

buildings

Maintenance pays off in paddock and parlour

Ensure that your animals have adequate, safe water

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Field water troughs are often neglected on farms. January is a good time to ensure the troughs are clean before the busy calving season. They should have been drained when grazing finished, or during the winter, allowing them to be cleaned and any debris removed. A dead bird

or animal in a water trough can lead to sick livestock after turnout.

January is also the time to get your plumber to do annual maintenance on water pumps; carry out flow tests, etc.

Farmers with a grassland stocking rate over 170kg organic nitrogen per hectare (before any export of slurry) will need to move troughs so that they are at least 20m from watercourses. This will require a decent, level, hardcore base under and around the trough with a dust finish – as for a roadway.

Placing geotextile under the stone will help to prevent the soil coming up through the stone. This type of work should only be done when ground conditions are suitable.



A 'flip over trough' is easy to clean (picture on left) but we also need at least an annual clean for outdoor troughs.

Figure 1: Configuration of

Components can be omitted to suit your own situation and isolation valves need to be added in. A water meter at the well and on the supply to the fields is useful for finding leaks.

Procedure for whole system disinfection (again assuming tanks and troughs are physically clean)

1 To 25 litres of water add one litre of a 5% w/v solution of sodium hypochlorite.

2 Pour half of the solution into the well.

3 Turn on the water tap that is furthest from the well and let the water run until there is a distinct smell of chlorine from the water. Then turn off the tap.

4 Turn on all other taps and let the water run until there is a distinct smell of chlorine from the water. Allow the troughs to fill then turn off the taps.

5 Pour the other half of the solution into the well. Turn off the well pump and ensure that the well is covered properly. Allow to stand overnight or for at least eight hours.

6 After at least eight hours reconnect the pump. Turn on all taps and let the water run until the strong smell of chlorine is gone.

7 Use as normal.

Cleaning options

Prepare a simple safety plan (sodium hypochlorite is corrosive and there are risks with handling petrol, etc.).

- Shut off the water supply to the paddocks.

- Empty water troughs. A pump with a petrol engine can be hired for approximately €40 per day including VAT.

- Clean out debris (scrub each trough with a brush) and clean ballcock valves.

- Spray all the sides of the water troughs with a 200mg/l strength solution of sodium hypochlorite (optional).

- Troughs can be re-filled with water after 30 minutes.

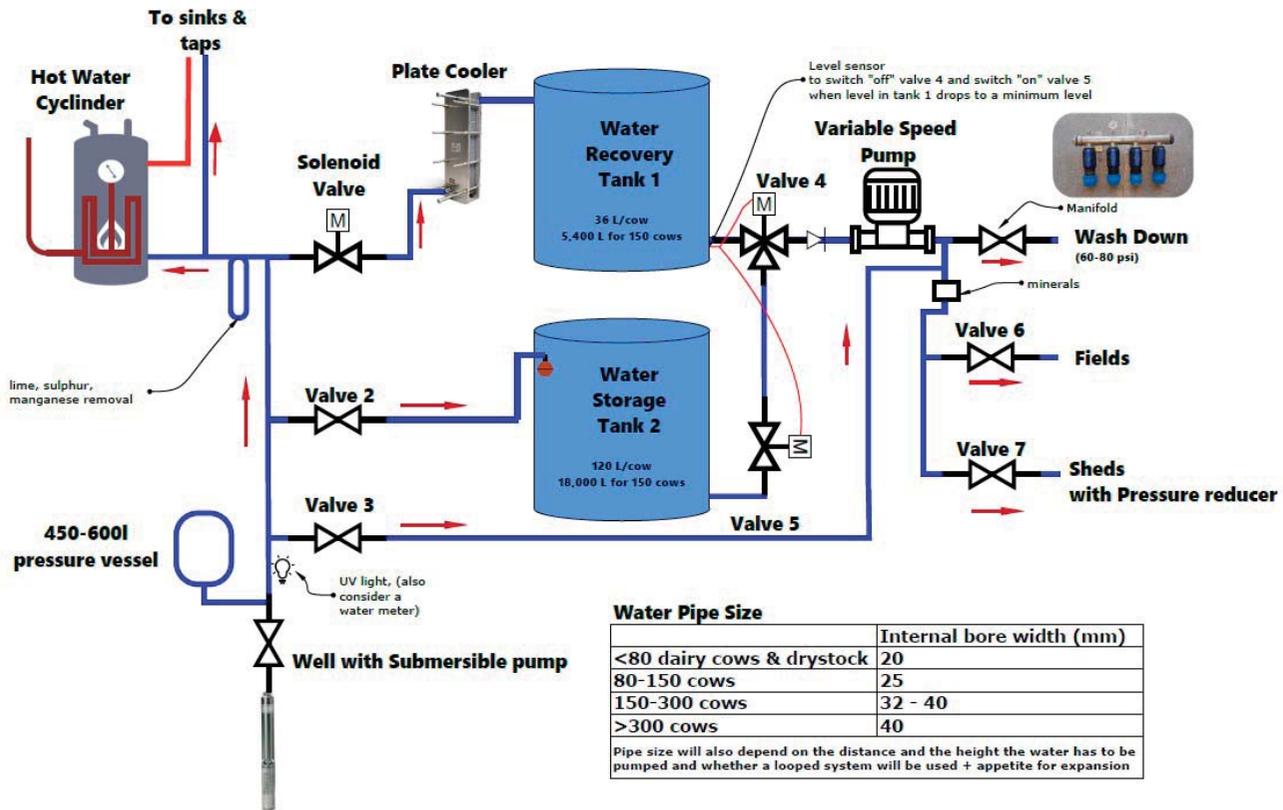
- Check ball cocks to ensure they have closed off correctly.

