

Productivity top priority for EP farmers

SARAH JOHNSON

The Nield family are focussed on achieving productivity gains through new technologies, increased efficiencies and land expansion.

Increased productivity is a key driver of the farming strategy adopted by the Nield family more than a decade ago.

From investing in new technologies for no-till and controlled traffic farming to removing fence lines and stone heaps to increase efficiency, the Nields have progressively implemented a plan to increase productivity within their farming enterprise, which is based near Cleve, on SA's Eyre Peninsula.

"Everything we do links to productivity and efficiency," said Joel Nield, one of three partners in the enterprise, which includes Joel and wife Emma, Joel's brother Blake and his wife Britt and parents Ricky and Kathy. "We balance the risk of a decision against what we can gain in productivity, as well as profitability."

Their strategy is a gradual process that began in 2000, with the objective to slowly improve practices over time. "It's still a work in progress. There are lots of works in progress here," quipped Joel.



FAMILY FARMERS – BLAKE, RICKY AND JOEL NIELD.

FARM SNAPSHOT

Farmers: Ricky and Kathy Nield, with sons Joel and Blake and their wives Emma and Britt.

Land: 5,870 ha at Cleve Hills, between Cleve and Kimba on Eyre Peninsula

Soil type: Approximately 75% red loam, 25% non-wetting sand and 25% heavy clay

Rainfall: 300 to 400 mm a year

Crops: Wheat, barley, lupins, canola, vetch and peas

Seeder: 18-metre Flexi-Coil seeding bar with Agmaster knife points on 300 mm spacing

"We have expanded in the past five years, doubling our land size, so it has taken us quite a while to put it all into action because we've accumulated more and more jobs."

Increasing the size of the farm is a key strategy being used to improve productivity growth, with the family increasing their farm size after Blake returned to the farm in 2007. The addition of Blake, a qualified mechanic previously employed at Cleve's John Deere dealership, and his family to the enterprise necessitated the farm's expansion. In 2008 the family bought Mangalo, a 900 ha property 12 km from Campoona Hill, the Nields' 'home' property. Three years ago they bought another 1,800 ha, increasing their total land holding to 5,870 ha, which is spread across 50 km from end to end.

"It was about remaining viable," said Joel in relation to the family's land expansion. "When my brother came home we had three families living off the farm, so we decided to expand so we could all work here in the long run and remain viable into the future. We also enjoy the

challenge of cleaning up new land and making it more productive."

The Nields began making changes to their farm business in 2000 with the adoption of no-till farming practices. They bought a Flexi-Coil 820 seeding rig with cultivator bar and Agmaster knife points on 230 mm spacing.

Moving away from cultivation has significantly affected their enterprise. "No-till has triggered some big changes," Joel said. "Better crop establishment is one improvement. Being able to seed in one pass is another, which has increased timeliness of sowing. It means less hours on the tractor and being able to get away with less equipment too."

They have also been able to remove contour banks, which were installed by Joel's grandfather to counteract water erosion. "Since moving to no-till, water erosion hasn't been as big an issue on our heavier soils, so we've been able to move our contour banks," said Joel. "We used to get gutters down the hills, but now the soil is covered there's no water erosion."

The contour banks have been removed progressively over the past six years, which has benefitted the Nields' controlled traffic farming (CTF) system. "Removing the banks means we can go straight up and back with autosteer."

In 2012 they upgraded their seeding rig to an 18-metre Flexi-Coil bar fitted with hydraulic tines to avoid damage caused by stony country. They now operate on 300 mm spacing, changing from 230 mm in 2004 to better manage soil throw and chemical absorption. "In our harder soils the knife points were throwing soil and chemicals into the next row and burying the seed. The seeding depth was too varied," said Joel.

The family's latest investment in new technology is John Deere's StarFire RTK guidance system, part of their shift into CTF.

In 2012 they used a Starfire plus or minus 30 cm system but upgraded to RTK (Real Time Kinematic) last season to achieve 2 cm accuracy. RTK improves the accuracy of position data from a satellite. It relies on a radio-controlled base station on the ground to provide real-time corrections of the satellite data. "It's how you achieve 2 cm accuracy repetitively," said Joel.

