

I. Product Knowledge

Topic 12a

Types of Spraying Machines

FACT SHEET

I. Product Knowledge

Topic 12a: Types of Spraying Machines

Spraying machines are very important for the **correct application** of pesticides. There is a wide range of sprayers available on the market, and it is important to select the right sprayer. The following should be considered when selecting a sprayer. The sprayer needs to:

- Be easy to use.
- Have low maintenance.
- Have readily available spare parts.
- Be easy to calibrate.

Spraying machines can be divided into four different types:

1. Compression sprayers.
2. Backpack or knapsack sprayers.
3. Powered sprayers:
 - a. Motorized knapsack sprayers.
 - b. Fogger machine.
4. Dusters.

1. Compression sprayers

These sprayers are loose-standing sprayers with a tank, pressure pump, hose, hand trigger mechanism, spray lance, nozzle, and usually a pressure gauge.

Tank capacity: 1-10 liters.
Recommended for: Pest control application.
Remarks: Good control over rate of application. Not really suitable for crop protection.



2. Backpack or knapsack sprayers

The backpack or knapsack sprayers are the most commonly used sprayers in Africa. They consist of a frame with back straps, tank, hand pump mechanism, hose, hand trigger mechanism, and spray lance with the nozzle. The operator pumps the lever up and down. The pump action creates pressure inside the tank, which forces liquid into the hose and up to the hand trigger mechanism. When the operator presses the hand trigger mechanism, the liquid releases into the lance and sprays out through the nozzle.

More information on the knapsack sprayer can be found in topics 12b, 13a, and 13c.



Tank capacity: 14-20 liters.
 Recommended for: Agricultural crop protection.
 Remarks: Proper calibration is very important. Avoid tanks that are very big, because they have to be carried.

3. Powered sprayers

Powered sprayers are powered by either electricity or petrol-driven engines. They are also called motorized sprayers. The motorized knapsack sprayer and the fogger sprayer are both powered by petrol-driven engines.

3a. Motorized knapsack sprayer

The motorized knapsack sprayer is used for a wide variety of pesticide applications. The machine creates pressure and a stream of air, which turns the pesticide into a fine mist to treat large areas. A special UL nozzle can be fitted for the application of ultra low volume pesticides.

Tank capacity: 14-20 liters.
 Recommended for: Large areas of application. Suitable for migrating pests such as army worms and locusts.
 Remarks: Good control over rate of application. No pump action needed.



3b. Fogger machines

The fogger machine is driven by a petrol engine that heats up the exhaust. The pesticide is applied through a nozzle into the extremely hot exhaust system, which turns the pesticide into a fog for application to the target area.

Tank capacity: 14-20 liters.
 Recommended for: Large areas of application. Suitable for migrating pests such as army worms and locusts.
 Remarks: Good control over rate of application. No pump action needed.



4. Dusters

Dusters are actually not sprayers, but they are used to apply dry powder pesticides or dusting powders to crops. The dusting powder is in a tank. When you pump the unit, air is sucked into the tank and pressed out together with the powder through the hose and lance.

Tank capacity: 3-4 kg of dusting powder.
 Recommended for: Only suitable for application of dust pesticide formulations.
 Remarks: Not very common in Africa.



INSTRUCTIONS

I. Product Knowledge

Topic 12a: Types of Spraying Machines

Materials needed

- Flip-sheet board with flip-sheets
- Markers (1 black, 1 blue, 1 green, 1 red)
- Colored cards

Time needed: 45 minutes

Preparations:

- Flip-sheet with the heading *Types of spraying machines*
- One copy of every visual
- Flip-sheet with the heading *Questions* and the text:
 - *Name of sprayer*
 - *How does it work?*
 - *Used for what?*
- If possible, real spraying machines (different types)
- Set of colored cards with the following types of spraying machines:
 - *Compression sprayer*
 - *Knapsack sprayer*
 - *Motorized Knapsack sprayer*
 - *Fogger machine*
 - *Duster*

Set up

- Attention:** Ask participants if anyone can tell what a spraying machine is. A spraying machine is used to apply pesticides correctly.
- Title:** Tell participants the title while showing the flip-sheet with the title: *Types of spraying machines*.
- Credibility:** Explain your experience in application equipment.
- Objectives:** To explain the different types of spraying equipment and what they are recommended for.

- Benefits:** Knowing the different types of spraying machines will help agro-dealers advise and service the farmers.
- Direction:** During this session, we will focus on the different types of spraying machines. We will not go into detail about the different parts or about how to use the sprayers.

Delivery

Explanation, Demonstration, Exercise, and Guidance:

1. Tell the participants that without using spraying machines, the farmer does not have **control** over how much pesticide is applied to crops. Also, he/she is exposed to the possibility of **contamination**.
2. Tell participants that a few things should be considered when **selecting** a sprayer. The sprayer needs to:
 - Be easy to use.
 - Have low maintenance.
 - Have readily available spare parts.
 - Be easy to calibrate.
3. Divide participants into five groups and give each group one **visual** of a spraying machine. Paste the flip-sheet with the heading *questions* on the wall. Ask all groups to discuss the following questions:
 - a. What is this type of spraying machine called?
 - b. How does it work?
 - c. What is it used for?

Note: If you have real spraying machines, use them instead of the visuals.

4. Let the groups write their answers on a flip-sheet. Tell them to write big, bold, and in capital letters.
5. **Discuss the results.** Ask the first group to paste its flip-sheet on the board and to clearly show the visual to everyone. Let the group present its results. Tell participants to be brief and to the point. Ask if other groups agree with the results. Highlight important words on the group's flip-sheet and add words, if necessary.
6. Continue with the other groups until all visuals are discussed.
7. Ask the participants which spraying machines on the wall are used in their **region**. Allow some time for brief discussions.
8. Ask participants if there are any **other spraying machines** in their regions. List the spraying machines on a flip-sheet. If they mention tractor-drawn sprayers, acknowledge their input but tell them that we are now focusing on small-scale farmers that probably are not using tractors. Briefly discuss each spraying machine listed by the participants.

Note: If tools are listed that are not on the fact sheet, make a note to include them in the material for future use.

Finish

- Summary:** Give a summary by mentioning all types of spraying machines and how they are used. Show the real equipment, if possible.
- Questions:** Ask if anyone has a question or comment.
- Evaluation:** Ask them to name the different types of spraying machines. Ask what they are used for.
- Next step:** In this session, we learned about the different types of spraying machines. In the next session, we will discuss the different parts of a knapsack sprayer and how they function.

Distribute the **fact sheet** to all participants.

VISUAL 1



VISUAL 2



VISUAL 3



VISUAL 4



VISUAL 5

