Rosa Paula Cuevas

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Career Summary

Data and food scientist with extensive experience applying data analytics in food science and agricultural research to devise data-driven solutions for real-world problems. Generates insights from data using Excel, R, and Python. Communicates impactful stories gleaned from data analytics and visualisation to stakeholders.

Technical Skills

Languages: R, Python, SQL, HTML, CSS, JavaScript

Data Visualisation and Manipulation: pandas, matplotlib, ggplot2, circlize, gridExtra, corrplot, Tableau

Statistical Analysis/ Machine Learning: regression analysis, ANOVA, ad-hoc testing, correlation analysis, random forest, cluster analysis, natural language processing (NLP)

Laboratory: Scientific writing, grain quality, sensory evaluation, rheometry, texture profile analysis, capillary electrophoresis, high-performance liquid chromatography

Selected Data Science Projects

(SQL, Python, HTML, CSS, JavaScript, Tableau)

Natural Language Processing

- Extracting summaries and identifying trends from over 4000 scientific abstracts authored by staff from the International Rice Research Institute (https://enigmatic-plains-87359.herokuapp.com/)
- Keyword extraction, sentiment analysis for poems (https://young-bastion-43943.herokuapp.com/)

Data Visualisation

- Dashboard for belly button microbial diversity (https://still-brook-99773.herokuapp.com/)
- Visualising trends of NY Citi Bike ridership in 2018 (https://rochiecuevas.github.io/Citi_Bike/)
- Finding patterns in alien sightings: (https://rochiecuevas.github.io/UFO_Sightings/)

Machine Learning

- Exploratory analysis of hotel guest ratings data (https://github.com/janelcv/Hotel_Rating_Analysis)
- Classification of wheat grains into colour classes through logistic regression of spectrometric data

Experience

Scientist (2015–2018)
International Rice Research Institute – Los Baños, Laguna, Philippines

- Research focus: associating sensory properties, chemistry, and genetics of grain quality
- Refined the rice quality classification system based on insights derived from data subjected to machine learning approaches
- Leveraged insights derived from scientific and popular literature and analytical approaches based on natural language processing to co-develop the "gastronomic systems research framework" for contextualising food choice for urban high-income rice consumers
- With economists, conducted a hedonic pricing analysis for rice grain quality

Consultant (2014–2015)
International Rice Research Institute – Los Baños, Laguna, Philippines

- Generated datasets of descriptive sensory profiles for 130 rice samples from a diverse collection.
- Enhanced market linkages of Philippine heirloom rice varieties via collaborations with restaurants

Post-doctoral Fellow (2010–2014)
International Rice Research Institute – Los Baños, Laguna, Philippines

- Developed evidence-based insights about the associations of starch chemistry with various indicators of rice quality and communicated these with technical audiences through publications and symposia presentations

Professional Service Staff (2008–2010)
International Rice Research Institute – Los Baños, Laguna, Philippines

- Strengthened the data-driven basis of the GQNC-Quality Evaluation Services' full-cost recovery program through the development of cost databases (MS Access)

Researcher, 2004–2005
International Rice Research Institute – Los Baños, Laguna, Philippines

- Collected data about rice starch properties using differential scanning calorimetry, rheometry, size-exclusion chromatography, and fluorophore-assisted capillary electrophoresis

Quality Assurance Supervisor, 2003–2004
Antonina Industrial Corporation – Sta. Rosa, Laguna, Philippines

- Decreased incidences of environmental and finished-goods microbial contamination by ~70% through data-driven improvements in in-line hygiene monitoring and environmental sampling procedures, production line cleaning schedules, and on-boarding staff training
- Reduced monthly consumer product complaints by ~70% by improving traceability studies through a stronger emphasis on data coming from production lines and improved communication lines with staff
- Traced potential product losses amounting to approximately Php 7,000,000 (~USD 158,400) through in-depth analyses of data generated by the production lines affected, which eventually led to the implementation of stricter tolerances to finished-good product weights

Researcher, 2002–2003
International Rice Research Institute – Los Baños, Laguna, Philippines

- Located the putative location of the low-tillering gene in two japonica rice mapping populations through molecular marker-based data collection and analyses

Education

University of California, Berkeley Extension – San Francisco, CA, USA
Certificate, Data Analytics and Visualisation (2019)

University of Queensland – Brisbane, QLD, Australia
PhD Agricultural Science (2009)
Doctoral Thesis: Starch microstructure and functional properties in waxy rice (*Oryza sativa* L.)

