

# A GUIDE TO THE DESIGN AND IMPLEMENTATION OF A TREE AND SHRUB FERTILIZATION PROGRAM

**Whether it is the agronomics or the dynamics of Growth Products liquids, you can provide your customer with results while increasing your bottom line.**

- Find the ease of handling and mixing liquid products in any type of equipment.
- With Growth Products Arbor Care products, you have a choice of varying N-P-K ratios and any minor elements to meet your specific needs
- Liquid products diffuse throughout the soil providing uniform coverage.
- The use of true liquids solutions eliminates costly down time and worn parts.
- Versatile, effective and safe applications by root injection, foliar and soil drench.

A balanced fertilization program is one of the most important cultural practices for improving the health and appearance of landscape trees and ornamentals. Most insect problems, diseases and physical stress are the symptoms of bigger problems beneath the soil. Many landscape areas have poor soil that is unable to maintain good, healthy growth. Such problems can be attributed pH imbalances related macro or micronutrient deficiencies, low organic matter or may be the result of toxins in the soil. The list of potential problems is growing as we learn more about the nutrient requirements of a healthy plant.

In the forest, and in other natural environments the recycling of nutrients occurs naturally when leaves and other organic materials decompose. Problems occur, however, on landscapes where this natural cycle is disrupted. Most trees and shrubs on a landscaped property have to compete for nutrients with grasses and other ground covers. Without new organic matter being introduced, the soil is soon depleted. With a balanced fertilizer program, one cannot only improve the health and appearance of these plants, but also reduce the amount of damage caused by pests and physical stress. This will save time and money by reducing pesticide usage. It will also generate savings through a reduction of tree and shrub removal and replacement.

## Getting Started:

Fertilizing trees and shrubs is not nearly as involved as it sounds. You may already own most of the equipment needed. The following is a list of this equipment

- 1) Clean sprayer unit, 100 gallons or greater.

## Time Savers & Other Helpful Hints

- If part of the root zone is covered (i.e. driveway, house, pool, etc...), place injections closer together in the uncovered area.
- Always monitor gallonage being used on each tree in order to avoid using too much or not enough.
- If the ground is excessively compacted, a soil drench containing Essential will help loosen the soil and allow for needle penetration.
- Soil drenches and foliar sprays are also recommended for smaller shrubs and ornamentals planted in mulch, chips or landscape stones.
- In order to avoid damaging shrubs and ornamentals from dragging hoses through and around planted and landscaped areas, liquids can be used as a foliar or soil drench.
- For ornamentals and smaller plants, a rule of thumb is to place holes closer together and apply less fertilizer mixture per hole.
- Foliar applications of micronutrients will rapidly correct discoloration caused by chlorosis. This should be done in conjunction with a pH test and soil injection to permanently correct the problem.
- Apply fertilizer to shrubs and flower beds at time of re-mulching.
- With Growth Products liquid solutions, there are no broken or solidified bags, no settling, no clogging, and no worn out parts from abrasion.
- All of our products are safe because of their low salt index and slow release nitrogen sources, the "smart" nitrogen from Nitro-30 SRN.

2) For deep root injection, pump requirement 100-200 psi for good coverage.

