

On-farm Pesticide Use

Introduction

If non-chemical control methods become ineffective, pesticides can be used to prevent economic loss and obtain desired results. The use of pesticides presents a number of opportunities for risk of exposure to the applicator and the environment. While pesticides are regulated at all levels of government they must be used carefully and according to label instructions.

Mixing and filling sprayers

Preparing pesticide mixtures and filling sprayers poses the greatest risk of exposure for the applicator and the risk of contamination to the environment as a result of splashes and spills.

Before You Start

- Read the product label
- Wear required Personal Protective Equipment
- Ensure equipment is functioning properly:
 - no hose leaks or cracks
 - proper agitation
 - filters, screens and nozzles are clean
- Always have on hand:
 - emergency phone numbers
 - first aid and eye wash kits
 - spill response kit

Choose a mixing and loading area which is outdoors or in a well ventilated area. The mixing area should be away from livestock, pets, wells or bodies of water. A minimum separation distance of 30 m (100 ft.) should be maintained from wells, watercourses and agricultural ditches when mixing pesticides.

Filling the Sprayer

1. Fill spray tank ½ full
2. Add adjuvants before pesticides unless otherwise stated on label
3. Accurately weigh or measure required pesticide and add to spray tank
4. Prepare slurry with wettable powders by premixing with water before adding to spray tank
5. Rinse measuring equipment and add rinsate to spray tank
6. Complete filling of spray tank

When filling a sprayer it should be watched closely at all times to prevent overflow. In addition, a check valve should be installed on a water supply. Maintaining an air gap between filler hose and water level in the spray tank during filling will further prevent the possibility of backflow to the water supply.



Figure 1. Elevated bulk water tank, or nurse tank, for rapid filling and back-flow prevention.

Ideally, a nurse tank should be used to fill pesticide application equipment (Fig. 1). Elevating the nurse tank above the sprayer tank height will prevent backflow and enable rapid filling of a sprayer, reducing the possibility of overflow from inattention. Portable water storage should be considered at application sites.

Disposal of Unused Pesticides and Empty Pesticide Containers

Thoroughly drain pesticide containers of concentrate. Empty containers should be triple rinsed with rinsate added to the spray mixture. Containers should be punctured and returned to the place of purchase or a container collection site. If possible, packaging for wettable powders should be carefully single rinsed and disposed of at a local solid waste disposal site.

Dispose of expired material through municipal or provincial hazardous waste cleanup. For further information refer to **Pesticide Storage and Handling** factsheet.

Pesticide Applications

There are many factors to consider for proper pesticide performance including product selection, spray volume, travel speed, nozzle type, droplet size, spray pressure, boom height and weather conditions. Careful calibration of spray equipment, considering all of these aspects, will ensure adequate coverage and minimal drift contributing to a safe and successful pesticide spray program.

Ensure the sprayer is in good working order. Worn or damaged parts or nozzles can lead to misapplication of pesticides and poor spray patterns resulting in drift, the potential for crop damage, excessive pesticide use and unnecessary expense.

Application equipment should be calibrated at least once a year to ensure accuracy of application rates. Wettable powders can cause extreme wear to spray nozzles; producers applying large quantities of wettable powders should calibrate more often. For further information refer to **Field Sprayer Calibration** factsheet.

On-farm assistance in the calibration of pesticide application equipment and nozzle selection advice is available upon request. Refer to contact information at the end of this factsheet .

Ensure weather conditions at the time of application will be adequate for product performance and drift prevention. Consider that weather conditions may change rapidly depending on the time of day. Table 1 outlines some general observations to help determine appropriate conditions for the application of pesticides. It is not advised to apply pesticides when wind speed is greater than 18 km/hr (11 mph). In addition, avoid conditions where temperature inversions exist, as both circumstances can contribute significantly to drift. Reduce the possibility of spray drift by using most appropriate nozzles or low drift nozzles where applicable. Refer to **Nozzle Selection for Blueberry Growers** factsheet.

Table 1. General observations to help gauge wind speed and appropriate spray conditions.

Wind Speed	Spraying conditions	Observations
1 to 3 mph	Avoid fine sprays	Smoke drift indicates wind direction
3 to 7 mph	Ideal spraying	Light breeze felt on face, leaves rustle
7 to 11 mph	Good spraying	Leaves and twigs in constant motion
11 mph +	Do not spray	Small trees and branches sway, dust rises

Adapted from: "A pocket guide to IPM scouting in wild blueberries" (University of Maine)

Placing sprayer controls within the tractor cab and cabs equipped with charcoal filters greatly reduces the risk of exposure to the operator when applying pesticides.

Some pesticide labels specify minimum separation distances, or buffers, which must be adhered to. If not stated on the label, minimum buffer zones should be maintained around sensitive areas such as wells (10 m or 33 ft.), watercourses (5 m or 16 ft.), and agricultural ditches (3 m or 10 ft.) when applying these pesticides.

Maintain accurate records of pesticide application, including:

- stage of crop and pest development
- pest distribution in field
- pesticide and rate applied
- equipment settings
- date and time of application
- weather conditions

A Field Cropping Record Book is an excellent place to maintain pesticide application and calibration records.

Cleaning Pesticide Application Equipment

Always read the label for cleaning instructions as some products have specific requirements for cleaning.

Do not flush or clean a sprayer where it may result in contamination. Water should be used to dilute the chemical when rinsing/cleaning a pesticide sprayer and the rinse watersprayed on the same area or field. Headlands or unused areas between fields can also be used to spray out rinse water while still respecting and maintaining adequate separation distances. It is important that maximum pesticide label rates are not exceeded when applying tank rinse water to areas previously sprayed.

Poorly cleaned equipment can result in the buildup of residues, causing breakdown of

equipment and interfere with the effectiveness of other pesticides. Thoroughly clean the exterior of the sprayer as well.

Spills

Clean up any pesticide spills immediately

Prevent spills by transporting, handling and storing pesticides properly. Check containers frequently for leaks. Mix, load and apply pesticides carefully to minimize the chance of spills. Mixing and loading should be done in areas designed to contain spills, ideally on a concrete pad. Spills during mixing and loading pose the greatest personal and environmental risk due to the handling of concentrated products.

Keep a spill response kit in storage area and close by at all times in mixing and loading areas (Fig. 2). A spill response kit can be purchased or assembled from everyday items. Check label or MSDS for specific instructions. Always wear the appropriate personal protective equipment.



Figure 2. A spill response kit assembled from everyday available items.

Contents of Spill Kit

emergency contact information
unlined chemical resistant gloves
respirator
disposable coveralls
broom and dustpan or shovel
heavy plastic bags

rubber boots
protective eye wear
absorbent material
ie. peat moss, cat litter
water tight container with lid
marker

If a spill occurs:

Assess personal safety issues before addressing spill.

Eliminate source of the spill.

Prevent the spill from spreading by diversion or providing a barrier.

Do not apply water to clean up a spill as this will cause it to spread.

Apply absorbent materials to soak up spilled liquid pesticide or dilute mixtures:
sweep or scoop up dry pesticides
dig up and remove contaminated soil

Always read the label for cleaning instructions, as some products have specific requirements.

Place spilled pesticide and all collection and cleaning materials in a sealable container or heavy plastic bag, label and dispose of properly.

Shower, washing thoroughly after cleaning up a pesticide spill.

**If a spill greater than 5 kilograms or 5 litres of pesticide in concentrated form,
or 70 litres of diluted pesticide occurs you must contact the 24-hour
Environmental Emergencies toll free number at 1-800-565-1633**

For further information contact:

Environmental Farm Plan
Phone: (902)893-2293

