

PASTURE CROPPING AND REGENERATIVE AGRICULTURE

Colin Seis

The idea for pasture cropping

As Colin Seis tells the story, the idea for pasture cropping came to him during a conversation with his friend Daryl Cluff, while drinking beer one evening in 1993. Colin and Daryl were contemplating why crops and pastures were farmed separately. Their answer: tradition. They had been taught that pasture and crop systems operated by different ecological processes and were thus incompatible. Crops needed tilling and pastures needed animals. The systems could be alternated over the years, but never integrated. Right? Or wrong?

Colin raised the question because he had been watching the native grasses on his farm and began to wonder if nature didn't intend for annuals and perennials to coexist. Nature certainly wanted weeds in his pasture - so why not a different type of annual instead, such as oats? He knew why: weeds liked to run a 100 m sprint while perennial grasses like to run a marathon. Two different races, two different types of athletes. Right? Or wrong?

What if it were just one race? What if grasses acted as a kind of cover crop for the annuals, keeping down the weeds but allowing the middle-distance runners, such as oats or barley or canola, to grow while the perennials waited for their turn on the racetrack? More to the point: what if you no-till drilled the perennial pasture during its dormant period with a cereal crop? As farmers, couldn't they figure out a way to make them all get along symbiotically? If nature could do it, why couldn't they?

That's when the light went on, Colin said, thanks to the beer. "You had to be drunk to think of something like pasture cropping. But once we sobered up the next day, we decided to give it a go." And give it a go they did.

So have many others. Today, pasture cropping is practiced by over 2,000 farms across Australia, and many more overseas. The idea continues to spread as well. Here are some reasons why:

- High crop yields,
- Sustained high pasture and animal production from cropped land,
- Increased fodder for livestock,
- High rates of carbon biosequestration,
- Marked improvement in the water-holding capacity of the soils,
- Improved nutrient cycling,
- Improvements in biodiversity and resilience even under drought stress,
- Significantly reduced input costs and risks,
- Improved economic return from the "vertical stacking" of enterprises, and
- Improved 'happiness' quotient on the farm.



Above: Colin Seis, co-inventor of pasture cropping and regenerative agriculture advocate

It is this last point that is perhaps most important, Colin said. As a practice, pasture cropping is pretty straightforward: by growing an annual plant in the competitive niches in the root ecology of a perennial pasture, it avoids the need to kill pasture grasses prior to sowing a crop, thereby maintaining a living plant cover, which improves biological health of the soil and protects from wind and rain erosion. Plus, a farmer gets two products - crops and animals - from one piece of land.

But it is the social and emotional value of farming regeneratively, as Colin calls it, that matters most to him. To tell the story properly, we need to back up in time.

A new farm

Colin's 840 ha family farm, "Winona", is located 20 km north of Gulgong in the central tablelands of NSW. Colin's grandfather resisted the industrial changes being pushed on Australian wheat farmers by agricultural companies and government agencies. His son, Harry, however decided to give something called "New Manure" a go, which turned out to be an early version of superphosphate, in an attempt to boost declining yields.

Trouble slowly escalated after Colin's father bought a tractor. He didn't know it, but his increased ploughing was depleting the soil, carbon especially. A vicious cycle ensued: less fertility in the soil meant more chemical inputs were needed to compensate. Then the farm began to fail. Costs kept rising, fertility kept falling, salinity rose, trees began to die - and they were going broke.

The farm ended up becoming dysfunctional and unprofitable. The granite soil on Winona had become compacted and acidic, and organic carbon levels had dropped to below 1.5 percent. The topsoil had declined to less than 100 mm deep and the subsoil had become sodic. Areas of salinity were also breaking out around the property.

Then in 1979, a wildfire burned almost all of Winona. Three thousand sheep died, all of the buildings were destroyed, 20 miles of fencing burned up, trees exploded, grass died, and Colin ended up in the hospital with burns on his body. "Worst of all, there was no money to recover things with, which means we had hit rock bottom" he explained. When Colin had recovered from his burns, he decided to rethink the way he had been practicing agriculture. The fire suddenly created an opportunity to create a new farm.

The move towards regenerative agriculture

The first step was to physically rebuild the farm, which took two years, with lots of help from neighbours. The second step was to go cold turkey on fertilizer, herbicides and pesticides, because they couldn't afford them. The pastures collapsed as a consequence - they were addicted to phosphorus, Colin said.

The third step was to research native grasses. Could they come back? Would they be an acceptable alternative? His father had battled against native grasses all his life, Colin said, and they kept returning despite his efforts at eradication. This raised a question in Colin's mind: if they keep wanting to come back, why not let them? Apparently, they want to be on the farm.

This led to the fourth step: study the holistic management ideas of Allan Savory, who had developed a way of managing animals on pasture that mimics the graze-and-go behaviour of wild herbivores. Colin resisted initially, but again felt that he had no choice. He quickly learned that it worked, however it created a long transitional period of low productivity, which reinforced his neighbours' belief that native grasses were not as productive as introduced ones. But Colin

persisted with his plan.

By 1990, things had improved substantially, and Colin was seeing benefits both on the land and in his bank account. But he knew it wasn't enough to completely repair all the damage that Winona has endured over the years. He needed a new idea. That's where the beer came in. "Before industrialized agriculture was developed, the world's grasslands and farms contained hundreds of plant species of all sorts," Colin said. "And they functioned with very few problems like disease, insect attack and weeds because it was a balanced ecosystem. Pasture cropping returns that balance. It also creates good, rich soil with high carbon levels and good water-holding capacity."

Today, Colin and his son Nicholas run around 4,000 merino's on "Winona" and pasture crop around 200 ha annually in oats, wheat and cereal rye. Thanks to holistic management, pasture cropping, and other regenerative practices, "Winona" has left rock bottom far behind. So have Colin and his family.



Above: In pasture cropping, grazing and cropping are combined and managed in a way where each one benefits the other. At left, the crop is shown being harvested, with emerging perennial grass beneath. At right, the native grassland is shown being grazed after the crop is harvested

Acknowledgement

This article has been adapted with permission from a story by Courtney White which originally appeared in 'Acres' in July 2012. The complete story can be viewed online at Colin Seis' website, www.pasturecropping.com.