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Selvin Alí Hernández and agriculture technician Luis Edgardo García Molina check the crops o

Selvin Alí Hernández, 29, and agriculture technician Luis Edgardo García Molina, 39, check the crops of his farm that show diversification with association of taro and beans, and he also uses live barriers to prevent erosion and begins to leave stubble to protect the soil in his plot located in Opatoro, Honduras. Project participants have received training in conservation agriculture (ASA – Water Smart Agriculture) from CRS and its local partner ASOMAINCUPACO. (OSV News/Silverlight for Catholic Relief Services/Oscar Leiva)

Marietha Góngora V.

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According to a 2022 World Meteorological Organization report, the Latin American and Caribbean region is facing extreme weather events and experiencing the impacts of climate change, such as mega-droughts, extreme precipitation, terrestrial and marine heat waves, and glacial melt.

In Central America, the report found that a total of 7.7 million people in Guatemala, El Salvador, and Nicaragua "experienced high levels of food insecurity in 2021,

contributed to by factors such as the continued effect of hurricanes Eta and Iota in the late 2020s and the economic repercussions of the COVID-19 pandemic."

Many people in these countries are engaged in growing staple grains in an area vulnerable to extreme weather events. Axel Schmidt, a technical advisor for agriculture and science for Catholic Relief Services (CRS) Latin America, told OSV News the impact of climate change mainly affects the rural population.

"Small-scale farmers in Central America are almost 3 million, and they have very little land — one, two or three hectares — but they all occupy 3/4 of the agricultural land," the CRS expert said.

"They are struggling to survive, and they are producing about 70% of the food for all of Central America," he said.

Another factor impacting farmers is the Central American Dry Corridor, which runs through Costa Rica, Nicaragua, Honduras, El Salvador and Guatemala.

According to the U.N.'s Food and Agriculture Organization, this zone has periods of drought followed by heavy rains that strongly affect local populations' livelihoods and food security.

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"Eighty percent of small producers live in poverty, and many people are forced to migrate," FAO stated on its website.

The region's topography, along with the influence of the El Niño phenomenon that brings drought or the La Niña phenomenon that translates into rain, also complicates agricultural activity.

"We have a rainy season that is six months (from May to October or November) and the rest of the year there is no rain, it is drought. Then people must produce everything they need for the year in six months," Schmidt said. "They plant in May or June what they call the first harvest of the year, and they usually plant corn."

For the second harvest, around September and October, they plant beans or sorghum. Between these two harvests, there is the "canícula," Schmidt explained, a kind of "little summer" in mid-August, when there is no rain. It lasts between two and

three weeks, generating very high temperatures.

In addition to already adverse conditions, the effects of climate change complicate agricultural activity in this region. This is why 12 years ago, CRS began helping Central American farmers prepare for the toll climate has in their production cycles through studies, field schools, and the accompaniment of field promoters — working side by side with farmers to apply better and more efficient cultivation methods, soil management, and water resources.

Schmidt explained that projections of the impact of climate change on corn and bean crops — staple food products in Central America — show that rainfall is expected to decrease, that average temperatures will increase, and that there will be more days with extreme temperatures and more nights with increased temperatures.

With all these factors, it is challenging to plan crop planting, which puts the livelihood of farmers — who cannot afford to lose a crop — at risk. The CRS program provides farmers with accurate information based on weather services and forecasts that allow them to prepare and plan and make decisions based on verified information to avoid wasting materials, labor, and money.

Portrait of the Figueroa Family: Maximiliano Turcios, 60, Mainor Alexis Figueroa, 9, Emilson Fi

Portrait of the Figueroa Family: Maximiliano Turcios, 60, Mainor Alexis Figueroa, 9, Emilson Figueroa, 14, Rony Figueroa, 35, and Reina Padilla, 35, in their corn, bean and banana plantations that are watered even in the dry season thanks to the assistance of RAICES DRR project that installed them a water system that permits drop irrigation in the plantations saving a lot of water. The family puts in practice Conservation Agriculture practices from ASA (Water Smart Agriculture) program from Catholic Relief Services. (OSV News/Silverlight for Catholic Relief Services/Oscar Leiva)

Recently, crop scientists and farmers have noticed longer periods of drought and extreme rainfall events, underscoring the importance of the role that soil plays in water management. So in 2015, the CRS program called Water-Smart Agriculture (ASA or Aguas y Suelo para la Agricultura in Spanish) was born as a method to make the most of water resources and rainfall, seeking to anticipate and adapt to the conditions generated by climate change.

In this sense, ASA seeks to manage and protect the soil so that rainwater infiltrates the soil and is retained at a depth of 10 to 20 centimeters, facilitating plant absorption. This resource is known as green water, and ASA practices aim to maximize its use in agricultural work.

Schmidt explained CRS experts had developed a set of practices based on conservation agriculture and integrated soil fertility management to correctly manage all aspects of the soil to maximize the productivity of the water resource.

"Every drop of water counts and with this, people can have more harvest with the water that falls," he said.

For several years, CRS crop scientists worked on the ASA approach with farmers on more than 3,000 farms in Central America. "With ASA, people have more harvest and better net income," said Schmidt, adding they were also able to increase the carbon content in the soil, which helps to eliminate CO2 from the atmosphere.

In a testimonial shared by CRS, Honduran farmer Eulalio Amaya Orellana, the father of five children, said he needed this project because before, although he planted his crops, they would dry up due to lack of water and high temperatures.

"We lacked the knowledge. The organization came to awaken us, who were kind of blind. But today, with all the soil samples, we see the increase in profitable crops," he said. "When they told me that there was going to be a market for the products that I was going to cultivate, I was so excited. I said, 'This is my place.' My thoughts are no longer about migrating to the United States; my future is here."

Ruth Noemi Lima Corado, 20, of the RainDrop founding group, Selena Claribel Escalante Oran

Ruth Noemi Lima Corado, 20, of the RainDrop founding group, Selena Claribel Escalante Orantes (foreground), 26, Raindrop's plant cover monitor, and Jennifer Rebeca Avila Ruiz, 21, RainDrop intern seen during a planting day of trees with community members in Bosque San Lorenzo, in Ahuachapán, El Salvador. For years, a team of agronomists affiliated with CRS have worked with farmworkers in Central America to propagate ASA (Water Smart Agriculture). (OSV News/Silverlight for Catholic Relief Services/Oscar Leiva)

For farmers like Amaya, crop resilience — and the need to reduce risks related to drought, water scarcity and rainfall variability — begins with taking care of the soil

and water.

In a video CRS sent to OSV News, Pablo Clavel, an older farmer who has learned to use ASA practices in El Salvador, said the system has helped him use less fertilizer and yield better crops. "I feel happy and content despite my age. Without sluggishness, I'm flying around in the field because it's wonderful to see a crop like this," he said, smiling in the middle of a cornfield.

Schmidt said the project has benefited about 100,000 families so far, thanks to work led by CRS that involves local governments and private sector partners enabling more farming families to join and adopt these practices and improve their quality of life.

"I was very pleased to see that people were happy adopting these practices and their perception is that they are doing better with ASA," said Schmidt.

In addition to the personalized accompaniment in different parts of the world, CRS also has a digital platform consisting of 20 courses and many resources available so that those with an internet connection can access it, and continue learning and applying new techniques and important information.

"That's what we are looking for," Schmidt said, "that people have enough information, tools and practices so that they can apply all this in their fields according to their own conditions."