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SUMMARY

Experienced and dedicated Statistician with more than 35 years of practice in applied statistics in agricultural and educational sectors. Consultant, Professor, Researcher and Statistical advisor for several multidisciplinary research projects specialized in data management, statistical analysis, and inferential methods, experimental design, mathematical modeling, and simulation. Adept at receiving and monitoring data from multiple data streams, including Access, SQL, and Excel data sources. In-depth Knowledge of SAS and R. Bringing forth the ability to synthesize quantitative information and interact effectively with stakeholders, scientists, professors, and students. Proven track record of generating summary documents reporting and scientific publications with over a hundred scientific papers published in refereed journals as well as book chapters and proceedings. Peer reviewer of various journals and advisor in numerous research committees. A committed statistics professor at the graduate and undergraduate level, passionate about working to further enhance the educational offerings of an institution.

AREA OF SPECIALTY

- Experimental and sampling design
- Exploratory analysis
- Statistical Inferential methods
- Mathematical simulation modeling
- Linear and non-linear regression
- SAS Programmer
- SPSS/JMP/R/Genstat
- Generalized Linear model
- Multivariate analysis
- Time series
- Data management
- Geo-statistics
- Microsoft Office

EDUCATION

Master of Science - Experimental Statistics **1982**
Colegio de Postgraduados de Chapingo *Chapingo, México*
Bachelor of Statistics **1980**
Universidad Nacional de Colombia *Bogotá, Colombia*

PROFESSIONAL EXPERIENCE

2021-present Director of Statistics, Teaching and Consulting. College of Agriculture, AU.

2018-2021 Consultant in Data Analysis. WSU and USDA-ARS-IAREC.

2011-2018 *Associate in research.* Department of Horticulture and Grain Legume Genetics Physiology Research. USDA-ARS-IAREC. Statistical consultant in data management, analysis, and interpretation of several crops; lead the application of MULTISPEQ device data management and statistical analysis using SAS programming skills. Provided statistical advising and support, including planning, experimental design, analysis, and interpretation of results for research projects of professors, students, researchers, and visiting scientist.

2010-2011 *Associate in research*. AgWeatherNet Program Biological Systems Engineering Department. Washington State University. SAS code programmer to convert soils databases (World, Africa, and the USA) in ICASA format to be used in Decision Support System for Agrotechnology Transfer (DSSAT), development of a mathematical model for apple phenology and fruit growth. Provided statistical advising and support, including planning, experimental design, analysis, and interpretation of results for research projects of professors, students, researchers, and visiting scientist.

2001-2010 *Associate professor.* College of Agriculture National University of Colombia (Facultad de Agronomía. Universidad Nacional de Colombia). Created powerful and compelling curricula in applied statistics for Agronomy and Agricultural students, and promoted an open and interactive classroom environment for enhanced learning. Courses taught at both undergraduate and graduate levels: Statistical Methods and Experimental Design. Developed course syllabi and structures, and administered all grades. Provided statistical advising and support, including planning, experimental design, data analysis, and interpretation of results for research projects of professors and students.

2008-2009 *Visitor Scientist.* Agricultural & Biological Engineering Department. The University of Georgia, Griffin Campus. Project development in the spatial distribution of the daily rainfall in Georgia, USA. Performed detailed data validation, worked with complex datasets using SAS programming skills.

2005 *Visitor Scientist.* The University of Florida. Institute of Food and Agricultural Sciences. Agricultural and Biological Engineering Department. Modeling Lab. Model development to simulate plantain (*Musa AAA Simmonds*) potential yield.

1987-2001 *Department Head of Biometrics*, Scientific Research Program at the National Coffee Federation of Colombia. -CENICAFE- (Centro Nacional de Investigaciones de Café) Chinchiná- Caldas. Colombia. Provided leadership and management to research scientists and students in the planning and execution of agronomical experiments. Oversaw all aspects of planning, design development, and data analysis to all of the experiments carried at the research center, and offered design solutions when necessary. Offered advice for experimental design and data analysis to effectively solved agricultural problems and enhanced goal achievement. Provided statistical advising and support, including planning, experimental design, data analysis, and interpretation of results for research projects of research scientists and students.

