

Clay delving still working after ten years

Location: Rudall

Region: Eastern Eyre Peninsula, SA

Industry: Continuous cropping

Issue: Addressing non-wetting sands with delving

Key outcomes: Improving yield, profit and paddock management by delving non-wetting sandy soils

Background

Laryn, Paul, Brad Harris and their families farm 6500 ha in the Cleve and Rudall districts. Their properties have dune swale country which is a mixture of heavy clay soils through to very light and deep sands. In the past the Harris's used to treat areas within paddocks very differently due their yielding potential and erosion risk. With summer rains comes weed germination and growth, and 10-15 years ago the Harris's wouldn't spray weeds in these paddocks until it was time to implement their seeding program as this would expose the light sand soil to erosion.

The project

Clay spreading and delving gained popularity within Eastern Eyre Peninsula in the early 2000's. Harris' were involved in early adoption and decided to trial delving to see if it would work for them. Their trial proved successful with noticeable improvement on small dune area within several paddocks. They decided to build their own clay delver in 2007, with the aim to address non-wetting soils and germination issues within more of their paddocks. Among the list of desirable outcomes sort was improvements in soil and weed management, and increase in soil cover and productivity.

Over the next three-four years Laryn, Paul and Brad delved over 600 ha for clay resulting in varying degrees of success, attributed to the natural fluctuations in clay quality and depth. Having delved and brought up approximately 120 t/ha of clay, the Harris's could undertake early summer weed control across the whole paddock whilst still retaining soil moisture saving time and money.

"The delving also assisted in Brome and Rye grass control, as these weed species became buried they tended to rot and an overall reduced in weed seed germination was achieved." said Paul



Brad Harris amongst a mature 10 year old delved area still showing better results than undelved soil, even with a dry start the year.



Brad and Paul Harris in an undelved area of the paddock emphasising the poor condition of the entire paddock prior to clay delving.



Management of a freshly delved site is crucial. In the first year the paddock was sown down to barley a) to capitalise on the increase in bulk, and b) to use the early plant vigour to assist in protection from soil wind erosion. They estimated a one hundred percent increase in crop germination in comparison to germination under the similar weather conditions in previous years.

The Harris's have now been able to crop most of this paddock for the past 10 years and the paddock produces very consistent yields, has remained resilient to most wind erosion events and continued to build organic matter in the good growing years.

Delving proved is worth in 2017

There was an exceptionally dry start in 2017 and soil moisture was notably non-existent at depth at the time of seeding, in both the delved and non-delved areas. Sowing dry resulted in patchy germination in areas where the clay percentage was low and/or the clay quality varied. However, where clay particles and clods were present there was significant germination (at least 70-80% better) in comparison to those without. In spring 2017, where better delving results are known to be, the crops seemed to be looking healthier and more consistent in colour.

By September 2017, there was a noticeable difference in areas with lower clay quality with these areas haying off before the rest of the paddock.

The consensus was that without delving and without being able to undertake an early summer spraying, there would have been nothing worth harvesting in 2017.

Outcomes

Within the first year of delving the Harris's indicated that the paddock was 100% better to manage. This included in the short-term increases in germination and yield, and they also indicated that the paddock has been consistently better over the last decade.

They believe that they made their money back in the first year, particularly undertaking all of the work themselves. However, a careful cost estimate of labour is recommended to others wishing to follow suit. It is a large undertaking and they recommend staging the works if you were to go this way.

"In this project we worked on operating costs of \$150 ha to undertake the delving and incorporation with an offset disk. This does not taking into account the actual Delver build costs." said Paul.

They believe that they easily picked up over \$100 ha in yield annually following delving.

When asked - Was it worth cropping in a clay delved paddock in a dry start? The answer was a resounding - Yes it was!

The future

The Harris's would like to continue to follow-up old delved sites with additional incorporation techniques, such as spading, to get a better seedbed at the time of sowing, or using a ripper with inclusion plates to increase organic matter.



Brad with the delver the Harris' made and adapted.

