



Carbon Grazing

The Missing Link

Improving plant & landscape resilience

Re-carbonise the soil for profit

De-carbonise the atmosphere

Reduce methane emissions

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www.carbongrazing.com.au

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Carbon Grazing® is a general principle to maximise the introduction of carbon from the atmosphere into the landscape between the trees. Those who implement Carbon Grazing should enhance their economic return and achieve positive environmental outcomes including methane reduction.

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CHAPTER 5

THE TWO FOOD CHAINS PLANTS SUPPLY

The carbon compounds contained in plants provide energy and are the building blocks for all the processes in animals, birds and the soil fauna/biota. Remember the earlier comment that we humans are 18% carbon.

After they grow, plants do not just evaporate, they are also consumed. The different forms of consumption are; animals and birds, soil biota/fauna, insects, and fire.

In following the path of carbon, after it enters the landscape through photosynthesis, we discover that plants supply two food chains, one above the ground and one below the ground.

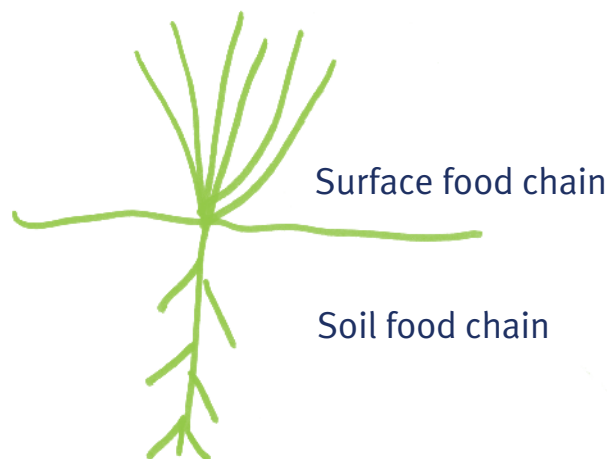


Figure 4: The two food chains which plants supply.

Plants feed both food chains through leaves, stems and roots. One of the critical messages of this book is that plants should be recognised as the start of both of these food chains. All life in the landscape depends on plants. Plants achieve this by capturing the energy of the sun and storing it in a form that can be utilised by all living things above and below the ground. Apart from sourcing carbon out of the atmosphere plants also accumulate nutrients from the soil. Plant products are not suited to all consumers, which is why herbivores precede carnivores in the flow of carbon.

The food chain below the ground is out of sight and out of mind for many producers. This is unfortunate, as it is what happens under the ground that determines the health and fertility of the soil that plants grow in.

The food chains are the paths of consumption which all the non burnt carbon follow before the bulk of it eventually returns to the atmosphere. Burning is the immediate return of carbon to the atmosphere. As we move along the food chains from plants, carbon compounds become part of the body of the consumer as well as part of the waste product of consumption (ie the form of carbon changes as it is utilised). This process applies to soil microbes and soil fauna, as well as animals and birds.

During consumption above and below ground, some of the carbon consumed is always lost and returns to the atmosphere in the form of carbon dioxide. This is known as respiration. With respiration, we breathe in air which contains oxygen and release carbon in the form of carbon dioxide as we breathe out. Soil microbes also produce carbon dioxide when they consume organic matter in the soil, as part of the process of restructuring it and making nutrients available to plants (ie they respire like all other living things). It is important to be aware that there is an ongoing loss of carbon along the food chains with each consumption event. We never get anything for nothing. This is why the world could support more people as vegetarians than if we were all meat eaters. There is less of the original carbon available for consumption at the livestock stage than the grain stage, as it is further along the food chain. This discussion highlights the need for a flow of carbon to maintain the cycle of consumption, which is the basis of all rural production. This in turn highlights the sheer importance of correct plant management, as plants are the sole source of carbon. This applies equally to both farmers and graziers.

There is also a separate food chain in the ocean. Plankton are the entry point for carbon into the oceans. Plankton in the oceans use photosynthesis to extract carbon from CO₂. Like grasses they use chlorophyll to achieve this. They are the starting point of the marine food chain. As we move through this book, we will discover that there are a lot of similarities, like this one, in what we may have thought were completely different processes

The big picture and the processes involving plants, animals and soil biota, and how they interact, can not all be explained at once. That said, **they are all part of carbon flows as they all contain carbon.**