1999-2000 *Rothamsted International Fellowship.* Institute of Arable Crops Research (IACR)-Rothamsted pursuing research in the Statistics Department. Harpenden – England – U.K. Impact and adoption of the recommendations to control coffee berry borer in Colombian coffee. Merged data with existing data sets, careful to keep old data sets and documentation. Performed detailed data validation, worked with complex datasets using SAS programming skills.

1978-1987 *Statistician.* Statistics and Biometrics Office. Colombian Agricultural Institute I.C.A. (Instituto Colombiano Agropecuario) Editor I.C.A Journal 1984-1987. Provided statistical advising and support, including planning, experimental design, data analysis, and interpretation of results for research projects of scientific researchers and academics.

RECENT PUBLICATIONS

1. 2026 Maverick Mariquit Penelope Perkins Nelda Hernández-Martínez Guoying Ma Elina Coneva Brenda Ortiz Paul Bartley Kathy Lawrence Bernardo Chaves Cordoba Edgar L. III Vinson Melba Salazar-Gutiérrez. Fruit compositional differences in 'Albion and 'San Andreas' strawberries grown in a hydroponic system. DOI:10.71318/wwrdzg02 January 2026

2. 2025 Austin Lindquist Jeremy Pickens Bernardo Chaves Cordoba Rishi Prasad Eve Brantley Glenn Fain Paul Bartley III. Evaluation of Petunia Growth Characteristics in Response to Application of a Novel Poultry-derived Fertilizer. DOI:10.21273/HORTSCI18532-25 October 2025 HortScience 60(10):1665-1673

3. 2025 Kati Kent Arnold Brodbeck Mark Hoffman Mark Hoffman Bernardo Chaves Cordoba Paul Bartley III. Perceptions, barriers, and challenges of adopting battery-powered landscape equipment in professional maintenance. DOI:10.3389/fhort.2025.1490879 July 2025 Frontiers 4:2025

4. 2025 M.R. Salazar-Gutiérrez N. Hernández-Martínez Bernardo Chaves Cordoba. Modeling the flower and fruit phenology of strawberries. DOI:10.17660/ActaHortic.2025.1425.55 March 2025 Acta Horticulturae

5. 2024 Chhabi Raj Debolina Chakraborty Dexter B. Watts Tibor Horvath Quirine M. Ketterings David M. Blersch Abigail A. Tomasek Bernardo Chaves Cordoba Rishi Prasad. Impact of Broiler Litter and Swine Liquid Manure on Nutrient Loading from Three Consecutive One Acre-Inch Rainfall Events DOI:10.2139/ssrn.4891190. January 2024

6. 2023 Nelda Hernández-Martínez Melba Salazar-Gutiérrez Bernardo Chaves Cordoba Daniel Wells Wheeler Foshee Amanda McWhir. Model Development of the Phenological Cycle from Flower to Fruit of Strawberries (Fragaria × ananassa). DOI:10.3390/agronomy13102489 Agronomy September 2023 13(10):2489

7. 2023 Adriana Cifuentes Carvajal Bernardo Chaves Cordoba Edgar L. III Vinson Elina Coneva Dario Javier Chavez Melba R. Salazar-Gutiérrez. Modeling the Budbreak in Peaches: A Basic Approach Using Chill and Heat Accumulation. DOI:10.3390/agronomy13092422 September 2023 13(9):24222023 Melba R. Salazar-Gutiérrez Kathy Lawrence Elina Coneva Bernardo Chaves Cordoba. Photosynthetic Response of Blueberries Grown in Containers. DOI:10.3390/plants12183272

8. Plants September 2023 12(18):32722023 Luis Munoz James T Krehling Matthew A Bailey Dianna Bourassa Wilmer Pacheco Bernardo Chaves Cordoba Cesar Escobar Lobo Leticia Orellana-Galindo Yagya Adhikari Ken Macklin. The Role of Dietary Supplementation of Yeast Cell Walls in Response to a Campylobacter jejuni Inoculation in Broiler Chickens. DOI:10.1637/aviandiseases-D-23-00003September 2023 Avian Diseases 67(3)

