

# **Sprayers 101**

Great Plains Growers Conference

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# Midwest Grower Supply / GFG Ag Service

- Wayne Peterson
  - Servicing Vineyards, Orchards, Vegetables and Small Fruits Growers in 12 states since 1985
  - Offering Complete Line
    - Pesticides
    - Irrigation Supplies
  - Rears and Ag-Tec Sprayers
    - V-Mech Equipment

# Topics To Discuss

- Effective Spraying
- Understanding Rates
- Factors that influence your choices
  - Types of pumps
  - Types of sprayers

# Effective Spraying



# What Is Your Target

- Diseases
  - Insects
  - Weeds
- Tree - Plant – Vine - Ground

Andrew Landers – Cornell University

[www.EffectiveSpraying.com](http://www.EffectiveSpraying.com)

# What Is Your Problem

- What Disease ?
- Powdery Mildew
- Downy Mildew
- What Insect ?
- Codling Moth
- Spider Mite
- What Weed ?

# What Product To Use

- Sterol-inhibiting Fungicide
  - Strobilurin Fungicide
  - Protectant Fungicide
  - Curative Fungicide
  - Systemic Insecticide
  - Contact Insecticide
- Pre-emerge or Post-emerge

# What Is Your Cost

- Manzate Pro Stick – 3 lbs
  - Rally 40 W – 5 oz
- Imidan 70 WSB – 3 lbs
  - Bio-Film Extra – 2 oz
  - \$ 69.00 per Acre

Spraying Is Not Cheap



# What Is Your Rates

- Apples – 400 gal
- Peaches – 300 gal
- Grapes – 200 gal
- Vegetables - ???

New spray guides show per acre rates

Mancozeb 6 lbs per Acre ?

# Dilute Spraying and TRV

Spraying water to wet trees thoroughly to the Point of run off

Tree row volume (TRV) is a method of determining the dilute (1X) volume of a spray solution necessary to cover the entire tree surface

**Step 1** Calculate feet row / acre

$$\frac{43,560 \text{ sq ft / acre}}{\text{Between row spacing (ft)}} = \text{feet of row / acre}$$

$$\frac{43,560}{20} = 2178 \text{ feet of row per acre}$$

**Step 2** Calculate cubic feet of TRV / acre

Feet of row / acre x tree height x diameter of tree canopy = TRV

2178 x 12 x 12 = 313632 cu ft

**Step 3** Select density factor

- .70 Trees extremely open, light visible through entire tree, less than 15 scaffold limbs per tree
- .75 Trees very open, 18 to 21 scaffold limbs per tree, light penetration throughout the tree, healthy spurs
- .80 Trees well pruned, adequate light in trees for healthy spurs, many holes in foliage where light can be seen
- .85 Trees moderately well pruned, reasonable spur population within canopy, tree thick, light cannot be seen through the tree
- .90 Trees minimally pruned, spurs weak due to limited light, very little light
- 1.00 Trees unpruned, extremely thick, no light, trees more than 20 feet high

**Step 4** Calculate TRV gallonage per acre

$$\frac{\text{Cu ft of TRV / acre} \times \text{density factor}}{1000} = \text{gallon of dilute solution}$$

Example

$$\frac{313632 \text{ cubic feet of TVR} \times .70 \text{ Density factor}}{1000} = 220 \text{ gallons per acre}$$

# Dilute Spaying

Based on .7 density factor

Row Spacing	Tree Width	Tree Height	Dilute Rate
40	28	20	427
40	28	16	342
30	20	15	305
25	16	14	273
22	14	13	252
20	12	12	220
18	10	12	203
16	8	10	152
14	6	10	131
12	5	10	127
11	4	10	111

# Low Volume Spraying

- Using less water per acre to apply pesticides
- Apples at 400 gal = 1X
- Peaches at 300 gal = 1X
- Apples at 80 gal = 5X
- Peaches at 60 gal = 5X

# Factors that influence your choices

- **Crop** – (Fruit or Vegetable – Cultivars)
- **Tractor** - (Horsepower – Weight)
- **Row Spacing** - (Width – Ends)
- **Ground** - (Steep or flat)
- **Time** - (Second Job)
- **Budget** - (How much can you afford)
- **X Factor** – (Rain – Wind – Temperature)



# Types of Pumps

- Diaphragm (5 to 66 gpm - 290 to 850 psi)
- Piston (2 to 20 gpm – 400 to 1000 psi)
- Roller (6 to 37 gpm – 150 to 300 psi)
- Centrifugal(60 to 180 gpm – 60 to 100 psi)

