Rick Ward

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Personal

Born	Richard William Ward	Maryland, USA (US Citizen)	1954

Education

PhD	Agronomy. Dissertation: Comparative responses of alloplasmic and euplasmic wheats to photoperiod and vernalization.	Kansas State University	1981
MSc	Agronomy. Thesis: Evaluation of early generation selection for high protein in wheat.	Colorado State University	1978
BSc	Agronomy, with Distinction.	Colorado State University	1976

Work Experience

Director and Bud Antle Endowed Chair (Specialist and Professor, School of Plant Sciences), Maricopa Agricultural Center, University of Arizona. **Jan 2015 - present**

- Exercise budgetary and programmatic authority and administrative responsibility over an 850 ha research and extension center with 688 irrigated hectares of arable land, and 51 staff; total expenditures $4.1M/year.
    - Home to 22 USDA-ARS Arid Land Ag Research Center scientists plus 7 UA scientists.
- Reorganization of farm staff for better client orientation.
- Establish ties with major players in the water management and policy arenas of Arizona.
- Facilitate acquisition and implementation of DoE research program that includes a 200m x 27m Lemnatec field gantry phenotyping system for improvement of energy biofuels.
- Negotiate access to recycled water from the Maricopa municipality.
- Provide oversight for crop and water research through partnerships with over 30 partners.

Principal Scientist and Wheat Breeder, CIMMYT[1] Global Wheat Program. **2010 – 2015**
Posted to Afghanistan, Pakistan, and then Minnesota. From July 2012 - Dec 2014, concurrently non-salaried Visiting Associate Professor at the University of Minnesota's Department of Plant Pathology.

- Supported development of seed and rust pathology projects in Ethiopia ($4.5M, funded), and an agronomy and seed project in Iran ($14M, pending). Established measurable indicators of progress.
- As resident Country Liaison Officer and country manager, administrated and managed CIMMYT's offices in Kabul (2010) and Islamabad (2010-2012). Managed CIMMYT relations with the Governments of Pakistan and Afghanistan plus the donor community. Held authority to issue checks for up to $100,000. Developed business and policy procedures.
- Participated as focal point for technical matters and proposal development in shaping CIMMYT's input and role in a $5 million, USAID-funded project titled "Feed the Future Innovation Lab for Applied Wheat Genomics".
- Provided technical and managerial leadership as primary author for the multi-disciplinary, and multi-institutional USAID-funded "Agricultural Innovations Program" (AIP) for Pakistan. This four-year, $30 million project is managed by CIMMYT. I served as Project Leader for the first year after its launch in 2012. AIP supports research-for-development in livestock (ILRI), vegetables (AVRDC), tree fruits (UC Davis), and cereal systems (IRRI and CIMMYT).

[1] The International Maize and Wheat Improvement Center. Km. 45, Carretera Mexico-Veracruz; El Batan, Texcoco, Edo. de México; CP 56130 México

- Developed and then led the CIMMYT component ($5.5 million) of the "Wheat Productivity Enhancement Program" (WPEP, see www.wpepforpakistan.org) a research project that is funded by USDA-ARS. Led the process of designing the technical and budgetary aspects of the Pakistan partner components of WPEP, and negotiated agreements between CIMMYT and 11 Pakistani partner institutions.
- Recruited and led a team of nine distinguished scientists who conducted a USAID-funded multi-disciplinary assessment and evaluation of the history and status of agricultural research in Afghanistan. Managed relations with the Afghan government, who requested the assessment.

Senior Associate Director, Durable Rust Resistance in Wheat Project, Cornell University[2]. **2008 - 2010**

- Provided leadership, coordination, and management in support of launching the $26 million Durable Rust Resistance in Wheat Project (DRRW, see www.wheatrust.cornell.edu), a multi-disciplinary program funded by the Bill and Melinda Gates Foundation involving scientists at 15 institutions in 13 countries (including USDA-ARS, UN-FAO, UC Davis, U of MN, U of the Free State, U of Sydney, CSIRO, CIMMYT, IRRI, and ICARDA).
- Led DRRW efforts to catalyze coordinated global research in wheat SNPs, cereal rust surveillance, application of modern genetics to host plant resistance, gene discovery/deployment, and seed delivery systems.
- Managed the Executive Committee of the Borlaug Global Rust Initiative (www.globalrust.org) to facilitate additional linkages and synergies among existing rust-focused wheat research efforts throughout the world.
- Communicated regularly with the DRRW's Program Officer at the Bill and Melinda Gates Foundation to refine priorities and resource allocations; compiled research findings and led development of the annual progress reports.
- Provided coordination that enabled the national research programs of Kenya, Ethiopia, and Nepal to individually refine goals, priorities, and resource assignments for their DRRW budgets.

