



# Fincastle: sustainable hill farming is the future

*Silvopasture in the uplands increases biodiversity, carbon sequestration and overall viability, writes Robert Barbour.*

Hill farming has always been a precarious pursuit, but rarely has its future looked as uncertain as it does today. The long-standing issues of low profitability and an ageing workforce are now being compounded by the multiple threats facilitated by Brexit, while the impacts of climate change are only just starting to be felt. To some, this is a major cause for concern—hill farming in different forms has, after all, been a key part of Scotland's social, cultural and ecological tapestry for millennia. For many others, however, a major reduction in the size of the sector is not something we should try to prevent, but actively seek to encourage.

The argument goes that we should not be supporting a costly, unproductive and often environmentally damaging enterprise, that is also currently preventing the large-scale reforestation needed to make meaningful progress on the climate and biodiversity crises. It is a view that appears to be increasingly held not just by campaign

groups, but also by some in the UK Government and its advisory bodies. There is, of course, a lot of validity to these arguments, including around the need for landscape-scale reforestation. But the assumption that solving these problems will require the complete removal of livestock from large parts of the uplands is not only incorrect, but potentially damaging. With enough imagination, there is enormous scope for Scotland's hill farming sector to become genuinely sustainable, and if our farm's experience is anything to go by, this includes a great deal of potential for on-farm reforestation.

We have been trying to prioritise profit margins over volume on our farm in Highland Perthshire for a number of years now. When my parents first started out close to three decades ago, the farm was run in a fairly conventional manner, but it quickly became apparent that this was not only inefficient, but also damaging to the environment. There were too many set-stocked sheep, too few cattle and too much money being spent on fertilisers—bad for the land, bad for the animals and bad for the balance sheet.

## A new direction

A change in direction was obviously needed, so we significantly reduced the sheep numbers and increased the numbers of cattle, enabling a move to a mixed rotational grazing system that made much more efficient use of our grass resource and dramatically reduced the need for anthelmintics (anti-parasitic drugs). We also made the decision to go organic, and while this has come with its downsides (the small amount of feed we buy in is exorbitantly expensive, for instance), it did force us to ditch the use of nitrogen fertilisers and start growing clover as the primary source of fertility.

All these changes have made sense financially—making a more efficient use of grass while minimising inputs has improved our margins, though we would still struggle to make ends meet without the agri-environment payments we receive for sensitively grazing our semi-natural grasslands. The biggest improvements, however, have been to our environmental performance. Changing our grazing system has driven a remarkable improvement in the condition of our species-rich grasslands, which are

Above, left to right: The planting pattern; Cows in the grass alleys between the rows of trees. Photos: Patrick Barbour.

now awash with wildflowers over the summer months. The elimination of avermectins (used to treat parasitic worms and insect pests) and other pesticides demanded by the organic standards also appears to have had a positive impact on the abundance of insect and birdlife. And we know from the carbon audits done on the farm that reducing our stocking densities and using clover has reduced our nitrous oxide emissions, while the move to rotational grazing and oversowing instead of ploughing when reseeded our pastures has benefited our soil carbon levels, offsetting around a third of our total emissions.

### Silvopasture works

These are all positive changes, and we are far from the only hill farm that has realised the benefits of a lower input approach that works more closely with nature. But none of these actions does anything to address the need for more trees in our uplands. The more 'traditional' approaches to farm woodland creation, namely the planting of shelter belts and larger blocks of commercial forestry, have a role to play in this—they have been important elements on our farm for generations. But they also involve the removal of livestock and so, if applied at the scales needed for meaningful quantities of carbon sequestration, will still result in a significant loss of agricultural production. This is obviously something which we—and most other hill farmers—do not want to do, not just because of the hit on our finances, but because it would reduce our livestock numbers to a level where we would no longer be able to keep our grasslands in good ecological condition.

This is where agroforestry—or more specifically in the uplands, silvopasture—could have an important role to play. Growing trees and animals on the same piece of ground is far from a new idea, but despite the widespread support it has received in recent years, examples of how silvopasture might work in a Scottish hill farming context remain almost non-existent. The main

template that has been used in grant schemes and modelling exercises to date is based on research plots from the 1980s which were never meant to be used as a model for production. If we are serious, therefore, about implementing silvopasture at scale in the uplands, more practical models need to be developed.

Twelve years ago, driven by a desire to grow quality timber without losing any grazing ground, we decided to



try just that. A mixture of native hardwood species was planted in a rowed pattern at a higher planting density than most other agroforestry models, with wide alleys left empty to provide some continued grass growth. All animals were excluded with stock fencing for a time, but sheep were allowed back in after five years, and cattle after nine.

So far, it has been a great success. The stock have benefited from the shade and shelter, but perhaps the biggest positive from an agricultural perspective has been the boost to early season grass growth provided by the trees' microclimate, a massive positive at a time of year when we are often tight for feed. The trees themselves are also growing well, and in time will provide us with a very welcome source of income through the timber and thinnings produced. We are already seeing benefits for

wildlife, and the hope is that we will eventually be able to achieve a level of species diversity akin to that seen in traditional wood pasture systems found in Europe. Perhaps the most significant benefit moving forwards will be carbon sequestration. Using Forest Research figures, we reckon that planting around 15 per cent of our farm with wood pasture (around a third more than at present) could offset all of our emissions—something which we can definitely achieve without any real loss of agricultural production.

### A vital debate

At a time when reaching or even surpassing net zero has become all important, this clearly represents a massive opportunity, not just for ourselves but for hill farms more generally. There is nothing unique that has enabled us to pursue this model of wood pasture—providing grasslands are being efficiently grazed, there is likely to be significant potential to 'reforest' poorer quality grazings with low biodiversity interest at scale on most hill farms, without the need for a loss of agricultural production and all the social, economic and biodiversity benefits that this can bring.

This is all doable, but it will require Government to recognise and support the various public goods that low input farming and silvopastoral systems can deliver in the uplands. The question as ever, then, is whether policy makers will take us in this direction, or continue to follow a siloed approach towards trees and livestock—and indeed, towards food production and other land uses more generally. The future of our farm, and many others across the Scottish uplands, will be defined by the outcome of this debate—if we genuinely care about the future of our uplands, I can only hope that we as a society take the former option.

*Robert Barbour is a Researcher for the Sustainable Food Trust. His brother, Patrick, captured the family's work on film, which can be seen at <https://vimeo.com/541541773>.*

Above: Fincastle. Photo: Patrick Barbour.