All life seemingly hangs by a slender thread. Maintenance of that thread of life and critical genetic diversity is the primary function of all germplasm collections. Oat (Avena spp.) seed will maintain satisfactory viability for only 3 to 5 yr in warm, humid regions when stored under average conditions with no control over temperature and humidity. Under dry, cool conditions, however, oat seed will remain viable for considerably longer periods, with little germination loss for 10 to 20 yr. Therefore, depending on storage conditions, humankind is only 3 to 20 yr away from the loss of a given oat seed lot, and the germplasm it represents may be lost forever.

Breeding adapted oat cultivars suited for commercial production invariably leads to a narrowing of a nation’s deployed germplasm resource base since relatively few cultivars will be in production at any given time. Although reliable oat cultivar surveys are available for only a few states, examples such as North Dakota probably are indicative of the situation in most states. The USDA Crop Reporting Service survey for North Dakota in 1987 showed that five oat cultivars occupied more than 70% of the 425 000 ha planted. Similarly, the top five oat cultivars occupied nearly 60% of the area planted for grain in Iowa in 1986.

One cannot overestimate the value of the genetic diversity present in Avena accessions in the National Small Grains Collection (NSGC). It is truly a gene bank in every sense of the word, but it is not representative of all diversity in Avena, a goal that may never be attained. Naturally occurring stands of wild Avena spp. in various parts of the world are at risk. Many such stands are being encroached upon through the use of lands for a variety