

# Successful Seeding Rates

Pay attention to details on the seed tag to ensure food plot success.

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Have you ever gone to great lengths to plant your food plots correctly, but they didn't turn out as you had hoped? There are many potential explanations, but we want to cover one that is often overlooked.

Let's assume you used proper agronomic practices. You prepared an adequate seedbed and planted properly, and it rained not long after you planted. Germination was good and the plot established well. You installed an exclusion cage after planting, and you know grazing pressure is not excessive because there is not a big difference in forage height outside and inside the cage. However, you notice your forage planting is relatively thin, and you notice weeds are taking advantage of the exposed area. Why is your planting thin? In this scenario, the most likely reason is improper seeding rate.

Even though you calculated the area of the food plot before planting, and you weighed the seed and are confident you planted the recommended pounds per acre of seed, you still did not use enough seed unless you calculated what is called Pure Live Seed (PLS), which is the amount of live seed in the bag that is likely to germinate. In fact, it was stated on the bag of seed you planted that the contents would cover 1 acre, and you planted 1 acre. So,

your seeding rate surely was accurate, correct? Wrong.

Do not be misled by advertisements on some commercial food plot mixtures that claim the bag will cover "X" acres. You must read the seed tag attached to the bottom of the bag and calculate PLS to know how much of the seed in that bag to plant per acre. By law, when selling certified seed, seed suppliers must provide information to consumers about the seed, such as the variety, where it was grown, percentage of pure seed in the bag, the germination rate of the seed, and the date it was tested. This information is provided on a seed tag, which is either attached to the bag or printed on it. If the seed does not contain a seed tag, do not buy it.

Beyond knowing seed origin, date of testing, and germination rate, important information related to seed coating is provided on the tag. Nowadays, it is common for seed to be coated prior to packaging. Legumes often come preinoculated with the proper bacteria to help ensure nodulation for nitrogen production. Other seed may be coated with various materials, such as fungicide, insecticide, or micronutrients. Preinoculated legume seed (such as clovers and alfalfa) are relatively convenient because you do not have to inoculate

 **MANY FOOD PLOT SEEDS** include various coatings for inoculation or other purposes, and the weight of this coating should be considered when calculating seeding rates. Otherwise, you may underseed your food plot.

the seed yourself. Seed are coated with a protective material (usually lime) that contains the inoculant with live bacteria. This coating is usually gray, blue, pink, or off-white in color. However, the weight of the coating material must be considered when calculating seeding rates for your food plots. This factor is overlooked by most people, which causes many plots to be underseeded.

Recommended seeding rates for each crop species are established by the USDA and university agricultural Extension agencies after extensive testing to determine the amount of seed necessary for a healthy, productive stand. The seeding rate is calculated in pounds per acre. However, the rate given represents PLS, which does not factor in the germination rate or the weight of coating material. This is important!

A bag of preinoculated clover seed typically contains 34 to 50 percent coating material, depending on the producer. This means that if you purchase a 50-lb. bag of preinoculated clover that contains

50 percent coating material, there is only 25 pounds of seed in the bag. The rest of the weight (25 pounds) is coating material. Furthermore, if the germination rate of this bag of seed is 80 percent, then there is only 20 pounds (0.8 x 25 lbs.) of viable clover seed in the 50-lb. bag.

As we said, seed should be sown according to the percentage of PLS. Determining PLS is simple but requires some basic math from the information contained on the seed tag. In the example seen on this page, the seed tag is from a bag of crimson clover that was recently purchased, which is an excellent forage for deer. This seed has been preinoculated as specified by the percentage of “inert matter” or “coating material” listed on the tag, which is 50 percent. The recommended seeding rate (broadcast, not drilled) for crimson clover is about 25 pounds of PLS per acre if planting a pure stand.

To determine the appropriate seeding rate of the material in this bag, multiply the percentage of pure seed contained in the bag (48.73 percent) by the germination rate of the seed (80 percent).

$$0.4873 \times 0.80 = 0.39$$

Next, divide the **desired seeding rate for crimson clover** by 0.39 (the number determined above).

25 lbs./acre divided by 0.39 = 64 lbs./acre of crimson clover.

In other words, you would need to plant 64 pounds of **this product** per acre to achieve a 25 lbs./acre PLS seeding rate. So this 50-lb. bag does not contain enough seed to plant 1 acre in crimson clover. If you only planted 25 lbs./acre of **this product**, you would have applied less than half the seed that is needed for a successful stand.