Senior Scientist, Wheat Breeder, and Coordinator, Global Rust Initiative, CIMMYT Global Wheat Program, Mexico. **2006 - 2008**

- Led development of the programmatic and budgetary aspects (goals, priorities, resource allocations) of the DRRW Project proposal that was funded in 2008 by the Bill and Melinda Gates Foundation, and executed by Cornell University (see above).
- Developed a proposal that led to a $1.4 million USAID award to CIMMYT and the International Center for Agricultural Research in Dry Areas (ICARDA) for the Global Rust Initiative.
- Secured $1.0 million from CIDA (Canada) to support the Global Rust Initiative. Developed financial and technical progress reports to the governments of the USA, Canada, and Japan.
- Planned and coordinated evaluation of field rust resistance of world wheat germplasm in Kenya in cooperation with USDA and wheat improvement programs in over 16 countries.
- Organized and chaired the 2006 Global Rust Initiative conference at Alexandria, Egypt to set global priorities for responding to stem rust Ug99.
- Managed CIMMYT's *Fusarium* Head Blight research program, including organization and management of an international *Fusarium* conference at CIMMYT headquarters in Mexico.

[2] 255 Emerson Hall, Cornell University, Ithaca, NY 14850

Assistant then Associate Professor and Wheat Breeder, Department of Crop and Soil Sciences, Michigan State University[3]. 75% Research, 25% Teaching. Tenured 1995. **1989 - 2006**

Courses taught:

- Introduction to Plant Breeding and Biotechnology (CSS451: annually 1990 through 2000).
- Quantitative Genetics (CSS941: every other year 1991-1997).
- Introduction to Plant Genetics (CSS350: annually 2001 through 2005).

Graduate students/Post-Docs/Visiting Scientists:

- Served as Major Professor for 7 graduate students:
  PhD: SY Wang, S. Hazen, H.S. Kim, J. Lewis; MSc: S. Nkhori, S. Hazen, K. Nightingale.
- Member of 21 other graduate student committees 1989-2005.
- Hosted ten visiting scientists and/or post-docs.

Research:

- Managed and administered the science, operations, and budget of the Michigan State University (MSU) wheat breeding and genetics research program, including management and timely publication of results of the annual state wheat variety trials (see www.css.msu.edu/varietytrials/wheat/Variety_Results.html).
- Developed and released six wheat varieties in coordination with the Michigan milling and seed industries. Contributed to the testing, development and release of nine additional varieties.
- Authored or co-authored 21 refereed journal articles.
- Secured funded projects from Michigan State Millers Assoc., Michigan Crop Improvement Association, Kellogg's, USDA-ARS (USWBSI), and the Michigan Ag Exp Station.

Extension:

- Authored/co-authored 46 extension reports; over 100 extension talks.
- Planned, launched, and co-chaired the MSU "Wheat 2000" wheat extension project with colleagues in weed science, plant pathology, plant protection, seed science, soil science, and with representatives of Michigan's wheat grower and wheat processing industries.

Outreach/Service:

- Launched the Global Rust Initiative (later the Borlaug Global Rust Initiative) in partnership with NE Borlaug, Cornell, USDA-ARS, CIMMYT, and ICARDA. Co-Chaired the formal launch of the Initiative in September 2005.
- Co-founded the $5 million dollar per year USDA-ARS funded US Wheat and Barley Scab Initiative (USWBSI, see www.scabusa.org/mission.html). The USWBSI grew to include research conducted at 15 US universities and USDA-ARS by over 70 principal investigators. Total grant funding issued through 2013 exceeds $70 million.
- As Director of the USWBSI Networking and Facilitation Office and Co-Chair of the Steering and Executive committees, acted as primary liaison with USDA-ARS, six research committees, and all PI's and their home institutions (1998-2006). Developed policies and procedures for the USWBSI's annual grant process, and supervised its implementation.
- Planned and managed five annual meetings of the USWBSI from 2000 to 2004, including editing and production of proceedings.
- Gave fifteen invited talks to industry groups, etc., plus annual presentations to the Michigan Crop Improvement Association and the Michigan State Millers Association.

University/Department Administration:

- Chaired two faculty search committees; chaired the small grains sub-committee of the departmental variety release committee. Served on six college or department-level committees.

[3] Plant and Soil Sciences Building; 1066 Bogue Street, Room A286; East Lansing, MI 48824

Post-doctoral Fellow, Purdue University, tissue culture, Dr. Tom Hodges. **1988 - 1989**

Maize Breeder and Team Leader, CIMMYT Maize Program, Harare, Zimbabwe. **1985 - 1988**

- Developed goals, budget, and administrative processes and then managed and administrated CIMMYT's new regional office and research station in Zimbabwe. Hired over 20 local staff and acquired all equipment.
- Selected the site, and led design and acquisition of greenhouses, seed storage, and irrigated land facilities for the station. Led and coordinated a team of breeders and entomologists to create a new CIMMYT maize breeding program in Zimbabwe with heavy emphasis on maize streak virus resistance. That station is still the hub of CIMMYT activity in Southern Africa.
- Developed goals, budget, and administrative processes and then served as Station Manager and breeder of new maize breeding research station in Texas for Pioneer Overseas Corporation (with testing and market in Mexico and Central America). Hired staff and acquired equipment.

