

Airblast Sprayer Calibration: Tractor Speed

Driving too fast is the most common error made in airblast sprayer calibration. Tractor speed must correspond with sprayer output to ensure that proper air displacement occurs in the tree canopy. For most airblast sprayers this means driving at speeds from 1.0 to 2.5 miles per hour. Sprayer efficiency can be modeled using specific information about the orchard being sprayed and the sprayer being

used. This type of model can help to determine if your tractor speed is appropriate for your orchard and sprayer. An interactive webpage on sprayer efficiency can be found at: <http://pmtp.wsu.edu/spraytech.php>. Applying Surround (Kaolin) and visually checking to see if all areas of the tree have been adequately covered is a good way to confirm spray coverage in your orchard. As tree density increases through

the growing season, tractor speed may have to be reduced to achieve the same coverage.



<http://pmtp.wsu.edu/spraytech.php>
sprayer efficiency webpage

Airblast Sprayer Calibration: Gallons Per Acre

Tree Row Volume (TRV) is one method used to calculate the amount of water volume necessary to achieve dilute spray coverage. TRV is a calculation of the canopy volume (cubic feet) per acre compared to the number of gallons necessary to treat 1000 cubic feet of foliage. Canopy volume is calculated by multiplying **length** (the total linear row space in an acre of or-

chard ($43560 \text{ sq. ft./acre} \div \text{distance between rows (ft)}) \times \text{width}$ (diameter of the tree canopy (ft)) * **height** (tree height (ft)). The number of gallons necessary to treat 1000 cubic feet of foliage is estimated to be between 0.7 (well pruned) and 1.0 (not pruned) gallon of spray material. Multiplying this value by canopy volume will estimate the minimum amount of spray volume necessary to achieve a dilute application. TRV provides an estimate of the spray volume required to achieve dilute coverage. When applying insecticides at spray volumes less than dilute, use caution to ensure that coverage is not compromised.

Tree Row Volume (TRV)

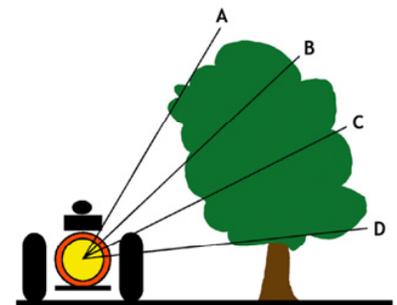
$$\text{TRV} = \frac{0.7 \text{ gal}}{1000 \text{ cu ft.}} * \frac{43,560 \text{ sq ft/ac}}{\text{RS (ft)}} * \text{TW} * \text{TH}$$

TW = tree width (ft); TH = tree ht (ft); RS = row space (ft)

Airblast Sprayer Calibration: Nozzle Setup

After determining the desired travel speed (mph) and gallons per acre (gpa), calculate the gallons per minute that each side of the sprayer must apply (gpm). Use a nozzle chart to choose nozzles that will produce this output based

on the operating pressure of your sprayer. When placing nozzles on the sprayer manifold, tree size and shape must be considered. Place the largest nozzles in line with the thickest part of the tree (B and C), then arrange the medium and small-sized nozzles so that the gallons per minute output tapers off on either end (A and D). Keep output per minute highest along



the part of the manifold that lines up with the bulk of the tree. Gallons per minute output should be rechecked regularly throughout the season to ensure that all parts are still calibrated correctly.

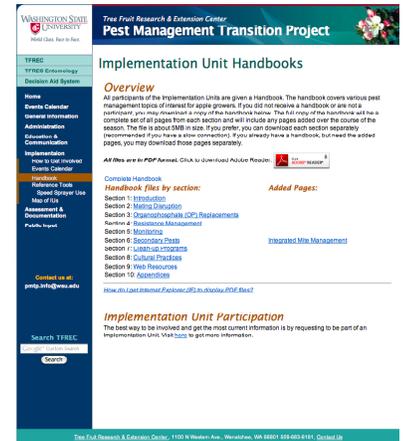
Gallons Per Minute Per Side

$$\text{gpm} = \frac{\text{gpa} * \text{mph} * \text{row space (ft)}}{990}$$

PMTP Website: Updates

The newest feature on the PMTP website is an interactive worksheet (<http://pmp.wsu.edu/spraytech.php>), which will allow users to input real values from a specific orchard block and sprayer to see the effects of tractor speed on air displacement and time-to-spray an acre. Also new on the website, the **Implementation Unit Handbook** is now available online in PDF format. The handbook can be downloaded complete or by section. In addition, the **PMTP**

Events Calendar has been updated so that all PMTP related events will now appear on one calendar. Calendar events that will be featured include: Implementation Unit workshops, meetings, and newsletter release dates. Look for the link to the Events Calendar under **News Links** on the PMTP home page (<http://pmp.wsu.edu>). The PMTP website is the best source for up-to-date information related to the Pest Management Transition Project.



<http://pmp.wsu.edu/handbook.php>
download the PMTP IU Handbook

WSU Decision Aid System: Grand Re-Opening

The WSU Decision Aid System (DAS) has been updated and is now ready to use for the 2008 field season. The DAS can be found at: <http://das.wsu.edu>. Registration for DAS is free and an easy to use registration tutorial is available online to help with the registration process if necessary. This season, all users will be asked to fill out a brief survey on their first visit to the DAS. This survey will provide DAS programmers with user feedback necessary to continue to improve features and ease of use.

New features in 2008 will include: **new models** (cherry mildew and peach twig borer), **new and improved graphics** for many other models, and an option to define your own station and **upload your own weather data** (there will be a help file available for instructions on using this feature). Also in 2008, using the **codling moth model will not require setting a biofix date**. Instead, the codling moth biofix will be predicted using accumulated temperatures beginning on January 1.

New DAS features:

-  cherry mildew model
-  peach twig borer model
-  new or improved graphs
-  updated expert database
-  user defined stations

The DAS is, and will continue to be, the best source for time sensitive IPM information. Login now to begin using this resource for 2008.

Visit PMTP online at:
<http://pmp.wsu.edu>

Next Newsletter: April 15

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