

## **TRIAL N ERROR ON MIAPPLE FARM – by Peter Cooke**

### **INFRASTRUCTURE**

#### **FENCES**

After several failures at keeping out animal pests we finished up with fences 1.8metres high with 900mm 8strand hingelock strained tight on the bottom half and 900mm hingelock strung upside down and loose strained on the top half. The close strands at the bottom of the fence were enough to keep lambs and goats out. The close strands at the top were loose enough to stop big kangaroos bouncing on and over the top wires – so that the top wires would give under them and the roo would fall back down with the wires giving under them. Next we strung 1100mm chicken wire mesh attached to the bottom hingelock wire so that it finished up 900mm high with 200mm laid flat on the ground outside the fence allowing the grass to grow up through it.

The fencing was strung on 1800mm high star posts placed 3metres apart and braced 1800mm wooden posts at each corner or gateway.

Bird netting was later attached to the outside of the fences down to the 900mm level.

This allowed small birds to pass through the chicken netting to feed on insects in the orchard trees while preventing access to larger birds, rabbits, kangaroos, foxes, echidnas and wombats.

Smaller swinging gates 1.2 x 1.8m high were filled in with shade cloth or chicken wire.

Larger gateways to allow tractor access 3metres wide and 1.8m high were installed Mallee gate style by filling in the gate gap with the normal fencing materials attached to a removable steel starpost at one end and padlocked with a chain around the adjacent wooden fence post.

Adding chains and padlocks to the gates, coupled with the use of surveillance cameras has reduced the access to two legged rats who come to steal your fruit because “breaking and entry” is a jailing offence compared to a slap on the wrist for entry through an unlocked gate.

#### **SHADECLOTH WINDBREAKS**

Young orchard trees cannot handle the hot dry winds of summer and where we grow young trees on the north or west of the orchard, we have attached 1800mm high shade cloth to the fence to act as a wind break. A strong wind will bend the starposts with the shade cloth acting like a sail which we solved by bracing the posts against the wind.

For individual young trees planted in the middle of the orchard we have place a metre square piece of shade cloth attached to wooden stakes or starposts on the north-west side of the tree. In the early days we made up large bags of shade cloth and placed them over individual trees for the summer.

#### **BIRD NETTING**

Our first trial was to hang five metre square netting straight on the trees. The birds got tangled in black net and not in white net. We then found the cockatoos were clever enough to sit on the net over the tree and chew away the branches through the net until the net dropped so that they could get to the fruit through the net.

We then drove 2metre stakes into the ground around the trees. The stakes were rounded at the top to take hoops of 25mm poly pipe over the trees and the netting was placed over that and held down with rocks. That kept the birds out but the netting made it difficult for mowing, spraying, weeding and spraying the trees.

## SUSPENDED BIRD NETTING

As the orchard grew in size we settled on a limit of 400 trees under netting which occupied a ground area of 100metres by 50metres. Telescopic 2metre steel posts of 42mm and 36mm square were installed in rows 10metres apart. Semi tensile fencing wire was strung along the top of the posts and also used as bracing wires around the perimeter to support the whole structure like a big circus tent. Standard white 10metre wide netting was attached to the strung wires while the telescopic poles were at 2metres high and then when the netting was completed, all the poles were raised to 3.8metres.

Each pole was mounted on a spigot set in concrete at its base and short starposts were set in concrete 2.5metres from the outer poles to carry the wire bracing. Standard fencing materials including in-fence winches and fencing gripples were utilised in tightening the wires.

The main netting was attached by lacing tie wires through the edges of the netting, making the net tight by stretching it out and then attaching the tie wires to the main wires with hog rings. Six metre wide netting was hung like a curtain around the perimeter, over the fence line and ultimately tied back to the top of the rabbit wire 900mm above ground.

In 10 years time when the netting needs replacing, the poles can be lowered and the net replaced a panel length at a time.

With time we learned that where the exterior brace wires pass through the outer net curtain down to the fence, action of the wind caused the net to rub on the wires causing large holes in the net curtain.

Kangaroos have run into the wire bracing around the perimeter of the orchard causing wires to be broken, poles bent or broken and kangaroos injured. We fed the brace wires through plastic electrical conduit which made the wires easier to see and we found the conduit was less abrasive on the netting.

