



Farmers Speak: Stories from the Fields





The global population is expected to reach 9.8 billion by 2050. Population growth comes from an increased demand for food, exacerbating the challenge of food security. Climate change also further complicates this issue by disrupting reliable and sustainable food production methods.

Solving these challenges to global agriculture requires innovative approaches such as biotechnology. Agricultural biotechnology, or agri-biotech, uses modern tools and techniques to enhance crops and livestock, addressing the need to feed and clothe the fast-growing population. Biotech crops are products of agribiotech that offer cost-effective tools for easier and more efficient production.

The Philippines has been a pioneer in adopting biotechnology in agriculture within Southeast Asia. In 2002, the country authorized the planting of insect resistant Bt corn, a genetically modified (GM) corn that effectively controls corn borers, rootworms, and other destructive pests. This decision has led to significant benefits for farmers, including increased yields and incomes, as well as a reduction in the use of insecticides.

Since its introduction, Bt corn has become an essential element of Philippine farming practice, with adoption rates steadily rising. Over 673,000 small-scale Filipino corn farmers have benefited from it. In 2019, the Philippines stood out among 29 countries engaged in biotech crop cultivation, ranking 12th globally for its commitment to biotech crops, specifically dedicating 875,000 hectares to biotech corn.

Within this context, *Farmers Speak: Stories from the Fields* aims to uncover the stories of those at the forefront of biotech corn adoption—the farmers whose experiences shed light on its impact. Their stories reveal the benefits that biotech crops bring to them and their communities, while also offering valuable lessons about the challenges of adopting these technologies.

Farmers Speak: Stories from the Fields is a collaborative effort between ISAAA Inc. and the Philippine Agriculture and Fisheries Biotechnology Program of the Department of Agriculture (DA Biotech Program). Within its pages, readers will discover diverse stories illustrating the experiences of Filipino farmers embracing biotech corn. Through these narratives, valuable insights into the human dimension of biotech adoption emerge. These stories deepen understanding of agri-biotech and highlight the farmers' role as change-makers.

The overarching goal in crafting this volume is twofold. First, it aims to pay tribute to the tireless efforts of biotech farmers. Second, it rallies informed decision-making in agriculture.

This publication amplifies the voices of farmers in shaping agricultural practices. *Farmers Speak: Stories from the Fields* demystifies biotech farming through in-depth interviews and testimonies as it explores the reasons behind adoption, the challenges faced, and the successes achieved. It also serves as a sequel to *Farmers First: Feedback from the Farm*, which featured farmers from China, India, and the Philippines—three of the earliest biotech crop country adopters in the region. In this second volume, the tales of farmer-leaders from the Philippines are put in the spotlight to showcase their journey toward breakthroughs with biotech.

Ultimately, the feedback from farmers, who benefit most from agri-biotech, underscores the effectiveness of the technology. Farmers themselves wield significant influence in the decision-making process of biotech crop adoption, fostering widespread acceptance and influencing others to follow. The narratives within *Farmers Speak: Stories from the Fields* celebrate the farmers' resilience and ingenuity, highlighting their journey as leaders toward a more sustainable future in agriculture.



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“Agriculture is our wisest pursuit, because it will in the end contribute most to real wealth, good morals, and happiness.”
- Thomas Jefferson





Adriel Dave Alvarez, or Farmer AD, had a comfortable career before choosing to become a farmer. As the Executive Director of a nonprofit microfinance institution focused on poverty alleviation, AD developed a deep passion for helping the poor. Upon witnessing the plight of Filipino farmers, he became interested in finding solutions to increase their yields and productivity. This eventually led him to the idea of establishing a “mission farm” on their family property in Camotes Islands, Cebu.

A Catalyst of Social Transformation: From Non-Profit Executive to Mission Farmer

Introducing Bt corn to Camotes Islands

When AD arrived in the Camotes Islands in 2010, he learned that corn was the main produce for farmers in the island and in the rest of Cebu. He further observed that the farmers were producing low corn yields. This led him to research and use his mission farm to demonstrate advanced farming technology to improve yields.

“I primarily farm to help the community and offer them options on good practices which they can emulate. We are trying to establish our farm center as a technology demo and marketplace for farmers who would adopt modern agriculture,” Farmer AD explained.

Bt corn had been commercialized in the Philippines in 2002, but the technology had not reached the islands like Camotes in 2010. Hence, Farmer AD began introducing Bt corn planting there. With an average Bt corn yield of 8,400 kg per hectare, compared to the 600-800 kg per hectare yield of conventional corn, his demonstration captured the interest of farming communities in Camotes, as well as in other parts of Cebu and Leyte.

Global recognition and network expansion

Farmer AD was awarded the “Most Outstanding Corn Farmer of Cebu” by the Provincial Division of the Department of

Agriculture 2016 and the “Most Outstanding Corn Farmer of Region 7” the following year, due to the significant increase in yields on his mission farm. His story as a farmer leader resonated beyond the country, and in 2017, he was chosen to attend the Cornell Alliance for Science's first batch of international farmer participants to undergo special training in Illinois, USA. In the same year, he had the opportunity to visit the International Maize and Wheat Improvement Center (CIMMYT) in Mexico, where his understanding of corn and corn varieties grew. He also saw maize varieties in the pipeline that were being developed by the research center to solve pressing agricultural problems like climate change, food insecurity, and low productivity.

In 2018, he was nominated to participate in the Global Farmer Network Roundtable discussions on trade and biotechnology during the World Food Prize events in Des Moines, Iowa, USA, representing farmers from the Philippines. This experience gave him further insights into farming from a global perspective.

Upon returning to the Philippines, Farmer AD got more involved with the Philippine Maize Federation, a confederation of different maize farmers, serving as its corporate secretary in 2023.

As a biotech champion and advocate, Farmer AD has often been invited as a resource person for government agencies



Farmer AD with Derek Matthews and Marcos Guigou in Cinnamon Ridge during the Cornell Alliance for Science training in 2017.

and private organizations involved in biotechnology, such as the Department of Agriculture Crop Biotechnology Center (DA-CBC), CropLife International (CLI), CropLife Asia (CLA), and the Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA). He also participated as a farmer guest delegate in the 2023 APEC High-Level Policy Dialogue on Agricultural Biotechnology (HLPDAB) in Seattle, Washington, USA, through ISAAA, bringing a farmer perspective to important discussions about regulatory cooperation among APEC-member economies.

Farmer AD also attended the first all-member conference of the Global Farmer Network in Argentina in February 2023. He delivered a talk in one of the sessions on the global farmer perspective. In South America, he visited Uruguay and other parts of Argentina to learn more about advancements in agriculture and the use of biotechnology.

In 2023, Farmer AD was recognized by the Department of Agriculture (DA) as one of the *Filipino Faces of Biotechnology*, along with the selected top scientists and political figures who have been at the forefront of advancing biotechnology in the country, for his passionate efforts in promoting crop biotechnology in the Philippines and in helping resource-poor farmers improve their lives through biotech crop adoption.

