

Chlorine dosing to manage bacterial iron in a bore

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Many growers are challenged by the buildup of brown sludge in irrigation systems caused by iron bacteria. Ben Funnekotter at The Seedling Factory showed us how he controls iron bacteria in his contaminated bores during a recent tour of his operations. His home-made system provides continual chlorine treatment to the bore (which kills the bacteria) using a simple Venturi setup that draws water through a canister containing chlorine tablets.

How does it work?

When the bore is pumping, part of the outgoing water is diverted through 4-6mm micro tube (yellow tube) that delivers water to the top of the canister containing chlorine tablets. The canister diameter can be 65-100mm.

The water percolates through the chlorine tablets and is then led by another 4-6mm micro tube (red tube) from the bottom of the canister to the very bottom of the bore where the chlorinated water is recirculated with the main ground water stream before it's pumped to the surface.

**No power needed,
just a weekly top up
of chlorine tablets.**

**A simple home-made
system that does the job!**

Iron bacteria are microorganisms that occur naturally in soil, surface water, and shallow groundwater. While most bacteria get their energy from decomposing organic matter, iron bacteria derive theirs from oxidising dissolved ferrous iron or manganese in groundwater. *Gallionella* spp. and *Lepothrix* spp. are the two common bacterial species involved in iron and manganese oxidation.

Although a small population of iron bacteria can naturally occur in groundwater, they typically exist in abundance above ground. The most common way for these organisms to enter wells is when the bacteria enter from the ground surface during well drilling, submersible pump installation, or any other construction, maintenance, or well servicing. Good hygiene practices when drilling and maintaining a bore can help keep the water source free from the bacteria.



An extreme case of iron sludge deposits inside a pipe.

Photo credit: Patrick Ruohy

Red micro tube takes chlorinated water from the tablet canister down to the base of the bore where it is mixed with the main groundwater stream providing continual dosing while the bore is pumping

Yellow micro tube supplies water from the bore to the top of the chlorine tablet canister

Galvanised post:

- holds the canister off the ground

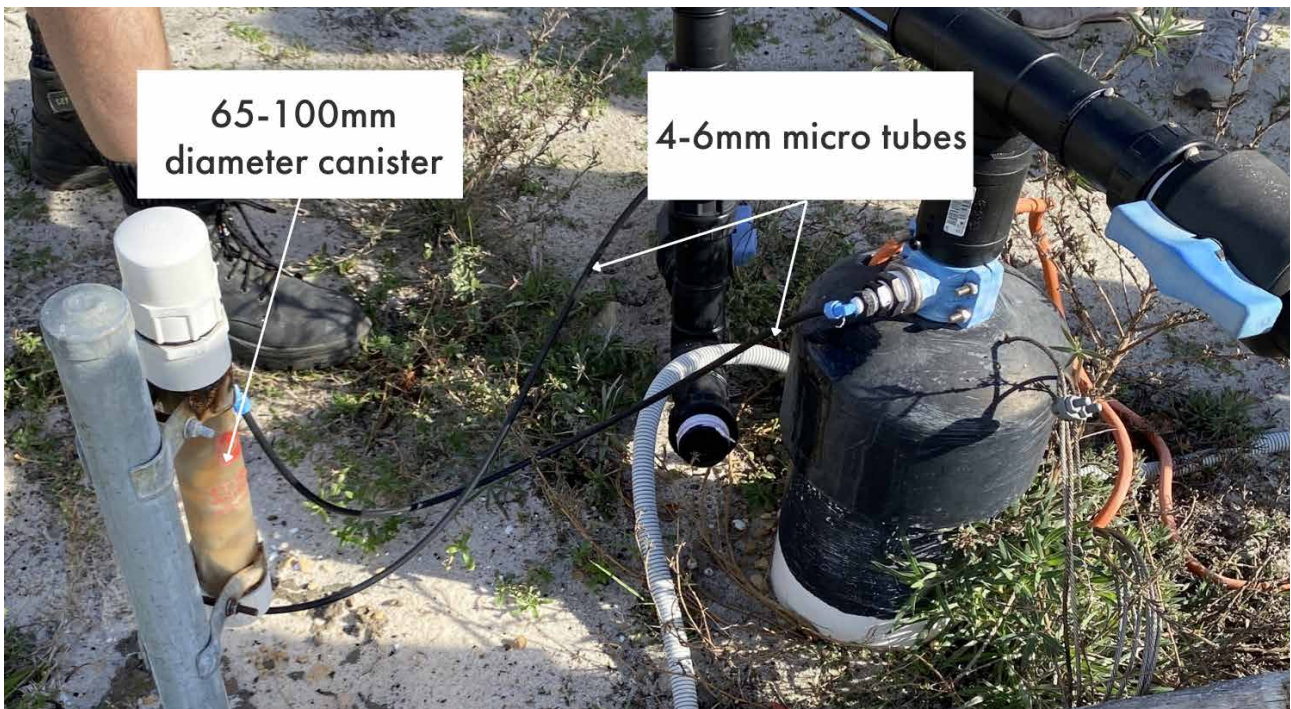
PVC canister:

- holds 10 x chlorine tablets
- refill 1 x week depending on water usage



Iron bacterial treatment system used at The Seedling Factory to prevent iron sludge in irrigation pipes.

Photo credit: Helen Newman



Recommended sizing for pipes and the canister. Photo credit: Helen Newman



Thank you to Ben Funnekotter at The Seedling Factory for sharing this system design.