THE HARDINESS OF CAMELLIAS

Any Camellia enthusiast knows and appreciates the beauty of Camellias, some also know the ease in which Camellias grow. But how many really know how tough and resilient Camellias can be. We know by the areas in which they grow, their tolerance to a range of conditions depending on the species, for example the Species Rusticana is known as the "Snow Camellia", because in its natural habitat it grows above the snow line in the mountains of Japan and China.
We know that species reticulata grows well in sub-tropical to temperate rainforest areas of Southern China, its natural habitat. Its large leaf with drip tip is a give away to its liking of water and moist air. There are also Camellia species such as Nitidissma , (one of the yellow Camellias), and Sinensis the Tea Camellia which are natural tropical species. So we have a vast range of climatic conditions to suit many of the 200 odd known species from South East Asia. It is obvious that the majority grown in the western world have derived from the colder climate loving species, because of where they were first introduced to the western world, i.e., Europe and England. It may have been that other species were bought to the colder climates but did not survive, for example, sinensis the "Tea Camellia".

A give-away to these cold-loving species japonica is their waxy epidermal cortex covering of the leaves, wax as you know is a good protector from the cold and moisture, one of the reasons we use wax coated boxes for plants, so the boxes don't become soggy from the water in the pots. But wax is not a good protector against strong heat as wax becomes hot, it melts and bums, as any person who has had the misfortune to drop hot wax from a candle onto their skin knows only too well. Therefore these Camellias, japonica is a good example, when our summer heat gets over the 32 celsius mark. It is not uncommon for severe leaf scorch to occur in these cold-loving Camellias.

So what chance of survival with all this information, would you expect to happen to cold loving Camellias in the event of a fire-storm many times hotter, closer to 1000 degrees Celsius. I would have thought "no chance at all". But I can say through personal experience, quite the opposite happened. On Christmas Day 2001, my garden of 1000 different cultivars was ravaged by a bushfire so large and intense, on a 20 kilometer front, that left nothing in its path, but many black stumps and white ash.
Some 600 odd Camellias in my front garden facing west, the direction from which the fire traveled through a gully, wiped out every single plant in its path, stopping virtually at my front door step. Only the Camellias in the back yard were saved from the devastation, mainly due to the solid brick 2 storey-house. As a firefighter myself, there was very little I could do for my plants, until released from firefighting duties 10 days later after the fires. I expected very few if any to survive, due to the sheer intensity of the fire and knowing the climates the majority of my Camellias came from. I had no such fear about my Australian Native Plants as this is a common occurrence they face on a regular basis, except rainforest and wet area Native Plants.

Many of the Camellias in large pots, had the plastic either burnt away or melted into their root system, so deep I could not remove all the plastic. These too I held out little hope of them surviving, because of the time of the year, late December, the majority of them had already put on and completed their annual growth cycle of new stem and foliage, although I know it is possible, particularly for sasanqua Camellias to produce two and sometimes three new growth circles, during spring to late summer, if damage occurs to them. I was not so sure how this would affect japonicas.

When I had the chance to do something about the damage I proceeded to treat the pot specimens first, due to the root exposure to summer temperatures. As many as possible were repotted into new potting mix and pots, and fed at fortnightly intervals with "Seasol", (Seaweed tonic) to see if I could encourage any root or stem growth at all, as hope rather than an expectation. The Camellias in the ground, all I could do, was just water "Seasol" around where I thought roots may be, at the same intervals as the pots for six weeks. To my amazement after natural rain, a month after the fire, the

first signs of green life, started to reappear in my garden, but these were not my camellias. These were as expected Native Species, such as Wattles, Hakeas and Ferns. The first sign of life to my Camellias occurred in mid March, and these surprisingly were of japonica and japonica hybrids that bore dark red small flowers, such as "H. Black Opal", "H. Night Rider', "J. Kuro-Tsubaki" and "J. Fuyajo".

My only explanation can be, that perhaps these particular cultivars growth cycle is later than other varieties. These were all in large pots, some had the plastic pots burnt off them, and one was in a large metal pot, still intact, all close together in the same aspect, with many other cultivars. Almost simultaneously within 5 days of one another, tiny dark red leaves started to appear on the charred burnt stems and branches.
As a horticulturist I was always led to believe that new growth all came from cambium tissue (that is the green layer of tissue) underneath the bark, but in the case of these plants most of that would have been impossible that they were so badly burnt, could it be possible since there is life in the root system that live tissue can be produced through old tubular dead wooded material closer to the core of the trunk themselves.