9. 2023 Leticia Orellana Duarte Pereira Neves James T Krehling Raquel Burin Patricia Soster Leopoldo Malcorra de Almeida Andrea Urrutia Luis Munoz Cesar Escobar Lobo Matthew A Bailey Bernardo Chaves Cordoba Chance Williams Marco Rebollo Ken Macklin. Effect of translucency and eggshell color on broiler breeder egg hatchability and hatch chick weight. DOI:10.1016/j.psj.2023.102866 June 2023 Poultry Science 102(9):1028662023 Candace C Lyman Carlos R Pinto Bernardo Chaves Cordoba Alex Wittorff Peyton Draheim Alejandro de la Fuente Pouya Dini R Jayachandra Babu G. Reed Holyoak. In vitro derived embryos produced from mares treated with intravenous clomiphene citrate. DOI:10.1016/j.jevs.2023.104661 June 2023 Journal of Equine Veterinary Science 125:104661

10. 2023 Mohammad Mahfuzur Rahman Lyndon Porter Yu Ma Clarice J. Coyne Ping Zheng Bernardo Chaves Cordoba Naidu Rayapati. Resistance in pea (Pisum sativum) genetic resources to the pea aphid, Acyrthosiphon pisum. DOI:10.1111/eea.13296 March 2023 Entomologia Experimentalis et Applicata 171(6)

11. 2023 Luis Munoz Matthew A Bailey James T Krehling Dianna Bourassa Ruediger Hauck Wilmer Pacheco Bernardo Chaves Cordoba Kaicie Chasteen Aidan A. Talorico Cesar Escobar Lobo Andrea Pietruska Ken Macklin. Effects of dietary yeast cell wall supplementation on growth performance, intestinal Campylobacter jejuni colonization, innate immune response, villus height, crypt depth, and slaughter characteristics of broiler chickens inoculated with Campylobacter jejuni at d 21 DOI:10.1016/j.psj.2023.102609 February 2023 Poultry Science 102(5):102609
12. 2023 Paul Bartley Ted C Yap Brian Eugene Jackson William Fonteno Michael D. Boyette Bernardo Chaves Cordoba. Quantifying the Sorptive Behavior of Traditional Horticultural Substrate Components Based on Initial Hydraulic Conditioning. DOI:10.21273/HORTSCI16698-22. January 2023 HortScience 58(1):79-83

13. 2022 Shimul Das, Lyndon D. Porter, Yu Ma, Clarice J. Coyne, Bernardo Chaves-Cordoba, Rayapati A. Naidu. Resistance in lentil (*Lens culinaris*) genetic resources to the pea aphid (*Acyrthosiphon*). Entomologia Experimentalis et Applicata. https://doi.org/10.1111/eea.13202. 13 June 2022. V170. 755-769.

14. 2022 Majumdar, A., Willis H., Chaves-Cordoba, B., Rabinowitz, A., Chambliss, A. Alabama Extension Commercial Horticulture Virtual Events and Social Media Evaluation System During the COVID-19 Pandemic. ISSN 2158-9459. June 2022. V15. 1-16

15. 2020 Salazar-Gutierrez, M.R and Chaves Cordoba Bernardo. Modeling approach for cold hardines estimation on cherries. Agricultural and Forest Meteorology. https://doi.org/10.1016/j.agrformet.2020.107946. 15 June 2020. V287

16. 2018. Peña Q., A.J., Chaves, B., Salazar, M.R., Keller M., and Hoogenboom G. Radius of influence of air temperature from automated weather stations installed in complex terrain. Theoretical and Applied Climatology. https://doi.org/10.1007/s00704-018-2717-9 published online 27 November 2018.

