LAYING OUT A TRICKLE IRRIGATION SYSTEM

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To design a drip irrigation system we need to know a few things about the field:

1. Crop
2. Row Length
3. Row Spacing
4. Predominant Soil Type
5. Elevation Changes in Field
6. Water Source
7. Distance From Water Source
8. Elevation From Water Source
9. Type of Pump and Power Source
EXAMPLE:
1 ACRE OF TOMATOES

FIRST, find the drip tape footage:

35 rows
x210 feet per row
7350 feet of drip tape

SECOND, find the flow rate:

In this case we will use tape with 12 inch spacing between emitters and 0.450 GPM PER 100 FEET.

\[
\frac{73.5 \text{ (hundred feet)}}{100} \times 0.450 \text{ GPM per 100 ft} = 33 \text{ GPM}
\]

33 GPM is less than the capacity of the well, so we can irrigate the entire field at once.

THIRD, find the supply hose diameter:

Check the size selection chart.

33 GPM is above the limit for 1 1/2 in., so we must use 2 in.

Be sure to buy hose rated for the pressure your pump produces.

FOURTH, select a pressure regulator:

A 1 1/2 in, 12 psi pressure regulator is appropriate here. Most drip tapes are designed to operate between 7 and 10 psi. A 12 psi pressure regulator allows for some pressure loss in the line.

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No more decisions...

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
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<tbody>
<tr>
<td>1 roll TSX 508-12-220 (7546 ft.) drip tape</td>
<td>$149.00</td>
</tr>
<tr>
<td>1 roll 2&quot; SF 10 layflat hose (300 ft)</td>
<td>180.00</td>
</tr>
<tr>
<td>35 0.400&quot; barb x Tape Loc connectors</td>
<td>17.50</td>
</tr>
<tr>
<td>1 0.400&quot; punch</td>
<td>19.00</td>
</tr>
<tr>
<td>1 1 1/2&quot; 12 psi pressure regulator</td>
<td>24.21</td>
</tr>
<tr>
<td>1 1 1/2&quot; 150 mesh screen filter</td>
<td>120.00</td>
</tr>
<tr>
<td>1 2&quot; brass gate valve</td>
<td>11.77</td>
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<tr>
<td>2 3/4&quot; pvc ball valves</td>
<td>10.72</td>
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<tr>
<td>1 Mazzei 584</td>
<td>44.50</td>
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<tr>
<td>Assorted pipe fittings</td>
<td>30.00</td>
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Total Initial Cost.......................................................................... 506.70

Annual Cost..................................................................................... 149.00

**WHAT IF THE WELL ONLY PRODUCES 12 GPM?**

You have several options that can affect the total flow rate:

- Increase the emitter spacing to 16 inches.
  This decreases the total flow rate to 25 GPM.

- Use drip tape with lower flow rate emitters:
  16 inch spacing tape comes in either **0.340 GPM PER 100 FEET**
  or **0.170 GPM PER 100 FEET**
  The lower flow rate decreases the total flow rate to 12.5 GPM, not quite low enough.

- Divide the field into irrigation zones:
  With 2 zones, 12 inches between emitters and the lower flow rate of 0.220 GPM per 100 feet, the total flow rate is 8 GPM.

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