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Tropical perennial grasses – seed quality

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Successful establishment of sown tropical perennial grass pastures is highly dependent on the quality of the seed that you buy and sow. Quality can vary markedly, so you need to know what you are buying – often it is a case of 'buyer beware'.

Always ask for a copy of a current (no older than six months) certificate of seed analysis for the seed that you are intending to purchase. Check to make sure it has a high seed purity percentage, a high germination and low amounts of inert matter (straw and empty florets) and other seeds (often weed seeds).

If seed quality, purity and germination are below the average expected for a cultivar, then potential establishment will be low. It is going to cost you extra money to increase the sowing rate and improve establishment. Ask yourself – is it really worth buying poor quality seed?

The old saying 'you reap what you sow' is very true when it comes to buying seed of tropical perennial grasses. If you take the time to buy high quality seed, with high purity and germination, then you have taken the first step necessary for good establishment. Sowing poor quality seed is a recipe for establishment failure – even if you do everything else right.

The only way that you can be confident that you are buying high quality seed is to ask the seller for a copy of the seed test certificate. Make sure that the certificate is from an accredited laboratory and that it is less than six months old. There are three main areas that you need to look at. The first two are shown as part of the purity test and indicate the percentage of pure seed and the percentage of inert matter and other seeds. The third is part of the germination test and shows the percentage of normal seedlings that germinated (usually after at least 14 days). For high quality, the purity and germination percentages need to be high and the percentage of inert matter and weed seeds should be low.

An example of poor quality seed with a high proportion of darker coloured seeds of other species. Only buy and sow good quality seed with high purity and germination of normal seedlings and low percentages of inert material and other seeds.

If a current seed test certificate is not available, consider having a seed test analysis done. It takes a few weeks and may cost $150–200 per sample, but compared with the cost of buying seed it is 'cheap insurance'. Pure Live Seed – PLS – is a measure of the seed quality of a sample. It is expressed as a number between 0 and 1. The higher the seed quality the closer that PLS is to 1; the lower the seed quality the closer the PLS is to zero. PLS is the purity percentage multiplied by the germination percentage (shown as a value for

Cultivar	Common name	Purity %	Germination %	Proportion live seeds (PLS)	No. of tests
Bambatsi	Panic grass	95	60	0.570	39
Premier	Digit grass	72	55	0.396	52
Katambora	Rhodes grass	94	55	0.517	18
Floren	Bluegrass	73	30	0.219	27
Bisset	Creeping bluegrass	68	29	0.197	17
Inverell	Purple pigeon grass	94	26	0.244	12

Average purity (%) and germination (%) of normal seeds of some tropical perennial grass cultivars commonly recommended for sowing on the North-West Slopes of NSW. The number of tests indicates the number of seed analysis certificates used to calculate the average. Only three certificates of seed analysis were available for Swann forest bluegrass, so it is not listed; its average seed purity was 59% and germination was 52%, giving a PLS of 0.307.

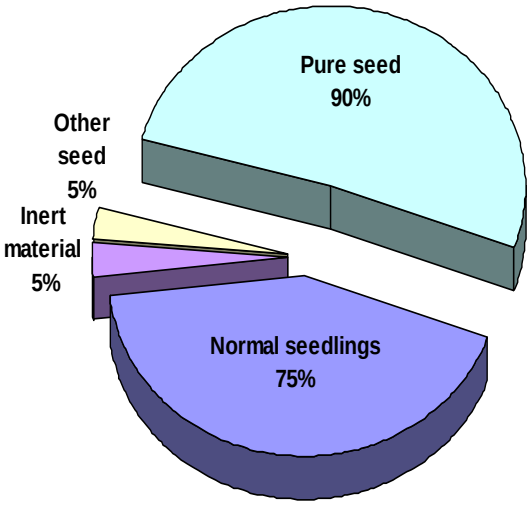
normal seedlings) and divided by 10,000. Typical values for some of the more commonly sown cultivars were obtained from analysing the results from 168 seed test certificates and are shown in the above table. For these cultivars, the PLS values for Bambatsi, Premier and Katambora were higher than those for Floren, Bissett and Inverell. If the seed that you are considering buying has a PLS below the values shown in the above table then its quality is below average and for good establishment you will have to buy more seed to increase the sowing rate, which increases the overall cost of seed. If it has a PLS above the value shown in the above table then it is probably best to maintain the sowing rate and be confident of having a high potential stand density.

