

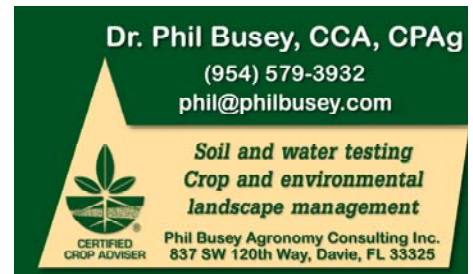
Spray Calibration and Set-Up

Dr. Phil Busey, CCA, CPAg¹

May 25, 2016

South Florida STMA at JetBlue

Park, Fort Myers, FL






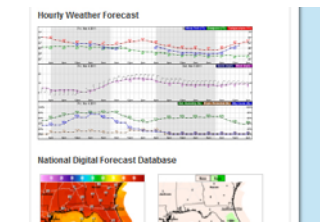
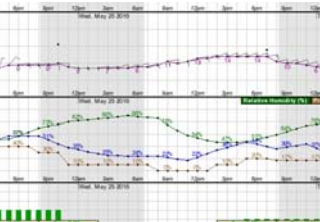
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Soil and water testing
Crop and environmental
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CERTIFIED CROP ADVISER

Getting a prediction for tomorrow's wind speed and rain probability.

<p>Search Google for “national weather service Tampa Bay” or other big city, Miami, Melbourne Click the top link, e.g., http://www.srh.noaa.gov/tbw/</p>	
<p>Look down the page for the map that says, “Click on the map below for the latest forecast” and click the map.</p>	
<p>Look for a new map to appear with a bright green square which is the “Forecast Area.” Click again if you need to reposition the square on your area of interest. Make sure the square is centered over land, not ocean.</p>	
<p>In the new page that emerges, look to the lower right to see the “HOURLY WEATHER GRAPH” and click it.</p>	
<p>The “Hourly Weather Forecast Graph” will appear and it will have instructions how to go “Forward 2 Days” (at your peril) and “Back 2 days.” There is also a link to the left under “Additional Forecasts and Information” for “Tabular Forecast” For today this says at 7:00 am precipitation 10% going down to 0% and wind 8 mph go up to 11 mph.</p>	

¹ Certified Crop Adviser and Certified Professional Agronomist and member of Brookside Society of Professional Consultants.


How NOT to spray (don't do anything on this list)

1. Not reading the label
2. Wind speed over 5 mph or other weather problems (rain)
3. Not having everything ready the day before including replacement nozzles
4. Not having the right pesticide
5. Pump or hoses leaking
6. Spray nozzles not identical or the wrong kind
7. Other parts of spray equipment not working, e.g., foam marker, pressure gauge
8. Hoses blocked
9. Previous pesticide not cleaned out
10. Agitator not working
11. Wrong boom height
12. Ground speed not controlled
13. Failure to follow up with a second properly timed application
14. Being unable to read the bottom of the tank
15. Not properly calibrating or not properly using hand sprayer
16. Using hollow cone nozzles for spot treatment
17. Mixing too many things in the tank
18. Adding extra adjuvant beyond that called for on the label or the wrong adjuvant
19. Using flood jet nozzles for herbicides
20. Using an overlap between passes that is different from the overlap of nozzles on the boom

Learn nozzle tip selection by reading the manufacturer's handbook



XR TeeJet® (XR) and XRC TeeJet (XRC)

	PSI						
	15	20	25	30	40	50	60
XR8001	M	F	F	F	F	F	F
XR80015	M	M	M	F	F	F	F
XR8002	M	M	M	M	F	F	F
XR8003	M	M	M	M	M	M	F
XR8004	C	C	M	M	M	M	M
XR8005	C	C	C	C	M	M	M
XR8006	C	C	C	C	C	C	C
XR8008	VC	VC	VC	C	C	C	C
XR11001	F	F	F	F	F	VF	VF
XR110015	F	F	F	F	F	F	F
XR11002	M	F	F	F	F	F	F
XR110025	M	M	F	F	F	F	F
XR11003	M	M	M	F	F	F	F
XR11004	M	M	M	M	M	F	F
XR11005	M	M	M	M	M	M	F
XR11006	C	C	M	M	M	M	M
XR11008	C	C	C	C	C	M	M
XRC11010	VC	VC	C	C	C	C	M
XRC11015	XC	XC	VC	VC	C	C	C
XRC11020	XC	XC	XC	VC	VC	VC	VC

How to calculate gallons per acre (GPA) knowing ground speed, nozzle discharge, and nozzle spacing.

