

## Don't forget to calibrate that sprayer...

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Yes, there may still be snow on the ground and cold temperatures in the air; however, turfgrass managers are starting to think about those first sprayer applications and calibration of those sprayers is a necessary first step. Throughout the month of January, if you participated in the Commercial Pesticide Applicator Training for category 3 (Ornamental & Turf); you were introduced to a simple calibration method. This method is called the 128<sup>th</sup> Calibration Method and requires very few steps and no math. This article will outline this method and provide turfgrass managers a tool for simple calibration at the beginning of every season as well as a simple means to spot check throughout the season.

The concept of the 128<sup>th</sup> method is based on the time it takes to spray 128<sup>th</sup> of an acre with a single nozzle. That time requirement is then used to collect fluid ounces from that single nozzle. Since we all know that there are 128 fluid ounces in a gallon; the simple conversion or result is in gallons per acre (GPA). Let's begin.

### STEP 1:

The first step requires a tape measure to measure the distance between nozzles on your spray boom. Most sprayers are setup at 20 inches, although you may find a range from 10 to 30 inches depending on your spray tip selection.



### STEP 2:

Use the following table to determine the distance you need to travel with your sprayer to cover 128<sup>th</sup> of an acre with a single nozzle. If for some reason you do not have this table or miss place it, the calculation can be performed for whatever nozzle distance you have.

Table 1. Nozzle spacing and travel distance.

<b>Nozzle Spacing (inches)</b>	<b>Nozzle Spacing (feet)</b>	<b>Distance to Travel (feet)</b>
<b>40</b>	<b>3.34</b>	<b>102</b>
<b>38</b>	<b>3.17</b>	<b>107</b>
<b>36</b>	<b>3.00</b>	<b>113</b>
<b>34</b>	<b>2.83</b>	<b>120</b>
<b>32</b>	<b>2.67</b>	<b>127</b>
<b>30</b>	<b>2.50</b>	<b>136</b>
<b>28</b>	<b>2.34</b>	<b>146</b>
<b>26</b>	<b>2.17</b>	<b>157</b>
<b>24</b>	<b>2.00</b>	<b>170</b>
<b>22</b>	<b>1.83</b>	<b>185</b>
<b>20</b>	<b>1.67</b>	<b>204</b>
<b>18</b>	<b>1.50</b>	<b>227</b>
<b>16</b>	<b>1.34</b>	<b>255</b>
<b>14</b>	<b>1.17</b>	<b>291</b>
<b>12</b>	<b>1</b>	<b>340</b>
<b>10</b>	<b>0.83</b>	<b>408</b>

To calculate the distance needed to travel for any nozzle spacing, you will note that there are 304.31 square feet in 128<sup>th</sup> of an acre. Dividing the distance (in inches) between nozzles by 12 will convert that distance to feet. Taking a square measure and dividing by a linear measure will equal a linear measure. Therefore, if we divide 340.31 square feet in 128<sup>th</sup> of an acre by 1.67 feet (20 inch nozzle spacing), we will see the distance required to travel is 203.78 feet or 204 feet if we round up.

**STEP 3:**

The distance required to travel should be flagged out on ground similar to that you plan to spray. If your nozzle spacing is 20 inches, then flag out a distance of 204 feet. Fill your sprayer half full with water and time yourself in seconds, the time it takes to travel that distance at your desired speed. You can make several runs and then take an average, but be sure to take this measurement in seconds.

**STEP 4:**

For this step you need to have your sprayer operating with water in the tank, desired pressure and a good flow running through your spray tips. To complete this calibration method, you will need a collection cup and stop watch. Simply collect fluid from a single nozzle for the time (in seconds) it took for you to travel the distance determined in Table 1. The collection cup should be marked in fluid ounces. After collecting the fluids for the determined time, the fluid ounces collected simply equal GPA. It's that simple.



Photo by Micah Woods, Asian Turfgrass Center

The additional benefit of this method is the ease to spot check your output during the spraying season. If the operating speed of your sprayer remains the same, then measure the output of your nozzles with the collection cup and stop watch. If for example, you were collecting 40 fluid ounces in the determined time and you are still collecting 40 fluid ounces in that time; then you are still putting out 40 GPA. Also keep in mind if you wish to have an output different from what you collect, then simply adjust pressure up or down depending on what direction you wish the output to be. For example, if you are collecting 37 fluid ounces (37 GPA) and wish to be at 40 GPA; adjust the pressure upward until you collect 40 fluid ounces (40 GPA) in the determined time.

From time to time, it is always recommended to test all spray tips for consistency across the entire boom. If any spray tip is off by 10%, simple replace it. Several inconsistencies across the spray boom may warrant the changing of all spray tips.

This simple calibration method should make spraying preparations easier this spring and help maintain consistent sprayer outputs throughout the season. Several on-line sources discuss and present this method of calibration so the instructions are only a smart phone away – search for “128<sup>th</sup> calibration method”.

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