Chapter C6. Case study 2

PURPOSE OF THIS CHAPTER

To present a case study of good soil management

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- case study

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CASE STUDY 2

Cedric Schofield of 'Glenelg', East Kangaloon, in the Southern Highlands of New South Wales, produces fresh potatoes for the Sydney market (Figure C6-1).

Figure C6-1.

Capitalising on his minimum-till operation, Cedric Schofield markets his potatoes as 'sustainably produced'. (Bernie McMullen)

See Chapters C1 to C5 for more information on soil types.

The soil type is a well structured kraznozem with some heavier clay. The basalt-derived soils are high in organic matter, but traditional potato-growing practices of excessive cultivation can lead to structural decline. On this sloping land, erosion is a major concern.

Cedric does a three-block rotation with a north-east to south-east aspect.

To overcome the potential erosion problem a number of strategies are implemented. Contour banks are strategically placed to reduce slope length and act as silt traps; they can also be used as traffic ways. The banks and drains are sown with kikuyu.

A pasture/oats/potato rotation is practised, with minimum tillage. Traditional practice needs up to six cultivations to prepare a satisfactory seed bed.

The oaten cover crop is grazed (or sprayed with a knockdown such as glyphosate by some farmers), then tilled with a modified Agroplow® with a power harrow (Figure C6-2 and C6-3).

Figure C6-2.

Robertson potato grower Jack Hill inspecting an oaten cover crop sown immediately after the potato harvest. This crop is necessary to stabilise the soil and prevent erosion on the sloping soil. (Bernie McMullen)

The cultivator has tines fitted with a set of widesweeps designed to lift and fracture the subsoil. A gearbox driving two vertical rotor blades and powered by the tractor is bolted to the frame. These blades work up the ground behind the tines in a circular manner, cultivating the ground sufficiently in one pass without inverting or 'turning over' the soil. The speed of rotation of the tines can be altered according to the soil conditions prevailing at the time of ploughing.

Two passes using this minimum-till technique are the most needed to ensure a good crop (Figure C6-4).

Irrigation is done with overhead sprinklers, and the rate determined by tensiometer readings.

Figure C6-3.

The modified Agroplow® developed for the minimum-tillage trials run on a number of properties in the Robertson area from 1992 to 1996. (Guy Van Owen)

Figure C6-4.

One pass into a sprayed-off paddock is sufficient to prepare a seedbed for planting. Another advantage is that only rows into which potatoes are sown are disturbed by the rotary tines, thereby keeping the area and degree of ground disturbance to minimum. (Guy Van Owen)

A base N:P:K fertiliser regime based on soil tests is practised, and side-dressing with N and K occurs in wetter seasons when leaching may occur. To avoid erosion after harvest the cover crop is sown as soon as possible.

Integrated pest management strategies are used to reduce spraying, including irrigation to seal the ground and prevent potato moth infestation.

Yields average 40 t/ha; this compares most favourably with traditionally grown crops that have much higher cultivation costs as well as greater soil structural breakdown and erosion problems.

Full details of trials comparing growing systems are available in the Robertson District Potato Advancement and Landcare Association publication *Sustainable Potato Production in Highland Areas of Australia*, available from the Association—phone Sandra Lanz on (02) 4677 0198.