
1

2

Going biological rewards wine farmer

Saying goodbye to conventional farming practices and mastering biological farming principles, is not an easy mind shift. But for Mr Fritz Breytenbach, a wine and fruit farmer from Robertson, farming is once again a profitable adventure because of this change.

FARM INFORMATION

LOCATION: Robertson, Western Cape

NAME: Middelplaas and Wakkerstroom

SIZE: 210 ha altogether (veld included)

OWNERSHIP: Middelplaas: company; Wakkerstroom: owner

DIVISIONS: Grapes, peaches, apricots

SOIL TYPE: Shale to river alluvial soil

AVERAGE RAINFALL: 285 mm per year

Albert Einstein once said a problem could not be solved with the same thinking that initially caused the problem. Seven years ago Mr Fritz Breytenbach (76), a wine and fruit farmer on the farms Wakkerstroom and Middelplaas near Robertson, made a decision to tackle his farming problems biologically and to not continue with his unsuccessful conventional methods.

"When you make a paradigm shift, all knowledge becomes void. You must acquire knowledge and experience anew, otherwise you can't make the shift. I think it is similar to a second marriage – you have to begin all over again," he says.

On the table in front of him is the source of this "new knowledge"; books that he "has swallowed up" by authors such as Gary F. Zimmer (*The Biological Farmer*), Neal Kinsey, Graeme Sait (*Nutrition Rules!*) and Charles Walters (*Weeds. Control without Poisons*).

"Step by step I was initiated into a world of thinking that was in direct conflict with the world and farming around me. It was a great adventure …"

Fritz then began to apply biological farming practices.

"Feed your soil and do not use degrading practices. Over time the soil will once again be able to feed the plants. You farm with soil, a living organism. If you don't respect it, it is going to unload you along the way."

This turnaround was not always easy, but the results made up for it.

The carbon count on Middelplaas improved from 0,07 ppm to 0,47 ppm, and then to 0,81 ppm. Last year the white wine grape harvest was 64,34% better than 2014, and 30,22% better than 2013.

In 2013 the gross income per hectare of white wine grapes of Middelplaas was >R75 000 and already the highest out of 59 supplier farms at the Ashton Cooperative Wine Cellar. The wine buyers were also queuing up and their reaction usually was: "The analyses is without comparison. We don't need to add anything in the cellar."

In 2012 Fritz began to write down his ideas and experiences. These documents are stored in a thick file that he wants to leave to his son, Fanie, one day. In one "letter" he mentions what is vital for soil life: oxygen, moisture, organic matter (food for bacteria and fungi), a consistent temperature, minimum or no tillage, the absence of poisons,

"It is similar to a second marriage – you have to begin all over again."

1. Natural vegetation is used as a permanent cover crop in the vineyards. No herbicide is tolerated.

2. Some of the books that convinced Fritz to move away from conventional farming practices and rather implement biological principles.

3. Chemistry plays an important role in biological farming. Fritz says without it you cannot balance the minerals and trace elements in your soil.

4. Fritz farmed near Robertson for more than 50 years before he decided to go the biological route. It has benefitted him tremendously.

5. Mr Fritz Breytenbach says that herbicides destroy soil life and that "problem weeds" are only a reflection of the poor condition of the soil. He no longer has any curly dock, flax-leaf fleabane or common blackjack on his farm.

LBW ASKS ...

MR FRITZ BREYTENBACH

WHAT LESSONS DID YOU LEARN?
You must admit that soil life is the most important part of your work. You cannot balance the minerals in the soil overnight.

WHAT ARE THE BIGGEST CHALLENGES WHEN YOU MOVE FROM CONVENTIONAL TO BIOLOGICAL FARMING PRACTICES?
The compaction and general degradation of the soil through conventional cultivation and the use of herbicides and the wrong fertilisers. Also, to see weeds as an asset.

a soil pH of 6 to 6,5, not too much sodium, no waterlogging, plant life (the feeding of microbes on roots), calcium rich soil, the correct calcium:magnesium ratio, well aerated soil, not too little carbon, and the use of a biologically friendlier fertiliser.

With all this in mind Fritz implemented an action plan to encourage soil life in the soil on the farms. The first step was to do a reliable soil analyses, whereafter they did not only look at shortages, but also at imbalances. In order to make sensible decisions, he takes soil samples every year.

Initially the calcium level of the soil was too low and the magnesium level too high. The sodium level was also high. Calcium helps, amongst others, to open soil pores for better aeration. "Twice a year we administered about 2,5 tons gypsum per hectare. It contains the minerals and elements that can help to remedy a deficit."

