

system is necessary, and a sand trap may be required.

The nylon insert orifices are uniform in size, low in cost and available with the pipe, or may be purchased separately. A simple hand tool may be used to place the inserts into existing pipe.

"Prescription-placing" of orifices was used in the system recently installed in an orchard of 1,500 apples and 500 pecan trees in Knox County, Tex., owned by Dr. James F. Harber of Odessa, Tex. Because the trees were young and required only small amounts of water to get them established, only two Submatic insert orifices were used at each tree.

Dairyman Ted J. Wood of New Deal, Tex., is currently grazing 35 head of cows and 35 calves on five acres of subsurface irrigated pasture. Wood has indicated he intends to add 20 acres more. He performed the installation work himself, purchasing a small trencher. Having tried the pipe with a drilled orifice, he now plans to use only the insert orifice. He has obtained better results and a more uniform distribution of water with it.

Dick Park of Lubbock attributes the excellence of his lawn to the below-ground system, citing the advantage of placing the right amount of water at the right time and at the right place; also, that fertilizer can be applied through the system. He believes that because the root zone is kept moist while the top soil is kept dry, a healthier plant results.

Recently, the City of Lubbock Parks and Recreation Department installed the Submatic system in a median strip of turf along heavily traveled Indiana Ave. The idea was to save water and also to prevent the spraying of passing cars.

Although the system can be automated, say Submatic engineers, most users find that since large areas can be irrigated at one time—depending only upon the amount of water available—it is an easy matter to open and close valves. If additional information is desired, circle (721) on the reply card.

Enzyme Stops Growth Of Bent on Hot Day

A Michigan State University scientist believes he's found why golf course greens and bentgrass lawns stop growing when surface temperatures go above 95 degrees.

The reason could be an enzyme called nitrate reductase. By selecting grasses with stabilizing levels of this enzyme, golfers and home-

owners might have a little less to moan about during hot days.

Speaking at the annual meeting of the American Society of Agronomy, John E. Kaufmann, MSU turfgrass researcher, reported that growth and nitrate reductase induction in bentgrass ceased at 95 degrees. But both growth and the enzyme were still going strong in bermudagrass at 104 degrees.

So Kaufmann isolated the enzymes from the two grasses grown at 77 degrees and tested them again. This time, the bentgrass stopped functioning at 104 degrees, but the ber-

mudagrass kept on going.

"We concluded that the stoppage of bentgrass growth was related to this enzyme, which changes nitrate to nitrite," he said.

Kaufmann and Drs. James Beard and Donald Penner, MSU crop scientists, made their findings after studying enzymes of Tifgreen bermudagrass and Toronto bentgrass. Bentgrass, commonly used on northern golf greens, will quit growing during hot days, forcing greenskeepers to cool the greens to encourage enough growth to recover from the wear and tear of golfers.

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