

# Determining the Proper Amount of Fertilizer to Apply to Your Lawn.

Adapted by Clair Klock

From David Phipps

Superintendent

Stone Creek Golf Club



CLACKAMAS COUNTY  
Soil and Water Conservation District

# Key Points to Cover

- Nutrient Requirements of Turfgrass
- Nutrient Benefits to Turfgrass
- What to Buy
- Measuring Your Lawn
- Determining the Proper Amounts to Apply
- How to Apply

# Beneficial Macronutrients

- **NITROGEN**

Maintains growth and cell development.

- **PHOSPHORUS**

Affects establishment, rooting, maturation and reproduction.

- **POTASSIUM**

Affects rooting, drought, heat, and cold hardiness, disease and wear tolerance.

# **Other Macronutrients Beneficial to Turfgrass**

- **CALCIUM**

Cell wall construction, affect on soil ph.

- **MAGNESIUM**

Vital constituent of the chlorophyll molecule.  
Maintenance of green color.

- **SULFUR**

Essential constituent of amino acids and other  
organic compounds.

# Micronutrients

## Beneficial to Turfgrass

- Iron, manganese, zinc, copper, molybdenum, boron and chlorine are just as important as the macronutrients but are required by the plant in smaller amounts.

- **IRON**

Iron is not a constituent of chlorophyll but is required for chlorophyll synthesis.

# Nutrient Requirements

## Soil Test

- **Your local state or county extension offices** are paid by the public to help in give you all kinds of information on how to take these samples and for a small charge they give you a detailed and most times written recommendations on the amounts needed to be added and suggested fertilization rates for houseplants to lawns to pastures and everything in between.

# Soil Test Benefits

- **This test will provide you with information** such as the pH of your lawns soil and the amount of various nutrients needed or in abundance in the soil. The laboratory can even recommend solutions if you provide the crop (grass type) growing in your soil sample.

# What is in a Bag of Fertilizer?

25-5-10

NITROGEN

PHOSPHORUS

POTASSIUM

The Number is a percentage by weight

Example:

If this were a 50 pound bag 25 percent of the weight would be nitrogen, or  $.25 \times 50\# = 12.5 \text{ lb N}$

which the bag says it covers so many feet, What rate of N are they recommending?

It is a 50 lb bag and it says it covers 12,000 square feet. How many pounds of N per 1000 will be applied per 1000?



$$\frac{.24N \times 50lb}{12K} = 1.0 \text{ Lb N}/1000$$

# What do you get from this bag of fertilizer?

50 lbs Net Weight

- 12 lbs of Nitrogen
- 2.5 lbs of Phosphorus
- 5.5 lbs of Potassium

The bag covers 12,000 sq ft.

Total cost for 1 lb Nitrogen per 1000 square feet is \$1.25



# Lets Look at Another Brand

29 - 3 - 4

It is a 15.52 lb bag and it says it covers 5000 square feet. How many pounds of N will be applied per 1000?



$$\frac{.29N \times 15.52lb}{5K} = .90 \text{ lbs N/1000}$$

# What do you get from this bag of fertilizer?

15.52 lbs Net Weight

- 4.5 lbs of Nitrogen
- .46 lbs of Phosphorus
- .62 lbs of Potassium

At 1 lb N per 1000 this bag  
~~Total cost for 1 lb Nitrogen~~  
~~only covers 4500 sq. ft.~~  
~~per 1000 square feet is~~  
\$5.10



# What do you get from this bucket of fertilizer?

- 25 lbs Net Weight
- 6 lbs of Nitrogen
- 1.25 lbs of Phosphorus
- 2.75 lbs of Potassium

The bucket covers 6,000 sq ft.

Total cost for 1 lb Nitrogen per 1000 square feet is \$2.16



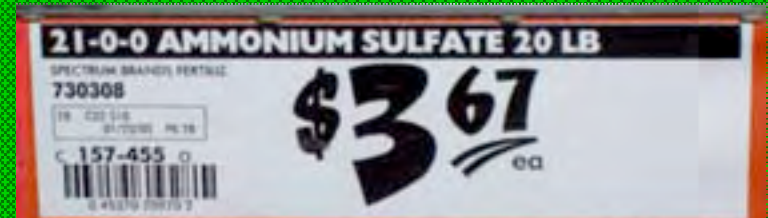
# What do you get from this bag of fertilizer?

- 20 lbs Net Weight
- 4.2 lbs of Nitrogen
- 0 lbs of Phosphorus
- 0 lbs of Potassium
- 4.8 lbs Sulfur

The bag covers 4,200 sq ft.

