

Malvern Hills AONB Landowners and Managers Group Event

Soils event – 22nd September 2023 at Mathon Parish Hall

‘The Weatherproof Farm’

This event was an opportunity for farmers and land managers to hear from Niels Corfield, a soils specialist who has worked with farmers across the U.K to provide practical advice about improving soil health. The event was well attended with 20 people listening to the talk and taking part in a practical session in the adjacent field.

It was also a good opportunity to enjoy a sandwich lunch and to network, comparing notes with other farmers, landowners, smallholders and those from local and national organisations with an interest in soils. The audience’s farming regimes were varied, including organic arable and pasture, orchard and pasture, regenerative agriculture and more traditional set stocking. The majority of farmers and landowners grazed sheep and beef cattle, largely on heavy soils.

Notes:

Niels’ talk was titled ‘the weatherproof farm’ and was an introduction to the soil issues which can cause problems for pasture in extreme weather and what can be done about it. Niels’ starting point is that good soil health is at the heart of a profitable grazing operation and that measures to improve it often provide benefits to stock and to wildlife, as well as reducing costs and increasing profits for the farmer.

Niels believes that our pasture land can be a lot more productive if managed well and the U.K should be able to support more stock than it does, if we look after soil. Good pasture management can give increased profit by using natural (free) techniques to improve grass production and stocking rates and reduce costs by cutting down the use of fertilisers and reducing the amount of time stock are housed indoors.

Niels’ full presentation can be found on his website <https://nielscorfield.com/weatherproof-farm-download/> (Use password: WPF23) or see his [summary handout](#).

In summary:

1. Niels showed graphs revealing the link between wet weather and low yield and hot weather and low yield. Extreme wet and extreme heat lead to periods of low growth and reduced yield. Both are caused by poor soils and drainage, not the weather.
2. He showed slides of waterlogged pasture and sections cut down through them with a spade, revealing that below a sodden surface the soil may be completely dry. Where does the water go?

3. The rate at which water is absorbed from a field surface varies for different soil types and for the same soil type in different locations of the field being tested. Typically, undisturbed soils (e.g. next to hedges) absorb water better. Where the soil is compacted, through poor structure, machine tracking, animal hooves etc. the water doesn't manage to travel down through the soil, staying in the top few inches or running off the surface.
4. Ideally the structure of soil should be something like a crumble mix – an assortment of sizes so that water can flow through the 'grains' and air can be retained. This assortment of sizes can be produced by natural, chemical or mechanical means. A loose aggregate structure, long plant roots (which help to break up the soil) and the action of slime, gel and biotic glues which help soil particles to clump together, maintain channels which help water and air to move throughout the soil.
5. Where soils don't have a good structure there is a lot of standing water in wet periods and high run-off with nutrients being washed out of the soil.
6. Organic matter added to soil – straw, muck, compost etc. - can play a key role in holding nutrients in the soil and encouraging the soil bacteria, fungi and earthworms which provide these slimes, gels and glues.
7. Get to know your soil. Dig a few test sections with a spade and feel, smell and look at it. Carry out water infiltration tests to see if water moves through the soil.
<https://www.youtube.com/watch?v=IQGYisfPZI> Take a look at this video; they only take a few minutes to do.
8. Resting land is the key to creating healthy pasture – allowing plants to grow between grazing periods.
9. How can two identical acorns grow into an 80ft oak and a 2ft bonsai? If the top of the oak is continually pruned the roots can't develop. This is what can happen with continuously grazed grass – the short grass plant is the bonsai equivalent, always being root suppressed. If allowed to grow it will put down longer roots.

a. How can poor soil health be 'fixed'?

10. Aim for 'Boy Soil', the nickname given to soils so good that even a novice could get results.
11. Avoid compaction by machines. Think about back fencing, multiple field entrances and set tracks.
12. Think about animal 'stop' hot spots which get compacted by providing varied areas for shade, browsing and shelter. Move water troughs around if possible.
13. Rest the grass to encourage good roots on plants.
14. Ideally stock should be frequently moved within fields to let this happen. Divide larger fields into smaller areas and move the animals from paddock to paddock, allowing the grass to recover between grazing. The yields for pastures where animals are moved will generally improve, especially if the pastures can be grazed for a longer period as waterlogging/droughty conditions are reduced.
15. Use a seed mix which has some deep rooting plants where establishing/re-seeding pasture. Herbal leys can both build soil structure and help fertility.
16. Use mechanical means where necessary if the soil is compacted – slitting and aerating soil or using a spiked roller. Never work on soils which are too wet to work, always carry out mechanical operations when drier.
17. Chemical interventions may also be helpful e.g. gypsum and lime. These can help provide nutrients and improve soil structure. It's best to take advice about what to add and how much and always check the source of materials you buy in.

Questions and Answers:

- **Q : If cutting the grass on a lawn it tillers and grows strongly. How does this fit with the idea of resting pastures?**
- A: Grass may tiller if cut but what we are looking for is for the grass to put down long roots, which frequently cut grass won't do, so it doesn't benefit the soil structure. In addition, if the pasture has broadleaves (which are good for nutrients and root penetration) the stock will graze the new shoots out in preference to grass. Providing a period of rest allows them to grow.
- **Q: Moving animals frequently takes a lot of time. Is it realistic to do this?**
- A: Yes it is. There are now machines which can make moving stock easier – e.g. the Kiwitech power pack can send out and gather up a 3 wire electric fence at rapid speed – or you can set out fencing/place bales in your fields in positions which make moving stock easier. Include areas for stock to access water and shade. Planning your back fencing(to limit back grazing) will also reduce time spent on moving fences.
- **Q: How can I do a water infiltration test on my land?**
- A: Use the drainpipe test. Drive a pipe into your soil – any diameter is O.K. Pour in water to a depth of approx. 10cms and measure the time it takes for the water to drain into the soil. (use your phone stop clock) If your soil is in good health and not compacted the soil should absorb all the water within about 5 minutes (many will take much less) if it doesn't do this you may have soil problems. It's a good idea to dig a section with a spade close to the hole and take a look at the soil profile. This short video will show you how to carry out the test. <https://www.youtube.com/watch?v=IQGYyisfPZI>

This short session covered the basics of 'weatherproofing' soils. If you would like to know more Niels offers a range of courses, farm planning and advice see his website www.nielscorfield.com