



Lime efficiency trial – East Tenterden

Trial host: Thomlinson Family

Key Messages

- Lime applications typically achieved a 210 – 870kg/ha increase in oat yield over the nil lime control.
- In 2020, there was no significant difference achieved between 5t/ha and 10t/ha lime applications.
- In the 2016 & 2019 growing seasons, significant yield responses were seen across the trial site in all lime treatments. Yield differences occur in seasons with a dry spring & not in seasons with a wet spring as experienced in 2020.
- The 5t/ha lime application followed by mouldboard ploughing for incorporation led to the highest average yield at this demonstration site in 5 out of 6 years analysed.

Background & Trial Aims

Soil acidity, if not managed appropriately, has the potential to cause significant losses in yield production across the landscape, as well as creating induced toxicities and increased salinity or erosion risk. The site had severe sub soil acidity and soil tests have confirmed that the trial area was relatively uniform in sub soil acidity. The purpose of the trial is to determine how best to ameliorate subsoil acidity over time via varying lime application rates and incorporation method.

Treatments

A total of seven different amelioration rates and incorporation methods were analysed during the life of the project, including:

- Nil lime (2014) – control treatment
- Nil lime (2014) + mould board ploughing (MBP) (2015)
- 2.5 t/ha lime (2014)
- 5 t/ha lime (2014)
- 5 t/ha lime (2014) + MBP (2015)

- Nil lime (2014-2018) + 5t/ha lime (2019)

- 10 t/ha lime (2014)

Results and Discussion

These results build on previous research conducted by SCF since 2014. The original funding for the project came from South Coast NRM. In 2020, SCF successfully applied for a grant from the National Landcare Program (NLP) to communicate and extend the results of long-term soil health projects that had already been established by the group.

Overall, SCF found that there were no significant differences recorded between treatments in the 2020 growing season at a 95% confidence level. However, it is important to note, that all treatments yielded above the nil lime application (avg yield = 4.79t/ha), with the exception of the 2.5 tonne/hectare lime application rate which achieved an average yield of 4.17t/ha of oats.

The 2.5t/ha lime application average yield was brought down by one plot recording a 2.99t/ha yield, which was significantly lower than the other plot's value of 5.34 t/ha for the same



treatment. Removing this outlier would bring the 2.5t/ha lime application average yield to approximately 550 kilograms above the control treatment.

The maximum average yield recorded on the trial site was achieved on the 5t/ha lime + mould board ploughing treatment, which yielded an average of 5.66 t/ha. Both 5t/ha (with & without mouldboard ploughing) achieved 30-90kg/ha higher yield than their neighbouring 10t/ha applications. In 5 out of the 6 recorded seasons, the 5t/ha lime application + mould board ploughing treatment yielded the highest.

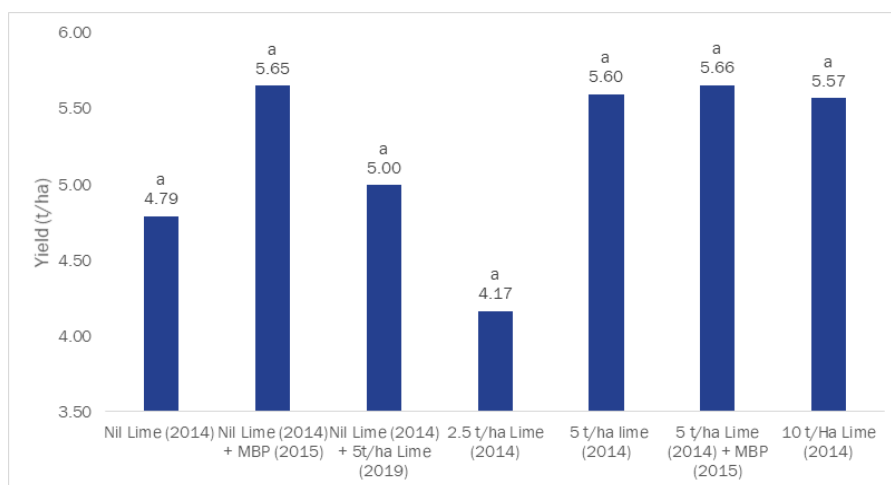


Figure 1: 2020 average yields recorded per treatment type.

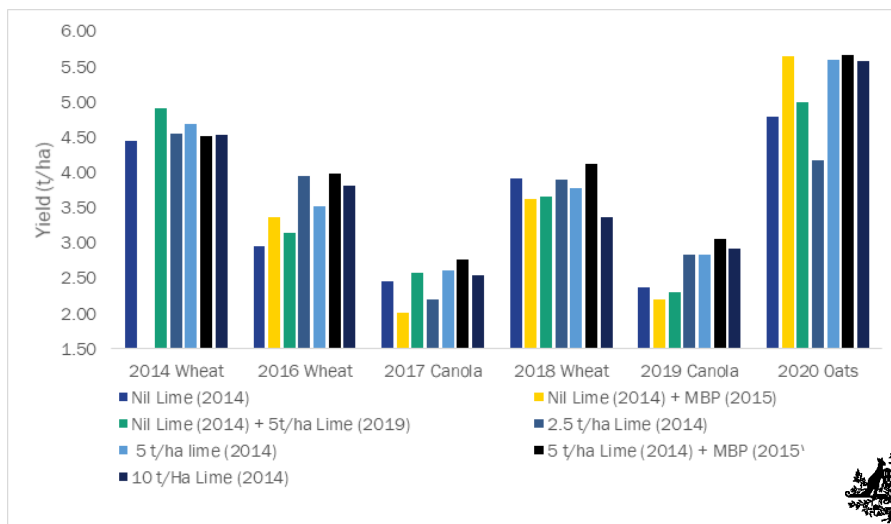


Figure 2: Grouped yields for lime efficiency site (2014 - 2020)

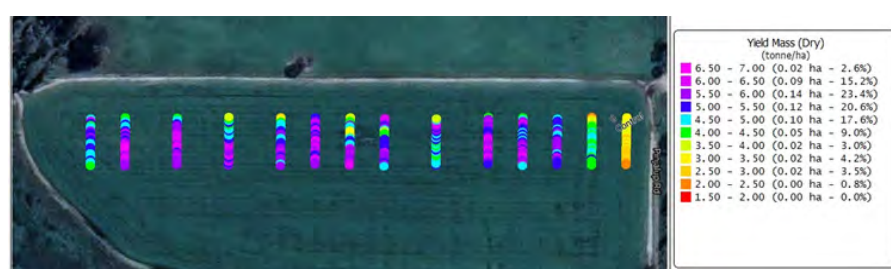


Figure 3: 2020 Oat yield map