Advocacy for inclusive farming programs

Amidst his success and numerous accolades, Farmer AD wishes for a more enabling environment and inclusive

programs by the government for farmers. He explains, “Hopefully, the Philippine government will also support the medium-scale farmers as much as they support our smallholder farmers, since medium-scale farmers also need assistance from the government. A truly effective agriculture program for any country is an inclusive one—not only about helping small-holders but a balanced program for all farmers.”

As a biotech advocate, Farmer AD is also active in mainstream media, such as radio and television guestings, to reach a wider audience. He also utilizes social media and other emerging digital platforms, dispelling myths and misconceptions about biotechnology while promoting its benefits. He frequently shares his advocacies and perspectives on his podcast, *On the Ground with Farmer AD*.

Farmer AD’s story serves as an inspiration and a testament to the power of individuals who are dedicated to creating positive transformation in people’s lives, especially those who are marginalized and need help the most. As he continues to champion biotechnology and advocate for the empowerment of farming communities, Farmer AD’s story serves as a reminder and inspiration that everyone is capable of making change, no matter how small, starting with one’s circles of influence. – **Kaymart Gimutao**



Dorina "Dhen" Roche, 31, is a third-generation farmer and a second-generation biotech corn farmer from Sara, Iloilo. Farming has played a vital role in her life, supporting her and her family throughout her life. The commercialization of biotech corn in the Philippines in 2002 improved their lives significantly. Her mother was among the earliest adopters of biotech corn in their community, which became a blessing that financed Dorina and her siblings' education.

Third-Generation Farmer Finds New Hope in Biotech Corn

Embracing biotech corn farming

A graduate of B.S. Information Technology, Dorina was not interested in farming as her primary source of income. Having seen how laborious farming was for her parents, she chose a career in a different field and worked as an online English tutor. However, her mother's positive experiences as a farmer convinced her to give it a try. Her mother also explained that farming had become much easier with biotech corn than it was in the past. As Dorina's mother is also the direct seller of their corn produce, she is at a slight advantage compared with other farmers who supply their harvests to middlemen. That was the turning point for Dorina to take interest in farming.

"It is actually not that hard to see the potential of biotech corn farming to improve our lives now that I have my own family and children to raise," Dorina explained. "My mother talked about biotech corn farming, how the technology changed farming for the better, and how farming progressed and provided better income for our family. My in-laws are also farmers, so my husband and I really grew up in farming households."

Aside from her relatives' testimonials, Dorina also witnessed the transformation that biotech corn farming brought to other farmers in their community. She researched the ideal biotech seed varieties, the time of the year and methods to

plant, and even consulted seed technicians from biotech trade centers to optimize the potential of biotech corn farming.

Even with her family's experience in biotech corn farming, Dorina ensured that everything was in place before she shifted career, acknowledging that it was one of the biggest decisions of her life, with her children's future at stake. Once she started growing biotech corn, she never looked back, immediately seeing its potential to change their lives for the better.

"Biotech corn farming gave our parents an opportunity to improve our lives. Now, we also have a chance to ensure my children's future," Dorina shared.

Currently, Dorina manages a 2.5-hectare biotech corn farm. According to her, biotech seeds can withstand pests and provide better yield with lower expenses since pesticide spraying is not necessary in planting biotech corn. She added that biotech corn farming has proven to be promising and has never disappointed her since she adopted the technology.

Addressing misconceptions about farming

The promising benefits of biotech corn and its potential could help attract younger generations into farming, provided proper science communication and agricultural extension initiatives are implemented. Dorina admitted that before



Dorina with her husband in their cornfield in Iloilo.

becoming a farmer, she was among the young people who viewed farming less favorably as a primary source of living, given that farming is perceived as an inferior profession in the country

“My college degree, as well as my husband’s, is Information Technology, a field far removed from farming. But later, we realized that farming, particularly biotech corn farming, has a tremendous potential to drastically change our lives, especially since my first child had been sickly from birth. I seized the opportunity to farm biotech corn when it arose. Now, I am so grateful that I made the right decision to be a biotech corn farmer. It not only covered our child’s medical expenses but also allowed us to save for our future needs,” Dorina added.

In the future, Dorina hopes that scientists can develop crops that are even more pest resistant, as she worries that problems like climate change may enable crop pests to become more pervasive. Nevertheless, Dorina is very grateful for this life-changing technology and is convinced that the current varieties of biotech corn are already a significant blessing for farmers like her. – **Kaymart Gimutao**



Randy Magno, 51, never imagined that his life would change as a farmer when he started planting biotech corn 21 years ago. He recalled that life was challenging in the agricultural town of Ma-ayon, Capiz before biotech corn adoption. Back then, farmers in Ma-ayon could only plant conventional crops, which were prone to pests.

From Adopter to Influencer: Pioneering Farmer Inspires Others to Adopt Biotech

Overcoming challenges in conventional farming

“It was really hard to become a farmer back then because you had to do extra work with conventional crops, such as plowing and removing the weeds around your crops manually,” Randy explained.

However, things changed when biotech corn was introduced to the farmers of Ma-ayon in 2003. At first, Randy was reluctant to plant biotech corn, thinking that the promise of the technology was too good to be true. However, the ease of managing biotech corn compared to conventional varieties quickly convinced not just Randy but also his fellow farmers in the community.

“Initially, I bought one bag of biotech corn seeds. Then, [after reaping the benefits of planting biotech corn] I bought two bags from [seed trade center] Modern Agro Sales, then four bags, until I became a seed supplier to my fellow farmers here in my community,” Randy shared.

Randy’s success story transcended beyond his own farm. Recognizing the benefits he reaped, he ventured into supplying biotech corn to his fellow farmers. As one of the pioneer biotech corn adopters in his community, he served

as a role model for other farmers. His bountiful and consistent yield served as a testament to the various benefits of biotech corn, easily enticing his fellow farmers in the community to also adopt the technology.

Support from a pioneer advocate

It was Delson Sonza of Modern Agro Sales who introduced biotech corn to Randy. Delson taught Randy the proper techniques for planting biotech corn and sent seed technicians whenever problems arise in Randy’s farming community. Delson’s continued support and guidance played a crucial role in Randy’s successful journey as a biotech corn farmer.

Delson himself is a prominent figure in biotech corn adoption in the Philippines, being one of the pioneer biotech farmers and biotech seed suppliers in the country. During his testimonial at the International Conference on Biotech Crop Adoption in Manila, Delson shared that farmers from his region in Panay were among the early adopters of biotech corn.¹

He added that before biotech corn was commercialized in the country, farmers could only earn during the rice farming

¹ ISAAA Inc., “International Conference on the Adoption of Biotech Crops in the Developing World: Case Studies of Farmers from China, India, and the Philippines,” 2013.