# Types of Sprayers

- Hand Gun
- Hydraulic
- Air Blast

# Backpack Sprayers



# Electric Spot Sprayer



# PTO Tractor Mount



# Self Contained



# Hydraulic

- Rears Pul Tank With Trellis Boom









INTERNATIONAL **HI-CLEAR SPRAYERS**



# Air Blast

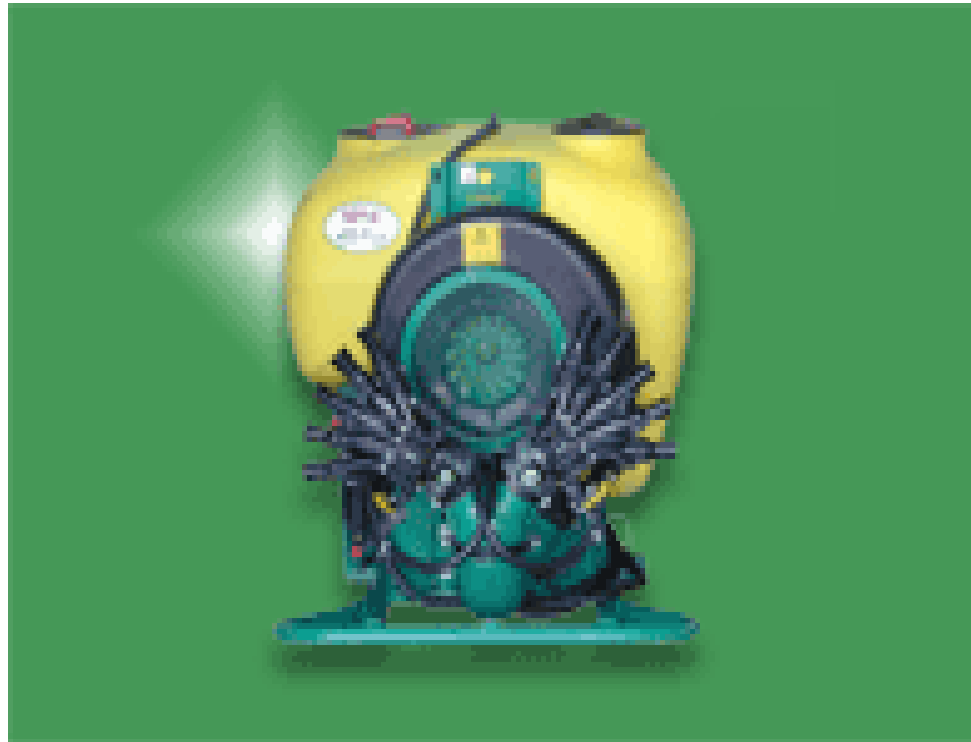
- Rears Pak Blast



- Rears PulBlast



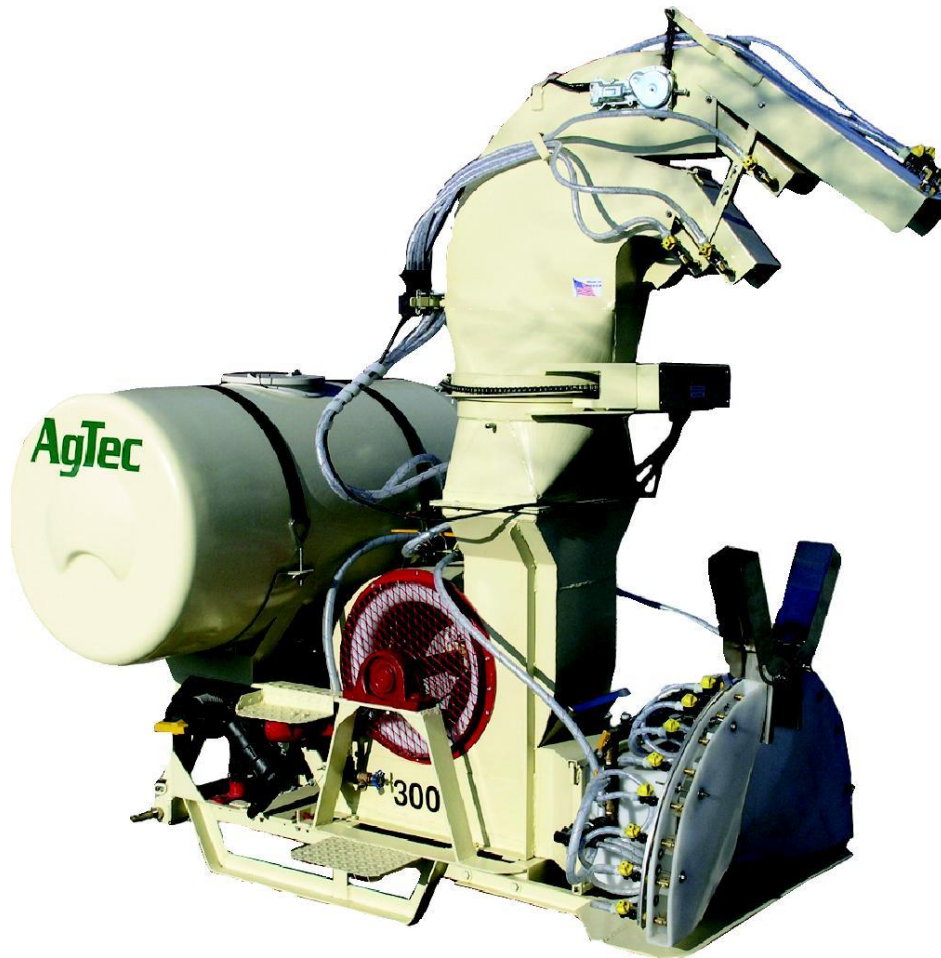
- Cima P45 Three Point Sprayer



- Cima T45 Trailed Sprayer



# Ag Tec 3004



# Thing to Remember

- Need to know your Tree Row Volume
- Need to calibrate your sprayer
- Need to maintain your sprayer
- Need to winterize your sprayer

No Forgiveness

# Questions