Cultivation

It's that time of the year again, as you drive around the country side many farmers are busy working up paddocks for a summer crop, cereals, or maize. Getting the tractor out of the shed is the easy bit, but do you know if the soil moisture levels are right for ploughing. Get this wrong and not only will you pay for it with reduced yields and increased number of passes, but the affects on soil structure could last for several years.

Primary cultivation must be done at the correct moisture levels and not because it is the second week of November. If you undertake ploughing when the soil is too wet, the wetness will prevent the soil from fracturing and you end up with a mass of very large pods. It also will cause smearing and the formation of thin plough pans that reduce water infiltration. As a consequence water will sit around in the plough layer and on the surface. If it sits around long enough you can get anaerobic (no oxygen) conditions. Soil temperatures will be particularly slow to rise and could affect crop seed germination times whilst potentially increasing weed seed germination rates. And at the end of the crop you will blame it all on the season and not your bad timing decision to get the tractor out of the shed.

It's about now I can hear you say that you have been cultivating the same way as Granddad George did it back in 1946 and it is not that complex. You're right, it is not complex but why do so many farmers get it so wrong. The problem with many New Zealand soils is that they are "Sunday soils" - too wet to cultivate on Saturday and too dry on Monday. Below describes a simple test you can do to ensure you have it right. Getting this right will save you money with increased yields.

To assess if soils are suitable for primary cultivation, take a piece of soil (half the volume of your index finger) and press firmly to form a pencil with your fingers. Roll the soil into a 'worm' on the palm of your hand with the fingers of the other until it is about 50 mm long and 4 mm thick. Exert sufficient pressure with your fingers to reduce the diameter of the worm to 4 mm in 15 to 20 complete forward and backward movements of the fingers. Conditions are suitable for cultivation if the soil cracks before the worm is made, or you cannot form a worm (for example, in sandy soils). The soil is too wet to cultivate if you can make a worm. It's that simple.

Conditions are right for secondary cultivations for seedbed preparation when clods can be easily broken in the hand. Cultivating at the right soil moisture content maximizes breakdown of clods, helps to preserve soil structure, and allows seedbed preparation with a minimum of passes.

Clods that are too dry won't break down with further cultivation to give a fine seedbed. If cultivated too wet, clods will simply deform and pancake under wheel traffic.

Good timing is essential to prepare a good seedbed and help maintain soil structure by encouraging the soil to fracture along natural fissure plans.

One of the other big mistakes that can occur at cultivation is ploughing too deep. This occurs when you bury the topsoil under some sub-soil. The topsoil contains all the goodies for plant growth – better physical structure which helps for root penetration and moisture holding capability, organic matter, soil nutrients etc. The list goes on. So why do farmers want to bury it below something that is far less inviting as a plant medium and pay for it with reduced yields? If you have shallow topsoil depth and ploughing will bury it, then consider another cultivation technique or direct drill it.

Your soil is your greatest asset. Some soils are more forgiving than others. How you treat your soil will dictate how much crop or grass you will grow. And this obviously influences your bottom line.