Randy with his family at their agricultural supply shop.

season (May to July), sugarcane planting season (October to January), and harvesting of rice and sugarcane (October to December). Delson noted that the crime rate in his community was high during periods when there was not much income from farming. Things drastically changed when people started adopting biotech crops in their region which provided them with high-yielding and more profitable inputs.

Gratitude and hope for further advancements

The advantages of biotech corn for the livelihoods, incomes, and health of Filipino farmers, as well as for the environment, have been thoroughly researched and documented across the country. These benefits include increased income, biotech corn's good physiological and physical traits, high quality and volume of harvests, and reduced expenses for labor and pesticides. On a macroeconomic level, biotech corn adopters in the Philippines earned around US\$872.6 million cumulatively from 2003 to 2018.² Randy can attest to the documented benefits enjoyed by Filipino biotech corn farmers and how the technology improved his and his family's lives.

"My life has really changed since I started planting biotech corn. Before, with conventional seeds, planting corn took too much work. It radically changed when we started planting biotech corn. We no longer have to plow our land, we no

longer need to remove weeds because the crops are herbicide tolerant. With biotech corn farming, I was able to build a retail store, renovate my house, buy my own car, and afford other corn production facilities such as a corn dryer. My income has increased two- to threefold with planting biotech corn," Randy added.

As Randy looks to the future, he remains hopeful for further advancements in crop science that will continue to enhance yields and profitability for Filipino farmers. His aspirations reflect the ongoing pursuit of innovation and improvement that drives agricultural progress, complemented by effective agricultural extension work to optimize the potential of biotech crop adoption across the globe. By persevering and adapting to change, Randy not only improved his own farm but also became a beacon of success for his community, inspiring fellow farmers to embrace biotech corn.

Randy could not help but be grateful to the people who made his dreams and aspirations as a farmer possible. These include the scientists who continue to improve crop varieties to address challenges faced by different agroecosystems, such as pests, acidic soil, and climate change. He is also thankful to people like Delson Sonza who have been instrumental in his success, highlighting the importance of knowledge sharing and extension in agricultural development. – **Kaymart Gimutao**

² Brookes and Barfoot, "GM Crops: Global Socio-economic and Environmental Impacts 1996-2018," 2020, <https://pgeconomics.co.uk/pdf/globalimpactfinalreportJuly2020.pdf>



In the barangay of Caratagan in Pio Duran, Albay, Deorita Borero Pillarda's story unfolds—one of resilience, practicality, and the enduring pride of a farmer. At 60 years old, Deorita's journey demonstrates the positive impact of embracing biotech crops on farmers' lives.

How a Farmer's Leap of Faith Changed Her Life and Community

Deorita was raised in a family of farmers and understands the challenges and rewards of agricultural life. "Farming has always been our livelihood," she explains. "Both my spouse's family and mine grew up in farming communities."

Deorita's husband works as a driver in Manila while she tends to their home and farm. At one point, Deorita recognized the potential of their land. "We have land that could be cultivated, so I decided to invest in it for additional income," Deorita recalls.

Transitioning from a homemaker to a barangay councilor and back to farming, Deorita's journey has been marked by adaptability and resilience. "I used to stay at home, but I also served as a barangay councilor for a while," she recalls. "However, after my term ended, I decided to focus on farming."

Over the past 20 years, Deorita has grown various crops, raised pigs, and tended to rice fields and vegetable gardens. Now living with her youngest child of three, who occasionally lends a hand on the farm, Deorita is widely known in her community as a proud farmer.

A new beginning

Deorita's dedication to farming intensified in 2020 amidst the challenges brought by the pandemic. "Before, I would just visit

the farm occasionally," she recalls. "But since the pandemic, I've been more hands-on."

In 2020, Deorita attended a seminar on biotech corn organized by the Department of Agriculture (DA). Before this, her knowledge about Bt corn was minimal. "I had no idea about Bt corn," she admits.

However, the seminar catalyzed her curiosity and provided her with insights about Bt corn's potential as a farming solution. The seminar introduced Bt corn as the pioneering commercialized genetically modified (GM) crop in the country, emphasizing its ability to reduce or eliminate the use of pesticides. Intrigued, Deorita quickly decided to take the leap and give it a try.

Starting small, Deorita planted Bt corn on a portion of her land during the pandemic. Her crops soon started to flourish, and it became clear to Deorita that this was a new chapter for her as a farmer.

"I decided to give it a try," she affirms. "I first tried planting a small portion of my land. When I saw that the outcome was good, I continued with it." In her community, Deorita is among the few who have embraced biotech corn farming.



A life transformed

Switching to biotech corn brought tangible benefits for Deorita and her farm. “One of the most significant advantages is the reduced need for weeding,” she notes. This decrease in manual labor use, thanks to the crop’s built-in resistance against pests, has led to significant cost savings for Deorita. The lesser need for herbicides has also resulted in substantial cost savings. Deorita remarks, “It helped a lot. We don’t need to weed as much, and we spend less on herbicides.”

Aside from these, the yields from her biotech corn fields have been consistently impressive. “The produce sells well in the market,” Deorita adds.

With her extensive experience in planting biotech crops, Deorita acknowledges that she has yet to encounter any disadvantages with these products. “I haven’t experienced any drawbacks because the benefits have been clear and substantial,” she concludes.

Hopes for the future

Encouraged by her success in Bt corn farming, Deorita dreams of a future where the benefits of biotech crops continue to grow while minimizing adverse impacts.

“I hope there are no negative effects on human health or the environment,” she emphasizes, speaking not just for herself but for fellow farmers.

When asked about her dreams for the future of biotech, Deorita passionately shares, “I hope that everyone will be taught and encouraged to plant Bt corn.” Deorita remains optimistic about the long-term prospects of biotech crops as she understands the expectations that come with new technology.

Despite initial uncertainties, Deorita’s dedication and hands-on approach have propelled her success as a biotech corn farmer. She acknowledges the support provided by the DA and seed companies, emphasizing the collaborative efforts driving agricultural innovation in her community.

As a leader in agricultural associations in Pio Duran, Albay, including the Pioduran Corn Cluster Association Inc. where she serves as the President, and the Caratagan Rice, Corn, and Vegetable Growers Inc., where she is the Secretary, Deorita actively contributes to advancing agricultural practices. Her journey shows how biotech crops can improve the lives of farmers and communities, and she is proud to be part of this transformation. – **Michaela Jyra Melo**



Although Engr. Raul Carreras is a civil engineer by training, he did not find his true passion in skyscrapers and blueprints. Instead, he found it in the fertile soils of Brgy. Panagan, Tigaon, Camarines Sur, where he is recognized as an important farmer-scientist in his community.

Biotech Innovation Transforms Engineer to an Agricultural Pioneer

Initially, Raul aspired to pursue a career in civil engineering abroad. However, fate had a different plan when his wife encouraged him to invest in agriculture, specifically corn farming.

Starting with a modest two-hectare plot in 1985, Raul expanded his farming enterprise when he recognized the potential of corn farming. He gradually increased his land until he eventually cultivated a 50-hectare expanse of cornfields.

