How to Fertilize

Fertilizer should be broadcast uniformly over the desired areas of the landscape. Consideration shall be given to root location, fertilization objectives and plant species. Areas where tree or shrub fertilization zones overlap with lawn fertilization zones should be fertilized for one or the other of the plant types, but not both. Foliar applications, injections or implants should only be used when soil application of fertilizer is impractical or ineffective in achieving fertilization objectives. When applying foliar fertilizer, the fertilizer solution should be sprayed to thoroughly cover the affected foliage at the proper stage of growth to achieve objectives

The following precautions and procedures need to be followed when applying fertilizers to insure that no injury occurs to the plants or the environment.

Apply the right fertilizer.

Unless a lawn has a uniform weed population, AVOID “weed and feed” products. Only spot-treat problem areas with weed killer. If you choose to use “weed and feed” products, be well aware that only Certified Pesticide Operators may apply “weed and feed” products. They are a regulated pesticide.

Use the right application rate.

Over fertilization is a major cause of plant injury. Excess fertilizer also leaches and may cause water pollution.

Be sure that the plants being fertilized have adequate moisture.

Plants under water stress or wilted plants can be severely injured by applying fertilizers to them.

Spread the fertilizer evenly according to the method of application.

Broadcast fertilization should be evenly dispersed over the entire area. If fertilizer is injected into holes drilled into the soil, then the holes should be evenly spaced with the same amount of fertilizer applied in each hole. Individual plant fertilization should have the same amount for the same size and type of plant. Row fertilization and side dressing should be evenly distributed within the row.

Avoid getting dry fertilizer on the leaves and green stems of plants.

In situations where fertilizer does get on the leaves, remove as much as possible prior to watering. Watering after the fertilizer application will wash any fertilizer dust off the leaves and will begin to activate the fertilizer. Dry fertilizers should never be applied to wet plants. If you have applied a foliar application of liquid fertilizer, the plants should not be watered immediately after application.

Ring of Responsibility

Except when adjacent to a protective seawall, always leave a “Ring of Responsibility” around or along the shoreline of canals, lakes, or waterways, so that you do not get fertilizer into a body of water. When fertilizing, it is important to ensure that fertilizers and other lawn chemicals do not come into direct contact with the water or with any structure bordering the water or a storm drain such as a sidewalk, brick border, driveway, or street. If any materials do get onto these impervious surfaces, sweep them into the vegetated landscape or otherwise clean them up.

This untreated buffer protects the water quality of the waterway by ensuring no prills or droplets enter the water. When applying liquid fertilizers, the Ring of Responsibility should be at least 3 feet from the edge of the water. The same is true for applying granular fertilizers with a broadcast fertilizer spreader that features a deflector shield. A deflector shield only allows fertilizer to be

distributed on one side. This half-circle application (instead of the typical full-circle application of most fertilizer spreaders) allows for a more accurate fertilizer application. If you are broadcasting fertilizer without a deflector shield, the Ring of Responsibility should extend at least 10 feet from the edge of the water, since the prills may be thrown up to 7 feet.

Fertilizing Adjacent to Impervious Surfaces

Most urban landscapes are surrounded by impervious surfaces such as sidewalks, driveway and streets. An impervious surface that drains to a water body or the stormwater system is called a Directly Connected Impervious Area (DCIA). Fertilizer inadvertently applied on these surfaces has ready access to our water resources through storm drains. This is why it is so important to keep fertilizer off impervious surfaces and to remove any that is spilled on them and deposit it back into the landscape. If using a broadcast spreader, deflector shields should always be used when applying fertilizer adjacent to these surfaces.

Fertilizer Spreader Calibration

Fertilizer application is only effective if you ensure uniform coverage. Dry fertilizers can be applied with either a drop (gravity) spreader or a rotary (centrifugal) spreader.

A drop spreader has the advantage of applying a fairly exact pattern since this is limited to the distance between the wheels. This also allows a “tight” pattern (line) to be cut but requires that each pass meets exactly with the previous one or skips will be noticeable. Wide (over 6 feet) drop spreaders can become cumbersome in the landscape by limiting access around trees and shrubs and getting through gates. The agitator in the bottom of the drop spreader’s hopper also may break the coating of some slow-release fertilizers.

The cyclone (also known as rotary or centrifugal) spreader generally has a wider pattern of distribution compared to a drop spreader and thus can cover a larger area in a short time. The application pattern of the cyclone spreader also gradually diminishes away from the machine, reducing the probability of an application skip. The uneven, wide pattern of the cyclone spreader is initially harder to calibrate and heavier fertilizer particles tend to sling farther away from the machine. However, proper calibration and experience minimize these.

