibits any seed germination.

Dense bracken growth has two major negative impacts on tree establishment. One is shading which will reduce the sapling growth rates, and the second is that at the end of the growing season the collapsing fronds tend to flatten and bury the young trees. However, once the trees are established, they will outcompete the bracken which is then unable to survive.

Currently the main method used to treat bracken prior to planting is by spraying Azulox herbicide, typically by helicopter. This is problematic as the safety warnings around the product are very strong and it is likely to be withdrawn from the market in the near future. There are also situations where its use is not permitted, such as on organic land and or near watercourses or water supplies.

Farmers and foresters in mid-Wales therefore embarked on an EIP Wales project to study different approaches to controlling bracken that avoided expensive and damaging aerial herbicide treatments.

BENEFITS OF THE FUNDING

In 2019, the project secured £36,700 of funding through the European Innovation Partnership (EIP Wales). EIP Wales, which is delivered by Menter a Busnes, received funding through the Welsh Government Rural Communities – Rural Development Programme 2014–2020, which is funded by the European Agricultural Fund for Rural Development and the Welsh Government.

The project aimed to trial different approaches to controlling bracken that could break the cycle of using costly and environmentally concerning practices.

As part of the project, different ground preparation techniques were compared, including using a mini digger to cut shallow benches, a digger with a cultivator attachment, a crawler tractor with cultivator, a forestry scarifier and lastly a robocut machine with a cultivator. Alternative techniques of post planting weeding such as strimming and manual bashing were also carried out.



With the ground trials under way four tree species saplings were planted from Sessile oak, Downy birch, Rowan and the Sitka spruce. The majority of these saplings were 45–60 cm in length which is the industry standard. One plot was planted with larger saplings of one metre directly into untreated bracken to establish whether the extra costs of larger plants and stakes would be a more cost effective alternative than the experiments involving mechanical control.

Every technique is being monitored closely, through survival and growth rate of the trees. A cost benefit of each technique will be made and an estimate of the likely costs of each technique when employed on a larger scale.



THE FUTURE'S BRIGHT...

Planting for the future and the eradication of poisonous herbicides is critical for rural Wales and its inhabitants. This project shows that investigation into different ground techniques can produce different practices to control bracken in the future.

“The first year of the research was hampered by extreme levels of rainfall followed by very dry conditions but nonetheless the project has achieved some interesting interim results. The mortality rate between species varied significantly, with just 5% of losses for birch and rowan saplings and around 10% for Sitka spruce.

“The project also found that there is a very limited window for mechanical cultivation in upland conditions in September and October. The work must be done before the soil reaches winter wetness but the bracken needs to have died back sufficiently for hazards such as rocks to be visible.

“Cultivation was found to influence tree height, allowing birch and rowan to grow significantly taller; this effect was not seen in the oak and spruce however. At one of the two sites, strimming and trampling treatments also led to a significant increase in tree height, although the results were inconsistent.

“The finalised results will be relevant to both conventional and organic farms, and the most effective method of establishing trees in bracken is likely to see widespread adoption particularly at a farm scale.”

Dr Peter Jackson, woodland and conservation advisor