Long version

$$\begin{array}{c} \text{Ground speed} \\ \frac{14 \text{ seconds time}}{100 \text{ feet distance}} \end{array} \times \begin{array}{c} \text{Nozzle discharge rate} \\ \frac{45 \text{ ounces discharge}}{30 \text{ seconds time}} \end{array} \times \begin{array}{c} \text{Nozzle spacing} \\ \frac{1}{20 \text{ inches between nozzles}} \end{array} \times \begin{array}{c} \text{Convert volume} \\ \frac{1 \text{ gallon}}{128 \text{ ounces}} \end{array} \times \begin{array}{c} \text{Convert distance} \\ \frac{12 \text{ inches}}{1 \text{ foot}} \end{array} \times \begin{array}{c} \text{Convert area} \\ \frac{43560 \text{ foot x foot}}{1 \text{ acre}} \end{array} =$$

Simplified version

$$\begin{array}{c} \text{Ground speed} \\ \frac{14 \text{ seconds}}{100 \text{ feet}} \end{array} \times \begin{array}{c} \text{Nozzle discharge rate} \\ \frac{45 \text{ ounces}}{30 \text{ seconds}} \end{array} \times \begin{array}{c} \text{Nozzle spacing} \\ \frac{1}{20 \text{ inches}} \end{array} \times 4084 = \underline{\hspace{2cm}} \text{ gpa}$$

Working version

$$\begin{array}{c} \text{Ground speed} \\ \frac{\text{seconds}}{\text{feet}} \end{array} \times \begin{array}{c} \text{Nozzle discharge rate} \\ \frac{\text{ounces}}{\text{seconds}} \end{array} \times \begin{array}{c} \text{Nozzle spacing} \\ \text{inches} \end{array} \times 4084 = \frac{\hspace{2cm}}{\hspace{2cm}} \text{ gpa}$$

APPLICATION METHODS, MIXING, AND COMPATIBILITY

Uniform, thorough spray coverage is important to achieve consistent weed control. Select spray nozzles and pressure that deliver MEDIUM spray droplets as indicated in nozzle manufacturer's catalogs and in accordance with ASAE Standard S-572. Nozzles that deliver COARSE spray droplets may be used to reduce spray drift provided spray volume per acre (GPA) is increased to maintain coverage of weeds.

Mixing Instructions

Revolver Herbicide must be applied with clean and properly calibrated equipment. Prior to adding Revolver Herbicide, ensure that the spray tank, filters and nozzles have been thoroughly cleaned.

1. Fill spray-tank with 25% to 50% of the required volume of water, and begin agitation prior to the addition of Revolver Herbicide.
2. Continue agitation to ensure full dispersion of Revolver Herbicide.
3. If Revolver Herbicide is applied in a tank mixture with other pesticides, add Revolver Herbicide to the spray tank first and ensure it is thoroughly dispersed before adding other pesticides.
4. Continue to fill the spray tank with water to the desired volume and agitate while adding spray adjuvants and nitrogen fertilizers. Continue agitation during application to ensure a uniform spray mixture.

Application

Broadcast:

Revolver Herbicide can be applied as a broadcast treatment in a minimum of 25 gallons of water per acre. For weed control in dense weed populations or under adverse growing conditions, use higher spray volumes up to 60 gallons per acre. Rates are listed in the Use Rate Table for Weed Control.

Spot treatment:

For hand held pump type sprayers, mix 0.5 to 2 fluid ounces of Revolver Herbicide per gallon of water, depending on the weed and stage of growth. Use the higher rate for the more difficult to control or larger weeds. Spray to wet. Do not apply beyond runoff.

SPRAY SOLUTION pH

The efficacy of Revolver Herbicide may be affected by the pH of the spray solution. A pH near 7 is ideal. If pH is less than 6, add a buffer.

Excerpts from an herbicide label showing a few examples how the label determine what spray equipment is used and how it is used.

WEED CONTROL

Tank Additions for Difficult-to-Control Weeds

Control of some difficult-to-control weeds with Revolver Herbicide, including volunteer/clumpy ryegrass, and goosegrass, may be improved by additional adjuvant and nitrogen fertilizer. These additives may also cause phytotoxicity to desirable grasses under some situations. Use of these additives should be tested in a limited area prior to widespread use.

- Use methylated or ethylated seed oil containing at least 80% MSO and 10% emulsifier or greater (up to 1 % v/v). Do not use non-ionic surfactants, crop oil concentrates, crop oil concentrate/methylated seed oil blends, and refined vegetable oils with Revolver Herbicide.
- Sources of nitrogen include ammonium sulfate (AMS) and urea ammonium nitrate (UAN). Use UAN (1.5-2 qt/A) in areas of low relative humidity and spray grade AMS (1.5-3 lb/A) for areas of high relative humidity.

TANK CLEANUP PROCEDURE

1. Drain the tank completely, then wash out tank, boom and hoses with clean water. Drain again.
2. Fill the tank half full with clean water and add ammonia (i.e. 3% domestic ammonia solution) at a dilution rate of 1% (i.e. 1 gallon of domestic ammonia for every 100 gallons of rinsate). Completely fill the tank with water. Agitate/recirculate and flush through boom and hoses. Leave agitation on for 10 minutes. Drain tank completely.
3. Repeat Step 2.
4. Remove nozzles and screens and soak them in a 1% ammonia solution. Inspect nozzles and screens and remove visible residues.
5. Flush tank, boom, and hoses with clean water.
6. Inspect tank for visible residues. If present, repeat Step 2.