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HIGHLIGHT QUALIFICATIONS

Trained and experienced biologist with strong academic background in botany, plant taxonomy, seed morphology, seed physiology, seed biology, weed biology, plant ecology, agronomy, and horticulture

Productive research lead in initiating research activities, delivering high impacted research outcomes, managing research projects, and establishing research collaborations with exceptional competencies in initiative, critical thinking, innovation, adaptability, problem-solving and decision making

Experienced lab manager with excellent leadership, interactive communication, and team building skills in the management of human resource, the delivery of diagnostic services, CFIA accreditation programs and reference material management and expansion under ISO 17025 and ISO 17043 quality control standards, and the conduct the consultations with internal and external stakeholders

EDUCATION

Ph.D., Plant Sciences with a specialization in Plant Ecology, the Department of Plant Sciences, University of Saskatchewan, Saskatoon, Saskatchewan, Canada.

M.Sc. Agriculture with specializations in Plant Physiology, Department of Agriculture, Inner Mongolia Agriculture University, China.

B.Sc. Agriculture with a specialization in Horticulture/Vegetable Crop Sciences, Department of Agriculture, Inner Mongolia Agriculture University, China.

EXPERIENCES AND EMPLOYMENT HISTORY

12/2016-Present: Research Scientist, Head of the National Seed Herbarium, Saskatoon Laboratory-Seed Science and Technology Section, Canadian Food Inspection Agency (CFIA) 301-421 Downey Road, Saskatoon, SK, S7N 4L8, Canada

12/2006- 11/2016: Unit Head, Research Lead, Program Coordinator, and Biologist, National Seed Herbarium and Plant Health Diagnostic Unit, Saskatoon Laboratory-Seed Science and Technology Section, Canadian Food Inspection Agency (CFIA) 301-421 Downey Road, Saskatoon, SK, S7N 4L8, Canada

Research Lead

Proposed, developed, and led high profile research projects identified by CFIA plant health programs of Seed, Invasive Plants, and Oilseeds and Grains. Enriched testing resources (e.g., weed seed specimens, image database), testing methods (e.g., germination and sub-sampling) and developed seed identification tools (e.g., Lucid tool, image analysis and computer vision).

Published and presented research results and technical posters from research projects or investigations annually in conferences and annual meetings. Developed resources from research projects have been used and distributed widely to seed testing industry, CFIA internal lab staff, program specialists, inspectors, and the general public in CFIA external website.

Developed collaborations and expert networks with other federal departments, academia and international organizations, such as Agricultural Agri-Food Canada, Canadian Grain Commission, University of Saskatchewan, and USDA.

Led internal projects of diagnostic method development, validation study, procedural improvement, and coordinate external referee studies for inter-laboratory comparison.

Unit head

Managed with excellence the services of Canadian National Seed Herbarium internally to CFIA laboratories, program specialists, plant risk assessors and inspectors, and externally to the private seed testing industry and grain export companies. The services included diagnostic testing, investigations, science advice, proficiency test program delivery, the delivery of training programs, the development of training materials, and program support.

Managed with excellence the diagnostic services of Plant Health Unit to CFIA seed and grain inspections, import and export monitoring, and invasive plants pathway survey in support of phytosanitary certification, regulation surveillance, and the policy decisions of

plant health programs. Managed reference supply programs to commercial seed labs and the Commercial Seed Analyst Association of Canada.

Managed the emergency need of weed seed analysis for phytosanitary certification of a grain surge with a short turnaround time by resource reallocation, process improvement, and staff mobilization. Recognized with Western Award for Exceptional Service Delivery in 2016.

Provided supervision, mentorship, team building, and collaboration between units for over 10 staff in the National Seed Herbarium and Plant Health Unit.

Ensured the diagnostic tests of NSH and Plant Health unit and the reference material management of National Seed Herbarium in compliance with applicable quality control requirements of the International Organization for Standardization (ISO 17025)

Performed auditing internally and externally as technical assessors, drafted and updated Standard Operational Procedures for diagnostic tests and reference material management.

Provided and reviewed science advice in relation to seed identification, taxonomy and weed biology and pest control to CFIA plant health programs of Seeds, Invasive Alien Species, and Oilseeds and Grains.

Participated in human resource recruitment and business planning, served in staffing selection boards for the laboratory staffing actions in recruiting positions of BIs, Supervisor, EGs and students. Drafted and succeed in writing contracts for imaging, computing and web-designing.

Provided technical, quality control and program trainings, developed their associated training modules and training materials.

Performed duties as an acting Section Head for managing multiple units, solving issues, providing technical advice and information briefings internally and externally.

Program Coordinator

Participated in national, bilateral (Canada and USA), quadrilateral (Canada, USA, Australia, New Zealand), and international seed testing or plant health working groups, technical committees, associations and plant health organizations.

Managed, delivered, strategic planned and improved CFIA proficiency test program and seed analyst accreditation program for over 30 private seed testing laboratories and seed

analysts. Drafted, reviewed, and revised and issued four key official documents to seed testing industry related to the CFIA accreditation programs for seed testing.

Current Membership of Committees

Chair or Technical committee members of the International Seed Testing Association (ISTA), Purity Committee, Proficiency Test Committee, Wild Species, and AOSA Rule Committee and Journal Committee.

Chair of Quadrilateral (QUAD, Australia, New Zealand, USA and Canada) diagnostic Tools Collaboration Working Group on developing diagnostic tools for plant pests

Member of a working group for the protocol of Striga of International Plant Protection Convention (IPPC).