Photo courtesy of UF

A recent improvement in fertilizer spreader technology is the use of air to apply the material (like the cyclone spreader) that is somewhat exact (like the drop spreader) without damaging the granules or slinging heavier particles farther. Wind and rain effects also are reduced using the technology but initial equipment expense and application expertise are higher. Calibration differs from each type of lawn fertilizer, but there are some standard operating procedures that apply to any spreader.

1. Test to see if your spreader is applying fertilizer at the set rate
    a. Fill the spreader with fertilizer and fertilize over a known distance.
    b. To calculate the area you covered, measure the width of the spreader and multiply it by the length you moved.
    c. Do this over a tarp or mat where the fertilizer can be collected and weighed. Any spill off the tarp must be cleaned up to prevent

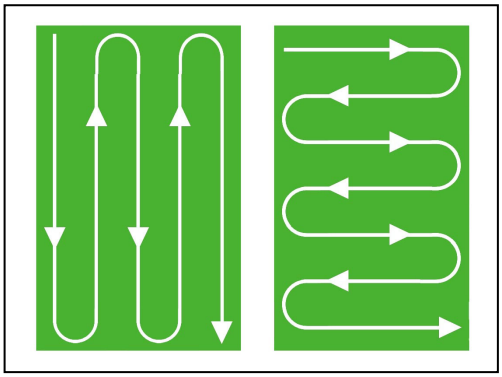
potential runoff into a “directly connected impervious area”, causing pollution in the waterways

d. If you tested over a 100 sq. ft. area, multiply the amount discarded by 10 to see how much would have been discarded over a 1000 sq. ft. area.

e. If the resulting number matches your spreader setting, the spreader is calibrated properly.

f. If the resulting number is higher or lower, adjust the setting to recalibrate the spreader.

2. Pour the material into your spreader over a driveway or other cement area where spilled material can be swept up (pouring over a lawn where spilling may occur can lead to burn); do not let excess fertilizer be washed into storm drains.
3. A few days before you fertilize, deeply irrigate your lawn so that the soil is moist; the grass blades should be dry by the time you start your application
4. Go around the periphery of the area you are treating first, ensuring a consistent application around the edge of your lawn. Then, run the spreader back and forth within the area bounded by your first perimeter run.
5. While covering this main portion of the lawn, make passes up and down the remainder of the lawn, spreading half the required fertilizer; be sure to turn off the spreader when you are turning around or have finished a pass.
6. Go over the lawn a second time, spreading the remainder of the fertilizer at right angles to the first.
7. With each pass, overlap wheel marks to avoid any striping.
8. Irrigate after application to move the fertilizer from the leaves into the soil.
9. Return any leftover material to its container and hose out the equipment and let it air dry.



CALIBRATING A DROP-TYPE (GRAVITY) SPREADER

Follow these steps, in order, to calibrate your drop-type (gravity) spreader

1. **Check the spreader** to make certain all the parts are functioning properly.
2. **Mark off an area** which when multiplied by the width of the spreader will give 100 square feet of area. *For example, the length required for a 1½-, 2-, and 3-foot spreader is 66 2/3, 50, and 33 1/3 feet respectively*.
3. **Fill the spreader** with the material you wish to apply (fertilizer, seed, herbicide, lime, other). Fill the hopper only to the level you will have when the material will actually be applied.
4. **Make several trial runs** over the area and practice opening the spreader as you cross the starting line and closing it at the finish line. Opening the spreader before it is in motion will result in non-uniform distribution. Walk at a pace which will be used when actually applying the material. Open and close the spreader gradually, not in a fast, jerky motion.
5. **The weight of the material** applied by the spreader must be

determined. It can be swept up from a hard surface or caught on a large piece of paper or plastic. The easiest method is to attach a catch pan (cardboard works nicely) under the spreader openings and *catch the material in the catch pan during the test run to determine how much was applied.*

6. **Begin calibration** at the lowest setting and proceed at progressively higher settings (larger openings). The more trials at a given setting, the better will be the average rate of application. Usually three trials at a given setting are enough to obtain a reliable application rate. Weigh the material and record the information on each trial run for future use.
7. One of the calibrated settings will approximate the **correct rate of material.** *Example: You want to calibrate a spreader to apply 1 pound of nitrogen per 1000 square feet using a 10-10-10 fertilizer. This calculates to 10 pounds of fertilizer per 1000 square feet since the material is 10% nitrogen (10% x 10 pounds = 1 pound nitrogen). Since the area for calibration trials in only 100 square feet, apply one-tenth of 10 pounds or one pound of fertilizer per 100 square feet. The spreader setting should be 11 for this example from your calibration trials with your spreader*. If the desired application rate was 0.5 pound of nitrogen (5 pounds of material per 1000 square feet or 0.5 pound per 100 square feet) a setting of 7 should be used. Careful calibration is suggested for the complete spreader range. Settings are not necessarily linear, therefore, half of a particular application rate may not necessarily be obtained by using a setting number half the original.
8. **The same calibration procedure** is used for any material you want to apply. Since the quantity applied depends upon the physical properties of the material, the same settings cannot be used for different materials, even if the ratios are the same. Once the spreader is calibrated and set for the proper rate, any size area can be treated accurately.

