CALIFORNIA CROP IMPROVEMENT ASSOCIATION
ANNUAL MEMBERS MEETING

Prato Room, Parsons Seed Certification Center
UC Davis campus
9:00 a.m. May 23, 2013

1. Call to order – President Tom Hearne

2. Roll call – Robert Stewart

Directors present:	**Directors absent:**	**CCIA:**	**CCIA absent:**	**Guests:**
Jack De Wit	Kent Bradford	Timothy Blank	Larry Teuber	Jorge Dubcovsky (by phone)
Ed Eggers	Bob Baglietto	Pablo Guzman	Mary Voorhees	Dan Putnam
Glenn Hawes	John Heaton	Nicole Hostert		L.W. Gallagher
Tom Hearne	Andrea Fox	Alex Mkandawire		Paul Gepts
Jim Hill	Ray Johnson	Kitty Schlosser		Isabel Alicia del Blanco
Scott Hudson	Ken Scarlett	Katy Soden		
Shannon Mueller				
Frank Saviez				
Chuck Schonauer				
Bob Stewart				
Chris van Kessel				
Mary Wadsworth				

3. Minutes of previous meeting
   It was ***moved, seconded, and passed*** to accept the minutes from the May 2012 Members Meeting as distributed.

4. Additions to agenda – Tom Hearne
   Hearne requested that we add the appointment of At-Large Directors to the agenda.

5. Director Election results
   Elections were held for the even-numbered districts; the following directors were elected and will serve a 4-year term:
   District 2 – Mary Wadsworth
   District 4 – Tom Hearne
   District 6 – Jack De Wit
   District 8 – Glenn Hawes
   It was ***moved, seconded, and passed*** to accept the election results.

6. At-Large Director appointment
   The Executive Committee recommends the reappointment of Ed Eggers to a 2nd 4-year term. Mary Wadsworth had one more year to serve in the At-Large Director appointment but will now be serving as an elected Director representing District 2. The Executive Committee recommends John Palmer be appointed to serve the remaining one year of this appointment; next year an appointment will be made to fill this seat for 4 years.
   It was ***moved, seconded, and passed*** to accept the appointments.

7. Agency Directors
   All current agency directors have been reappointed:
   Agricultural Commissioners – Scott Hudson
   California Farm Bureau Federation – Andrea Fox
   California Dept of Food & Ag – John Heaton
   California Seed Association – Ken Scarlett
   UC Cooperative Extension – Shannon Mueller
   UCD, College of Agriculture & Environmental Sciences – Jim Hill
   UCD, Department of Plant Sciences – Chris van Kessel
   Seed Biotechnology Center – Kent Bradford
   Foundation Seed Program – Robert Stewart
   It was ***moved, seconded, and passed*** to accept the appointment of all agency directors.

8. Nomination and election of board officers – Chuck Schonauer
   Schonauer reported that the nomination committee (De Wit, Johnson, and Schonauer) recommends the following slate of officers for 2013-14:
   President – Tom Hearne

Vice-President – Glenn Hawes
Treasurer – Mary Wadsworth

It was ***moved, seconded, and passed*** to seat the officers as noted.

9. Research reports were presented for research funded in 2012-13 and requests for funding in 2013-14. The abstract from each proposal is included below as a description of their presentation.
   a. **Jorge Dubcovsky** reported by conference call on two continuing research programs:
      1) "Development of Wheat Varieties for California"
      The overall objective of the UC wheat breeding program is to develop common and durum wheat varieties adapted to different California environments. The specific objectives are 1) introduce new sources of disease resistance and end-use quality characteristics; 2) create new segregating populations by hybridization and select the best lines using field based selection; 3) determine the genetic basis for important resistance and agronomic traits and develop markers to accelerate the introduction of these genes into breeding lines adapted to different California environments; and 4) produce Breeder's seed of the best lines targeted for variety release. The field-based selection program will be complemented by marker assisted selection to accelerate the introgression of valuable traits. In the area of drought tolerance we will initiate the introgression of an engineered 1RS translocation from rye that increases drought tolerance without limited impact on quality. In the area of salt tolerance we will introgress the *Nax2* gene into durum wheat that increases salt tolerance. In parallel, we will continue our efforts to develop durum varieties with low Cadmium to comply with new international regulations and continue the second year of a three year project to map yield components in bread wheat. Marker assisted selection efforts in the area of disease resistance will be focused on the pyramiding of slow rusting resistance genes *Yr48, Yr36* and *Yr18*. As part of a preventive breeding effort, we will incorporate sources of resistance to the stem rust race UG99. We will continue the introgression of *septoria tritici* blotch resistance genes *Stb3*, *Stb4*, and *Stb7*.
      2) "Evaluation of Small Grains in California"
      Two new varieties are available: Patwin 515 wheat with 2-gene resistance to stripe rust was released last year; Miwok wheat with reduced cadmium content will be released this year.

