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Dept. of Entomology, Plant Pathology and Weed Science

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EDUCATION

PhD	Biological Sciences	University of Alberta, Edmonton, Alberta, Canada
PhD	Plant Physiology	Jozsef Attila University, Szeged, Hungary
MSc	Plant Breeding	University of Chittagong, Chittagong, Bangladesh
BSc (Hons)	Botany	University of Chittagong, Chittagong, Bangladesh

EXPERIENCE

Ag. Research Scientist & Graduate Faculty Member 2017-present
Dept. of Entomology, Plant Pathology and Weed Science
New Mexico State University
Las Cruces, NM

Research Geneticist (Plants) 2015 - 2017
United States Dept. of Agriculture
Agricultural Research Service
National Small Grains and Potato Germplasm Research
Aberdeen, ID

Plant Molecular Biologist 2013 - 2014
Dept. of Plant and Soil Sciences
University of Kentucky
Lexington, KY

Molecular Plant Biologist 2011 - 2012
Crop Diversification Centre (North)
Alberta Agriculture
Edmonton, Alberta, Canada

Graduate Teaching Assistant (2nd PhD student) 2004 - 2010
Dept. of Biological Sciences
University of Alberta
Edmonton, Alberta, Canada

Research Scientist & project director 1994 - 2004
Alberta Research Council/Alberta Agriculture
Alberta, Canada.

Postdoctoral Fellow/Research Associate 1985 - 1994
Agricultural University, Wageningen, Netherlands
University of Quebec, Three Rivers & Montreal, Quebec, Canada
University of Saskatchewan, Saskatoon, Saskatchewan, Canada
Florida State University, Tallahassee, Florida
University of British Columbia, Vancouver, BC, Canada

Lecturer/Assistant Professor 1979 – 1985
Dept. of Botany, University of Chittagong
Chittagong, Bangladesh

Scientific Officer 1978 – 1979
Breeding Division, Bangladesh Rice Research Institute
Gazipur, Dhaka, Bangladesh.

PUBLICATIONS

Review article:

Rashid, A. (2016). Defense responses of plant cell wall non-catalytic proteins against pathogens. *Physiol. Mol. Plant Pathol.* 94, 38-46.

Book publication:

Rashid, A. (2012) Development of transgenic plants through application of reverse genetics. pp 232; ISBN-13: 978-3-8465-4625-3; LAP LAMBERT Academic Publishing GmbH & Co. KG; Heinrich-Böcking-Str. 6-8, 66121, Saarbrücken, Germany.

AGRI-FACTS publication:

Rashid, A. et al., (2001). Plant bioassay techniques for detecting and identifying herbicide residues in soil. Agri-Facts: Practical information for Alberta's Agriculture Industry. Agdex # 609-1, Edmonton, Alberta, Canada.

Journal articles:

Rashid A., and Schutte, B. A simple resazurin colorimetric assay for detecting weed seed mortality. Manuscript in preparation.

Gines, M., Baldwin, T., **Rashid, A.**, Bregitzer, P., Maughan, P.J., Jellen, EN., Esvelt Klos, K. (2018). Selection of expression reference genes with demonstrated stability in barley among a diverse set of tissues and cultivars. *Crop Sci.* 58,332–341.

Rashid, A. et al., (2017). A high-throughput RNA extraction for sprouted single-seed barley (*Hordeum vulgare* L.) rich in polysaccharides. *Plants*, 6, 1-6.

Rashid, A. (2017). Comparison of a kanamycin versus hygromycin resistance gene in transgenic plant selection of *Arabidopsis thaliana* L. *Adv. Cell Sci. Tiss. Cult.* 1, 1-3

Rashid, A. and Deyholos MK (2015). Phylogenetic relationship and *in silico* expression profile of *PELPK1* of *Arabidopsis thaliana* (L.) Heynh. *Intern'l. J. Biosci.* 6, 93-99.

Rashid, A. (2014). Sub-cellular localization of *PELPK1* in *Arabidopsis thaliana* as determined by translational fusion with green fluorescent protein reporter. *Mol. Biol.* 48, 258-262.

Rashid, A. et al., (2013). A genomic region upstream of *Arabidopsis thaliana* *PELPK1* promotes transcription in aleurone tissues and in response to *Pseudomonas syringae* or *Pythium irregulare*. *Plant Mol. Biol. Rep.* 31, 1025-1030.