Five years after installing the netting, repairs have included replacement of the main fencing suspension wires where they wore through from movement at the tops of the poles, repair of tie wire on the edges of nets that has snapped from wear or stress and replacement of hog rings where the wind has pulled the net away from the main wires from high winds.

Where netting around the perimeter needed to be raised periodically, plastic conduit was threaded through the bottom of the net curtain which in turn could be pegged down if needed.

## WATER SUPPLY

Our orchard consists of 20 rows of 20 trees set out along a distance of 100metres each row being 40 metres long.

We installed 2 x 9,000 litre tanks above the height of the orchard which feed through 50mm polypipe into a main pipe that runs the full length of the orchard and with a twin tap riser in the middle of every second row. Having the one main feeder pipe allows for future addition of a liquid fertiliser system that can service the whole orchard.

Each row of trees has a wire strung along the row about knee high to which is attached 15mm poly dripper tube with screw in variable drippers and tree identity labels.

Supplementary 25mm polypipe and taps have been run along the lower/northern fenceline to provide water for nursery pots and rootstock stoolbeds along that fenceline.

Each week we water we give 50litres to each of 400 trees, one litre to each of 1500 nursery pots and another 1000litres to the rootstock stoolbeds – a total of 22,500 litres.

If we water for 25 weeks of the year – orchard consumption is about 6/10 of a megalitre.

During summer we connect the 10 water taps through 12mm hoses to the dripper system and water 200 trees at a time – which is about the capacity of the 50mm main water pipe operating gravity feed.

The water tanks are replenished with electric pumps running off-peak on weekends or at night when electricity is half the price.

## BORE WATER

Nine years ago a neighbour put down a bore successfully – so the bore contractor drilled 60metres below our ground before he found good water and he stopped at 65metres. The ground pressure brought the water 50metres back up the bore.

The electric bore pump was constricted to 4500 litres per hour and was suspended 60metres down and the water level during normal weather settled at 45metres above the pump.

During the two droughts we have had since, the water level has never settled below 43metres above the pump. If we pump all day for 10 hours, the water level drops to 38metres above the pump and then replenishes back up to 45metres overnight.

To obtain a bore permit, we applied for a stock and domestic bore permit from the local water authority and we are permitted to take 2 megalitres per year without further charge.

During the two droughts we used about 1.3megalitres from the bore – well below the limit – half of that was used in the household and garden.

The bore water contains about 800 parts per million calcium salts (the same salt deposited in stalagmites) – and the apple trees love it.

## PROPS

Where trees are overladen with fruit we take two 25mm square stakes of equal length and join them together about 150mm from the top with a bolt through drilled holes. Two more holes are drilled near the bottom and a length of hayband tied between the two bottom holes. The A frame formed is placed under to support the overladen branch and the prop is easily folded back for storage over winter.

## STAKES

Longer stakes used for netting support or props are usually 25mm square.

For young trees we buy 15mm x 25mm stakes about 900mm long and tie the young tree to the stake using loops of hayband or old pieces of netting.

Never tie a knot around the tree or it may cause stricture injury to the tree as it grows.

If a tree has bent over to the extent that it needs a starpost to straighten it up – think twice.

Where I have used a starpost and strong ties to straighten a tree, I have found that later the wood at the base of the tree has split or the bark has stripped off under the pressure.

It is better to prune back the tree heavily and encourage new growth and a new trunk from the old base making sure of course that the new growth comes from above the old graft.

## WINDBREAKS

A good orchard needs to be surrounded by a hedgerow of trees to protect it from high winds. Pine trees are popular in some areas as are Cyprus trees – or even gum trees – but all are fire prone and Miapple Farm is in a fire prone area – so we have planted nothing so far.

Australian native Lillypilly trees are reputed to be less fire prone but they also need a lot of water to grow into a hedge.

## FIRE PREVENTION

The area surrounding the Miapple Farm orchard is grassland paddocks on the West and East. To the North we have a wide river flat which stays green provided that it is mowed each spring or has the grass kept down by livestock.

We slash about 20 acres of grass paddock around our orchard each year for fire prevention.

To the South above us we are dependant on the neighbours keeping their grass down for the summer.