

Executive summary of findings

Benefit cost analysis of sub-surface
drains for managing on-farm
waterlogging in the Albany and
Esperance Port Zones

Report prepared for:



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Executive Summary

South Coast Natural Resource Management in association with Stirlings to Coast Farmers have conducted a three-year trial to determine the cost-effectiveness of sub-surface drainage in the Albany and Esperance Port Zones of Western Australia. The trial is an investment by the Grains Research and Development Corporation and aims to support growers and advisors make more informed management decisions to address waterlogging on-farm. This executive summary of findings presents the results of two reports that present the Benefit Cost Analyses of the sub-surface drains in each zone to determine their cost-effectiveness and the timeframes associated with economic returns.

The trial was conducted in four locations; two near Albany (Perillup and West Cranbrook) and two near Esperance (Dalyup and Neridup). The trial drains varied in area from 5ha (with a 16ha zone of influence) to 56ha (with a 66ha zone of influence). The cost of installation of the drains ranged from \$2,990 – \$5,190/ha of drain, with lower cost of installation attributed to lower labour costs (grower installation rather than subcontracting installation) and the use of a perforated sock to surround the pipe rather than limestone aggregate.

The yield response due to the drains ranged from 0.2 – 1.5t/ha for wheat, 1.4 - 1.5t/ha for barley and 0.1 - 1.6t/ha for canola.

Results of the Benefit Cost Analysis suggest that sub-surface drains are likely to be a cost-effective way for growers to manage soils that are susceptible to waterlogging in the Albany and Esperance Port Zones of Western Australia.

The net present value of the drains ranged between \$1,900 - \$10,200/ha for the four sites, with a return on investment between 31 - 460% and an internal rate of return of 12-110%. The time to break-even is estimated to be between 2 and 12 years with drains lasting at least 20 years and possibly more than 30 years without significant repair and maintenance costs. **Higher profitability is associated with a greater zone of impact compared to the drained area, greater crop yield responses to the drain and minimising installation costs.**

A Sensitivity Analysis found that the cost-effectiveness of the sub-surface drains is robust to a range of realistic changes to future economic and environmental conditions. The profitability of the drains is most sensitive to expected future prices and yield responses. The larger the area of drains installed, the more important it is to maximise the zone of impact (relative to the area of drains) and minimise installation costs to maximise profitability. However, it is likely that sub-surface drains will remain profitable even if future conditions are significantly more pessimistic than expected.

This analysis is limited by the number of trial years (3), the homogeneity of trial seasons in each zone and the number of years for which crop types were tested (wheat = 4 years, barley = 2 year, canola = 4 years, faba beans = 0 years). **Our results need to be validated with further trial sites, over a longer period of time to consider a range of years and where the yield responses of different crops types are repeatedly tested.**