

### GROMOR JULY 2016 NEWSLETTER

#### EARTHWORMS AND "SOIL LIFE"

It was the controversial Darwin who found that in an average English soil, earthworms brought to the surface about 10 tons of castings per acre per annum. The difference between our soils and English soils, is that on average our soils contain less than 1½% soil organic matter (SOM), whilst the average English soil has over 5%. In most of South Africa we have not looked after our soils, believing that nothing more than chemical fertilizers were required. Earthworms render the soil permeable to rain, mix organic matter thoroughly and are excellent subsoilers.

Earthworm digestion of plant organic matter helps in humus build up from inactive carbon, making unavailable nutrients, available to plants. Humus does not only make the availability of nutrients naturally found in the soil more available, it also improves the "storage" and uptake of nutrients from chemical fertilizers.

An example of the better nutrient availability is the concentration of nitrate nitrogen, which is up to 8 times higher in worm castes than in surrounding soil (Why? Probably the result of the earthworm gut microbes being able to convert ammonia N to nitrate N, the form in which plants use nitrogen, as well as the high cation exchange capacity of the surrounding humus that the earthworms have helped form, greatly reducing leaching).

Earthworms thrive on SOM, which increases with "no-till", leys, green manures, composting, application of organic fertilizers etc.

In a normal arable soil, there can be a total of between 10 and 100 kilograms of earthworms in a square metre.

The "soil tillage" carried out by earthworms greatly increases the macropores (diam >0,5mm), creating a network of channels, which can amount to a length of 500m per square metre, stretching down to depths of 3m. In carrying out this "tillage", earthworms move a considerable amount of soil to the surface as worm casts. Earthworms dislike tillage, pesticides, soil compaction etc. The effect of ploughing or "turning the sod" causes much debate. A study done on this, found that ploughing carried 10% of the total mass of earthworms in the plough layer to the surface, where one third of them were consumed by birds (who had a right royal feast!) whilst two thirds managed to escape back into the soil! (injured, I'm sure!) (SA Groente and Vrugte January/February 2016 et al)

The estimated number of earthworms per acre in soils at the Rothamsted Experimental Station in England is roughly 0,5 million in unmanured land and 2,75 million in manured land.

There is a whole living world down there under your feet that you cannot see, but which needs your support to survive. Don't ignorantly destroy it, before it destroys you!

#### GMO'S

Contrary to what you may have thought after reading the opening piece on earthworms. I believe that there is a place for GMO'S, herbicides, insecticides, inorganic fertilizers etc.

"NO TILL" cultivation practices utilising the GMO ROUNDUP READY maize variety has made it practical to cultivate NO TILL maize over big areas and in this way significantly increase soil organic matter and with it earth worms. Remember earthworms don't like the sod to be turned or compaction, which inevitably comes with standard cultivation.

Just in case you don't know how it works, the ROUNDUP READY maize cultivar through its modified genes can tolerate being sprayed with the broad spectrum herbicide ROUNDUP, which kills all the weeds in the maize lands leaving the maize to grow out strongly in a weed free land, without tilling. This stimulates the build up of soil organic matter and with it soil life.

Some people argue that ROUNDUP (glyphosate) is a poison that stays in the soil forever doing "damage". Well, it doesn't affect crops planted directly after the maize and just to check that it does breakdown in the soil I

contacted Dr Charlie Reinhardt at Pretoria University who confirmed that glyphosate firstly breaks down to AMPA and subsequently to its constituent parts: C, P, N and O<sub>2</sub>, through micro organic action in the soil. These are not toxic.

#### **LOOKING FOR SOMETHING TO PLANT:**

If you're in a frost free area, try some beans.

Dig in GROMOR COMPOST 1 x 30dm<sup>3</sup> bag/5m<sup>2</sup> to 10m<sup>2</sup> together with GROMOR ACCELERATOR organic fertilizer pellets at 150g/m<sup>2</sup> into the bed.

Plant seeds 2cm deep in rows 50cm apart, with 5cm between plants. Once germination takes place, keep the "bed" moist with a weekly watering. Trellis, if it's runner beans you've planted.

Using the above land preparation, one can also plant beetroot, carrots, cucumbers, melons, pumpkins, marrows, tomatoes, peppers and potatoes.

#### **LIMING**

I've always been an advocate of liming acid soils so as to make trace elements and phosphate more available, in addition to inhibiting the toxicity of free aluminium and manganese so prevalent in acid soils. What I hadn't realised, is that liming also enhances nitrogen utilisation by making conditions more favourable for nitrifying bacteria, which convert ammonia nitrogen from fertilizers like Urea, LAN and Ammonium Sulphate to nitrates, the form of nitrogen used by plants.

#### **IGA (Intensive Growers Association)**

The venue for the IGA Symposium has been moved to Cedara. The date stays the same 21 July 2016. We have some top class speakers lined up for what promises to be a very interesting day.

1. Paddy de Vries a top rated hydroponics expert will be there together with Canadian Colleague from Cravo.
2. Prof. Mark Laing will be present a paper on Fusarium and other problems. Mark worked at the UKZN Agric. Faculty for many years, before going on his own developing ECO-T and other associated products.
3. John Sandison, and Mike Way will also be giving presentations.

For further information e-mail Marieke Mendes at [Marieke.Mendes@dubetradeport.co.za](mailto:Marieke.Mendes@dubetradeport.co.za).

#### **GROMOR MONTHLY NEWSLETTERS**

Odd people read my newsletters from time to time and have requested to receive them via e-mail on a monthly basis.

In view of this I have asked Angel to open an e-mail address file for anyone interested. Contact Angel at [gromor@iafrica.com](mailto:gromor@iafrica.com) and ask for the service.

#### **PS JOKES**

I also often get asked why the jokes appear as a PS below my signature. The reason is that they are not original and so I felt that I could not sign for them – they come from Susan, who thinks them out!

Regards,

**GROMOR (PTY) LTD**

R. Hagen

PS: Shame, a well dressed man was watching a weather beaten tramp fishing in a puddle outside the local pub. Feeling sorry for the guy he invited the old man in for a drink.

As they sipped their drinks the gentleman thought he'd humour the old man and asked; "so how many have you caught today?" To this the old vagabond replied "you're the eighth!"

PPS: Scottish Mother visiting her newly emigrated son in his apartment in New York. How do you find the Americans son? "They're very noisy mum, screaming and banging their heads against adjoining walls all night" "How do you put up with that my boy?" James: "What can I do?" I just lie in bed playing my bag pipes quietly!!"