

EVALUATING YOUR SYSTEMS PRESSURE REQUIREMENTS

Sprinkler heads are nothing more than "sophisticated holes" in your irrigation system's pipe network that let the water out. Their sophistication lies in the fact that they are engineered to open up only when you want them to, and they either rotate, fan out, or dribble-out water in a prescribed pattern and distance. Unfortunately, they only do the things that they are designed to do if enough water is provided to them at the proper pressure. Therefore, providing enough water at the proper pressure is what you need to look for when you set out to evaluate your system.

Determining the proper pressure to operate your type of sprinkler heads is easy. If your system was designed and constructed properly you merely have to determine what type of sprinkler you have and how far apart they are spaced from each other. Once you know this you can consult the sprinkler manufacturer's engineering data (usually located in the product catalog) and match up the numbers. When you determine what pressure the sprinklers should have at their current spacing, all you have to do is verify that you're giving them that pressure.

Determining whether you're giving the sprinklers enough water is more complicated. A properly designed irrigation system is engineered to allow you to operate enough sprinklers at the same time to irrigate your entire course over a certain length of time, while staying within the limits of your water

"...and though the holes were rather small they had to count them all."

Lennon and McCartney

source. Each leg of main line or sub-main on your golf course is sized to allow a maximum flow of water to the sprinklers within an acceptable pressure loss (due to friction), and to keep the velocity of water down to an acceptable speed at that maximum flow. If you try to exceed the maximum (by opening too many "holes") then you disrupt the balance between available pressure, pressure loss, water velocity, and the required operating pressure of the sprinkler heads. This is not good! To find out approximately how many sprinklers you should be able to run on a main line you need to go back to the manufacturer's data sheet to find out how many gallons per minute (GPM) each sprinkler is putting out at the pressure you're providing.

Since you can expect each sprinkler (of the same model and nozzle configuration) to put out the indicated GPM, the more sprinklers you open on the same leg of pipe, the more water you need to provide to that pipe. The more water you provide, the higher the velocity of the water and the higher the friction loss. Most PVC pipe and fittings manufacturers strongly advise against trying to exceed water velocities of 5 feet per second (F.P.S.) through their product. With that in mind, you can consult the appropriate velocity/friction loss data for the type and size of pipe you have, determine the maximum flow in that pipe that will keep you below 5 F.P.S., and divide that maximum flow by the flow out of each sprinkler.. This will determine the maximum number of sprinklers that you can open at the same time while providing enough water at the proper pressure to operate each sprinkler.

Keep in mind that there are a multitude of other factors to consider (such as distance between the water source and each sprinkler, elevation changes, surge pressure, weather changes, part circles vs. full circles, available watering time, turf types, etc.) before you can be confident that you are operating each sprinkler at its optimum performance, but nobody said this job was going to be easy - did they?

Next Month : Control Systems

Editors note: Please send in questions for the authors to answer. . See address on page 2

A HEALTHY LAWN IS IN YOUR BEST INTEREST: HERE'S WHY

Cooling-The front lawns of a block of eight average houses have the cooling effect if about 70 tons of air conditioning-enough to cool 16 average homes. On a Summer day, grass can be 10 to 14 degrees cooler than concrete or asphalt.

Air Quality-A 50' by 50' well-maintained grass area will create enough oxygen to meet the needs if a family of four every day. Acting like a gigantic sponge, lawns absorb all types of airborne pollutants such as soot, dust, and carbon dioxide, as well as noise, less weeds means less weed pollen. A relief to those with allergies.

WaterQuality-Studies show healthy lawns absorb rainfall 4-6 times more effectively than farm fields, being exceeded only by virgin forest. Lawns return the moisture to the water table where it can again be used by everyone. A Penn State University study showed thick lawns slow the velocity of run-off and allow

the water to infiltrate 15 times better from a high quality lawn than from a patchy lawn with a lot of weeds.

Soil Quality-A healthy lawn prevents erosion by water or wind and the loss of valuable topsoil-less mud and dust in the house.

Aesthetics-There can be no argument that a beautiful lawn is immediately pleasing to the eye and relaxing in its appearance. Lawns help to soften and reduce reflected light -less glare.

As seen in The Mountain State Greenletter