University of the Philippines Los Baños – Los Baños, Laguna, Philippines
BSc Biology, Magna cum Laude (2002)
Thesis: Production and utilisation of crude tylosin from high-yielding *Streptomyces fradiae* NRRL 2702 Mutant No. 93 as therapeutic agent in broilers

Selected Publications (applications of data science)

Cuevas, R. P., P. S. Takhar, N. Sreenivasulu. 2018. Characterisation of mechanical texture attributes of cooked milled rice by Texture Profile Analyses and unravelling viscoelastic properties through rheometry. In: Rice Quality: Methods and Protocols. Ed: N. Sreenivasulu. NY: Springer. pp. 151–168.

Molina, L., R. Jimenez, N. Sreenivasulu, R. P. Cuevas. 2018. Multi-dimensional cooking quality classification using routine quality evaluation methods. In: Rice Quality: Methods and Protocols. Ed: N. Sreenivasulu. NY: Springer. pp. 137–150.

Misra, G., S. Badoni, C. J. Domingo, R. P. Cuevas, C. Llorente, E. G. N. Mbanjo, N. Sreenivasulu. 2018. Deciphering the genetic architecture of cooked rice texture. Frontiers in Plant Science 9: 1405. DOI: 10.3389/fpls.2018.01405

Cuevas, R. P., C. J. Domingo, N. Sreenivasulu. 2018. Multivariate-based classification of predicting cooking quality ideotypes in indica germplasm. Rice 11(1): 56. DOI: 10.1186/s12284-018-0245-y

Cuevas, R. P., A. de Guia, M. Demont. 2017. Developing a framework of gastronomic systems research to unravel drivers of food choice. International Journal of Gastronomy and Food Science 9: 88–99. DOI: 10.1016/j.ijgfs.2017.06.001

Cuevas, R. P., V. O. Pede, J. McKinley, O. Velarde, M. Demont. 2016. Rice grain quality and consumer preferences: A case study of two rural towns in the Philippines. PLOS One 11(3): e0150345. DOI: 10.1371/journal.pone.0150345

Anacleto, R., R. P. Cuevas, R. Jimenez, C. Llorente, E. Nissila, N. Sreenivasulu. 2015. Prospects of breeding high-quality rice using post-genomic tools. Theoretical and Applied Genetics 128 (8): 1449–1466. DOI: 10.1007/s00122-015-2537-6

Butardo, V. M., V. D. Daygon, M. L. Colgrave, P. M. Campbell, A. P. Resurreccion, R. P. Cuevas, S. A. Jobling, I. Tetlow, S. Rahman, M. K. Morell, M. A. Fitzgerald. 2012. Biomolecular analysis of starch and starch granule proteins in the high-amylose rice mutant Goami 2. Journal of Agricultural and Food Chemistry. 60 (46): 11576–11585. DOI: 10.1021/jf303205p

Boualaphanh, C., M. Calingacion, R. P. Cuevas, D. Jothityangkoon, J. Sanitchon, M. A. Fitzgerald. 2011. Yield and quality of traditional and improved Lao varieties of rice. ScienceAsia 37: 89–97.

Tran, N. A., V. D. Daygon, A. P. Resurreccion, R. P. Cuevas, H. M. Corpuz, M. A. Fitzgerald. 2011. A single nucleotide polymorphism in the *Waxy* gene explains a significant component of gel consistency. Theoretical and Applied Genetics 123(4): 519– 525. DOI: 10.1007/s00122-011-1604-x

Cuevas, R. P., V. D. Daygon, M. K. Morell, R. G. Gilbert, M. A. Fitzgerald. 2010. Using chain-length distributions to diagnose genetic diversity in starch biosynthesis. Carbohydrate Polymers 81(1): 120–127. DOI: 10.1016/j.carbpol.2010.02.004

Cuevas, R. P., J. Peate, M. A. Fitzgerald, R. G. Gilbert. 2010. Structural differences between hot-water-soluble and hot-water-insoluble fractions of starch in waxy rice (*Oryza sativa* L.). Carbohydrate Polymers 81: 524–532. DOI: 10.1016/j.carbpol.2010.03.007

Cuevas, R. P., V. D. Daygon, H. M. Corpuz, R. Reinke, D. L. E. Waters, M. A. Fitzgerald. 2010. Melting the secrets of gelatinization temperature. Functional Plant Biology 37(5): 439–447. DOI: 10.1071/FP09258

Fukuta, Y., E. Araki, L. Ebron, R. P. Cuevas, D. Mercado-Escueta, G. S. Khush, J. E. Sheehy, H. Tsunematsu, H. Kato. 2006. Identification of low tiller gene in two rice varieties, Aikawa 1 and Shuho of rice (*Oryza sativa* L.). JIRCAS Working Rep. 46: 86– 92.

