

Regenerative Farming

Minimising soil disturbance

Practical Guide



Regenerative Agriculture is a set of farm management principles which put soil health at the centre of agriculture practise. Putting soil health at the centre of farming practices has many benefits including ecosystem service such as water filtration, nutrient cycling and increased biodiversity.

The concept of regenerative agriculture often involves reduced inputs and increased management to tailor inputs and operations to the soil's requirement.

This Practical Guide looks at the second principle of regenerative farming: Minimising soil disturbance

One of the basic principles of regenerative agriculture, is minimising the disturbance to the soil. This means avoiding farming practices that interrupt natural soil processes, including physical or chemical alterations.

Soils support a complex web of organisms, from bacteria and fungi, to nematodes, arthropods, protozoa and worms. Mechanical soil disturbance is especially harmful to soft bodied organisms, such as earthworms, and can result in biological simplification in the soil as only some organisms can cope with the damage.

Reducing tillage on a farm can help to promote good soil structure and boost the biological systems that happen in the soil.

For many years ploughing has been adopted by farmers due to its ability to consistently encourage uniform crop establishment no matter the weather. However, ploughing or power harrowing instantly disrupts the soils physical structure and provides oxygen to soil microbes which promotes the breakdown of soil organic matter which is important for soil fertility and aggregate stability.

For example, a highly tilled soil is often dominated by bacteria and often lacks in fungi. Likewise, excessive applications of fertiliser can unbalance the soil, leading to reductions in soil carbon and/or leaching of nutrients.

Definitions

Direct drilling: *drilling crops straight in to the stubble of the previous crops*

Minimum tillage: *using the minimal amount of cultivations to ensure crop growth e.g. Strip Tillage.*



Five Principles of Regenerative Agriculture:

1. Maintaining a living root
2. Minimising soil disturbance
3. Maximising crop diversity
4. Keeping soil covered
5. Integrating livestock

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Websites

www.farmingforabetterclimate.org

See also:

[Soil Regenerative Agriculture Group - Farming For a Better Climate](#)

www.farmingfutures.org.uk

www.ipcc.ch

www.agreacalc.com

www.soilassociation.org.uk

[Home | Scotland's soils \(environment.gov.scot\)](#)



Scottish Government
Riaghaltas na h-Alba
gov.scot



Benefits and drawbacks of reduced tillage options:

Benefits:

- Reduces risk of nutrient leaching
- Can help to reduce soil erosion
- Reduced fuel usage
- Increases soil organic matter content
- Moisture conservation
- High daily output

Drawbacks:

- Some soil types challenging
- Specialist machinery needed
- Establishment problems if root crops in rotation
- Grass weed control can be a problem
- Increased slug pressure
- Soils slower to dry out in the spring

Drill options:



Conventional

(plough & power harrow / one-pass)

- Reliable
- High input
- Maximum soil disturbance



Tine Drill

(Strip till)

- Option to remove surface compaction
- Best drill for conversion period



Disc Drill

(Direct / Zero till)

- Better seed placement
- Trouble closing slots
- Relies on a well structured seed bed
- High daily output

Reduced tillage or direct drilling might not suit every farm, it can depend on the soil type, rotation and farming practices. **It is important to consult an advisor before changing any cultivation methods.**

One issue that some farmers can have with minimising soil disturbance is fitting root crops into a rotation, especially potatoes. While the financial gain of renting fields for potatoes can be high it has to be weighed against the offset damage to the soil due to the destoning and harvesting. Crops that stress the soil (such as potato crops) require you to work harder to promote soil health during the rest of the rotation.

Key Points

- Takes time for change to happen
- Speak to others about their experience and equipment
- Some soil types are more challenging than others