Total cost for 1 lb Nitrogen

1000 sq ft is \$0.07



# What is your annual cost to fertilize 6,000

sq. ft.?

- 1 bag 24-5-11 (\$14.99)  
( \_ spring \_ fall)
- 3 bags 21-0-0 (\$11.01)  
(.75 - .50 lb N/Month)

**Total Cost \$26.00**

(Equals 4.1 lbs N/1000/year)

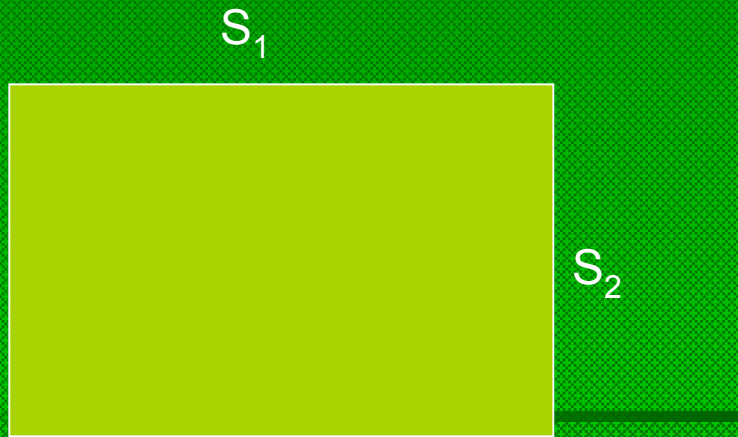
*OR*

- 4 bags of “Scotts Turf Builder \$91.92  
(Equals 3 Lbs N/1000/year)

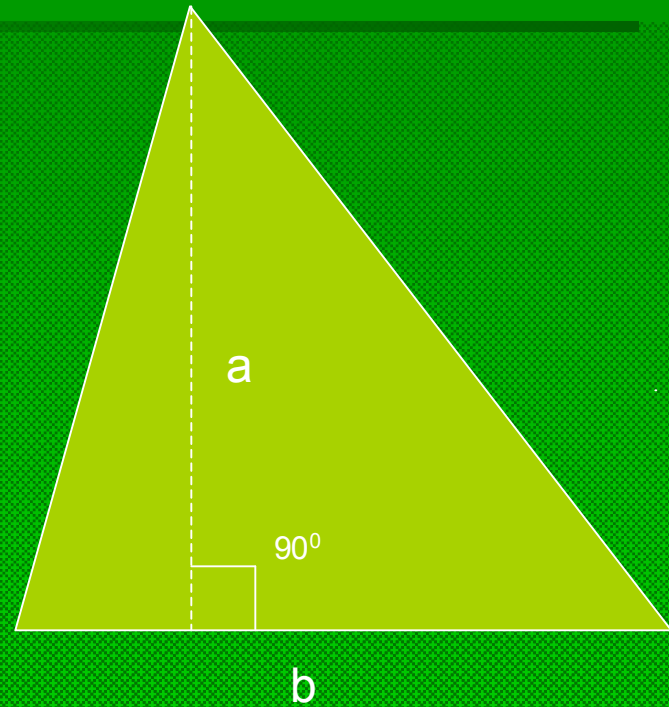
# The first step in fertilizing your lawn is to measure the total area.

- Important things to remember
  - The more exact the measure the more control you have over how much fertilizer you are applying.
  - Try to get close but remember it does not have to be exact.

