Drip or Solid-Set Chemigation Injection Rate Worksheet for Volume-Based Applications

This worksheet helps growers, consultants, or fieldmen to calculate the chemical injection rate for static irrigation systems that don’t move during irrigation, such as drip, solid set, hand lines, or wheel lines, when the application rate is specified in fluid ounces, pints, quarts, or gallons per acre.

Required Information:

1. Application area width in feet (width of the total area that is irrigated during the set).
2. Application area length in feet (length of the total area that is irrigated during the set).
3. Product application rate in ounces, pints, quarts, or gallons per acre (refer to pesticide label).

Example: Applying a pesticide at 2 pints per acre into a drip irrigation system. The drip tubes/tape are spaced in rows that are 8 feet apart with an average run of 820 feet. The application block or set contains 32 drip lines per irrigation set. The grower typically irrigates in 8-hour sets, and the pesticide label recommends that the product should be applied during the middle third of the irrigation set.
Diluting to Increase the Injection Rate.

Unless specifically made for low flow rates, many chemigation pumps are not capable of accurately injecting at such low injection rates. In this case, water is added to the chemical (diluted) to increase the total injected volume. This uses the simple equation

\[
\text{Injection Rate} = \frac{\text{Volume}}{\text{Time}}
\]

In this example, water is added to the calculated 1.21 gallons of chemical to increase the total volume of the solution to 50 gallons. This new volume is then used to calculate the new injection rate:

\[
50 \text{ gal} \div 2.67 \text{ hr} = 18.7 \text{ gal/hr}
\]
Alternatively, water can be added to match a targeted injection rate. The equation is rearranged to be $\text{Volume} = \text{Injection Rate} \times \text{Time}$. For example, if the target injection rate is 20 gal/hr then the required total injected volume can be calculated as:

$$20 \text{ gal/hr} \times 2.67 \text{ hr} = 53.4 \text{ gal}$$

Therefore, water would be added to the 1.21 gallons of chemical (or the chemical is added to the water) to increase the total volume of water plus chemical to 53.4 gallons. (53.4 – 1.21 = 52.2 gallons of water added).

### Additional Information

Some helpful conversions for calibration testing:

<table>
<thead>
<tr>
<th>Multiply:</th>
<th>By:</th>
<th>To Get:</th>
</tr>
</thead>
<tbody>
<tr>
<td>gallons/hour</td>
<td>2.13</td>
<td>ounces/minute</td>
</tr>
<tr>
<td>gallons/hour</td>
<td>63.09</td>
<td>milliliters/minute</td>
</tr>
<tr>
<td>gallons/hour</td>
<td>0.0355</td>
<td>ounces/second</td>
</tr>
<tr>
<td>gallons/hour</td>
<td>1.05</td>
<td>milliliters/second</td>
</tr>
</tbody>
</table>

### Additional Resources


Use pesticides with care. Apply them only to plants, animals, or sites as listed on the label. When mixing and applying pesticides, follow all label precautions to protect yourself and others around you. It is a violation of the law to disregard label directions. If pesticides are spilled on skin or clothing, remove clothing and wash skin thoroughly. Store pesticides in their original containers and keep them out of the reach of children, pets, and livestock.

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