

Assessment of the extent of agricultural cultivation ridges of the Western Isles and North-west of Scotland.

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Project Summary: The proposed study will quantify the extent of lazy bed systems currently, and identify future potential of these for contribution towards food security in North West Scotland and the Islands.

Background – Rationale:



Figure 1: Historic Lazy Bed System (Source: RCAHMS.gov.uk)

Many crofting areas across the north-west mainland of Scotland and its islands lie on wet, acidic, anthropogenic, highly organic, substrates. Current agricultural production on these landscapes consists largely of rough grazing, with some limited evidence of wider agricultural cultivation (this is primarily, but not exclusively, confined to west coast communities of the islands, supported by the Machair Life initiative). There is however, considerable evidence of older, small-scale production systems that have supported generations of crofting communities, and their livestock, across the wider region (Figure 1).

Recently interest amongst island communities and NGOs in assessing the potential for re-activating these historic cultivation systems has been revived, with a view to providing sustainable, locally grown produce (e.g. Sustainable Uist; Blackland Project; Machair Life). These projects have made use of historic references and local oral tradition and knowledge to piece together past methods and crop rotations on land that is now identified as 'less favourable'.

Initial investigation indicates a dearth of literature on both the historic and current extent of these cultivation systems in Scotland. Their potential to support future sustainable food production in remoter parts of the country has not been subject to any scientific investigation. On the basis of this a number of questions arise:

- What is the current extent of these historic cultivation systems across the islands and the north-west of Scotland?
- What potential is there for ridge and other cultivation systems to contribute to sustainable, local food production and food security in remote communities?
- What impact would re-activation of these cultivation systems have on the wider ecosystems and current biodiversity of Scotland's north-west and the islands?
- Are there opportunities for potential carbon sequestration in the re-activation of these agricultural systems?

Aim: To identify the current distribution of historic agriculture production systems across the North-West of Scotland and the Islands, and to identify their potential for contribution towards sustainable food production and carbon sequestration in this region.

Objectives and Approach to Project:

Table 1: Research Objectives	
Objective 1	Mapping the extent of the ridge network of the islands and north-west Scotland will use a combination of remote-sensing and GIS technologies. These will be used to assess the extent of historic, agricultural landuse of the anthropogenically modified organic soils of the Western Isles and North-west Scotland.
Objective 2	Having mapped the current and historic ridge systems, ground-truthing the data from the remote-sensing phase of the study will be undertaken. As part of the ground-truthing phase of the study the field assessment of the ridge systems will determine: history of development and distribution; method of construction; soil type and how these systems function.
Objective 3	The ground-truthed information will be utilised in developing indicative measures of the potential for increased crop production. Determination of the soil type and conditions within the ridges, both historic and active, will be used to assess the carbon sequestration potential within these areas.
Objective 4	Understand the multiple benefits (including ecosystem services) that these systems could deliver in achieving sustainability objectives for the island communities will be investigated through biological survey work and social study. Support for the project from national NGOs, local community trusts and SAC Consulting will assist with access to existing data sets to facilitate this objective.

Further Reading:

OGG Knox, T-J Marsden, S Warnick, MN Scherbatskoy, D Wilson and BA Harvie (2014). Seaweed and the reworking of old agricultural production systems to provide improved sustainability and ecosystem services. Delivering Multiple Benefits from our Land: Sustainable Development in Practice 206-214

O Knox, T-J Marsden, S Warnick, M Scherbatskoy, D Wilson and B Harvie (2013) Reinvigorating the ridges: a case study in North Uist. Aspects of Applied Biology 121, 125-132.