

Composting Systems

The following contains basic information on composting systems currently being used by South African Avocado Growers.

Mechanically Aerated Windrows

Compost windrows are made up by placing a mixture of raw materials in long narrow piles. The size of the turner used ultimately determines the size and shape of the windrows. Typically windrows range from 2 – 4 m wide, and 1.2 to 1.5 meters high. Problems can be encountered with very large windrows, where anaerobic zones can occur near the centre. Windrows that are too small lose heat too quickly, and temperatures do not build up sufficiently to promote effective composting.

Functions of the compost turner include:

- Expelling CO₂ and re-introducing O₂ to ensure that the process remains aerobic
- Mixing materials, placing inner material on the outside and outer materials inside
- Rebuilds porosity to facilitate passive air movement
- Releases trapped heat and moisture
- Water and inoculants can be added if required
- Turning reduces the time to maturation

There are a number of different compost turners that are being used by avocado growers. Turners are either self-propelled or tractor mounted.

Self-propelled compost turners

Self-propelled compost turners are used by Westfalia and ZZ2 in the Limpopo Province. The two models currently in use are locally produced and available from Ritlee-Xecutech.



Westfalia's Miskuier at Westfalia Estate



ZZ2's turner at their Houtboschdorp composting site

Tractor mounted compost turners

Smaller growers usually opt for tractor mounted compost turners. One of the benefits of going this route is that the tractor can be used for other activities during periods when turning is not required.



Imported Sandberger ST 250 tractor mounted turner (N. Human)



Locally manufactured tractor mounted compost turner (L. Roettgers)

The Sandberger turners are built in Austria and are available in a number of sizes. A popular imported size is the ST 250.

Static Pile Composting

The static pile system is most often used by smaller growers. Careful care must be taken when forming the compost windrows. Enough bulky materials should be placed in the pile to ensure that sufficient passive air movement takes place. Compact piles made from raw materials with small particle size will become anaerobic very quickly.

There are a number of different approaches that growers use to build their static piles. Mike Amm, an organic granadilla grower in the Agatha area has opted for steep sided windrows to aid rainwater runoff in times of heavy downpour to ensure that the piles don't get saturated. The correct balance of raw materials and water is mixed in a cement mixer before the piles are formed. Other growers usually opt for layered piles, with chunky materials placed at the bottom.

One big disadvantage with static windrows is that it is extremely difficult to wet the inner lower parts of the pile if they are too dry. Saturated piles take a long time to dry out, with large areas of anaerobic activity.

Vermicomposting

Vermicompost is a bacterial dominated compost, produced by worms. The use of vermicompost on avocados is not common practice at this point. ZZ2 has recently had a worm bin built for them. In the future I hope to include more on vermicomposting in this section. If however you would like to see more on this subject, website searches bring up a lot of useful information.



Interior of a Vermicomposting 'worm bin' at ZZ2