

REGENERATIVE FARMING AND A FOCUS ON SOIL HEALTH ARE PROPELLING TASSIE FARMER SAM TRETHEWEY'S BEEF TOWARDS A CARBON POSITIVE LABEL



Regenerative farming and a focus on soil health are propelling Tassie farmer Sam Trethewey's beef towards a carbon positive label

- A raft of regenerative tools have helped Tassie farmer Sam Trethewey on his journey towards carbon positive beef.
- Grazing, multi-species pastures and little to no synthetic or chemical-based products are Sam's top three regenerative farming practices.
- Two of the country's five biggest beef producers are learning lessons from Thethewey's operation

Farmer Sam Trethewey Location Central-north Tasmania Farming Program 1800 wagyu cross cattle (rotational grazing) Farm Size (acres) 684 Climate Zone Temperate Soil Type Ferrosol Rainfall (per annum) 1000mm Years on Regen Journey Approx 15 years, including the last two years in Tasmania Interviewer Olivia Thorn

Olivia:

Thanks for joining me today Sam. Let's start from the beginning, your business model is fairly unique in that you set out just a couple of years ago to start a beef business but you didn't have any cows. How did that all unfold?

Sam:

I'd been working with startups for about three years and watched them develop very innovative systems around how to create value without needing to own large assets. To own large or expensive assets, you first have to pay for those large assets when it comes time to raise money. The more expensive those assets, the more money you have to raise, the more equity you've got to give up. So in efforts to give up as little equity as possible, we've got investors in both our operational side of the business and our land side of the business - we wanted to keep pretty light and lean on our balance sheets. We looked around and we worked out that dairy farmers don't want half their calf drop and we don't want cows, so how can we work with them? This certainly wasn't a new concept, it had been done before, but essentially no one had been doing it in Tassie so we went into dairies and offered our red Wagyu semen or live bulls, and we offer that for free and then in turn we buy that calf back on a contract either at a week old or at 100 kilos.

 Cattle farmer Sam Trethewey on his Tasmanian property. Photo: Tim Noonan

What a fascinating model. What pulled you down the regenerative agriculture road?

I've grown up with my father buying, developing, and selling off a few different farms and all the while he's always used regenerative grazing practices, known more formally as all the [RCS](#) type stuff - he's a big cell grazer. I'd seen the impacts of focusing on building soil carbon for regenerative grazing practices. Then also throughout my adult life, I've learned more about farming and practices, and formed my own opinions. Introducing foreign chemicals - whether or not they're chemical-based fertilisers, like single super or actual chemicals - introducing them into natural systems has never really made sense to me.

I've never really been someone who just takes yes or no as an answer. I always have to ask why, and no one's ever been able to specifically answer that for me articulately as to why it's okay and is it sustainable long-term to introduce those types of products into natural systems? The reality is that we haven't been doing it for very long, only 70 years or so, it's not like we've been doing it for a thousand years. So it just doesn't make sense to me. The more I dug into that space, the more I found people out there who are doing some amazing stuff without chemicals or are being very selective with how they use them.

What drew me in was the fact that I'd seen it from a grazing perspective and now I was saying; alright, if that's all about increasing soil health, what else increases soil health? Then of course there's a whole raft of other tools and management methods that do that.

I felt it was an opportunity through measuring the sequestration and storage of that carbon and therefore an improvement in your soil health, through using all these different tools that we could actually store more greenhouse gases in our soils than our operation emits, therefore producing a net positive carbon product. Given beef has become the punching bag for most debates on climate change - very disproportionately so - I thought how cool would it be from a marketing perspective to produce a truly carbon positive beef product, obviously without buying carbon credits which I believe is cheating.

It seems regenerative ag can mean different things to different people... can you expand on the regen principles you apply to the day-to-day operations at Tas Ag Co?

My definition of regenerative agriculture - because there are many and everyone will give you a different one - is very simple. The conventional agriculture system is built on soil chemistry; which is essentially your nutrition - phosphorus, nitrogen, potassium, sulfur and so on and so forth. That's what is studied when people learn to become an agronomist.

Regenerative agriculture gives just as much, if not more, weight to soil biology as soil chemistry.

Regenerative farmers focus on biological processes, getting your microbiology up and going, which unlocks nutrients, increases your water holding capacity, sequesters carbon - all these things.

I suppose the question is how do you focus on soil biology and what tools do you use to feed and enable that soil biology? I think that's the greatest way to work out what is actually the difference without being nasty because it can be very polarising this regenerative agriculture stuff.