Raul then made a bold move to double his land area to an ambitious 100 hectares. However, managing this vast land became challenging. When he recognized the need for change, Raul opted to reduce his operations and return to a more manageable 50 hectares.

Embracing biotech innovation

In his early farming years, Raul encountered significant challenges, particularly with corn borer pests that were notorious for ravaging corn crops. "It could result in the total loss of up to 95% of the harvest if they strike," Raul explains.

In 2000, the Department of Agriculture (DA) sought a demo farm to pioneer the farming of Bt corn, a genetically modified (GM) crop designed to be resistant to corn pests. Raul's farm was chosen for this effort.

Shortly after, Raul's cornfield in Tigaon became a demo farm to showcase how effective this GM crop is in combating pests and improving crop yields. Raul then started to plant GM corn, which resists corn borers and can withstand glyphosate spray used to kill weeds without harming the corn.

The results of the demo farm were nothing short of remarkable. Raul noticed an improvement in his farm's resilience against pests and weeds. For Raul, this marked a significant shift towards more resilient and productive farming practices.

Raul's testimony

Raul experienced the numerous advantages of Bt corn firsthand as one of its early adopters. He quickly realized its practical benefits, which improved his farming practices and economic outcomes. Raul considers it a stroke of luck that Bt corn was government-approved, as it significantly improved his earnings.

Bt corn is genetically modified to produce a protein toxic to certain pests, including corn borers. As a result, crops planted with Bt corn are naturally resistant to these pests. For Raul, this meant that his farm faced considerably less damage from corn borers compared to when he was planting traditional corn varieties. This led to more reliable harvests, as the crops were better protected against infestations. "Using GM crops guarantees a 100% harvest yield," Raul emphasizes.



Because Bt corn requires less protection from pests, the need for extensive weeding was also reduced compared to traditional corn varieties. This streamlined his farming process and eventually lowered labor costs.

A visionary leader

Raul's demonstration farm played a crucial role in encouraging more farmers in the region to embrace Bt corn. His early work in biotech corn farming helped him tackle corn borer issues and ensured the continued success of his farm while inspiring others in the process.

Today, Raul leads R2C Agrifarm, a successful agricultural business spanning 50 hectares of fertile land. As a trusted supplier of high-quality corn feed, his products sustain local poultry and livestock industries, driving economic growth and food security.

As Raul's success grew, so did his accolades. Raul's significant contributions to the agricultural sector have earned him prestigious recognitions, including being named the 2nd National Outstanding Farmer Scientist and receiving the Regional Gawad Saka Outstanding Corn Farmer award twice.

Looking to the future

Despite his many accomplishments, Raul remains dedicated to ongoing improvement and innovation in corn farming. He envisions a future where biotechnology plays an even larger role in protecting agricultural livelihoods from emerging challenges.

Raul emphasizes the importance of continuous education and research in biotechnology. "Especially with emerging insects like armyworm and *waya-waya* (corn planthopper) threatening harvests, it's crucial to stay proactive," he notes.

Acknowledging the financial strain of combating new insect pests, Raul pointed out, "The presence of new insects means extra costs for pest control, posing significant challenges, especially with the high cost of chemicals." He emphasized the importance of exploring alternative methods to lessen the burden on farmers and decrease reliance on environmentally hazardous chemicals.

In Raul Carreras' story—a civil engineer turned farmer—lies a profound testament to the significant impact of biotechnology. He has not only reshaped the Philippine agricultural landscape through his pioneering spirit and dedication but has also planted seeds of hope and prosperity for future generations of biotech farmers. – **Michaela Jyra Melo**



At 55, Henry Lariosa of South Cotabato, Mindanao embodies the spirit of the hardworking Filipino, nearly to the point of burning the candle at both ends.

When Trusting Evidence Triumphs Over Fear and Helps a Farmer Maximize Income

When he is not tending to his farm in Purok Magsaysay, Brgy. Rang-ay, Banga, Henry enthusiastically takes on stints as a welder, driver, or farm equipment operator. “When I’m done with my work on the field, I take on any blue-collar jobs that I can do,” he shares. While this may seem impressive from an outsider’s perspective, this venerable jack-of-all-trades attributes his ability to earn more—and ultimately, his success—to his adoption of biotech corn.

Embracing tradition while trusting scientific innovation

Ever since he was a young man in the 1980s, Henry’s family are already in the corn farming business. Their focus on maize is a necessity due to the resources and setup they had on hand. Both the type of soil and their water system made their land suitable only for corn, not rice.

Henry reminisces about accompanying his parents to the cornfields in his youth, which ultimately led him to decide and become a corn farmer himself. “Eventually, I became a corn farmer myself—and to this day, I still plant corn. I chose this path because this is what my parents taught me to do.”

Henry shares that originally, they specialized in planting non-GMO white corn, before diversifying and trying out

other variants. According to his recollection, his family’s first encounter with Bt corn was in the late 1970s, when stakeholders from abroad introduced the product to their community. “The first ever hybrid corn variety that was planted here in our area was a pioneering breed of yellow corn, back in 1977. That year, we were approached and they convinced us to try planting it ourselves,” he shares.

However, the farmers, including Henry, were not entirely on board at first. In fact, they had their doubts about biotech corn. Henry recalls, “Initially, we didn’t want to try it because we were told that the corn was treated with *Bacillus thuringiensis* (Bt) bacterium, which made us worry about whether it’s really safe for human consumption.”

Henry admits that he was particularly concerned about this, as he himself was fond of eating corn. However, he did his due diligence and studied Bt bacterium. He stresses that because of his lack of scientific expertise, he exerted twice as much effort in doing his research—and in the process, he became convinced that Bt corn would not cause harm to the people who would eat it.

As the years went by, the farmers of Banga became acquainted with improved varieties of genetically modified (GM) crops. Henry notes the mid 2000s in particular as the



decade in which biotech corn truly boomed, becoming a popular choice for him and his peers.

For Henry, adopting biotech corn became a major boon for his business. On top of being a reliable crop, it also enabled him to save enough time to take on other jobs. He shares, "By planting biotech corn, I am able to save time. This is where I'm able to get additional income for my family."

A road that was not without challenges

Of course, Henry's journey as a Bt corn farmer was not completely smooth. For starters, just like any other farmer, when calamity strikes, it becomes a major blow to their household income.

There was one instance where, right after he had finished planting corn, it rained for a solid 24 hours. The heavy downpour washed away about half of his planted corn seedlings, leading to a less-than-satisfactory harvest and leaving him with only about 40% of his projected income. In this regard, Henry wishes that the authorities in charge of investigating these cases and providing assistance to farmers could act in a more timely manner.

"When a farmer submits a report about a calamity, a representative should already be there within three to four days to check the area. But that doesn't happen. That's all we're asking for, really," Henry notes.

