

PEGS METHOD FOR BLENDING AND MIXING SEED
A Novel Approach for the Spartan Stadium Modular Field
David M. Gilstrap, John C. Sorochan, Ronald N. Calhoun, and John N. Rogers, III
Department of Crop and Soil Sciences
Michigan State University

A wide range of seed sizes exists among turfgrass species, cultivars within species, and seed lots within cultivars. In addition, germination rates and purities can vary widely among seed lots. Therefore, blending or mixing seed lots using equal parts by weight does not result in a blend or mix of equal parts of pure live seeds of each cultivar. A new method of calculating the percentages by weight of the components in seed blends and mixes has been devised at Michigan State University. The name for this system is the PEGS (Proportion of Expected Germinating Seed) Method for Blending and Mixing Seed. This approach allows for the planting of desired proportions of pure live seed. It takes into account seed counts, germination rates, and purities of component lots so that each contributor can be expressed as a percentage of total weight.

The first application of the PEGS method was for the June 2001 seeding of the modular field that will be placed in Spartan Stadium in the summer of 2002. For this Kentucky bluegrass planting, several cultivars were considered. Two pieces of research that were scrutinized were a traffic study at Iowa State University and a thatch study at Laval University in Quebec. While traffic tolerance was an obvious concern, the ability to form thatch was thought to indicate aggressiveness, which would increase the recuperative ability of the field. Input from several seed company breeders and personal observations by the MSU Turf Team were contributing factors, as well as the commercial availability of seed.

Samples were taken from 12 bags of seed each containing a different cultivar or different lots of the same cultivar. These samples were analyzed by the State Seed Lab at the Michigan Department of Agriculture (MDA). Percent purity, percent germination, and number of seeds per pound were estimated. In addition, the lab technicians examined each sample for the presence of other seed, particularly annual bluegrass, rough bluegrass, and any noxious weeds, of which none were found. The lab results are shown in the table below, as well as the percent germination guaranteed on the seed tag of each cultivar. Note that there was more than a twofold difference in seed size between the two cultivars having the largest and smallest seeds, which were Champagne and Moonlight, respectively. The purities shown were those determined by the MDA, but they did not differ appreciably from those guaranteed on the seed tags. It is of particular interest that with all but one cultivar, the germination determined by the local lab (MDA) was less than the germination stated on its seed tag with no test date being more than one year old.

<u>Cultivar</u>	<u>seed / lb</u>	<u>Purity</u>	<u>Tag Germ</u>	<u>MDA Germ</u>
Champagne	895,558	99.53%	85%	81%
Coventry	1,538,931	97.66%	89%	80%
Limousine	1,587,124	97.96%	80%	67%
Midnight	1,178,182	98.22%	80%	92%
Moonlight	1,958,338	88.92%	87%	68%
Northstar	1,175,130	97.74%	97%	87%
Rugby II	1,233,866	98.68%	80%	70%
Serene	1,232,190	97.67%	95%	86%
Unique	1,797,325	99.13%	82%	81%

Nine cultivars were chosen, and it was decided that they should be blended in relative proportions that resulted in equal parts of each in terms of pure live seed. To achieve this, we used Excel to generate the following relative weights for each cultivar in the Spartan Stadium Blend.

<u>Cultivar</u>	<u>PLS/lb</u>
Champagne	15.8%
Coventry	9.4%
Limousine	10.9%
Midnight	10.7%
Moonlight	9.6%
Northstar	11.4%
Rugby II	13.3%
Serene	11.0%
Unique	7.9%
	100.0%

Using these percentages, a seed lot was mixed by Michigan State Seed Company in Grand Ledge. A portion of it was then planted on the Spartan Stadium Modular Field at a rate 1¼ lb per thousand square feet, which resulted in an approximate seeding rate of 8 PLS per square inch with each of the nine cultivars contributing equally at the time of planting. Subsequent sampling of the polystand will reveal the relative presence of each cultivar over time.

Note: The patenting process for this technology is underway via the Michigan State University Office of Intellectual Property. Inquiries as its use should be directed to David Gilstrap (gilstrap@msu.edu)