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Bushfire recovery, six months on

In the March edition we looked at the damage caused by last summer's devastating bushfires in two SA groves, and the respective actions undertaken to assist in the trees' recovery. An Olives SA field day was held in August at Woodside Grove to check on progress, with a wealth of observations and advice shared on both bushfire recovery and general grove management practices.

Woodside Farm: background

In late December 2019 an uncontrolled bushfire raged through Ron and Ethne Baker's Woodside Farm grove. It impacted around 4500 of the 5000 trees, most of which were mature and in full production, along with 50km of irrigation piping.

As it was an extremely hot grass fire, rather than a crown burn, the trees were heat-affected rather than destroyed: the leaves were brown and dead but the trunk and main branches appeared to be okay. It was hoped the damaged trees could be saved so they prioritised getting water back onto the grove, a massive task achieved in two weeks thanks to Olives SA volunteers.

Knowing the fire would stimulate shooting all over the trees, the Bakers then decided to cut all the severely heat-affected trunks off at 5ft (1.5m) to keep the re-growth manageable. From there the plan was for selective re-shooting for two years and hopefully a crop in the third year.

Grove observations and discussion

Mulching

The tops cut off the burned trees were mulched at the time and the mulchings were left in the rows. In the six months-plus since they have already broken down significantly, adding valuable organic matter to the grove.

Trunk damage

While cutting the trunks the Bakers had found some trees where the bark had 'cooked', and the intense temperature had damaged the trunk down to ground level. With recovery and regrowth via the trunk not occurring, these trees were later cut down even further to a six-inch stump.

Many of the damaged higher cut trees have since developed shoots, with various degrees of vigour. Some have developed from existing moisture in the trees, and will eventually die; some of the trees have also been found to have dead sections throughout the trunk.

Basal sucker re-establishment

The trees cut back to six-inch trunks are being re-established from basal suckers. They

weren't grafted, so there's no risk that the re-growth is root stock and the Bakers know the trees will be true to the original varieties.

The sucker shoots are coming up in a number of areas around the trunk. Eventually the strongest one will be chosen and left to grow, and the others removed.

Comment was made that the vigour of the shoots can change over time, with new more dominant shoots often appearing well after the others, and that "what you see now is probably not what you'll end up with".

Weeds

Control of weeds is important at this early stage of re-growth to reduce competition for water and available nutrients. Much of the trees' previous root growth is no longer functional and they are therefore re-establishing new roots below the trunk, along with the new shoots above.

Spraying is not recommended, however, due to the high risk of damage caused to young growth by Glyphosate products. Glyphosate causes genetic damage to



Some of the higher cut trees developed shoots from existing moisture in the trees, however they were too badly damaged to sustain the growth.



Some of these have instead sprouted from the base.



While others have established lush, healthy regrowth.

the structure of the plant which can cause problems for many years and “you always have drift”, even on a still day.

Large established trees will handle a certain amount of Glyphosate without sustaining damage but for young suckers and shoots, any exposure at all “is not a good practice”.

Shoot selection and establishing the new tree

Leave all suckers growing for a year to see how they respond. Each tree will progress differently and you need a good strong, straight shoot growing upwards before you de-select the others. Importantly, lots of small additional suckers will also increase growth of the root system and provide energy for the bigger suckers - including the eventual new stem.

Choosing the shoot which will become your new tree is a combination of observation and experience – if you have it! Sometimes it’s easy: one shoot will just take over and it becomes obvious that ‘it’s the one’. Sometimes there are several dominant shoots among a bunch of others: in that case check the growth monthly and eventually it will become clear which is the best of the two.

The important thing is to wait until you have that one strong, straight, dominant shoot in place, then remove the rest of the growth to let it have free access to the water and nutrients available.

Once you’ve done that, continue to take the centre growth out to shape your tree.

Don’t stake the new stem, rather prune to straighten. The plant will respond to wind movement by establishing a stronger root system to keep it in place.

Replanting

Where trees were completely destroyed by the fire, the trunks are being removed by tractor and replacement trees planted in the same holes. Any remaining dead roots will rot down, providing nutrients and water channels for the new trees: as long as there is good drainage there is generally no problem with the practice.

One possible downside raised by Coonalpyn Grove Manager Andrew Taylor is that the dying roots can become a food source for soil-borne fungal disease, however he said any evidence of that being an issue was “a long way off”.

Varietal variations

In the Woodside grove the Coratina trees survived the fire better, followed by the Frantoio and then the Leccino. The latter aren’t doing particularly well, however, and it is expected that most of them will eventually die.

Progress of top-cut trees

The first burned trees to be top-cut, which also had water provided as soon as possible, have progressed far better than the rest of the grove and are way ahead in terms of shoot vigour, colour and volume.

