# GILA RIVER INDIAN COMMUNITY DEPARTMENT OF ENVIRONMENTAL QUALITY

PESTICIDE CONTROL OFFICE

Community Applicator Certification Training

Image Credit: GRIC PCO

## Module 10: Pesticide Application Procedures

# Planning the Pesticide Application

*This Module Will Help You:*

- Select appropriate application equipment and pesticide formulations
- Understand equipment components
- Determine pesticide application rates
- Chose drift reduction practices

# Applying Pesticides


Media Credit: Michigan State University, and the US EPA
https://youtu.be/PATznTBiPVI

# Application Methods

- Broadcast
  - Air, ground, boat
- Band
- Crack and crevice
- Spot
- Basal
- Space treatment
- Tree/stem injection
- Rope-wick or wiper treatment

Image Credit: GRIC PCO

# Application Placement

Image Credit: Cornell University

- Foliar
- Soil injection
- Soil incorporation
  - Tillage, rainfall, irrigation

# Types of Safety Systems

- Closed mixing and loading systems
  - Mechanical systems
  - Water-soluble packets
- Enclosed cabs
- Pesticide Containment Pad

# Closed Mixing and Loading Systems

- Prevent human contact with pesticides while mixing or loading
- Benefits
  - Increase human safety
  - Reduce need for PPE
  - Decrease likelihood of spilling
  - Accurately measure pesticide

Water-soluble packet
Image Credit: Tony McCandless, GRIC PCO

# Enclosed Cabs

- May prevent pesticide exposure if sealed correctly
- Supplement to PPE but not a replacement
- Consider cab contamination issues

Image Credit: GRIC PCO

# Pesticide Containment Systems

## Containment Pad

Image Credit: Washington State University

- Catch spills, leaks, overflows and wash water
- Prevent environmental contamination
- Impermeable material (sealed concrete, synthetic liners, glazed ceramic tile, etc.)
- System for recovering and removing material

# Application Equipment

## Hydraulic Sprayer: Liquid


Image Credit: Gemplers


Image Credit: Gemplers

- Large power sprayers
- Small backpack
- Hand-held sprayers

# Application Equipment

## Mechanical Systems: Granular Applicator

Image Credit: Gemplers


Image Credit: Gemplers

- Band or broadcast
- Application rate affected by:
  - Ground speed
  - Gate opening
  - Granule size, shape, and density
  - Terrain
  - Weather

# Sprayer Components

## Tank and Agitator

Image Credit: Gemplers

- Non-corrosive and easily cleaned
- Opening top and bottom eases filling and cleaning
- Continuous mixing of pesticide and carrier

# Sprayer Components

## Pump

- Provides pressure and volume to nozzles
- Corrosion and abrasion resistant
- Read manufacturer instructions


Image Credit: Gemplers

# Sprayer Components

## Nozzle

- Amount of material applied
- Orifice size => droplet size
- Distribution and droplet pattern

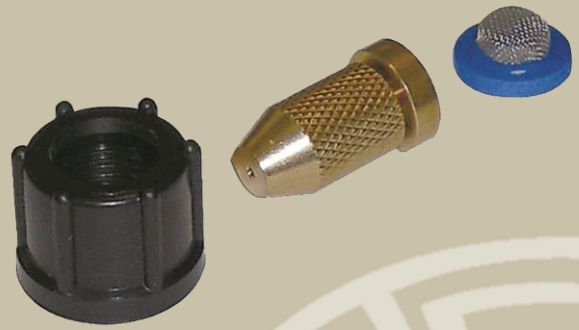
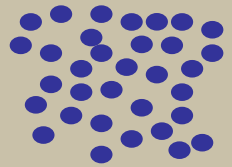
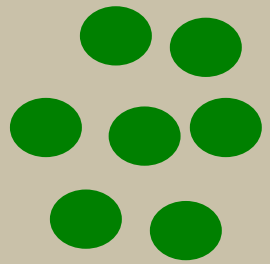


