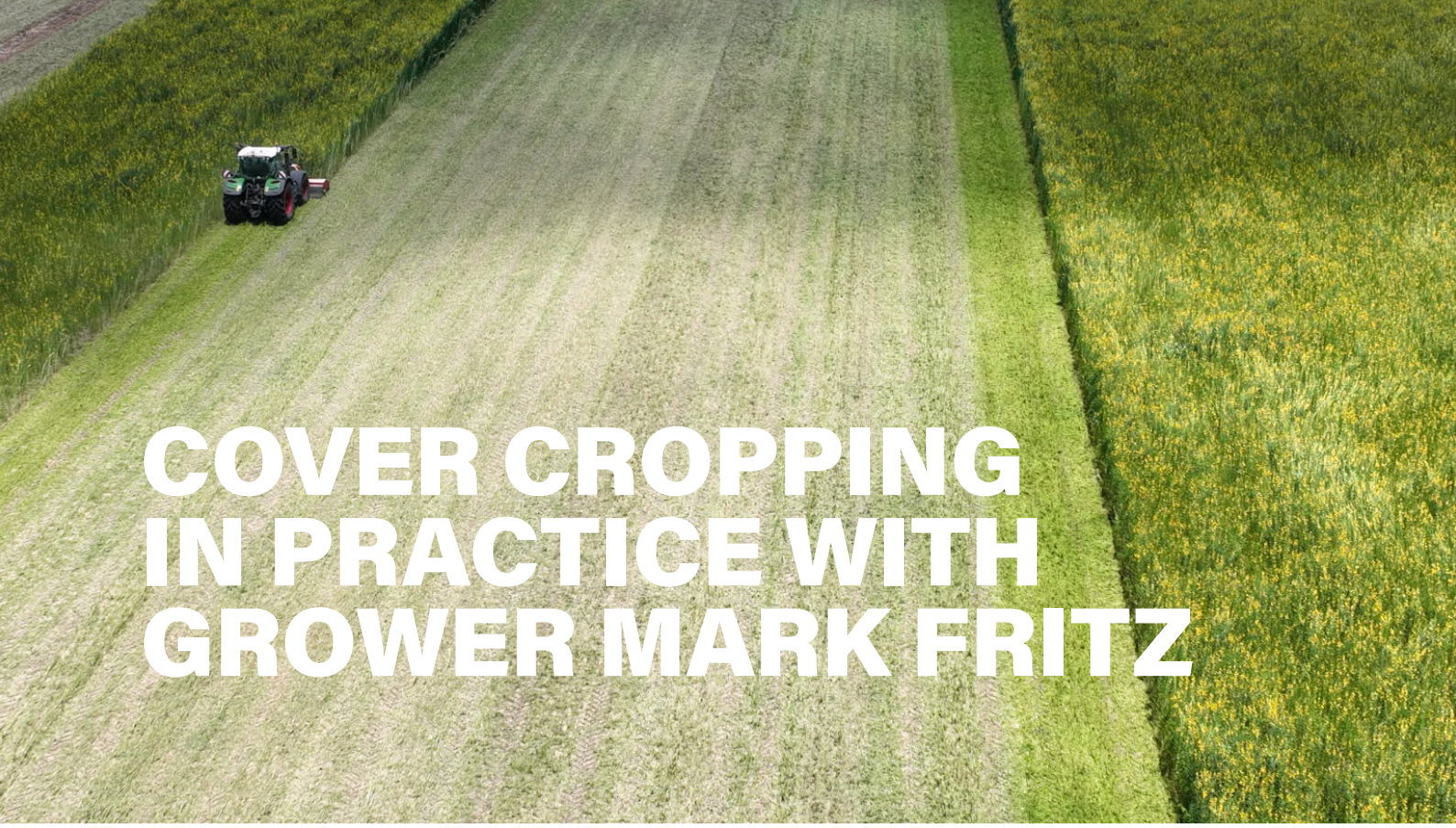

COVER CROPPING IN PRACTICE WITH GROWER MARK FRITZ

Mark Fritz from M&J Fritz, a potato-growing operation based in Calavos (Bundaberg, Queensland), has been building a cover cropping program for 20 years. Here, Mark shares his personal experience in growing and experimenting with cover crops over that time.