      The Regional Cereal Evaluation Program will include evaluation nurseries of advanced breeding lines and new and standard cultivars obtained from public and private breeding programs. The requested funding will be used to support common wheat, durum wheat, and barley trials in the major small grain-producing areas of California. Trials will be located at representative environments in the Sacramento, San Joaquin, Imperial, and northern intermountain valleys, and south-central coastal foothills. The Regional Cereal Evaluation Program will also provide elite germplasm nurseries for the UC wheat breeding program in two selected locations to help accelerate the development of public cultivars. Nurseries will be grown using production practices appropriate for each environment. The performances (yield, agronomic characteristics, diseases and pest reactions, grain quality) of the entries will be documented and summarized in the Agronomy Progress Reports and reported on the Small Grains website. The resulting information will be used to help identify areas where new cultivars are best adapted and as supporting data for justifying the release of advanced breeding lines from both public and private breeding programs.
   b. **Lynn Gallagher** reported on two continuing research projects:
      1) "Oat Improvement for California"
      This project will improve oats by traditional breeding methods through the creation and evaluation of new segregating populations and the selection of advanced lines which have potential for release as cultivars in diverse California environments. The breeding program will emphasize forage/hay/green chop varietal improvement with selection for earliness to heading/maturity and for resistance to the most important oat diseases, namely, barley yellow dwarf (BYD) and cereal yellow dwarf (CYD), both of which cause leaf reddening/yellowing and stunting. Resistance to crown rust, stem rust, powdery mildew, and leaf blotch diseases will also be sought. Selection for grain yield is of secondary importance. Additional agronomic improvement will emphasize culm thinness, stature and resistance to lodging. Until five years ago, no new hybridizations for oat improvement had been made in the last twenty-two years in California. Eight new varieties recently were released by the University of California, Davis, after 25 years of sporadic breeding efforts by Cal Qualset and his students. However the very popular oat variety Montezuma, the only early variety in use, was released in 1968 and is highly susceptible to BYD/CYD, crown rust, stem rust, powdery mildew, and leaf blotch. No replacement for Montezuma has been bred. About 220,000 acres of oats were grown in California during three most recent growing seasons placing California second to Texas and tied with Wisconsin and North Dakota for acres planted. Funding for oat breeding at UCD is inadequate to maintain a robust program.

Dr. Gallagher has developed a relationship with several seed companies to provide staff to help him with harvesting the research plots.

2) "Breeding Malting Barley for California"

New opportunities exist for barley production in the Central Valley of California, especially for high quality malting barley. Malting barley germplasm development at UCD is supported by the American Malting Barley Association (AMBA), but this organization does not encourage varietal development for California. AMBA wants to develop malting barleys with broader adaptation which would require only the development of germplasm resistant to a broader spectrum of diseases. The UCD barley breeding program will create two-rowed malting varieties adapted to the Central Valley.

California produces little or no malting barley, except by contract now and then in the Klamath Basin. California produces and consumes more beer than any other state. Because malt houses are built in areas of malting barley production, no large malt houses exist at this time in California. California growers must be capable of producing sizeable amounts of malting barley before a large malt house is built. Development of malting varieties adapted to Central Valley growing conditions requires a long term commitment because of the great number of characteristics desired by the brewing industry. A major constraint in the development of two-rowed malting barley has been the lack of adequate resistance to Cereal Yellow Dwarf Virus (CYDV) and to BYDV, the more common virus. Genes conferring resistance to both these viruses are being pyramided in malting barley backgrounds. In the near future consideration must be given to the issue of pilot malting as the second step in evaluation of material in the breeding program.

Dr. Gallagher has found several growers in California who are interested in growing and malting barley for use in their own brewing. This is encouraging for the malting industry in California.

c. **Paul Gepts** reported on the continuing project **"Development of a High-Density Genetic Map to Facilitate Transfer of *Lygus* and Nematode Resistance among Lima Bean Varieties"**.

