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LOW COST FILTER FOR TRICKLE IRRIGATION

By C. R. COFFMAN, Irrigation Adviser, Manjimup, and G. L. GODLEY, Horticultural Adviser, Midland.

CLEAR water is essential for a successful trickle irrigation scheme. Most water sources are not sufficiently clean and some form of filtration is necessary.

The filter illustrated opposite has the advantage of being inexpensive, efficient and easily cleaned.

This filter has a 3 in. diameter body with a 1½ in. diameter filtering element. It will meet the needs of most trickle irrigation schemes being installed. For systems with flow rates of less than 15 gallons per minute (g.p.m.), a 2 in. body with ¾ in. filtering element is sufficient.

Pressure loss in the normal working range, 0 to 80 g.p.m., is satisfactory. For flows greater than 80 g.p.m., two of these filters in parallel are recommended.

Materials required

NOTE: Catalogue numbers, given in brackets, are the same for all Australian-made PVC fittings.

<table>
<thead>
<tr>
<th>PVC fittings</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>1 only 3 in. cap (6).</td>
<td></td>
</tr>
<tr>
<td>2 only 3 in. flange plus gasket (16).</td>
<td></td>
</tr>
<tr>
<td>1 only 3 in. tee (19).</td>
<td></td>
</tr>
<tr>
<td>2 only 3 in. x 2 in. reducing bush (5).</td>
<td></td>
</tr>
<tr>
<td>One of these is machined out to allow 2 in. PVC pipe to pass through.</td>
<td></td>
</tr>
<tr>
<td>1 only 2 in. elbow (13).</td>
<td></td>
</tr>
<tr>
<td>1 only 1½ in. cap (6).</td>
<td></td>
</tr>
<tr>
<td>1 only 1¼ in. faucet socket (17).</td>
<td></td>
</tr>
<tr>
<td>1 only 2 in. x 1¼ in. valve socket (3).</td>
<td></td>
</tr>
<tr>
<td>4 ft. by 3 in. PVC pipe.</td>
<td></td>
</tr>
<tr>
<td>3 ft. by 1½ in. PVC pipe.</td>
<td></td>
</tr>
<tr>
<td>18 in. by 2 in. PVC pipe.</td>
<td></td>
</tr>
</tbody>
</table>

Stainless steel or brass mesh

30 in. x 7 in., 80 to 100 meshes per inch.

Nuts and bolts

4 only ⅜ in. x 1¼ in. hexagonal galvanised.

Tap

1 only ¼ in. low pressure tap. A larger tap could be fitted for more efficient back flushing.

Construction of filtering screen

Four rows of ⅛ in. diameter holes at 1 in. spacing are drilled in a piece of 1¼ in. PVC piping, 33 in. long. A section 1¼ in. long at
each end should be left undrilled for gluing of the cap and faucet socket.

Twelve-gauge stainless steel or copper wire is wound around the pipe in a spiral pattern to form a spacer between the drilled PVC piping and the mesh. Wire mesh is wrapped around the pipe and soldered at the seam. Spot soldering of the mesh to the spacer gives added rigidity to the screen.

The cap and faucet socket are now glued to the ends of the screen. The ends of the wire mesh are sealed with PVC glue.

**Operation**

This filter can be placed anywhere on the delivery side of the pump. The pump shed is often the most convenient site to allow easy servicing. The filter has been designed to be placed in a vertical position which allows the lighter filtrated debris to float to the top of the column above the mesh area of the element.

Water delivered to the filter rises on the outside of the screen and is filtered through the mesh, passing down the inside of the screen into the mains. The gas cock on the element cover is used to remove air from the filter before pumping water into the mains.

If a head of water is available above the filter, the main gate valve and the gas cock can be opened at the same time. This will force the air out of the filter column.

When there is no water head the gate valve is kept closed and the pump started with gas cock open. The air will be forced out of the filter. When all air is removed the cock is closed and the gate valve opened, allowing water to pass into the mains.

**Cleaning**

A pressure gauge on the inlet and outlet sides of the filter is very useful for checking filter blockage. A significant difference in pressure will indicate filter blockage.

Frequency of cleaning will depend on the water being pumped. The mesh can be readily cleaned by unscrewing the element from the filter body and rubbing gently with a light scrubbing brush.

If a system of back flushing is available, the screen need not be removed. Debris can be flushed out by reversing the water flow with gas cock open.