Mark works alongside his son Curtis Fritz, Brian Poulsen, and share farmer Tony Grassick, to grow processing potatoes for Pepsico.

They typically work on a two-year cycle with planting in April, growing through winter, then harvesting in September.

Outside of potato production, cover cropping has long been a major focus. Carefully planned rotations use winter cereals like triticale, barley, and ryecorn, summer legumes such as cowpea and sunn hemp, along with summer cereals sorghum and millet.

Through years of trial, learning, and fine-tuning, cover crops have become central to Mark's farming system.

The system is designed to build soil health, improve soil biology, reduce chemical use, and increase soil carbon – all driven by Mark's belief that even if it's not perfect, it's better than not trying at all.

PotatoLink's Steph Tabone spoke with Mark to understand how cover cropping fits into his operation, the challenges he's worked through, and his advice for other growers.

WHAT MOTIVATED YOU TO INVEST IN COVER CROPPING?

For Mark, cover cropping is an essential to "spelling the ground" between potato crops and giving the soil a break from intensive production.

"It's about disease management, soil protection, improving water holding capacity, nutrient holding capacity – the list is endless," Mark explains.

Heavy rains and strong winds in the Bundaberg region can quickly erode sandy soils.

"Without cover crops, the soil can just blow away."

What started as a way to manage erosion and reduce soil-borne disease pressure has grown into a whole-of-

From left: Mark Fritz, Curtis Fritz, Brian Poulsen, Tony Grassick

system approach to improving soil condition and productivity.

Mark has seen clear benefits from cover cropping, including:

- Steady improvements in yields from 32t/ha to 40t/ha (seasonal averages), gained over the last 20 years
- Improved soil health
- Lessened soil-borne disease pressure, particularly verticillium and powdery scab

HOW DOES COVER CROPPING FIT INTO THE SYSTEM?

Timing and establishment

Mark believes timing is everything when it comes to successfully growing cover crops. His strategy is to sow cover crops immediately after harvesting potatoes to take advantage of clean paddocks and any residual soil moisture.

If conditions are dry at harvest, cover crops may establish slowly or not at all. However, if rain follows, it's essential to act quickly and get the cover crop in the ground.

"As we don't irrigate our cover crops, it's critical to make the most of natural rainfall and leftover moisture from the potato season if we want to get a good start and stay ahead of the weeds," he says.

Why legume cover crops?

Legumes are a cornerstone of Mark's cover cropping program as they offer multiple benefits, including:

- **Nitrogen fixation**, thus reducing the need for synthetic fertilisers.
- **Weed control**, as Mark can selectively spray grass weeds without harming the crop.
  - He avoids using pre-emergent herbicides on cover crops because of the extra cost and the desire to reduce chemical use.
- **Pest management**, with sunn hemp, in particular, helping to manage fall armyworm (FAW)
  - FAW tends to favour sorghum but does not significantly impact sunn hemp.

However, there are always trade-offs. Sunn hemp is not as competitive against weeds as sorghum, and weeds, including volunteer potatoes, can still break through cover crops. Weed management is therefore a constant balancing act.

Machinery and planting practices

Mark uses a practical, low-till approach to planting and managing his cover crops, including:

- Direct drilling into the stubble left from the previous crop
- Speed tiller with a seeder box that covers four metres at a time; an Einböck metering system and fan distribute the seed through tubes
- Great Plains disc drill for precision sowing into stubble

"Our aim is to minimise soil disturbance, only working the ground before and after potatoes."

"If a cover crop fails and doesn't produce enough mulch to protect the soil, we spray out the weeds, till the soil, and replant."

Mark emphasises that you don't need the flashiest machinery to get started.

"We began with basic equipment, simply distributing seed with a fertiliser spreader. As the system evolved we moved to more specialised tools."

His advice – start simple and upgrade once you know what works for your farm.

Cost considerations

Costs can vary widely depending on the species and whether seed is purchased or grown on-farm.

