Pioneers aim to make every last drop count

SNAPSHOT

Owners: Jason and Nicole Batten, and Kim and Jasmine Batten

Location: East Yuna, Western Australia

Farm size: 7000 hectares owned, 3000ha leased

Annual average rainfall: 260mm

Soil types: sandy loam over sodic clay, shallower loam over limestone or coffee rock, gravel and yellow sand plain

Soil pH: 4.5-6

Enterprise mix: Dryland cropping and Douwana Dorper Stud, plus commercial Dorper and Merino flock

Crop program (2020): Cereals 80% (Scepter, Vixen, Rockstar and Chief wheat), canola 10% (44Y29), legumes 10% (Jurien lupins).

Typical rotation: Wheat-fallow-wheat-canola/legume-wheat

Photo: Battens

Kim (from left), Jasmine, Nicole and Jason Batten.

Retaining the flexibility to adjust inputs at seeding to match their confidence in the coming season has been central to the adoption of precision agriculture at Batten Farms.

Brothers Jason and Kim Batten, and their wives Nicole and Jasmine, farm 10,000ha of owned and leased land at East Yuna, in the northern wheatbelt region of Western Australia.

They crop about 6000ha each year, producing wheat, canola and lupins, and operate Douwana Dorper Stud, as well as running a flock of about 1000 commercial Dorpers and Merino ewes.

The Battens are widely considered pioneers in the field of precision agriculture in WA's low rainfall zones. When there's just 220mm – often less – of growing season rainfall to draw on, it's important to make every last drop count while staying within budget. This approach has helped ensure average wheat yields of 1.5t/ha.

How it started

They began yield monitoring in 1999 and in 2000 bought a 48ft Case Concorde seeder bar and box. Using a Rinex system and Case software for the air seeder box they began by varying fertiliser and seeding rates manually from the tractor cab.

"Because our soil types can be quite diverse throughout the paddock, we knew the strengths, the better soil types and the way that we wanted to treat them," Jason says. "In the early days, we experimented a little bit manually. There's been a lot of help along the way to get to where we are now. But we always knew fundamentally that soil types were the main part that we wanted to vary our rates across."

Jason says their best soil type is a sandy loam that extends 90cm to 1.2m deep, over a layer of sodic clay. This holds both moisture and nutrients "quite well". There's also duplex soil, with a shallower hard setting loam over the top of limestone or coffee rock, gravel, and varying yellow sand plains with low water holding capacity.

The rotation includes a chemical fallow phase about every three years. This helps keep weeds under control and boosts yields in low-input crops sown in the following years.

"We pick up, on average, nearly 1t/ha on those fallow paddocks compared to the ones that aren't each year," Kim says. "That's lifted our average by 0.3-0.4t/ha across the program."

Stubble retention is important for preventing wind erosion by strong summer winds before the next crop is sown.

Yield maps in the first five years proved both a blessing and a curse. Apart from periodic data loss because of computer and software malfunctions, the Battens discovered the manual alterations they'd been making to input and seeding rates muffled the output of the yield maps.

"That's added more complexity to our decision making about what those soil types needed doing to them," Kim says. "We'd already made some adjustments and the yield had corresponded a bit to

The Battens sow crops in paired rows using a Morris. Photo: Battens

match it. Then when we went the next step into doing the full-blown prescription maps, the transition wasn't as sharp as it otherwise would have been in those zones."

This was most noticeable when they employed precision agriculture consultants to do some work for them. Without the benefit of their experience, the consultant would sometimes interpret yield maps differently.

"The biggest learning curve for us was just making sure that you're not fixed to those zones once you create them," Kim says. "They do sometimes need a little bit of adjustment along the way. Now we're at a point where we like to look in the paddock as we're going and we're looking for a software program or something that we can use to actually ground truth soil type as we're seeding and refine it."

The benefits

Since they "got dinkum" about PA, the Battens have used a Morris Contour C2 direct drill airseeder with an 80-foot seeder bar and a Topcon X20 VRT monitor, which they upgraded in 2021 to a Topcon X35.

Jason says a key attraction of the Topcon gear was the ability to completely change a prescription map before the machine reaches the paddock, compared to other systems that allow only percentage changes up and down.

"We can pull into a paddock and change the rates within that prescription on the day that we're seeding it, before we start that paddock," he says. "We do that quite a lot. One thing that we've noticed is that throughout seeding – because we start dry seeding here mid-April – and then we're slowly ticking away, not knowing when the break of the season is. Sometimes you can become more optimistic towards the end of seeding and sometimes you can become a little bit more nervous of the way the season is panning out."

