

GENETIC IMPROVEMENT

Refereed Journal Articles

Agbicodo, E.M., C.A. Fatokun, R. Bandyopadhyay, K. Wydra, N.N. Diop, W. Muchero, J.D. Ehlers, P.A. Roberts, T.J. Close, R.G.F. Visser, and C.G. van der Linden. 2010. Identification of markers associated with bacterial blight resistance loci in cowpea [*Vigna unguiculata* (L.) Walp.]. *Euphytica*. DOI: 10.1007/s10681-010-0164-5.

Awale, H. E. Falconi, J. C. Villatoro and J.D. Kelly. 2008. Control y caracterizacion de aislamientos de *Colletotrichum lindemuthianum* de Ecuador y Guatemala. *Revista Agronomía Mesoamericana* 19: 1-6.

Barrera-Figueroa, B., Gao, L., Diop, N.-N., Wu Z., Ehlers, J., Roberts, P.A., Close, T.J., Zhu, J.-K. and Liu, R. 2011. Identification and comparative analysis of drought-associated microRNAs in two cowpea genotypes. *BMC Plant Biology* 2011, 11:127. doi:10.1186/1471-2229-11-127.

Beaver, J.S., M. Zapata, M. Alameda, T.G. Porch and J.C. Rosas. 2011. Registration of PR0401-259 and PR0650-31 dry bean germplasm lines. *J. Plant Reg. Reg.* doi: 10.3198/jpr2011.05.0283crg; Published online 9 Nov. 2010.

Beaver JS, Porch TG, Zapata M. 2010. Registration of ‘Badillo’ Light Red Kidney Bean. *Journal Plant Registrations* 4:1-4.

Cichy, K.A., M. W. Blair, C. H. Galeno-Mendoza, S. S. Snapp, and J.D. Kelly. 2009. QTL analysis of root architecture traits and low phosphorus tolerance in an Andean bean population. *Crop Sci.* 49:59-68.

Das, S., D.A. DeMason, J.D. Ehlers, T.J. Close, and P.A. Roberts. 2010. Transcriptional profiling of root-knot nematode induced feeding sites in cowpea (*Vigna unguiculata* L. Walp.) using a soybean genome array. *BMC Genomics* 2010, 11:480. doi:10.1186/1471 2164-11-480.

Diouf, D., N. Cisse and M. Timko. 2012. Genetic relationship of cowpea [*Vigna unguiculata* (L.) Walp.] varieties from Senegal based on SSR markers. *Genetics and Molecular Research* 11(1): 292-304. DOI <http://dx.doi.org/10.4238/2012.February.8.4>

Dorcinvil R, Sotomayor-Ramírez D, Beaver JS. 2010. Agronomic performance of common bean (*Phaseolus vulgaris* L.) lines in an Oxisol. *Field Crops Research*. 118:264-272.

Ehlers, J. D., B.L. Sanden, C.A. Frate, A.E. Hall, and P.A. Roberts. 2009. Registration of ‘California Blackeye 50’ Cowpea. *Journal of Crop Registrations* 3:236-240.

Ernest, E.G., E. Falconí, E. Peralta and J. D. Kelly. 2008. Uso de una encuesta a agricultores para orientar el fitomejoramiento de frijol en Ecuador. *Revista Agronomía Mesoamericana* 19: 7-18.

Guachambala MS and Rosas JC. 2010. Caracterización molecular de accesiones cultivadas y silvestres de frijol común de Honduras. *Agronomía Mesoamericana* 21(1):1-10.