Rashid, A. et al., (2013). Proteomic profiling of the aleurone layer of mature *Arabidopsis thaliana* seed. *Plant Mol. Biol. Rep.* 31, 464-469

Rashid, A. et al., (2013). Effects of soil-borne *Rhizoctonia solani* on canola seedlings after application of glyphosate herbicide. *Canadian J. Plant Sci.* 93, 97-107.

Rashid, A. et al., (2013). Effects of root exudates and pH on *Plasmodiophora brassicae* (Woronin) resting spore germination and infection of canola (*Brassica napus* L.) root-hairs. *Crop Protection* 48, 16-23.

Hwang, S-F, Ahmed, H., Zhou, Q., **Rashid, A.**, Strelkov, S., Gossen, B., Peng, G. and Turnbull, G. (2013). Effect of susceptible and resistant canola plants on *Plasmodiophora brassicae* resting spore populations in the soil. *Plant Pathol.* 62, 404-412.

- Rashid, A.** and Deyholos, *M.K.* (2011). PELPK1 contains a unique pentapeptide repeat and is a positive regulator of germination in *Arabidopsis thaliana*. *Plant Cell Rep.* 30, 1735-1745.
- Rashid, A. et al.**, (2005). Inhibition of seed germination and seedling growth by hound's-tongue (*C.officinale*) seed leachate. *Weed Biol. & Mgmt.* 5, 143-149.
- Rashid, A. et al.**, (2003). Spiny annual sowthistle (*Sonchus asper*) resistance to acetolactate synthase (ALS) inhibiting herbicides in Alberta. *Weed Res.*, 43, 214-220.
- Shah, S., **Rashid, A.**, Burd, G., Dixon, D. and B. Glick. (2002). Phyto-remediation of Arsenate contaminated soil by transgenic canola and plant growth promoting bacterium, *Enterobacter cloacae* CAL2. *Plant Physiol. Biochem.* 40, 355-361.
- Rashid, A. et al.**, (1998) A possible involvement of gibberellin in the mechanism of wild oat resistance to *triallate* and cross-resistance to *difenzoquat*. *Weed Res.* 38, 461-466
- Rashid, A. et al.**, (1997) Effects of *triallate* and *difenzoquat* on fatty acid composition in young shoots of susceptible and resistant *Avena fatua* populations. *Pestic. Biochem. Physiol.* 57, 79-85.
- Rashid, A. et al.**, (1997) Response of *triallate*-resistant and -susceptible wild oat populations to *difenzoquat* and EPTC in a seedling bioassay. *Weed Technol.* 11, 527-531.
- O'Donovan, J.T., **Rashid, A.**, Nguyen, H.V., Newmann, J.C., Khan, A.A., Johnson, C.I., Blackshaw, R.E., and Harker, K.N. (1996) A seedling bioassay for assessing the response of wild oat populations to *triallate*. *Weed Technol.* 10, 931-935.
- Eastman, P.A.K., **Rashid, A.**, and Camm, E.L. (1997) Changes of the photosystem II activity and thylakoid proteins in spruce seedlings during water stress. *Photosyn.* 34, 201-210.
- Rashid, A. and Popovic, R.** (1995) Electron donation to photosystem II by DPC is inhibited by both the endogenous Mn-complex and by exogenous Mn ions. *Biochem. Cell Biol.* 73, 241-245.
- Rashid, A. and Camm, E.L.** (1995) Activities and stability of native and Triton X-100-fractionated thylakoid membranes from white spruce and spinach. *Photosyn.* 31, 389-398.
- Rashid, A. et al.**, (1994) Molecular mechanism of action of Pb⁺⁺ and Zn⁺⁺ on water oxidizing complex of photosystem II. *FEBS Lett.* 350, 296-298.
- Friesen, L., Morrison, I.N., **Rashid, A.** and Devine, M.D. (1993) Response of a chlorsulfuron-resistant biotype of *Kochia scoparia* to sulfonyleurea and alternative herbicide. *Weed Sci.*, 41, 100-106.
- Devine, M.D. and **Rashid, A.** (1993) Antagonism of tralkoxidim activity in wildoat (*Avena fatua* L.) by metsulfuron methyl. *Weed Res.* 33, 97-104.
- Rashid, A. and Homann, P.H.** (1992) Properties of iodide- activated photosynthetic water-oxidizing complexes. *Biochim. Biophys. Acta.* 1101, 303-310.
- Rashid, A. and Popovic, R.** (1992) Requirement of manganese for the photooxidation of hydroxylamine by photosystem II. *J. Photochem. Photobiol.* 13, 323-326.
- Rashid, A. et al.**, (1991) Interaction of zinc with the donor side of photosystem II. *Photosynth. Res.* 30, 123-130.
- Rashid, A. and Carpentier, R.** (1991) Ca⁺⁺ stimulation of the inhibitory action of Carbonyl Cyanide p-Trifluoromethoxyphenylhydrazone (FCCP) in photosystem II. *Photosyn.*. 25, 441-446.
- Rashid, A. and Popovic, R.** (1990) Protective role of CaCl₂ against Pb⁺⁺ inhibition in photosystem II. *FEBS Lett.* 271, 181-184.
- Rashid, A. and Carpentier, R.** (1990) Atrazine inhibition of photosystem II is modulated by specific inorganic cofactors involved in oxygen evolution. *Curr. Res. Photosynth.* Baltscheffsky, M. ed., Vol. 1, 595-598, Kluwer Acad. Pub., Massachusetts, USA.
- Rashid, A. and Carpentier, R.** (1990) The 16 and 23 kDa extrinsic polypeptides and the associated Ca⁺⁺ and Cl⁻ modify atrazine interaction with photosystem II core complex. *Photosynth. Res.* 24, 221-227.
- Rashid, A. and Carpentier, R.** (1989) CaCl₂ inhibition of H₂O₂ electron donation to PS II in submembrane preparations depleted in extrinsic polypeptides. *FEBS Lett.* 258, 331-334.