Where soil moisture is present after summer rain, they'll start confidently with fertiliser rates. But when seeding dry, Jason says they're more conservative with both nitrogen and seeding rates, because it's easy enough to top up nitrogen in-crop and pointless having a thick crop early in the season that won't handle a hot finish.

During April 2021, Tropical Cyclone Seroja caused minor property damage and delivered 30-45mm of rain across the farm.

The Battens adopted a 12.2m controlled traffic farming (CTF) system in 2015 and now use mostly Case machinery. The Case Patriot self-propelled 4430 sprayer has a 120-foot boom, and the Case headers have 40-foot MacDon and Case fronts. Crops are sown into paired rows 100mm apart on 15-inch spacings.

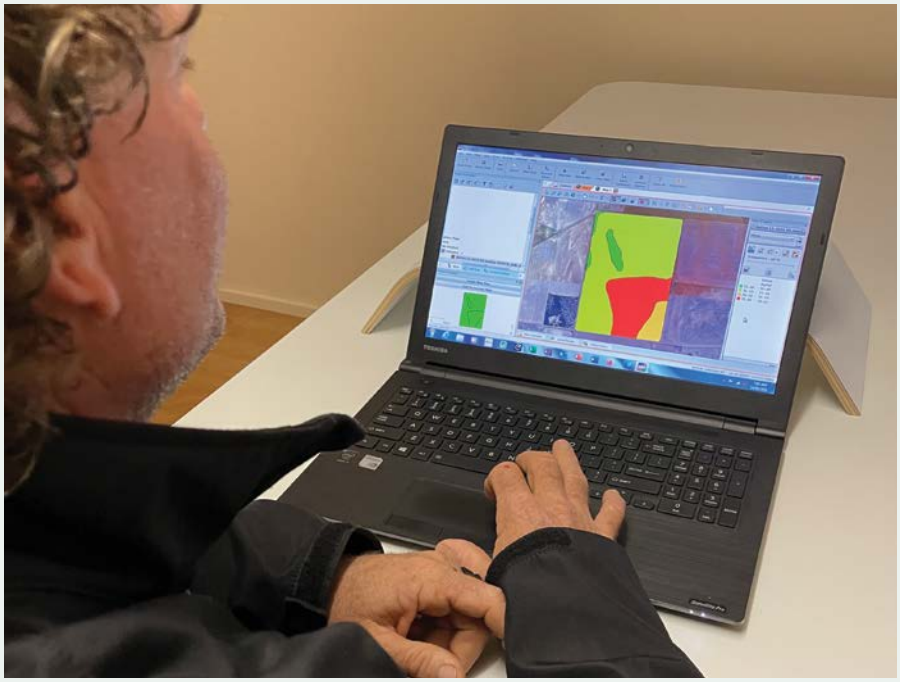
Jason says the move to CTF was an important component of PA, minimising wheel tracks which can be prone to wind erosion and allowing them to drop chaff on the tramlines as part of an integrated weed management strategy.

"There's a benefit of those weed seeds being in the one location," he says. "But for us, there's also the added benefit of reduced dust for summer spraying, and its

Photo: Battens

A Douwana Dorper ewe with twin lambs.

Photo: Battens



Jason Batten amends a prescription map to go into the tractor at seeding.

Photo: Battens

Loading prescription maps for seeding.

reduced dust in those fallows as well so there's not as much wind erosion or water erosion on those wheel tracks."

In recent years, they embarked on a campaign of deep ripping the compaction-prone yellow sandy soils and are now trying to establish how often it will be needed to get a positive yield response.

Jason says the yield response from ripping the yellower sand plain was 1t/ha or more. They've stayed away from ripping the loams but would like to find a method of incorporating lime to reduce acidity, address aluminium toxicity and improve nutrient availability more quickly. So far most paddocks have received an average of 3.5t/ha of lime.

What's next

A Terrain Tracker WeedIt-equipped sprayer has been useful for reducing the herbicide bill while staying on top of summer weeds, but Kim says access to green-on-green weed detection technology will be "massive for us" and for agriculture as a whole, given growing public demand for farmers to reduce chemical use.

He's also keen to see the further development of autonomous units that can take on some of the burden of spraying for summer weeds.

"We've seen a bit of an increase in our summer rainfall," Kim says. "We've got to look after it because that's the thing that's keeping us here."

MORE INFORMATION

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