



Introduction

Key facts

- Sandy soils dominate the landscape across much of the low-rainfall regions of south-eastern Australia.
- The poor water-holding capacity of many sandy soils has both agricultural and natural resource management (NRM) implications.
- Successful management requires a thorough understanding of the complex interactions between sandy soils and the agricultural systems they are required to support.

Sandy soils are particularly vulnerable to erosion, prone to water repellence and have a poor ability to hold water and nutrients in the root zone. These soils also are inefficient accumulators of soil organic matter (SOM), which results in high rates of carbon (C) being released into the atmosphere as carbon dioxide (CO₂).

Improving the water-holding capacity of sands enables crops to better access soil moisture, boosting dry matter (DM) production and significantly increasing grain yields. This has flow-on environmental benefits. Increased crop water use reduces the amount of recharge entering perched water tables, reducing the risk of seeps developing across the landscape. Greater crop biomass increases the level of ground cover, which is essential to reducing the risk of soil erosion.

A large gap currently exists between water-limited potential yield and actual yields on sandy soils in the low-rainfall cropping regions of south-eastern Australia. This publication

Sandy soils are a dominant feature of the soil resource base in the low- to medium-rainfall cropping zone of south-eastern Australia. The poor water-holding capacity of sands is the major factor limiting yield potential and also impacts the natural resources across these south-eastern regions.

aims to bring together current knowledge and best-practice management strategies to address the issues limiting the productivity and sustainability of sandy soils within the context of the whole farming system.

Grower consultation

The topics covered in the following nine chapters are based on consultation with industry experts and agronomists, as well as a small-scale survey of 22 growers. Of the growers surveyed, one third were from the Eyre Peninsula and two thirds from the Mallee and Upper South East. More than half the survey respondents reported that 20–40% of their farms comprised what they considered to be 'sand'.

The single most important issue related to sandy soils, identified by survey respondents, was water repellence, followed by inadequate fertility (soil nutrition). Erosion also polled highly as a major issue on sandy soils.



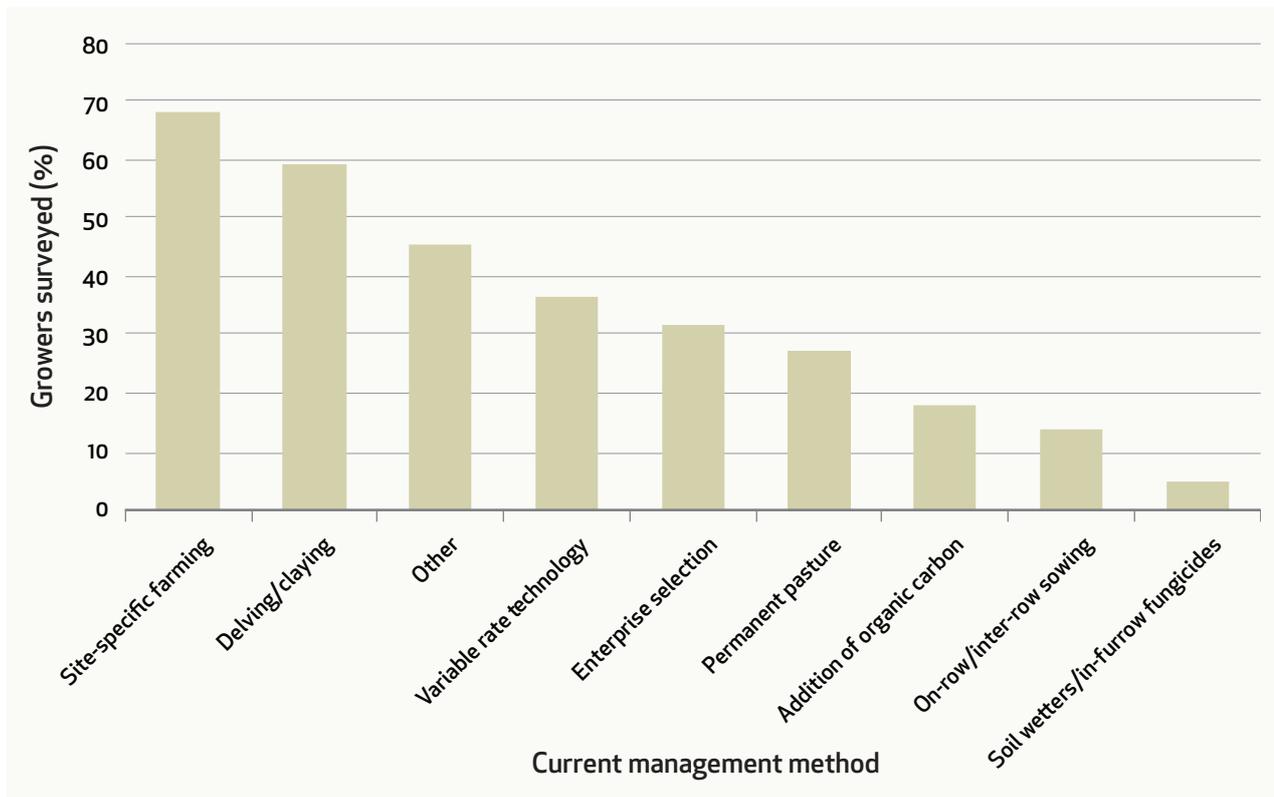
PREVIOUS PAGE: Strategies that protect fragile sands from erosion are critical for long-term sustainability and productivity. Photo: GRDC
ABOVE: Growers currently use strategies such as clay spreading and delving to lift production on sandy soils. Photo: SEPWA

Growers were asked about the strategies they employ to manage sandy soils. An overview of the range of strategies identified in the survey is outlined in Figure 1. In addition to the strategies listed in the survey, respondents identified a range of ‘other’ management strategies they use to improve the performance of sands, including mouldboard ploughing, delayed sowing to allow sandy soils to wet, fencing off sandy zones and sowing pastures as break crops, to name a few.

Soils are a foundational resource of every farm business and natural ecosystem. The preservation of soils is essential to sustain the profitability of farm businesses and the health

and biodiversity of ecosystems. Management strategies that limit the risk of erosion, and therefore protect the soil surface from degradation, are critical to ensuring the long-term sustainability of low-rainfall farming systems for future generations.

Figure 1. Current grower practices employed to manage sandy soils across south-eastern South Australia



Source: Results of a grower survey carried out by Lou Flohr, Agrilink Agricultural Consultants (Aust) Pty Ltd during 2015