

The potential of pyrolysis to create sustainable land management opportunities in the Hunter Valley

Newell, P

Tom Farrell Institute, Newcastle University and Crucible Carbon Pty Ltd - Elmswood, Gundy, Via
Scone, NSW 2337 AUSTRALIA

E-mail: patrice.newell@cruciblecarbon.com

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Abstract

With the first commercial production module of the Crucible Carbon Pyrolysis technology being built for demonstration on the site of the Vales Point coal-fired power station, the creation of a new way of managing biomass in the region has begun.

This is a step towards the “Carbon Valley 2050” vision of the Hunter Valley as an emerging region of climate friendly innovation.

Can land owners incorporate into their business models this prospective opportunity to provide renewable energy resources as well as biochar for agriculture and rehabilitation of mined land?

What are the systems necessary to enable farmers to participate in this new opportunity? While coal may be king in the Hunter Valley most of the land remains under pasture and is utilised predominately for cattle grazing.

This research project will study and measure:

1. The biomass resources available on one 10,000 acre farm combining livestock grazing and horticulture
2. The performance of different biomass accumulation techniques.

3. The quality of energy and char products that might be produced by pyrolysis.

4. Application of the biochar in a commercial horticultural crop on the same farm and the performance impacts on the soil and the crop.

5. The carbon balance for the system as a whole, including net abatement and sequestration.

Farmers need to understand the biomass/bioenergy potential under their management. This study will assess the business opportunities and logistical challenges in the Hunter Valley environment and will demonstrate in practice the most promising solutions.

Industrial agriculture so often thinks little of bringing onto the farm huge volumes of inputs – both inorganic and organic. This research will examine how to better utilise the biomass within one farm in the hope of reducing inputs and creating a more cyclical micro-economy.

There is a need to re-imagine the land’s potential productivity if we are to maximize the value from bio-energy and carbon capture and storage in soils. This is an opportunity for farmers, land owners and rural industries to make a vital contribution to the transition away from the fossil fuel economy.