

WINTERIZING YOUR IRRIGATION SYSTEM

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The objectives of properly winterizing your irrigation system are (1) to foresee and forestall or eliminate problems from winter freezes, (2) protect your investment in time and money and (3) keep the system in top shape for best use.

Why do Pipes Freeze?

Most objects get smaller, or contract, as they get colder. For example, a wire or pipe becomes shorter as it cools. However, water expands as it freezes. It needs a larger volume as it freezes. Pipes contract or get smaller. The two actions are direct opposites. Thus, huge forces are opposing each other. The irresistible force (the pipe) meets the immovable object (the ice). Enormous forces or pressures are created. Something has to give. The pipe does the giving. It bursts.

Components of an Irrigation System

The main components of an irrigation system are: (1) water source, (2) power source, (3) pump, (4) control, (5) chemical injectors, (6) filters, (7) pipes, (8) emitters or sprinklers, (9) drains and (10) valves. These components may or may not need freeze protection.

Water Source

Surface sources of water include ponds, lakes and streams. They may freeze over in the winter. Exposed water bodies freeze from the top down rather than from the bottom up. As water cools down, it decreases in volume (density increases) until 4 degrees C (39.2 degrees) is reached. From 4 degrees C to the freezing point (0 degrees C or 32 degrees F) water increases in volume (becomes lighter - density decreases). This colder lighter weight water comes to the surface where it freezes. If the air temperature stays below freezing, the water will continue to freeze from the surface downward. Also, because water expands or it freezes, it will rupture plant cells like they were miniature pipes and thus destroy them. There is little or no danger of ground water freezing (except at shallow open wells).

Power Source

Power sources may include electrical motors and diesel, gasoline, LPG or natural gas engines. These will not freeze. The oils and fuels will not freeze at usual temperatures. Moisture may condense and freeze in fuels or oil in engine compartments or fuel tanks. Take caution to avoid moisture condensation. If the engines have water cooled engines, antifreeze should be added to radiator or cooling pipes, or the water should be completely drained out of the radiator pipes and hoses. The motors or engines should have an enclosure to protect them from the weather. Rain water could accumulate on engine parts and freeze and damage the part. Fuel line and filters having water deposits may freeze and should be protected by drainage.

Pumps

Any exposed pump should be completely drained of water and preferably stored in dry enclosure. Do this well in advance of freezing temperatures so that the pump components can dry out

and not be freeze damaged. Deep well pump components will not freeze below the static water level in the ground. Exposed tanks and pipes should be drained or they may freeze.

Controls

Controls, such as automatic controls, should be covered with plastic or suitable enclosures or removed and stored inside. Protect them from moisture.

Chemical Injectors

Chemical injectors should be flushed clean and drained completely. Disassemble if necessary to remove all water. Some types are expensive. You may wish to remove and store them in a dry place.

Filters, Strainers and Screens

Filters, strainers and screens protect the pump and their components. They remove solid, non-soluble, particles from the water. They should be cleaned, flushed out and dried to protect damage.

Pipes

Flush drip laterals with suitable cleaners to remove solids and chemical deposits. Open the end plugs to flush out dirt. Exposed pipes should be drained. Be sure to remove water from the low spots. Pipes buried a foot or more deep probably will not freeze. However, draining them would be advisable.

Emitters and Sprinklers

Flush out with a cleaner. Drain all tubes, laterals, and sprinklers. The emitters are normally durable and should not be damaged in cold weather.

Drains and Valves

Clean and flush all drains and valves. Make sure they are not plugged. After drying, leave in the closed position to avoid small animals or insects making a home in them.

Summary

Freeze damage to irrigation equipment can be expensive in time and money. It can be prevented. Winterize your irrigation system. It will protect it and make it easier to activate in the spring. Finally, check the system out in the spring well in advance of use to detect any unforeseen problems.

Put It On Your Calendar . . .

**Southeast Greenhouse
Conference**
June 20-23, 2001