- Henry A, Rosas, JC, Beaver JS, Lynch JP. 2010. Multiple stress response and belowground competition in multilines of common bean (*Phaseolus vulgaris* L.). *Field Crops Research* 117:209-218.
- Kwapata, K., R. Sabzikar, M. B. Sticklen, and J. D. Kelly. 2010. In vitro regeneration and morphogenesis studies in common bean. *Plant Cell Tiss Organ Cult: J. Plant Biotechnology*. 100:97–105.
- Lucas, M.R., N.-N. Diop, S. Wanamaker, J.D. Ehlers, P.A. Roberts, and T.J. Close. 2011. Cowpea-soybean synteny clarified through an improved genetic map. *The Plant Genome* 4:1-11.
doi:10.3835/plantgenome2011.06.0019.
- Mbogo KP, Davis J, Myers JR. 2009. Transfer of the Arcelin-Phytohaemagglutinin- α Amylase Inhibitor Seed Protein Locus from Tepary bean (*Phaseolus acutifolius* A. Gray) to common bean (*P. vulgaris* L.). *Biotechnology* 8:285-295.
- Miklas, P.N., S. P. Singh, H. Terán, J. D. Kelly, and J. R. Smith. 2011. Registration of common bacterial blight resistant cranberry dry bean germplasm line USCR-CBB-20. *J. Plant Reg.* 5:98-102.
- Mkwaila, W., K.A. Terpstra, M. Ender, and J.D. Kelly. 2011. Identification of QTL for resistance to white mold in wild and landrace germplasm of common bean. *Plant Breeding* 130:665-672.
- Muchero, W., N.N. Diop, P.R. Bhat, R.D. Fenton, S. Wanamaker, M. Pottorff, S. Hearne, N. Cisse, C. Fatokun, J.D. Ehlers, P.A. Roberts, and T.J. Close. 2009d. A consensus genetic map of cowpea [*Vigna unguiculata* (L) Walp.] and synteny based on EST-derived SNPs. *Proceedings of the National Academy of Sciences, USA* 106:18159-18164.
- Muchero, W., P.A. Roberts, Ndeye-Ndack Diop, I. Drabo, N. Cisse, T.J. Close, S. Muranaka, O. Boukar and J.D. Ehlers. 2011. Genetic architecture of delayed senescence, grain and biomass yield under drought stress in cowpea. *PLoS ONE* (in press).
- Muchero, W., J.D. Ehlers, T.J. Close and P.A. Roberts. 2011. Genic SNP markers and legume synteny reveal candidate genes underlying QTL for *Macrophomina phaseolina* resistance and maturity in cowpea [*Vigna unguiculata* (L) Walp.]. *BMC Genomics* 12:8.
- Muchero, W., J.D. Ehlers, T.J. Close, and P.A. Roberts. 2009a. Mapping QTL for drought stress-induced premature senescence and maturity in cowpea (*Vigna unguiculata* (L.) Walp). *Theoretical and Applied Genetics* 118:849-863.
- Muchero, W., J.D. Ehlers, and P.A. Roberts. 2009c. QTL analysis for resistance to foliar damage caused by *Thrips tabaci* and *Frankliniella schultzei* (Thysanoptera: Thripidae) feeding in cowpea (*Vigna unguiculata* L. Walp.). *Molecular Breeding* 25:47-56.
- Muchero, W., J.D. Ehlers, and P.A. Roberts. 2009b. Restriction fragment length polymorphism-based candidate gene mapping for seedling drought tolerance in cowpea (*Vigna unguiculata* L. Walp.). *Theoretical and Applied Genetics* 120:509-518.

- Muchero, W., J.D. Ehlers, and P.A. Roberts. 2008. Seedling Stage Drought-Induced Phenotypes and Drought-Responsive Genes in Diverse Cowpea Genotypes. *Crop Science* 48:541-552.
- Musoni, A., P. Kimani, R. D. Narla, R. Buruchara and J. Kelly. 2010. Inheritance of *Fusarium* wilts (*Fusarium oxysporum* f. sp. *phaseoli*) resistance in climbing beans. *African J. Agric. Res.* 5(5):399-404.
- Muurinen S, Slafer GA, Peltonen-Sainio P. 2006. Breeding effects on nitrogen use efficiency of spring cereals under northern conditions. *Crop Sci.* 46, 561–568.
- Ohkura, M., Abawi, G. S., Smart, C. D., and Hodge, K. T. 2009. Diversity and aggressiveness of *Rhizoctonia solani* and *Rhizoctonia*-like fungi on vegetables in New York. *Plant Dis.* 93:615-624.
- Porch, T.G., C.C. Urrea, J. S. Beaver, S. Valentin, P. A. Peña, and J. R. Smith. 2011. Registration of TARS-MST1 and SB-DT1 multiple-stress-tolerant black bean germplasm. *J. Plant Reg.* doi: 10.3198/jpr2010.08.0501crg; Published online 8 August 2011.
- Porch TG, Smith JR, Beaver JS, Griffiths PD, Canaday CH. 2010. TARS-HT1 and TARS-HT2 Heat-tolerant Dry Bean Germplasm. *HortScience* 45:1278-1280.
- Rodriguez O., J.C. Rosas. 2010. Selección de genotipos de frijol común por su resistencia al tizón bacteriano. *Agronomía Mesoamericana* 21(2):1-6.
- Salem, N.M., J.D. Ehlers, P.A. Roberts and J.C.K. Ng. 2010. Biological and molecular diagnosis of seed-borne viruses in cowpea germplasm of geographically diverse subSaharan origins. *Plant Pathology* 59:773-784.
- Sawadogo, A., B. Thio, S. Kiemde, I. Drabo, C. Dabire, J. Ouedraogo, T. R. Mullens, J.D. Ehlers, and P.A. Roberts. 2009. Distribution and prevalence of parasitic nematodes of cowpea (*Vigna unguiculata*) in Burkina Faso. *Journal of Nematology* 41:120-127.
- Tonessia C., M. Wade, N. Cissé and S. Aké. 2009. Caractérisation de *Striga gesnerioides* (Willd.) Vatke du Sénégal: réactions de plusieurs cultivars de niébé (*Vigna unguiculata* (L.) Walp.). *Journal of Applied Biosciences* 24:1462-1476.
- Tako, E., R.P. Glahn, J. M. Laparra, R.M. Welch, X. Lei, J.D. Kelly, M.A. Rutzke and D.D. Miller. 2009. Iron and zinc bioavailabilities to pigs from red and white beans (*Phaseolus vulgaris* L.) are similar. *J. Agric. Food Chem.* 57: 3134–3140.
- Vallejo, V., and J. D. Kelly. 2009. New insights into the anthracnose resistance of common bean landrace G 2333. *The Open Horticulture J.* 2:29-33.
- Wright, E.M., and J.D. Kelly. 2011. Mapping QTL for seed yield and canning quality following processing of black bean (*Phaseolus vulgaris* L.). *Euphytica* 179:471–484.
- Xu, P., X. Wu, B. Wang, Y. Liu, J.D. Ehlers, T.J. Close, P.A. Roberts, N.N. Diop, D. Quin, T. Hu, Z. Lu, and G.

