

Pasture Cropping

Profitable Regenerative Agriculture

Colin Seis



Why Practice Pasture Cropping?

Concerns about declining profitability, poor soil structure, dryland salinity, soil acidification and increasing numbers of herbicide resistance weeds have prompted over 1500 farmers throughout eastern, southern and Western Australia to adopt Pasture Cropping.

The resulting year-round groundcover reduces wind and water erosion, improves soil structure, reduces weed numbers, increases nutrient availability and increases levels of soil organic carbon. The soil health benefits from plant root exudates and a large increase in organic matter derived from a mix of shallow rooted crops and deep-rooted perennial pastures are numerous and include large improvements of soil microbiology.

In an era when dryland salinity, soil acidification and loss of soil carbon are having increasing impacts on the productivity and profitability of farming enterprises, pasture cropping is providing one option for addressing these issues.

What Is Pasture Cropping?

Pasture cropping is a technique of sowing crops into living perennial (usually native) pastures and having these crops grow symbiotically with the existing pastures.

Colin Seis and Daryl Cluff initiated this idea about 15 years ago and since that time, on his property “Winona”, Colin Seis has spent much of his time perfecting this technique and due to this it is now possible to grow many different types of winter and summer growing crops, without destroying the perennial pasture base.

It may appear that pasture cropping is simply a cropping technique. It is much more than that. Pasture cropping is the combining of cropping and grazing into one land management method where each one benefits the other. The potential for profit and environmental health including building soil carbon in being able to do this are enormous and a lot of landholders in many regions of Australia are showing this to be the case. There are now over 1500 farmers pasture cropping cereal crops into summer (C4) and winter (C3) perennial native grass in NSW, South Australia, Victoria Queensland and West Australia as well as the USA and Scandinavia with good results.

Benefits Of Pasture Cropping

The original concept in 1993, of sowing crops into a dormant stand of summer growing (C4) native grass, like red grass (*bothriochloa macra*) was thought to be a very **inexpensive method of sowing oats for stock feed**. This certainly turned out to be true, but it was quickly learnt that there were many side benefits and that it was only touching the surface of a land management technique that is proving to be revolutionary. The grazing crops performed so well that it was obvious that good grain yields could be achieved as well.

It was also learnt that sowing a crop in this manner stimulates perennial grass seedlings to grow in numbers and diversity. This produces more stock feed after the crop is harvested and totally **eliminates the need to re-sow pastures**. Conventional cropping methods require that all vegetation is killed prior to sowing the crop and while the crop is growing.

From a farm economic point of view the potential for good profit is excellent because the **cost of growing crops in this manner is a fraction of conventional cropping methods**. The added benefit in a mixed farm

situation is that **up to six months extra grazing** is achieved with Pasture Cropping compared with the loss of grazing due to ground preparation and weed control required in traditional cropping methods.

Other benefits are more difficult to quantify.

These include the **vast improvement in perennial plant numbers and diversity of the pasture** following the crop. This means that there is **no need to re-sow pastures**, which saves from \$100 to \$150 per hectare.

The technique is also being used to restore native grasslands over much of Australia.

There is growing evidence, anecdotal and scientific, to support that it **improves soil health, improves water use efficiency and general improves ecosystem function.**

By retaining perennial native grass in grazing and cropping systems and having 100% ground cover 100% of the time, **large increase in plant biomass** can be achieved when compared to conventional methods. This biomass dramatically increases soil carbon levels and improves the soil food web.

On “Winona” organic soil carbon levels have risen from 2% to 4% over a 10 - year period.

Independent studies at “Winona” have found that Pasture Cropping is 20% more profitable than conventional agriculture this is coupled with great environment benefits that will improve the soil and regenerate our landscapes.

Current Research Reports Positive Outcomes

The CSIRO have also taken pasture cropping seriously investing in a three-year trial project that was conducted by Dr Sarah Bruce on “Winona”. The project investigated many aspects of Pasture Cropping and documented a **wide range of positive outcomes, including increased water use efficiency, improved nitrogen use efficiency and improved plant biomass**

Dr Warwick Badgery and Grain and Graze Australia are also conducting **research on the practical aspects of Pasture Cropping**, which include fertiliser and chemical use and soil health. One of the more recent findings has been on native perennial grass recruitment during the Pasture Cropping process. These results **verified the technique being used restores native grasslands.**

Is Pasture Cropping Successful Everywhere?

Pasture Cropping is being adopted over a very large range of varying climatic conditions and soil types in Australia and it is very successfully being practiced from Gulgong N.S.W, Cobar in Far West N.S.W, Biloela in North Queensland, Bairnsdale in South-East Victoria, Jamestown in SA, Geraldton in W.A. and numerous areas between.

These districts vary greatly in annual rainfall and distribution of rainfall.

In these areas good crop yields have been achieved while stimulating perennial species, improving soil health and increasing plant biomass, which will increase soil organic carbon levels over time.

Until this point in time Pasture Cropping has been practiced with the use of chemicals to control weeds and conventional fertilizers to manage soil chemistry. But over time, as Pasture Cropping stimulates improvement in soil health including soil micro -organisms with increase in soil organic carbon levels and improvement in ground cover, many crops are now being sown without these inputs.

The benefits of pasture cropping are enormous, way beyond the short-term crop yields. They contribute to the development of vitally needed top-soil, water management, stabilising the many forms of soil erosion, controlling weeds as well as great potential for increasing soil carbon levels and improving soil health. It gives farmers and graziers a tool to effectively manage their properties whilst individually contributing to a healthier environment.

Once complete ground cover is achieved, the Pasture Cropping technique can be used to grow organic crops. This can be done without using a plough or herbicide to destroy the existing pasture.

Note. Because of a groundswell of interest in Pasture Cropping, Colin Seis has been helping landholders in many parts of Australia and other countries advising them with workshops and private on-farm consultancy on the best methods to use for their particular area, rainfall and pasture type. This consultancy-type advice can be extended to any interested party.



Colin Seis
“Winona”
Gulgong
NSW 2852

Ph 02 63 759256
Email: colin@winona.net.au