



Proper Fall Fertilization



Proper Fall Fertilization of trees

- **Does My Tree Need Fertilizer?**
- Trees growing in their natural habitat should have access to all of the minerals they need to survive and grow. Anything you can do to mimic that habitat can reduce the need for fertilizer. This may include letting leaves remain on the ground in the fall instead of raking them up. Chances are, though, that despite your best efforts, the need for fertilizer will not be entirely eliminated



Plant Residue

Plant Residue

Plant uptake

Organic Matter - Humus

Microbes - Compost

Microbes - Food

Organic Matter - Humus

Microbial Active Zone

NH₄⁺

NH₄⁺

NO₃⁻

NO₃⁻

Denitrification

Leaching

Leaching

Denitrification

Lost to atmosphere

Lost to atmosphere

Lost to ground water

Lost to ground water

Direct

Direct
Microbes

Direct

Direct

Direct

Direct

Microbes

Microbes

Microbes

Microbes

Cation exchange

Direct

Direct
Microbes

Direct

Cation exchange

Direct

Direct

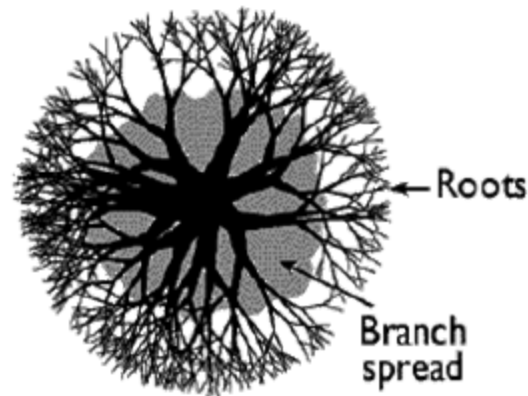
Direct
Microbes

Goals of Fall Fertilization

- To make available vital nutrients & components necessary to increase root structure and mass
- To increase biological diversity & activity
- To increase availability of plant nutrients and uptake
- To increase active organic matter

Where Do I Put The Fertilizer?

- The objective of fertilization is to put the nutrients where they will best be taken up by the tree's roots. Therefore, it is necessary to fertilize throughout the entire root system. In general, the roots extend well beyond the outer reach of a tree's branches.





When Should I Fertilize My Tree?



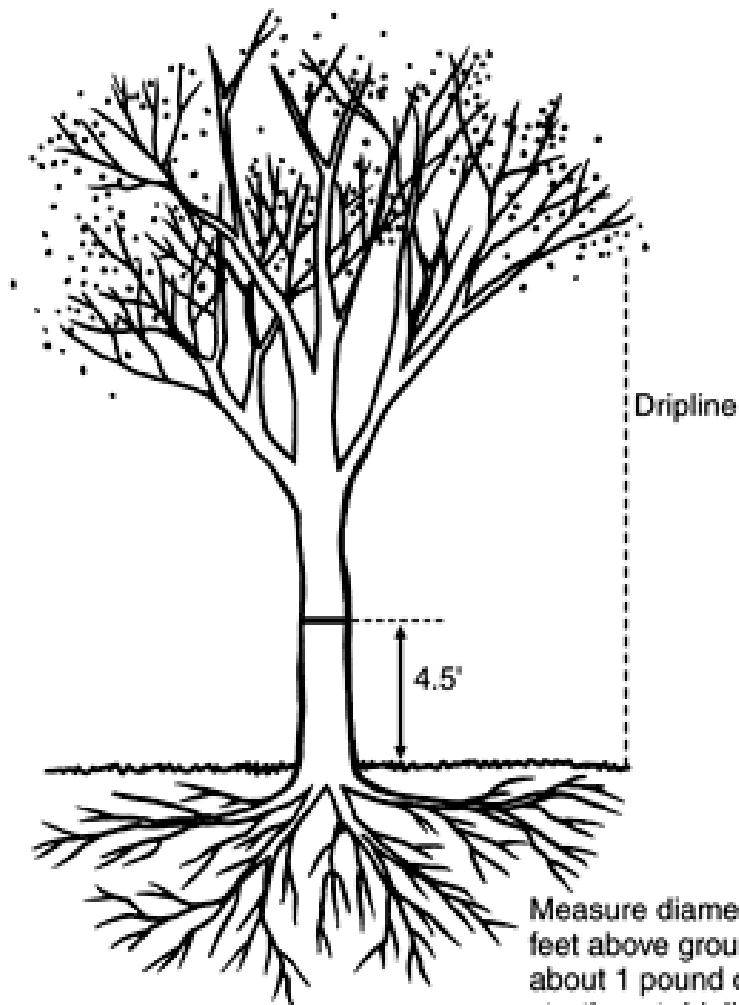
- A good time to fertilize trees in most climates is from *fall to mid-spring*. At these times the tree's roots take the nutrients from the soil and apply them to important health-promoting functions such as root development and disease resistance, rather than simply putting out new growth. Using biological inoculants during the fall at the time of mulching will provide a blanket of beneficial microbes which strengthen the root zones while providing depleted nutrients in the surrounding soil as well as roots
- During the *growing season*, fertilizing can help a tree overcome mineral deficiencies and fight off infections. If you are fertilizing in mid- to late summer, avoid formulations high in nitrogen as this will just promote weak, new growth that may be easily damaged in the winter