We would have shifted 300 stone heaps each year in the past four years.

The Nields expect to achieve more precise inter-row seeding in 2014 using the StarFire RTK system. "It will be a lot more accurate because we won't have the satellite drift. We probably achieved about 70% in between the row with plus or minus 30 cm and hope to increase that to 85 to 95% with RTK," Joel said. Their seeding accuracy is affected by their undulating country because the machinery can shift out of line on the hills. Our machines can 'crab' on the hill sides. They don't pull dead straight and we don't have implement steering to realign the machine," he said.

Their CTF system uses a 12-metre implement width module, which they based on a new 36-metre John Deere 4940 self-propelled sprayer, and four-metre track width, with their header, sprayer and largest tractor all on four-metre wheel bases. They have a 12-metre header front and an 18-metre seeder with a 36-metre



STONE HEAPS AND CONTOUR BANKS LIKE THESE ARE BEING SYSTEMATICALLY REMOVED TO IMPROVE OPERATING EFFICIENCY AND PRODUCTIVITY.

boom. A second header, which is 10.5 m wide, is set to be upgraded. "We're in the process of upgrading the smaller header to a 12-metre front and our fertiliser spreaders will work on 24-metres. It's not full controlled traffic but we're moving that way, slowly lining things up so we're driving along a lot more of our wheel marks and a lot less on our paddocks," said Joel. "As we buy new machines, we make sure they're the right width so it all matches. It's not high on our priority, but it's something we're aware of and we're developing as we go along."

One of the aims of CTF for the Nields is reducing compaction, particularly on their sandy country. "When we're spraying and spreading in the crop we don't want different wheel tracks all over the paddock," said Joel. He is less concerned about compaction caused by the headers on their heavier soil, but the family feels it is important for the headers to fit within the CTF system because of their impact on those parts of their property with sandy soil. "On our heavier soil harvest machinery doesn't seem to cause much compaction, but it does on the sand. The soil doesn't have any structure there."

Finalising the conversion to CTF depends on removing stone heaps and reefs, which is another part of their strategy to increase efficiencies within their farm operation.

Removing obstacles in the paddocks streamlines sowing and reaping. "We're removing the stones for efficiency," said Joel. "If you don't have to dodge stone

heaps it speeds up working the paddock. It's definitely more time-consuming if you have to do a lap around a stone heap and they inevitably land right in the middle of your run."

They began removing stone 10 years ago. They have contracted out the removal of the stone reefs - outcrops of stone close to the surface that become exposed with wind erosion - but remove stone heaps themselves, using a Komatsu four-wheel loader.

"We've chipped away at it each year during summer," said Joel. "The new properties we've purchased have a lot of stone heaps on them. We would have shifted 300 heaps each year in the past four years." They are also in the process of removing fence lines to square up their paddocks and increase the working area of each paddock to about 120 ha. "When we pull into a paddock with the harvester or seeder now we've got a decent amount to do and we're not wasting time packing up machinery and shifting too often."

The Nields' latest property additions don't have fence lines and on their older properties they are removing all of the fences except those on main creek lines. They currently run 650 ewes, but plan to move away from livestock in the near future, making fences obsolete on their property.

Joel acknowledges that expanding the area of land has added to their workload and presented other issues such as access

to water for spraying, communication difficulties and travelling time.

“It’s taken a fair amount of work to get the new properties in line with our farming strategy,” he said. “There are also some logistical issues associated with the expansion that have proved challenging.

“Travelling a greater distance between properties is time-consuming, which makes being organised even more important. You’ve got to remember to throw everything you need in the ute before you leave for another property. If you forget something you have to do another trip.”

Mobile communication is unreliable on many parts of their property, so contacting a family member to deliver equipment can be problematic. “The phone service is very limited on most of our properties,” said Joel. “I generally end up with about 10 missed calls each day. We know the spots where we can get coverage, but it’s definitely not ideal.”

