

Evaluating wild/semi-natural perennial ryegrasses

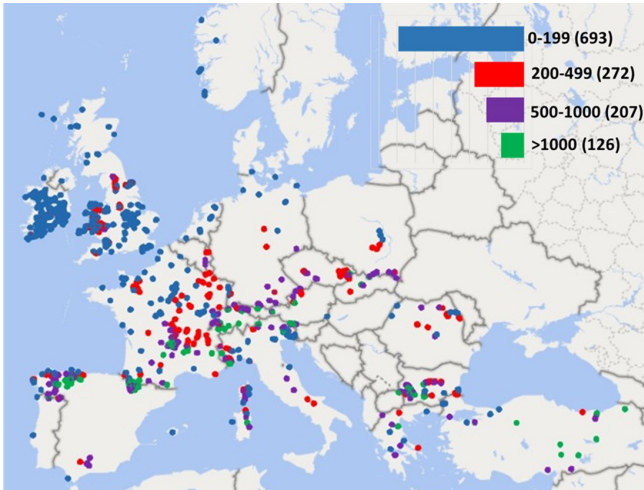


Figure 1. Collection site locations of wild/semi-natural perennial ryegrass accessions held in the Aberystwyth Seed Biobank. Locations are colour coded according to the altitude (m) above sea level (asl) of the collection site (blue, 0-199; red, 200-499; purple, 500-1000; green, >1000 m asl). Numbers in brackets are the total number of perennial ryegrass *ex situ* seed accessions within that category.

The Aberystwyth Seed Biobank at IBERS contains ~3400 accessions of perennial ryegrass, including wild and semi-natural accessions for which there is little or no growth information. These are a unique, under-used germplasm resource, and potentially harbour important resilience traits. The aim of this project is to test the establishment and persistency of diverse ecotypes under different growing conditions. A total of 200 diverse perennial ryegrass accessions have been selected following initial testing for germination efficiency. These will be sown across the four Challenge Gradient sites (at altitudes of ~70 m and ~150 m above sea level (a.s.l.) at Trawscoed, and sites at ~230 m and ~340 m a.s.l. at Pwllpeiran) and at a fifth site ~420 m a.s.l. at Pwllpeiran. A selection of modern varieties will be included at each site for comparison. All experimental will be managed using low inputs. Persistency, disease resistance, biomass yield, and herbage quality is being measured across three years.

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Grasslands represent approximately 70% of UK agricultural land and just under half of the UK's agricultural land is classified as upland. Farming systems in these areas are heavily reliant on areas of improved pasture to achieve viable levels of productivity given the poor nutritional value of native grasslands. Particular challenges to herbage production in these areas include acid soils and shortages of major nutrients, particularly nitrogen (N) and phosphorus (P), and historically high rates of inorganic fertiliser and lime have been necessary to ensure establishment and persistency of perennial ryegrass in such areas. The economic and environmental costs of such applications are high, however, with inorganic N a major source of the greenhouse gas nitrous oxide.

