New SynOp International Triticeae Mapping Initiative (ITMI) population seed increase.

To: Members of the Wheat Research Community

From: Cal Qualset (coqualset@ucdavis.edu) and Mark Sorrells (mes12@cornell.edu).

We are in the process of a field seed increase at Davis, CA, of about 2,000 lines of two new populations constructed using the same parents (Synthetic W7984 and Opata 85) as the original ITMI mapping population. One is a doubled haploid (designated SynOp-DH) and the other is an RIL (designated SynOp-RIL) population described below. We need funds to complete the work and are sending the following request to state Wheat Commissions or Committees. We will also send this to various corporations and international contacts. Because you may be asked by potential donors about the relevance of the populations, we wanted to inform the wheat research community of its imminent availability and provide information about them.

There has been considerable interest by researchers to receive these new populations, and we are doing a one-time seed increase so that everyone can receive the same seed source and so that future large-scale seed increases will not be necessary. I hope you will help promote this effort by indicating your support for it to potential donors. If your own program can assist financially, we would greatly appreciate hearing from you. Harvest will begin about 15 June. Come on over! We have sickles. Feel free to send this information to others or contribute in other ways. Thank you.

Genetic stocks for wheat breeding and genomics research. Reconstruction of the SynOp (ITMI) mapping population 'Synthetic Wheat W7984 / Opata M85'.

In the early days of RFLP mapping, scientists of the ITMI developed an RIL population from a synthetic wheat, *Ae. tauschii* [DD] x Altar durum [AABB] hybridized with Opata M85 [AABBDD] bread wheat. This population, contrary to many wheat hybrid populations, had high variation [polymorphism] for DNA sequences and, therefore, was very useful for constructing a DNA molecular linkage map for wheat. The population included 150 RILs and was, and still is, widely used for mapping important traits of wheat. The population was initially distributed globally by M.E. Sorrells, Cornell University, where the first linkage map was developed. The population has been maintained and advanced several generations at the University of California, Davis, by C.O. Qualset and P.E. McGuire. The RILs have been distributed to more than 25 researchers and more than 20 papers have been published on genetics of wheat quality, kernel hardness, threshability, disease resistance, flowering time, and several morphological traits.

This population has proved valuable for initial mapping of traits, but the population is too small for detailed mapping and to aid in gene discovery. Requests have been received for a larger population of RILs of this useful population. Hence, the population has been reconstructed with a new cross having the same parents and advanced to near-homozygosity by J.P. Gustafson, USDA, Columbia, MO, and M.E. Sorrells, Cornell University. In addition, Daryl Somers, formerly of Canada Food and Agriculture, Winnipeg, Manitoba, produced doubled haploid (DH) lines that each have complete homozygosity. The reconstructed populations now includes about 1,700 new F_2-derived RILs (SynOp-RIL) and 200 DH lines (SynOp-RIL).

This population is public domain and will be distributed to all scientists who request seed. The intention is to provide 10 seeds of each line so that researchers can grow sufficient plants to extract DNA or grow additional plants to meet their research needs. We are now engaged in the seed increase phase. The objective now is to produce sufficient seed of each line for distribution to all qualified research scientists who request seed for the next 10 years. Because the lines from this cross vary so widely in many traits, including vernalization requirement, it is essential that the materials be grown at a site where all of the lines will produce at least 100 grams of seed. Northern California provides such an environment with autumn planting. C.O. Qualset at the University of California, Davis, has agreed to conduct this seed increase planting and to collect data on several traits to characterize each inbred line. The lines were planted in November 2008 and will be harvested in June 2009. Qualset is a retired professor and founding coördinator of ITMI, a position he held for 12 years and is available, without cost, to carry out this activity. However, there are expenses for the culture of the field plots, harvesting, seed cleaning and packaging, and distribution of the seeds for which no funds are available.

We are requesting your organization to assist with meeting these costs, estimated to be $10,000. A donation of any amount would be appreciated. We hope you can participate in this effort, and, of course, your organization would be welcome to receive seed for your research.

Funds may be transferred by check to C.O. Qualset payable to the Regents of the University of California. Acknowledgement of receipt of tax deductible donation will be made.

Thank you for your consideration.

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