Fortunately, when it comes to support from scientists, Henry has only good things to say. Back when chemical resistant corn borers threatened to wipe out their corn, Henry and his fellow farmers sought the aid of researchers from the University of the Philippines Los Baños (UPLB). With crucial input from the farmers, the scientists were able to eliminate the pests.

"That's why I tell prospective farmers two things: Make sure to study the technology before getting into biotech crop farming and ask scientists if you have any questions about biotech crops," Henry recalls.

Informed decisions toward a brighter future

According to Henry, planting Bt corn played a critical role not only in sustaining his family, but also in getting his daughter through college. Now a graduate with a degree in Business Administration, she has also received training from her father on how to manage the farm.

Henry also shares with her what he has learned from the seminars conducted by the Department of Agriculture (DA) about biotech corn and other farming-related competencies. "Even though our farm isn't that huge, it would be a shame if, in the future, no one would be able to manage it, especially since Bt corn is such a stable and reliable crop." – **Mikael Angelo Francisco**



Forty-six-year-old Joan Aguilar of San Rafael, Iloilo, used to be an overseas Filipino worker (OFW)—but thanks to modern farming innovations, he can build a secure future for his loved ones without having to be miles away from them.

A Former OFW No Longer Has to Be Far From Home, Thanks to Biotech Corn

For Joan, leaving the Philippines to work abroad was understandably not a light choice to make. When he decided to be away from his family to earn a living in greener pastures, it was not entirely due to a lack of opportunities at home. An unexpected incident left his father incapable of working, forcing Joan to step up for the household.

“Farming isn’t new to me. Ever since the ‘80s and ‘90s, even when I was still in high school, I was already personally handling and managing our rice farm,” Joan shares.

But while the prospect of life as an OFW started with hope for Joan, reality quickly sank in, prompting him to come home after three years. “Whatever I’d earn as an OFW was only enough for the needs of my children. I was only able to save very little. Here, the system is pretty much the same: I earn a bit from farming, plus I get to be with my entire family.”

After weighing the pros and cons, Joan flew back to Iloilo to resume his work as a farmer—and that’s when biotech corn entered the picture and changed his life for the better.

Easy to plant and grow—and delicious, too

Joan recalls that the corn planting industry first reached their community in 2008. However, he only made the leap to growing corn—specifically biotech corn, in 2015.

“When I came home after my OFW stint, I looked at what used to be our bare, seemingly useless land. I noticed that all around me, everyone was already planting pest resistant corn. It also helped that there were institutions offering loans to help farmers. But what really encouraged me to plant corn was this realization: When there were no insects to ruin the corn, the profit margins were good,” Joan recalls.

Joan observed that the system of planting biotech corn was not that complicated. The familiarity of everything, from preparing the land to planting to applying fertilizer, coupled with free training sessions provided by government agencies and private companies made biotech corn farming appealing enough for Joan to give it a shot.

It also helps that planting corn is generally simpler than planting rice. The former requires less focus and attention than the latter. “After you apply fertilizer in your cornfield, you can just check on it every once in a while. Which is why it is less time-consuming than growing rice,” Joan shares.

For Joan, planting hybrid corn gave his family’s neglected farmlands new life and purpose, while also providing him with a reliable source of income so he would not have to leave the country again.

Aside from that, Joan also has confidence in the product itself. As someone who eats corn, he can attest to the fact



that hybrid corn does taste good. For him, hybrid corn is to conventional corn as broiler chickens are to native chickens—both delicious, yet somehow different.

How farmers' lives improved with biotech corn

Nowadays, Joan is leading the development of a farmer organization in their barangay called Brgy. San Florentino Corn Farmers Association. As it turns out, he was not the only farmer there reaping the benefits of biotech corn.

“If you take a look around the community, you’ll notice that farmers who used to lead simple lives now have significantly better living conditions. While their houses aren’t so huge, they now have amenities they didn’t use to have, all because they started planting biotech corn,” Joan shares.

Complementing the simple corn planting procedure is an equally functional and efficient distribution model. According to Joan, the buyers themselves go to the farmers’ community to purchase corn. All they have to do is bring their freshly harvested corn to the main line via their vehicles. The buyers handle the task of weighing the produce, as well as the rest of the process. As for selling dried corn, it requires the extra step of taking the corn to the mechanical dryers for preparation, where the buyers travel to personally pick up their purchases.

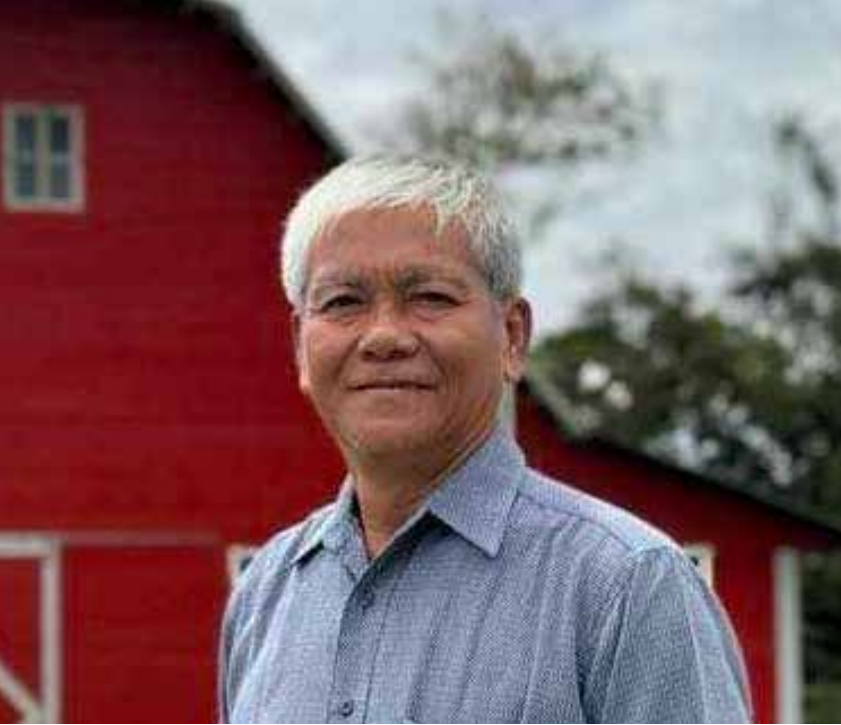
With that said, Joan and the other corn farmers maintain realistic expectations. “As farmers, we know that not every harvest is going to be like Christmas. We anticipate that

there will be times when we won’t make that much in terms of profit. But the important thing is not to give up. While it’s inevitable that you’ll sometimes lose, you won’t lose all the time, and eventually, you’ll win again.”

Challenges to overcome

While the future of biotech corn planting in Joan’s community is bright, there are still some obstacles for them to overcome, including the lack of mechanical dryers and the need for funding support from the government. Additionally, while there are free seminars for farmers to attend, they still need hands-on training and workshops, as many of them still rely on traditional farming practices.

