Distichlis spicata var. yensen-4a improves the soil physical properties when grown in saline discharge zones

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Introduction

Saline discharge sites are generally seen as degraded environments, both chemically and physically. *Distichlis spicata* (NyPa Forage) is a C4 halophytic pasture species that is able to grow productively in wet saline environments and has been used on a trial basis for approximately 10 years at Wickepin, Western Australia.

Methodology

Destructive and intact soil cores were collected from the field site in July 2005. The site had been established to *D. spicata* 8 years prior to sampling, with an adjacent area that was not planted for comparison.

Results

Eight years of growth of *D. spicata* improved the saturated hydraulic conductivity of the soil at all depths (Figure 1). The saturated hydraulic conductivity increased from 0.5 cm/h in the control, to 7.5 cm/h after 8 years of growth.

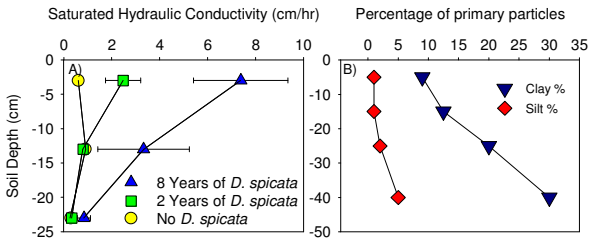

Figure 1. A) The effect of *D. spicata* growth duration on the soil saturated hydraulic conductivity. B) Contents of clay and silt of soil profiles at the field site. Error bars are ± SE of the mean.

Aggregate stability was also improved in the top 10 cm of the soil (Figure 2), with a marked increase in the stability of aggregates greater than 2 mm in diameter.

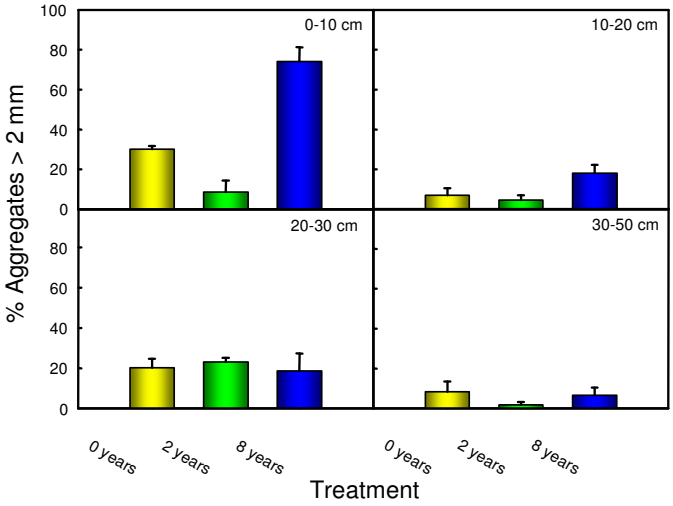

Figure 2. Percentage of water stable aggregates of the soil at varying depths after growing *D. spicata* for 0, 2 and 8 years. Error bars are the SE of the mean.

Soil carbon and nitrogen were also increased where *D. spicata* had been growing for 8 years, with the biggest changes occuring in the top 10 cm of the profile (Fig 3).

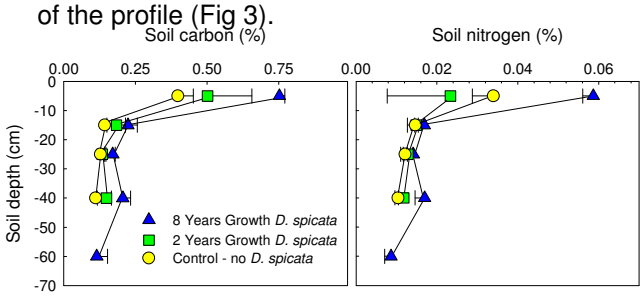

Figure 3. Soil carbon and nitrogen at varying depths after growing *D. spicata* for 0, 2 and 8 years. Error bars are the SE of the mean.

Conclusion

Improvements in the soil physical properties occur where *D. spicata* is grown in saline discharge zones.

Acknowledgements

This work was supported by the Australian Research Council, NyPa Australia Ltd, Department of Primary Industries Victoria, Buloke Park Pty Ltd and Elders Ltd.