Seed sampling techniques and diversity maintenance in outcrossing grass species. (C08-johnson182030-Oral)

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Abstract:

Regeneration of plant germplasm exposes populations to potential genetic drift and reduced diversity. This is especially true of heterogenous species with high variation in seed production among plants. An equal contribution of seeds from each plant is desirable to maintain higher effective population size and reduce potential genetic drift, but this can be labor intensive if seed counts are required for each plant. Six grass species (Bromus inermis, Dactylis glomerata, Festuca arundinacea, Lolium perenne, Phalaris aquatica, and Pseudoroegneria spicata) with four accessions per species were studied to determine the potential for improving effective population size through sampling of inflorescences from each plant. Taking multiple inflorescences per plant reduced the variation in seeds per plant thus increasing effective population size. In some Dactylis glomerata and Phalaris aquatica accessions, inflorescence sampling resulted in effective population size values that were more than 95% of the census population size. In all species, the majority of the improvement occurs with less than five inflorescences sampled per plant. Inflorescence sampling appeared to be a cost effective way to improve effective populations size in heterogenous grasses.

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