

## **1. Introduction**

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### **1.1 The Database**

The Shepparton Irrigation Region (SIR) has detailed soil maps, which feature 6 major soil groups, made up of 148 soil types. Prior to this study, there had been only a few measurements of soil hydraulic properties on some soil types for specific purposes. Although broad association had often been made between soil permeability and soil groups, overall there was a poor understanding of the hydraulic properties of the soils in the region. A two year project has been completed to collect information on soil hydraulic properties of major soils in the SIR. Soil properties of Horizons A and B1 for 34 soil types were measured at 79 sites, representing 75% of the total area of the SIR.

The collected soil hydraulic property data were compiled in a database. The database describes soil properties based on soil types and soil groups. The database is in the form of look-up tables of soil properties. Values of mean, median and variability measures are given. Group values of each soil group are also given, which can be used for those soil types which were not measured.

### **1.2 Soil Property Parameters**

The following soil physical, chemical and hydraulic property parameters are included in the database.

Soil physical property parameters

- particle size distribution
- bulk density (BD)
- soil depth of horizons
- organic matter content (OM)

Soil chemical property parameters

- soil electrical conductivity (EC)
- soil pH (H<sub>2</sub>O)
- soil pH (CaCl<sub>2</sub>)
- soil exchangeable cations such as Ca, Mg, Na and K
- sodium exchangeable percentage (ESP)

Soil hydraulic property parameters

- saturated hydraulic conductivity (K<sub>sat</sub>) of Horizons A, B1 and B2
- final infiltration rate (FIR) at Horizon B1
- soil water retention characteristic
- soil water capacities

### **1.3 Organisation of the Database**

The database consists of:

- (1) Soils in the SIR – this contains maps of irrigation districts and location of project sampling sites, and listing of measured soil types and their soil group (Table 1),
- (2) Listing of soil properties by soil property for soil types, soil groups of different irrigation districts (Tables 2 to 15),
- (3) Listing of soil properties by soil property for soil groups of the SIR (Tables 19 to 27),
- (4) Listing of soil properties by soil type (Table 28),
- (5) Listing of soil properties by soil group for different irrigation districts (Table 29),
- (6) Listing of soil properties by soil group (Table 30), and
- (7) Pedotransfer functions for estimation of soil water retention characteristic (Table 31).