Image Credit: GRIC PCO

<u>Fine droplets</u> =
maximum coverage



<u>Coarse droplets =</u>
minimize drift



# Sprayer Components

## Nozzle: Material Selection

- Brass – don't use with abrasive material
- Plastic
- Hardened Stainless Steel
- Ceramic

} Best to use with wettable powders and dry flowables

Avoid application problems- replace worn nozzles

# Oh no, Math!


- Equipment calibration and application requires basic math skills
- Remember, refer to manuals for formulas but you need to know how to use the formulas

Image Credit: GRIC PCO

# Equipment Calibration

***Calibration*** is the process of measuring and adjusting the amount of pesticide your equipment will apply over a target area. It is a critical "first step" in making certain that your equipment is applying pesticide uniformly and at the correct rate. Calibrating your equipment will save you money, by not wasting pesticides from over application; and time, by preventing the need for re-application from under application. Over applying pesticides also can result in excess residues on or in plants, soil, and surface or groundwater.

http://pesticidestewardship.org/calibration/Pages/Calibration-Intro.aspx

# Equipment Calibration

## Why is Calibration Important?

- Adjust equipment to get desired rate
- Achieve label rate for product delivery
  - Meet application volume requirements
  - Effective pest control
  - Does not waste money
- Personal and environmental safety

# Timing Delivery Calibration


Media Credit: University of Florida, Entomology
https://www.youtube.com/watch?v=DvvwqADlI_E

# Test Application Calibration


Media Credit: University of Florida, Entomology
https://www.youtube.com/watch?v=9JrGpJdM7S0

# Equipment Calibration

## How Often Should You Calibrate?


Image Credit: University of Florida, Entomology

- Periodically
  - Any change in equipment set up
  - Whenever change products

*Calibration is important*

*Take the time to do it right and often*

# Applying the Correct Amount

## Decide on How Much Pesticide to Apply

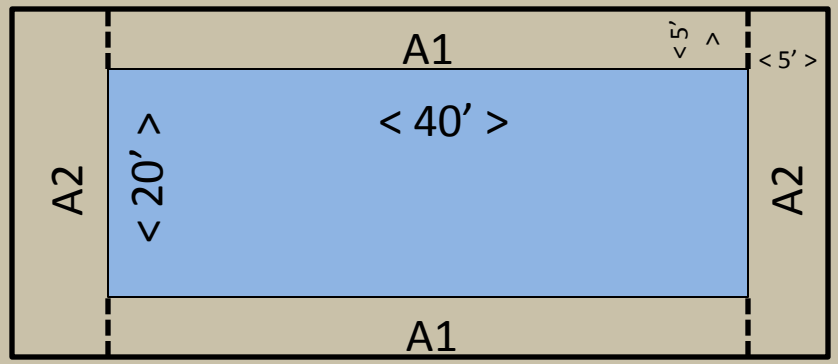
- Calculate the area to be treated
- Use the “Directions for Use” section of the label for the appropriate rate

A1 = L x W

A1 = 40 x 5

A1 = 2 x 200

A1 = 400 sq. ft.




**Total Area = 700 sq ft.**

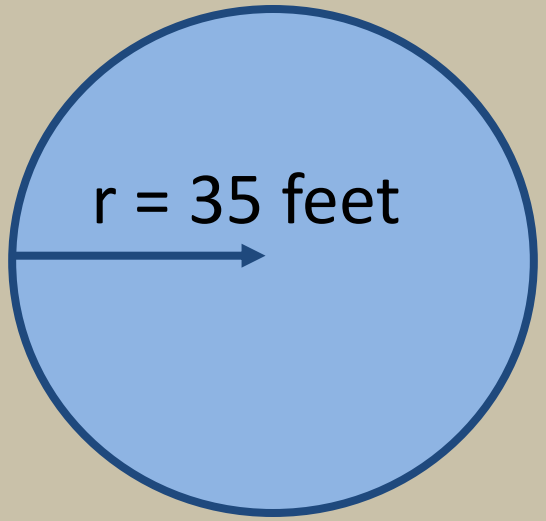
A2 = L x W

A2 = 30 x 5

A2 = 2 x 150

A2 = 300 sq. ft.

