

Why treat your soil like dirt?

Some of our urban cousins think milk comes from a bottle and there are others who think milk comes from grass. Actually, soil is the power-house of any farm, not the grass - it is your biggest asset, so why do many farmers treat their soil like dirt?

Soil has many important physical aspects that hugely influence the ability to produce grass and how it can be treated. To get the best out of your soil, there are some characteristics you should consider. The next time you dig a post hole, have a good look inside the hole and check out some of the physical properties of the soil. This will tell you a lot - some of the things you can and can't do without compromising the soil's ability to grow grass.

Texture

All soils contain a mix of sand, silt and clay particles – this mix is called soil texture. It will vary for different soil types, for example, a 'loam' contains equal proportions of sand, silt and clay, whereas a 'silty clay loam' contains roughly 60% silt, 30% clay and the rest sand.

There is not much you can do to change the ratio of these fine particles, but it is important to have an understanding of what the textures of the various soils on your property are and what it means for you. Texture affects drainage, structure, nutrient holding capability, and how much pressure a soil will handle from cultivation or grazing with heavy cattle at different moisture levels, or even the ability to hang on longer under a drought. Texture should even influence your fertiliser policy.

Texture even influences land use. If you have a clay textured soil, for example, and you want to run an intensive bull system, you need a plan for wet periods, or you should sell the farm and buy one more suited.

Structure

Soil structure is the building blocks of the soil. Its how sand, silt and clay particles are packed together and how much pore space is available between them. Soil structure is important for root growth and drainage.

Soil structure is something your farm management will have a huge effect on. Look after your soil structure and the soil will look after you. Treat soil structure like dirt, production will slide, and soon you can forget about the summer holiday at the beach!

Activities that destroy soil structure include pugging, compaction, and over-cropping. These activities reduce pore space, inhibit drainage, decrease worm numbers and activity, and affect the ability of plant roots to grow and seek out moisture, nutrients and oxygen. Destroying soil structure can drastically reduce pasture production and crop yields rapidly. We were at a property in the Manawatu recently where just one pugging event reduced pasture production by 50% for over three months. And this was from just one night of leaving the steers on a wet clay loam.

Colour

The colour of a soil can give some hints to the drainage characteristics and what plants or crops could be grown.

In general, the darker the colour, the greater the amount of organic matter. This is why the top soil is generally darker than lower horizons. Greyish-blue coloured soil, with scattered rusty, orange spots (mottles)

suggest that the soil is water-logged for most of the year, while a browner soil, with the same mottles indicates water-logging occurs over only short periods. Free draining soils will have no mottles.

Sharp colour changes indicate a change in soil properties, such as a clay pan, affecting drainage ability and maybe root growth. The depth of the change will influence the types of crops that can be grown. There were many 'Queen Street' farmers in the eighties that got burnt investing in kiwifruit without checking to see if the soils were free draining. Digging a hole could have saved them thousands of dollars. Currently there are farms being converting to intensive bull beef systems that are coming unstuck because simple, basic checks are not being done.

Soil consistency

Soil consistency is how tightly the soil particles are stuck together. This is influenced by texture, the type of clay minerals present, the amount of organic matter, and the soil moisture content.

You all know that soil behaves differently depending on how wet it is. From too dry, where large clods remain intact during cultivation; to moist soils that form a good seed-bed (like crumbly breadcrumbs when crushed in hand), to wetter soils that compress and stick together when cultivated; through to soil that is liquid and oozing water.

For safe cultivation, or even grazing with heavy cattle, it is important that soils are not too wet. This can easily be determined by rolling a sample of soil into a worm 2-3 mm in diameter on the palm of your hand. If the thread forms without breaking, the soil is too wet and would be damaged.

What this all means

To get the best out of your farm, you need to identify the different soil types on your property, so that areas can be managed according to soil properties to maximize pasture production, pasture utilisation and the returns. Each soil type has strengths to offer your farm business. It's a matter of identifying these and maximizing the opportunities waiting for you under the ground. There is no need to treat your soil like dirt.

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