The Bakers are leaving them alone for now, just monitoring tree health and letting the dominant shoots come through and become obvious. This may take up to two years and they’ll then thin the trees out with a chainsaw.

Regrowth: to thin or not to thin?

Discussion was had about the pros and cons of leaving all the regrowth in place, particularly as it becomes quite dense. Considerations are:

- thinning out enables all the branches to

get more sunshine, and therefore energy;

- most will grow straight upwards, however, whereas you want them to compete for sunshine and grow outwards;
- the issue of disease, as dense canopy regrowth creates a good environment for fungal attack.

Note: ongoing monitoring and early, minimal treatment is one course of action for disease but the recommendation is that it’s better to just leave the trees alone for two years, then go in and deal with whatever is there once, saving the money and time involved in ongoing treatment.

All up, it was agreed that there is no advantage in thinning out or choosing new stem shoots this early. In fact, it could be a disadvantage if wind or birds break the chosen branches after the others have been removed.

Future harvests

Mention was also made of planning for the initial future harvests after regrowth. The first crop shouldn’t be touched, as the tree growth will be too soft and easily damaged or broken off, destroying wood suitable for the following harvest.

There is also a high risk of damage if a trunk vibrator is used at harvest for at least the first three years - “and fruit on one/two-year-old wood attached to eight-year-old trees won’t shake off anyway” - so alternative methods like electronic rakes would have to be used until the new fruiting tree growth is older.

Sun damage

A question was asked about the risk of sun damage to the bare trees, particularly in terms of the cut sites, and whether paint or



Coonalplyn grove manager Andrew Taylor led discussion around the pros and cons of retaining all regrowth.

kaolin clay should be applied for protection until there is sufficient regrowth. The advice was that the sun damage doesn't have enough effect to make treatment worthwhile.

Rio Vista Olives: background

Rio Vista Olives' Jared Bettio was also hit by the December 2019 bushfires, which impacted heavily on his 200-tree Manzanillo grove at Mt Torrens.

While logistics meant the field day participants couldn't also visit Jared's grove, he gave attendees a good run down of the damage sustained and his management of the grove since.

Pre-fire preparation

Fortunately, when the fire season peaked Bettio had both water available and a foreboding feeling that the forecast catastrophic fire warnings were going to come to fruition.

His grove has sprinklers - "not the most efficient irrigation but I inherited them" - so he normally has a green belt around his trees. When he heard about the weather conditions that were coming he decided to put all the water left in his dam on the grove, and for three days he irrigated 24/7. He also mowed the grass in the grove right down to ground level.

As a result, he said, on the day of the fire the ground was soaking wet and spongy, and the fire just smouldered through the grove. And while adjacent gums were burned to the ground, the olive trees were left standing.

They were scorched and severely stressed, however that good preparation combined with fast action post-fire to lay the groundwork for what he hopes will be a solid recovery.

Post-fire action

The irrigation system in Bettio's grove was also destroyed but he was able to replace it more quickly and had water back on to the trees in three days. This meant he was able



With good strong regrowth occurring, the Rio Vista grove is getting minimal intervention until next year when structural pruning is planned.

to immediately re-establish the trees' usual weekly watering regime.

Aiming for fast regrowth, he also gave the affected trees a nitrogen injection around the base to stimulate the process. Other than keep the water up, however, that was all he did immediately post-fire.

It worked, producing good strong regrowth and keeping the roots alive.

Ongoing grove maintenance

Bettio said next year he will prune the regrowth, choosing and retaining the strongest shoots only, aiming to get some structure back into the trees.

Until then, he's following the minimal intervention approach. He hasn't used herbicides for the past three years, rather mowing and slashing, and leaving the cuttings as mulch. He "mows and mows and mows" to keep the weeds under control and give the trees the best chance at the available water and nutrients.

Cape-weed

This year the Rio Vista grove has had an infestation of cape weed in particular - something also noted at Woodside Farm and

discussed during the field day. Cape weed is an opportunistic plant which commonly invades areas where the ground has been laid bare, and blocks the growth of other plants with its crown of thick, wide-spreading leaves.

Bettio said he'll keep mowing it down and, with its spreading domination under control, eventually the other grasses will come through. This was backed by consensus by field day attendees, with note made that it is particularly important to keep it mown down as it nears the seed-setting stage.

Learning opportunity

It's great news that re-growth is now well underway in both groves, and interesting to see the varying results and how they relate to their different fire-event situations. There's a lot to learn from their experiences - and with another hot summer ahead it's a valuable opportunity for all growers to gain preparatory knowledge.

We'll update on progress again in the March edition of *Olivegrower*, to see how the groves are looking with a full year's opportunity for recovery and regrowth.