“We hope the government can provide stronger support for us, primarily in terms of financial aid, but also in other areas where we need help,” Joan said. – **Mikael Angelo Francisco**



For farmers looking to minimize risks while earning consistently, biotech corn is a safe and smart choice, according to Ronaldo Damasco, a 59-year-old farmer from South Cotabato, Mindanao, Philippines.

Consistent Profit and Sustained Business Growth Through Biotech Corn

Farming has been a part of Ronaldo's life for as long as he can remember. During his formative years, he and his siblings were taught how to tend to the soil, apply fertilizer, and perform other essential farming tasks.

Back then, biotech corn had yet to reach them, they relied on crops like turnips, tomatoes, and conventional corn for their livelihood. "Way back in 1975, I was already aware of how our parents make a living, and I was more than happy to help out," Ronaldo recalls.

However, things changed for Ronaldo in the mid 2000s. By that time, he had just started a family and was about to be introduced to the genetically modified (GM) crop that would become a significant part of his future.

Dipping a toe into Bt corn planting

Ronaldo first learned about biotech corn, thanks to the technicians and producers who brought the product to their community. Although he cannot remember the exact year he started, he says that he was among the early adopters of biotech corn when it began gaining popularity in his area.

It is worth noting, though, that biotech corn was not initially met with universal acceptance by Ronaldo and his fellow

farmers. "At first, the people here were vehemently against planting biotech corn. For starters, it was an unfamiliar crop, deviating from the norms we were used to when it comes to conventional corn. Moreover, we were worried about the possible effects of biotech corn consumption on human health. We thought, 'Our carabaos might eat the leaves and get sick. Maybe the reason why corn borers don't eat this corn is because it's poisonous.'"

However, it only took a leap of faith on the part of the farmers to realize that Bt corn offered them a safe and hassle-free option for their farms. "It's easier to plant and tend to biotech corn. It's less risky for the farmers," Ronaldo shares.

Ronaldo acknowledges that biotech corn is somewhat more expensive to grow than conventional corn. Still, he is quick to add that the profit margins more than compensate for the extra cost. "The seeds come with a heftier price tag, and there are additional costs, such as fertilizer. But based on our experience, it's not difficult to get a satisfying return on our investment."



Biotech corn: a better option than conventional crops

Agriculture in the Philippines faces unique challenges, with supply chain and food wastage issues significantly affecting farmers' profits.³ This is particularly problematic for farmers who rely solely on their produce to earn a living.

Ronaldo attests to this, sharing his experiences and losses with other crops. "Getting our produce to market was certainly a problem. Before, I would plant two hectares' worth of tomatoes, only to harvest 60 kg. Worse, we couldn't bring our harvested tomatoes to Manila because they might not survive the trip. And when we tried to sell them here, the prices our potential buyers wanted were way too low. I tried other crops like onions and red peppers, but price fluctuations ultimately made them unprofitable."

In contrast, Ronaldo highlights how easy and convenient it is for him to grow and sell biotech corn. "Here in our city, we already have buyers for our corn, so we don't have to worry."

Combined with the adoption of new technologies and advanced farming equipment, life has become more relaxed for farmers. "In South Cotabato, the ideal crops are corn and rice. In our barangay, everyone has shifted to planting Bt corn," Ronaldo said.

Supporting a family through Bt corn farming

Much like how his father taught him to farm, Ronaldo also made sure his sons learn how to work in the field. However, he also instilled in them the desire to pursue professional careers outside of farming.

Now, his eldest is a certified nurse who has already worked in Japan for a decade, his second son works in Australia after a brief stint on a ship, and his youngest is an electrical engineer. For Ronaldo, planting Bt corn was instrumental in securing a better future for his children. "Through planting Bt corn, I was able to get my three boys through college."

Ronaldo looks at the future of biotech corn and GM crops with uncertainty and anticipation, in equal parts. While he knows that the adoption of new technologies may come with unforeseen challenges, he believes that embracing innovation has proven beneficial for farmers like him.

"I hope that scientists will continue to research and breed better, more resilient varieties of corn to help farmers. We trust that they know what's best for us and our livelihoods." –

Mikael Angelo Francisco

³ Domingo, "PH loses 30 pct of vegetable produce to wastage: DA chief," ABS-CBN News, January 16, 2024, <https://news.abs-cbn.com/news/01/16/24/ph-loses-30-pct-of-vegetable-produce-to-wastage-da-chief>.



Josephine de Vera is one of the women farmers harnessing the unique and beneficial characteristics of biotech corn, following in the steps of other women farmer-leaders in her town.

How Biotech Corn Empowers Women Farm-Leaders

Josephine, 47, is a mother of three from San Jacinto, Pangasinan. She attends to the needs of her husband and children almost round the clock. She is also a farmer. One may wonder how she manages it all, but for Josephine, the answer is simple—she relies on pest-resistant and herbicide tolerant biotech corn to make her farming much easier.

“I rely immensely on the effectiveness of biotech seeds in planting our corn crops because when you use conventional corn seeds, they are prone to insects and pests, which make farming labor-intensive. Almost 50 percent of our potential income is lost because of these challenges. We are investing our money and four months’ worth of our time and effort, so we might as well choose the variety that guarantees income. With biotech corn, and given good farming conditions such as the weather, we are assured of an income come harvest time,” Josephine explains.

Yield improvements and economic benefits

Josephine began planting biotech corn in 2015 when seed technicians from a seed company and agricultural extension officers from her town’s Municipal Agricultural Office introduced the technology to their farming community. After experiencing first-hand the benefits of planting biotech crops,

she continued to adopt the technology and never looked back.

According to Josephine, biotech corn’s yields are larger and heavier compared to conventional yellow maize. She and her husband have been planting corn for 26 years, and she knows by heart how conventional corn yields differ significantly from biotech corn yields. She recounted that when they started to plant the genetically modified (GM) corn, they noticed an immediate difference in their yield, harvesting around six to seven tons per hectare with biotech corn compared to conventional corn’s average yield of three tons per hectare.

“We can acquire a cheaper seed nearby, but the yield is overwhelmingly low, and its quality is not that good, so I always prefer to plant biotech corn,” Josephine adds. She is one of millions of Filipino farmers benefiting from biotech crops. According to ISAAA Inc., among the advantages of biotech crops as reported by Filipino farmers are higher earnings, improved crop quality, increased yield, and reduced labor and pesticide costs.⁴ From a broader economic perspective, Filipino farmers who adopted biotech corn collectively earned approximately US\$872.6 million between 2003 and 2018.

⁴ ISAAA Inc., “Pinoy Biotek Magazine Vol. 1 No. 1,” 2023.



