



North Ayrshire Monitor Farm Meeting June 2018

Soil management and compaction – Bill Crooks SRUC

The main purpose of the day was to see de-compaction equipment in action, to ensure that we were not conducting “recreational subsoiling” I ran through my standard checklist when evaluating a grassland field. The field chosen for the day is close to the steading and used for permanent grazing with a high stocking density all year round. John has noticed that the drainage has declined with land staying wetter for longer following rain and holding more water over the winter and in the front end.

First priority was the state of the drains, there have been changes to the drains and it was recommended that John chase up a drawing of the new system so he can understand what was done. Also, the importance of clearing your outfalls and confirming they are running after a rainfall was discussed.

Second was a review of the soil analysis results. It is important to make sure you check the soil pH and nutrient status prior to investing in a field to ensure you maximising that investment. The pH was very low and John has responded by establishing a liming program. The P and K levels were also high or on target and the importance of good nutrient management was discussed as there is an opportunity for John to save on fertiliser costs.

Third was digging a hole as this is an absolute must before you do any type of cultivation or de-compaction. You should be able to dig and find the problem before you try and fix it. This is also important when bringing a grass field into rotation to make sure your cultivation plan is fit for purpose. In this case we found a distinct cow pan from the surface down to about 10 cm. The rest of the topsoil layer was firm as was the subsoil which is typical in old swards that receive a lot of traffic. The maximum rooting depth was poor at about 15 cm which is due in part to how the grass is managed but the cow pan and firm topsoil below is also a factor.

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Fourth is devising a plan and making sure you have the right equipment for the job. Remember your thinking should not always be limited by what equipment you have on farm already. Investing in new kit or use of a contractor should always be an option. For this field I recommended that John make sure his drainage system is working, consider subsoiling to reconnect with the drains and bring the field into rotation or do a full reseed. John feels that this is not an option at this time so the priority is to knock out the cow pan but I still recommend that subsoiling at some stage be considered.

On the day we had three distinct types of equipment:

- sub-soiler,
- sward lifter
- soil aerator

For John's field the most appropriate tool to knock out the 'cow pan' is the sward lifter which should be set to run at a depth just below the compacted layer. It is important to remember that these three different types of equipment are designed to do different jobs. The subsoiler is mainly a drainage tool used to reconnect with your drains or to loosen up subsoil and typically runs at depth below 35 cm, the sward lifter should be used to target compaction in the topsoil layer and should be purpose built for this. Trying to use a subsoilers to de-compact topsoil will be inefficient and can cause more problems. The aerator is for sward management rather than soil de-compaction, it helps open up the sward and allows air down to the grass roots which will help the grass deal with the compaction. Aerators can sometimes help with repairing swards damaged by de-compacting but primarily they should be used to help maintain healthy swards. The importance of only conducting these types of field operations when the field conditions are right was discussed. Too wet and you will make the problem worst and too dry may cause excessive soil surface heave and root damage leading to sward death.

Bill Crooks

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