The reality is that soil biology is still a very unknown space, even biologists will tell you there's more that they don't know than what they do know. I've heard that there's over 50% of organisms in the soil that we still haven't even got a name for yet - it's such a misunderstood and misinterpreted space. Soil chemistry, however, is a very well studied, almost exhausted kind of science, and it just so happens that there are a number of multi-billion dollar companies that can feed off that soil chemistry strategy who make up an enormous part of our industry. It's a lot harder to make money out of soil biology.

 Carbon-rich soil pulled from Tasmania Agriculture Company's land.

You mentioned cell grazing, how else do you focus on soil biology at Tas Ag Co?

There are three main things we do from a regenerative point of view; grazing, (cell, rotational, or time-controlled), multi-species pastures, and little to no use of synthetic or chemical-based products.

So with grazing, at the moment we're moving our stock every two days because our mob sizes are a bit smaller - but essentially it's matching that stocking rate to carrying capacity and doing that regular move and governing the farm by the rest period that the grass is getting, not by what the animals need. That's where time-controlled grazing flips most grazing management styles on their head.

The second piece is using multi-species in our paddocks.

We're sewing between 15 and 30 different species into our pastures. We use a mix of legumes,

cereals, obviously grasses, brassicas and chenopods - they are the five main plant groups. There's no silver bullet as to what mix, it's just about adding diversity. I'd ask anyone to go look at any snapshot of bush or a wild scene, no matter where they are in the world, you'll see mother nature growing all different types of things. That's what she likes - complexity and diversity. We've stripped that away with conventional systems where we just sow one or two things, so she attempts to diversify us - she starts throwing weeds into the mix that have different attributes often to what we more commonly see in our paddocks. If we've got ryegrass grass and clover she'll start putting out doc and scotch thistle and mustard weed and all these things that have taproots and have root structures that are completely opposite to what's out there. Perhaps if we start to change the way we look at things, we can see that she's trying to diversify and perhaps communicate to us. What we've done is if she wants to grow taproots we will give her some taproots, so I'll put in tillage radish and chicory and all these other sorts of things, but cattle actually eat these, and unsurprisingly they've gone really, really well. So there's something about that grass or that land that's conducive to growing tap roots because that's what she's trying to grow. We kind of take her lead and get out of her way. Planting multi-species is really important, another reason being that each plant has its own bacteria and fungi that work really well with that plant. When you start adding different types of species you then increase the diversity of your underground livestock in the form of fungi and bacteria, which then create a kind of snowball ecosystem effect of breaking down organic material into organic matter, which increases your humus (Soil Organic Carbon) and you get a whole heap of trickle-down benefits like unlocking certain nutrients. The conventional guys get upset that there's all this stuff locked up, well the way you unlock it is through microbiology.

The third and final part is little to no use of synthetic or chemical-based products. Why? Because they kill microbiology in most cases. If you don't believe me, go and drink some and see what it does to your guts.

Super phosphates - 'great stuff' - it's rock phosphate mixed with sulphuric acid. Go put sulphuric acid out in the paddocks and see what it does. There's no doubt about it, these products work really well in the short-term, but as far as the long-term effects, perhaps we're starting to see some patterns around the world in human health, environmental health, planetary health that perhaps they're not as good as we thought they were. By limiting our use of chemicals in both fertilisers and obviously spraying out actual chemicals we can basically stop killing stuff which enables all things to grow and then of course stops killing microbiology and whatnot. I might add, that comes with its own challenges, right? I've been brought up in a conventional system where if you don't want weeds then go kill them. You don't want this, you go kill it: kill, kill, kill. That's what we do. All of a sudden it's very difficult to have to hold yourself back and say, 'well, how do we get around this?' You might be happy to kill some of the weeds potentially but you don't want to kill anything else. So how do you do that without knocking the microbiology around when you don't want to use 2,4-D or MCPA? So there are ways and means of doing that.

What are those ways and means you've experimented with?

It's still early days for us, we've only been here for just under two years. In five years' time, I could sit down and say this is what we did, this is what did and didn't work. So I'm having to use other people's experience and evidence over the years to trial and test. We have our own regenerative agronomist who helps us on a regular basis. There are some mechanical controls that can be effective but are pretty laborious and intensive. Wick wipers or weed wipers, for example, are able to be quite selective, you drag it across your paddock and it's able to kill thistles, or other taller standing undesired plants, without touching any of the grass or getting to microbiology.