Li. 2011. A SNP and SSR based genetic map of Asparagus Bean (*Vigna. unguiculata* ssp *sesquipedialis*) and comparison with the broader species. PLoS One 6: e15952.

Zapata, M., J.S. Beaver and T.G. Porch. 2011. Dominant gene for common bean resistance to common bacterial blight caused by *Xanthomonas axonopodis* pv. *Phaseoli*. Euphytica 179:373-382.

Other Publications (reports, conference papers, working papers, manuals, etc.)

Abawi, G. S., T. G. Porch, and J. D. Kelly. 2011. Field and greenhouse evaluation of bean germplasm for root rot and other diseases in New York, 2010. Bean Improvement Cooperative (BIC) 54: 142-143.

Beaver JS. 2010. Collaborative program for bean improvement in Haiti. Invited presentation made at the 25th Annual Conference of the American Society for the Advancement of Science (AAAS), Caribbean Division held in Rio Piedras, Puerto Rico on 24 & 25 September 2010.

Brisco, E.I., T. G. Porch, and J.D. Kelly. 2011. Comparison of choice versus no-choice tests of a dry bean IBL population for resistance to potato leafhopper. Annu. Rep. Bean Improv. Coop. 54:88-89.

Kelly, J.D., G.V. Varner, and E.M. Wright. 2010. Registration of 'Bellagio' cranberry bean. J. Plant Registrations 4: 171-174.

Kelly, J.D., G.V. Varner, and B. Long. 2010. Registration of 'Santa Fe' pinto bean. J. Plant Registrations 4:12-16.

LOS COMITÉES DE INVESTIGACIÓN AGRÍCOLA LOCAL (CIALs) EN LOS VALLES DE LOS RÍOS CHOTA Y MIRA (Imbabura y Carchi), Ecuador: Avances y Retos. Boletín Divulgativo. Agosto 2008. Mejore su nutrición, salud y alimentación...Consuma Fréjol. Hoja Divulgativa.

Mkwaila, W., and J. D. Kelly. 2011. Heritability estimates and phenotypic correlations for white mold resistance and agronomic traits in pinto bean. Annu. Rep. Bean Improv. Coop. 54:134-135.

Muchero, W., N.N. Diop, P.R. Bhat, R.D. Fenton, S. Wanamaker, M. Pottorff, S. Hearne, N. Cisse, C. Fatokun, J.D. Ehlers, P.A. Roberts, and T.J. Close. 2009d. A consensus genetic map of cowpea [*Vigna unguiculata* (L) Walp.] and synteny based on EST-derived SNPs. Proceedings of the National Academy of Sciences, USA 106:18159-18164.

Musoni, A., L. Butare, D. M.nkubana, E. Gasigwa, F. Nsanzabera, M. Blair, and R. Buruchara. 2009. Climbing beans for increased productivity: Participatory selection of new varieties adapted in semi-arid regions in Rwanda. In Proceedings of International Conference on Program for African Seed Systems. Alliance for a Green Revolution in Africa (AGRA). Bamaako, Mali. October, 2009.

