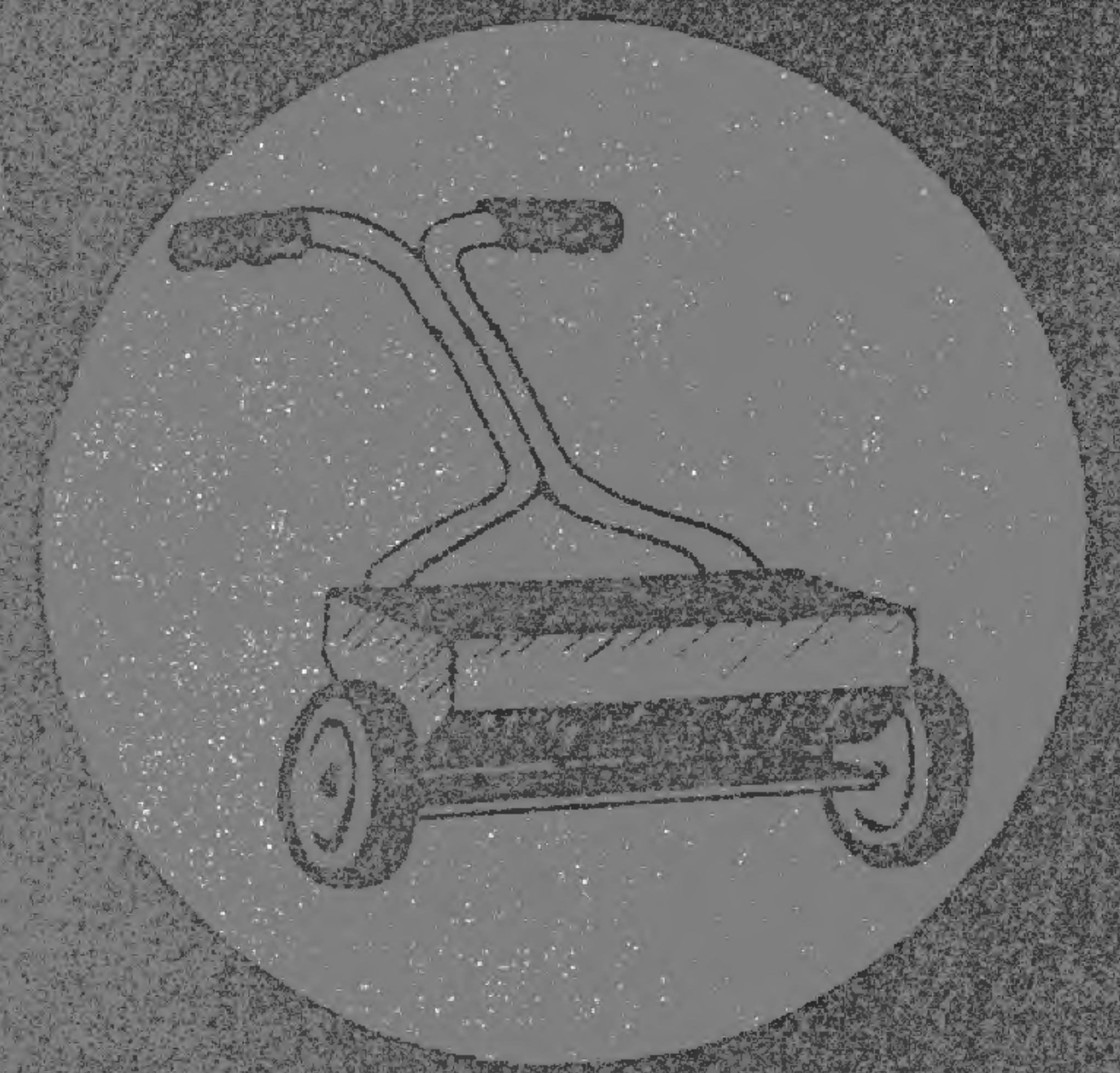


horticulture

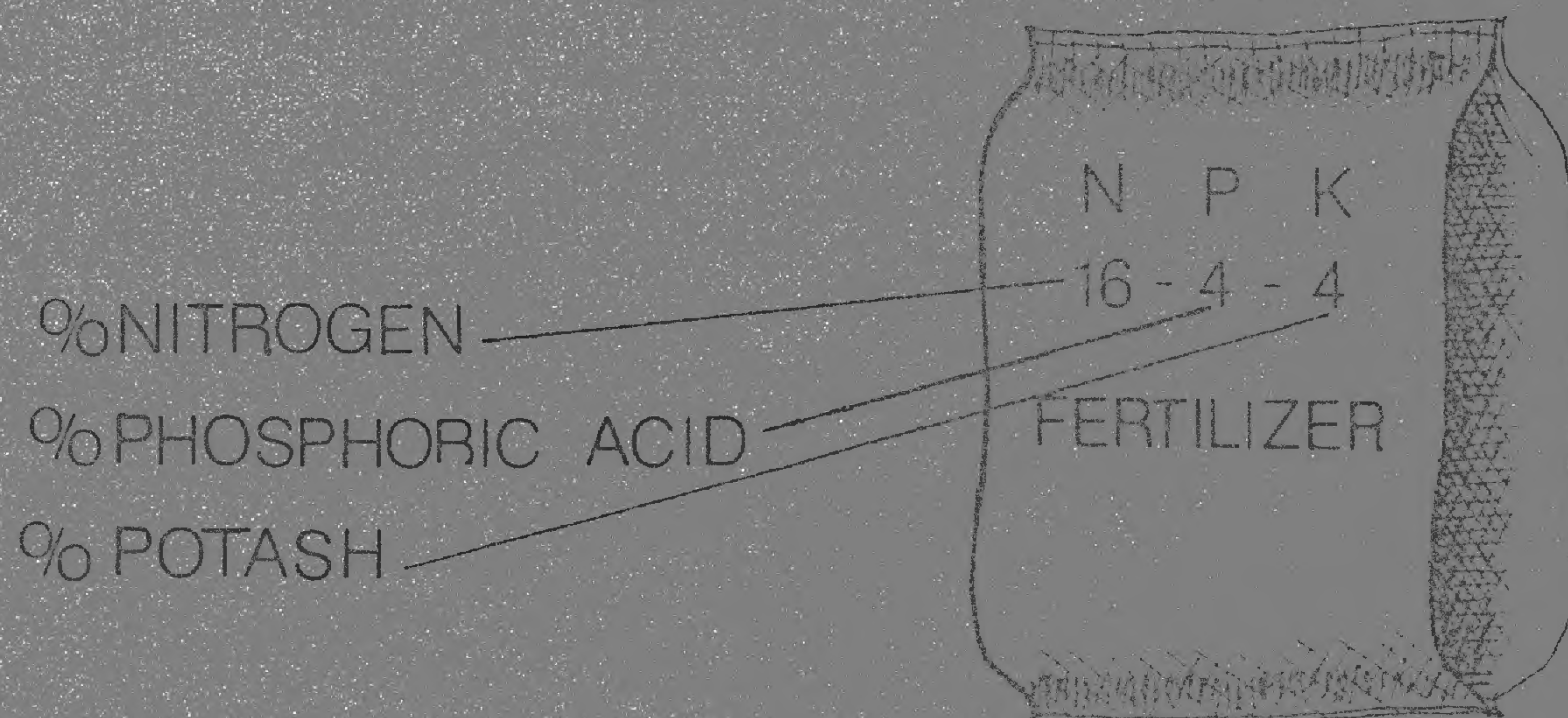
for the home gardener



Number 16

Fertilizers

Garden soil in its natural state rarely contains all the nutrients plants need for the best growth. To obtain the most vigorous lawn, the most abundant flowers, and the best yield of vegetables, fertilizers must be added to replenish and supplement the supply of nutrients. A complete fertilizer commonly purchased contains three primary elements which are listed on the container as a numerical ratio.



The first number represents the percentage of nitrogen contained in the fertilizer including its source, the second shows the percentage of phosphorus, and the third number refers to the potassium present in the formulation. This means that in every 100 pounds of mixed 16-4-4 fertilizer, 16% (16 lbs.) is nitrogen, 4% (4 lbs.) is phosphorus, and 4% (4 lbs.) is potassium. The remaining 76% is filler and anti-caking material.

MAJOR NUTRIENTS

Nitrogen, the growth element, is the nutrient most frequently lacking in local soil. Sources of nitrogen are of two main types: organic fertilizers such as manures, sludges, and blood meal; and inorganic fertilizers such as ammonium sulphate and ammonium nitrate. Organic fertilizers usually are slower to become available to the plant but they generally have a longer lasting effect. Inorganic materials are usually quickly assimilated and short lived. Nitrogen from slow and quick acting sources are often incorporated in commercial mixtures for better results.

The following table lists various fertilizing materials and translates the percentage of nitrogen present in each one into the actual amount needed to supply one pound of nitrogen to the soil.

<u>Fertilizer material</u>	<u>Percent nitrogen</u>	<u>Pounds to supply 1 pound nitrogen</u>
Manure (steer, chicken)	2%	50
Sludge	2%	50
Blood meal	12%	8.3
Ammonium sulphate	21%	4.3
Ammonium sulphate-phosphate	16%	6.3
Ammonium nitrate	33%	3.3
6-10-4 (commercial garden mix)	6%	16.6

OVER

