



Department of  
Primary Industries

Stronger Primary  
Industries



# Regenerative Agriculture

Susan Orgill and Warwick Dougherty, NSW DPI



# Contents

Introduction	3
What is regenerative agriculture?	3
Common attributes of regenerative agriculture	4
Outcomes of regenerative agriculture	6
Challenging our scientific way of thinking	6
The role of regenerative agriculture in our future farming systems	7





# Introduction

Our agricultural systems continue to face many challenges to soil and landscape condition, uncertainty associated with increasing climate variability and the desire to provide farm products. This is at the same time as delivering environmental benefits to the broader community. These challenges in part have led to a growing interest in enhancing aspects of how we manage our farming landscapes. Regenerative agriculture is one potential approach to many of the challenges to our landscapes, the viability of farming enterprises and lifestyles, and has gained the support of many farmers, scientists, consumers, politicians and those in the financial sector.

## What is regenerative agriculture?

Regenerative agriculture can be challenging to define as it means different things to different people. Fundamentally, regenerative agriculture is about restoring and enhancing ecosystem function on farms and in landscapes through practices designed to work with the landscape, climate, people and livestock. Regenerative agriculture is often described as a destination with a critical starting point being to define your goals; so, the question then becomes how do you get there? You could make incremental changes or transformational changes. Many practitioners say that it all starts with a mindset shift. There is no denying that many producers are recognising the need for change in the way they do things to improve landscape health and productivity, as well as the resilience of their enterprises and improve their wellbeing.

It is worth noting that many farmers who do not identify as regenerative agriculture farmers have aspirations that are similar to those who do identify as regenerative agriculture practitioners.





# Common attributes of regenerative agriculture

- setting clear aspiration and goals for the health of your farming systems and landscape, your business and your lifestyle
- progressively improve natural capital on farms; soil, water and biodiversity
- creating landscape- and climate-specific farming decisions that work with variability in landscapes, time and climate
- developing links between producers, industry, consumers and the public
- growing individuals, communities and farming businesses that are flexible and resilient under a changing and variable climate.





## Regenerative agriculture is not prescriptive but is focused on outcomes and practices, which may include:

- adaptive grazing management (this can be rotational, cell or strategic)
- reduced reliance on agricultural chemicals (ranging from reduced inputs, to organic amendments, to microbial inoculants, to no inputs)
- integrated pest and weed management
- mixed species planting in grasslands, pasture phases and cover crops
- biodiverse plantings within the farming landscapes, and any efforts to promote biodiversity
- no-till farming
- stubble retention
- water ponding and spreading.

Many of these practices are tried, tested and evidence-based.





# Outcomes of regenerative agriculture

There is a range of environmental, economic and social outcomes that are often associated with regenerative agriculture including:

- enhanced ecosystem services, including increases in soil organic carbon
- improved soil function (i.e. optimised microbial processes for nutrient supply and improved soil structure)
- improved plant root growth and below ground contributions of 'plant carbon' (i.e. root exudates)
- increased landscape heterogeneity
- enhanced farming system resilience, recovery and stability under short- and long-term climate variations (drought and climate change respectively)
- connecting individual farms and farmers within farming landscapes
- improved life satisfaction or wellbeing.

Again, it is worth pointing out that many farmers who do not identify as 'regenerative farmers' seek, and indeed achieve, similar outcomes.

## Challenging our scientific way of thinking

Elements of research and development (R&D) the NSW DPI and its partners undertake aligns with the practices and principles of regenerative agriculture, but there are some clear needs for more information and evidence in the field of regenerative agriculture. A major challenge is dealing with whole of farm 'condition' (baseline natural capital assessment, as well as agricultural productivity and profitability), spatial and temporal variability, systems thinking and landscape-scale decisions.

Often, traditional agricultural trials are short-term (e.g. 3 years) and are designed to control variables to identify individual mechanisms responsible for system changes. This approach has been, and still is, essential for developing our fundamental understanding of processes, much of which informs regenerative agricultural practices. However, to build on this knowledge and better understand the opportunities of regenerative agriculture, specifically how multiple mechanisms and processes interact, we need to take a systems approach and work with the variability and heterogeneity of our landscapes through time.

The common attributes of regenerative agriculture align with the NSW DPI Vision of 'Stronger Primary Industries'. NSW DPI, through its RDE&A and industry programs, continues to support the development and implementation of a range of approaches to improve the condition of agricultural resources and landscapes to deliver on this vision.



# The role of regenerative agriculture in our future farming systems

Our agricultural resources e.g. soil, water, climate, plants (and even producers!) are coming under increasing pressure to produce more with less. We need our farming systems to be resilient so they can continue to provide food, fibre and ecosystem service benefits, as well as recover quickly from disturbances (fires, droughts and floods). Many producers adapt practices and develop innovative and new ways of doing business. Our capacity to support this form of innovation and change over time with sound scientific and evidence-based support is important to building adaptive capacity and resilience in our landscapes and communities.

Regenerative agriculture aligns with many of the aspirations of producers, advisers and agricultural researchers. We need to better understand the role of regenerative agricultural practices in providing productive, profitable and resilient farming businesses, and support producers to make informed decisions and implement the right practice in the right place at the right time. To do this, the research and development community needs to partner with the regenerative agriculture community and stakeholders to build on current R&D and collect more evidence on the production and ecosystem service benefits of regenerative agricultural practices.