# Area Formulas for Squares and Triangles

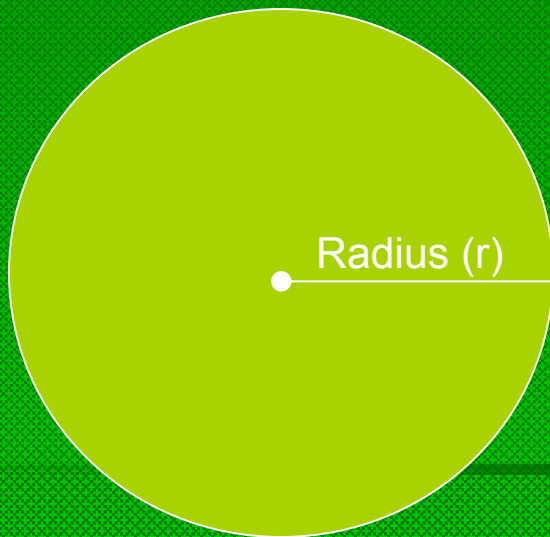


$$\text{Area} = S_1 \times S_2$$



$$\text{Area} = \frac{\text{base} \times \text{altitude}}{2}$$

# Area Formulas for Circles and Trapezoids

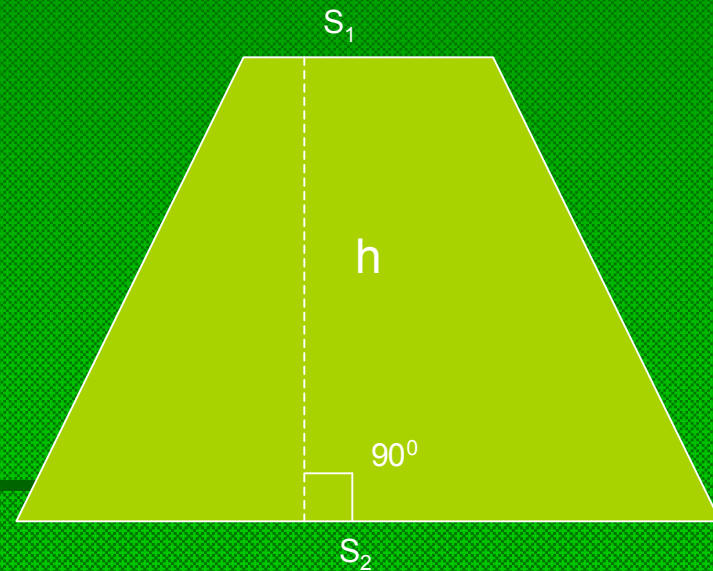


$$\text{Area} = \pi r^2$$

$$\pi = 3.14$$

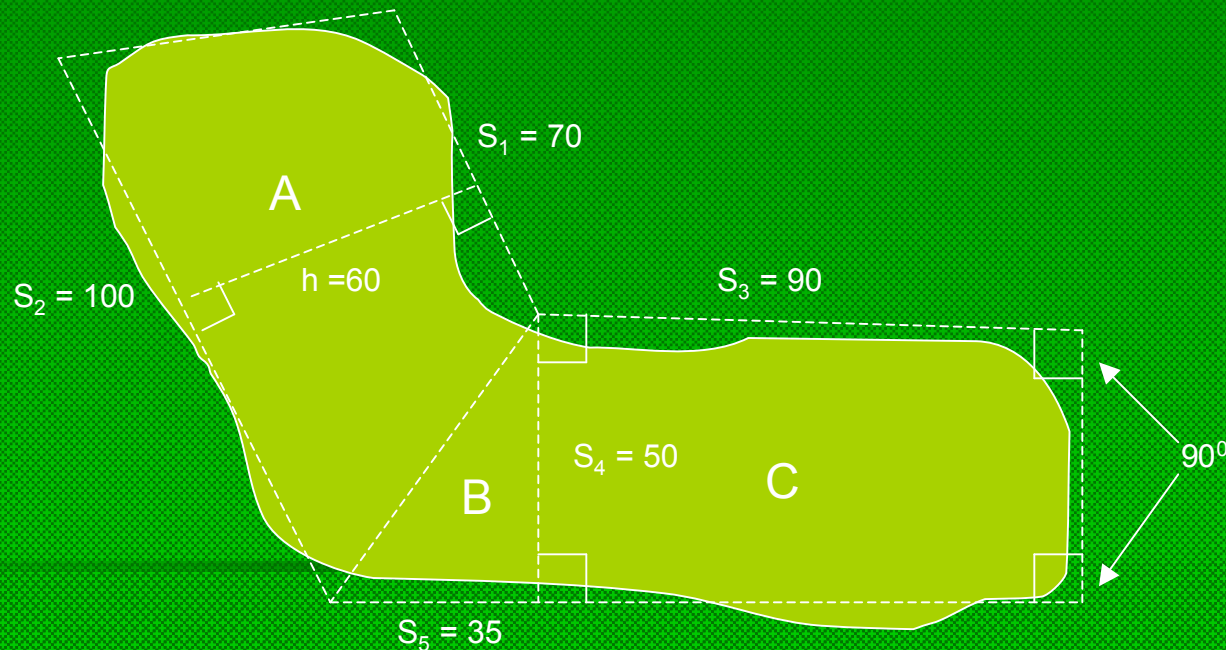
$$r = 43 \text{ ft}$$

$$3.14 \times 43 \times 43 = 5805.9 \text{ ft}^2$$



$$\text{Area} = \frac{S_1 + S_2}{2} \times h$$

# Lets do an Example!



Area A = Trapezoid

Area B = Triangle

Area C = Rectangle

$$\left( \frac{100 + 70}{2} \times 60 \right) + \frac{35 \times 50}{2} + 90 \times 50 = 10,475 \text{ sq ft.}$$

# How Much Fertilizer do I Apply?

Total area = 10,475 sq. ft.

