

## Guideline: Planting fruit trees with biochar and compost

This guide aims to provide people who are using biochar and compost in growing trees with some basic instructions and information in relation to the type of biochar and compost to use, quantities, methodology and watering. It is based on the experience of the author with a community food forest project in Leederville near Perth, Western Australia.

### Type of biochar

The type of biochar is important because in our case, water holding capacity is the most important quality that we were seeking. Thus a biochar made from wood or straw or similar lignocellulosic biomass is best. Notwithstanding this, in the Perth region the only biochar we could source was the [Charlie Charcoal](#) product by Greenlife Soil Co in the Swan Valley. This is a biochar obtained from a stockpile of charcoal from the old [Wundowie foundry and wood distillation plant](#) which operated in the Perth hills between 1948 and 1981. Consequently the biochar is derived from Jarrah and slightly acidic, which is good for the alkaline sands we have in Perth.

### Nutrients

Compared to biochar derived from manures and wastewater solids, biochar derived from lignocellulosic material has fewer nutrients. However, nutrients can be provided by compost and by mixing with a biological agent such as worm liquid. The nutrients will adsorb to the biochar and will also provide a home for biological agents such as bacteria and fungus which also produce beneficial nutrients for the plant over time.

### Cost

A summary of costs per plant are as follows:

- 25L bag of Charlie Charcoal - \$28 (excludes trade discount)
- FOGO compost - Free
- 500mL Wormwiz - \$2.90 (excludes trade discount)

The cost per stem therefore is about \$30 excluding trade discount.

### Volumes

Approximately 1x 25L bag of Charlie Charcoal and 1x 25L bag of FOGO compost and 200ml of Worm Wiz was mixed into the soil/sand for each planting hole. The planting hole was about 0.5m x 0.5m x 0.5m (125L). This equated to a ratio about 1:1:3 of biochar, compost and soil or 20%:20%:60%. Rates of less than 10% for biochar are unlikely to have any impact.

The weight of one bag of Charlie Charcoal is about 10kg which is less than half the volume i.e. 20 litres. Weight of biochar can vary significantly depending on factors such as the size of the biochar e.g. powder, chunks, the pyrolysis temperature and the substrate used.

### Activation

Mixing the biochar with the compost and Worm Wiz was recommended to activate the biological processes which aid the soils fertility. In the first plantings, this was done in the wheelbarrow at the time of planting. For the second planting, the biochar, compost and worm

liquid were mixed together in large vats (upside down compost bins) two weeks before the planting day (recommended).

## Quality control

Due to the enthusiasm of the volunteers there was a lack of quality control when it came to applying the biochar/compost mix to the planting holes so there was likely to be a significant variation in quantities applied. This does not appear to be detrimental to the plants however, which are showing significantly very good growth rates.

In the future it would be best to provide an introduction to the planting process and the benefits of biochar/compost/worm liquid along with a demonstration.

## Watering

After the initial planting, the plants were watered about once a week with 9L of water per plant. The water source is a small tank which is kept full with bore water. Watering is undertaken manually with watering cans. Fortunately there were some good rain during winter.

Waterings increased to about 2 per week in the beginning of October with one watering of 9L and a second watering of 18L, totalling 27L per week. In late November, when we experienced a heat wave, waterings increased to 3 times per week with the addition of another 9L per stem resulting in 36L per stem.

## Maintenance

In the six (6) months after plantings there was one community maintenance day In November which involved weeding, reapplying cardboard and newspaper and fertiliser (Seasol). The volunteers providing the watering also weed etc. opportunistically.

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Attachment

## Attachment: Guidelines – Planting trees with biochar and compost

Prior to planting, provide planters with a demonstration of the method and explanation of the benefits of biochar and compost.

**Step 1** – Mix biochar and compost at a rate of 1:1 and sprinkle with worm liquid. Allow 2 weeks to activate.



**Step 3** – Fill planting hole with water. Mix soil in the planting hole. Water thoroughly.



**Step 2** – Dig planting hole approx. 50cm x 50cm x 50cm (or slightly deeper than the pot depth). Mix the biochar/compost/ soil a ratio of 1:1:3.



**Step 4** – Surround planting hole with cardboard and mulch to suppress weeds and help prevent evaporation.

