

## MORAY MONITOR FARM Analysis of Different Tyre Pressures and Effects on Soil Compaction at Corskie

### THE CHALLENGE

The Morayshire Monitor Farm management group have been very focused on improving soil as part of the Monitor Farm programme. Soil is such an important part of growing a successful crop and has been looked at in depth during the project at Corskie, so far. The management group wanted to look at the effects that tyre pressure has on soil structure and look at ways in which soil compaction could be reduced

### WHAT WE DID ON FARM

The Corskie team prepared two strips of cultivated land by ploughing and levelling it with a cultivator. Tony Powell from Michelin Tyres then worked with the Corskie team altering tyre pressures on tractors and demonstrating the effects they have on footprint and soil structure by driving over the cultivated areas for comparison. Several tyre pressures were demonstrated on tractors, trailers and also using the dual wheels.



After the meeting was complete Iain, Derek Hanton and Samantha Stewart measured the level of compaction at each of the different tyre pressure sites to gain an idea of the levels of compaction that has been caused below the surface. These were measured using a DICKEY-john Soil Compaction Tester at approximately 3", 7" and 10" below the soil surface. The soil compaction tester measures the pounds (lbs) of pressure applied per inch<sup>2</sup> to move through the soil, e.g. the higher the reading suggests increased compaction. This gave an indication of the severity and depth of compaction caused by the different tyre pressures and equipment used on the trial day.

# THEME REPORT



## RESULTS

The results generated a lot of discussion during and after the Monitor Farm meeting. The full results and photographs of each tyre footprint are [available here](#) but have been summarised below:

- Dual wheels caused the least soil compaction;
- The tractor hauling a loaded 8t trailer with super single tyres at 80psi caused the most deep compaction, under the soil surface.
- The tractor hauling a loaded 8t trailer with floatation tyres at 22psi caused the most surface level compaction.
- The lower the tractor tyre psi, the less compaction was witnessed in the field trials.
- Lower psi distributes weight over larger area, therefore reducing pressure/compaction on the soil.



Working with the correct tyre pressures has many advantages, as follows:

- Reduced soil compaction (as demonstrated) = better yield, drainage and a more even crop;
- Reduced wheel slip in the field = fuel cost savings by reduced fuel consumption;
- Increased working season, especially in wet sowing/harvest period;

# THEME REPORT



- Improved grip/stability on the road and better self-cleaning of the tyre tread in the field;
- Savings could be made by reducing tyre wear and risk of damages.

## WHAT HAS CHANGED ON FARM

After carrying out this project, Iain and the Corskie team now alter the tyre pressures in many of the tractors, particularly when completing a lot of arable work and in wetter ground conditions. Iain is also an advocate for using dual wheels when sowing, especially when the ground conditions are wetter, as it reduces soil compaction effects and can allow access onto the ground earlier. In addition, Iain fitted a system which allows tyre pressures for all four tyres to be altered from the cab in the latest tractor purchased on the farm. This will allow optimal tyre pressure for completing field tasks, adjust to ground conditions, tweaks for road use and fuel use savings. In future Iain plans to add this feature to additional tractors on the farm once they come up for replacement.

### FACILITATOR CONTACT DETAILS

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