

TECHNICAL NOTE

USDA NATURAL RESOURCES CONSERVATION SERVICE PACIFIC ISLANDS AREA

Plant Materials Technical Note 3

UNDERSTANDING PURE LIVE SEED (PLS)

INTRODUCTION

The success of any conservation planting depends on seed quality, planting technique, and an understanding of knowing what to plant and how much seed to plant. A successful planting begins with identifying the purpose of the planting and selecting suitable species that meet the cooperators' objectives in addressing resource concerns. This, in turn, will help to determine the amount of seed necessary for a successful planting. Recommended seeding rates are normally given as pure live seed (PLS) amounts. PLS is used to describe seed that will germinate and grow into healthy plants. Having a basic understanding of PLS and recommended seeding rates will help to determine how much seed bulk will be needed for a planting. By making the right decision when acquiring seed quantities, one can avoid the loss of time and money. Furthermore, not planting enough seed may result in a stand failure.

RECOMMENDED SEEDING RATE

The recommended seeding rate for any plant is the amount of PLS needed to achieve an adequate stand the desired plant or mix of plants to address the identified resource concern(s). This rate is normally expressed as pounds PLS per acre. Recommended seeding rates are based on sowing a predetermined number of PLS per square foot to achieve a specific plant density. Plant density has a direct effect on the overall health of a planting. Excessively high plant densities can cause developing plants to compete for available sunlight, nutrients, and water. On the other hand, extremely low plant densities may increase the opportunity for weed invasion. However, higher plant densities can be effective when a quick cover is imperative, such as critical area plantings.

SEED LABEL

A seed label contains information that can be confusing. This information is essential when converting a recommended PLS seeding rate to bulk seeding rate. It is not normal practice for seed companies to include percent PLS on their seed labels, but the information that is given can be used to determine the percent PLS.

Seed purity and quality will naturally vary from bag to bag. The total weight of the seed bag generally refers to the bulk seed amount. The bulk seed amount includes the desired seed, weed seed, and other plant and inert materials. Seed purity is the percentage of desired seed contained within the bulk seed amount. This amount includes seed that may or may not germinate. The germination rate of the desired seed is also found on the seed label. This is the

percentage of seed that will readily germinate in a reasonable amount of time. The date of the germination test should also be noted because seed quality may diminish over time and thus lower the germination rate.

DETERMINE PERCENT PLS

By knowing the percent purity and the germination rate, the percent PLS of the bulk seed amount can be determined.

Hypothetical Example:

FORMULA: % Purity x % Germination Rate / 100 = % PLS

IF % Purity = 85% AND % Germination Rate = 75%,

THEN $(85 \times 75) / 100 = 63.75\%$ PLS

CONVERT PLS SEEDING RATE TO BULK SEED SEEDING RATE

Recommended seeding rates are normally given as pounds PLS per acre. To assure that the correct amount of seed is acquired, the PLS rate must be converted to a Bulk Seed seeding rate. Bulk Seed is referred to all the contents within a particular bag of seed. It is crucial that the recommended PLS seeding rate is converted to a Bulk Seed seeding rate.

Hypothetical Example:

FORMULA: Recommended PLS Seeding Rate / % PLS x 100 = lbs. Bulk Seed per Acre

IF Recommended PLS Seeding Rate = 10 lbs. PLS per acre AND % PLS = 63.75%,

THEN $(10 / 63.75) \times 100 = 15.69$ lbs. Bulk Seed per Acre

As shown in the example above, the Bulk Seed seeding rate is significantly higher than the PLS seeding rate. Potentially, if this conversion is not performed, the resulting density of the planted crop could be substantially less than desired. Time and money can be saved and frustration can be avoided when the correct amount of PLS is planted. Also remember that it is essential that this conversion be done for each bag of seed since seed quality will vary from bag to bag.

REFERENCES

Englert, J.M., 2007, *A Simplified Guide to Understanding Seed Labels*, Maryland Plant Materials Technical Note No. 2, USDA-NRCS National Plant Materials Center, Beltsville, MD.

Hoag, J.C., L. St. John, and D.G. Ogle, 2002, *Reading Seed Packaging Labels and Calculating Seed Mixtures*, *Plant Materials Technical Note 4*, USDA-NRCS, Boise, ID.

Houck, M., July 2009, *Understanding Seeding Rates, Recommended Planting Rates, and Pure Live Seed (PLS)*, *Plant Materials Technical Note No. 11*, USDA NRCS, Alexandria, Louisiana.

Leif, J., Sept 2006, *Agronomy Technical Note #13, Plant Materials- Using Seed Package Label Information to Calculate Pure Live Seed (PLS) and Seeding Rates*, USDA NRCS Rose Lake Plant Materials Program, Michigan.