17. 2018. Luis F. Aristizábal, Suzanne Shriner, Robert Hollingsworth, Gabriel Moura Mascarin, Bernardo Chaves, Traice Matsumotoand Steven P. Arthurs. Field sampling strategies for coffee berry borer (Coleoptera:Curculionide: Scolytinae) infesting berries in coffee farms in Hawaii. September 2018. International Journal of Tropical Insect Science. 1-9. DOI 10.1017/S174275841800022X
18. 2018. Rick Boydston, Steven F. Vaughn, Charles Webber, Bernardo Chaves. Evaluating Mustard Seed Meal for Weed Suppression in Potato (Solanum tuberosum). August 2018. DOI 10.5539/Journal of Agricultural Science.v10n2p48
19. 2018. Rick Boydston, Lyndon Porter, Bernardo Chaves, Lav Khot, Phillip Miklas. The Impact of Tillage on Pinto Bean Cultivar Response to Drought Induced by Deficit Irrigation. August 2018. Journal of Agricultural Science. V180. 63-72. DOI: 10.1016/j.still.2018.02.011
20. 2018. Hector Camargo, Melba Salazar, Bernardo Chaves, Gerrit Hoogenboom. Modeling pollen tube growth of 'Gala' and 'Fuji' apples. June 2018. Scientia Horticulturae 240. DOI: 10.1016/j.scienta.2018.05.032
21. 2018.Farhat Abbas, Shafqat Saeed, Shah Fahad, Artemi Cerdà, Wajid Farhad, Chaves Cordoba Bernardo, Wajid Nasim, Muhammad Mubeen, Hafiz Faiq Bakhat. Offsetting land degradation through nitrogen and water management during maize cultivation under

arid conditions. Land Degradation and Development. March 2018. V29.5:1366-1375. doi.org/10.1002/ldr.2933

22. 2017. Rick Boydston, Howard Nelson, Bernardo Chaves. Tolerance of Chickpeas to Postemergence Broadleaf Herbicides. November 2017. Weed Technology DOI 10.1017/wet.2017.99
23. 2017. Rick Boydston, D. A. Navarre, H. P. Collins, Bernardo Chaves. The Effect of Vine Kill Method on Vine Kill, Tuber Skinning Injury, Tuber Yield and Size Distribution, and Tuber Nutrients and Phytonutrients in Two Potato Cultivars Grown for Early Potato Production. November 2017. American Journal of Potato Research. DOI 10.1007/s12230-017-9614-0
24. 2017. Bernardo Chaves, Melba Ruth Salazar Gutierrez, Tory Schmidt, N. Dasgusta, Gerrit Hoogenboom. Modeling fruit growth of apple. May 2017 Acta horticulturae 1160(1160):335-340. DOI 10.17660/ActaHortic.2017.1160.48
25. 2017. Bernardo Chaves, Melba Ruth Salazar Gutierrez, Tory Schmidt, N. Dasgusta, Gerrit Hoogenboom. Modeling apple bloom phenology. May 2017. Acta horticulturae 1160(1160):201-206. DOI 10.17660/ActaHortic.2017.1160.29
26. 2017. Vaishali Sharda, Cameron Handyside, Bernardo Chaves, Richard, T. McNider, Gerrit Hoogenboom. The Impact of Spatial Soil Variability on Simulation of Regional Maize Yield. Transactions of the ASABE. Vol. 60(6): 2137-2148 © 2017 American Society of Agricultural and Biological Engineers. ISSN 2151-0032 https://doi.org/10.13031/trans.12374
27. 2017. Philip N. Miklas, Deidre Fourie, Bernardo Chaves, Constance Chirembe. Common Bacterial Blight Resistance QTL BC420 and SU91 Effect on Seed Yield, Seed Weight, and Canning Quality in Dry Bean. January 2017. Crop Science 57(2). DOI 10.2135/cropsci2016.06.0557
28. 2016. Z. Zheng, H. Cai, Gerrit Hoogenboom, Bernardo Chaves, L. Yu. Limited Irrigation for Improving Water Use Efficiency of Winter Wheat in the Guanzhong Plain of Northwest China. December 2016. Transactions of the ASAE. American Society of Agricultural Engineers 59(6):1841-1852. DOI 10.13031/trans.59.11810
29. 2016. Aristizabal LF, Moura Mascarin G, Cherry R, Chaves-Cordoba B, Arthurs SP. A Rapid Sampling Plan for Scirtothrips dorsalis (Thysanoptera: Thripidae) on Container Shrub Rose (Rosa 'Radrazz'). J Econ Entomol October 109 (6): 2543-2550.
30. 2016. Diana Zapata, Melba Salazar-Gutierrez, Bernardo Chaves, Markus Keller, and Gerrit Hoogenboom. Predicting Key Phenological Stages for 17 Grapevine Cultivars (Vitis vinifera L.). American Journal of Enology and Viticulture. September
31. 2016. H. P. Collins, L. Porter, R. A. Boydston, A. Alva, B. Chaves Cordoba. Petiole N, P, K Concentrations and Yield of the Potato Cultivar Molli from Certified Organic Amendments and Fertilizer Formulations. Communications in Soil Science. April 47 (10): 1227-1238.
32. 2016. Eliane T Bodah, Lyndon Porter, Bernardo Chaves, Amit Dhingra. Evaluation of pea accessions and commercial cultivars for fusarium root rot resistance. Euphytica, March 1:63-73.
33. 2015. D. Zapata, M. Salazar, B. Chaves, M. Keller and G. Hoogenboom. Estimation of the base temperature and growth phase duration in terms of thermal time for four grapevine cultivars. International Journal of Biometeorology. April.
34. 2014. Alfonso Parra-Corona, Gerhard Fischer and Bernardo Chaves. Tiempo termico para estados fenologicos reproductivos de la feijoa (Acca Sellowiana(O. Berg) Burret). Acta Biologica Colombiana. 20(1):167-177. December.
35. 2014. H. M. Hammad, A. Ahmad, F. Abbas, W. Farhad, B. Chaves, and G.t Hoogenboom Water and nitrogen productivity of maize under semi-arid environments. Crop Science September 55:1-12.
36. 2014. Miguel Ángel López M., Bernardo Chaves C., Víctor Julio Flórez R. Potential growing model for the standard carnation cv. Delphi. Agronomia Colombiana. Aug: 32:196-204.