- Rashid, A. and van Rensen, J.J.S.** (1987) Uncoupling and photoinhibition in chloroplasts from a triazine-resistant and a susceptible *Chenopodium album* biotype. *Pestic. Biochem. Physiol.* 28, 325-332.
- Rashid, A. and Demeter, S.** (1986) Triazine resistance in *Erigeron canadensis* L. IV. Investigated by thermoluminescence measurements. *Ind. J. Plant Physiol.* 29, 335-344
- Rashid, A. and Demeter, S.** (1986) Triazine resistance in *Erigeron canadensis* L. II. Investigated by fluorescence induction transient analysis. *Bang. J. Bot.* 15, 207-210.
- Rashid, A. and Demeter, S.** (1985) Triazine resistance in *Erigeron canadensis* L. I. Investigated by oxygen evolution measurements. *Bang. J. Bot.* 14, 133-139.
- Rashid, A. and Demeter, S.** (1985) Triazine resistance in *Erigeron canadensis* L. III. Investigated by flash induced 515 nm absorbance change measurements. *Bang. Nuc. Sci. Appl.* 16, 60-66.
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- Rashid, A. and Bhadra, S.K.** (1982) Assessment of radiosensitivity of three varieties of *Solanum melongena* L. *Bang. Nuc. Sci. Appl.* 13, 61-66.
- Rashid, A. and Bhadra, S.K.** (1981) Effect of gamma radiation on agronomic characters of egg plant (*Solanum melongena* L.) *Chitt. Univ. Stud.* 5, 123-127.
- Rashid, A. and Bhadra, S.K.** (1981) Studies on the effect of gamma rays on yield and some ancillary characters of *Solanum melongena* L. *Bang. Nuc. Sci. Appl.* 11, 36-42.
- Rashid, A. and Bhadra, S.K.** (1980) M₁ morphological abnormalities and M₂ mutation studies in gamma ray treated population of *Solanum melongena* L. *Chitt. Univ. Stud.* 4, 27-32

