Technical Spraying Information

SPRAYING SOLUTIONS OTHER THAN WATER - NEW METHOD

Since all the tabulations are based on spraying water, which weighs 8.34 lbs. per USA gallon, conversion factors must be used when spraying solutions which are heavier or lighter than water. To determine the proper size nozzle for the solution to be sprayed, first convert the desired GPM or GPA of solution to a water rate using the conversion factors. Use the new converted GPM or GPA rate to select the proper size nozzle.

<table>
<thead>
<tr>
<th>Weight of Solution</th>
<th>Specific Gravity</th>
<th>Conversion Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.0 lbs. per gallon</td>
<td>.84</td>
<td>.92</td>
</tr>
<tr>
<td>8.0 lbs. per gallon</td>
<td>.96</td>
<td>.98</td>
</tr>
<tr>
<td>8.34 lbs. per gallon-WATER</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>9.0 lbs. per gallon</td>
<td>1.08</td>
<td>1.04</td>
</tr>
<tr>
<td>10.0 lbs. per gallon</td>
<td>1.20</td>
<td>1.09</td>
</tr>
<tr>
<td>10.65 lbs. per gallon-28% nitrogen</td>
<td>1.28</td>
<td>1.13</td>
</tr>
<tr>
<td>11.0 lbs. per gallon</td>
<td>1.32</td>
<td>1.14</td>
</tr>
<tr>
<td>12.0 lbs. per gallon</td>
<td>1.44</td>
<td>1.20</td>
</tr>
<tr>
<td>14.0 lbs. per gallon</td>
<td>1.68</td>
<td>1.29</td>
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</tbody>
</table>

Multiple Nozzles Over the Row
Band Spraying Application - GPA Formulas

Do not confuse band applications with cutting recommended gallon per acre rates. The rate applied on a Banding basis is normally the same rate recommended for broadcast applications. Banding of agricultural chemicals allows for increased acreage to be covered with the same tank volume by reducing the area being treated. Multiple nozzles over the row applications are calculated similar to a single nozzle banding except the flow calculated by the formula should then be divided by the quantity of nozzles producing the band.

**FORMULA (1):**

To determine the gallons per minute (GPM) capacity required for each spray tip to band agrichemicals in a multiple nozzle application.

\[
GPM \ (\text{Per Nozzle}) = \left(\frac{\text{GPA} \times \text{MPH} \times \text{W}}{5940}\right) \times N
\]

Where:
- GPA = Gallons per Acre (Application) Rate
- MPH = Actual field speed in Miles Per Hour
- W = Band width inches
- N = Number of nozzles producing the Band.

**FORMULA (2):**

To determine the gallons per Acre (GPA) on treated spray band:

\[
\text{GPA} \ (\text{Treated Band}) = \left(\frac{GPM \times N}{\text{MPH} \times \text{W}}\right)
\]

Where:
- GPA = Gallons Per Acre (Application) Rate
- MPH = Actual field speed in Miles Per Hour
- W = Band width inches
- N = Number of nozzles producing the Band.

**FORMULA (3):**

To determine the gallons of solution used over the actual Field Acre:

\[
\text{GPA} \ (\text{Field Acre}) = \left(\frac{\text{GPA} \ (\text{Treated Band}) \times \text{Band Width}}{\text{Row Spacing}}\right)
\]

SPRAY COVERAGE INFORMATION

This table lists the theoretical coverage of spray patterns as calculated from the included spray angle of the spray and the distance from the nozzle orifice. These values are based on the assumption that the spray angle remains the same throughout entire spray distance. In actual practice, the tabulated spray angle does not hold for long spray distances.

**THEORETICAL SPRAY COVERAGE AT VARIOUS SPRAY HEIGHTS (AT 40 PSI)**

<table>
<thead>
<tr>
<th>Spray Height (inches)</th>
<th>65° Spray Angle (inches)</th>
<th>80° Spray Angle (inches)</th>
<th>110° Spray Angle (inches)</th>
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</thead>
<tbody>
<tr>
<td>8</td>
<td>8</td>
<td>10</td>
<td>17</td>
</tr>
<tr>
<td>9</td>
<td>9.5</td>
<td>11</td>
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