Sunn hemp is an expensive option, particularly when buying seed coated with rhizobia inoculant, which can cost up to $600ha. Despite the high cost, Mark says it's the best cover crop he's ever grown, and he's interested in seeing how it impacts soil nematode levels.

Mark is now exploring cheaper ways to ensure legume seed is inoculated with suitable rhizobia. This could mean buying uncoated seed and applying a soil surface inoculant at planting.

Mulching the cover crop

Triticale and sorghum is much cheaper, typically $150–$250/ha.

Where possible, Mark harvests his own cover crop seed, reducing costs to as little as 50c/kg. Having your own seed enables denser planting rates, which in turn helps to choke out weeds.

Termination strategies

Mark has developed tailored termination methods for each type of cover crop:

- **Cowpea** is roller crimped and left for a couple of weeks. Any regrowth is side-mowed, then sprayed with herbicide. Lime or cow manure is applied, followed by minimal soil working to prepare for potatoes.
- **Sunn hemp** is mulched into fine pieces, left on the surface to decompose, side-mowed to tidy remaining stalks, then lightly incorporated before potato planting. Mark prefers to keep the mulch on the surface to protect the soil and support soil biology.
- **Sorghum** is managed by mowing up to three times during growth to control height, with mulching only if it grows too tall.
- **Ryecorn** may be baled for hay or allowed to go to seed and then crimped to terminate.

Mark's aim is not to create a fine soil bed but to retain decaying organic matter on the surface, which prevents erosion, and improves soil structure, moisture retention, and microbial activity.

SOIL CARBON AND EMISSIONS MONITORING

Soil health is a major focus on Mark Fritz's farm. Although emissions monitoring isn't yet on his radar, Mark does keep track of soil organic matter and carbon levels through basic nutrient testing.

"We're not aiming for specific carbon percentages – it's more about building up organic matter steadily, over time," he said.

"It's a slow process, especially when you're essentially sieving the soil every time you harvest potatoes."

When it comes to fertiliser management, Mark takes a practical, whole-farm approach. His nutrient program is generally tailored to each season rather than each individual paddock.

"Customising every paddock would be too hard to manage, and you'd end up wasting too much product," he said.

Each year, he works out his NPK requirements and typically applies rock phosphate and trace elements pre-planting. He uses soil testing selectively-testing around three paddocks out of every ten and rotating which ones are tested to monitor trends across the farm.

In-season adjustments are rare but may be made if there's been a leaching event, provided the potato crop is still viable and worth saving. Mark has also started using more flexible fertiliser blends and has incorporated carbon-coated urea into his program to support gradual nitrogen release.

While the base fertiliser remains consistent, Mark adapts side-dressing and pre-planting rates each season depending on conditions.

Organic carbon is an important part of his system, but he doesn't target a particular mulch percentage – he simply focuses on building organic matter wherever possible.

ADVICE FOR OTHER GROWERS

For Mark, one of the most important lessons is that cover cropping must suit your own farming system.

"Do what works for you," he said.

"Don't get too hung up on doing what others are doing. It has to fit your farm and your conditions."

He's quick to point out that just

Sun hemp at emergence

Sun hemp at termination

Open sun hemp nodule - the red colour is a good indicator that the legume is fixing nitrogen.

LESSONS AND ADJUSTMENTS

Over time, Mark has steadily refined his cover cropping approach, making practical adjustments along the way.

- **Fertilising sorghum** He initially trialled growing sorghum without fertiliser but found it needed some nutrient support to perform well.
- **Managing Fall Armyworm (FAW)** FAW is a persistent challenge in the region. While it reduces sorghum biomass, it hasn't caused a financial loss—just less organic matter to return to the soil. To manage FAW pressure, Mark now leans more towards growing sunn hemp, which the pest tends to avoid.
- **Nitrogen adjustments** Incorporating legumes into the system has allowed Mark to reduce nitrogen rates in his potato crops by 40 kg/ha. He now uses carbon-coated urea to better control nitrogen release.
- **Weed management** Getting cover crops established quickly is key to suppressing weeds, especially after rain events. Volunteer potatoes can also emerge as weeds in the cover crop phase.
- **Machinery and investment** Mark recommends starting with basic equipment before moving to more specialised machinery once the system is proven. He's found that simple setups can be highly effective.
- **Seed costs**
  Saving seed from his own cover crops helps keep costs down and allows him to plant at higher rates to improve weed suppression.