In 2013 soil samples showed that the pH of the soil was becoming more uniform, although it was still high in some places. The calcium level also increased.

Seven years ago Fritz installed Puricare's Soilcare Unit with activated oxygen ("Activated oxygen triumphs over nematodes", LBW, 12 March 2010). This laid the foundation for his biological farming practices.

The unit maintains the irrigation system and prevents blockages, ensures even distribution of water and fertilizer, aerates the soil and stimulates soil life, which ensures that organic fertilisers and additives for soil health will be more effective.

WEEDS AS A COVER CROP

Natural vegetation is one of his most valuable allies and helps, amongst others, to keep the high sodium level in check, aerate the soil and keep soil temperature more consistent.

For many years Fritz sowed cover crops (oats and triticale/"korog") and sprayed herbicides on the ridges, but eventually he realised that it did not help one bit with soil fertility. The carbon content of the soil at the time, despite the crops, was only 0,07 ppm.

"Is this how you improve soil?" he wondered.

His first thought was to switch to organic fertiliser, but compost was expensive and not always effective, especially if it lies on top of the soil. His micro-irrigation also caused straw to disintegrate too quickly.

Fritz found the answer in permanent cover crops - common "weeds". Now he does not have to buy seed, prepare the seed beds or spray the weeds anymore.

"It's funny how we call something a cover crop if we sow it in the vineyards, but what God sows, we call weeds! It is useless to fight against seed. You must ensure that your microbial life is sustained at all costs, in other words you give them food and a home. Natural vegetation is ideal for that."

He practises no weed control apart from mowing the grass with a bush-cutter. The grass is left on the tyre tracks to help prevent compaction.

"If you want to heal your soil you cannot poison it continuously. The 'problem weeds' are only a reflection of your soil. If your soil improves, they disappear by themselves."

Weeds such as curly dock, flax-leaf fleabane and common blackjack "moved" off his farm. He now mainly uses Van der Merwe grass as a permanent cover crop.

"These weeds are, however, useful in the transient phase because they supply food to the microbes. They also keep the soil temperature more consistent, which is good for the microbes."

Weeds, however, compete with his vineyards for food and water. Fritz said they did not suffer crop losses because of the competition, but he could see poorer growth, especially in early spring, in the vineyard. The weed material keeps the soil cooler and this delays budding. Foliar nutrition and the correct chemical substances (Omnia's Vita NS40 with nitrates and ammonium) stimulated growth, but as his soil structure improved, so did the ability to retain water, which in turn made this resource more readily available.

Fritz also learned his lesson as far as tillage was concerned. "Every time after the soil was turned or a ripper was used, the soil structure became so poor that you could make bricks with it and the grass did not want to grow. The microbial life that must keep the soil loose, was being injured."

Within two years his policy of minimum tillage paid dividends.

Things began to change when he stopped tilling and since 2012 the production average on Middelplaas has been almost 30 t/ha. "It is tilling that injures the roots that feed the plants and provides access to nematodes. The oxygen-ethylene cycle is destroyed, as well as the working of the mycorrhiza after harvest. It makes no sense to me to continue with nitrogen fertiliser for cover crops, because it breaks down organic matter and reduces carbon."

Fritz has been using Karabos's Soilhelp packs containing various beneficial microbes since 2011. He administers it through irrigation. He also sprays Karabos's microbes that suppress snails on his ridges. "It was highly successful. You still see snails, but not even R5 of damage and that without snail bait."

Karabos's biochemically activated bio-nutritional products, such as RootAktiv and Vigor, also help to stimulate growth.

It saddens him when he sees how farmers destroy soil life with 'good' soil preparation and 'good' farming practices.


1


2

USE THE CORRECT CHEMICAL AGENTS

"You can't balance your soil with manure or compost. You need chemical agents. The answer is the correct chemical fertiliser to balance the soil and that is not harmful to soil life," he says with reference to his raised carbon levels.

"Farmers use fertilisers that harm soil life. Most fruit farmers, for example, use potassium nitrate as a fertiliser for fruit size, shelf life and Brix count. They do not, however, look at their calcium level. Calcium combines with the nitrate and can be absorbed, but can also leach out. When the calcium level drops too far, the ratio of magnesium to calcium becomes too high. This leads to soil compaction, which in turn leads to plants such as curly dock becoming the dominant weed.

"If we try to kill curly dock by spraying, we again harm soil life, and more compaction, waterlogged soil and a total lack of oxygen become the norm."

Fritz says if you use potassium sulphate instead of potassium nitrate, the sulphate will combine with the magnesium. The magnesium level will drop and this will lead to a better calcium:magnesium ratio. "For too long we have ignored the role of calcium and trace elements and continued only with NPK."

THE PERFORMANCE OF VARIOUS GRAPE CULTIVARS ON THE DIFFERENT FARMS (TON/HA)

Cultivar	2013	
	Middelplaas	Wakkerstroom
Chenin blanc	29,11 (all blocks are older than 20 years)	-
Colombar	41,3	-
Ruby Cabernet	39,25	-
Sauvignon blanc	46,482 (record yield)	-
Merlot	26,15	27,939
Chardonnay	23	22,469
Wit Muskadel	-	34,537
Cabernet Sauvignon	-	27,5
Shiraz	-	34,689

FOLIAR NUTRITION

While the soil structure is recovering, they also administer foliar nutrition. "The soil stayed cold in spring for a long time because of the cover crops and therefore root growth began late. If I did not administer foliar nutrition, there definitely would have been production losses."

They also spray boron and calcium (Calmag + B + Liquibor) early in spring to ensure the best possible fruit set. This is supplemented with a product that contains the necessary trace elements in organic form.

POOR ESTABLISHMENT

Fritz says poorly established vineyards with a short lifespan were a serious problem. They tried to solve this in various ways, including using plastic, as well as chemical and mechanical weed control, but with limited success.

"I then had a look at what bacteria were absent from the soil, as well as how to put them back in order to improve the availability of nutrients. We therefore looked at soil

1. Numerous small roots under the surface.

2. Even when dew falls during the night the thick mat of natural vegetation in the vineyard becomes soaking wet and the plant roots can utilise the moisture.

3. He uses the Puricare unit to introduce activated oxygens into the water, which benefits soil life.

4. Even the peach orchards on the farm benefitted from the biological principles. This year the fruit were exceptionally large.

5. Fritz is a real horse lover and has completed the Faurismith endurance ride a couple of

root diseases and the available nutrition. It worked like a bomb!"

His modus operandi is: he does not fertilise after harvest. If necessary, each alternate row gets 2 tons Langfos organic fertiliser per ha (the previous year these rows were given chicken manure).

On the rows that did not get chicken manure the previous year, he administers on average 10 m³ chicken manure per ha. It is strewn between the tyre tracks so that the sodium and antibiotics do not end up on the ridges. All river soils and some of the shale lands get 1,25 tons Kolkiesrivier gypsum per ha.

The next step is to administer Complex Root (humic acid) and Vita NS40 at 50 kg/ha through the water.

With the fourth and fifth irrigation Omnia's Vita K is administered, together with Vita NS40 on the river soil.

Just before budding Fritz sprays the Soilhelp pack (consisting of biofulvin acid, Trichoderma, live fungi and live bacteria). Afterwards he "washes" it in with micro-irrigation.

PRODUCTION

Fritz says when he looks at the news reports about the difficult times wine farmers face, it becomes clear to him that farmers will have to be more productive to survive.

He believes he has proved that high yields do not necessary lower quality. Ashton Cooperative Wine Cellar paid him a bonus in 2013 for the outstanding Ruby Cabernet grapes he delivered to the cellar. "It was exceptional, because it was a block of 1,1 ha that yielded a harvest of 39,25 t/ha with a sugar content of 25,77 degrees Brix and a pH of 3,51. You could only expect a good wine."

Even more exceptional are the five vineyard blocks (Muscadel, Chenin blanc, Tintas, Chenel and Colombar) older than 20 years that all yielded 14% to 44 % more than in 2014. The Colombar block is the oldest on the farm (32 years) and yielded 27 t/ha in 2014 and 2015.

NEMATODE CONTROL

Experience taught Fritz that nematodes reappear within three months after chemical fumigation.

He prefers to use Karabos's nematode pack. All types of nematode, from root-knot to spiral nematode counts are now very low in his soil. "I wonder where I would have been if I had continued on the chemical path."

He is adamant he will continue on the biological path. It saddens him when he sees how farmers destroy soil life with "good" soil preparation, "good" fertilisation and "good" farming practices.

"Where is the knowledge to stop this? It is difficult to get farmers and consultants to change their way of working and thinking. There is a saying: 'It makes no sense to teach a pig to fly; he can't fly. You just irritate the pig." **LBW**

ENQUIRIES: Mr Fritz Breytenbach, email: **fritzlouise@lando.co.za**; tel. **023 615 1956**.

This article was originally published in Landbouweekblad*, 12 February 2016.*