Do not let someone tell you that you can plant the recommended rate and disregard the weight of the seed coating because the seed coating leads to increased germination rates, increased seedling survival, and thicker stands. It is possible that the coating can lead to increased seedling survival, especially if the coating contains a fungicide or insecticide and there was a

problem with a fungus or insect pests on the site. However, seeding rates are based on the assumption that the seedlings will live. If you do not plant enough seed to realize a sufficiently dense planting, do not expect the stand to “thicken” over time just because the seed had a coating around it.

Notice in the picture on the bag that it shows the germination rate is 80 percent, “hard seed” is 10 percent, and the total germination rate provided is misleading. Although some people may tell you to use the “total germination rate” stated on the seed tag to calculate PLS, we recommend against it. Hard seed represents those seed that are dormant and are not expected to germinate until they experience freezing and thawing. These seed will not germinate after a rain or two when

PLS of clovers, alfalfa, and other seed, such as chicory, vary greatly. One bag may have a 90 percent germination rate, whereas the next bag may have a 60 percent germination rate. Therefore, if you mix seed yourself to form a blend, and you do not calculate and plant according to percentage of PLS, then some of the seed mixture (such as wheat or oats) may appear relatively thick and as it should, but the clovers, for example, may be relatively sparse (because the clover had a low germination rate).

Planting method can be very influential with regard to thin coverage of clover or other small seed. If, for example, you cover the clover seed by disking, you will cover it too deep and germination will suffer. This is another problem with some commercial blends that contain both large and small seed in the same bag. You cannot plant all of the seed at the correct depth. Relatively large seed, such as wheat, oats, or winter peas, will germinate best if they are covered ½- to 1-inch deep. Clovers should not be covered any more than ¼ inch. Therefore, if you are planting with conventional cultivation, to sow relatively large seed, cover by disking, tilling, or dragging, then cultipack to get a good firm seedbed, then sow the small seed, then cultipack again to ensure good, firm, seed-to-soil contact.

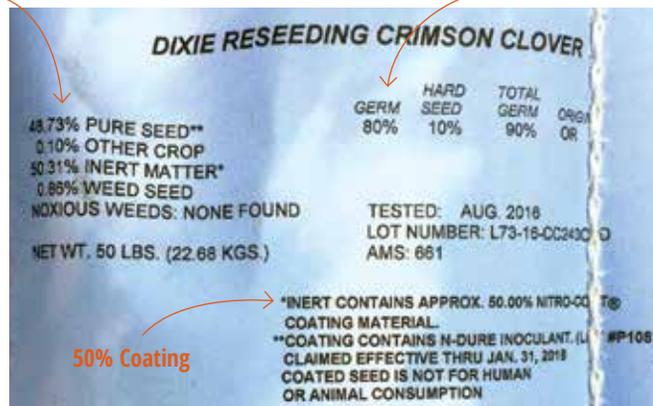
Considering the example above, it’s easy to see how failing to calculate the proper seeding rate using PLS can lead to sparse coverage of planted forages and

less than desirable results. Not only does it result in less forage being available in your plots for wildlife, it also provides an avenue for weeds to invade the “empty space” created from a low seeding rate. Additionally, if you rely on the reseeding capabilities of annual clovers (such as crimson and arrowleaf) to reduce annual planting costs, not planting enough seed initially will result in lower clover seed production that would be available in the seedbank to germinate the following year.

Don’t let this simple step limit you from realizing the fruits of your labor and achieving successful food plots to benefit your deer management program.

Percent Pure Live Seed (PLS)

80% Germination Rate



**THIS ACTUAL SEED TAG** shows the information you need to calculate a practical seeding rate. Once you account for coatings and germination rate, you would need to plant 64 lbs./acre of the seed in this bag to equal the recommended seeding rate of 25 lbs./acre for crimson clover!

you expect your seed to germinate. We do not care how much of the seed may germinate after winter, or in another year. We want to know what can be expected to germinate now so the deer and turkeys can begin using the plot. Do not include the percentage of hard seed into your PLS calculation.

You should calculate PLS for all of your plantings, not just clovers. In general, cool-season grains, such as winter wheat and oats, usually have an 80 percent germination rate, which actually is convenient because it just so happens that 80 percent of 50 pounds is 40 pounds, which is a perfect complement to a clover mixture. The