

# Science for soil



Dr Mary Cole is internationally recognised for her work in plant pathology and microbiology. 360745

Pictures: STEWART CHAMBERS

On a 60-acre plot of land in Garfield, science and soil quietly converge. Microbiologist Dr Mary Cole has dedicated an entire career to the pursuits of sustainable agriculture and soil vitality from her on-site laboratory company AgPath, as Gazette journalist **ELEANOR WILSON** learnt.



**M**icrobiologist Dr Mary Cole lives by a simple motto: care for the soil and everything else will take care of itself.

It's an ethos the academic and her husband Alan Cole OAM have put to practice for almost six decades on their 60-acre property in Garfield - where large trees and fresh produce thrive on a modest mix of organic compost.

"This garden has never seen a chemical, it's just compost tea," Dr Cole boasts proudly from the lush crops that carpet the grounds of the farm.

The property itself houses the Cole home - an oasis of organic fruit, vegetables and flowers designed around outdoor living.

It is also the site for AgPath - Dr Cole's pride-filled microbiology laboratory, where she executes microbial pathology research and farming consulting services alongside a small team.

The day before the Gazette's visit, AgPath received 17 soil samples from local and commercial farmers eager to improve their soil health.

They will be tested for microbiology, before



AgPath is currently undertaking soil health trials thanks to a grant from Sustainability Victoria. 360745

**“We’ve got too far away from Mother Nature and if you work with Mother Nature, she gives back in spades.”**

Dr Cole constructs a program to help each farmer maximise their soil vitality.

AgPath's mission is to introduce farmers to biological farming with the viewpoint of improving soil health and productivity.

With a PhD in plant pathology and decades

of research in sustainable agriculture, Dr Cole has long been at the forefront of biological non-chemical farming practises.

"What I've always tried to do throughout my career, I've always been a farmer, I've always tried to find out how I can get the best for the farmer with the least cost to the farmer."

She thinks her father's attitude rubbed off on her, a viking naturalist who learnt about caring for the land from First Nation's populations in Northern Queensland.

"As a very small child I was introduced to caring for country and I've tried to do that for the whole of my life.



Rachel Cavallo tests a sample at the AgPath lab. 360745



Compost is screened and combined with water to create microbe rich compost tea. 360745



A 1000-litre vat used to make compost tea. 360745



Dr Cole and husband Alan grow their own organic produce on the property. 360745

“Care for country and it’ll look after you.  
“We have to get rid of this arrogance that we know better, when we don’t.

“Mother Nature will show you what to do and what’s not working, you can see if you actually look and see, then its all there in front of you.”

On the property, the only thing that leaves is the odd sardine tin and the wine bottles.

Everything else, she explains, goes into their compost.

Some would consider the Coles lucky to live without many of the routine nuisances that inhibit farmer’s practices today.

Their crops are free from insect damage, there’s no lice or Lucerne flea to pick at their pasture and they haven’t had scours in 40 years.

Except, it’s not quite luck, as Dr Cole explains.

“In good, fungal dominated soil, you don’t have weedy species, it is so simple a concept to come back and say to mother nature ‘what is it that you want me to do’ and if you do that, she’ll reward you.

“We’ve got too far away from Mother Nature and if you work with Mother Nature, she gives back in spades.”

But from a microbiology perspective, the absence of pest species also comes back to having nutrient-rich soil.

“In an organic environment, you have large leaves, good photosynthesis and you build up the sugars.

“When the sugars get to a certain amount 10 or 12 per cent, insects can’t digest the sugars.”

Dr Cole is fervent in her opinion that pesticides and other chemicals are destroying Australian soil.

“Synthetic chemistries are literally destroying our soil and there’s millions upon millions of acres of agricultural land around the world that now doesn’t produce anything because its been destroyed.

“I’ve worked for all of my career in trying to have farmers understand that they need to care for the soil.”

She is accustomed to her viewpoints being

viewed as outlandish.

“In the very early time of my career you’d be called a greeny or a crazy woman in a very male-dominated agricultural system.

“It was hard, I had some bad days.

“I was encouraged by my wonderful mentors to continue, because this is life on the planet and we have to leave a planet for our children and grandchildren where they can enjoy some of the things we enjoyed and it is fast running out of time.”

Crops on the Garfield farm are fed with brews of microbe filled compost tea - produced by mixing compost with water and cultivating their microbiology.

Dr Cole makes her compost tea in a 1000 litre vat, using just 10 to 15 kilograms of solid compost, allowing them to spread their compost further.

“If you have a farm that is broad acre for example, there’s no way you can make the tens of thousands of tons of compost you require to get the amount of organic matter that you need.

“But with a compost tea, you can make enough compost tea to be able to go out and spread.”

Last year, AgPath became the recipient of a research grant from Sustainability Victoria, injecting hundreds of thousands of dollars to better understand the potential for a range of organic amendments to improve soil health and plant yield.

On 11 October, a field day hosted by AgPath and Melbourne University on the Garfield farm will analyse the lab’s progress, looking at how compost and soil can influence yield and nutrient availability.

Despite their significant contributions to the environmental pathology field, Dr Cole remains humble in her legacy.

“If one is humble and you actually look and see what nature can do, then its such a pleasurable life.

“We love what we’ve got here.

“Our legacy will be a little bit more clean air and good soil.”

To RSVP to AgPath’s Field Day, contact lab@agpath.com.au



The 60-acre Garfield farm is completely organic. 360745

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