Rate = 1 lb. Nitrogen per 1000 sq. ft.

## Example 24 – 5 – 11

Divide the analysis into 100. If the analysis is 24% Nitrogen.  $100 \text{ divided by } 24 = 4.17$ .

That means you would need to apply 4.17 lbs. per 1000 sq. ft. to apply an actual rate of 1 lb of Nitrogen per application.

$$4.17 \times 10.475 = 43.68 \text{ lbs.}$$

# Common Fertilizer Spreaders



**Not Recommended for  
fertilizer. Lime only**



# Simple Steps to Calibrate Your Spreader

- 1. Measure the width of the effective pattern of the spreader: This is simply the distance from the center of the spreader to the edge of one side of the pattern. See "Effective Pattern of a Rotary Spreader" on the previous page.

\_\_\_\_\_ ft.

- 2. Measure a convenient distance to run the spreader: the longer the distance, the more accurate the calibration.

\_\_\_\_\_ ft.

# Continued

- 3. Multiply the step 1 value by step 2 value to calculate the area covered by the spreader.

\_\_\_\_\_ ft<sup>2</sup>

- 4. Weigh a portion of the product and place into spreader. \_\_\_\_\_

\_\_\_\_\_ lb.

# Continued

- 5. Push the spreader over the area previously measured in step 3, being careful to shut the spreader on and off precisely at the beginning and end of the course.
- 6. Weigh the amount of product left in the spreader.

\_\_\_\_\_ lb.

# Continued

- 7. Subtract the number in step 6 from the number in step 4. This is the amount of product applied to the area you have measured.

\_\_\_\_\_ lb.

- 8. Divide the number in step 7 by the number in step 3 to give lb. applied per square foot.

\_\_\_\_\_ lb./ft<sup>2</sup>

# Continued

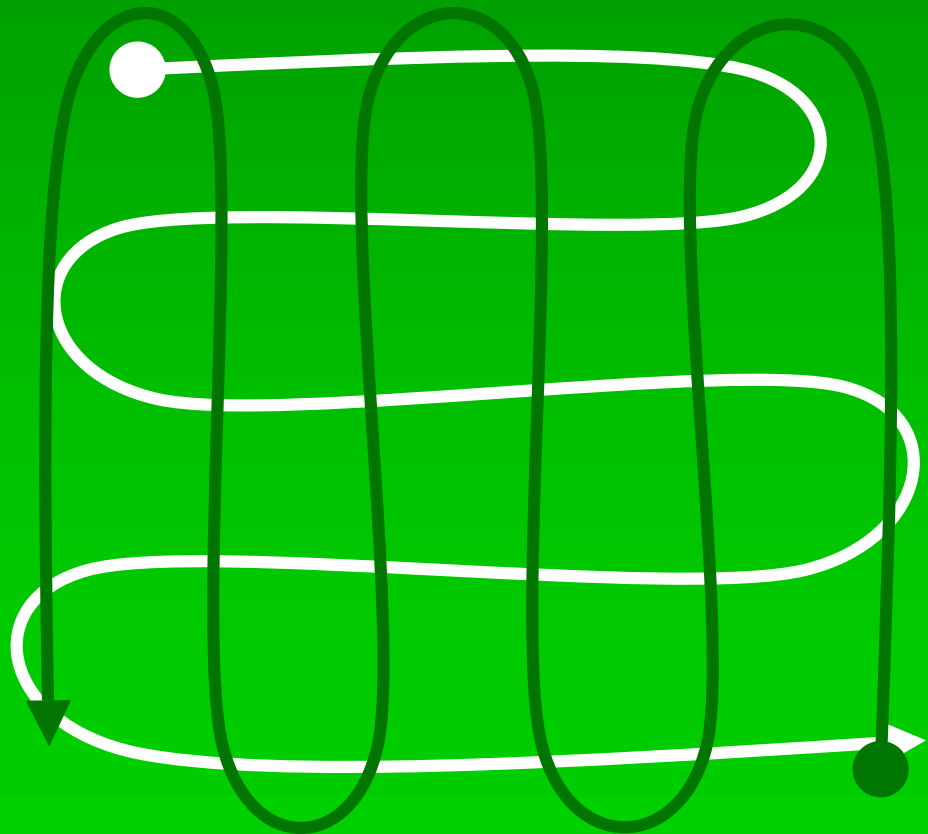
- 9. Multiply the number in step 8 by 1000 to give lb. product/1000 ft<sup>2</sup>

\_\_\_\_\_ lb./1000 ft<sup>2</sup>

- 10. Adjust the spreader setting and repeat the calibration if necessary until the spreader is applying the recommended rate listed on the bag.