- **Methods of fertilizing**

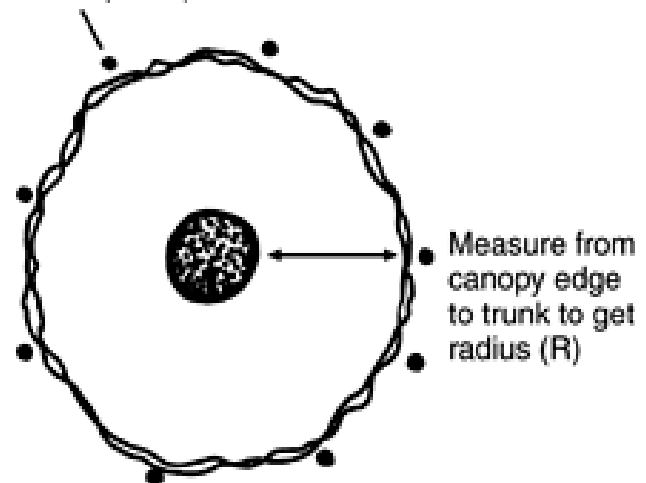
- Putting fertilizer below the soil surface is more difficult but gets phosphorus and potassium into the root zone and provides the additional benefit of aeration. This can be accomplished by using a root feeder or drilling holes in the soil
- Using a hose-attached root feeder will get the material into the root zone in liquid form. Water flows past premeasured tablets in an enclosed chamber and passes through a hollow needle inserted into the soil about 8 to 12 inches deep.
- Another method of application is to make holes approximately 2 to 3 feet apart at and beyond the drip line of the tree (see sketch). Holes are drilled into the soil with a power auger 8 to 12 inches deep, slanting toward the center of the tree.

CALCULATING TREE FERTILIZATION REQUIREMENTS



Measure diameter of trunk at 4.5 feet above ground level and apply about 1 pound of fertilizer/inch starting at dripline

Insertion holes for feeding needle or auger method, just outside dripline (branch spread) of tree



Measure from canopy edge to trunk to get radius (R)

Example:

$$A = R^2 \times 3.14$$

$$A = 15' \times 15' \times 3.14$$

$$A = 706.5 \text{ square feet}$$

Apply 1 pound of actual N/1000 SF or 5 pounds of 20-10-10 fertilizer

SUSTAINABLE

Sustainable products are those products providing environmental, social and economic benefits while protecting health, welfare and environment over their full commercial cycle, from the extraction of raw material to final disposition

WHY IS THIS SO IMPORTANT?

Because it allows the earth to remain as the correctly operating eco system that it is. Now, mind you that in a “perfect” world, totally organic products are preferred . As green minded as our company is, we strive to find the safest, most sustainable products.

Protect Global & Human Health and Environment



SUSTAINABLE PRODUCTS

Promote Economic Prosperity

Dow Jones
Sustainability Index

Protect Social Welfare



ORGANIC MICROBIAL SOIL INOCULANT



Derived From PURE BLACK CASTINGS™
Plant Probiotic and Soil Inoculant
Made from Natural Products

VermaPlex®



Orchards &
Vineyards



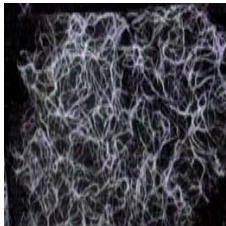
Agriculture
& Turf



Lawns, Gardens
& Nurseries

CONTAINS LIQUID HUMATE, YUCCA, SOLUBLE SEA KELP, & AMINO ACIDS
Enhances Plant Growth, Flowering, and Fruit Production
LIQUID CONCENTRATE - Will not burn or damage plants from direct contact!

ALL NATURAL SOIL AMENDMENT



A root mass after treatment with
VermaPlex® and Nutri-Cast®
Hairy roots are a sign of healthy
plants and of healthy soil

