

NC STATE

Extension Gardener

Carolina Lawn Care Custom Lawn Plan

*Creating beautiful lawns while
protecting our waterways*

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Content	
Acknowledgements	2
Soil Testing	3
Plant Nutrients	4
Nutrients found in the environment	4
Macronutrient Functions	4
Nitrogen Fertilizers	5
Fertilizer Calculation Worksheet	6
Ring of Responsibility	7
Fertilizer Timing	7
Watering Your Carolina Lawn	10
Summary	11
Landscape Checklist	11
My Carolina Lawn Prescription for a Healthy Lawn	12
Calculating Area.....	13
Notes.....	14

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SOIL TESTING

Soil testing is the first step to creating a beautiful and healthy lawn, and it's easy! A soil test kit is included in Carolina Lawn Care packet, and you can visit <http://www.ncagr.gov/agronomi/forms.htm> to download more forms. Once your soil has been analyzed by the NCDA&CS: Soil Testing Lab, you will receive your results via email. If you have questions about your results, call your local NC Cooperative Extension Office for further assistance.

Soil test results give you information on:

1. Soil ____ and nutrient content.
2. Soil tests will not tell you how much _____ is in your soil because it is too mobile (it moves in and out of the soil), so that is why it is important to follow the NC State University recommendations.
3. North Carolina Department of Agriculture fertility and soil amendment recommendations.

Notes:

Nutrients found in the environment

Carbon (C)
Hydrogen (H)
Oxygen (O₂)

Macronutrients

Nitrogen (N)
Phosphorus (P)
Potassium (K)
Calcium (Ca)
Magnesium (Mg)
Sulfur (S)

Micronutrients

Iron (Fe)
Manganese (Mn)
Boron (B)
Copper (Cu)
Molybdenum (Mo)
Zinc (Zn)

PLANT NUTRIENTS

The nutrients needed by plants can be divided into two categories: macronutrients and micronutrients. Plant macronutrients are needed in the largest amount; micronutrients are needed in the smallest amount. It is important to remember that micronutrients, while not needed in large amounts, are just as important to plant health as macronutrients.

Plant nutrients are supplied naturally by the atmosphere, soil, or water. In the landscape, carbon, hydrogen, and oxygen are always supplied naturally. Other nutrients may be found in the soil, and occasionally in irrigation water. If a nutrient is not available naturally, then fertilizer must be added.

The two nutrients needed in the greatest quantity by turf are _____ and _____.

_____ and _____ can contribute to non-point source pollution.

MACRONUTRIENT FUNCTIONS

_____ Promotes plant growth and makes up part of the chlorophyll.

_____ Promotes flowering, fruiting, and root generation in seed establishment.

_____ Strengthens roots; increases disease resistance, cold and drought tolerance.

NITROGEN FERTILIZERS

Nitrogen (N) is available from many different sources which can be divided into two categories: “quick release” and “slow release.”

Quick Release Nitrogen (also known as “water soluble” or “readily available”)

These forms of N are available to the plant immediately, and they easily leach through the soil if applied incorrectly.

Slow Release Nitrogen (also known as “SRN”, “SCU”, or “time released”)

These forms of N are released slowly over time by microbes, water, soil, or temperature. Since the nitrogen is released slowly, it likely will not leach. However, if applied incorrectly, it may become a stormwater runoff pollutant. Most slow release fertilizers contain some quick release forms

Many local fertilizer ordinances state that landscape fertilizers should contain at least 50% slow release nitrogen.

of N as well as slow release. The following is the recommended application rate for slow release fertilizer:

Slow or Control Release Nitrogen Recommended Rate

Up to 1 lb. (N) / 1,000 ft² /application

Notes:

FERTILIZER CALCULATION WORKSHEET

Step 1: Calculate the total square feet of turf

Front Yard: $\frac{\text{Length}}{\text{Length}} \times \frac{\text{Width}}{\text{Width}} = \text{ft}^2$

Back Yard: $\frac{\text{Length}}{\text{Length}} \times \frac{\text{Width}}{\text{Width}} = \text{ft}^2$

Left Side Yard: $\frac{\text{Length}}{\text{Length}} \times \frac{\text{Width}}{\text{Width}} = \text{ft}^2$

Right Side Yard: $\frac{\text{Length}}{\text{Length}} \times \frac{\text{Width}}{\text{Width}} = \text{ft}^2$

Total square feet of your lawn: _____ ft ²
--

Step 2: Determine the percentage (%) of N, P, and K in your fertilizer

What is your fertilizer analysis? ____ - ____ - ____

N - P - K

The first number of your fertilizer analysis = the percentage of N in your fertilizer: ____%

Step 3: Determine pounds of fertilizer needed

- Find the square feet of your lawn in the left column of the table below.
- Find the percentage of N in your fertilizer on the top row.

