

What can be hidden at depth affecting your pasture production?

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Introduction

Salts in surface soils around Condobolin can exceed the tolerances of many commonly used annual and perennial pastures and crops (Semple *et al.*, 1999). This limits production and remediation options of landholders. Pastures are generally more susceptible than broadacre crops to soil salinity (Russell, 1976). Therefore, pastures are prone to production losses when salinity exists.

Soil salinity may not always be present at the surface as white crusts and bare areas. Salts are often stored at depth in the soil profile and may not be readily visible. Soil sampling to depth is required to determine whether salts are in the plant root zone.

Aim

The aim of the project is to investigate soil salinity levels at depth on a typical red-brown earth at Condobolin, New South Wales.

Methods

Intensive soil sampling was conducted in 2000 on a pasture trial at the Condobolin Agricultural Research Station. Sampling was done at five depths to 90 cm. Salinity tests were conducted using an EC_e soil test that considers soil-texture changes down the profile.

Results

Figure 1 shows minimum, average, and maximum soil salinity levels measured in the trial for five depths to 90 cm. Results show wide variability of EC_e levels and a general increase in soil salinity with depth.

Rose and sub clover and some medics have a salinity tolerance of 1 dS/m, and generally lucerne tolerates about 2 dS/m (Russell, 1976). Although most of the soils measured were below this salinity level at the surface, some high levels below 10 cm could impact on

root development and growth of these pasture species. This may be shown by poor germination, stunted growth, or yellowing despite having sufficient moisture.

Conclusion

Soil tests on a red-brown earth at Condobolin showed the presence of salts in the subsoil. Deep soil testing is the best way to determine if hidden salts are affecting pasture production.

References

- Russell, J. S. 1976. Comparative salt tolerances of some tropical and temperate legumes and tropical grasses. *Journal of Experimental Agriculture and Animal Husbandry* 16:103–109.
- Semple, W., Beale, G., Cole, L., Gardiner, T., Glasson, A., Koen, T., Parker, B., Phillips, B., Reynolds, K., and Thearle, L. 1999. *Evaluation of the performance of perennial grasses on saline sites in eastern NSW: site characteristics*. Orange: DLWC.

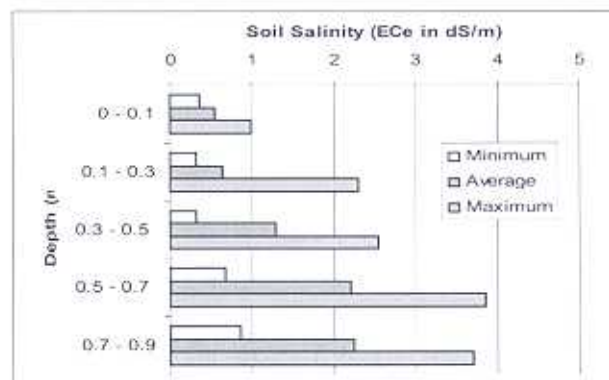


Figure 1. Minimum, maximum, and average soil salinities for the trial.