

National Scientist Dolores A. Ramirez: From Beating the Odds to Empowering Philippine Agriculture

By Malem Flores*



She could have been an excellent physician, an expert in the medical sciences, and become a major asset to some big-shot pharmaceutical corporation because of her fascination with science. Or she could have been a remarkable literary artist because of her fondness for aesthetic words. Instead, she chose to be a specialist in plant breeding and genetics, as well as an academic and author.

Through her work on plant genetics, particularly concerning food crops, Dr. Dolores A. Ramirez has been empowering the scientific community and agricultural sector in the Philippines, and the whole world, for almost six decades now. In addition to this remarkable endeavor, Dr. Ramirez has also spawned equally excellent would-be researchers, administrators and agricultural policymakers under her careful and brilliant tutelage.

Dolores A. Ramirez was born on September 20, 1931 to a working class couple, Augusto U. Ramirez and Leonor Altoveros of Calamba, Laguna. The eldest of eight children, she excelled in classes despite the challenges that her early years brought to her, one of which was the untimely death of her father, whom she claims to be her inspiration to be an academic achiever. Despite the lack of resources, her mother who was not able to reach secondary level education, supported Dolores in her struggles with school.

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Her academic journey was influenced by outstanding persons who inspired her and served as her role models. It was her patient and enthusiastic high school Biology teacher, Dr. Godofredo Alcasid, who introduced her to the world of the life sciences. Likewise, she developed appreciation for the arts and literature gained from having good English teachers who were products of the University of the Philippines. Those individuals motivated her to excel in her studies. Her perseverance and passion for academics bore fruit when she graduated First Honorable Mention from Laguna Institute in 1952.

Towards the end of her high school years, her family's situation improved a bit. This enabled Dolores' mother to send her to college and she chose to go to UP Los Baños (UPLB) College of Agriculture. She planned to major in Agricultural Chemistry, but the charismatic and convincing Dr. Dioscoro Umali, who was then head of the Department of Agronomy Plant Breeding Division, enticed her to specialize in Plant Breeding instead. Indeed, she did more than well in Plant Breeding.

Her college years were not without challenges. In a class of around 300 during her freshman year, only 20 students were female. Being a woman in a field usually associated with men exposed her to discrimination. Dr. Ramirez recalls an instance when a visiting U.S. professor remarked, "But Plant Breeding is not a field for women! Why don't you specialize in some other fields?" Similarly, Dolores heard dissuading and chauvinistic comments like "Agriculture is not a career for women. You (ladies) are more suited for Education. You (ladies) are more suited for Nursing...Become teachers or nurses instead..."



Young Dolores working in the lab.

“I think during that time, I was probably getting fed up that it was always said that this field is not meant for women, so I was further driven to pursue Plant Breeding. I was challenged”, she responded to those condescending words to her gender.

“In a way, I was not discouraged. For me, it really pushed me to work harder. I took it more as a challenge rather than as a disadvantage. I wanted to prove that I am a woman, that women are not disadvantaged and can be equal if not better than men.”

Dolores’ perseverance and passion lifted her up to be the top of her class and to graduate in 1956 magna cum laude, as among her laudable distinctions in college. This achievement opened opportunities for her, including her pursuit of a Master’s degree through a Rockefeller scholarship grant. UPLB hired the fresh graduate right after as a research instructor in Plant Breeding.

She pursued her Master’s degree under the world-renowned cytogeneticist Dr. Charles R. Burnham at the University of Minnesota and finished in less than a year. She obviously had to compromise her social life since her time was spent mainly between home, school and laboratory. “I had wanted anyway. Besides, I went there because I wanted to study.”

Her first major published research output was her B.S. thesis under the tutelage of Dr. Umali, which was about the nature of lodging in rice. Later on, as she proceeded with her Master’s degree, Dolores worked on cytogenetic studies of new rings of six chromosomes in barley plants.

Once again, the Rockefeller Foundation gave her a scholarship grant, this time for her PhD in Biochemical Genetics, with minors in Plant Physiology and Plant Pathology under another renowned geneticist, Dr. Mark L. Tomes of Purdue University from 1961 to 1963.

After finishing her doctoral studies, she rewarded herself with a four-month trip around Europe with her savings from the Rockefeller grant, before going back to her homeland. She went back to her alma mater, UPLB College of Agriculture in 1964 to share her knowledge and experiences from Purdue University. She was promoted from research assistant professor in 1964 to associate professor in 1969, and became a full professor in 1974.

As a researcher, Dr. Ramirez had to be resourceful and realistic because UPLB then lacked advanced facilities and equipment. However, she got around those problems through the support she gained from people in UP, the Department of Agriculture (DA) and Department of Science and Technology (DOST), the International Rice Research Institute (IRRI) and other institutions. “You have to adjust to those limitations because that is the reality,” she said.

Among her most notable works concerns the macapuno coconut in collaboration with Dr. Evelyn Mae Tecson-Mendoza, particularly on how high galactomannan metabolism affects the set of genes that characterize the non-rigid cell walls of the fruit’s endosperm. Long before the establishment of IRRI, Dr. Ramirez, who already contributed to rice research through her Bachelor’s thesis on the nature of lodging in rice, continued to work on the cytogenetics of rice hybrids with related wild species which traced sterility causes in some hybrids. With students and staff, she also worked on mung beans, especially about the genetics of chemical resistance factors of the plants *Cercospora* leaf spot.