As biotech crops are not labor-intensive and less time-consuming, they give opportunities for more women, including housewives, to be engaged in agriculture. This further empowers Filipino women's involvement in farming, making the Philippine agriculture landscape more gender-inclusive. Research, including a qualitative exploratory study and an economic study on the gender impacts of biotech corn, has enumerated gender-differentiated benefits of GM crops in several developing countries, including the Philippines.⁵

Community leadership and advocacy

Beyond the actual farming, the role of women Filipino farmers extends to other functions, such as community leadership and advocacy of the technology's benefits. "I am a farmer-leader in our barangay. As a farmer-leader, I have to attend monthly meetings organized by the Municipal Agricultural and Fishery Council (MAFC) to discuss the current problems experienced by farmers in our community. If there are plant diseases and other concerning problems, we report them to the Department of Agriculture (DA)," Josephine says.

Women farmers in Josephine's hometown are indeed influential in disseminating information and advocating the benefits of biotech crops. In fact, Ms. Rosalie Ellasus, one of the notable women farmer leaders in the Philippines, also

hails from San Jacinto, Pangasinan. Tagged as the "Queen of Bt corn" in the Philippines, Ms. Ellasus is the 2017 Kleckner Global Farm Leader Award recipient and, in 2016, the DA Biotechn Program named her as one of the *Filipino Faces of Biotechnology* due to her significant contributions to the country's agribiotech sector. Another woman farmer-leader and advocate of biotech corn from the said municipality is Trinidad Velasco who, like Josephine, is a dedicated mother and farmer. Indeed, Josephine's journey of adopting biotech corn is greatly influenced by champion farmers like Ellasus and Velasco.

Josephine's journey exemplifies the transformative power of biotechnology in empowering women, strengthening communities, and driving agricultural progress. As the Philippines continues to embrace biotechnology in agriculture, recognizing and amplifying the voices of women farmers like Josephine who are driving positive change in their communities is already a success. – **Sophia Mercado**

⁵ ISAAA Inc., "Filipino Experts and Agri Stakeholders Discuss Gender and GM Crops," *Biotech Updates*, September 16, 2015, <https://www.isaaa.org/kc/cropbiotechupdate/article/default.asp?ID=13749>.



Mariel Corpuz juggles the noble pursuits of being a full-time yellow corn farmer and single mother in Tumauni, a first-class municipality in the northern Philippine province of Isabela. Despite her struggles, the benefits of biotech corn have given her hope to sustain her farming livelihood.

Biotechnology Gives Hope to Female Farmers

As a long-time solo mother of three, Mariel's life has been tough. She had to raise her children while tending to her three-hectare yellow corn farm, which had been plagued by infestations of corn borer attacks. "It has been a major challenge, planting yellow corn. My experience with conventional corn was that it always had very limited harvest," she says. Based on her experience, yield with traditional yellow corn varieties only reached up to four tons per hectare or even less.

Her farm, which she acquired in 1998 through Presidential Decree No. 27, a law instructing the transfer of land ownership to farm tenants, was plagued with weeds and proved to be extremely costly and laborious because it was dealt with only through manual weeding. "The normal practice in the past was to hill up twice, and around 20 workers were needed," she says. "Imagine the cost of that!"

It was around 2007 when she was introduced to biotech corn by a seed company agent. At first, she was hesitant to plant the new seeds because she was skeptical of how it could affect the farm laborers and workers. However, continuous learning about biotech corn through training sessions and farm visits proved pivotal in changing her mindset regarding the technology. Eventually, she found that the benefits of biotech corn led to better advantages to her farm, which also extended to her community. In one of her testimonials, she described the biotech corn crops as sturdy during windy

weather and commended the good quality of plant roots, even during the dry season. She added that compared to conventional corn seeds, biotech corn assures flowering among her crops and a bountiful harvest even in a dry spell. Mariel has since then been thankful for the agent's persistence in getting her to try the biotech corn seeds.

Making farming easier

According to Mariel, using biotech corn seeds provides significant convenience for a farmer. "As a female farmer, I cannot afford to stay in the field the whole day. This is the easiest way—you have good seeds, you don't need to really tire yourself in the field," she reflects. With conventional corn, she only harvested around four tons per hectare; but with biotech corn, it has increased up to eight tons. Her first harvest of biotech corn produced 300 sacks from 1.5 hectares. The major difference from her previous harvest solidified her decision to use biotech corn. Her farm's net profit, she recounts, has increased to more than half of her average production cost. With the improvement in her livelihood, biotech corn has enabled her to successfully support her children and their education, she said.

Mariel also notes that the consistent positive results brought by the biotech yellow corn seeds have given her hope and confidence in continuing farming. It has also encouraged her to step up and organize an association with fellow farmers



Mariel in Bayer's Dekalb Harvest Festival in 2023.

where she currently serves on the board. More recently, she also convened a women's group in her barangay. With the exemplary performance of her biotech corn farm, Mariel was recognized by various public and private organizations and was asked to share her experience in different events in the Philippines and abroad, as part of the Global Farmer Network. She has served as spokesperson and champion of biotech corn in her community, with her farm often used for field demonstrations.

Spreading the good news

Now at 51, with three working children and one grandchild, Mariel has been planting biotech corn for 17 out of the 26 years of farming. She remains staunch in encouraging fellow farmers to use biotech corn. As a leader in her community, she believes that being a model in her vocation is necessary to show other farmers the benefits of biotech corn.

With biotech corn now widely used among her fellow farmers, Mariel hopes that existing scientific research and development in agriculture will address farmers' struggles with the effects of climate change, especially as her farm is situated near the Cagayan River, which supports crop cultivation, but is also merciless when it overflows and floods surrounding farms. She urges scientists to continue developing technologies that would eventually be beneficial to grassroots farmers. "Don't get tired of conducting research that can help us farmers improve our livelihood," is her plea to researchers. – **Sophia Mercado**



Trinidad Velasco is grateful for the biotech corn technology as it became a main source of income for her family of seven in their one-hectare farm in San Jacinto, Pangasinan.

Sustaining Families Through Biotechnology

At 68, Trinidad, a dedicated wife, mother of five, and a farmer, is reaping the benefits of the insect-resistant and herbicide tolerant biotech corn. Born in San Carlos City, Pangasinan, she moved to the municipality of San Jacinto when she married her farmer-husband, who introduced her to the noble vocation of farming. She has since then devoted her life to farming and her family.

In her 40 years of farming, two decades have been dedicated to cultivating biotech corn. “We first planted biotech corn when my children were still very young,” she recounts. It was no mean feat taking care of their children while also tending to their farm, which, before their biotech corn adoption, faced various challenges, including corn borer pests.

Without any protection from these persistent pests, the main problem with ordinary, non-biotech corn, according to Trinidad, was its low yield. “Back then, we only harvested around three to four tons in a hectare, per season,” she recounts. However, when they saw the very good results of fellow farmers in San Jacinto who planted biotech corn when it was introduced, they decided to try the then-novel seeds. “We saw their experience with biotech corn, which is why we gave it a go. Of course, we should always choose what’s best for our livelihood,” Trinidad says.