But in many cases, and a lot of the big regenerative guys will tell you, we're not even bothering about the weeds - the weeds are there because the nutrition isn't right and the diversity isn't right in the pastures.

This goes back to [Peter Andrews](#) stuff from the 90s - if you get your nutrition right and you introduce that diversity back into your pastures, you won't see as many of those weeds that were previously popping up. They'll basically choose not to grow there because the conditions that you've now created are not ideal for them. It's just trusting that system, which is, I think, the biggest leap that people have to go through in this space, being able to trust and work with mother nature. It's easy to control and think about things in a more modern, mechanical, humanistic kind of brainwave, as opposed to thinking more broadly and holistically.

Women are very, very good in this space because the way their brain typically works and connects and brings things together perhaps is a little bit different from the laser-focused, mission and goal orientated, 'hunter-type' way that the male brain tends to operate.

You say you're avoiding synthetic fertilisers. Have you played around with any other inputs to enrich the soils - manures or the like?

Yeah, absolutely. We've been spreading **poppy seed meal** out, which is a by-product of the poppy industry down here in Tassie. **Chicken manure** too, which has quite a lot of phosphorus in it but good amounts of other nutrients and obviously adds a bit of organic material, which in turn provides some food for our microbiology to break down. We are using **liquid fertilisers** - Nutrisoil is one. We do use some products from Nutri-Tech Solutions like Brix-Fix.

When we use some perhaps more conventional or synthetic products - which is very rarely - we will introduce organic products with it. We'll bring in some humic or fulvic acid - basic sources of carbon - to help shoulder the blow and the harsh impact or activation of those chemicals. If you put out MAP or DAP the soil and plant response is quite aggressive, it's a real whack and it's too much for some things. That's why organic-based stuff is a very soft, gradual release or enablement of those nutrients. Whereas our synthetic ones are literally like a heroin shot in the arm, an instant hit. Applying those carbon sources and other things can actually soften the blow, feed and just settle things down as well. This might sound hocus pocus but it's all very well researched and very well practiced around the world. Even some of the regenerative guys that still use Roundup have found ways of using a third of what the label suggests - they don't have to use as much to get as effective a kill. They include liquid fish and other things, so they're giving the microbes a bit of a headache but at the same time, they're packing a heap of energy and food for them - offsetting perhaps the damage they're causing but still being able to kill their plants so they can then go in and sew their crops.

 Sam Trethewey has turned his cattle into a carbon-positive operation by focusing on soil biology.

Let's look at the carbon sequestration space. I'm really keen to hear how you go about building your soil carbon data?

We're still in the middle of that. We baselined in December 2019 and then again in December 2020

which we're still waiting on the results from. It's been quite a long, laborious process, we had a couple of tough seasons where we were a bit overstocked so I don't have particularly high hopes for any major increases in carbon sequestration during that time. Since taking on the farm it's just washing itself out of the last kind of management cycle. It was very conventionally run, with a lot of pesticides, and an enormous amount of nitrogen use, which actually burns off carbon when used in excess. I suppose it's only from now on that the farm is settling into our management and it does take two to four years to convert and flip the farm over from a chemical-based system to a more biological-based system. Unfortunately, I don't have any data to come back to you with, but I will add that I've been a little bit frustrated by some of the carbon projects. I would say to anyone that's interested in a carbon project to look far and wide and spend a lot of time doing your due diligence on what carbon partners you choose to go with.

We went with [AgriProve](#) because from what I can see they are the most sophisticated, they are the only developer that makes use of the internationally recognised soil carbon testing protocol that's authorised with the UN Paris Agreement. As a result, our carbon credits can actually go towards Australia reducing its emissions within that UN Paris agreement.

The test goes down to a metre, whereas a lot of these carbon guys only go down to 15 centimetres - I can go out and put eight to ten tonnes of mulch per hectare and actually influence carbon levels in the top 10 or 15 centimetres quite quickly. Whereas going down to a metre, the only way you can influence that testing down to a metre is regenerative practices. [Agriprove](#) is really great to do business with, they take skin in the game as to how much you can sequester and it's a pretty rigorous kind of bulletproof process, I believe. We're in the middle of that process so I can't tell you how we're going except our carbon levels in the top 10 or 15 centimetres are between 6-9%, which is very high and is testament to the quality of the land and country down here. But at a metre we're averaging about 2.8% so it's going to be cool to see that increase over time.

