THE EXTENSION LINE

Hole Notes welcomes the addition of Bob Mugaas of the University of Minnesota Extension Service as a regular contributor. As Hennepin County Extension Agent, Mr. Mugaas will compile various articles related to the golf field for our information. Bob is an excellent source for answers to many questions on horticultural problems. He may be reached at 542-1420. Written requests should be sent to:

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This month's articles cover Trees & Stress, High pH soils & flowers and Black Knot of Prunus.

TREES AND STRESS

by CYNTHIA ASH, Assistant Extension Specialist
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Healthy, established trees can recover from the drought of 1988. However, many trees which previously appeared to be healthy were actually under stress from disease, insect, other environmental factors and/or mechanical damage. These types of stress rob the tree of its stored food supply: starch. When a tree is damaged by any of these factors it uses part of its stored food supply to replace lost leaves or branches or heal wounds.

In the meantime the appearance of the tree remains basically the same. However, at some point the stored food supply becomes used up. When this occurs additional stresses result in dieback and, if severe, the eventual death of the tree. During spring and summer 1989, regardless of the weather conditions, many trees and shrubs are going to be in that "stressed" category and others will be beyond that and die.

Watering is very important. Not only do plants need the water but without water they cannot take up the necessary nutrients from the soil. In soils where nutrients may be deficient, fertilization is important especially on young trees and shrubs. An organic mulch (such as wood chips or shredded bark) placed several feet out from the trunk of the tree will help to keep the soil moist, prevent weed growth, and keep the soil cooler. High soil temperature kills plant roots, preventing water and nutrient uptake even when water is present.

HIGH pH SOILS ARE DETRIMENTAL TO DAFFODILS

by MARY MAQUIRE LERMAN, Coordinator
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In the past several years I have written an article for the April issues of the Minnesota Horticulturist on our daffodil naturalizing project in the Minneapolis parks. The news has always been good. Unfortunately, this past spring we had some disastrous results at several planting sites. Bulbs that were planted the previous fall in what were considered ideal textural soils failed to emerge. After examining the bulbs last spring and taking soil tests, the information was sent to Dr. Gus Hertogh, a narcissus specialist at Raleigh, North Carolina. His response was that although the soil texture was fine, the pH was too high. In research from the Netherlands, he noted that at pH levels above 7.3, daffodil bulbs often did not develop adequate roots. The bulbs that had been examined from the sites had failed to develop any root system.

It was quite a surprise to find that we had soil pH levels ranging from 7.3 to 8.3 in park areas where construction materials or debris were not involved. We then began a policy of testing all sites for pH prior to planting. Last fall twenty sites were tested. Of those, 15 of the sites had pH readings between 7.6 and 8.0. After consulting with Carl Rosen, Extension Soil Scientist at the University of Minnesota, I assembled the following information to assist in soil pH modification for last fall's planting and replanting efforts. Table 1 below shows the number of pounds of elemental sulfur required per 100 square ft. to lower the soil pH change to occur once added to the soil. Iron sulphate and aluminum sulphate will also lower the pH, but they are 6 to 7 times less effective than elemental sulfur on a weight basis. However, aluminum sulphate is not recommended for lowering soil pH as it has been found to have potentially toxic effects such as restricting root growth at lower pH levels. If you want to lower the soil pH faster than with elemental sulfur, iron sulphate would be the recommended choice as the reaction time for the pH change is usually 2-3 weeks.

Using the table for elemental sulfur, multiply the recommended rate by 7 to calculate the correct number of pounds of iron sulfate to apply. for example, if your soil tests out as a pH of 8.0 and is sandy soil, you must apply 7 x 3.0 (or 4.0) to = 21 lbs. of iron sulfate for each 100 square feet of soil area to lower the pH to 6.5.

Once you have lowered the pH levels, you can help maintain the lower pH by applying nitrogen fertilizers that contain ammonium. Ammonium sulfate is the best acidifying nitrogen fertilizer source and should be applied at label recommended rates.