How many pounds of fertilizer will you need to fertilize your lawn? ____ lbs.

	6% N	10% N	12% N	15% N	16% N	23% N	27% N
1,000 ft ²	16.5 lbs.	10 lbs.	8.25 lbs.	6.5 lbs.	6.25 lbs.	4.25 lbs.	3.75 lbs.
1,200 ft ²	20	12	10	8	7.5	5.25	4.5
1,500 ft ²	25	15	12.5	10	9.25	6.5	5.5
2,000 ft ²	33.25	20	16.5	13.25	12.5	8.75	7.5
2,500 ft ²	41.5	25	20.75	16.5	15.5	10.75	9.25
3,000 ft ²	50	30	25	20	18.75	13	11
3,500 ft ²	58.25	35	29	23.25	21.75	15.25	13
4,000 ft ²	66.5	40	33.25	26.5	25	17.5	14.75
4,500 ft ²	75	45	37.5	30	28	19.5	16.5
5,000 ft ²	83.25	50	41.5	33.25	31.25	21.75	18.5

RING OF RESPONSIBILITY

Always use a _____ shield when applying fertilizer near water, and leave a _____ foot maintenance-free zone.

FERTILIZER TIMING

Knowing when to fertilize is a critical component to creating a beautiful lawn. Fertilizer applied at the wrong time can “burn” turfgrass, leach through the soil, and/or runoff.

Some ordinances require a larger ring of responsibility!

Table 3a. Suggested maintenance fertilization of established lawns in the coastal region.

Lawn Grass	Fertilization	Monthly Application Rate (lb N / 1,000 sq ft)												Total lb N Per 1,000 sq ft/yr	
		J	F	M	A	M	J	J	A	S	O	N	D		
Bermudagrass	Basic				1		1		1						3
	High				1	1	1	1	1	1					6
Centipedegrass	Basic					1									1
	High					1			1						2
Tall fescue	Basic	0.5								1		0.5			2
	High	1	0.5							1	1	0.5			4
St. Augustinegrass	Basic					1			1						2
	High				0.5	1	0.5	1	0.5	0.5					4
Zoysiagrass (Emerald and Meyer cultivars)	Basic					1			1						2
	High				1		1		1						3
Zoysiagrass (other cultivars)	Basic					1			1						2
	High				1	0.5	1	0.5	1						4

Table 3b. Suggested maintenance fertilization of established lawns in the piedmont.

Lawn Grass	Fertilization	Monthly Application Rate (lb N / 1,000 sq ft)												Total lb N Per 1,000 sq ft/yr
		J	F	M	A	M	J	J	A	S	O	N	D	
Bermudagrass	Basic					1		1		1				3
	High				1	1	1	1	1	1				6
Centipedegrass	Basic					1								1
	High					1		1						2
Tall fescue	Basic	0.5								1		0.5		2
	High	1	0.5							1	1	0.5		4
Kentucky bluegrass	Basic	0.5								1		0.5		2
	High	1	0.5							1	1	0.5		4
Kentucky bluegrass / fine fescue mix	Basic	0.5								1		0.5		2
	High	1	0.5							1	1	0.5		4
Kentucky bluegrass / tall fescue mix	Basic	0.5								1		0.5		2
	High	1	0.5							1	1	0.5		4
Kentucky bluegrass / tall fescue / fine fescue mix	Basic	0.5								1		0.5		2
	High	1	0.5							1	1	0.5		4
Kentucky bluegrass / perennial ryegrass mix	Basic	1								1		1		3
	High	1	0.5							1	1	0.5		4
St. Augustinegrass	Basic					1		1						2
	High					1		1	1					3
Zoysiagrass (Emerald and Meyer cultivars)	Basic					1								1
	High				1		1							2
Zoysiagrass (other cultivars)	Basic					1		1						2
	High				1		1	1						3

Table 3c. Suggested maintenance fertilization of established lawns in the mountains.

Lawn Grass	Fertilization	Monthly Application Rate (lb N / 1,000 sq ft)												Total lb N Per 1,000 sq ft/yr
		J	F	M	A	M	J	J	A	S	O	N	D	
Bermudagrass	Basic					1		1						2
	High					1	1	1	1					4
Tall fescue	Basic			0.5					1		0.5			2
	High			1					1		1			3
Kentucky bluegrass	Basic			1					1					2
	High			1					1		1			3
Kentucky bluegrass / fine fescue mix	Basic			1					1					2
	High			1					1		1			3
Kentucky bluegrass / tall fescue mix	Basic			1					1					2
	High			1					1		1			3
Kentucky bluegrass / tall fescue / fine fescue mix	Basic			1					1					2
	High			1					1		1			3
Kentucky bluegrass / perennial ryegrass mix	Basic			1					1		0.5			2.5
	High			1					1	1	0.5			3.5
Zoysiagrass (all cultivars)	Basic					0.5			0.5					1
	High					1		1						2

Never fertilize when heavy rainfall is expected!