Maize Breeder and Station Manager, Pioneer Overseas Corporation, Weslaco, Texas. **1983 – 1984**

- Developed goals, budget, and administrative processes and then served as Station Manager and breeder of new maize breeding research station in Texas for Pioneer Overseas Corporation (with testing and market in Mexico and Central America). Hired staff and acquired equipment.

Post-doctoral Fellow, maize breeding, CIMMYT Maize Program, Mexico. **1981 - 1982**

Recognitions

Bud Antle Chair for Excellence, University of Arizona. **2015**

Mentor to Ms. Naeela Qureshi, a Pakistani who is winner of the 2014 Jeannie Borlaug Women in Triticeae Award. **2014**

USDA Certificate of Appreciation in Recognition of Outstanding Leadership, Commitment, and Service to the United States Wheat and Barley Scab Initiative, 1997-2006. Presented by Dr. Kay Simmons, USDA-ARS. **2005**

MSU Extension Director Citation, "Special Contribution to MSU Extension and the Michigan Wheat Industry". **1996**

Outstanding Senior in Crop Science, Colorado State University. **1976**

Outstanding Junior in Agronomy, Colorado State University. **1975**

Wheat Varieties Developed/Registered

Name	*R. Ward's Role*	*Year of Release*
'Chelsea'	Testing and release	1993
'Lowell'	" " "	1994
'Mendon'	" " "	1994
'MSU D6234'	Crossing, selection, testing, release	2003
'MSU D8006'	" " "	2004
'Red Ruby'	" " "	2006
'Jewel'	" " "	2006
'Crystal'	" " "	2006
'Ambassador'	" " "	2007
'Red Amber'	Crossing, selection, testing (released by Dr. Janet Lewis)	2008
'Coral'	" " "	2008
'Envoy'	" " "	2008
'Jupiter'	" " "	2010

Publications in Refereed Journals

Lewis JM, Siler L, Ellis D, Souza E, Ng PKW, Dong YH, Brown-Guedira G, Marshall D, Kolmer J, Jiang GL, **Ward RW.** 2012. Registration of 'Red Ruby' Wheat. *Journal of Plant Registrations* 6: 324-332.

Singh RP, Hodson DP, Huerta-Espino J, Jin Y, Njau P, Wanyera R, Herrera-Foessel SA, **Ward RW** (2008) Will stem rust destroy the world's wheat crop? *Advances in Agronomy* 98: 271-309.

Jin Y, Szabo LJ, Pretorius Z., Singh RP, **Ward R**, Fetch T. 2008 Detection of virulence to resistance gene *Sr24* within race TTKS of *Puccinia graminis* f. sp *tritici. Plant Disease* 92: 923-926

Jiang G, Dong Y, Shi J, **Ward R**. 2007. QTL analysis of resistance to Fusarium head blight in the novel wheat germplasm CJ 9306. II. Resistance to deoxynivalenol accumulation and grain yield loss. *Theoretical and Applied Genetics* 115: 1043-1052.

Jiang GL, Shi J, **Ward RW**. 2007. QTL analysis of resistance to Fusarium head blight in the novel wheat germplasm CJ 9306. I. Resistance to fungal spread. *Theoretical and Applied Genetics* 116: 3-13.

Jin Y, Singh, RP, **Ward RW**, Wanyera R, Kinyua M, Njau P, Pretorius ZA. 2007. Characterization of seedling infection types and adult plant infection responses of monogenic Sr gene lines to race TTKS of *Puccinia graminis* f. sp *tritici. Plant Disease* 91: 1096-1099.

Jiang GL, Chen Z, Xu Y, Yang Z, Shen Q, Lu W, **Ward R**. 2006. Registration of FHB-resistant and high-yielding wheat germplasms CJ 9403 and CJ 9815. *Crop Science* 46: 2724-2726.

Jiang GL, Dong Y, Lewis JM, Siler L, **Ward RW**. 2006. Characterization of resistance to *Fusarium graminearum* in a recombinant inbred line population of wheat: resistance to fungal spread, mycotoxin accumulation, and grain yield loss, and trait relationships. *Crop Science* 46: 2590-2597.

Jiang GL, Huang DC, Shen QL, Yang ZL, Lu WZ, Shi JR, Zhu H, Chen ZX, **Ward R**. 2006. Registration of wheat germplasms CJ W14 and CJ 9306 highly resistant to Fusarium head blight. *Crop Science* 46: 2326-2328.

