



Lady Bird Johnson Wildflower Center

How to Buy Wildflower Seed in Bulk

Educating people about the environmental necessity, economic value, and natural beauty of native plants

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While most seed companies can recommend the amount of seed to plant for a given area (and, therefore, how much to purchase), it is important to ask about seed quality. The two most important indicators of seed quality are germination and purity, and their combined measure PLS or Pure Live Seed.

Germination Percentage

Germination percentage is the proportion of seed that will germinate under optimum conditions in a seed-testing laboratory. To determine the germination percentage, small samples of seed from a larger seed lot are tested. The germination percentage may overestimate the germination success actually encountered in the field, but in all cases the higher the percentage of germination, the better the seeds.

Germination may be low for some seeds because of an impenetrable seed coat or other germination inhibitors. Many seeds, especially wildflower seeds, have built-in dormancy mechanisms. Overcoming these mechanisms to test seeds for germination can be a challenge. Seeds that do not germinate immediately may do so at a later time.

The percentage of germination can change over time, depending on how the seeds have been stored. High temperature and high humidity can have negative effects on seed germination. Many states have seed-labeling laws that require the date of the most recent germination test to appear on the label.

Purity

Purity measures the proportion of pure seeds versus other items such as noxious weed seeds, the seed of other crops, and inert matter such as chaff and broken seeds, in a given sample. A seed lot's purity can be estimated more accurately than the percentage of germination.

Pure Live Seed (PLS)

Pure live seed (PLS) measures both germination and purity percentages. The figure is obtained by multiplying the percentage of germination by the percentage of purity and

dividing by 100. As a general rule, the higher the PLS, the better the seed quality, although it is important to check each component.

For example:

Seed Lot A	Seed Lot B
Germination: 80%	Germination: 90%
Purity: 90%	Purity: 80%
PLS = $\frac{80 \times 90}{100} = 72\%$	PLS = $\frac{90 \times 80}{100} = 72\%$

Both lots have the same PLS, but if high germination is required, seeds from Lot B would be the best to buy. If contamination with weed seeds is highly undesirable, the remaining 20 percent of the purity measure should be checked for noxious weed seed content. If it contains a high proportion of noxious weed seeds, then the seeds from Lot A may be the better buy because it would minimize weed eradication costs in the future.

PLS estimates the amount of seed in a given lot that are good seeds. For example, where seeds have a 72 percent PLS, 72 pounds of a 100-pound sack will germinate. The value of the PLS measure is more easily seen when shopping for seeds and comparing PLS with price per pound. Inexpensive seeds with a low PLS may actually cost more per pound for good, viable seeds than higher-priced seeds with a higher PLS. Compare two batches of seeds below.

Seed Lot C	Seed Lot D
Germination: 50%	Germination: 70%
Purity: 70%	Purity: 70%
PLS = $\frac{50 \times 70}{100} = 35\%$ at \$3/lb	PLS = $\frac{70 \times 80}{100} = 56\%$ at \$4/lb

To obtain 100 pounds of pure live seed from Lot C, 286 pounds of seed are needed:

286 lbs x 35% PLS = 100 lbs. pure live seed.
These seeds would cost \$8.38/pound of pure live seed.

$\frac{286 \text{ lbs} \times \$3/\text{lb}}{100 \text{ lbs. pure live seed}} = \8.58 per pound of pure live seed

To obtain 100 pounds of pure live seed from Lot D, 178 pounds of seed are needed:

178 lbs. x 56% PLS = 100 lbs. pure live seed.
These seeds would cost \$7.12/pound of pure live seed:

$\frac{178 \text{ lbs} \times \$4/\text{lb}}{100 \text{ lbs. pure live seed}} = \7.12 per pound pure live seed

The seeds from Lot D, although more expensive per pound in bulk, are the better buy because they have a higher germination percentage and better purity.

Although vegetable and forage crop seeds have been regulated for many years under federal law, flower seed quality has not been standardized. A few states, however, do enforce quality standards for flower seeds. Seed testing standards developed by the Association of Official Seed Analysis (AOSA) exist for most agricultural crop species. There are no standard tests yet for most wildflower seeds, although AOSA is working to develop them.

When buying wildflower seeds in bulk, keep the following points in mind: shop carefully; obtain seed catalogs and call the producers for information about their product(s); check for the percentage of germination, the date the germination test was done, and the measure of seed purity. PLS can then be calculated for comparing seed quality and price. When you start with high quality seeds, wildflowers will work!