Nitrogen is needed for the development of foliage. Fertilizer intended for lawn grasses or other foliage plants generally contains the highest proportion of nitrogen. Because the nutrient moves from older to newer leaves, the older leaves will be the first to become yellow and lose the rich green color in the leaf veins in a nitrogen poor situation. An application of too much nitrogen, however, could result in weak, rapid growth and insufficient bloom. When uncomposted sawdust or straw mulches are used, bacteria which decompose the mulch draw on the plant's nitrogen supply, thereby causing a deficiency. To correct this situation, apply additional nitrogen before mulching with such materials.

Phosphorus, the second number listed on a fertilizer label is needed by plants to convert sunlight into the energy needed for growth. A fertilizer high in phosphorus is usually applied to plants to encourage the production of fruits and flowers. Lack of phosphorus discolors young leaves, giving them purplish margins or a deep green color with dying tips. Phosphates move slowly in the soil even when there is plenty of moisture; the nutrient must either be dug in deeply or kept in abundant supply so there is always some phosphate moving into the plant's zone of use.

Potassium, the last number listed in the fertilizer formula, is required in greater quantities than all other elements except nitrogen and calcium. It aids in the formation of starches and sugars, speeding the buildup of proteins to form sturdy, disease resistant plants. Tip and marginal leaf burn of mature leaves, weak stalks, small fruit, and slow growth indicate a deficiency of soil potassium. Potassium travels through the soil more easily than the other primary elements and is often leached out of the soil by winter rains.

APPLICATION

In the U.S. more than 1.5 million tons of chemical fertilizers are sold annually, mostly in granular form. The easiest way to apply granular fertilizer is to scatter it over the planting area according to directions, and water it in immediately. Care should be taken that it is not applied directly on moist foliage or it may burn the young growth. Liquid fertilizer may also be applied through a hose applicator and watered in.

The timing and amount of fertilization will vary from plant to plant. Generally, plants benefit most from small quantities of fertilizer applied frequently during the growing season. If the needed elements in the soil cannot be determined by plant symptoms, soils can be analyzed through the commercial nurseries.