

Raingarden Math

How much Leaf-Compost will I need?

Total sq. ft. **multiplied by** soil depth = cubic feet.

Cubic feet **divided by** 27 = cubic yards needed

Example: The raingarden is 200 square feet. You over excavated the soil to make a basin in the raingarden. Currently the basin is 9 inches deep. You want the finished raingarden basin to be 6 inches deep. Therefore you will bring in enough compost to fill it up 3 inches (3 inches is 0.25 feet).

200 sq ft x 0.25 feet = 50 cubic feet 50 cubic feet/27 = 1.85 cubic yards

You would need to order about 2 cubic yards of compost for this project.

*A typical pick up can carry about 1 – 1.5 cubic yards of material so you may need to factor in a delivery charge when figuring out your raingarden budget.

**If you have clay soils, plan on ordering a sand/compost mixture for your project. Talk to your landscape provider to get more details.

How much mulch will I need?

Total square feet of planting area **divided by** 150 = cubic yards needed (2-3" depth)

Example: The raingarden is 200 square feet.

200 sq ft/150 = 1.33 cubic yards

How many plants will I need?

If you are only planting with perennials (not shrubs), plan to use either 12" or 18" spacing.

12" spacing: one plant per square foot

18" spacing: sq ft of planting area/2.2 = number of plants needed.

Example: 200 square foot raingarden – about 120 square feet is the dryer part of the raingarden and 80 square feet is the wetter area.

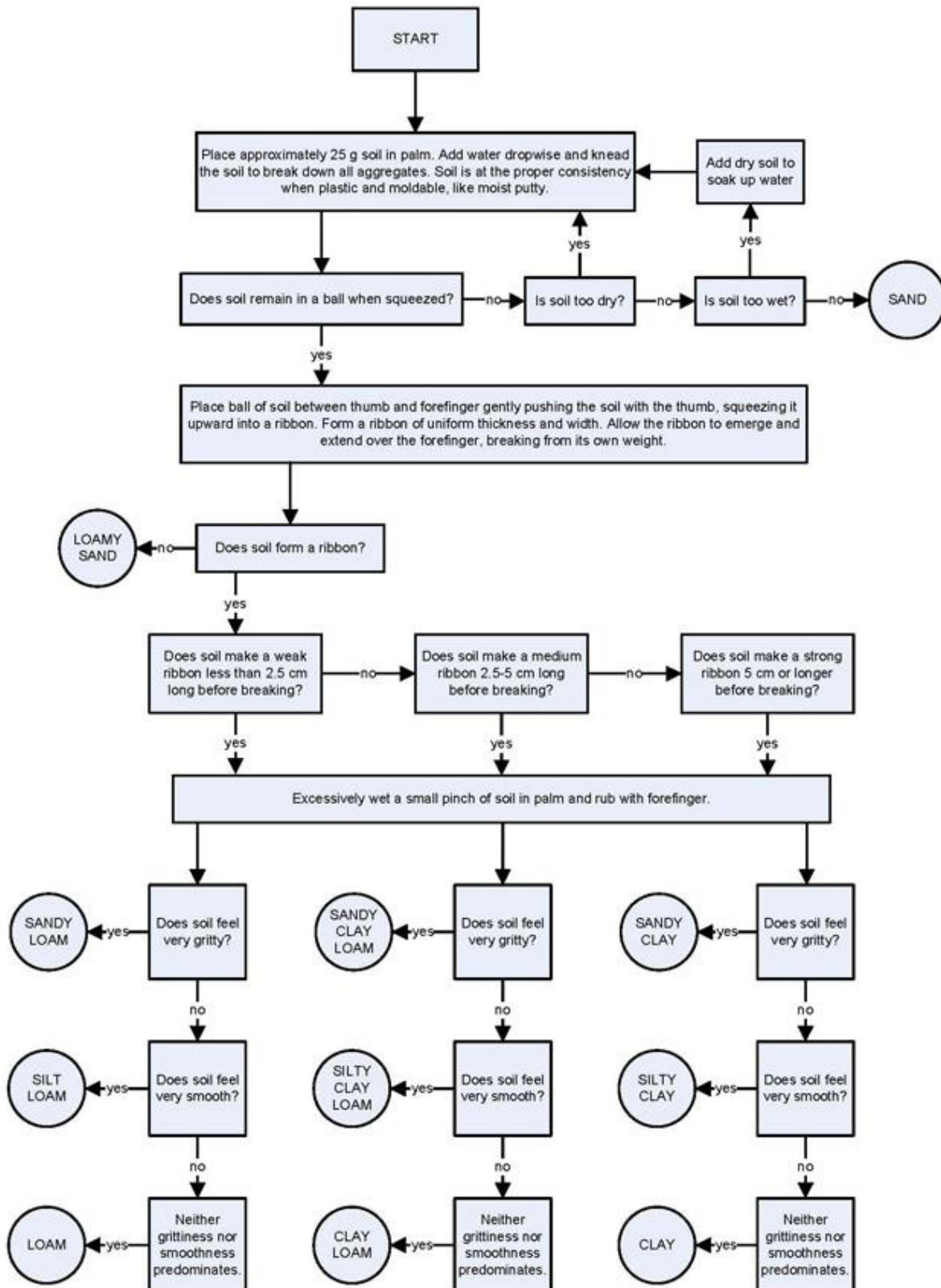
12" spacing: 120 plants for the dryer area; 80 plants for the wet area.