Water is another issue, with two of the properties not connected to mains water. They cart water to these locations when spraying. “It creates a bit of a headache,” he said.

The first two years after the land purchase were stressful, but good communication and conflict resolution has helped the family through any difficulties. “We communicate and get along well. We



THE NIELDS’ MAIN HEADER FITS THEIR CTF SYSTEM AND USES THE PERMANENT WHEEL TRACKS LIKE THE REST OF THEIR MACHINERY.

have disagreements, but we work it out and get on with the job.”

Farm jobs are allocated according to individuals’ skill sets, with Blake and Ricky, also a former mechanic, handling machinery maintenance. “Their mechanical skills have definitely saved us a lot of money in maintenance; it’s really valuable.”

Improving their cropping system is currently high on the Nields’ agenda.

“Rotation is one of the biggest things we’re focussing on now,” said Joel. “Getting enough break crops and choosing those that will make us a bit of money.” Lupins and canola are two of their preferred break crops, with lupins providing nitrogen benefits and allowing them to resolve grass weed issues.

The family believes diversity is a key factor in their cropping system. “We’re trying to grow as many different crops as we can and learn how to grow them all successfully.” They use a flexible crop rotation that includes wheat, barley, lupins, canola, vetch and peas. It changes according to weed burdens and frost risk. “On a couple of farms, frost can limit our rotation options.” They have experimented with Yitpi, a frost-tolerant wheat variety, and plan to use it again in the future. “We went away from that variety during the past few years because of its rust and disease profile, but we’ll use it again in our most frost-prone paddocks to minimise the frost risk,” said Joel.

At the time of writing, the Nields were optimistic about the 2013 harvest, anticipating 3 t/ha from their cereal crops, 1 t/ha above average. They received good spring rains up until the end of September and started harvest on October 17, two weeks earlier than normal. A 40°C day with 60 to 90 kph winds in mid-October damaged early-maturing wheat, barley and canola, causing an estimated loss of about 1 t/ha.

No-till farming has had a significant



STUBBLE RETENTION IS AN INTEGRAL PART OF THE NIELDS’ FARMING SYSTEM, AS ILLUSTRATED BY THE REMNANTS OF THE PREVIOUS YEAR’S LUPIN STUBBLE STILL CLEARLY VISIBLE IN THE STUBBLE OF THIS RECENTLY HARVESTED WHEAT CROP.

impact on their soil health and subsequently crop establishment. “We’ve improved our soil structure by not cultivating paddocks two or three times a year,” Joel said. “The soil has the ability to store more water now, and in some of the heavier soils we’re getting better crop establishment than we used to. Our non-wetting soils are a bit trickier.”

Six years ago they used clay delving to improve 100 ha of non-wetting soil where there was a layer of clay was close to the surface and this year 2014 plan to cart and spread clay to improve about 30 ha of non-wetting soil in a paddock that doesn’t have clay close to the surface.

“We’re using clay to fix the non-wetting soils and improve their productivity,” Joel said.

“We have more than doubled productivity where we delved six years ago. Germination is much more even and chemicals are more effective because there is better activity in the soil due to the moisture. We don’t have the dry pockets that we used to and the ground-applied herbicides are working better. But the biggest thing is that we’re achieving higher yield.”

We have disagreements, but we work it out and get on with the job.

The Nields continue to scrutinise their farming practises with productivity in mind, and two years ago changed from windrowing to direct-heading canola in order to save time and boost productivity. “It’s one less pass over the paddock, so it’s a time saver,” said Joel, who believes canola varieties don’t shatter as much as they used to. “We just reap it when it’s ripe and I guess we prioritise it because it’s worth so much to us.” The change was also influenced by losing windrows in windy conditions. He believes they don’t tend to lose canola in the wind when it’s standing.

Direct heading has produced an additional, unexpected benefit, producing a cleaner sample than windrowing and again saving production time. “With direct heading we get a lot cleaner sample straight off the header so we’re able to sell it without having to clean it. With windrowing you can pick up stones and other rubbish.”



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