37. 2014. Melba R. Salazar-Gutiérrez, Bernardo Chaves, Jakarat Anothai,Matthew Whiting, Gerrit Hoogenboom. Variation in cold hardiness of sweet cherry flower buds through different phenological stages. Scientia Horticulturae Jul ; 172:161–167.
38. 2014. J. M. Tarara, B. Chaves, L. A. Sanchez, and N. K. Dokoozlian. Cordon Wire Tension Can Be Used for Static and Dynamic Prediction of Grapevine Yield. American Journal of Enology and Viticulture August 65:4-10
39. 2014. J. M. Tarara, B. Chaves, B. C. Strik. Grow tubes change microclimate and bush architecture but have little effect on bush biomass allocation at the end of the establishment year in blueberry. HortScience May 49:596-602.
40. 2013. J. M. Tarara, B. Chaves, and B. C. Strik. Above- and Belowground Microclimate of Grow Tubes in an Organic Mulch-incorporated, Raised Bed System for Blueberry. HortScience November 48:1363-1369.
41. 2013. J. M. Tarara, B. Chaves, L. A. Sanchez, N. K. Dokoozlian. Analytical Determination of the Lag Phase in Grapes by Remote Measurement of Trellis Tension. HortScience 2013 48:453-461.
42. 2013. M.R. Salazar-Gutierrez, J. Johnson, B. Chaves and G. Hoogenboom. Relationship of Base Temperature to Development of Winter Wheat in the Southeastern US. The International Journal of Plant Production. 7 (4): 741-762.
43. 2013. H. P. Collins, J. Streubel, L. Porter, A.A. Alva, and B. Chaves-Cordoba. Phosphorous Uptake by Potato (*Solanum tuberosum* L.) from Biochar Amended with Anaerobic Digested Dairy Manure Effluent. Agronomy Journal 105: 4: 989-998.
44. 2012. L. Santacoloma, B. Chaves, H. L. Brochero. Susceptibility of natural populations of dengue vector to insecticides in Colombia. Biomédica 32:333-43.
45. 2011. M. R. Salazar-Gutierrez, J. E. Hook, A. Garcia y Garcia, J. Paz, B. Chaves, G. Hoogenboom. Estimating Irrigation Water Use for Maize in the Southeastern USA: A Modeling Approach. Agricultural Water Management. Vol.107, Pages 104-111.
46. 2010. M. A. López M., B. Chaves, V. J. Flórez R., M. R. Salazar. Node appearance model for substrate grown carnation (*Dianthuscaryophyllus*) cv. Delphi., *Agron. colomb.*, vol.28, no.1, p.47-56. ISSN 0120-9965
47. 2010. L. Santacoloma, B. Chaves, H.L. Brochero. Susceptibility of *Aedes aegypti* to DDT, deltamethrin, and lambda-cyhalothrin in Colombia. Rev Panam Salud Publica. 27(1):66–73.
48. 2010. M. Rodríguez, G. Plaza, R. Gil, B. Chaves, J. Jiménez. Design and assessment of a weed management proposal for spinach (*Spinacea oleracea* L.) crop, based on agronomic and socioeconomic aspects. *Agron. colomb.*, vol.28, no.1, p.47-56. ISSN 0120-9965
49. 2010. A. del P. Baracaldo, A. Ibagué, V. J. Flórez, B. Chaves. Growth of standard carnation cv. Nelson, in soil and substrates. *Bragantia* [online]. 2010, vol.69, n.1, pp. 1-8. ISSN 0006-8705. doi: 10.1590/S0006-87052010000100002.