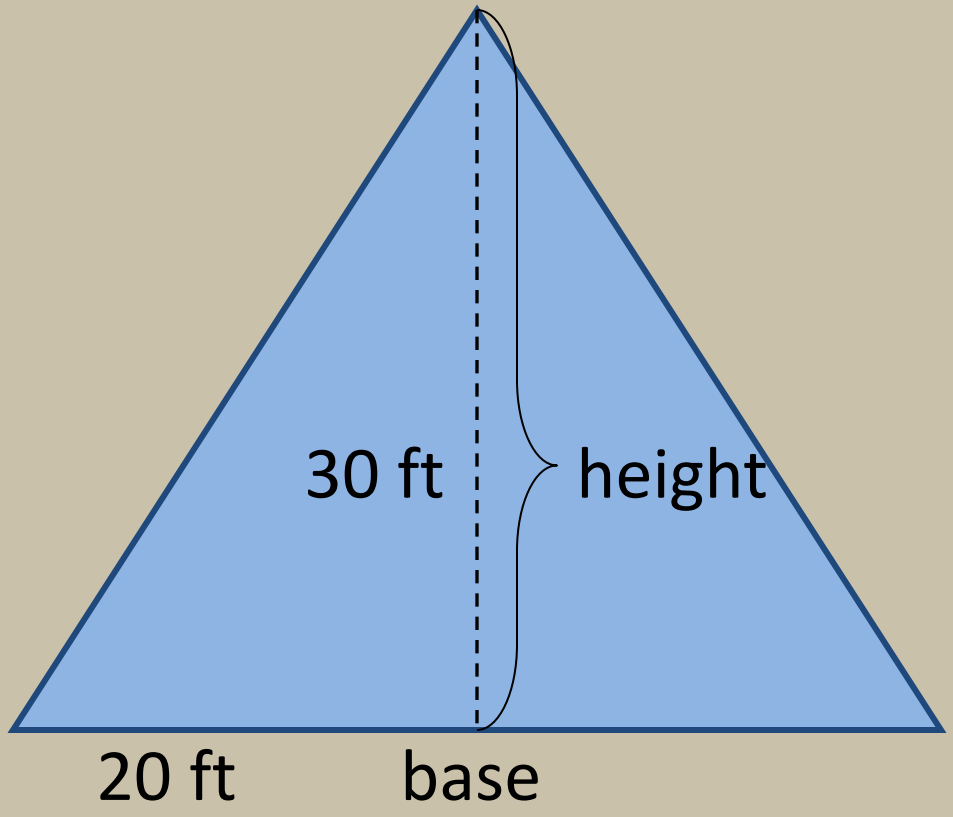
# Area of a Circle




**Area = 3.14 x $r^2$**

3.14 x 35 x 35 = 3,846.5 sq.ft.

