

## Sod Culture in Orchards, Vineyards & Nut Plantings

Orchard and vineyard managers should pay as much attention to ground management as they do to tree management. A modern sustainable property includes the use of 'sod culture', whereby a sward of plant growth is nurtured between the rows and a mulched weed-free strip is maintained under the trees.

With the advent of trickle irrigation came the understanding that cultivation was no longer good practice, as it causes erosion, does not suit trickle irrigation and causes severe damage to root systems including leaving roots very susceptible to disease infection. It also obliterates the population of beneficial soil fauna such as micorrhizae (cultivated soils are noticeably hotter during summer).

While studies have shown that the highest yields from irrigated orchards are where there was total chemical control of all ground vegetation from prior to flowering through to the onset of winter, the next highest yields were from 'sod culture'.

Advantages of sod culture include:

- reduction in soil erosion and dust levels
- relatively low input and maintenance
- suppression of weeds / unwanted species
- improvement of soil structure & fertility
- encouragement of a wider, more effective root system of trees and vines
- better traction with soft tyred machinery
- good to walk or work on and pleasing to the eye

An integral part of the sward is the make-up of ground covers, and it is now recognized that a low growing leguminous-based sward has a number of distinct advantages over grasses (especially perennial grasses) and most weeds including:

- nitrogen fixation – studies have shown legumes to produce 50-250 kg nitrogen per hectare.
- clovers use less water than grasses.
- reduced costs – less frequent mowing and savings in nitrogen fertilizers.
- increased pollination due to minimal pasture species blossom competition by bees.

The sward should be made up of predominantly medium to long season annual subterranean clovers, with some short grasses such as ryegrass. Perennial clovers are sometimes used, but they encroach into the weed-free strip and are very difficult to manage. Long season sub clovers such as Trikkala are most suitable as they produce attractive lush growth right

through the winter, then dry off in late spring leaving a terrific dry mulch that doesn't blow away. Gosse is a suitable species for wet areas.

### Establishment procedures:

- With the first rains in autumn, mow or graze down the areas as close to the ground as possible.
- Spread Superphosphate with added copper and zinc at 120–140 kg/ha (sold in bags at rural suppliers as 'Super-Copper-Zinc'), or rock phosphate at 250-280 kg/ha plus trace elements.
- If the clover seed has not been lime-pelleted, don't apply the super until one month after seeding.
- Spread clover seed at 15–25 kg/ha and ryegrass at 8–10 kg/ha, then 'tickle in' by dragging a sleeper or log around a couple of times to bed the seed into the very top of the soil.
- When weeds come back, you can spot-spray or grub them out up until you see the first sign of the clover or ryegrass emerging, after which you then use a mower as mentioned below.

### Sod management:

The sward is then managed by careful mowing to encourage clovers at the expense of taller growing grasses and weeds, in fact this is the key to maintaining their dominance. During the spring it should be mown low and often, as this increases seed burr production in sub clovers and reduces the flowering and seed set of less desirable species.

Depending on growth this could be as often as every 10-20 days in spring. For the rest of the year it is just mown to keep it under control, usually just above the height of the clover growth. Mowing clover too low during winter reduces their biomass and allows unwanted species to germinate and/or grow through.

The species balance of a pasture or sward can be dramatically changed over a couple of years by the way it is mown. Taller species will all but disappear, including annual ryegrass you may have seeded with the clover, but this is of little concern.

Unwanted species can also be reduced or removed by the judicious use of selective herbicides (only if necessary), such as Fluazifop (Fusilade®) to take out certain grasses. Over-seeding can be done during autumn if necessary to increase the population of a particular species.