soil, deep placement will make them immediately available to the new plant to enhance root and top growth. It is extremely important, however, that the fertilizer be mixed into the backfill and not placed in direct contact with the roots. A slow release fertilizer is not desirable for mixing with the backfill. Slow release fertilizers supply only small amounts of nutrients at any one time, so the possibility of root damage is minimized and a longer term response is obtained.

Of the nutrients in a complete fertilizer, nitrogen gives the most pronounced effect. Phosphate and potassium, on the other hand, generally produce little visible growth response unless soil levels are extremely low. Since certain soils may be deficient in these two nutrients, and since phosphorus is essential for root growth, it is usually beneficial to use a complete fertilizer (N,P,K).

The recommended rates of fertilization are four pounds actual nitrogen (N) per 1,000 square feet per year. When needed, 3.6 pounds of phosphate (P205) per 1,000 square feet and six pounds of potassium (K90) per 1,000 square feet should be applied every two to four years. These quantities of fertilizer cannot be applied to the turf under trees. It must be applied to a non-turf area or placed in holes drilled in the soil around the tree. The recommended rate for turf is 1 lb. N/1,000 ft² at one time and any rate greater than two pounds of nitrogen per 1,000 ft² in one application will result in injury to the turf. 

Products that combine fertilizers and herbicides ("week and feed") should not be used on or around trees and shrubs. Such products will injure or kill trees in the same way that they kill weeds.

NEW DROUGHT FOLDER AVAILABLE

The Dial-U Insect and Plant Information Service has written a follow-up folder to last year's "Drought and the Urban Landscape". The new publication is called "Restoring the Urban Landscape: Methods for Recovering from Hot, Dry Weather". It deals with lawn repairs, tree and shrub care, and offers gardening tips for coping with dry conditions. It also alerts to insect and disease problems expected this year.

Order your copy of "Restoring the Urban Landscape" by contacting your local County Extension Office. Ask for AG-FO-3727.

FILL IN EXTENSION SERVICE AGENT

Phil Allen has been hired as turf extension assistant for the state of Minnesota from now through September 30,
1989. This position fills the vacancy for Turf Extension while Don Taylor is on sabbatical leave.

He can be reached at: Phil Allen, Turf Extension Assistant
434 Alderman Hall
University of Minnesota
St. Paul, MN 55108
Phone: 624-1706

MISSING TABLE

Here is the table that was left out of the article titled "High pH Soils are Detrimental to Daffodils" last month.

<table>
<thead>
<tr>
<th>Initial pH</th>
<th>Sandy Soils</th>
<th>Clay Soils</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.0</td>
<td>0.5 - 1.0</td>
<td>1.0 - 2.0</td>
</tr>
<tr>
<td>7.5</td>
<td>1.0 - 2.0</td>
<td>2.0 - 3.0</td>
</tr>
<tr>
<td>8.0</td>
<td>2.0 - 3.0</td>
<td>3.0 - 4.0</td>
</tr>
<tr>
<td>8.5</td>
<td>3.0 - 4.0</td>
<td>4.0 - 5.0</td>
</tr>
</tbody>
</table>

1Adapted from the 'Fertilizer Handbook', Natural Plant Food Institute, Washington, D.C.

WELL-KNOWN FOR QUALITY

Insist on a Bergerson-Caswell ground water monitoring well to assure accurate soil and water samples.

- Production wells — rotary, auger and cable tool
- Well abandonment
- Submersible and vertical turbine pumps, sales and service
- Byron-Jackson pumps, Fairbanks Morse pumps, Grundfos pumps
- Meeting municipal, industrial and irrigation needs

(612) 479-3121
Member NWWA, MWWA, MMUA, GWI

BERGERSON-CASWELL

5115 Industrial Street • Maple Plain, MN 55359
Wells, elevator shafts, foundation boring and Byron-Jackson pumps.
Since 1948.