Insecticides Formulation And Their Application

MZM

A **pesticide/insecticide formulation** is a mixture of chemicals which effectively controls a pest. Formulating a pesticide involves processing it to improve its storage, handling, safety, application, or effectiveness.

Some Formulations[2,3]	
A	Aerosol
B	Bait
D	Dust
DF	Dry flowable
E,EC	Emulsifiable concentrate
FL	Flowable
G	Granule
M	Microencapsulated
P	Pellet
RTU	Ready-to-use
SP	Soluble powder
ULV	Ultra-low-volume concentrate
WP	Wettable powder
WDG	Water-dispersible granule

Table I. Pesticide Formulations.

DRY	LIQUID	OTHER
Dusts Granular Wettable Powder Soluble Powder Pellets Feed formulations Baits Fertilizer Combinations Water Dispersable Granule (WDG) Dry Flowable (DF)	Emulsifiable Concentrates (ECs) Ultra Low Volume (ULV) Tech Concentrates Flowables MECs Aerosols Liquified gas/Fumigants Solutions Paints	Controlled Release Repellents Attractants Collars & tags Impregnated products Predator control devices Animal Systemics (oral, dermal,injectable, implant, feed additive)

The pesticide formulation is **a mixture of active and inert ingredients**. An active ingredient is a substance that prevents, kills, or repels a pest

Synergists are a type of active ingredient that enhance another active ingredient's ability to kill the pest. For example, insecticides containing the active ingredient **pyrethrins** often contain **piperonyl butoxide** as a synergist.

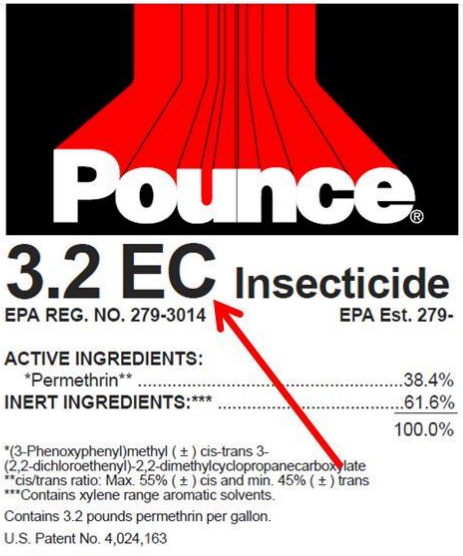
Inert ingredients may aid in the application of the active ingredient and include **solvents**, **carriers**, **adjuvants** etc.

Pesticide Label

READ THE LABEL FIRST

Parts of a Pesticide Label

- **Type of Formulation:** information on the formulation may be included on label, often as a part of the brand name; abbreviated form (e.g., WP or EC) generally used