Rosas JC, Guachambala MS, Ramos RA. 2010. Guía ilustrada para la Descripción de las Características de Variedades de Frijol Común. EAP, Zamorano, Honduras, 22p.

Rosas JC, Araya R, Ortega I. 2009. Variedades de Frijol Rojo obtenidas por Fitomejoramiento Participativo en Honduras y Nicaragua. Est. Exp. Agr. Fabio Baudrit Moreno, Heredia, Costa Rica, 40p.

Ruiz L, Beaver JS, Rosas JC, Ernest E. 2010. Evaluation of Lima bean landraces from Puerto Rico. Ann. Rep. of the Bean Improvement Coop. 53:72-73.

Singh, S.P., H. Terán and J.S. Beaver. 2009. Scarlet runner bean germplasm accessions G 35006 and G 35172 possess resistance to multiple diseases of common bean. Ann. Rep. of the Bean Improv. Coop. 52:22-23.

Other Types of Output (presentations, webpages, videos, equipment designs, etc.)

Beaver, J.S. and D.P. Maxwell. 2011. A legacy of bean-breeding against whitefly transmitted viruses in the Caribbean. Invited presentation at a session entitled “Whitefly-transmitted geminiviruses: a Caribbean legacy in honor and appreciation of Dr. Julio Bird. 2011 Annual Meeting of the American Phytopathological Society, Caribbean Division held in San Juan, Puerto Rico. 19-22 March 2011.

Beaver, J.S. 2010. Contributions of genetic diversity to the improvement of dry edible beans. Invited presentation made at the C-08 Symposium ‘Using genetic resources: Does it have a role in increasing yield?’ 2010. ASA-CSSA-SSSA Annual Meeting. Long Beach, CA. 2 Nov. 2010.

? Estévez de Jensen, C., T.G. Porch, J.S. Beaver, A. Chicapa Dovala., L. Baptista. 2011. Disease incidence in *Phaseolus vulgaris* in the regions of Chianga, Cuanza.

Godoy-Lutz G, Beaver JS, Rosas JC, Steadman JR. 2010. Web blight research techniques posted on the web site of the Bean Improvement Cooperative.
http://www.css.msu.edu/bic/_pdf/Web_Blight.pdf.

Sul and Malange, Angola. Presentation made at the 2011 Annual Meeting of the American Phytopathological Society, Caribbean Division held in San Juan, Puerto Rico. 19-22 March 2011.

? Hocdé H., J.C. Rosas y R. Araya. 2010. Co-desarrollo de variedades entre agricultores, científicos y profesionales, biodiversidad y otras cosas. ISDA 2010, Montpellier, France, 13 p.

Mbui Martins, M., C. Estévez de Jensen, T.G. Porch, J.S. Beaver. 2011. Response of *Phaseolus vulgaris* lines to angular leaf spot. Presentation made at the 2011 Annual Meeting of the American Phytopathological Society, Caribbean Division held in San Juan, Puerto Rico. 19-22 March 2011.

- Mejía, P.Z., M.Pavon and J.C. Rosas. 2011. Avances en la producción orgánica de frijol en la región del Lago Yojoa, Honduras. Presentation made at the LVI PCCMCA Annual Meeting, April 25-29, Sonsonate, El Salvador.
- Roman-Avilés, B., J.M. Lewis and J.D. Kelly. 2011. Fusarium Genetic Control: A Long Term Strategy. In: Control of Fusarium Diseases, In Editors: Fernando M. Alves-Santos and Julio J. Diez. Control of Fusarium Diseases. 2011:000-000 ISBN: 978-81-308-0470-5.
- Rosas, J.C., A.G. Vargas, R. Ramos, S. Beebe, A. Llano, A. Clara, D. Escoto and J.C. Hernandez. 2010. Resultados del SISTEVER 2010 de Frijol de Grano Rojo. Presentation made at the LVI PCCMCA Annual Meeting, April 25-29, Sonsonate, El Salvador.
- Rosas, J.C., A.G. Vargas, R. Ramos, J.S. Beaver, S. Beebe, A. Llano, D. Escoto, E. Prophete, J.C. Hernandez and J.C. Villatoro. 2011. Resultados del SISTEVER 2010 de Frijol de Grano Negro. Presentation made at the LVI PCCMCA Annual Meeting, April 25-29, Sonsonate, El Salvador.
- Rosas, J.C. and A.G. Vargas. 2011. Variaciones fenotípicas de la respuesta de genotipos de frijol a la inoculación con cepas de Rhizobium. Presentation made at the LVI PCCMCA Annual Meeting, April 25-29, Sonsonate, El Salvador.
- Rosas, J.S. and A.G. Vargas. 2011. Caracteres fenotípicos asociados con la tolerancia a la sequía y baja fertilidad de líneas endogámicas recombinantes de frijol. Presentation made at the LVI PCCMCA Annual Meeting, April 25-29, Sonsonate, El Salvador.
- Rosas, J.C., J.S. Beaver, A.G. Vargas and R. Ramos. 2011. Evaluación agronomica de germoplasma de caupí. Presentation made at the LVI PCCMCA Annual Meeting, April 25-29, Sonsonate, El Salvador.