Perhaps like many Australian Native Plants they contain survival mechanism in lignotubers in little lumps on stem trunks, crowns and roots. That I cannot tell, but it may be worth some laboratory investigations to challenge some budding natural scientist. But what ever the case, slowly over the next 2 years, like Phoenix from the Ashes, two thirds have various stages of new growth on them. Sadly many were grafted Camellias and that new growth is of the under-stock. but to my surprise, particularly with reticulata hybrids, they actually produced new growth above the graft. Slowly, new wood encased the old burnt wood, a process which is still going on. As late as March this year, new growth on some varieties showed up for the first time since the fire.
The puzzling question is, why in certain sections of the garden, did a lot a plants regenerate and other plants not far away, showed no signs of life at all? Some of the plants were very close to a

Colorbond fence which buckled under the extreme heat and this part bore the most severe onslaught of the fire. Yet out of 42 Camellias in one garden all but 5 regenerated. Some were under-stock from grafted plants. Another garden approximately 5 metres away, was more protected than the previous garden by plants further down the hill, in this garden of approximately 35 plants, only 4 survived.
My theory is the Camellias against the Colorbond fence were damaged by a quick searing heat, which may have only lasted 3-4 minutes at the most. Just like cooking steak, on a very hot plate, you sear the very outside of the meat, but it is still tender and juicy on the inside. The other garden was not so much damaged by a quick searing heat, but by a slow roasting process, like cooking a leg of lamb, because of the very thick mulch, over the garden surface. Not being on hand initially to dampen this mulch after the fire passed through, allowed this mulch to slowly burn, with a deepening heat over a 48 hour period. This ensured that the majority of the root system had been killed off by the heat of the slow burning mulch. Whereas the other garden bed, although looking badly damaged had still some life left, in the crown and root systems of the plants.

The other thing about fires is that they actually vortex out like fingers on a hand, and swirl like the waves of an ocean. So, just as it is possible for a large fire like the Canberra fires to completely miss some streets and some houses and not totally destroy everything in its path, likewise on a smaller scale, it can do the same to certain plants on a block of land. Rocks may protect some, larger tree trunks may protect some, certain types of containers may be better than others, and pockets of moisture around the roots of plants in gardens and pots can vary also. Therefore some pots may be all of the same size and construction, example 30cm black plastic pots, one may have not only been repotted recently and therefore not a lot of roots close to the outside of the pot, where another may be due for repotting the coming late winter season, with many roots at the outside and generally tends to be drier, with the amount of roots sucking away the amount of water that is available.

All these factors have some bearing as to why some Camellias survived while others did not. But as an overall picture, out of some 690 Camellias, approximately 2/3rds have shown signs of recovery, some as late as April this year. It is probably possible that some whose root systems are deeper in the ground may still have life there, but because of our drought situation in Sydney, I think, that hope is rather forlorn.
It is a very interesting procedure watching the slow recovery of these charred remains that were Camellias and the different methods. depending on the severity of the damage, as to how quick, or how slow, and from what part of the plant system it had taken place, for example, those that recovered the quickest, produced epycormic growth off the trunks of the plants, and were back to normal and flowering within 12 months. Most of these were in pots which were not damaged, and

only the stem tissue and foliage seared by the scorching flames, these were the ones close to the house itself. The next to recover once again were pot specimens, but where the pots had been totally, or almost, melted off them, and after repotting rather quickly produced new long water shoot type stems from the crown. The next lot to show signs of life were those in the garden that had some form of protection from large tree trunks or rocks. One particular Japonica Camellia "Lady in Red.", was protected by a slanting rock face. The fire burnt 2/3rds off the top off the tree, but the two lowest branches against the rock stayed green and alive, and the plant re-grew from that point, but is now a low spreading type of Camellia rather than an upright.

Other Camellias in the garden have slowly come to life off the root system, some much quicker than others, depending on many factors, the most common of these is the depth and size of the root system below the soil. Other things include quicker growing Native Plants, such as Hardenbergia, which forms a dense ground cover if not controlled, and numerous Acacias (Wattles) and Hakeas that have come up from seed after the fire. These slow down or completely stop the re-growth of the Camellias whose roots are below the surface rooting ground cover, or the roots from the seed of the Native Shrubs. By removing as much of these Native seeds from around the old roots of the Camellias it may be possible for some still to re-generate, but the longer the time the less likely the proposition.

In conclusion, I always regarded Camellias as a hardy type of plant that grown in the right conditions, had little problems with pest and diseases and I was well aware of their hardiness to cold, snow and frost once established. I was however completely taken by surprise to their ability of toughness against extreme heat because any problems I had with Camellias in the past were due to stress from high temperatures and dryness, particularly to those Williamsii hybrids such as, "Waterlily" and "E.G. Waterhouse". But surprisingly both of these regenerated from the fire.

So with this factor in mind, the difference between rebirthing of Camellias after devastation from fires etc., must come from a different process line to the slow death from die-back in hot dry weather. It is obvious from this experience that Camellias are extremely hardy plants to many

different conditions, and can hold their place with Natives through bushfires. with one added advantage because of their thick moist leaves they act as a good fire protection barrier and I have no doubt, had it not been for the number of large Camellias between my home and the fire front the house too could have been badly damaged, or completely lost. I am slowly replacing as many of the Camellias as possible, in gratitude for what they have done in help saving my property, and because I know now they are as tough as any other plant that likes acid soils, including Natives.

'Long Live Camellias'

Jim Powell, Dip. Hort.