Across your operation, what's practically involved in that sort of monitoring?

From a carbon perspective, it's an incredibly rigorous process. You start with the baseline test, which goes down a metre deep. We have 18 randomly selected GPS points for sampling, barcodes are attached to soil sample bags at 30 centimetres and 70 centimetres, in line with the international rigorous protocol.

We're building data around everything that we're doing, probably a lot more than the average farmer, just because we really believe in this regenerative farming and I want to see the data validate my beliefs. But perhaps once we build that data set, it might validate and encourage other farmers to look at these types of practices and get on their own journey into the regenerative space.

We've got carbon tests, plant tissue tests, soil tests, feed tests, we've got blood tests of animals and our commercial performance data obviously. We have environmental data baselined with the Savory Institute's land to market program, so we have an environmental baseline of how many types of species we have - tree species, ground cover, water infiltration. We've got our own tests we do on-farm from a regen point of view with a penetrometer to measure weed and taproot diversity. There's a lot going on that we do on a quarterly basis to truly assess where we're at right then and there. Over time, I record this data with an app that I created which feeds into a set of Google sheets files. So over time we can start to hopefully see increases in those relative data sets.

✖ Building base line soil carbon data on Sam Trethewey's cattle farm, Tas Ag Co. Photo: Tim Noonan. ✖ Soil carbon testing at Tag Ag Co.

That all sounds pretty rigorous, all that data collection, at the same time as running a beef business. What connection, if any, have you made between the regen principles you're adopting and profitability?

Not as of yet, because it's early days. It's certainly not more expensive. I've seen some leaders in Australian agriculture come out on Australian Story and some other platforms in the last 12 months and say it's an inefficient form of food production or it's more expensive or it's not as productive and that's all bullshit - there's nothing to suggest that. If you talk to any regenerative farmer in South Africa, Australia, New Zealand, the UK, Canada, the US - they won't say that. I don't know where they get that from. It's pretty sad that we've got people out there making comments around things that they don't understand. But as far as profitability goes - from an input point of view, I'd almost say that we spend less on inputs. That's something that you quite commonly hear from the regenerative guys, inputs are cheaper and therefore your cost of production should be lower, therefore, your gross margins should be greater. At the moment, it's just hard to say because our farm is transitioning and we're running 28 DSE per hectare, not at 60 like the farm usually would. Now am I willing to do that for two, three or four years (given we've also reduced our input costs too I might add)? Absolutely. Can we get back up there? I believe we can and we'll just see how we do that.

Your regen Wagyu beef product has only been in the retail space for a matter of months now. Have you had much feedback or data on how that's been received by the market?

It's a bit of a funny one. Just to be upfront - our business was always designed to be able to make money at a commodity price. Now, given the commodity prices right now that's not particularly hard, but when we set this business up, the Eastern Young Cattle indicator was at \$4.35, whereas now it's like \$9. This was never a business that was set up as regenerative because we're getting a margin downstream. In actual fact, we make more money selling it at the beef price in the paddock, then putting it through our brand and charging wholesale prices because the beef price is so strong. It's better to be a farmer right now than it is a wholesaler.

But yeah look it's going well. It's a funny one, right? We're probably a bit early, before the tidal wave.

I think in five years, regenerative produce will be everywhere - it won't be different, it will be quite common. In the last three weeks, we've had two of the five biggest beef producers in the country visit our farm to look at what we're doing. You know if those guys are looking at it a) it's the future and b) we'll see a lot more of it.

The reality is, consumers don't know what it is yet - some do, but not very many. You can get chefs excited about it, butchers excited about it, retailers excited - they get it - but as far as 'Mum' walking in and looking at it and seeing a long convoluted word - regenerative - thinking 'what the hell does

that mean?' Along with the other fact that at the moment, which is bittersweet, both fortunate and unfortunate, is that there isn't a regenerative integrity system, unlike organic where it either is or it isn't. So I can go out and use a little bit of RoundUp, go spread a little bit of DAP out if I want, and I can still claim to be regenerative. That then freaks out retailers like Woolworths.

✖ Head on Tas Ag Co's carbon positive property.

Similar to the grass-fed beef marketing of recent times, regenerative could be the next thing the consumer locks onto. What do you say to those who might say you're simply using 'carbon positive beef' or 'climate-friendly beef' as a marketing advantage?