Reaping the benefits for the family

“That is why we are grateful for this biotech corn technology. It is the best kind of yellow corn seed variety we’ve ever had. We got so much from our hectare of land—our best harvest reached almost ten tons per hectare, while our lowest harvest has been eight tons with biotech corn,” she fondly shares. Trinidad and her husband expressed in one of their technology testimonials that with conventional corn, they used to spend a lot on insecticide, but now, they only apply it as needed.

“Even our children were happy because they saw the bountiful harvests—the large, yellow, clean corn cobs gathered from our field,” Trinidad adds. Their profit consequently increased too. They have been consistently planting biotech corn ever since, being among the early adopters of the technology. Their earnings from using biotech corn enabled the family to expand and modernize their farm. They bought two cows, other needed farm equipment, and even a car.

Through biotech corn technology and proper farm management, Trinidad and her husband were able to support their children in becoming successful working professionals. They are now proud parents to an engineer, a dentist, and a nurse, thanks to the considerable benefits provided by the biotech corn innovation on their land. Their sons and daughter, she says, witnessed the hard work of Trinidad and



her husband in their farm and have appreciated and even learned farming themselves.

Good stewardship and accountability

With her positive experience with biotech corn, Trinidad has become passionate in encouraging fellow farmers in San Jacinto to practice proper farm management and stewardship. “When you start a cropping season, you have to regularly monitor your field,” she says. “Since the beginning, we have been very careful in accounting for our farm inputs such as the seeds, fertilizer, and other needed things. We are always there, we do not abandon our farm. It is also like taking care of a child,” Trinidad explains.

Reflecting on her experience in conventional corn farming and with other crops, Trinidad says farmers back then had been lax in managing their farms. This, she ponders, was partly due to a lack of useful knowledge and access to technologies. Now, Trinidad values new knowledge and modern tools or innovations that are backed by scientific research in improving farming. She thanked the local government unit for providing training, seminars, and other learning activities for farmer constituents. The lessons she learned in these activities, she says, have also been instrumental in the success of their family farm, and should be shared as well with other farmers.

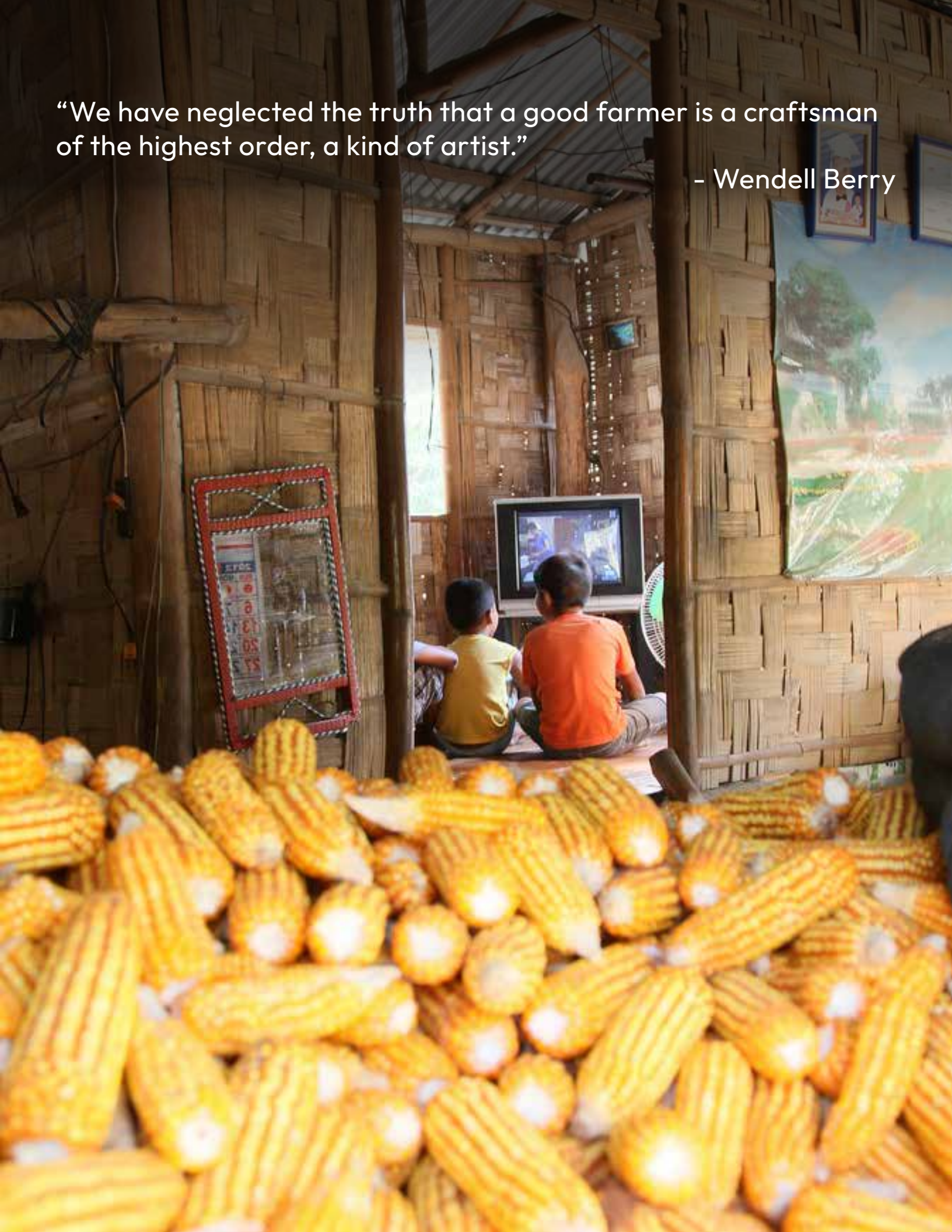
“Technologies must be made accessible to farmers, but at the same time, farmers should also make the effort to know how

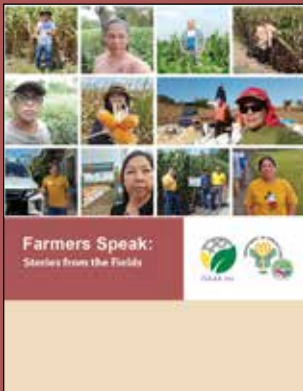
to properly use them with other inputs. Through proper farm practices and management, farmers can achieve their goals with their crops,” Trinidad says.

Trinidad also recognizes the hard work that scientists and researchers put into developing technologies such as biotech corn and acknowledges that it takes decades and efforts before such products can be made available to farmers. “We farmers are truly thankful that our scientists never cease to conduct research that can alleviate the plight of millions of small-scale farmers in agriculture,” Trinidad says. “I know that it is not easy looking for the right variety, especially with various agronomic concerns in different places in the country. I hope they will not get tired of doing research that can help our lands be more productive.” – **Sophia Mercado**

“We have neglected the truth that a good farmer is a craftsman of the highest order, a kind of artist.”

- Wendell Berry





Farmers Speak: **Stories from the Fields**

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