

# Spraying Cocoa: 10 Essentials



## 1. Keep tree height under control

**Tall trees are very difficult:**

- to monitor
- to spray
- to harvest

**Prune trees regularly:** cutting

down the height of tall trees (to 3-4 metres) will make spraying easier: but you may lose a season of crop!



courtesy J.Cooper, NRI

## 2. Know your target

What are you trying to control?

... what product and how will you apply it?

Examples:



Make sure it is not **too late** to spray.

It is often best to remove and bury (or destroy) any badly infested/diseased pods and branches.

## 3. What will you spray?

Choose and use the right pesticide:

think safety first ...

... and will it be effective?

**Read the label** – is it the best product for your problem?



**Do NOT use dangerous products**

If you do not have special personal protective equipment (PPE): mask, goggles, gloves\* etc...



this sign means the product is harmful

\* **NOTE:** it is safer to use no gloves at all than gloves with holes in them!



this sign means danger

What is the **pre-harvest interval?** (PHI: the minimum permitted number of days between the last spray and harvest).

## 4. Minimum Personal Protection

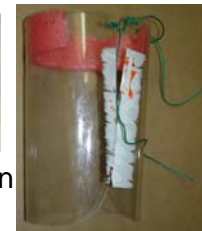
✓ **Wear a hat** against falling droplets

✓ Wear comfortable clothing that protects as much of the body, arms and legs as possible.



✗ ... but never put on previously contaminated overalls or other clothing

✓ A face visor is especially important for irritant or harmful pesticides: it can be made from a 2 L plastic soft drinks bottle, tied on with strings.



✓ Wear trousers on outside of boots



If you use a **motorised mistblower** ear defenders are essential.

**Children must not take part in spray operations:** they are especially sensitive to pesticides

## 5. Is your sprayer working properly?

- ❑ Choose a robust sprayer ...and will you be able to find spare parts for it?
- ❑ **before** each spray operation **check** equipment using clean water:
  - Are there any faults or blockages? Check pump, valves, filters and nozzle.
  - Are there any leakages? If spare parts are not available repair joints with white (plumber's) tape or rubber seals (can be made out of old tyre inner tubes). Replace worn and leaking hoses.

## 6a. How to treat the target?

Where must the spray deposit be put?

- pods & trunks
- shoots
- whole tree

**Select the right nozzle**

if your sprayer has a variable hollow cone nozzle – what setting should be selected?

Variable nozzles are difficult to calibrate - it is better to select the correct nozzle for the job

More details are available from .....

... please see next page

# Spraying Cocoa (2)

## 6b. Know your spray nozzles:

Squirting with a jet is usually wasteful.



A wide spray cone is good for general canopy treatment, but can be wasteful for pods and narrow branches



For narrow targets like pods and branches you need a narrow angle of spray



... and remember:

**High flow rates mean**

- bigger droplets
- greater risk of run-off
- **wasted money!**

## 7. It pays to Calibrate

Use the right amount of water (volume rate) and pesticide mixture. Ask the questions:

- how many litres can your sprayer tank hold?
- how many trees are treated per tank load?
- how many tank loads are required to spray the whole farm?

- Only mix as much pesticide as you need for the day of spraying



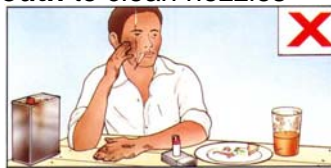
## 8. Application technique

- Be systematic: make sure you don't miss any target areas...
- ...or spray them twice!
- Are all the targets being sprayed effectively?
- Is there dripping from the pods or leaves?
- ... if so, you are **spraying too much**



## 9. Containers and Hygiene

- ✓ If you use sachets - dispose of carefully
- ✓ If you must re-use pesticide bottles: rinse at least 3 times before disposal, with the water for rinsing placed in the next spray tank load
- ✗ **Never** use your **mouth** to clean nozzles ... or to prime your sprayer
- ✗ Never eat, drink or smoke while spraying
- ✓ After spraying:
  - clean out the sprayer first
  - then wash yourself and your clothes



## 10. Can you do better next time?

- Did you spray the number of tank loads expected?
- Was it difficult to reach high pods and branches? If so - start pruning your trees
- Did the spray operation work? ... continue monitoring your crop ...
- if not, change your pesticide, timing or improve your application technique.



for more information visit:  
<http://www.dropdata.org>

Comments and suggestions please contact: r.bateman@imperial.ac.uk (v. 24/8/2007)