I don't believe it's a fad. I believe that regenerative agriculture is global agriculture's answer to the climate crisis. At the moment I believe conventional agriculture is not sustainable. From a human health point of view, are we living longer or dying slower? There are a lot of data points to suggest human health, planetary health and environmental health are not heading to a good destination.

Either no one knows or no one has the guts to point to the causes, the reality is there's one thing that we all have in common in the developed world, and that is we all feed from the same food system. Diseases don't discriminate over city or country so I suppose with all this in mind, I believe that the food system needs to change and I believe consumers do too. I don't really care what farmers think. I don't really care what the industry thinks. Demand drives supply - always has and always will. It doesn't matter if farmers like it or not. If consumers start to demand products that are produced in the way that they and that early adopters believe is better for the environment, more farmers will start to service that demand.

As more people like me, of which I'm one of hundreds around Australia, find ways of scaling and implementing these systems on-farm and making it commercially viable at a broad-acre scale - why wouldn't a farmer do it? I mean, I don't know one farmer that likes getting up in the morning and putting on their PPE and filling spray tanks full of chemicals. No one likes doing that. I suppose it's a different paradigm. I don't believe it's a fad - regen is absolutely here to stay and it's only going to get bigger and louder. So to answer your question, are we going to jump on that and use it and build fame around it? Absolutely, we are going to be riding this for all it's worth.

Are we seeing a shift in mindsets within traditional farming circles yet? Is regen getting traction?

Yes, absolutely. I know a lot of young people; they don't know what they don't know, but they like the idea of regen. I like to think of getting into a pool as a great analogy. I've jumped in the pool head first and I'm trying to swim. There are people out there that have been doing this stuff for 15 years, they're doing beautiful laps through the regen ag pool. Then you've got some guys who are dipping their toe in the water. You've got some guys that are kind of in the water but they won't let go of the side, they still want to use the chemicals or whatever. It's a funny little analogy but I know

there are a lot of young people my age out there that are starting to take on the family farm and are starting to move towards farming more in line with natural systems. In actual fact, it's the older generation that's allowing this and is quite interested in it. Perhaps they're old enough to remember what the farm was like when their grandfather was running it, before superphosphate, before products like Roundup which came out in their generation (the 1970s), and now they've got this more natural climate-focused culture within Australia. Perhaps they're looking at that next evolution and the young ones are picking up with it.

Whilst there hasn't been mass adoption, there certainly are a lot of young people starting to go, 'hang on, what is all this stuff about?' Perhaps that has something to do with people now getting paid for carbon - you can only get paid for carbon if you've got the carbon, you can only build the carbon if you're practicing these things.

There's another commercial financial reason potentially to do this. I've seen some big conventional guys go, "Oh great, we sequester carbon, let's do it." Well, they're only talking about the top five or ten centimetres and what they're finding out is they spent all this money on a carbon project, farming it and they're not making a difference because they don't know what they don't know. This is such an early space but I'm hoping over time as they change their practices, move to more perennial, basic systems, they do some cover cropping and all these other things as they start to see those carbon increases and not only see the benefits in productivity, profitability, but also carbon.

✖ Sam Trethewey and his family, based in Tasmania.

Just finally, Sam, I'm wondering if there are any learning resources or tools that have helped you along your regen journey that you might recommend to other people?

Yes, because like any industry there's content out there for the people who are doing laps, which is me, which is going to be too much for the people that are dipping their toe in the water. Graeme Sait, who runs NTS, NutriTech Solutions, has a podcast - you've got to be in the pool, off the ledge, and willing to drink out of a fire hose to enjoy that.

Nicole Masters book *For the Love of Soil*, is incredibly passionate and packed full of information. It's a great book; a really candid, upfront, black and white, slap in the face - this is the way things are - approach. Nicole would probably be in the top three regenerative influencers in the world.

Charles Massy is an obvious leader in this space - *Call of the Reed Warbler: A New Agriculture, a New Earth*.

John Kempf runs a regenerative agriculture podcast - it's very farmer-focused and quite technical; it might piss a few farmers off and it's probably for people who've pushed away from the sides of the pool, but it's really insightful.

Lastly - from a livestock nutrition point of view - Pat Coleby has written books about natural cattle, horse and sheep care and that's fantastic as it adds a piece to the regenerative puzzle.

Thank you very much for sharing your insights and experience, Sam.

Not a problem. My pleasure. Hopefully, that's of help to some people.