WheatCAP: Empowering Wheat Farmers With New Breeding Technologies

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The Wheat Coordination Agricultural Project (WheatCAP) is a consortium funded by USDA-SCREES National Research Initiative that includes public breeders from 23 states, 26 USDA-ARSpending centers and 19 private breeders. Since public wheat varieties account for 73% of the wheat production in the United States, this project has a significant economic impact. The competitiveness of US public wheat breeding is increasing with the incorporation of marker-assisted selection (MAS). With most from regions where wheat is a backbone to a diversified ecosystem, each breeder has identified the most important traits to select through MAS and has access to a 5,000 accession panel. During the first two years of the project, 100 public and 100 private breeders have generated more than 100,000 phenotypes. The traits selected include disease and pest resistance genes (85%), quality traits (17%), tolerance to abiotic stresses (12%), and agronomic or special purpose traits (8%). Candidate markers for traits are being identified using SNP analysis in 15 segregating populations created in the breeding programs using parental lines adapted to the different US wheat growing regions. As part of our outreach efforts, we are informing growers and end-users of the economic advantages of these lines through MAS through field tests and information sharing. We are training over 50 students in all levels in agricultural sciences and breeding as part of our educational objectives. Through Sept. 2007, WheatCAP has sponsored 13 student volunteers at wheat breeding projects in 10 universities. The student volunteers presented 71 lectures and classes, and organized 5 experimental plots and 51 workshops and field days (http://wheatcap.ucdavis.edu).