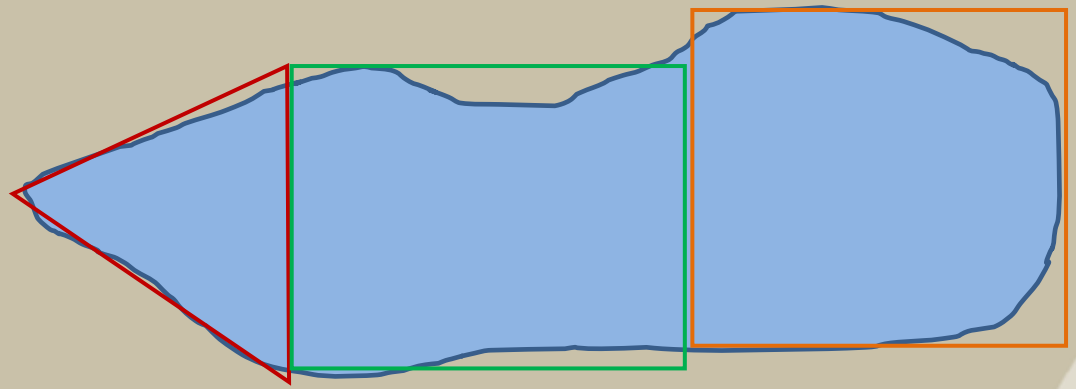
# Triangular Areas




**Area= $\frac{\text{base x height}}{2}$**

Area= $\frac{20 \times 30}{2}$ = **300 sq.ft.**

# Irregularly Shaped Sites



**Use a combination of shapes and add their areas:**

# Determining Application Rate

- Calibrated delivery rate of sprayer used to determine amount of pesticide concentrate needed and amount of total spray mix
- **READ THE LABEL!!!**
- Have someone double check your calculations

# Minimizing Drift

## Read the Label

- Volatility
- Equipment restrictions
- Droplet size restrictions
- Buffers
- Wind direction/speed
- Temperature Inversions

# What is Pesticide Drift


Media Credit: Ontario Pesticide Education
https://www.youtube.com/watch?v=RaOLznIryUk

# Lots of Decisions

## Mistakes are Costly

- Target site and pest
- Pesticide choices and formulations
- PPE, closed systems
- Equipment selection set up, calibration
- Environment where application is to take place

# Applicators Must Understand:

- Federal and Tribal pesticide laws and regulations
- Emergency procedures
- Importance of following label instructions
- How and when to correctly use pesticide application equipment
- Proper use and care of PPE
- Need of keeping accurate application records
- Importance of positive, open communication with employer, employees, customers, and public

# Public and Customer Communication

Image Credit: GRIC PCO

- Create a positive professional image
- Communicate what you are doing
- Stay current in pesticide issues and IPM
- Avoid troublesome phrases when communicating

# Explain to Customers “what” and “why”

- ***What*** needs to be done to manage pest problem
- Educate customer on pest and ***why*** they have a problem
- Explain your product selection, treatment technique, and anticipated results

# How to Answer Customer Questions

- Be prepared
- Training exercises
  - Role-playing
- Copies of pesticide labels, SDS's, application records
- Admit when you don't know the answer, don't lie

# Before You Leave:

If applicable, inform the homeowner / representative:

- Of the work you've completed
- How long they should stay off of the treated area
- Additional activities they need to do
- Who to contact if incidental exposure occurs
- When follow up will be conducted

**18.326. Notices to Consumers.**

A. Immediately following an application, Non-agricultural pest management businesses shall provide a written notice to a customer for whom the applicator provides a pest management service that contains the following:

1. Name and address of the customer;
2. Specific site to which a pesticide was applied;
3. Date of service;
4. Target pest or category of service;
5. Trade name of pesticide applied;
6. EPA registration number of restricted use pesticide applied;
7. Amount of pesticide applied, in terms of percent active ingredient and volume of diluted mixture or in terms of total amount of liquid concentrate, ready-to-use product, granular material, or bait stations;
8. Name and certification number of the applicator or if the applicator is uncertified, the name of the uncertified applicator and the name and certification number of the applicator providing supervision; and
9. Following statement printed in at least an eight-point font and shall include the words:

"WARNING - **Pesticides can be harmful. Keep children and pets away from pesticide applications until dry, dissipated, or aerated. For more information contact [applicator's name and certification number] at [applicator's telephone number].**"

# Stay Current

Image Credit: GRIC PCO

- Participate in continuing education
  - Regulations
  - Safety
  - Environment
  - New products
  - IPM
  - Recordkeeping

# Information Resources

## National Poison Control Center

1-800-222-1222

## National Pesticide Information Center (NPIC)

1-800-858-7378

http://npic.orst.edu

# Acknowledgements

Adapted with permission from the Washington State University
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**GILA RIVER INDIAN COMMUNITY**

**Department of Environmental Quality**

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