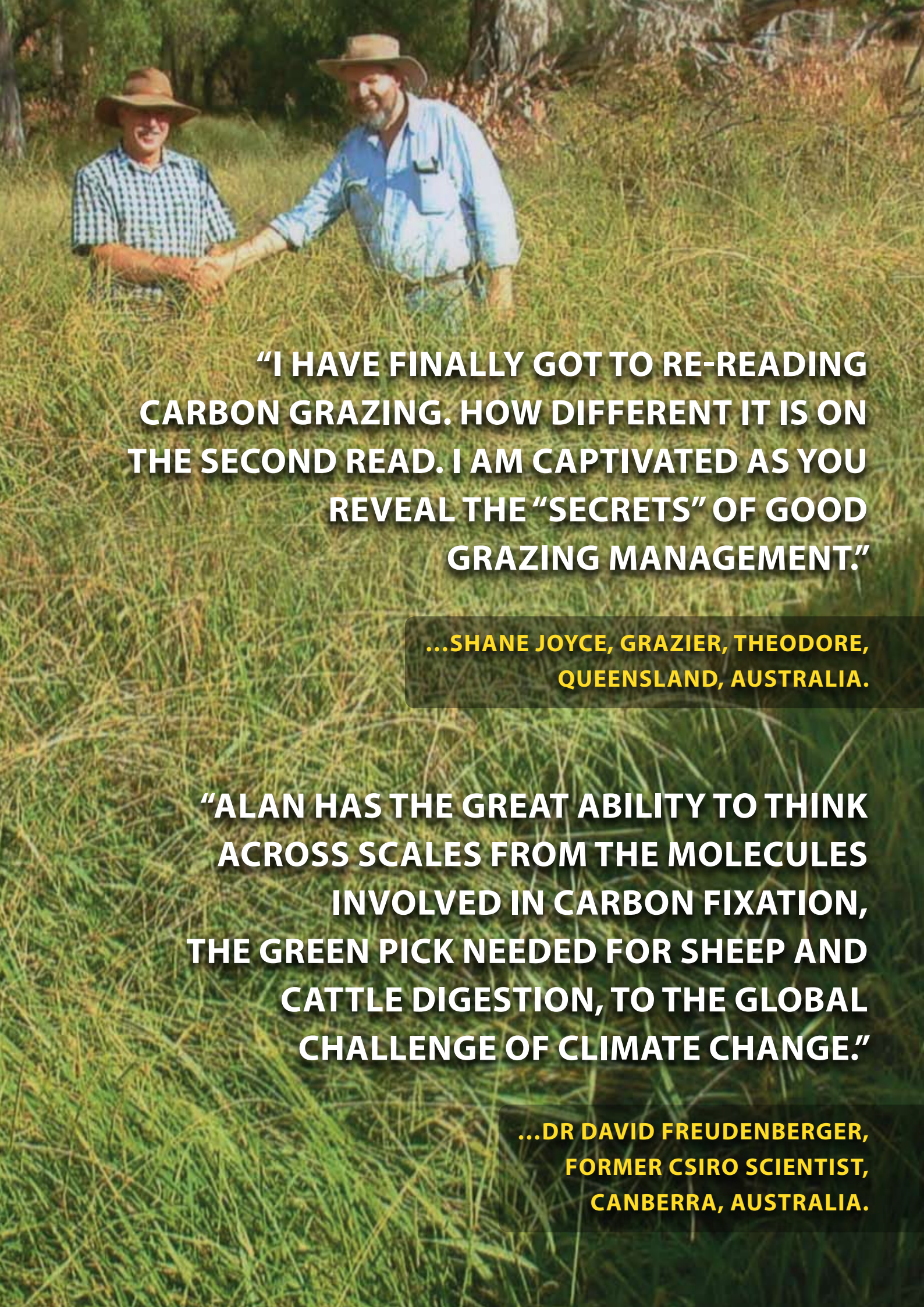
Already it is becoming obvious why the statement was made that carbon is always moving. It is moving from the atmosphere to the landscape via plants and then it is moving along both food chains through consumption. All the time, some carbon is returning to the atmosphere with every consumption event. The diagram of the carbon cycle in the chapter of the same name, details the movement of carbon on our planet. This book focuses on the plant and soil components of the carbon cycle. The outcomes of consumption in the soil are very important and are discussed in the soil chapter.

Fire is an important tool in landscape management. However, it must also be remembered that fire is an instant return of carbon back to the atmosphere in the form of CO₂. Fire immediately removes carbon from our production system. Fire is another form of oxidising carbon, just as respiration is. With fire, animals and soil microbes are denied access to the carbon.

While reading this book, it is important to be aware of the similarities in how all living things function. The microbes in the stomach (rumen) of a cow are very similar in their requirements to the microbes in the soil, the animals, or us. This is because they all have to build their bodies as well as function. All living things require energy and protein. The available supply of energy and protein is either directly or indirectly reliant on the supply of carbon.

As the book unfolds, it will be shown that maximising carbon flows through the two food chains (ie above and below ground), maximises rural profits and also meets the expectations of the other stakeholders in society through favourable environmental outcomes.

In following the path of carbon, we are really following consumption along the two food chains. It is through consumption that carbon keeps changing its form. As carbon cycles through different forms, it provides energy and building blocks for all the processes in animals and birds above ground and the soil fauna and microbes that live below the ground.



"I HAVE FINALLY GOT TO RE-READING CARBON GRAZING. HOW DIFFERENT IT IS ON THE SECOND READ. I AM CAPTIVATED AS YOU REVEAL THE "SECRETS" OF GOOD GRAZING MANAGEMENT."

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