Two of the major production constraints in lima bean in California are Lygus and nematodes. Obtaining lines with combined resistances will be facilitated by the availability of a dense linkage map to locate and tag individual resistance genes. The purpose of this proposal is to continue the development of such a linkage map (the first-ever for lima bean) using the latest advances in DNA sequencing and comparison with the linkage maps of related legume species, common bean and soybean to facilitate the discovery of resistance genes. Sequence-based markers (mainly single-nucleotide polymorphisms) have been developed by Illumina sequencing of pooled barcoded DNA of the two parents of a recombinant inbred (RI) population from the cross between a large lima germplasm line (UC92: resistant to nematodes) and a baby lima variety (UC Haskell: resistant to Lygus), ensuring high levels of molecular diversity and complementarity of agronomic traits. Resulting sequences have been analyzed bioinformatically for polymorphisms and have been mapped onto the common bean genome sequence. A sub-sample of spaced sequences will be mapped genetically in the RI population. Concurrently, reciprocal breeding populations for baby and large limas are being developed.

d. **Dan Putnam** on his continuing research project **"Alfalfa Experimental Variety and Germplasm Adaptation and Evaluation"**.

Craig Giannini reported for Dr. Putnam. This proposal plans to conduct research on 9 variety trials in California in 2013-14, depending upon the level of support from CCIA and the seed companies. This includes two new trials planted in 2012 (Scott Valley and El Centro), and two new trials (Kearney and West Side) to be planted in fall 2013. The West Side trial will be designed to deliberately increase the salinity applications to enable seed companies to test lines in a public trial under saline conditions. Ongoing trials at Davis and Modesto, El Centro and Tulelake will be harvested. Some of these trials (e.g. Kearney, Tulelake) will be terminated in 2013, replaced by new trials. This program includes both released lines and experimental cultivars, with more than 8500 yield estimations/year. Funding requested this year is for ½ of SRA salary and benefits at Davis, with all other costs to be borne by donations from seed companies. This additional amount to be supported by seed companies includes support for field station charges, additional labor, travel, supplies, equipment (including capital expenditures), web management and data analysis. Results of these trials will be reported at: http://alfalfa.ucdavis.edu and at field days and in end-of year paper publications. The economic differences due to high-yielding varieties are worth hundreds of dollars more per acre per year than lower yielding lines, confirmed by this data. They estimate that this yield data (potential economic differences due to varieties) are worth a about $300 million/year. Variety trials continue to be of vital interest to growers and seed marketers in California, and CCIA is the key supporter of this program.

e. **Alicia del Blanco** presented her research proposal **"Fine Mapping of CYDV in Barley"**.

Cereal Yellow Dwarf Virus (CYDV) is a serious disease affecting small grain crops around the world. In US, it is frequently present in California where it causes important losses when infections start early in the development, resulting in plant death. CYDV is transmitted by aphids, and it has been a major challenge to develop malting barley in California. A population to map CYDV has been created genotyped and

phenotyped. Preliminary quantitative trait loci (QTL) analysis indicate significant peaks for resistance/tolerance in three chromosomes; with two major QTL inherited from the most resistant parent (Madreselva), and 2 minor QTL from the moderately resistant parent (Butta 12). We propose to continue this research by fine mapping those QTL, creating sub-populations carrying individual QTL. This will allow 1) a more precise identification of the genome regions carrying the partial resistances; 2) to measure the contribution of each individual QTL to CYDV resistance; 3) to develop markers targeting these regions that can be used to assist selection in segregating generations of the breeding program, accelerating the advancement of resistant cultivars; 4) to start searching for candidate genes contributing to CYDV resistance in those genome regions.

f. **Cal Qualset** did not attend to report on his proposal **"Genetic Resources of Wheat for Public and Private Breeders**.
A two-year project was proposed and funded by CCIA in 2010, but not funded for the second year. Now assistance is requested to complete the second year of work in which more than 1,000 genetic resources of wheat that have been developed at UC Davis over a period of some 40 years will be documented and offered to public and private breeders. Field plantings have been made at Davis and will be made at Tulelake in April 2013 for visitations of interested breeders and researchers to make selections of materials of interest to them. Several groups of materials will be included: (1) congenic lines affecting leaf canopy structure, seed protein variants, plant height, tillering, and spike variation, (2) BYD and stripe rust resistant lines, (3) molecular mapping populations, (4) Iranian wheat landraces, (5) Triti-pyrum, (6) chromosome substitution lines, and others. The results will be prepared for publication and entry to national and international databases. Seed will be offered for distribution to researchers and to the USDA National Small Grains Collection. Registration of several varieties, germplasm, and genetic stocks by the Crop Science Society of America will be published in the Journal of Plant Registrations.

10. Since all the CCIA members present at the meeting are also members of the CCIA Board of Directors, Robert Stewart requested to move the Executive Director report to the Board of Directors meeting scheduled immediately after this meeting. The board was in agreement with this request.

11. Meeting was adjourned at 11:00 am.

Respectfully submitted,

Mary E. Schlosser

Mary E. (Kitty) Schlosser