Do not include fresh seeds as part of the germination percentage. Fresh seeds are viable (alive), absorb water and swell, but do not germinate, and the length of time and the conditions required to make them germinate are not fully understood. Inverell purple pigeon grass (*Setaria incrassata*) seed is known to have high initial levels of dormant seeds. To avoid sowing dormant seed that will not emerge, only buy seed of this cultivar that is at least two years old. Some certificates of analysis may also give results for a tetrazolium test. This test determines if a seed has a viable embryo, but includes seeds that are dormant, immature and damaged and so also should not be included in the germination percentage.

Examples of two seed lots with markedly different quality

The following examples for Premier digit seed demonstrate the effect of seed quality on the potential sowing rate of seeds that may germinate and the resulting seed cost. They highlight the major differences in seed cost of Premier digit when comparing good quality seed with poor quality seed. Premier digit seed has an average PLS of 0.396 (see table above). These examples are from seed samples that were commercially available.

Example 1 – good quality seed



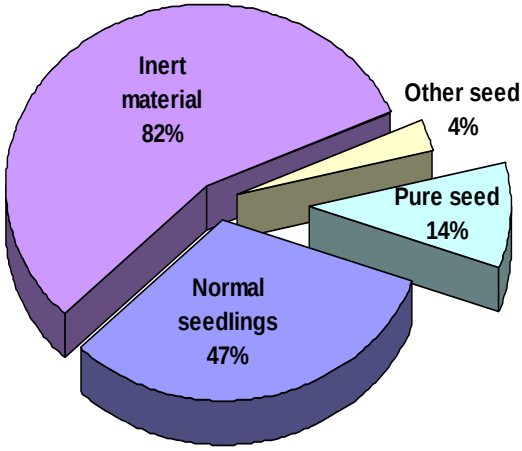
This seed has a high purity of 90% and a high germination (normal seedlings) of 75%. Its PLS would be 90 x 75/10,000 = 0.675

This is high compared with the average PLS (0.396) for Premier digit and indicates that 67.5% of the sample by weight contains seeds that may germinate.

Seed quality is high because purity and germination are high and there is a low amount of inert material (5%).

If you were sowing at a rate of 2 kg/ha, this seed would have the equivalent of 0.675 x 2 = 1.35 kg/ha of PLS. At a cost of $20/kg seed would cost $40/ha.

Example 2 – poor quality seed



This seed has a low purity of 14%, but about average germination (normal seedlings) of 47%. Its PLS would be 14 x 47/10,000 = 0.0658

This is low compared with the average PLS (0.396) for Premier digit. Only 6.6% of the sample by weight contains seeds that may germinate.

Seed quality is low because there is a high amount of inert material (82%), which in this case is florets that do not contain seed.

If you were sowing a rate of 2 kg/ha, this seed would have the equivalent of 0.0658 x 2 = 0.13 kg/ha of PLS. To sow at the same rate of PLS as in example 1 (good quality seed) at $20 per kg you would need to sow 10.4 (1.35/0.13) times as much seed, which would cost over $400/ha (see the Primefact *Tropical Perennial Grasses – Sowing rates* for more information).

Most tropical perennial grass seed is harvested and sold 'in the floret'. However, tropical grass seedheads tend to ripen unevenly and at harvest some of the florets may be empty and not contain any seed. A high proportion of empty florets can be indicated by a high value on the seed test certificate for 'inert material'. Similarly, a high proportion of seeds other than the cultivar that you are buying (including weed seeds) will be indicated by a high value for 'other seeds'. This also applies to coated seed since the tested seed sample may include all of the harvested material (florets with seed, empty florets, straw and other seeds, can all be part of coated seed).

All seed is sold and sown by total weight. Seed coating improves the flowability of light, fluffy seeds when sowing, but does little for its purity and germination. A 2:1 seed coating (2 kg of seed coating for every 1 kg of 'seed' material by weight) triples the cost of sowing seed per hectare.

Always consider buying seed with the highest purity and germination and the lowest cost per unit of seed weight. Ask yourself – is it really worth buying poor quality seed?

The department's website www.industry.nsw.gov.au contains other useful information.

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