CALIBRATING A ROTARY (CENTRIFUGAL) SPREADER

It is important that the "effective" width of application be determined first. Follow these steps, in order, to calibrate your rotary (centrifugal) spreader.

1. **Check the spreader** to make certain all of the parts are operating properly.
2. **Fill the hopper about half full** with the material you plan to apply and run it with the spreader setting about half open (medium setting). Make the application on bare ground or hard surface where the width of surface covered by the material can be measured.
3. Rotary spreaders do not apply a constant amount of material across the entire width of application. More material is applied toward the center and less at the edges. For this reason, **the width of application is accurate for a constant application rate only at about 2/3 (60 to 70%) of the actual width measured.** *Example: If the application width is 12 feet, only about 8 feet or 4 feet across both sides of the spreader, within the band of application, is receiving approximately the same application rate. The other 2 feet on each edge respectively receive much less material than the center area*. Once this "effective" width is determined, calibration is fairly simple.
4. **Determine the amount of material to be applied**. *Example: To apply 1 pound of nitrogen per 1000 square feet using a 16-4-8 fertilizer, 6.25 pounds of material should be applied per 1000 square feet.*
5. **Fill the hopper with a known weight** (1/4 of application weight) of fertilizer and adjust the spreader to the lowest setting which will allow the material to flow. Push the spreader down the center of the calibration area (1/4 of application area or 250 sq. ft.), opening the hopper at the

starting line and closing it at the finish. Weigh the material left in the spreader and subtract that amount from the starting weight to determine the amount used per 1,000 square feet. The beginning weight minus the ending weight tells how much material was applied per 1,000 square feet.

6. **Repeat** the preceding step at successively greater settings (openings) and record the material applied at each setting.
7. **Select the spreader setting** which most closely applies the desired rate of material, set the spreader accordingly, and use it on any size area. To obtain uniform spread of material, remember to set the spreader at half the desired rate of application and make two passes at 90° to each other. Strive for proper spread overlap during application. Example: If the "effective" width is 10 feet, after each pass, move the spreader over 10 feet from the center of the tire tracks. This will give a fairly constant rate of application over the entire area.

For each fertilizer application, apply a maximum of one pound of nitrogen per 1000 ft^2. This rate is easy to calculate from the information given on the fertilizer bag. Simply divide the nitrogen percentage (the first number of the analysis) into 100.

Equation 3: Fertilizer Application

100 ÷ Total N = pounds of fertilizer per 1,000 square feet

For example: You have purchased a 15-0-10 fertilizer, divide 15 into 100 (i.e. 100 / 15 = 6.6). Therefore, 6.6 or 6 pounds (always round DOWN for fertilizer amount calculations) of 15-0-10 will supply one pound nitrogen to be distributed over 1,000 square feet of landscape area.

Example 3: Fertilizer Application

100 ÷ 15 = 6.6 lbs. fertilizer per 1,000 square feet

STANDARD FERTILIZER LABEL

Labeling of materials sold as fertilizers is regulated by the Florida Commercial Fertilizer Law. The information and format required make fertilizer labels comparable and, if understood properly, a qualified comparison of fertilizers can be made. The label works on the basis of a guaranteed analysis, with each of the elements guaranteed to be present in a minimum amount. Guaranteed analysis is on the basis of percent by weight of the specified element or compound.

Manufacturers are required to purchase and affix a label to each bag, package, container or lot of fertilizer offered for sale in the state. For packaged products, this information shall either 1) appear on the front or back of the package, 2) occupy at least one-third of a side of the package, or 3) be printed on a tag and attached to the package. This information shall be in a readable and conspicuous form. For bulk products, this information in printed form shall accompany delivery and five analysis tags attached to the delivery ticket shall be supplied to the purchaser at time of delivery.

The law requires that each label show specific information about the analysis and composition of the mixture or material. The terms “Available Phosphoric Acid” or “Available Phosphate” and “Soluble Potash” may be used instead of “Available Phosphorus” and “Soluble Potassium”, respectively.

<u>The label includes the following:</u>