Insecticide Application Equipment
Common Sprayer Types

Hydraulic sprayer

Hand atomizer sprayer

Knapsack sprayer

Wheelbarrow sprayer

Insecticide Application Equipment
Common dusters

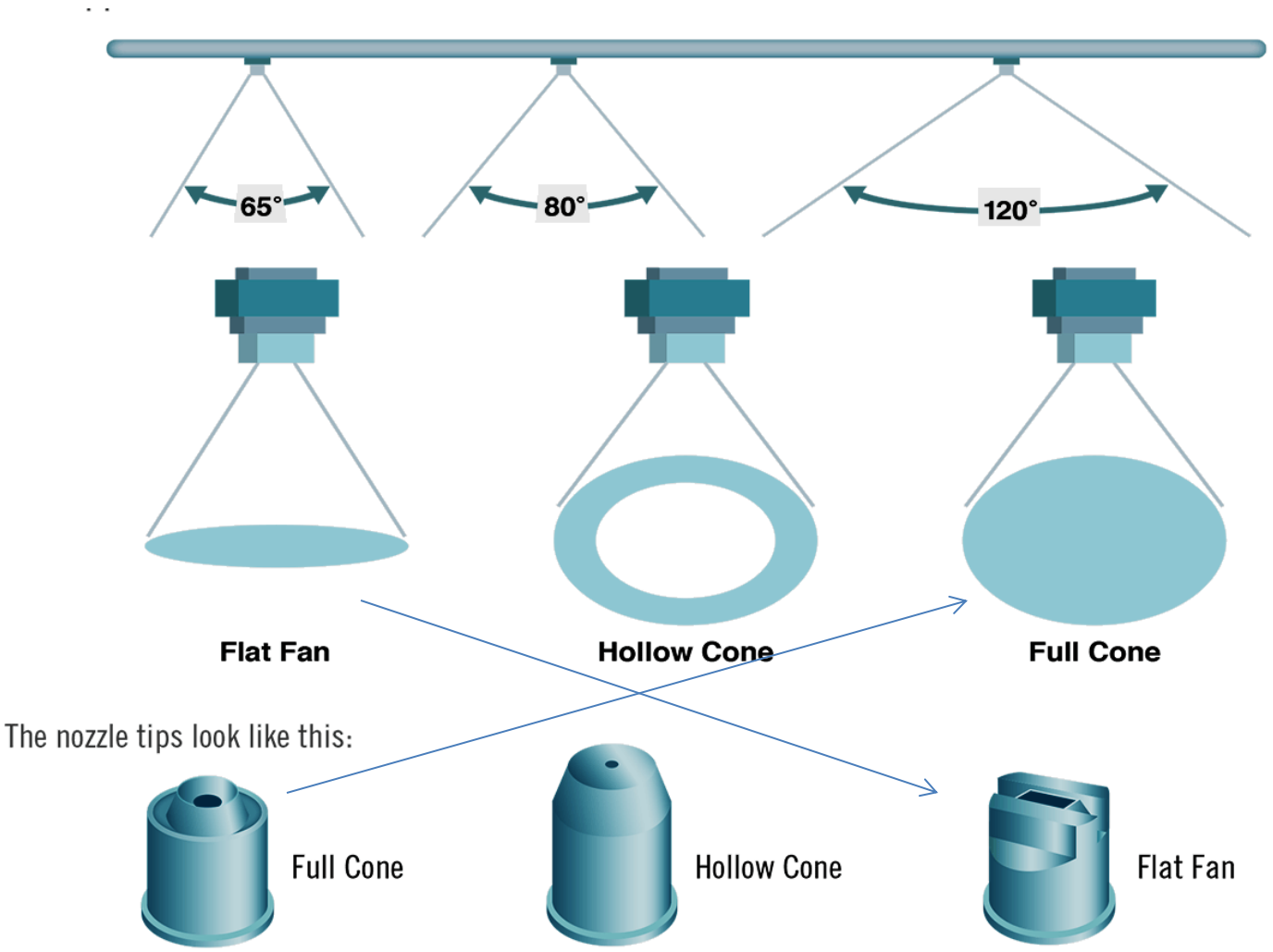
Hand Rotary Duster

Manual Powder Duster and Shaker Applicator

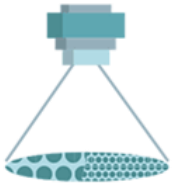
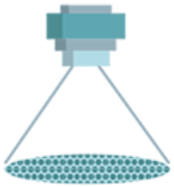
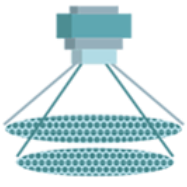
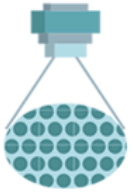
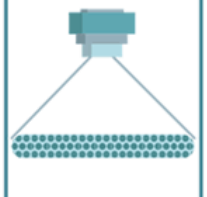
Viller's power rotary duster