# Spreader Pattern

Half rate two  
directions



# **Lawn Weed Control**

**Healthy, well maintained lawns are  
better able to compete with weeds**

# **Turf management begins with proper planning and proper lawn establishment.**

## Site

- Make sure your site is clean. Noxious weeds such as quackgrass should be sprayed with Round-up.
- Be sure your soil has good drainage. Till to break up compaction layer.

# Lawn Establishment

## Site Cont.

- Before seeding test soil for nutrients
- Fertilize with balanced fertilizer.
- Add compost if soil is void of organic matter.

# Lawn Establishment

## Seed Selection

- Use grasses well suited for our climate. (Perennial Ryegrass and Fescues)
- Use grass seed that contains very little “weed seed”. 0.15% or less.

# Lawn Establishment

---

## Seeding

- Seeding in the fall is optimum. There is less weed pressure.
  - Mulch over the seed bed when completed.
-

# Lawn Establishment

---

## Trees and shade

- Be sure your lawn site receives at least 6 hours of sunlight per day.
  - If shade is a problem utilize fescues.
-

# Maintenance by Mowing

---

## Mowing Height

- Greater length helps the grass produce more food reserves and deeper root system.
- Reduce the mowing height in the fall to reduce winter injury and disease.

# Maintenance by Mowing

## Mowing Frequency

- Best not to remove more than 1/3<sup>rd</sup> of the leaf blade. Cutting more will result in reduced root growth.
- Mow frequently during high growth periods.

# Maintenance by Mowing

## Keep it Sharp

- Sharpen blades 3 to 4 times per season. Dull blade will tear the lawn, creating entry points for diseases and increasing water loss from the leaves.
- Mow when dry and recycle clippings when possible. Clippings provide 20–50 percent of the nitrogen needed.

# Weed Control

## Crabgrass (annual)

- Cultural Control
  - Maintain thick healthy turf.
  - Water deeply.
- Chemical Control
  - A pre-emergence herbicide can be applied in the spring.



# Weed Control

## Quackgrass (perennial)

- Cultural Control
  - Dig out completely.
  - Replace soil and reseed.
- Chemical Control
  - Don't mistake it for Crabgrass. (Pre emergents will not work)
  - Spray out with Round-up, till and reseed after one week.



# Common Lawn Weeds



# Broadleaf Control

## Cultural Control

- Digging. This is most effective in the spring when weeds have their lowest food reserves stored in the roots. Try to dig or cut the roots as deeply as possible (3-5 inches).

# Chemical Control

- Herbicides containing 2,4-D, MCPP, or Banvel (dicamba) will control most broadleaf weeds. MCPP is particularly effective on chickweed, Dicamba should only be used on difficult weeds, However, because it can leach through the soil and be absorbed by tree roots, it can damage or even kill the tree.

# Weed and Feed Mixes

- If you use weed and feed type fertilizers, keep it on the lawn. Sweep granules back on to the grass to avoid runoff into local streams.
- My preference would be to avoid all together.



# Products

- For large area infestations use a hose end style sprayer.
- If weeds are few, spot spray.



# Chemical Safety

- Always wear gloves when handling pesticides.
- Most lawn and garden plants, especially tomatoes, are very susceptible to herbicides.
- Avoid drift by applying when it is cool and when wind is absent.
- When temperatures exceed 80°F products may volatilize and damage nearby plants.
- **READ THE LABEL!**

# Product Information

---

Read the label and check the MSDS  
(Material Safety Data Sheet)

## Household Products Database

- <http://householdproducts.nlm.nih.gov/index.htm>
-

# Final Thoughts

- Battling weeds can be time consuming and expensive. Start with a good healthy lawn and let the lawn fight the weeds first.
- Learn to live with a few weeds.
- Always consider spot treatment before all else.

# Thank you

Contact information:

David Phipps

Superintendent

Stone Creek Golf Club

503 518-8873

dcphipps61@yahoo.com