Georgia mulching (code 484) Standard Appendix H
How to Estimate Cover Crop Biomass (lbs/Ac dryweight)

How Much N?

To find out if you might need more N than your green manure will supply, you need to estimate the amount of N in your cover crop. To do this, assess the total yield of the green manure and the percentage of N in the plants just before they die.

To estimate yield, take cuttings from several areas in the field, dry and weigh them. Use a yardstick or metal frame of known dimensions (1 ft. x 2 ft., which equals 2 ft² works well) and clip the plants at ground level within the known area. Dry them out in the sun for a few consecutive days, or use an oven at about 140° F for 24 to 48 hours until they are "crunchy dry." Use the following equation to determine per-acre yield of dry matter:

$$\text{Yield (lb.)/Acre} = \frac{\text{Total weight of dried samples (lb.)}}{\text{\# square feet you sampled}} \times \frac{43{,}560 \text{ sq. ft.}}{1 \text{ Acre}}$$

While actually sampling is more accurate, you can estimate your yield from the height of your green manure crop and its percent groundcover. Use these estimators:

At 100 percent groundcover and 6-inch height*, most nonwoody legumes will contain roughly 2,000 lb./A of dry matter. For each additional inch, add 150 lb. So, a legume that is 18 inches tall and 100 percent groundcover will weigh roughly:

Inches >6: 18 in.–6 in. = 12 in.
X 150 lb./in.: 12 in. X 150 lb./in. = 1,800 lb.
Add 2,000 lb.: 2,000 lb. + 1,800 lb. = 3,800 lb.

If the stand has less than 100 percent groundcover, multiply by (the percent ground cover / 100). In this example, for 60 percent groundcover, you would obtain:

3,800 x (60/100) = 2,280 lb.

Keep in mind that these are *rough estimates* to give you a quick guide for the productivity of your green manure. To know the exact percent N in your plant tissue, you would have to send it to a lab for analysis. Even with a delay for processing, the results could be helpful for the crop if you use split applications of N. Testing is always a good idea, as it can help you refine your N estimates for subsequent growing seasons.

The following rules of thumb may help here:

- Annual legumes typically have between 3.5 and 4 percent N in their aboveground parts prior to flowering (for young material, use the higher end of the range), and 3 to 3.5 percent at flowering. After flowering, N in the leaves decreases quickly as it accumulates in the growing seeds.

* For cereal rye, the height relationship is a bit different. Cereal rye weighs approximately 2,000 lb./A of dry matter at an 8-inch height and 100 percent groundcover. For each additional inch, add 150 lb., as before, and multiply by (percent groundcover/100). For most small grains and other annual grasses, start with 2,000 lb./A at 6 inches and 100 percent ground cover. Add 300 lb. for each additional inch and multiply by (percent groundcover/100).

energy sources, which the microorganisms use as fuel to live. The process of burning this fuel sends most of the carbon back into the atmosphere as carbon dioxide, or CO_2.

Suppose a lot of new food is suddenly put into the soil system, as when a green manure is plowed down. Bacteria will expand their populations quickly to tap the carbon-based energy that's available. All the new bacteria, though, will need some N, as well as other nutrients, for body building before they can even begin to eat. So any newly released or existing mineral N in soil gets scavenged by new bacteria.

Materials with a high carbon to nitrogen (C:N) ratio, such as mature grass cover crops, straw or any fibrous, woody residue, have a low N content. They can "tie up" soil N, keeping it **immobilized** (and unavailable) to crops until the carbon "fuel supply" starts depleting. Tie-up may last for several weeks in the early part of the growing season, and crop plants may show the yellowing characteristic of N deficiencies. That is why it often makes sense to wait one to three weeks after killing a low-N cover before planting the next crop, or to supplement with a more readily available N source when a delay is not practical.

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