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P254 : Wheat, Barley, Rye, Oat, and related

WheatCAP: Empowering Wheat Farmers With New Breeding Technologies

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The Wheat Coordinated Agricultural Project (WheatCAP) is a consortium funded by USDA-CBRES National Research Initiative that includes public breeders from 25 states, four USDA-ARS genotyping centers and GrainGenes. Since public wheat varieties account for 78% of the wheat production in the United States, this project has a significant economic impact. The competitiveness of US public wheat breeding is being increased by the incorporation of marker assisted selection (MAS). With input from regional stakeholders, each breeder has determined the most important traits to select through MAS and has access to 5,000 analyses per year. During the first two years of the project, the high-throughput USDA-ARS genotyping centers have generated more than 190,000 datapoints. The traits selected include disease and pest resistance genes (65%), quality traits (17%), tolerance to abiotic stresses (12%), and agronomic or special purpose traits (9%). Molecular markers for new traits are being identified using QTL analysis in 18 segregating populations created by 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 advantage of lines developed by MAS through field days and demonstration plots. We are training over 90 students at all levels in agricultural sciences and breeding as part of our educational objectives. Through Sept. 2007, WheatCAP participants published 25 papers in peer-reviewed journals, presented 71 lectures and posters, and organized 3 experiential trips and 51 workshops and field days (<http://maswheat.ucdavis.edu>).