

TECHNICAL

U. S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

NOTES

IOWA STATE OFFICE
DES MOINES, IOWA

Agronomy #1

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Subject: COMPUTING PURE LIVE SEED (PLS)

In a number of the standards and specifications in use in Iowa and in seeding contracts, the term pure live seed (PLS) is used.

What is meant by Pure Live Seed?

It is simply all of the live viable seeds of a stated species or variety in a particular sample of seed, expressed as a percent of that quantity of seed. Any seed sold through commercial channels is required to have a seed test. This seed test must show the percentage of germination and the percentage of purity.

Germination x Purity = Pure Live Seed.

If a 50 pound bag of bromegrass seed shows that germination is 80% and purity is 80%, then $80\% \times 80\% = 64\%$ pure live bromegrass seed. If the bulk weight of the bag is 50 pounds and it contains 64% PLS, actually only 64% of this bromegrass seed is capable of producing a bromegrass plant. $64 \times 50 = 32$ pounds of pure live seed. If the seeding rate is shown as 10 pounds PLS per acre, how much bulk seed is needed to plant 10 pounds of pure live seed?

The total amount of bulk seed to be applied per acre can be determined as follows:

Total Amount of Seed = $\frac{\text{Seeding Rate Per Acre (PLS)}}{\text{Germination x Purity}}$ or 15.6 lbs.

This is the rate of bulk seed needed to obtain 10 pounds of pure live seed per acre.

This simple example serves to illustrate that the cost per pound of bulk seed is really not very important. What is important is the cost per pounds of pure live seed. It also points out that if both purity and germination are low, the pure live seed may be very low, and an adjustment must be made in the amount of bulk seed that must be planted to obtain a satisfactory stand.

Below is a simple form that can be used to compute the quantity of bulk seed that must be sown to achieve a specified rate of pure live seed per acre.

1	2	3	4	5	6	7	8
Kind of Seed	% Germ x % Pure		% of PLS	Lb. of PLS/Ac.	Lbs. Bulk Seed/Ac.	Acres to Be Seeded	Total Lbs. Seed Needed
Bromegrass	.80 x .80		.64	10	15.6	5	78.0
Tall Fescue	.85 x .92		.78	10	12.8	5	64.0
Alfalfa	.90 x .99		.89	8	9.0	5	45.0
Birdsfoot Trefoil	.70 x .98		.69	5	7.2	5	36.0

To obtain % PLS, multiply Column 2 and Column 3. To obtain pounds of bulk needed per acre, divide Column 5 by Column 4. To obtain total pounds of seed needed, multiply Column 6 by Column 7.

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