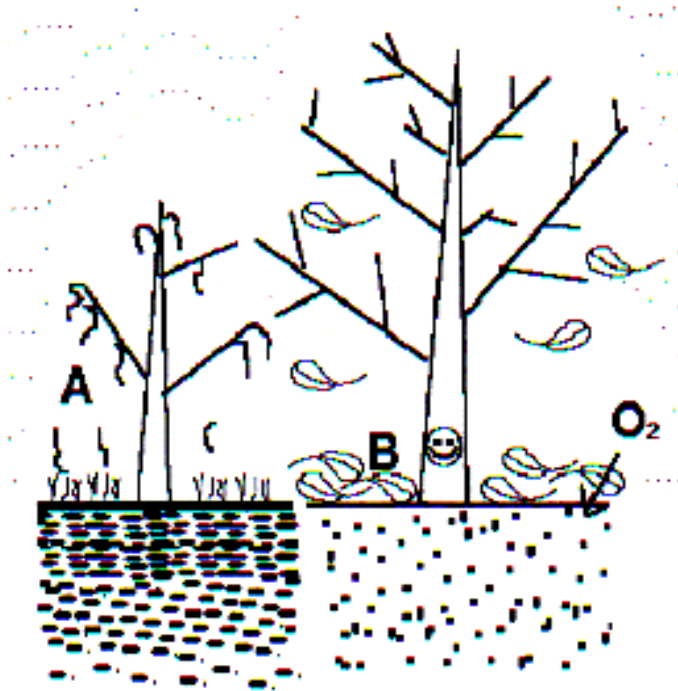
VermaPlex® can...

- ...restore biological life to soil. Soil is a living thing, and plants depend on this biological life to help them extract nutrients and combat disease. Plants do not grow in a vacuum, which is to say that living soil is absolutely essential to their health and survival
- ...help the soil regulate itself. In nature, soil chemistry is self-regulating: microbes in the soil consume organic matter, inorganic matter, water, and other nutrients, and regulate their levels as needed
- ...feed plants without burning them. VermaPlex® does not supply pure nitrogen, but instead increases the soil's ability to absorb nitrogen from the atmosphere, leading to greening without the risk of burning. For this same reason, VermaPlex® can also reduce dependence on traditional fertilizers, which can burn plants and pollute the environment
- ...VermaPlex® is 100% organic and all-natural. It will not leach or contaminate the water table. It is also totally non-toxic, so adults, children, and pets can safely use treated areas immediately!

About Soil Compaction

Think for a moment, how long can one hold their breathe? When one thinks of the compaction of the LIVING SOIL (A), this question must be considered.

Roots must respire – burn glucose to release energy. Oxygen is a major requirement for this process. The mycorrhizae are aerobic microorganisms which mean they require free, gaseous oxygen (O_2) for their growth. Learning the type of soil where a tree species grows naturally (B) is best and then plant these trees where the soil is similar. The main reason soil compaction is so very injurious to the plant system is not because of the oxygen – which is very important, but because soil compaction **KILLS THE MYCORRHIZAE**. At this point the plant material begins to suffer from lack of WATER & ELEMENTS and then the plant material begins to have a micro element deficiency. Long before soil compaction shows as a water problem – we will see compaction show its face as a micro element deficiency. **What can we do?.....**



Micro Bac Biological Package

- **Mycorrhizal and bacterial inoculum with amino acids, hormones and soluble sea kelp**
- **Micro Bac is a proprietary blend of naturally occurring dormant soil bacteria, rhizobia, seaplant extracts and microorganism food. This blend should be used to restore biological life to soils.**
- **Microbes are the life of the soil. Beneficial organisms help make nutrients and minerals available to plant life. This blend of microbes and microbe food was selected to increase efficacy of fertilizer. Beneficial bacteria are known to release bound materials from the soil.**
- **Higher populations of beneficial microbes will populate and may compete with soil pathogens for surface area.**
- **Also contains a rooting hormone to assist the formation and maintenance of new roots and root hairs.**

100% ORGANIC BIOLOGICAL SOIL AMENDMENT!

OMRI®
Listed

Nutri-Cast



Orchards &
Vineyards



Agriculture
& Turf



Lawns, Gardens
& Nurseries

Nutri-Cast® can do some pretty remarkable things in the soil. For instance:

*** It regulates the availability of essential plant nutrients**

*** It enhances the activity of fertilizers**

*** It's teeming with beneficial microbes, enzymes and humic acid**

*** It provides an organic energy source for beneficial soil microbes**

*** It can stimulate root system development. Plants need strong root systems to take advantage of soil nutrients**

*** In a nutshell, Nutri-Cast® stimulates and supplements soil biology. Plants rely on the beneficial organisms in the soil to extract water and nutrients and defend themselves from disease-causing organisms. Nutri-Cast® improves soil quality by bringing dead soils back to life**

A picture is worth a thousand words:



The yard on the right was treated with Nutri-Cast® when sod was applied. The yard on the left was not.

Plants can only be as healthy as the soil they grow in

Photos courtesy of:





The localization of agriculture

As agriculture localizes, livestock production will likely start to shift away from mega-sized cattle, hog, and poultry feeding operations. The shift from factory farm production of milk, meat, and eggs by returning to mixed crop-livestock operations facilitates nutrient recycling as local farmers return livestock manure to the land. The combination of high prices of natural gas, which is used to make nitrogen fertilizer, and of phosphate, as reserves are depleted, suggests a much greater future emphasis on nutrient recycling—an area where small farmers producing for local markets have a distinct advantage over massive feeding operations.