Backpack Granule Spreader

Insecticide Application Equipment
Common Nozzle Types

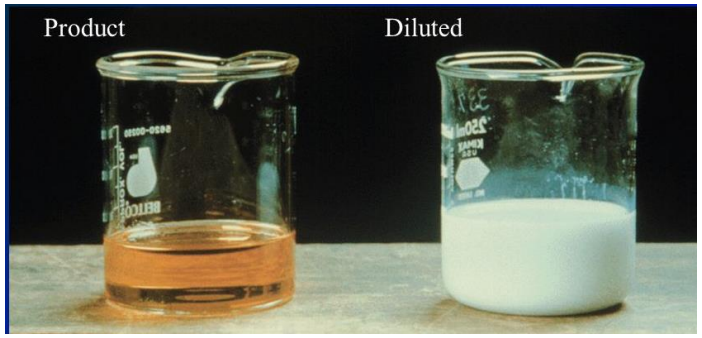


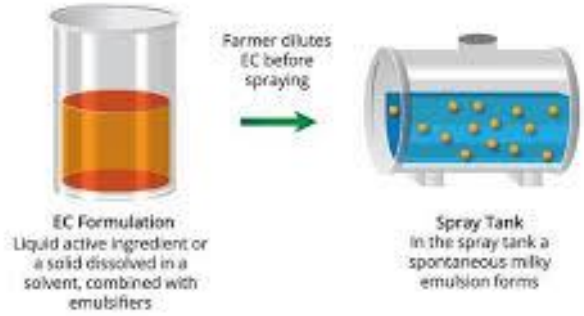
Insecticide Application Equipment
Nozzle Selection

Nozzle Guide for Broadcast Spraying								
	 Extended Range Flat Fan	 Standard Flat Fan	 Drift Guard Flat Fan	 Twin Flat Fan	 Turbo Flood Wide Angle	 Wide Angle Full Core	 Flood Nozzle Wide Angle	 Raindrop Hollow Cone
Herbicides								
Soil-incorporated	**Good**	**Good**	**Very Good**		**Very Good**	**Very Good**	**Good**	**Good**
Pre-emerge	**Very Good** (at low pressure)		**Very Good**		**Very Good**	**Very Good**		**Good**
Post-emerge Contact	**Good**	**Good**		**Very Good**				
Post-emerge Systemic	**Very Good** (at low pressure)	**Good**	**Very Good**		**Very Good**			**Good**
Fungicides								
Contact	**Very Good**	**Good**						
Systemic	**Very Good** (at low pressure)		**Very Good**		**Very Good**			
Insecticides								
Contact	**Good**	**Good**		**Very Good**				
Systemic	**Very Good** (at low pressure)		**Very Good**		**Very Good**			

The most common type of nozzle used in agriculture is the fan nozzle. A fan nozzle is widely used for spraying insecticides and fungicides — both for banding (over and between rows) and for broadcast applications.

Numerical Calculations for Preparing Insecticide Solutions





Total Quantity of Poison

$$TQP = \frac{Dose}{Formulation} + 100$$

Total Quantity of Spray(able) Material

$$TQSM = \frac{Dose}{Concentration} + 100$$

Assignment:

(Solve these numericals on a single page and submit it as photo/pdf to your CR/GR till tomorrow 08-05-2020. Write your name and registration number as file name)

Numerical 1:

Calculate the dose (per acre) of Imidacloprid 25WP with a concentration of 0.8 % and TQSM of 50 liters. What would be the TQP used for one acre?

Numerical 2:

Calculate TQP and TQSM of Actara (Thiamethoxam) 2.5 WP against sucking insect pests of tomato crop. Recommended dose of this insecticide is 200 mL active ingredient with a concentration of 0.08%.

Numerical 3:

You have to spray formulation Karate (Lambda-cyhalothrin 5% EC) on your cotton crop against armyworm on one acre area. Recommended dose of this product against armyworm is 200 mL per acre with a concentration of 0.05%. Calculate TQP and TQSM.