PROJECT INFORMATION SHEET

The new plots at Brignant: re-intensifying production

Three additional blocks of new treatments have been created on grassland adjacent to the Brignant long-term plots. Previous research at IGER Bronydd Mawr clearly demonstrated that withdrawal of fertiliser inputs can have profoundly negative effects on the productivity of upland grazed permanent pasture after only a few years, with both sown and unsown grass species being replaced by moss and litter. Biomass and nutritional value are reduced as a consequence, and over time the carrying capacity can fall to less than a third of that possible on grassland where inputs are maintained. The grassland around the original Brignant plots has had no fertiliser inputs for at least 8 years, and similar changes are apparent.

In this project we are testing the effectiveness of alternative renovation techniques as options for sustainable intensification on permanent pasture. The first approach consisted of treatment with a regeneration harrow to remove dead litter and moss; liming to raise the pH to above 6; applications of potassium and phosphorus as required to restore optimum soil indices; and the reintroduction of spring-time applications of inorganic nitrogen.

The second approach implemented the same protocols for harrowing, liming and restoring phosphorus and potassium indices, but this has been followed by broadcast seeding with a mixture of different white clovers, red clovers and lotus (sowing rates 3.3 kg/ha, 3.5 kg/ha and 2.2 kg/ha respectively). The varieties and lines of each used have been specially selected based on results from on-going research by the plant breeders at IBERS. They include types specifically selected for their ability to establish in marginal soils, and grazing tolerance. Slug pellets were spread immediately following seeding. Both the harrowing and broadcasting operations were done using quad-mounted equipment to maximise access to steep ground while minimising soil compaction. Regular measurements are being made of sward botanical and chemical composition to assess establishment and persistency of the introduced legumes, and the effect of the two renovation strategies on biomass yield and nutritional value.

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PROJECT INFORMATION SHEET

Lleiniau newydd Brignant: ail dwysau cynhyrchiant

Fel rhan o'n gweithgareddau Cyswllt Ffermio, mae tri bloc ychwanegol o driniaethau newydd yn cael eu creu ar laswelltir ger lleiniau hirdymor Brignant. Dangosodd ymchwil blaenorol IGER ym Mronydd Mawr fod dileu mewnbwn gwrtaith yn gallu cael effaith negyddol tu hwnt ar gynhyrchiant porfeydd wedi'u pori ar ôl ychydig flynyddoedd yn unig, gyda rhywogaethau glaswellt wedi'u hau a heb ei hau yn cael eu disodli gan fwsogl a deunydd marw. Nid yw'r glaswellt o amgylch lleiniau Brignant wedi derbyn gwrtaith ers 8 mlynedd o leiaf.

Gellir gweld y lleiniau gwreiddiol ar ganol yr awyrlun ar ffurf bloc hir a thenau a bloc mwy sgwâr ar ochr chwith yr heol, a thrydydd bloc mwy afreolaidd ar ochr dde'r heol. Mae'r ffin oren yn marcio ffin safle arbrofol Brignant.

Bydd dwy driniaeth dwysau cynaliadwy newydd yn profi effeithlonrwydd technegau adfer eraill. Bydd y cyntaf yn ymwneud â thriniaeth gydag og adfywio ac ail gyflwyno gwasgariadau gwrtaith er mwyn adfer mynegai pridd delfrydol. Bydd yr ail driniaeth yn defnyddio'r un technegau adfer ond hefyd yn cael ei hau mewn slotiau gyda chymysgedd o wahanol feillion gwyn, meillion coch ac alaw'r dŵr (lotus). Mae'r amrywiaethau a'r rhywogaethau o bob un a ddefnyddir yn cael eu dethol yn benodol yn seiliedig ar ganlyniadau ymchwil cyfredol gan y bridwyr planhigion yn IBERS. Byddant yn cynnwys mathau sydd wedi'u dethol yn benodol oherwydd eu gallu i sefydlu mewn priddoedd ymylol a'r gallu i wrthsefyll pori.

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