How To Apply Fertilizer Correctly

Spreader Calibration Example: Target Rate 5# per 1,000 sq. ft.

1. Weigh 10# of fertilizer and put in a push or hand-held spreader.
2. Adjust spreader opening setting to target rate - (usually on the fertilizer bag).
3. Apply in a test strip area of 1,000 sq. ft. This is done by establishing the effective spreader swath and corresponding walking distance to reach 1,000 sq. ft. For example, if you have a 10' Effective Swath then you would walk 100' to cover 1,000 sq. ft. ($10' \times 100' = 1,000$ sq. ft.). Or if you had an 8' effective swath, walk 125 feet to cover 1,000 sq. ft. ($8' \times 125' = 1,000$ sq. ft.). For smaller yards, this can also be accomplished by measuring 20' x 50' and applying fertilizer evenly in that area. Credit: UF



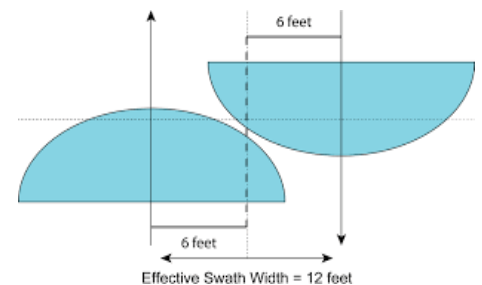
4. Reweigh fertilizer and see how close you were to 5#/1,000 sq. ft. (target rate.).
5. Adjust setting (more or less open, depending on fertilizer weight left in hopper from test strip).
6. Repeat steps until target rate is reached.



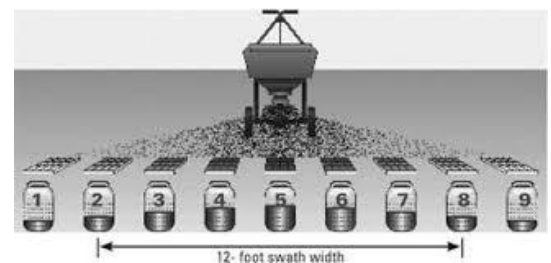
GREEN TIPS***

- *Remember to calibrate your spreader based on **your** walking speed and stay consistent as possible.
- *Different applicators may walk **faster or slower**, so a **separate calibration** is needed for each applicator.
- *Granular prill size can vary greatly depending on the product. **So calibrate separately for each product for accuracy.** Once each product has been calibrated for, record the spreader setting so you will have it the next time you apply that product!

Credit: Scotts Fertilizer



Credit: Penn State University



Credit: kyu.edu

Watering Your Carolina Lawn

One of the most common mistakes homeowners make is overwatering their lawn. In general, apply no more than _____ to _____ inches of water per irrigation event.

During the growing season **supplement** rainfall to meet your lawns water requirement of an _____ to _____ inches of water per week.

During the cooler month when grass is not actively growing less water is required.

Water _____ in the _____ to reduce disease occurrence and to increase absorption.

Overwatering your lawn can lead to a host of problems.

- Increased _____, _____, and _____.
- _____, shallow roots.
- _____ and runoff.
- _____ water.

To water properly, your irrigation system should have _____ to _____ coverage.

A _____ device stops your irrigation system from working when it's raining.

Rotors, and MP or Precision rotary nozzles are considered more efficient than standard _____ nozzles.

TIP

For best results, calibrate your irrigation system to determine how long it should run.

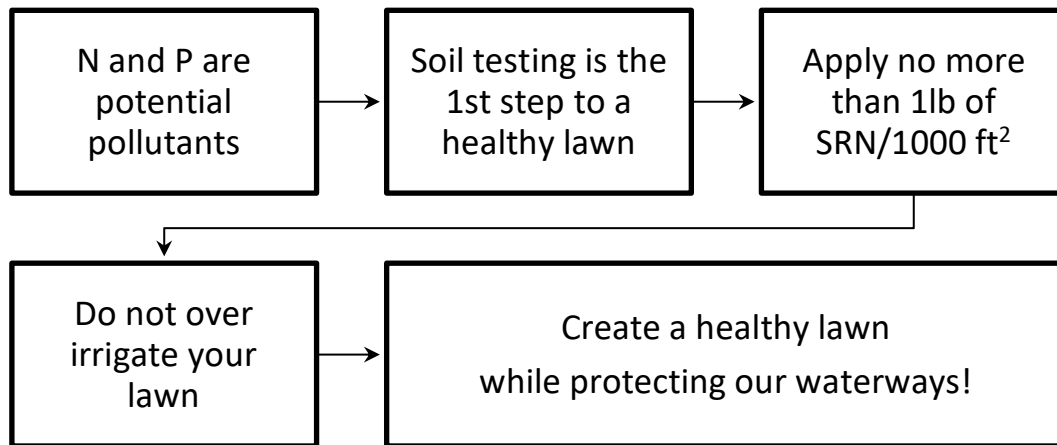
Always follow local watering restrictions.