An extended list of publications, attendance to conferences, presentations, and proceedings available upon request.

BOOKS

Florez, V.; Fernández, A.; Miranda, D.; Chaves, B. y Guzmán, M. (Ed). 2006. Avances sobre fertirriego en la floricultura colombiana. UNIBIBLOS. Universidad Nacional. de Colombia. ISBN: 958-701-722-6 http://unperiodico.unal.edu.co/ediciones/102/23.html

Angel C., Carlos Ariel; Tsubota N., Masanobu; Leguizamón C., Jairo E.; Cárdenas M., Reinaldo; Chaves C., Bernardo; Cadena G., Gabriel; Bustillo P., Alex E. Enfermedades y plagas en cattleyas; antecedentes e investigaciones en Colombia. CENICAFE. Chinchina [Colombia]. 2001. 322 p.

Duque O., H. Chaves C., B. Estudio sobre la adopción del manejo integrado de la broca del café. Chinchiná (Colombia), CENICAFE, 2000. 87 p. 59 Refs. Esp. (ISBN 958-96554-5-9).

Duque O., H. Chaves C., B. Estudio de adopción de tecnología en Manejo Integrado de Broca, /Hypothenemus hampei/ (Ferrari). Chinchiná (Colombia), CENICAFE, 1997. 114 p. 55 Refs. Esp.

FELLOWSHIPS, ACADEMIC AWARDS, AND HONORS

- Meritorious teaching and excellent award 2006. College of Agriculture. The National University of Colombia.
- Rothamsted International Fellowship. 1999-2000. Statistical Department at IARC-Rothamsted Research. Harpenden UK.
- Colombian Enthomology Society SOCOLEN Award "Francisco Luis Gallego" Awardees: Indhira Reyes, Alex Bustillo Bernardo Chaves Córdoba. FCM Corporation. Scientific paper presented at XXI Congress. Medellín, July 27 - 29 1994. Award given at XXII Congress Santafé de Bogotá D.C. Julio 26, 27 y 28 de 1995.
- Colombian Enthomology Society SOCOLEN Award "Francisco Luis Gallego" a: Luis Fernando Aristizábal, Jaime Orozco, Peter S. Baker, Bernardo Chaves Córdoba. Scientific paper presented at XXIII Congress Cartagena 17 al 19 de Julio de 1996. Award given at XXIV Congress Pereira-Risaralda Julio 16 - 18 de 1997.
- Colombian Enthomology Society SOCOLEN Award "Hernán Alcázar Viecco" a: Luis Fernando Aristizábal, Alex Bustillo, Jaime Orozco, Bernardo Chaves Córdoba. Scientific paper presented at XXV Congress Cali 16 al 18 de Julio de 1998. Award given at XXVI Congress Santafé de Bogotá Julio 30 de 1999.

REFERENCES

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Statistical Consultant for IFDC in Agricultural Research projects in Africa and Asia
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