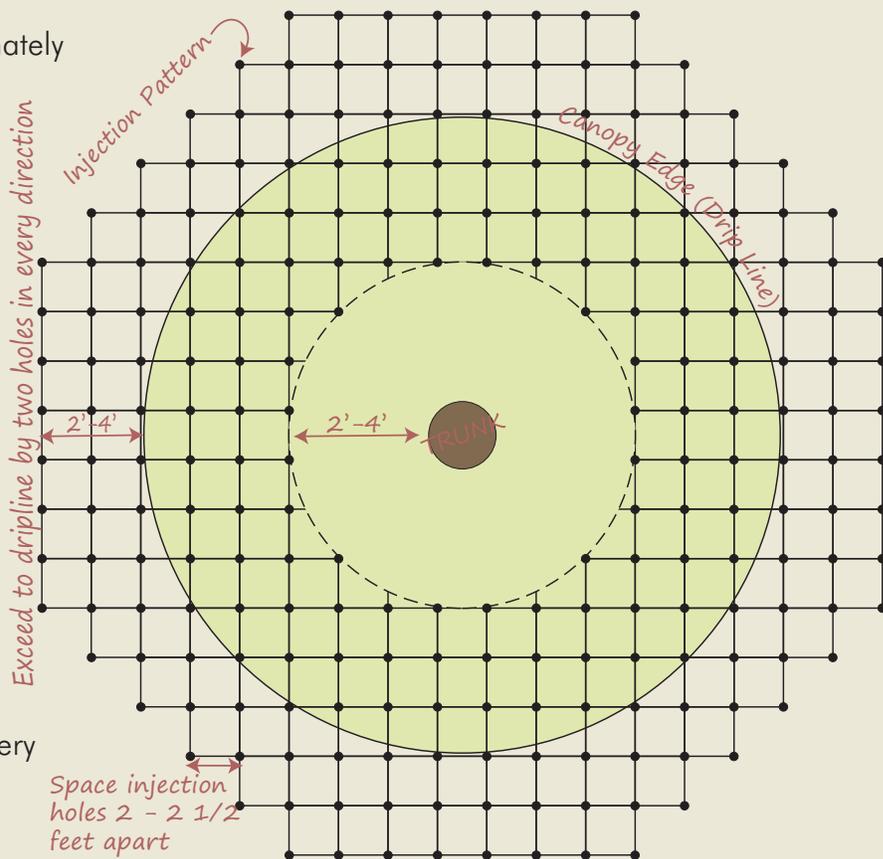
3) 1/2" – 3/4" spray or garden hose.

4) Fertilizing needles. There are several products available through a variety of distributors.

With these three items, one operator, fertilizer, and water you can run a very effective and preventative program.

## Injection Pattern

Start application of fertilizer approximately 2-4 feet from tree trunk and extend the same distance beyond the drip line. A grid pattern should be laid out, and injection holes should be spaced every 2- 2 ½ feet to a depth of 4"-8". The valve should be held open from 3-5 seconds per hole, injecting 1/2 gallon of fertilizer solution at each point. The goal is to apply 5 gallons of fertilizer mix per inch of tree diameter. The grid pattern should exceed the dripline (canopy edge) by two holes in every direction.



### How to Design the Correct Fertilizer Program:

The fertilizer blends you use are extremely crucial when designing a program. Many of the products offered in the market contain high salts, insoluble materials and chlorine. Granular products can cause problems in pumps such as clogging or parts wearing out from abrasion, resulting in considerable downtime. With Growth Products liquid fertilizers, you will not have any of these concerns. Our program is designed by looking at the entire soil picture, not just one or two aspects. It is designed to fine tune the application of NPK, micronutrients and natural organics.

### Estimating the Number of Gallons Needed:

Our recommendations are based upon applying five gallons of mix per inch DBH (Diameter at Breast Height) Example: an 18 inch tree would require 90 gallons of diluted fertilizer.

### Fertilizer, the Procedure:

The proper method for sub surface fertilization of trees is by injection of diluted fertilizer approximately 4 to 8 inches below the surface. Fertilization should begin 2 -3 times the DBH from the base of the tree and extend the same distance outside the drip line of the tree canopy.

Each injection should be placed 2-3 feet apart in a grid pattern throughout the under story of the tree (see diagram)

### Calibration Method:

Using a pre-measured container, time how long it takes to fill the container using the feeding needle. This will give you a more accurate determination of how long to hold the valve open per hole to reach the desired amount of ½ gal of tank mix per hole. Depending upon the flow rate, the valve should be held open approximately 5 seconds with an operating pressure of 150 – 200 psi.

### Timing or Applications:

A comprehensive tree and shrub fertilization program should include both early spring and early fall application program. It is recommended that a lower nitrogen higher phosphorus and higher potassium analysis is used for a fall application. A 1:2:2 N-P-K ratio in the fall helps prepare the tree for winter stress and improve root and carbohydrate reserves for the winter. A spring application ratio of 1:1:1 for deciduous and 3:2:1 ratio for evergreens is ideal. Applications can begin in the spring when the soil is thawed to permit fertilization. During heat and drought stress conditions, the late spring – summer application of Essential Plus – a natural organic – can help strengthen the tree without any salt stress.