A 1/250 dilution of 5% hypochlorite will give you a 200 mg/l strength solution.

So for five litres water add 20 mls hypochlorite, etc, (to be really precise add 20mls of hypochlorite to 480ml of water.)

Suspending the water supply to the paddocks during the winter will prevent frost damage and water wastage due to leaks.

a water system for a dairy farm



Water system on a dairy farm

Figure 1 shows how a water system can be configured on a dairy farm. Some farmers like to have at least a day's reservoir of water to help cope with any interruption to supply. A tank of 120 litres per cow will be adequate.

Light should not be able penetrate this tank or you could get algal growth. It is important that water for washing the milking machine comes directly from the well in the same way that your kitchen sink receives a direct supply whereas the rest of the house is generally supplied via a header tank.

An inverter costing about €1,500 enables a high-output variable speed pump to operate on single phase electricity. Some farmers with large herds on single phase electricity, choose an extra pump to supply the field along with a washdown pump. This option can be useful if there is a big rise in ground on the farm. It is always good practise to check up on cows in the paddock about two hours after milking, when peak grazing and drinking occur.

A plastic or stainless steel manifold is now commonly used to distribute water for wash down. Typically, there

will be a supply from the manifold to the dairy door, to both the front and the back of the pit, to a footbath, crush and the edge of the collecting yard.

Water for cooling milk

Using water to cool milk through a plate cooler is the first step to reducing the cost of cooling milk. Adequate water supply can be an issue but if it is fully reused this is no longer a problem.

Traditionally, water recovered from the plate cooler was only used for washing down because it was assumed that it wasn't suitable for other purposes. However, it can be safely used as cow drinking water provided it is not stored and was free of bacteria to begin with.

Figure 1 is configured with that in mind. Treating the recovered water with ultraviolet (UV) light is an extra safety measure. The recommended water flow through the plate cooler is two litres of water per litre of milk. The water recovery tank is sized for that purpose.

A 20-unit milking plant may have an output of 140 cows milked in an hour, or approximately 2,500 litres of milk, when cows are at their peak in April

or May. Therefore, $5,000/60 = 83$ litres of water must be delivered through the plate cooler per minute. Your water system may not deliver this flow rate even if the supply pipe is adequately sized etc. The water recovery tank should be sized accordingly.

Plate cooling efficiency checks

- Does the water pipe going to and from the plate cooler have adequate diameter?
- Does the plate cooler receive well water?
- Is there a timer on the milk pump that will open the solenoid valve to deliver water to the plate cooler while milk is being pumped with a delayed closing of 20 seconds?

Some farmers with a variable speed milk pump work without a solenoid valve and simply turn on the water to the plate cooler at the start of milking and turn it off at the end. A working routine based on standard operating procedures (SOPs) or a written checklist in the dairy is useful.

- Ideally, the milk temperature post plate cooling = water temperature plus 5°C.
- What is the amount of water recovered versus the volume of milk achieved in that period?