CLIENT REPORTS

- Rashid, A., Davies, M., Barrett, M., Palli, R.** (2013). "Keeping the Genie in the Bottle": placing transgenic agronomic traits under the control of 'gene switch' technology to facilitate phenotype containment. KTRDC Annual Report, Univ. of Kentucky, Lexington, Kentucky, USA.
- Rashid, A.** and O'Donovan, J.T. (2001). Defining Climatic factors that reduce crop tolerance and weed control with herbicides. AARI Final Report; Project # 98M218,
- Rashid, A.** (2001). Effects of cold temperatures on crop tolerance to the herbicides, *sulfosulfuron* and *glyphosate*. Final Report, Monsanto Canada Inc.
- Rashid, A.** (1996-2001). Herbicide damage diagnostic, and herbicide residue and resistance detection services. >100 reports provided to Producers, and Alberta Environmental Protection, Edmonton, Alberta, Canada.
- Rashid, A.** (2000). Development of a bioassay for Pursuit® (*imazethapyr*) residues in soil, and investigation of Pursuit® carryover injury to sensitive rotational crops. Report to Westco Fertilizers Ltd., Canada.
- O'Donovan, J.T., Pharris, R.P., Zhang, R., Rashid, A., and Harker, K.N.** (1998). Role of plant hormone gibberellins in wild oat resistance to herbicides. AARI Final Report, Project # 97M164, Alberta, Canada
- O'Donovan, J.T., Harker, K.N., Blackshaw, R.E., Rashid, A., Sharma, M.P., Khan, AA., and Maurice, D.** (1997). Investigation of herbicide resistant wild oat populations in Alberta. AARI Final Report. Project # 920037, Alberta, Canada.

ABSTRACTS AND PRESENTATIONS

- Rashid, A.** (2017). *Keeping the genie in the bottle*: a concept of containing herbicide-tolerant traits in crop plants by using a genetic switch. Seminar presentation at the Dept. of

- Entomology, Plant Pathology, and Weed Science, New Mexico State University, Las Cruces, NM; November 29, 2017.
- Rashid, A. et al.**, (2017). Genetic improvement of barley through chemical mutagenesis and cross-breeding techniques. Presented at the USDA-ARS PWA, Aberdeen, Idaho; June 13th 2017.
- Rashid, A. et al.**, (2016). Fast high-quality single-seed RNA extraction from sprouted malting barley rich in polysaccharides Presented at the 12th International Barley Genetic Symposium, Minneapolis, MN; June 26-30, 2016; Abstract #155.
- Rashid, A.** (2014). Management of imidazolinone herbicide tolerance trait in crop plants: Application of an externally regulated genetic switch. Presented at the KTRDC, Univ. of Kentucky, Lexington, KY; February 12th, 2014.
- Deyholos, M.K., Rashid, A. et al.** (2013). The intrinsically disordered Pan-Proteome, and characterization of growth promoting IDPs. Abstract #78, ASPB meeting (Western Section) April 12-13, 2013; University of California, Davis.
- Rashid, A.** (2012). Constitutive expression of putative blackleg resistance genes of *Arabidopsis thaliana* in an elite canola cultivar for resistance against blackleg disease: A project proposal presented to the Dept. of Agriculture, Food and Nutritional Sciences, Univ. of Alberta/Alberta Agriculture, Edmonton, Alberta, Canada; November 30th 2012.
- Rashid A. et al.** (2011). Effect of a wide range of pH values on resting spore germination and clubroot (*Plasmodiophora brassicae*) severity on canola. Abstract # 8; presented at the 32nd Annual Meeting of the Plant Pathology Society of Alberta, Univ. of Alberta, Edmonton, AB. Canada. November 7-9, 2011.
- Rashid, A.** (2011). Bioinformatics and mutational analysis of *PELPK1* in *Arabidopsis thaliana*. Presented at the Dale Bumpers National Rice Research Center, USDA-ARS, East Stuttgart, Arkansas.
- Rashid, A.** (2006). Development of Golden Rice through plant genetic engineering. Botany 600 presentation. Dept. of Biol. Sciences, Univ. of Alberta, Edmonton, Alberta, Canada.
- Rashid, A.** (2005). How herbicides work: classification, mode of action and resistance. Botany 600 presentation. Dept. of Biol. Sciences, Univ. of Alberta, Edmonton, Alberta, Canada.
- Rashid, A.** (2003). Factors affecting glyphosate performance. Presented at the producers meeting, Lakeland Agricultural Research Association (LARA), Bonnyville, Alberta, Canada.
- Rashid, A.** (2003). Recognizing herbicide action and injury. Presented at the Annual General Meeting, Lakeland Agricultural Research Association, Ashmont, Alberta, Canada.
- Rashid, A.** (2002). Herbicide damage diagnostic clinic at the Alberta Research Council in Vegreville. Presented at the ARC-Connect Conference, Leduc, Alberta, Canada.
- Rashid, A., et al.**, (2001). Sulfonylurea resistant spiny annual sowthistle populations can be managed with alternative herbicides. Abstract #5; Proc. Expert Comm. Weeds, Quebec City, Canada
- Rashid, A. et al.**, (2001). Climatic factors affecting herbicide performance. Abstract #6, Proc. Expert Comm. Weeds, Quebec City, Canada.
- Rashid, A.** (2001) Herbicide related issues in Alberta: an overview. Presented at the Regional Agricultural Crop Specialists and Fieldmen, ARC, Vegreville, Alberta, Canada.
- Rashid, A. and Checkel, S.** (2001). Factors affecting barley tolerance to graminicides. Presented at the Board of Directors, Alberta Barley commission, Alberta, Canada
- Rashid, A and Checkel, S.** (2001). Plant bioassay techniques for detecting Pursuit® (*imazethapyr*) residues in soil. On Farm Demo., Parkland Conservation Farm, Alberta, Canada.
- Rashid, A. and Checkel, S.** (2001). A barley bioassay for detecting Everest® (*flucarbazone-sodium*) residues in various soil types of Alberta. Demonstrated at the Board of Directors meeting, Alberta Barley commission, Alberta, Canada.

