

Teagasc Notes for week ending Friday 17th April 2020

Teagasc Notes – Cathal Somers, ASSAP Adviser

Reducing Soil Compaction on Grassland Farms

Soil compaction results in the reduced ability of the soil to carry out the core soil functions that we depend on to produce food and reduce environmental losses to both water and air.

Compaction reduces pore space making it more difficult for water to infiltrate through soil, this leads to ponding and run off of sediment and phosphorus (P) to water bodies. Roots have to work much harder to find nutrients and water in soil with poor structure due to their movement being restricted, resulting in reduced nutrient uptake and economic losses on the farm.

How does compaction occur?

On the farm we may have a number of different soil types (free draining to heavy), it is important to remember that each area must be managed differently. The shoulders of the year is the most dangerous time as fields are wetter and farmers are tempted to operate heavy machinery or graze animals on the land which may be too wet, leading to tracking and poaching.

- Slurry spreading when ground conditions are not suitable
- Heavy machinery and continuous cultivation plays a major role in damaging soil structure on arable land
- Out wintering (forage crops/sacrifice paddocks) and relying on ploughing or other equipment to fix compaction, this type of practice can lead to compaction issues further down the soil profile, which is more difficult to fix.

Good grassland management:

Prevention

- Allowing mild compaction to recover naturally in first 15cm over a few months
- Avoid fields that are wet with animals (poaching) & heavy machinery
- Lower stocking rates & strip grazing (back fence if needed)
- Keep machinery work on land to a minimum
- Avoid trafficking the whole field
- Lighten the load, lower tyre pressures & increased tyre width

Mechanical intervention (last resort, see below)

Identify where compaction is before trying to fix it:

Poor production and ponding in a field tell us we may have a compaction issue. It is of vital importance to identify where in the soil profile the compaction is. Using techniques such as **GrassVess** (grassland) and **Double Spade** method (arable) can save a lot of time and money by identifying where the issue is, allowing the land owner to use appropriate methods to remediate the problem area.

Mechanical solution (last resort)

- **(Top 15cm)** grassland aerators, slitters and sward lifters
- Severe compaction in the top 25cm of grassland may require **ploughing** and reseeding
- **(>25cm)** Severe compaction below the plough layer - **sub soiling** can be used to alleviate issues down to 45cm. A major caution comes with sub soiling; only set the level of the leg to just below the compacted area and ensure this work is only carried out in dry conditions.

- Sub soiling in damp conditions can cause smearing, leading to a more serious problem. It is important to manage soil correctly after sub soiling in order to avoid re compaction by reducing load weight on land after sub soiling.
- **Field drainage** in wet fields that are prone to compaction can improve soil structure by reducing moisture and aerating soil, this will allow plants, soil and biology to function better leading to improved soil structure.

Grassland Farmer of the Year Winner

Last December the Overall & Sustainability Farming Grassland Farmer of the Year was awarded to Bryan Daniels from Kilkenny. The competition promotes excellence in grassland management and farms are scored on soil fertility, grazing infrastructure, grazing management, grass measurement, reseeding and sustainability.

The Kilmoganny native farms alongside his wife Gail and three children Shannon, Toby and Ely and operates a spring calving system milking just over 300 cows. Over the last 3 years they have grown an average of 17t grass DM / ha, whilst achieving an average of 10 grazings per paddock on their farm. This was the highest number of grazings per paddock in the competition achieved. There are some paddocks on the farm up to 1,000 ft. above sea level. Whilst they excel in all areas of grassland management, this has been achieved by maintaining a key focus on sustainability of their farm system.

The use of clover on the farm has led to a considerable reduction in compound Nitrogen fertiliser input. In addition, the Daniels are strong advocates for using Low Emission Slurry Spreading technology (LESS) and Protected Urea.

As winner of the Grassland Farmer of the Year award the Daniels will take part in a Social Media Takeover on Twitter and Instagram on Wednesday 15th April. On the day Bryan will give an insight into the various technologies and management tools used on farm to achieve grassland excellence while farming sustainably. Local Teagasc dairy advisor John Kilboyle highlighted 'The Daniels farm provides an excellent example of a family run dairy farm that can achieve a high level of technical efficiency which has consistently achieved top results over the last number of years sustainably. Tune in on various Social Media Platforms on the day to get a flavour of the farm for yourself.'