Scholarly Activities and Accomplishments

- Heilig, J.A. 2010. Evaluation of dry bean genotypes for performance under organic production systems; Evaluation of early nitrogen fixation in dry bean. M.S. thesis, Michigan State University, East Lansing MI. 139pp.
- Kelly, J.D., G.V.Varner, P. O'Boyle, and B. Long. 2009. Registration of 'Zorro' black bean. J. Plant Registrations 3:226-230.
- Kelly, J.D., G.V.Varner, B. Roman, and B. Long. 2009. Registration of 'Fuji' Otebo bean. J. Plant Registrations 3:223-225.
- Mbui Martins, M. 2011. Desarrollo de líneas de frijol (*Phaseolus vulgaris* L.) con mayores niveles de resistencia a las enfermedades. M.S. Thesis. University of Puerto Rico, Mayaguez Campus.

Ndengoloka David, A. 2011. Estudio de la diversidad genética de germoplasma de caupí [*Vigna unguiculata* (L.) Walp.] de Angola y un grupo de germoplasma que representa otras regiones del mundo. M.S. Thesis. University of Puerto Rico, Mayaguez Campus.

? Plant Variety Protection Certificate No. 201000268 was issued for 'Zorro' black bean variety on 8/18/2011.

? Plant Variety Protection Certificate No. 201000269 was issued for 'Santa Fe' pinto bean variety on 8/18/2011.

? Plant Variety Protection Certificate No. 200700410, was issued for 'Sedona' pink bean variety on 4/7/2008;

? Plant Variety Protection Certificate No. 200700411 was issued for 'Capri' cranberry bean variety on 4/7/2008.

Ruíz Quiles, L.A. 2011. Desarrollo de líneas de habichuela (*Phaseolus vulgaris* L.) con resistencia a BCMV, BGYMV y mejor adaptación en suelos bajos en nitrógeno. M.S. Thesis. University of Puerto Rico, Mayaguez Campus.

Professional Recognition, Awards, and Accomplishments

Beaver: James Beaver was selected as a 2011 Fellow of the Crop Science Society of America.

Cisse: Dr. Ndiaga Cisse was appointed as Director of the ISRA/CERAAS regional laboratory in 2011.

Cisse: Dr. Ndiaga Cisse was promoted as director of the ISRA/CNRA Bambey Research Station in 2009.

Drabo: Dr. Issa Issa Drabo, [of] INERA, Burkina Faso, was awarded on October 5, 2008 "Chevalier de l'Ordre des Palmes Academiques" for his outstanding work on cowpea in Burkina Faso by the Minister of Higher Education and Research on behalf of the Chief of State.

Ehlers: Dr. Jeff Ehlers, UC-Riverside, was awarded the UC-Riverside campus "Distinguished Research Award (Non-Senate) for 2007-2008" in recognition of his research work on cowpea genetic improvement.

Kelly: Project PI, Kelly was recognized as 2008 Fellow of Crop Science Society of America;

Mbui Martins: Monica Mbui Martins received recognition for her poster presented at the 2011 Annual Meeting of the American Phytopathological Society, Caribbean Division held in San Juan, Puerto Rico. 19-22 March 2011.

Roberts: Dr. Philip Roberts was appointed Chair of the Department of Nematology, UC-R, in 2011.

Snapp: Dr. Sieglinde Snapp was recognized as Fellow of the American Society of Agronomy – 2010.

The President of El Salvador, Elías Antonio Saca, participated in an official ceremony where seed (10 kg sacks) of small red bean varieties CENTA Pipil, CENTA San Andrés e INTA Rojo were distributed to farmers. The program has distributed approximately 30,000 hwt of seed to 120,000 farmers in El Salvador. The contribution of the Bean/Cowpea and Dry Grain Pulse CRSPs were recognized at the ceremony.

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