Jiang GL, **Ward RW**. 2006. Inheritance of resistance to Fusarium head blight in the wheat lines 'CJ 9306' and 'CJ 9403'. *Plant Breeding* 125: 417-423.

Singh RP, Hodson DP, Jin Y, Huerta-Espino J, Kinyua MG, Wanyera R, Njau P, **Ward RW**. 2006. Current status, likely migration and strategies to mitigate the threat to wheat production from race Ug99 (TTKS) of stem rust pathogen. *CAB Reviews*: Perspectives in Agriculture, Veterinary Science, Nutrition and Natural Resources 1(54): 1-13.

Song QJ, Shi JR, Singh S, Fickus EW, Costa JM, Lewis J, Gill BS, **Ward R**, Cregan PB. 2005. Development and mapping of microsatellite (SSR) markers in wheat. *Theoretical and Applied Genetics* 110: 550-560.

Wang D, Shi J, Carlson SR, Cregan SB, **Ward RW**, Diers BW. 2003. A low-cost, high-throughput polyacrylamide gel electrophoresis system for genotyping with microsatellite DNA markers. *Crop Science* 43: 1828-1832.

Hazen SP, Zhu LC, Kim HS, Tang GS, **Ward RW**. 2002. Genetic diversity of winter wheat in Shaanxi province, China, and other common wheat germplasm pools. *Genetic Resources and Crop Evolution* 49: 437-445.

Hazen SP, Leroy P, **Ward RW**. 2002. AFLP in *Triticum aestivum* L.: patterns of genetic diversity and genome distribution. *Euphytica* 125: 89-102.

Van Sanford D, Anderson J, Campbell K, Costa J, Cregan P, Griffey C, Hayes P, **Ward R**. 2001. Discovery and deployment of molecular markers linked to Fusarium head blight resistance: an integrated system for wheat and barley. *Crop Science* 41: 638-644.

Rinella MJ, Kells JJ, **Ward RW**. 2001. Response of 'Wakefield' winter wheat (*Triticum aestivum*) to dicamba. *Weed Technology* 15: 523-529.

Kim HS, **Ward RW**. 2000. Patterns of RFLP-based genetic diversity in germplasm pools of common wheat with different geographical or breeding program origins. *Euphytica* 115: 197-208.

Ward RW, Yang ZL, Kim HS, Yen C. 1998. Comparative analyses of RFLP diversity in landraces of *Triticum aestivum* and collections of *T. tauschii* from China and southwest Asia. *Theoretical and Applied Genetics* 96: 312-318.

Kim HS, **Ward RW**. 1997. Genetic diversity in Eastern US soft winter wheat (*Triticum aestivum* L em Thell) based on RFLPs and coefficients of parentage. *Theoretical and Applied Genetics* 94: 472-479.

Hazen HS, **Ward R**. 1997. Variation in soft winter wheat characteristics measured by the single kernel characterization system. *Crop Science* 37: 1079-1086.

Hazen SP, Ng PKW, **Ward RW**. 1997. Variation in grain functional quality for soft winter wheat. *Crop Science* 37: 1086-1093.

Schulthess U, Schroeder K, Kamel A, AbdElGhani AM, Hassanein EE, AbdElHady SS, AbdElShafi A, Ritchie JT, **Ward R**, Sticklen J. 1996. NEPER-weed: A picture-based expert system for weed identification. *Agronomy Journal* 88: 423-427.

Maredia MK, **Ward R**, Byerlee D. 1996. Econometric estimation of a global spillover matrix for wheat varietal technology. *Agricultural Economics* 14: 159-173.

Fowler DG, Limin AE, Wang SY, **Ward RW**. 1996. Relationship between low-temperature tolerance and vernalization response in wheat and rye. *Canadian Journal of Plant Science* 76:37-42.

Wang SY, **Ward RW**, Ritchie JT, Fischer RA, Schulthess U. 1995. Vernalization in wheat .1. A model-based on the interchangeability of plant-age and vernalization duration. *Field Crops Research* 41: 91-100.

Wang SY, **Ward RW**, Ritchie JT, Fischer RA, Schulthess U. 1995. Vernalization in wheat .2. Genetic variability for the interchangeability of plant age and vernalization duration. *Field Crops Research* 44: 67-72.

Guo WW, **Ward RW**, Thomashow MF. 1992. Characterization of a cold-regulated wheat gene related to Arabidopsis COR47. *Plant Physiology* 100: 915-922.

Ward RW, Heyne EG, Paulsen GM. 1983. Responses of alloplasmic and euplasmic wheats to photoperiod and vernalization. *Theoretical and Applied Genetics* 66: 61-66.