and the nozzle spacing or spray width on the sprayer. The rate can also be determined using the rate table (Table 3).

\[
\text{Discharge Rate} = \frac{\text{Application Rate} \times \text{Speed} \times \text{Nozzle Spacing}}{5,940}
\]

### Table 3. Nozzle Discharge Rate Chart

<table>
<thead>
<tr>
<th>GPA</th>
<th>3 MPH</th>
<th>4 MPH</th>
<th>5 MPH</th>
<th>7 MPH</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>0.05</td>
<td>0.07</td>
<td>0.08</td>
<td>0.12</td>
</tr>
<tr>
<td>10</td>
<td>0.10</td>
<td>0.13</td>
<td>0.17</td>
<td>0.24</td>
</tr>
<tr>
<td>15</td>
<td>0.15</td>
<td>0.20</td>
<td>0.25</td>
<td>0.35</td>
</tr>
<tr>
<td>20</td>
<td>0.20</td>
<td>0.27</td>
<td>0.34</td>
<td>0.47</td>
</tr>
<tr>
<td>25</td>
<td>0.25</td>
<td>0.34</td>
<td>0.42</td>
<td>0.59</td>
</tr>
<tr>
<td>30</td>
<td>0.30</td>
<td>0.40</td>
<td>0.51</td>
<td>0.71</td>
</tr>
</tbody>
</table>

3. Set the sprayer as recommended for field operation and collect the spray from each nozzle. Determine the average discharge rate for the nozzles. If you selected a quick check nozzle during sprayer preparation, you can use it instead of collecting from each nozzle.

4. Compare the rate calculated in Step 2 to the rate determined in Step 3. If the two do not match, make the recommended adjustments explained in Making Adjustments and repeat the calibration steps until the rates match.

### Making Adjustments

If the sprayer calibration is not correct, choose one of the following adjustments to improve accuracy.
- Pressure–adjust if error in rate is less than 10%.
- Ground Speed–adjust if error, in rate is greater than 10% but less than 25%.
- Nozzle Size–change if error in rate is greater than 25%.

Your goal should be application rate errors less than 5%. Once you have the required accuracy, calibration is complete.

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5,000 copies of this public document were printed at a cost of $1,341 or $0.27 per copy.

Published by
North Carolina Cooperative Extension Service

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bands. For directed sprays (multiple nozzles per row), nozzle spray width is the row width divided by the number of nozzles per row.

Set the sprayer for the operating conditions and adjustments you plan to use. Be sure the sprayer tank and components are clean. Use water only for calibration, fill the tank half full. If the spray mix has a density different than water, use the correction factor suggested by the chemical manufacturer in your calibration.

Select the gear and throttle setting on the tractor for the required ground speed. Measure a test course in the field (see Table 1) and drive the sprayer across the course at least twice, once in each direction. Average the times required for the course distance, and determine true ground speed (MPH) from the ground speed equation or use Table 1.

Table 1. Ground Speed Chart

<table>
<thead>
<tr>
<th>Speed (MPH)</th>
<th>100 ft</th>
<th>200 ft</th>
<th>300 ft</th>
<th>400 ft</th>
<th>500 ft</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>34</td>
<td>68</td>
<td>102</td>
<td>136</td>
<td>170</td>
</tr>
<tr>
<td>3</td>
<td>23</td>
<td>45</td>
<td>68</td>
<td>91</td>
<td>114</td>
</tr>
<tr>
<td>4</td>
<td>17</td>
<td>34</td>
<td>51</td>
<td>68</td>
<td>85</td>
</tr>
<tr>
<td>5</td>
<td>x</td>
<td>27</td>
<td>41</td>
<td>54</td>
<td>68</td>
</tr>
<tr>
<td>6</td>
<td>x</td>
<td>23</td>
<td>34</td>
<td>46</td>
<td>57</td>
</tr>
<tr>
<td>7</td>
<td>x</td>
<td>19</td>
<td>29</td>
<td>39</td>
<td>49</td>
</tr>
<tr>
<td>8</td>
<td>x</td>
<td>17</td>
<td>26</td>
<td>34</td>
<td>43</td>
</tr>
<tr>
<td>9</td>
<td>x</td>
<td>15</td>
<td>23</td>
<td>30</td>
<td>38</td>
</tr>
<tr>
<td>10</td>
<td>x</td>
<td>x</td>
<td>21</td>
<td>27</td>
<td>34</td>
</tr>
</tbody>
</table>

x = not recommended

If the tractor or sprayer is equipped with a true ground speed indicator, such as radar or ultrasonic, use this speed for calibration. Be sure the indicator itself has been properly calibrated.

Calibration Methods

Choose one of the following methods that best suits the type of equipment or application to be used.

1. **BASIC METHOD**

   1. Set the sprayer as recommended for field operation. Collect the output from each nozzle and calculate the average nozzle discharge rate in gallons per minute (GPM). Use a flowmeter or the cup and stopwatch method explained in Preparing to Calibrate.
   2. Set the tractor for the desired ground speed. Be sure to maintain accurate and consistent speed.
   3. Calculate the application rate based on the average discharge rate for the nozzles, the ground speed and nozzle spacing (or spray width) on the sprayer.

      \[
      \text{Application Rate} = \frac{5,940 \times \text{Discharge Rate}}{\text{Ground Speed} \times \text{Nozzle Spacing}}
      \]

4. Compare the application rate required to the rate determined in Step 3. If the two do not match, make the recommended adjustment. Repeat the calibration steps until the rates match.

2. **1/128th ACRE METHOD**

   1. The distance for one nozzle to cover 1/128th of an acre must be calculated from the equation below or use the distance table (Table 2).

      \[
      \text{Spray Distance} = \frac{4,084}{\text{Nozzle Spacing (inches)}}
      \]

   2. Measure the distance (feet) on a test course in the field. Set the gear and throttle speed of the tractor or sprayer as recommended. Drive the course at least twice, once in each direction, and calculate the average time to cover the course.

3. Park the sprayer, set the recommended pressure, collect the output from all the nozzles, and calculate the average or select the nozzle closest to the average and collect the output for the time determined in Step 2. The number of ounces collected will indicate the application rate in GPA. For example, if 15 ounces are collected then the application rate would be 15 GPA.

4. Compare the application rate required to the rate determined in Step 3. If the two do not match, make the recommended adjustments explained in Making Adjustments, and repeat the calibration steps until the rates match.

3. **NOZZLE METHOD**

   1. Set sprayer ground speed as recommended. Be sure to maintain accurate and consistent speed.

   2. Calculate the nozzle discharge rate in gallons per minute (GPM) based on the application rate required, the true ground speed determined over the test course,