Selected Technical Presentations

Cuevas, R. P., M. C. Custodio, J. Ynion, A. Samaddar, S. K. Mohanty, M. Demont. 2018. We are what we eat: Understanding the drivers of food choice and nutritional outcomes in eastern India from a gastronomic systems perspective. 3rd Agriculture, Nutrition and Health Academy Week, Accra (Ghana).

Cuevas, R. P., A. de Guia, M. Demont. 2018. Consumer valuation of cultural heritage: Estimating the value of Cordilleran "heirloom rice" through the gastronomic systems research (GSR) approach. Food and Feed Technology Center-Kasetsart University International Seminar on Promoting Rice Farmers' Market through Value-adding Activities, Bangkok (Thailand).

Demont, M., R. P. Cuevas, M. C. Custodio, A. Samaddar, S. K. Mohanty, J. Ynion. 2017. Improving nutrition through gastronomic systems research. FAO-RAP "Asia and the Pacific Symposium on Sustainable Food Systems for Healthy Diets and Improved Nutrition", Bangkok (Thailand).

Capistrano, P. C., R. P. Cuevas, R. A. Reaño, D. O. Manzanilla, M. T. Wanawan, V. A. Tapat, A. E. Cope, C. M. Vera Cruz. 2017. Diversity analysis of farmer-grown heirloom and traditional rice varieties in five provinces of the Philippines. National Biotechnology Week, Muñoz (Philippines).
Cuevas, R. P. 2016. Why do we need to understand rice grain quality? Seminar on Cereal Grain Products: Importance of Assessing Its Quality, Polytechnic University of the Philippines, Manila (Philippines).

Cuevas, R. P. 2016. In pursuit of the perfect rice variety. 2016 Research Fortnight, University of Santo Tomas, Manila (Philippines).

Cuevas, R. P., C. J. Domingo, R. Anacleto, L. Samadio, N. Sreenivasulu. 2015. Exploring the diversity of rice quality through sensory evaluation. Nestlé Conference, Lausanne (Switzerland).

Cuevas, R.P. 2012. Grain quality evaluation approaches as tools in rice breeding. Mars Lunch & Learn, Los Angeles (USA).

Concepcion, J. C., R. P. Cuevas, A. Madrid, Jr., T. Atienza, R. Jimenez, A. P. Resurreccion, M.A. Fitzgerald. 2012. Connecting the dots from amylose content to cooked rice texture. International Young Scientists Conference, Los Baños (Philippines).

Cuevas, R. P., L. Quiatchon, M. A. Fitzgerald. 2011. Effect of nitrogen nutrition on quality and consumer perception of three popular rice varieties and a low-chalk line. International Network for Quality Rice meeting, Bangkok (Thailand).

Cuevas, R. P., R. Jimenez, A. P. Resurreccion, M. A. Fitzgerald. 2011. Where does amylose end and amylopectin begin? Philippine Chemical Congress, Cebu City (Philippines).

Cuevas, R. P., M. A. Fitzgerald, R. G. Gilbert. 2010. A new fraction of starch that helps explain eating quality in rice (Oryza sativa L.), International Rice Congress, Hanoi (Vietnam).

Peate, J., R. P. Cuevas, T. Witt, R. Cave, M. J. Gidley, M. A. Fitzgerald, S. Seabrook, R. G. Gilbert. 2009. Useful information from size separation data for branched polymers. Fourth International Symposium on the Separation and Characterization of Natural and Synthetic Macromolecules, Amsterdam (Netherlands).

Cuevas, R. P., J. Peate, M. Gaborieau, R. G. Gilbert, M. A. Fitzgerald. 2008. Structural differences between two fractions of starch from waxy rice (Oryza sativa L.). AACC International Annual Meeting, Honolulu (USA).

Cuevas, R. P., M. A. Fitzgerald. 2008. Hot-water soluble component of starch contributes to RVA peak viscosity. Starch: 4th International Meeting on Starch Structure and Functionality, Nottingham (United Kingdom).

Cuevas, R. P., M. A. Fitzgerald, R. G. Gilbert. 2007. Cooking properties of the starch granule. International Network for Quality Rice meeting, Los Baños (Philippines).