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Never allow irrigation water to fall onto sidewalks, driveways, or other hard surfaces because it might carry pollutants into waterways.

SUMMARY



LANDSCAPE CHECKLIST

Below is a checklist of Carolina Lawn Care practices that can help you maintain a healthy lawn while protecting our waterways.

- Fertilize
 - Calculate the square footage of lawn to be fertilized
 - Conduct a soil test every other year to determine how much fertilizer to apply
 - Apply no more than 1 pound of nitrogen per 1,000 square feet per application
 - Use a slow release nitrogen (SRN)
 - Leave a maintenance free zone around water bodies
 - Calibrate spreader
 - Use a shield on the fertilizer spreader to keep granules out of water bodies and off the pavement
 - After broadcasting the fertilizer lightly water it in
 - Do not apply fertilizer if heavy rain is forecasted

- Water
 - Install an irrigation system with a rain shut-off device
 - Calibrate your irrigation system to apply 1/3" of water at each watering
 - Water two to three times per week in warm months and water as needed during the winter (following local watering restrictions)
 - Water in the early morning hours to limit the periods of leaf wetness

- Mow

- Let the grass clippings fall
- Move grass clippings off hard surfaces and back into the grass or a compost pile

MY CAROLINA LAWN PRESCRIPTION FOR A HEALTHY LAWN

*The type of turf in my lawn is _____. This is a _____ season grass.

*I have _____ square ft of lawn.

Fertilizer:

*I will begin with a _____ before fertilizing.

I should apply _____ pounds of slow release _____ fertilizer in the following months: _____.

Avoid _____, which can lead to an increase in lawn disease, weeds and insect pests as well as water pollution.

Watering

*My irrigation system applies _____ inches of water per 20 min (catch-can exercise).

Apply _____ of water per week (broken into two or three separate applications).

Avoid _____, which can lead to lawn disease.

Mowing

Never remove more than _____ in a single mowing.

_____ the grass clippings.

Aeration

Aerate the lawn when it is _____ growing.

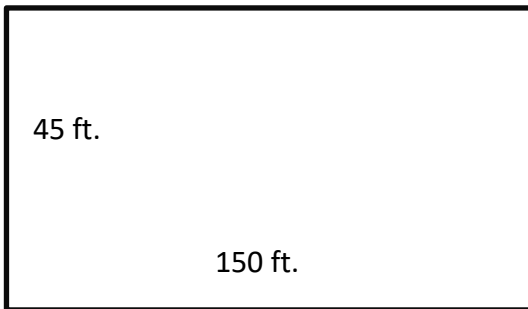
Resources:

- <https://go.ncsu.edu/lawns> Detailed information on selecting, installing, and managing lawns in North Carolina

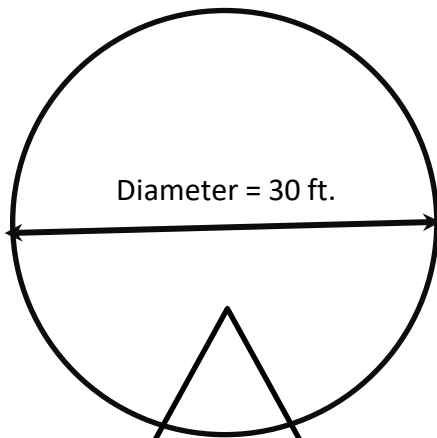
Items with * should be completed prior to follow-up trainings or consultations.

- <http://www.ncagr.gov/agronomi/forms.htm> Soil testing forms and directions
- <https://go.ncsu.edu/eg-handbook>
- <https://extensiongardener.ces.ncsu.edu/>
- <https://content.ces.ncsu.edu/carolina-lawns>
- http://www.allianceforwaterefficiency.org/Rainfall_Shutoff_Devices.aspx

Calculating Area



Rectangle: Length x Width = Area
 150 ft. x 45 ft. = 6,750 ft²



Circle:
 = 3.16
 r = radius = diameter ÷ 2
Step 1: find the radius
 30 ÷ 2 = 15
Step 2: find the area
 3.16 x 15 ft. x 15 ft. = 711 ft²

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Triangle:
 base = 64 ft., height = 120 ft.
 Area =
 ½ X 64 ft. x 120 ft. = 3,840 ft²

h = 1 2 0

NOTES: