Kent J. Bradford

Curriculum Vita

Distinguished Professor, Department of Plant Sciences
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EDUCATION

Degree	Institution	Field	Year
PhD	University of California, Davis	Plant Physiology	1981
MS	Michigan State University, East Lansing	Horticulture	1977
BS	Michigan State University, East Lansing	Biochemistry	1975

PROFESSIONAL EXPERIENCE

Distinguished Professor - Department of Plant Sciences, University of California, Davis, 2013-present
Professor - Department of Plant Sciences, University of California, Davis, 2005-2013
Director, Seed Biotechnology Center, University of California, Davis, 1999-present.
Vice Chair for Teaching and Curriculum Development - Department of Plant Sciences, UC Davis, 2006-2010
Chair - Department of Vegetable Crops, University of California, Davis, 1993-1998.
Professor - Department of Vegetable Crops, University of California, Davis, 1991- 2005.
Overseas Fellow, Horticulture Research International, Wellesbourne, England, February-March, 1991.
Visiting scientist, Faculty of Horticulture, University of Western Sydney, Hawkesbury, Richmond, New South Wales, Australia, September 1990-February 1991.
Visiting scientist, CSIRO, Division of Plant Industry, Canberra, ACT, Australia, April-August 1990.
Associate Professor - Department of Vegetable Crops, University of California, Davis, 1987-1991.
Assistant Professor - Department of Vegetable Crops, University of California, Davis, 1982-1987.
Postdoctoral Fellow - Research School of Biological Sciences, Australian National University, Canberra, 1981-1982.
Ph.D. advisors, U.C. Davis - T.C. Hsiao and S.F. Yang.
M.S. advisor, Michigan State University - D.R. Dilley.

AWARDS AND HONORS

Award of Distinction, College of Agricultural and Environmental Sciences, UC Davis, October 2007
Invited Visiting Professor, University of Pierre and Marie Curie, Paris, June 2005; June 2007; October 2010
Adjunct Professor, Xishuangbanna Tropical Botanical Garden, Yunnan, People's Republic of China, 2004-6
Fellow, American Association for the Advancement of Science, 2003
Seed Science Award, Crop Science Society of America, 2002
Fulbright Scholar, Universidad Nacional de Cuyo, Mendoza, Argentina, March-June, 1999
Visiting Lectureship, Wageningen Agricultural University, The Netherlands, September 1995
Overseas Fellowship, Vegetable Research Trust, Horticulture Research International, Wellesbourne, England, 1991.
Postdoctoral Fellow, Australian National University, Canberra, 1981-82
Harry A. Jastro Scholarship, University of California, Davis, 1980-81
Regents Fellowship, University of California, Davis, 1979-80
Jastro-Shields Graduate Research Scholarship, 1979, 1980
Graduate Research Fellowship, University of California, Davis, 1978
National Science Foundation Graduate Fellowship, 1976-79

BS with High Honor, Honors College, Michigan State University, 1975
National Science Foundation Undergraduate Fellowship, 1973
National Merit Scholar, 1971
Valedictorian, Dimmitt High School, Dimmitt, Texas, 1971

SOCIETY MEMBERSHIPS
American Society for Horticultural Science
American Society of Plant Biologists
American Association for the Advancement of Science
International Seed Testing Association
International Society for Horticultural Science
International Society for Seed Science (Founding Trustee and Secretary, 1999-2004)

EDITORIAL SERVICE
Editorial Board, *Journal of Experimental Botany*, 1994-present
Associate Editor, *California Agriculture*, 2006-present
Editorial Board, *Journal of Plant Research*, 2006-2010
Editorial Board, *Seed Science Research*, 1994-2007
Associate Editor, *Seed Science Research*, 2003-2007
Monitoring Editor, *Plant Physiology*, 1995-2000
Associate Editor, *Crop Science*, 1992-1995
In addition, ad hoc reviewer for an average of 15+ manuscripts per year from over 20 journals, including *Science, Nature Biotechnology, PNAS, Plant Cell, Plant Physiology, Journal of Experimental Biology, Crop Science, Seed Science Research*.

RESEARCH INTERESTS
Physiology, genetics, ecology, biochemistry, molecular biology and biophysics of seed development, dormancy, germination, and longevity; hormonal regulation of seed and plant development; mathematical modeling of germination responses to environmental factors; agricultural biotechnology.

EXTRAMURAL GRANTS AND ACTIVITIES
Principal Investigator on extramural grants from the NSF, USDA, USAID and seed industry groups and companies.

Organized the Western Regional Seed Physiology Research Group, a unique voluntary cooperative effort of horticultural seed companies to fund a University-based fundamental research program targeted to the long-term needs of the seed industry. This Group has been in continuous operation since 1989 with an average of 12 member companies.

Founding Director of the UC Davis Seed Biotechnology Center (http://sbc.ucdavis.edu), a research, education and outreach unit of the College of Agricultural and Environmental Sciences dedicated to the development and commercialization of new plant and seed technologies for agricultural and consumer benefit. The SBC develops and operates research and education programs including the Plant Breeding Academy℠ (http://pba.ucdavis.edu), which offers breeder education programs in the US, Europe, Asia (Thailand) and Africa.

Co-founder with Francois Korn (owner of SeedQuest (www.seedquest.com)) of Seed Central (www.seedcentral.org), an organization focusing on energizing the seed industry cluster in California and enhancing technology transfer from UC Davis to applications in plant breeding, seed production, agriculture and food technology.

TEACHING EXPERIENCE
Undergraduate courses: Currently teach *Professionalism and Ethics in Genomics and Biotechnology* (BIT 171, required course for students in Biotechnology major), *Growth and Yield of Cultivated Plants* (PLS 100B and 100BL, co-teach lecture

section and primary instructor for laboratory). Previously taught *Seed Production and Quality* (all aspects of seed production, seed technology, seed storage, seed enhancement and seed utilization for crop establishment); *Plants and People* (general education course for non-majors and an overview of plant science;

Graduate courses: *Science: Revelation, Discovery or Invention* (PBI 223, a unique course reviewing and discussing original writings in the history and development of scientific methodology, epistemology, and philosophy from Plato and Aristotle to contemporary philosophers and scientists); *Plant Biology Core Course* (PBI 200B, provide one week of instruction on seed biology); *Group Study in Seed Physiology* (PLS 298, offered approximately every third year).

Extension courses: *Seed Biology, Production and Quality*, 2-day intensive extension course offered in alternate years and other courses offered by the Seed Biotechnology Center (e.g., Plant Breeding Academy). Co-taught 1-week course on *Advanced Topics in Seed Physiology*, Universidad Nacional de Cuyo, Mendoza, Argentina, April 1999; Univ. of Lavras, Brazil, November 1999; and Wageningen University, The Netherlands, May 2010.

Mentoring: Directed the completion of 13 M.S. and 10 Ph.D. students since 1982. Currently major professor for 3 Ph.D. students. Supervised 16 postdoctoral research associates.

PUBLICATIONS

Journal Articles and Refereed Papers (130 total):

Huo, H., Dahal, P., Kunusoth, K., McCallum, C.M., Bradford, K.J. 2013. Expression of *9-cis-EPOXYCAROTENOID DIOXYGENASE 4* (*NCED4*) is essential for thermoinhibition of lettuce seed germination but not for seed development or stress tolerance. Plant Cell 25: 884-900.

Boddy, L.G., Bradford, K.J., and Fischer, A.J. 2012. Population-based threshold models describe weed germination and emergence patterns across varying temperature, moisture and oxygen conditions. J. Applied Ecol. 49: 1225-1236.

Schwember, A.R., and Bradford, K.J. 2011. Oxygen interacts with priming, moisture content and temperature to affect the longevity of lettuce and onion seeds. Seed Sci. Res. 21: 175-185.

Argyris, J., Truco, M.J., Ochoa, O., McHale, L., Dahal, P., Van Deynze, A., Michelmore, R.W., Bradford, K.J. 2011. A gene encoding an abscisic acid biosynthetic enzyme (*LsNCED4*) collocates with the high temperature germination locus *Htg6.1* in lettuce (*Lactuca* sp.). Theor. Appl. Genet. 122: 95-108.

Van Deynze, A.E., Hutmacher, R.B., and Bradford, K.J. 2011. Gene flow between *Gossypium hirsutum* and *G. barbadense* is asymmetric. Crop Sci. 51: 298-305.

Bradford, K.J., and Harada, J.J. 2010. Introduction to Translational Seed Biology: From Model Systems to Crop Improvement. Plant Sci. 179**:** 553-553. [Introduction to special issue of this journal edited by KJB and J.J. Harada based on Plant Science Symposium we organized in 2007.]

Schwember, A.R. and Bradford, K.J. 2010. Quantitative trait loci associated with longevity of lettuce seeds under conventional and controlled deterioration storage conditions. J. Exp. Bot.: 61: 4423-4436.

Miller, J.K., Herman, E.M., Jahn, M., and Bradford, K.J. 2010. Strategic research, education and policy goals for seed science and crop improvement. Plant Sci.: 179: 645–652.

Miller, J.K., Bradford, K.J. 2010. The regulatory bottleneck for biotech specialty crops. Nature Biotechnol. 10: 1012-1014.

Schwember, A.R., and Bradford, K.J. 2010. A genetic locus and gene expression patterns associated with the priming effect on lettuce seed germination at elevated temperatures. Plant Mol. Biol. 73: 105-118.

Argyris, J.M., Dahal, P., Hayashi, E., Still, D.W., and Bradford, K.J. 2008. Genetic variation for lettuce seed thermoinhibition is associated with temperature-sensitive expression of abscisic acid, gibberellin and ethylene biosynthesis, metabolism and response genes. Plant Physiol. 148: 926-947.

Bradford, K.J. 2008. Shang Fa Yang: Pioneer in plant ethylene biochemistry. Plant Science 175: 2-7.

Bradford, K.J., Benech-Arnold, R., Côme, D., and Corbineau, F. 2008. Quantifying the sensitivity of barley seed germination to oxygen, abscisic acid and gibberellin using a population-based threshold model. J. Exp. Bot. 59: 335-347.

Moravec, C.M., Bradford, K.J., and Laca, E.A. 2008. Water relations of drumstick tree seed (*Moringa oleifera*): imbibition, desiccation, and sorption isotherms. Seed Sci. & Technol. 36: 311-324.

Hill, H., Bradford, K.J., Cunningham, J., and Taylor, A.G. 2008. Primed lettuce seeds exhibit increased sensitivity to moisture during aging. Acta Horticulturae 782: 135-141.

Argyris, J., Dahal, P., Truco, M.J., Ochoa, O., Still, D.W., Michelmore, R.W., and Bradford, K.J. 2007. Genetic analysis of lettuce seed thermoinhibition. Acta Hortic. 782: 23-33.

Gealy, D.R., Bradford, K.J., Hall, L., Hellmich, R., Raybould, A., Wolt, J., and Zilberman, D. 2007. *Implications of Gene Flow in the Scale-up and Commercial Use of Biotechnology-derived Crops: Economic and Policy Considerations*. Council for Agricultural Science and Technology (CAST), Issue Paper 37. CAST, Ames, Iowa. www.cast-science.org.

Hill, H.J., Cunningham, J.D., Bradford, K.J., and Taylor, A.G. 2007. Primed lettuce seeds exhibit increased sensitivity to moisture content during controlled deterioration. HortScience 42: 1436-1439.

Kalaitzandonakes, N., Alston, J.M., and Bradford, K.J. 2007. Compliance costs for regulatory approval of new biotech crops. Nature Biotech. 25: 509-511.

Bradford, K.J., Côme, D., and Corbineau, F. 2007. Quantifying the oxygen sensitivity of seed germination using a population-based threshold model. Seed Sci. Res. 17: 33-43.

Alston, J.M., Bradford, K.J., and Kalaitzandonakes, N. 2006. The economics of horticultural biotechnology. J. Crop Improvement 18: 413-431.

Argyris, J., Truco, M.J., Ochoa, O., Knapp, S.J., Still, D.W., Lenssen, G.M., Schut, J.W., Michelmore, R.W., and Bradford, K.J. 2005. Quantitative trait loci associated with seed and seedling traits in *Lactuca*. Theor. Appl. Genet. 111: 1365-1376.

Gandhi, S., Heesacker, A., Freeman, C., Argyris, J., Bradford, K.J., Knapp, S.J. 2005. The self-incompatibility locus (*S*) and quantitative trait loci for self-pollination and seed dormancy in sunflower. Theor. Appl. Genet. 111: 619-629.

Van Deynze, A.E., Sundstrom, F.J., and Bradford, K.J. 2005. Pollen-mediated gene flow in California cotton depends upon pollinator activity. Crop Sci. 45:1565–1570.

Schwember, A.R., and Bradford, K.J. 2005. Drying rates following priming affect temperature sensitivity of germination and longevity of lettuce seeds. HortScience 40: 778-781.

Alvarado, V., and Bradford, K.J. 2005. Hydrothermal time analysis of seed dormancy in true (botanical) potato seeds. Seed Sci. Res. 15: 77-88.

Bradford, K.J., Van Deynze, A., Gutterson, N., Parrott, W., Strauss, S.H. 2005. Regulating transgenic crops sensibly: lessons from plant breeding, biotechnology and genomics. Nature Biotechnol. 23: 439-444.

Sánchez, M.P., Gurusinghe, S.H., Bradford, K.J., and Vázquez-Ramos, J.M. 2005. Differential response of PCNA and CDK-A proteins and associated kinase activities to benzyladenine and abscisic acid during maize seed germination. J. Exp. Bot. 56: 515-523.

Bradford, K.J. 2005. Threshold models applied to seed germination ecology. New Phytol. 165: 338-341.

Bradford, K.J., and Alston, J.M. 2004. Horticultural biotechnology: challenges for commercial development. Chronica Horticulturae 44: 4-8.

Kende, H., Bradford, K.J., Brummell, D.A., Cho, H.T., Cosgrove, D.J., Fleming, A.J., Gehring, C., Lee, Y., McQueen-Mason, S., Rose, J.K.C., Voesenek, L.A.C.J. 2004. Nomenclature for members of the expansin superfamily of genes and proteins. Plant Mol. Biol. 55: 311-314.

Bradford, K.J., Alston, J.M, Lemaux, P.G. and Sumner, D.A. 2004. Challenges and opportunities for horticultural biotechnology. California Agriculture 58: 68-71. (Co-editor of entire issue)

Bradford, K.J., and Still, D.W. 2004. Applications of hydrotime analysis in seed testing. Seed Technology 26: 75-85.

Wu, C.T., and Bradford, K.J. 2003. Class I chitinase and β-1,3-glucanase are differentially regulated by wounding, methyl jasmonate, ethylene and gibberellin in tomato seeds and leaves. Plant Physiol. 133: 263-273.

Graff, G.D., Cullen, S.E., Bradford, K.J., Zilberman, D., Bennett, A.B. 2003. The public-private structure of intellectual property ownership in agricultural biotechnology. Nature Biotechnol. 21: 989-995.

Bradford, K.J., Downie, A.B., Gee, O.H., Alvarado, V.Y., Yang, H., Dahal, P. 2003. Abscisic acid and gibberellin differentially regulate expression of genes of the SNF1-related kinase complex in tomato seeds. Plant Physiol. 132: 1560-1576.

Whitmer, X., Nonogaki, H., Beers, E.P., Bradford, K.J., Welbaum, G.E. 2003. Characterization of chitinase activity and gene expression in muskmelon seeds. Seed Sci. Res. 13: 167-178.

Downie, B., Gurusinghe, S., Dahal, P., Thacker, R.R., Snyder, J.C., Nonogaki, H., Yim, K., Fukanaga, K., Alvarado, V., Bradford, K.J. 2003. Expression of a galactinol synthase gene in tomato seeds is up-regulated before maturation desiccation and again after imbibition whenever radicle protrusion is prevented. Plant Physiol. 131: 1347-1359.

Alvarado, V., and Bradford, K.J. 2002. A hydrothermal time model explains the cardinal temperatures for seed germination. Plant Cell Environ. 25: 1061-1069.

Gurusinghe, S., Powell, A.L.T., and Bradford, K.J. 2002. Enhanced expression of BiP is associated with treatments that extend storage longevity of primed tomato seeds. J. Amer. Soc. Hortic. Sci. 127: 528-534.

Bradford, K.J. 2002. Applications of hydrothermal time to quantifying and modeling seed germination and dormancy. Weed Sci. 50: 248–260.

Chen, F., Nonogaki, H., and Bradford, K.J. 2002. A gibberellin-regulated xyloglucan endotransglycosylase gene is expressed in the endosperm cap during tomato seed germination. J. Exp. Bot. 53: 215-223.

Kwong, F., Stodolski, L., Mari, J., Gurusinghe, S.H. and Bradford, K.J. 2001. Viability constants for delphinium and salvia seeds. Seed Technol. 23: 113-125.

Chen, F., Dahal, P., and Bradford, K.J. 2001. Two tomato expansin genes show divergent expression and localization in embryos during seed development and germination. Plant Physiol. 127 : 928-936.

Edelstein, M., Bradford, K.J. and Burger, D.W. 2001. Metabolic heat and CO_2 production rates during germination of melon (*Cucumis melo* L.) seeds measured by microcalorimetry. Seed Sci. Res. 11: 265-272.

Wu, C.T., Leubner-Metzger, G., Meins, F. Jr. and Bradford K.J. 2001. Class I β-1,3-glucanase and chitinase are expressed specifically in the micropylar endosperm of tomato seeds prior to radicle emergence. Plant Physiol. 126: 1299-1313.

Gurusinghe, S., and Bradford, K.J. 2001. Galactosyl-sucrose oligosaccharides and potential longevity of primed seeds. Seed Sci. Res. 11: 121-133.

Chen, F., and Bradford, K.J. 2000. Expression of an expansin is associated with endosperm weakening during tomato seed germination. Plant Physiol. 124: 1265-1274.

Nonogaki, H., Gee, O.H., and Bradford, K.J. 2000. A germination-specific endo-β-mannanase gene is expressed in the micropylar endosperm cap of tomato seeds. Plant Physiol. 123: 1235-1245.

Cooley, M.B., Yang, H., Dahal, P. Mella, R.A., Downie, B., Haigh, A.M., and Bradford, K.J. 1999. Vacuolar H^+-ATPase is expressed in response to gibberellin during tomato seed germination. Plant Physiol. 121: 1339-1347.

Sitrit, Y., Hadfield, K.A., Bennett, A.B., Bradford, K.J., and Downie, B. 1999. Expression of a polygalacturonase associated with tomato seed germination. Plant Physiol 121: 419-428.

Downie, B., Gurusinghe, S.H., and Bradford, K.J. 1999. Internal anatomy of individual tomato seeds: relationship to abscisic acid and germination physiology. Seed Sci. Res. 9: 117-128.

Cheng, Z., and Bradford, K.J. 1999. Hydrothermal time analysis of tomato seed germination responses to priming treatments. J. Exp. Bot. 50: 89-99.

Gurusinghe, S.H., Cheng, Z., and Bradford, K.J. 1999. Cell cycle activity during seed priming is not essential for germination advancement in tomato. J. Exp. Bot. 50: 101-106.

Downie, B., Dirk, L.M.A., Hadfield, K.A., Wilkins, T.A., Bennett, A.B., and Bradford, K.J. 1998. A gel diffusion assay for quantification of pectin methylesterase activity. Anal. Biochem. 264: 149-157.

Yim, K.-Y., and Bradford, K.J. 1998. Callose deposition is responsible for apoplastic semipermeability of the endosperm envelope of muskmelon seeds. Plant Physiol. 118: 83-90.

Still, D.W., and Bradford, K.J. 1998. Using hydrotime and ABA-time models to quantify seed quality of brassicas during development. J. Amer. Soc. Hort. Sci. 123: 692-699.

Bradford, K.J., and Cohn. MA. 1998. Seed biology and technology: At the crossroads and beyond. Seed Sci. Res. 8: 153-160.

Taylor, A.G., Allen, P.S., Bennett, M.A., Bradford, K.J., Burris, J.S., and Misra, M.K. 1998. Seed enhancements. Seed Sci. Res. 8: 245-256.

Welbaum, G.E., Bradford, K.J., Yim, K.-O., Booth, D.T., and Oluoch M.O. 1998. Biophysical, physiological and biochemical processes regulating seed germination. Seed Sci. Res. 8: 161-172.

Downie, B., Gurusinghe, S., Plopper, C., Bradford, K.J., Greenwood, J.S., and Bewley, J.D. 1997. Elongated cells adhering to the megagametophyte and sheathing the radicle of white spruce following completion of germination are derived from the embryo root cap. Int. J. Plant Sci.: 158: 738-746.

Dahal, P., Nevins, D.J., and Bradford, K.J. 1997. Relationship of endo-β-D-mannanase activity and cell wall hydrolysis in tomato endosperm to germination rates. Plant Physiol. 113: 1243-1252.

Still, D.W., Dahal, P., and Bradford, K.J. (1997) A single-seed assay for endo-β-mannanase activity from tomato endosperm and radicle tissues. Plant Physiol. 113: 13-20.

Still, D.W., and Bradford, K.J. (1997) Endo-β-mannanase activity from individual tomato endosperm caps and radicle tips in relation to germination rates. Plant Physiol. 113: 21-29.

Dutta, S., Bradford, K.J., and Nevins, D.J. 1997. Endo-β-mannanase activity present in cell wall extracts of lettuce (*Lactuca sativa* L.) endosperm prior to radicle emergence. Plant Physiol. 113: 155-161.

Dahal, P., N.-S. Kim, and K.J. Bradford. 1996. Respiration and germination rates of tomato seeds at suboptimal temperatures and reduced water potentials. J. Exp. Bot. 47: 941-947.

Baker, E.H., K.J. Bradford, J.A. Bryant, and T.L. Rost. 1995. A comparison of desiccation-related proteins (dehydrin and QP47) in peas (*Pisum sativum*). Seed Sci. Res. 5: 185-193.

Bradford, K.J., and A.J. Trewavas. 1994. Sensitivity thresholds and variable time scales in plant hormone action. Plant Physiol 105: 1029-1036.

Baker, E.H., and K.J. Bradford. 1994. The fluorescence assay for Maillard product accumulation does not correlate with seed viability. Seed Sci. Res. 4: 103-108.

Berjak, P., K.J. Bradford, D.A. Kovach, and N.W. Pammenter. 1994. Differential effects of temperature on ultrastructural responses to dehydration in seeds of *Zizania palustris*. Seed Sci. Res. 4: 111-122.

Bradford, K.J., and A.M. Haigh. 1994. Relationship between accumulated hydrothermal time during seed priming and subsequent seed germination rates. Seed Sci. Res. 4: 63-70.

Dahal, P., and K.J. Bradford. 1994. Hydrothermal time analysis of tomato seed germination at suboptimal temperature and reduced water potential. Seed Sci. Res. 4: 71-80.

Bradford, K.J., and O.A. Somasco. 1994. Water relations of lettuce seed thermoinhibition. I. Priming and endosperm effects on base water potential. Seed Sci. Res. 4: 1-10.

Dutta, S., and K.J. Bradford. 1994. Water relations of lettuce seed thermoinhibition. II. Ethylene and endosperm effects on base water potential. Seed Sci. Res. 4: 11-18.

Dutta, S., K.J. Bradford, and D.J. Nevins. 1994. Cell-wall autohydrolysis in isolated endosperms of lettuce (*Lactuca sativa* L.). Plant Physiol. 104: 623-628.

Still, D.W, D.A. Kovach, and K.J. Bradford. 1994. Development of desiccation tolerance during embryogenesis in rice (*Oryza sativa*) and wild rice (*Zizania palustris*): dehydrin expression, abscisic acid content, and sucrose accumulation. Plant Physiol. 104: 431-438.

Bradford, K.J. 1994. Water stress and the water relations of seed development: a critical review. Crop Sci. 34: 1-11.

Bradford, K.J., A.M. Tarquis, and J.M. Durán. 1993. A population-based threshold model describing the relationship between germination rates and seed deterioration. J. Exp. Bot. 264: 1225-1234.

Ni, B.-R., and K.J. Bradford. 1993. Germination and dormancy of abscisic acid- and gibberellin-deficient mutant tomato seeds. Sensitivity of germination to abscisic acid, gibberellin, and water potential. Plant Physiol. 101: 607-617.

Tarquis, A. M., and K. J. Bradford. 1992. Prehydration and priming treatments that advance germination also increase the rate of deterioration of lettuce seeds. J. Exp. Bot. 43: 307-317.

Ni, B.R, and K.J. Bradford. 1992. Quantitative models characterizing seed germination responses to abscisic acid and osmoticum. Plant Physiol. 98: 1057-1068.

Kovach, D.A., and K.J. Bradford 1992. Temperature dependence of viability and dormancy of *Zizania palustris* var. *interior* seeds stored at high moisture contents. Ann. Bot. 69: 297-301.

Kovach, D.A., and K.J. Bradford. 1992. Imbibitional damage and desiccation tolerance of wild rice (*Zizania palustris*) seeds. J. Exp. Bot. 43: 747-757.

Bradford, K.J., and P.M. Chandler. 1992. Expression of 'dehydrin-like' proteins in embryos and seedlings of *Zizania palustris* and *Oryza sativa* during dehydration. Plant Physiol. 99: 488-494.

Welbaum, G.E., and K.J. Bradford. 1991. Water relations of seed development and germination in muskmelon (*Cucumis melo* L.). VII. Influence of afterripening and ageing on germination responses to temperature and water potential. J. Exp. Bot. 42: 1137-1145.

Welbaum, G.E., and K.J. Bradford. 1991. Water relations of seed development and germination in muskmelon (*Cucumis melo* L.). VI. Influence of priming on germination responses to temperature and water potential during seed development. J. Exp. Bot. 42: 393-399.

Mayberry, K.S., K.J. Bradford, and V.E. Rubatzky. 1991. Yellow cotyledon: a seedling disorder of broccoli. HortScience 26: 21-23.

Bradford, K.J. 1990. A water relations analysis of seed germination rates. Plant Physiol. 94: 840-849.

Welbaum, G.E., and K.J. Bradford. 1990. Water relations of seed development and germination in muskmelon (*Cucumis melo* L.). III. Sensitivity of germination to water potential and abscisic acid during development. Plant Physiol. 92: 1029-1037.

Welbaum, G.E., and K.J. Bradford. 1990. Water relations of seed development and germination in muskmelon (*Cucumis melo* L.). IV. Characteristics of the perisperm during seed development. Plant Physiol. 92: 1038-1045.

Welbaum, G.E., and K.J. Bradford. 1990. Water relations of seed development and germination in muskmelon (*Cucumis melo* L.). V. Water relations of imbibition and germination. Plant Physiol. 92: 1046-1052.

Dahal, P., K.J. Bradford, and R.A. Jones. 1990. Effects of priming and endosperm integrity on seed germination rates of tomato genotypes. I. Germination at suboptimal temperature. J. Exp. Bot. 41: 1431-1439.

Dahal, P., and K.J. Bradford. 1990. Effects of priming and endosperm integrity on seed germination rates of tomato genotypes. II. Germination at reduced water potential. J. Exp. Bot. 41: 1441-1453.

Trawatha, S.E., J.J. Steiner, and K.J. Bradford. 1990. Laboratory vigor tests used to predict pepper seedling field emergence performance. Crop Sci. 30: 713-717.

Bradford, K.J., J.J. Steiner, and S.E. Trawatha. 1990. Seed priming influence on germination and emergence of pepper seed lots. Crop Sci. 30: 718-721.

Argerich, C.A., K.J. Bradford, and F.M. Ashton. 1990. Influence of seed vigor and preplant herbicides on the emergence, seedling growth and yield of tomato. HortScience 25: 288-291.

Kelly, M.O., and K.J. Bradford. 1990. Ethylene synthesis and growth of tomato hypocotyls: induction by auxin and fusicoccin and inhibition by vanadate. J. Plant Growth Regul. 9: 43-49.

Welbaum, G.E., and K.J. Bradford. 1989. Water relations of seed development and germination in muskmelon (*Cucumis melo* L.). II. Development of germinability, vigour, and desiccation tolerance. J. Exp. Bot. 40: 1355-1362.

Ursin, V.M., and K.J. Bradford. 1989. Auxin and ethylene regulation of petiole epinasty in two developmental mutants of tomato, *diageotropica* and *Epinastic*. Plant Physiol. 90: 1341-1346.

Ursin, V.M., and K.J. Bradford. 1989. A unique phenotype in heterozygotes of the auxin-insensitive mutant of tomato, *diageotropica*. Plant Physiol. 90: 1243-1245.

Argerich, C.A., K.J. Bradford and A.M. Tarquis. 1989. The effects of priming and ageing on resistance to deterioration of tomato seeds. J. Exp. Bot. 40: 593-598.

Argerich, C.A., and K.J. Bradford. 1989. The effects of priming and ageing on seed vigour in tomato. J. Exp. Bot. 40: 599-607.

Fujino, D.W., D.W. Burger and K.J. Bradford. 1989. Ineffectiveness of ethylene biosynthetic and action inhibitors to phenotypically revert the *Epinastic* mutant of tomato (*Lycopersicon esculentum* Mill.). J. Plant Growth Regul. 8:53-61.

Fujino, D.W., S.J. Nissen, A.D. Jones, D.W. Burger and K.J. Bradford. 1988. Quantification of indole-3-acetic acid in dark-grown seedlings of the *diageotropica* and *Epinastic* mutants of tomato (*Lycopersicon esculentum* Mill.). Plant Physiol. 88:780-784.

Fujino, D.W., D.W. Burger, S.F. Yang and K.J. Bradford. 1988. Characterization of an ethylene overproducing mutant of tomato (*Lycopersicon esculentum* Mill. cv. VFN8). Plant Physiol. 88:774-779.

Alvarado, A.D., and K.J. Bradford. 1988. Priming and storage of tomato (*Lycopersicon lycopersicum*) seeds. II. Influence of a second priming treatment after storage on germination and field emergence. Seed. Sci. & Technol. 16:613-623.

Alvarado, A.D., and K.J. Bradford. 1988. Priming and storage of tomato (*Lycopersicon lycopersicum*) seeds. I. Effects of storage temperature on germination rate and viability. Seed Sci. & Technol. 16:601-612.

Bradford, K.J., D.M. May, B.J. Hoyle, Z.S. Skibinski, S.J. Scott and K.B. Tyler. 1988. Seed and soil treatments to improve emergence of muskmelon from cold or crusted soils. Crop Sci. 28:1001-1005.

Noland, T.L., J.D. Maguire, R.N. Oliva, K.J. Bradford, J.L. Nelson, D. Grabe, and S. Currans. 1988. Effect of plant density on carrot seed yield and quality under seed-to-seed production systems in California, Oregon, and Washington. J. Applied Seed Prod. 6: 36-43.

Oliva, R.N., T. Tissaoui and K.J. Bradford. 1988. Relationships of plant density and harvest index to seed yield and quality in carrot. J. Amer. Soc. Hort. Sci. 113:532-537.

Welbaum, G.E., and K.J. Bradford. 1988. Water relations of seed development and germination in muskmelon (*Cucumis melo* L.). I. Water relations of seed and fruit development. Plant Physiol. 86:406-411.

Kwon, O.-S., and K.J. Bradford. 1987. Tomato seed development and quality as influenced by preharvest treatment with ethephon. HortScience 22:588-591

Alvarado, A.D., K.J. Bradford and J.D. Hewitt. 1987. Osmotic priming of tomato seeds: Effects on germination, field emergence, seedling growth and fruit yield. J. Amer. Soc. Hort. Sci. 112:427-432.

Valdes, V.M., and K.J. Bradford. 1987. Effects of seed coating and osmotic priming on the germination of lettuce seeds at high temperatures. J. Amer. Soc. Hort. Sci. 112:153-156.

Kelly, M.O., and K.J. Bradford. 1986. Insensitivity of the *diageotropica* tomato mutant to auxin. Plant Physiol. 82:713-717.

Bradford, K.J. 1986. Manipulation of seed water relations via osmotic priming to improve germination under stress conditions. HortScience 21:1105-1112.

Eisinger, B.A., and K.J. Bradford. 1986. Role of seed mineral content in the occurrence of transverse cotyledon cracking of snap bean (*Phaseolus vulgaris* L.). J. Amer. Soc. Hort. Sci. 111:110-113.

Valdes, V.M., K.J. Bradford and K.S. Mayberry. 1985. Alleviation of thermodormancy in coated lettuce seeds by seed priming. HortScience 20(6):1112-1114.

Kwon, O.-S., and K.J. Bradford. 1984. Seed quality and fruit ripening of tomato (*Lycopersicon esculentum* Mill.) as influenced by preharvest treatment with ethephon. J. Appl. Seed Production 2: 54-57.

Bradford, K.J. 1983. Involvement of plant growth substances in the alteration of leaf gas exchange of flooded tomato plants. Plant Physiol. 73:480-483.

Bradford, K.J. 1983. Effects of soil flooding on leaf gas exchange of tomato plants. Plant Physiol. 73:475-479.

Bradford, K.J. 1983. Water relations and growth of the *flacca* tomato mutant in relation to abscisic acid. Plant Physiol. 72: 251-255.

Bradford, K.J., T.D. Sharkey and G.D. Farquhar. 1983. Gas exchange, stomatal behavior and $\delta^{13}C$ values of the *flacca* tomato mutant in relation to abscisic acid. Plant Physiol. 71:245-250.

Bradford, K.J., T.C. Hsiao and S.F. Yang. 1982. Inhibition of ethylene synthesis in tomato plants subjected to anaerobic root stress. Plant Physiol 70:1503-1507.

Bradford, K.J., and T.C. Hsiao. 1982. Stomatal behavior and water relations of waterlogged tomato plants. Plant Physiol. 70:1508-1513.

Bradford, K.J., and S.F. Yang. 1981. Physiological responses of plants to waterlogging. HortScience 16:25-30.

Bradford, K.J., and S.F. Yang. 1980. Stress-induced ethylene production in the ethylene-requiring tomato mutant *diageotropica*. Plant Physiol. 65:327-330.

Bradford, K.J., and S.F. Yang. 1980. Xylem transport of 1-amino-cyclopropane-1-carboxylic acid, an ethylene precursor, in waterlogged tomato plants. Plant Physiol. 65:322-326.

Saltveit, M.E., Jr., K.J. Bradford, and D.R. Dilley. 1978. Silver ion inhibits ethylene synthesis and action in ripening fruits. J. Amer. Soc. Hort. Sci. 103(4):427-475.

Bradford, K.J., and D.R. Dilley. 1978. Effects of root anaerobiosis on ethylene production, epinasty, and growth of tomato plants. Plant Physiol. 61:506-509.

Books Authored or Co-authored (1)

Bewley, J.D., Bradford, K.J., Hilhorst, H.W.M., and Nonogaki, H. 2013. *Seeds: Physiology of Development, Germination and Dormancy*, Third Edition, Springer, NY.

Books Edited (3)

Bradford, K.J. and Nonogaki, H., eds. 2007. *Seed Development, Dormancy and Germination.* Blackwell Publishing, Oxford, U.K.

Nicolás, G., Bradford, K.J., Côme, D., and Pritchard, H.W., eds. 2003. *The Biology of Seeds: Recent Research Advances*, CAB International, Wallingford, U.K.

Black, M., Bradford, K.J., and Vazquez-Ramos, J., eds. 2000. *Seed Biology: Advances and Applications*, CAB International, Wallingford, U.K.

Book Chapters (23):

Pluskota WE, Bradford KJ, Nonogaki H. 2011.Tissue printing methods for localization of RNA and proteins that control seed dormancy and germination. In A.R. Kermode ed, *Seed Dormancy: Methods and Protocols,* Methods in Molecular Biology, vol. 773, pp. 329-339, Springer, New York, NY.

Allen, P.S., Benech-Arnold, R.L., Batlla, D. and Bradford, K.J. 2007. Modeling of seed dormancy. In Bradford, K.J., and Nonogaki, H., eds, *Seed Development, Dormancy and Germination,* Blackwell Publishing, Oxford, U.K., pp. 72-112.

Nonogaki, H., Chen, F. and Bradford, K.J. 2007. Mechanisms and genes involved in germination *sensu stricto*. In Bradford, K.J., and Nonogaki, H., eds, *Seed Development, Dormancy and Germination,* Blackwell Publishing, Oxford, U.K., pp. 264-304.

Bradford, K.J. 2007. Seed biotechnology: Translating promise into practice. In S. Adkins, S. Ashmore and S. Navie, eds., *Seeds: Biology, Development and Ecology*, CAB International, Wallingford, U.K., pp. 130-138.

Bradford, K.J. 2006. Germination: internal factors affecting (physical, physiological, molecular and biochemical). In Bewley, J.D., Black, M., and Halmer, P., eds., *The Encyclopedia of Seeds: Science, Technology and Uses*. CABI Publishing, Wallingford, UK.

Kalaitzandonakes, N., Alston, J.M., and Bradford, K.J. 2006. Compliance costs for regulatory approval of new biotech crops. In Just, R.E., Alston, J.M., and Zilberman, D., eds., *Regulating Agricultural Biotechnology: Economics and Policy,* Springer Publishers, New York, pp. 37-57.

Bradford, K.J., Alston, J.M., and Kalaitzandonakes, N. 2006. Regulation of biotechnology for specialty crops. In Just, R., Alston, J.M., and Zilberman, D., eds., *Regulating Agricultural Biotechnology: Economics and Policy,* Springer Publishers, New York, pp. 683-697.

De Castro, R.D., Bradford, K.J., and Hilhorst, H.W.M. 2004. Desenvolvimento e conteúdo de água [Development and water content]. In A.G. Ferreira and F. Borghetti, eds., Germinação, Artmed Editoria S.A., Porto Alegre-RS, Brasil, pp. 51-67.

De Castro, R.D., Bradford, K.J., and Hilhorst, H.W.M. 2004. Embebição e reativação do metabolismo [Imbibition and reactivation of metabolism]. In A.G. Ferreira and F. Borghetti, eds., Germinação, Artmed Editoria S.A., Porto Alegre-RS, Brasil, pp. 149-162.

Nonogaki, H., and Bradford, K.J. 2003. Tissue printing for localization of mRNA expression in seeds. In Nicolás, G., Bradford, K.J., Côme, D., and Pritchard, H.W., eds., *The Biology of Seeds: Recent Research Advances*, CAB International, Wallingford, U.K. pp. 171-179.

Bradford, K.J. and Bewley, J.D. 2002. Seeds: Biology, Technology and Role in Agriculture. Chapter 9 in M.J. Chrispeels and D.E. Sadava, eds., *Plants, Genes and Crop Biotechnology*, 2nd Edition, Jones and Bartlett, Boston. Pp. 210-239.

Alvarado, V., Nonogaki, H., and Bradford, K.J. 2000. Expression of endo-β-mannanase and SNF-related protein kinase genes in true potato seeds in relation to dormancy, gibberellin and abscisic acid. In J.D. Viemont and J. Crabbé, eds, *Dormancy in Plants*, CAB International, Wallingford, U.K., pp. 347-364.

Bradford, K.J., Chen, F., Cooley, M.B., Dahal, P., Downie, B., Fukunaga, K.K., Gee, O.H., Gurusinghe, S., Mella, R.A., Nonogaki, H., Wu, C.-T., and Yim, K.-O. 2000. Gene expression prior to radicle emergence in imbibed tomato seeds. In: M. Black, K.J. Bradford, and J. Vazquez-Ramos, eds., *Seed Biology: Advances and Applications*, CABI, Wallingford, U.K., pp. 231-251.

Bradford, K.J. 1997. The hydrotime concept in seed germination and dormancy. In R.H. Ellis, M. Black, A.J. Murdoch, and T.D. Hong, eds., *Basic and Applied Aspects of Seed Biology*. Kluwer Academic Publishers, Boston, pp. 349-360.

Bradford, K.J. 1996. Population-based models describing seed dormancy behaviour: implications for experimental design and interpretation. In G.A. Lang, ed., *Plant Dormancy: Physiology, Biochemistry and Molecular Biology*. CAB International, Wallingford, U.K., pp. 313-339.

Bradford, K.J. 1995. Water relations in seed germination. In J. Kigel and G. Galili, eds., *Seed Development and Germination*, Marcel Dekker, Inc., New York. pp. 351-396.

Bradford, K.J. 1992. Seed. In *McGraw-Hill Yearbook of Science & Technology*. McGraw-Hill, Inc., New York, pp. 374-376.

Reid, D.M., and K.J. Bradford. 1984. Effect of flooding on hormone relations. In: T.T. Kozlowski (ed.), Flooding and Plant Growth, Academic Press, New York, pp. 195-219.

Hsiao, T.C., and K.J. Bradford. 1983. Physiological consequences of cellular water deficits: An overview. In: H. Taylor, W. Jordan, T. Sinclair (eds.), Limitations to Efficient Water Use in Crop Production. Amer. Soc. Agronomy, Madison, WI, pp. 227-265.

Bradford, K.J. 1982. Regulation of shoot responses to root stress by ethylene, abscisic acid, and cytokinin. In: P.F. Wareing (ed.), Plant Growth Substances 1982. Academic Press, London, pp. 599-608.

Bradford, K.J., and T.C. Hsiao. 1982. Physiological responses to moderate water stress. In: O.L. Lange, P.S. Nobel, C.B. Osmond, H. Ziegler (eds.), Water relations and photosynthetic productivity, Vol. 12B, Encyclopedia of Plant Physiology, New Series, Springer-Verlag, Berlin, Heidelberg, New York, pp. 263-324.

Yang, S.F., D.O. Adams, C. Lizada, Y. Yu, K.J. Bradford, A.C. Cameron and N.E. Hoffman. 1980. Mechanism and regulation of ethylene biosynthesis. In: F. Skoog (ed.), Plant Growth Substances 1979. Springer-Verlag, Berlin, pp. 219-229.

Extension bulletins and trade publications (11):

Kunusoth, K., Dahal, P., Van Asbrouck, J.V., and Bradford, K.J. 2012. New technology for postharvest drying and storage of seeds. Seed Times (New Delhi) **5,** 33-38.

Van Deynze, A., and Bradford, K.J. 2009. Plant Breeding Is In. Seed World. January, pp. 22-24.

Van Deynze, A., and Bradford, K.J. 2006. Academic training of plant breeders no longer meets demand. Seed World 144: 20-21.

Bradford, K.J. 2006. Methods to maintain genetic purity of seed stocks. University of California, Division of Agriculture and Natural Resources, Publication 8189. http://anrcatalog.ucdavis.edu.

Bradford, K.J. 2005. Biotech seed traceability & labeling: hindrance or asset to marketing and trade? Seed World 143(6): 16-22.

Van Deynze, A., Bradford, K.J., and Van Eenennaam, A. 2004. Crop biotechnology: Feeds for livestock. Division of Agriculture and Natural Resources, Agricultural Biotechnology in California Series, Publication 8145. http://anrcatalog.ucdavis.edu.

Thomas, B.R., Van Deynze, A., and Bradford, K.J. 2002. Production of therapeutic proteins in plants. University of California, Division of Agriculture and Natural Resources, Agricultural Biotechnology in California Series, Publication 8078. http://anrcatalog.ucdavis.edu.

Sundstrom, F.J., Williams, J., Van Deynze, A., and Bradford, K.J. 2002. Identity preservation of agricultural commodities. University of California, Division of Agriculture and Natural Resources, Agricultural Biotechnology in California Series, Publication 8077. http://anrcatalog.ucdavis.edu.

Suslow, T.V., B.R. Thomas and K.J. Bradford. 2002. Biotechnology provides new tools for plant breeding. University of California, Division of Agriculture and Natural Resources, Agricultural Biotechnology in California Series, Publication 8043. http://anrcatalog.ucdavis.edu.

Voss, R.E., Murray, M., Bradford, K.J., Mayberry, K.S., and Miller, I. 1999. Onion seed production in California. University of California, Division of Agriculture and Natural Resources, Publication 8008. http://anrcatalog.ucdavis.edu.

Murray, M., Hartz, T.K., and Bradford, K.J. 1997. Cucurbit seed production in California. University of California, Division of Agriculture and Natural Resources, Publication 7229. http://anrcatalog.ucdavis.edu.

Web sites

Kozik, A., R.W. Michelmore, Knapp, M.S. Matvienko, L. Rieseberg, H. Lin, M. van Damme, D. Lavelle, P. Chevalier, J. Ziegle, P. Ellison, J. Kolkman, M.S. Slaubaugh, K. Livingston, L. Z. Zhou, S. Church, S. Edberg, L. Jackson and K. Bradford et al. 2002. Lettuce and sunflower ESTs from the Compositae Genome Project. http://cgpdb.ucdavis.edu/

Patents (1)

Bradford, K.J., P. Dahal, H. Yang, M. Cooley, B. Downie and O. Gee. Regulation of source-sink relationships and responses to stress conditions in plants. U.S. Patent No. 6,342,656 issued January 29, 2002.

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