Along with her staff and students, Dr. Ramirez worked on the cytology of various Philippine plants and other topics regarding plant breeding, plant genetics, plant biochemistry, and plant cytology. Her research results on rice, coconut, sugarcane, ornamentals, fruit crops and many more have been used by plant breeders, botanists and agriculturists in their efforts to produce improved varieties of these crops.

As a teacher and mentor, “Mother Cell” or Ma’am DR, as her protégés dubbed her, never compromised quality and quantity for convenience in instructing her students. “I was never a spoon-feeder. I have a very strong conviction that no UP student is average...I refuse to accept anybody as ...average, much less, below average. And therefore, I am not going to insult your intelligence because I believe my very high expectations from my students are more than justified”.

“Mother Cell” or Ma’am DR was strict, but simple and upright in handling Biology and Agronomy subjects, in addition to being adviser to students undertaking their thesis research. During her time, she utilized the essay method during examinations to give her students the chance to understand, analyze, synthesize, and articulate well the lessons they learned. Through her instruction and training, she fostered critical thinking, innovation and intellectual dexterity among her students, aside from inculcating in them the value of discipline, resourcefulness, honesty,



Molding the minds of the future. Ma'am DR, during one of her famous Bio 30 Genetics classes, lectures about the central dogma of molecular biology.

and dedication. Despite her strictness, she gave room for errors and allowed her students to make mistakes, to self-discover and go beyond their comfort zones.

Straightforward in approach, Dr. Ramirez sought to make genetics more fascinating and simpler to grasp by producing the first lecture syllabus and a genetics laboratory back in 1967. Her commitment to improving the curriculum, instruction, extension and student development in the university did not cease when she served as Dean of the UPLB Graduate School. She was research adviser to B.S., M.S. and PhD students. Being the epitome of a good scientist and teacher, Dr. Ramirez served as a pioneer in the instruction of genetics and contributed to making UPLB one of the finest institutes for agriculture in the Philippines and the world.

Dr. Ramirez had become a trailblazer as well. Her affiliations with various organizations and groups enabled her to pursue her civic, professional, educational, and scientific advocacies. Some of those affiliations included various UPLB committees, like the Vegetable Research, Educational Policy and Curriculum, and a number of scientific societies and organizations, e.g., the Philippine Phytopathological Society, National Research Council of the Philippines, Crop Science Society of the Philippines, Society for the Advancement of Breeding Research in Asia and Oceania (SABRAO), National Academy of Sciences and Technology (NAST-Philippines), Third World Organization for Women in Science (TWOWS), The Academy of Science for Developing World (formerly Third World Academy Of Science, TWAS), International Maize and Wheat Improvement Center (CIMMYT, based in Mexico) IRRI, DOST, and others. She also



Defying the stereotype.

Dr. Dolores Ramirez, the only female board member during that time, surrounded by her male colleagues in the Board of Trustees of International Maize and Wheat Improvement Center (CIMMYT). CIMMYT is a non-profit organization that researches on the sustainable development of wheat and maize farming.

gave presentations on biosafety concerns for genetically modified food crops and served as a member of the DOST National Biosafety Committee for many years.

Almost sixty years in the academe, the laboratory and the field have enabled her to produce numerous published works on genetics, plant science, and research. Her research output includes 104 technical papers and 19 books, syllabi, and laboratory manuals. Her works also appeared in scholarly publications such as the *Philippine Journal of Crop Science* and *The Philippine Agriculturist* (now known as *Philippine Agricultural Scientist*).

From her student life to being a professional, Dr. Ramirez has earned a variety of awards and distinctions, the most notable of which is being named National Scientist in 1998. Among the other accolades bestowed upon her were the University of the Philippines Centennial Award as National Scientist by the UP System (2008), UP Professional Achievement Award in Agriculture (1985), and the Presidential Rizal Pro Patria Award for Out-

standing Achievement in Science-Biochemical Genetics (1981).

“For me, these recognitions are just a bonus. I was already happy doing the work that I wanted to do and I am already happy with what I’ve accomplished,” she said, despite having reached these milestones in her career.

Even at the ripe age of 82, Dr. Dolores A. Ramirez still is a true woman of science who faced and overcame adversities. Her success was a result of a penchant for knowledge, her determination and dedication, as well as her own version of female power. She is the epitome of a genuine *Iskolar ng Bayan* who definitely has served the people even up to this point. She has molded generations of would-be scientists through her lessons in and beyond the classroom. “Mother Cell” also nurtured the fields of plant breeding and genetics in the local setting and through her work, helped the agricultural and scientific sectors flourish. Dr. Dolores A. Ramirez is one Filipina scientist who truly inspires and empowers the world and her own countrymen.



Committed to the achievement of excellence. Dr. Dolores Ramirez was conferred the rank and title of National Scientist by then-President Fidel Ramos and DOST Secretary William Padolina in 1998.