Mark's approach is built on flexibility and having a plan for all weather scenarios.

"Even a cheap cover crop is better than bare soil," he said.

"If it's too wet, wait and plant when you can. If it's dry, wait until conditions improve get something in the ground to protect it."

"Cover cropping is a long-term learning process."

"You have to figure out what works for your soil and your system - it might look different to everyone else's."

because sunn hemp works well in his operation, it doesn't mean it will be the right fit for everyone.

"I tried plenty of other things that didn't work before I settled on what suits my system," he said. "Don't chase what someone else is doing."

Mark's advice is to start small and simple. "Just get started. If it doesn't work, tweak it and try again. Over time, you'll find the system that you're comfortable with and that you can sustain."

He believes it's essential for the industry to keep moving forward.

"We won't survive if we keep doing the same thing. We need to keep trying new ideas and improving how we farm," he said.

"When you first start, it won't be perfect. It might not even be the best option, but it's important to give it a go and learn as you go."

Mark also gives credit to the cover crop seed industry, which he says has come a long way.

"There's some really good seed on the market now, lots of different blends and varieties, including great forage options."

His advice is clear: start with something manageable, build your confidence, and add complexity once you know what works.

PotatoLink Regional Rep for Queensland, Dr Naomi Diplock (AHR) in the cover crop at flower

WHAT'S NEXT FOR MARK?

Mark is keen to try mixed species cover crops, pairing legumes with grasses to scavenge existing soil nitrogen and further stimulate nitrogen fixation in the legumes.

"Weeds might be harder to control in a mixed crop, but I'll work through that," he said.

He also plans to trial cheaper legume inoculant methods and continue experimenting with termination timing and machinery to refine the system.

"Cover cropping is a long-term learning process.

You have to figure out what works for your soil and your system – it might look different from everyone else's."

Mark Fritz

KEY POINTS TO GET STARTED

- Cover cropping is central to Mark Fritz's potato farming system. Used between seasons, cover crops help build soil health, manage erosion, and reduce disease pressure.
- The program includes both winter cereals (like triticale and ryecorn) and summer legumes (such as sunn hemp and cowpea), with legumes providing nitrogen fixation, weed control, and pest suppression benefits.
- Yields have improved significantly over 20 years, rising from 32 t/ha to 40 t/ha, alongside better soil health and reduced soil-borne diseases like verticillium wilt and powdery scab.
- Timing is critical – as cover crops are not irrigated, they are sown immediately after potato harvest to take advantage of residual soil moisture.
- Low-till methods and basic machinery are used to establish cover crops, with seed distribution ranging from spreaders to precision disc drills.
- Cover crop costs vary, with rhizobium-inoculated sunn hemp being the most expensive (up to $600/ha), but Mark reduces costs by saving seed and is now trialling cheaper inoculation techniques.
- Tailored termination strategies are used for each species, aiming to retain organic matter on the surface rather than creating a fine seedbed.
- Mark monitors soil carbon and organic matter through basic nutrient testing, aiming for gradual long-term improvement without fixating on exact targets.
- His fertiliser approach is whole-farm and seasonally adjusted, with selective soil testing and a focus on flexibility and practicality.
- His advice to other growers is to start small, learn by doing, and adapt cover cropping to suit individual conditions, rather than copying others' systems.

ACKNOWLEDGEMENTS

The PotatoLink team would like to thank grower Mark Fritz for his openness and willingness to share his cover cropping approaches, and for hosting the PotatoLink field walk on his farm earlier in the year.

EXPLORE THE TOPIC FURTHER

- **CASE STUDY:** Improving Soil Health with Andrew Tempra
- **FEATURE ARTICLE:** Management of potatoes under wet conditions
- **ONLINE TRAINING:** Cover crops for potato growers