

Yellow Gold – daffodil-derived galanthamine production in the uplands

Galantamine is a pharmaceutical compound that has been an approved Alzheimer's Disease treatment since 1998. Galantamine can be synthesised chemically but it is a difficult and expensive process. Producing galan/**t**/amine from galan/**th**/amine, an alkaloid extracted from certain plants, is more cost effective, but supplies are limited.

Daffodils are the only economically feasible plant source suitable for cultivation in the UK, and preliminary studies suggested that the environmental challenges associated with upland areas trigger a higher yield of galanthamine in daffodils that are grown there when compared to those grown in lowland conditions.



This Innovate UK-funded project is testing a novel approach to producing galanthamine based on sowing daffodils into existing upland pasture, and is a collaboration between Pwllpeiran, a commercial company (Agroceutical Products Ltd) and engineers from Harper Adams University. The

project is testing and evaluating machinery for planting bulbs under long-term grass leys and harvesting green daffodil material. Production trials are evaluating the impact of incorporating daffodils into grazed pastures on sheep performance and the stock carrying capacity of the land. Initial results indicate that the presence of daffodils does not affect lamb growth rates. The extent to which bulb size, planting density, harvesting patterns and fertiliser inputs influence the persistence of the daffodils and the yield of galanthamine obtained is also being evaluated in order to develop management guidelines that optimise dual cropping of daffodils and grazing stock on upland farms. This information will collectively allow a full assessment to be made of the economic viability of producing galanthamine in this way.

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