

SEED QUALITY: PURITY AND VIABILITY -
SEED BLENDING AND MIXING

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Basic to almost all agronomic endeavors is seed, yet all too often it is least talked about and least understood item in the turf field. Judging from all the complaint mail that comes to my desk from disappointed and sometimes irate customers, seed is not understood at all by the public at large. The seed analysis on each label is a complete mystery to the average person starting or maintaining a lawn. The terms Seed Quality and Germination are even more remote.

Among professional turf managers, especially sod growers, there is a great awareness or consciousness of grass seed and its quality attributes. This is the way it should be. Rare is the occasion that good turf can be produced from inferior seed. Good quality turf starts with good quality seed!

Seed Quality

None the less it may be advisable to briefly discuss seed quality and the factors that are being considered by that term. Primarily there are two aspects: Purity and Germination. They have to be looked at in union for either alone can easily provide a complete false impression. A third term which has to enter the consideration is based on genetic identity of the seed to assure that the stated quality is of the variety, varieties or species to be grown. State Certification programs in the seed production areas handle this responsibility. Seed fields under these programs are inspected periodically during the growing season - both the living plants in the field and resulting seed have to meet certain minimum standards. These standards are designed to bring high quality of known genetic identity to the consumer. In addition to and even beyond the standards of the certification programs several growing associations in northwestern states have also adopted a "sod quality" standard for seed with exceptional purity. Containers of such seed lot usually carry a gold tag as identification. Such seed lots are usually completely weed-free and as such are especially sought after for sod growing purposes. The term seed purity, then, refers to the quantity of pure seed per 100 lbs. Factors which influence purity are: 1) Inert matter, consisting of chaff, dust, sand, broken seeds and small stones; 2) Other crops, usually seeds of other varieties or common types of the same species that cannot be removed by cleaning; and 3) Weed seeds, usually weedy contaminants growing in the seed field that are not considered crops having seed of similar size and gravity that they are difficult or impossible to remove by cleaning. Proper field sanitation for these weeds is, therefore, a serious management consideration especially since weeds are the main culprit in preventing a seed lot from meeting certification standards. Obviously, then, the greater the proportion of inert matter, other crops and weed seeds is, the lower the purity will be. Of course, all the items reflect true seed purity only as well as the sample from the seed-lot represents the overall condition of that lot. But sampling procedures, techniques and equipment as well as sample dividers are matters for another presentation.

As stated earlier along with purity, percentage germination also has to be taken into account in assessing true seed quality. The best purity analysis says nothing about whether or not the seed will actually grow. Germination is ascertained on 400 seeds which are evenly spaced on moist blotter paper and are grown out in a special germination chamber.

To determine seed quality considering both purity and germination a formula can be developed that will provide an answer in actual pure live seed (PLS).

$$\text{PLS} = \frac{\text{Purity} \times \text{Germination}}{100}$$

Example 1: $\text{PLS} = \frac{98 \times 90}{100} = 88.2 \text{ lbs}/100 \text{ lbs Seed}$

A good seed lot

Example 2: $\text{PLS} = \frac{98 \times 75}{100} = 73.5 \text{ lbs}/100 \text{ lbs Seed}$

A relatively poor seed lot even though of the same purity as Example 1.

If both seed lots are offered at the same price, Example 1 obviously is the better buy yielding 88.2 lbs versus 73.5 lbs PLS actually able to grow after planting. To achieve the same plant density the seeding rate would have to be increased by 15.5% for the lot in Example 2.

Seed Blending

The term seed blending is fairly new and at times is used synonymously with seed mixing which is erroneous and may require some clarification. Briefly, seed blending refers to combining two or more varieties of the same species, e. g. Merion, Baron and Park Kentucky bluegrasses. Seed mixing, on the other hand, denotes combining two or more species, but of any one species more than one variety may be represented, e.g. Merion and Fylking Kentucky bluegrass plus Jamestown and Cascade chewings fescue.

For sod growing purposes seed is mostly shipped in blends, predominantly Kentucky bluegrass blends. Mixtures of various grasses are primarily used for home lawns, parks, and other utility areas where maintenance levels may not be sufficient to properly maintain pure Kentucky bluegrass turf.

No grass seed blend is, of course, better than the individual components that go into it, strictly referring to seed quality in this instance. To avoid possible contamination from undesirable species--bentgrasses are probably the most difficult ones--extraordinary care must be taken that the mixing equipment can be and is thoroughly cleaned each time a different blend is to be prepared. On the whole, it is advantageous to use a separate mixer for quality Kentucky bluegrass blends and not use it at all for any other grasses.