08/2006 to 12/2006: Production Research Lead, Syngenta Seeds, Inc., 6338 Highway 20-26, Nampa, ID 83687 USA.

Performed heat treatment studies on seed vigor and storage abilities for sweet corns.

Conducted variety analyses and comparisons to improve the process of seed harvesting treatments.

05/2005 to 07/2006: NSERC Visiting Fellowship, Saskatoon Research Centre, Agriculture and Agri-Food Canada, Saskatoon, SK, Canada, S7N 0X2.

Studied seed dehiscence physiology of *Brassica* species and their relations to pod shatter, and developing molecular markers for breeding pod shatter resistance in canola.

Completed a peer-reviewed manuscript, a research progress report, and a research proposal.

Evaluated twenty eight varieties or breeding lines in plant traits, pod morphology and yield performance in the field.

09/2001 to 03/2005: Ph.D. Candidate and Graduate Research Assistant, Department of Plant Sciences, University of Saskatchewan, Saskatoon, SK, Canada, S7N 5A8.

Studied plant ecology, seed biology and physiology in low temperature tolerance, water relations and metabolic activities using nuclear magnetic resonance (NMR) spectroscopy,

calorimetry, chromatography technologies and quantitative modeling approaches to predict field performance for a forage species.

Published six scientific papers in high ranking academic journals. Reviewed a grant application proposal for USDA and a peer-reviewed paper. Presented research results in six regional and international conferences.

03/2000 to 08/2001: Visiting Scientist, Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, AB, Canada, T6G 2P5.

Studied disease resistance to *Alternaria brassicae* in *Brassica* species with wild collections and crop species.

Developed screening and selection techniques of toxin-resistance using microspore culture in haploids

04/1993 to 02/2000: Associate Professor, Department of Horticulture, Inner Mongolia Agricultural University, Inner Mongolia, China.

Organized and supervised three research projects in water stress physiology and drought resistance, seed developmental physiology, and disease resistant breeding.

Developed research projects for external founding and writing scientific publications.

Provided leadership and executive administration for an academic section.

Cooperatively developed certification standards for crucifer seed quality and farm accreditation of vegetable seed production with the Inner Mongolia Standardization Bureau.

Conducted the germplasm collection and evaluation in seed pumpkin that contributed to the implementation of regional germplasm conservation

03/1993 to 10/1993: Visiting Fellow, Tsukuba International Agricultural Training Centre, Japan International Cooperation Agency (JICA), Tsukuba, Ibaraki, Japan.

Researched on seed vigor test using seed accelerated aging treatment.
Studied horticultural crop production and greenhouse management in Japan.
Communicated international agricultural research and production system

KEY PUBLICATIONS

Yi, X., Eramian, M., **Wang, R.**, Neufeld, E. (2014) Identification of morphologically similar seeds using multi-kernel learning, Computer and Robot Vision.

J. Neudorf, **R. Wang** and J. Hinke. (2011). Distinguishing Knapweeds and Star thistles (*Centaurea* spp.) of Interest to Canadian Weed Seed Regulation. Seed Technology Journal 33 (2)

J. Neudorf and **R. Wang**. (2009). Identification of Foxtail (*Setaria* sp.) Impurities: Examination and Comparison of Four Species. Seed Technology Journal 31 (2): 202

K. Tanino and Wang, R. (2008). Modeling Chilling Requirement and Diurnal Temperature Differences on Flowering and Yield Performance in Strawberry Crown Production. Hortscience 43 (7): 2060-2065.

Wang, R., Ripley, L.V., Rakow, G. (2007). Pod shatter resistance evaluation in cultivars and breeding lines of *Brassica napus*, *B. juncea* and *Sinapis alba*. Plant Breeding 126, 588-595.

Wang, R., Bai, Y., Tanino, K., Low, N.H. (2006). Seed size variation in cold and freezing tolerance during seed germination of winterfat (*Krascheninnikovia lanata*) (*Chenopodiaceae*). Canadian Journal of Botany 84: 49-54.

Yu, P., **Wang, R.**, Bai, Y. (2005). Reveal protein molecular structural-chemical differences between two types of winterfat (forage) seeds with physiological difference in low temperature tolerance using synchrotron-based fourier transform infrared microspectroscopy. Journal of Agricultural and Food Chemistry 53: 9297-9303.

Wang, R., Bai, Y., Tanino, K. (2006). Seedling emergence of winterfat (*Krascheninnikovia lanata* (Pursh) A.D.J. Meeuse & Smit) in the field and its prediction using the hydrothermal time model. Journal of Arid Environments 64: 37-53.

Qiao, Y., **Wang, R.**, Bai, Y., Hansen, L.D. (2005). Characterizing critical phases of germination in winterfat and malting barley using differential scanning calorimetry. Seed Science and Research 15: 229-238.

Wang, R., Bai, Y., Tanino, K. (2005). Germination of winterfat (*Eurotia lanata* (Pursh) Moq.) seeds at reduced water potentials: testing assumptions of hydrothermal time model. Environmental and Experimental Botany 53 (1): 49-63.

Wang, R., Bai, Y., Tanino, K. (2004). Effect of seed size and sub-zero imbibition temperature on the thermal time model of winterfat (*Eurotia lantata* (Pursh) Mog.). Environmental and Experimental Botany 51 (3): 183-197.