



Grow the Crop

Handout 10

Types of Equipment To Apply Chemicals

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Foliar applications can be applied in several ways, being:



- **Knapsacks**

Newly planted trees, up to the age of one year, may be sprayed with a knapsack as they require very little spray volumes.

Be careful not to use a knapsack for the application of insecticides after it was used for the application of herbicides due to possible damage to trees.

- **Handguns**

Trees between the age of two and four years old, depending on the cultivar planted and the area in which it is situated, are too big to be sprayed with knapsacks, therefore one will use handguns.

A handgun implies a spraying cart with a hosepipe and spray gun held by an operator when applying an insecticide. With handguns, as opposed to knapsacks, a much higher volume of spraying material can be applied in less consuming times.

- **Mist blowers**

The most popular automatic spraying machines are called mist blowers. These machines work on the principle of air displacement. The air within the tree is “blown out” by the high-speed fan on the spraying machine and replaced with chemical-filled air. There are many different types of mist blowers. They can be broadly classified into low, medium and high-profile machines. The choice of machine depends on the type of spray required. For example, low- and medium profile machines would not be suitable to apply a full cover spray to large mature trees.

- Low Profile Machines are double-sided mist blowers without any tower or deflector.
- Medium Profile Machines are raised, double-sided machines with or without a single-sided deflector or a raised machine with a short tower.
- High Profile Machines are single or double-sided mist blowers that have tall towers and cover the tree canopy from top to bottom.

Guidelines for setting up Mist Blowers

- The mist blower is attached to a tractor and the PTO is connected.
- The spraying machine is filled with water and the chosen discs and spinners are inserted into the nozzles.
- The pH of the water is checked to determine whether a buffering agent is required.
- The spraying machine is tested in the orchard/field with water to determine whether the theoretical calibration that was done initially gives the correct spray coverage to the tree/field, measured by observation.
- Minor adjustments are usually necessary to ensure good coverage and to prevent wastage of spraying material.
- The spraying material is mixed in the spray tank as prescribed.
- Before spraying starts, the protective clothing of the tractor driver is checked.
- Full instructions are given to the driver regarding the correct gear that the tractor should be in, the pump pressure required, and where the accelerator should be set to attain the correct PTO revolutions (540rpm).

- **Tractors**

Tractors are used to pull spraying machines. Power from the tractor is transferred to the spraying machine by means of a power take-off (PTO) enabling the pump, fan and spray tank agitator to operate.

- **Crop Spraying Aircraft**

Where large areas must be covered in a short period of time, aerial applications (very expensive) is often used. Aerial applications can however only deliver light covering sprays and are therefore generally only used for bait sprays.