

2

The olive tree *Olea europaea*

This chapter gives a detailed account of the olive (*Olea europaea* L.) life cycle and requirements for its successful cultivation. A timetable is provided that shows the flowering and fruiting stages of the olive and the various orchard operations that have to be undertaken during the annual cycle of the olive tree. It sets out the stages involved in fruit set and problems that can occur with alternate fruit set. The properties of olive fruit and its progress to different stages of ripeness are discussed. This is important as olives are harvested at different stages of ripeness for the production of different table olive products. The physical characteristics of the olive fruit, such as size, skin pressure and Flesh:Stone ratios are examined. The general chemical composition of fresh olives are discussed, such as minerals, protein, oil (fat), carbohydrate, sugars, fatty acids, phenolic compounds and pigments. A detailed segment on olive varieties provides information on those suitable for processing as table olives. Diagrams are given of key table olive varieties.

The olive tree

The olive *Olea europaea* L. is a medium-sized evergreen shrub/tree (Fig. 2.1) that grows and fruits well under a Mediterranean climate, such as occurs around the Mediterranean Sea, southern Australia, parts of New Zealand, the Americas and South Africa, and to a lesser extent in other countries. Olive trees, depending on the variety and growing conditions, can grow to a height of 15–20 m. However, for commercial production they are best trained and pruned to a height of 3–6 m depending on the harvesting method and the available technologies. Olive trees bear fruit that are bitter mainly due to the glycoside, oleuropein.

Olive trees need sufficient winter chill to ensure fruit set and a long hot growing season to ripen the fruit, particularly if naturally black-ripe olives are required. Frosts, especially during the spring flowering time, and hot dry winds during flowering