18" spacing in the dry area: 120 sq. ft/2.2 = 54.5 plants

18" spacing in the wet area: 80 sq ft/2.2 = 36.4 plants

Often plant plugs will come in 4 packs or 6 packs. Always round up – it's easy to squeeze in more plants rather than have big gaps in your garden. If you plant shrubs, just remember that they will grow larger than a perennial and plan accordingly.

SOIL CLASSIFICATION KEY



SOIL INFILTRATION TEST (taken from *The Blue Thumb Guide to Raingardens*, page 12)

To determine how deep to make your raingarden, you need to figure out how quickly or slowly water will soak into the soil. A simple method for testing this includes the following steps:

1. Dig one or two holes in the proposed garden area. Make them about 8 inches in diameter and 8 inches deep.
2. Clean the loose dirt out of the hole, and then fill it to the top with water.
3. Allow the water to soak into the soil for a minimum of one to two hours to saturate the soil.
4. Fill the hole back up with water so that the water level is about one inch from the top. Mark the starting water level with a toothpick or stick. Check your watch and record the time.
5. Measure how far the water level drops with a rule or tape measure. If you have sandy soils and the water goes down quickly, you might record the water level after 15 minutes, 30 minutes, and one hour. If you have clay soils and the water goes down very slowly, you may have to record the water levels after one, two, and four hours.
6. Based on the infiltration rate you measure, calculate how many inches of water will soak into the soil over 24 hours. The number of inches that soak into the ground should ultimately be your raingarden depth. If your water level dropped $\frac{1}{2}$ inch after 2 hours and 1 inch after 4 hours, your calculation would look like this:

$$\frac{1 \text{ inch}}{4 \text{ hours}} \times \frac{24 \text{ hours}}{\text{day}} = 6 \text{ inches/day}$$

*Even if the infiltration test indicated that more than 12 inches of water will soak into the ground in 24 hours, the maximum raingarden depth should be 12 inches. This will help prevent mosquitoes from breeding and allow you to choose from a large palette of plants for your garden.

HOW BIG SHOULD MY RAINGARDEN BE?

Measure your drainage area

Rooftop Drainage Area = 660 sq ft

280 sq ft

380 sq ft

Clay Soil

Drainage Area (sq ft)/Depth of raingarden (in) = Size of raingarden (sq ft)

660 sq ft / 3 inches deep = 220 sq ft raingarden



Planting Tips

1. Plant in large groupings. Use 3, 5, 7, 9 or more of the same plant in a large group – this looks more appealing and it is easier to weed later on.
2. Plan how you want your garden to be shaped – do you want to put large plants in the middle and taper off to the sides or have a wall of tall plants at the back of your garden with smaller ones towards the front? There's no wrong answer here – just check the heights and widths of your plant choices and how you would like them look when they are all together.
3. Using native plants means you don't have to do as much work to keep them alive. A native plant has evolved to live in our climate. They can handle times of drought, rain, heat and cold.
4. Choose plants that bloom at different times of the year. This will give you color throughout the seasons and provide food sources for bees, butterflies, and birds.
5. Don't be afraid to try something new. If you find something you like, buy one and see how it works in your yard. If it does well, you can add more. Gardening should be fun and relaxing.

Maintenance Tips

1. Expect to weed your gardens 3 times a year – especially the first couple of growing seasons until the plants are established and have gotten large enough to shade out the invasive weeds.
2. Water your garden – it will need 1 inch per week for the first couple of growing seasons.
3. Expect to lose 10% of your plants in any given year. Plants die from environmental conditions, disease, pests, or just “old age”.
4. Clean out the inflow and overflow areas of your raingarden each spring to ensure that water can enter and exit.
5. In the fall you can cut back the dead plant material or leave it up for winter interest and then cut it in the spring.



VLAWMO
Vadnais Lake Area
Water Management Organization

Raingarden Construction Cheat Sheet

1. Contact Kristine Jenson (651-204-6074) to schedule an on-site visit (if you live within the VLAWMO area).

Meeting Date/Time: _____

2. Contact Gopher One (<http://www.gopherstateonecall.org/> or 651-454-0002 or 8-1-1) to locate utilities.

Ticket Number: _____

3. Perform a soil infiltration test. Determine the size and depth of your raingarden.
4. Remove sod.
5. Dig basin, build a berm and if needed, install retaining wall.
6. Loosen the soil under the raingarden (at least 12" below the bottom of the raingarden).
7. Spread leaf litter compost and mix it into the soil.
8. Install edging if desired.
9. Spread shredded hardwood mulch.
10. Install plants.
11. If you've received a landscape grant, contact Kristine for a final inspection.
12. Water 1" per week and weed consistently to give your plants the best chance at surviving. Enjoy your new garden and feel good knowing that you have helped keep our lakes, rivers, and wetlands clean!