‘Don’t be scared to invest in technology’

Multiple KwaZulu-Natal Super Soya Competition winner Andrew Fyvie consistently gets the best from his 2,034ha farm between Winterton and Bergville. He attributes his success to a combination of technology, no-till and crop rotation. Lloyd Phillips reports.

"Farmer’s shouldn’t be scared to spend money on technology that’s been designed to improve yields," says Andrew Fyvie, the 2008/09 winner of the annual KwaZulu-Natal Super Soya Competition. He won in the categories Highest Yield and Highest Gross Margin under rainfed conditions. He also won the competition’s Highest Oil Content category for the whole province. In total, he has won five times in various categories of the Super Soya competition.

Andrew is a third-generation Fyvie farmer on Tregenna farm between Winterton and Bergville, after his father John and grandfather Louls. Tregenna is around 2,034ha in total, of which 400ha is used for cropping white maize and soya beans in summer and wheat in winter. Some 340ha of this are under centre-pivot irrigation and 60ha are rainfed. The balance is natural veld where Andrew’s stud and commercial Santa Gertrudis beef herds graze.

The farm gets an average of 702mm of rain a year, and the soil types are mainly Hutton and Avalon. These soils have similar clay contents of about 30%, but Avalon tends to dry out faster than Hutton. Both are well-drained.

Managing for bumper yields
For the past 10 years, the farm’s average soya bean yield has been 4.2t/ha. For the same period, the average yield for irrigated maize has been around 11t/ha, and for rainfed maize about 7.5t/ha.

Andrew is a third-generation Fyvie farmer on Tregenna farm. In addition to maize, soya beans and winter wheat, he runs stud and commercial Santa Gertrudis herds.

Andrew has won in various categories of the annual KwaZulu-Natal Super Soya Competition five times. He says technology has been a great help in achieving good results.
"I use no-till, so for me grid sampling is the first important management tool to improve yield," says Andrew. "In this area, it's not financially viable to have soil pH over 4.5. I focus on properly managing soil acid saturation, and I aim to keep it below 5%.

In Andrew's opinion, if a farmer wants to stay in no-till, it's pointless focusing on liming if there are also phosphorous and potassium problems. He explains that lime will allow crops to better utilise nutrients, but if phosphorous and potassium levels are low, then the crops won't have any important nutrients to utilise anyway. He adds that farmers should get their fertiliser companies to help them establish figures on soil calcium and magnesium ratios.

'I do things differently, but my returns prove I'm on the right track.'

"I want a potassium level of above 250kg/ha and a phosphorous level above 35kg/ha. These figures may be higher than some recommendations and may seem like an unnecessary expense, but I don't believe in shortcuts. I do several things differently, but my returns prove I'm still on the right track."

Another important management tool for Andrew is to start planting in lands that are nearly weed-free. Ahead of his summer planting, he uses a mixture of Roundup and 2,4-D applied a day before planting. The application rate depends on the land's weed pressure and the size of the weeds.

Andrew says some farmers might be surprised that he applies 2,4-D on a land where soybeans are about to be planted, but he uses a low rate of 100ml/ha. The 2,4-D works synergistically with the Roundup, and this enhances its ability to control convolvulus and commelina at this low application rate. He says what also helps the 2,4-D's effectiveness is that he doesn't allow weeds to grow to maturity on his farm. "I achieve this through many small sprayings. For example, I spray winter weeds in May at 0.752/ha of Roundup.

"Many other farmers would prefer to spray only before summer planting, but they'd then probably need an application rate of around 48/ha of Roundup. I apply three sprays of Roundup at 18/ha each before my summer planting, because there's relatively low weed pressure from winter. This saves me 18/ha or more of Roundup," Andrew points out.

"Three sprayings are slightly more expensive, but my John Deere self-propelled sprayer has been designed for optimal running and chemical application. The additional cost is more than compensated for by the savings! I get from improved soil moisture because of fewer weeds."

Andrew began his weed-control programme in 1990, and his farm has now reached the stage where he hasn't used pre-emergent herbicide for over 12 years. This alone saves him R200/ha to R300/ha on weed control.

A third tip for improved yields is planting during optimal soil-moisture conditions. Andrew doesn't plant his summer crops until the farm has had 40mm to 50mm of rain in the four weeks before 20 October. He says this allows the moisture to penetrate 10cm to 30cm into the soil. Then, when the farm has had 10mm to 15mm of rain between 20 October and the end of November, he begins planting the next day so the seeds will have access to moisture in the top 10cm and deeper. Should more than 15mm of rain fall in the planting season, Andrew will wait for the soil to dry slightly, to prevent smearing by the no-till planter's coulters or ripper tines in the seed rows, and pinning of stover with the cutting coulters.

"I keep a 90% stover cover on my lands, evenly spread. Bare patches of soil dry out fast and weeds germinate in these areas," explains Andrew. He says that another difference in his cropping enterprise is that he plants his soybeans with a 17,5cm
row-spacing TATU PDCM 27 no-till wheat drill. This planter frees up the John Deere 2115 no-till central seeder for planting the maize. The row-spacing of the TATU planter also allows Andrew more uniform inter-row and intra-row seed spacing for the soya beans.

At a 17.5cm row spacing, in comparison to the John Deere planter's 76cm row spacing, the TATU plants four rows for every single row planted with the John Deere planter. But Andrew points out that he still plants around 350,000 plants per hectare to 380,000 plants per hectare, which comes to the same as planting this crop with the maize planter.

“The advantage of this more even spacing is that canopy development is much quicker – at about 15cm plant height. With a 76cm spacing, soya canopy development would only be at around 40cm plant height. The quicker canopy development means that I only have to apply one post-emergent herbicide spray, as opposed to two or more sprays at 76cm rows.”

Monitoring moisture
Andrew uses a Watermark soil-moisture sensor system. He has about 30 sensors which he divides amongst the farm’s different irrigated soil types.

Through controlled irrigation, he aims to keep soil-moisture levels below 35. On a scale of 0 to 199, where 0 is liquid water and 199 is dry air, summer grains wilt at around 60.

“From about 45 and higher, plants experience moisture stress. The Watermark sensors are at a 20cm depth. I use a handheld data collector and use these readings to decide on how much to irrigate. This may be one of the simpler soil-moisture monitoring systems on the market, but I find it practical, and at the end of the day it still allows me to make the final irrigation decisions on the farm.”

Cattle and crop yield
Andrew’s Santa Gertrudis cattle also play a role in increasing Tregenna’s crop yield. In winter, from April onwards and once the summer crops have been harvested, he puts his cattle onto the maize and soya stover to forage. The cattle are removed when the stover cover is down to the preferred 90% minimum.

On the rainfed croplands, the cattle are taken off the stover when Andrew notices there are no more maize kernels in the dung. Stover is a source of cheap and highly nutritious feed, while the dung increases the organic matter in the soil.

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Andrew uses this 14-row and 7.5cm row-spacing TATU PDCM 27 no-till wheat drill to plant soya beans. It gives yields more consistent intra-row and inter-row spacing.