- Rashid, A.** (2001). An overview of herbicide research at Alberta Research Council in Vegreville. Presentation at the ARC Connect Conference, Leduc, Alberta.
- O'Donovan, J.T., Rashid, A., Newman, J., Robinson, D., Maurice, D. and Poisson, D** (2001). Spiny annual sowthistle (*Sonchus asper*) resistance to acetolactate synthase (ALS) inhibiting herbicides in Alberta. Proc. Weed Sci. Soc. Am., Reno, Nevada. #91, WSSA Abstract, Vol. 42, pp 26-27.
- Rashid, A., and Checkel, S.** (2000). Herbicide residue carryover in Alberta soil. Presented at the Top Grower Meeting, Festival Place, Sherwood Park, Alberta, Canada.
- O'Donovan, J.T., Rashid, A., and Phraris, R.P.** (1999). Wild oat (*Avena fatua*) resistance to *trilalate* and *difenzoquat* is linked to elevated levels of gibberellins. Proc. Weed Sci. Soc. of America, San Diego, CA, P.40-41.
- Rashid, A.** (1999). Effects of herbicides on weeds. Presented to the students of Environmental Toxicology, Lakeland College, Vermillion, Alberta.
- Rashid, A. and Sharma, M.P.** (1999). Herbicide carryover: Development of sensitive bioassay and Field investigation. Presented at the Westco ACES Agronomy Meeting, Edmonton, Alberta.
- O'Donovan, J.T., Rashid, A. and Khan, A.A.**(1997). Approaches to understanding *trilalate/ difenzoquat* resistance in wild oats: is gibberellic acid involved? Proc. Western Soc. of Weed Sci. p. 81-82.
- Rashid, A. et al.** (1997). Herbicide damage diagnostic, advisory, and technology transfer services. Presented at PMB Inspector Meeting, Alberta Environmental Protection, Chemical Assessment and Mgmt Division, Oxbridge Place, Edmonton, Alberta, Canada.
- Rashid, A., et al.** (1997). Wild oat resistance to *trilalate* and cross-resistance to *difenzoquat*. Presented at the 5th Annual Pseudo-Herbicide Resistant Weeds Workshop, Montana State University, Bozeman, Montana.
- O'Donovan, J.T., Rashid, A., Khan, A.A.**(1996). A relatively sensitive seedling bioassay for assessing wild oat resistance to *trilalate* and cross-resistance to *difenzoquat*. Proc. WSSA, Norfolk, VA, p.57.
- Rashid, A.** (1995-2002). Updates on herbicide research at the Alberta Research Council in Vegreville, Alberta. Yearly reports presented at the Alberta Weed Advisory Committee (AWAC) meetings, Edmonton, Alberta, Canada.

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