Too dry to thrive: Climate change spurs Mexicans to change crops

Por Susana Gonzalez/Bloomberg

Global warming may hurt Mexico more than many other countries.
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Farmers work in the fields in Mexico, where frequent and longer droughts have forced some farmers to give up corn and other cereals in favour of alternatives requiring less water, such as pistachio nuts or cactuses

At least 9,000 years ago, humans began domesticating corn for the first time near Tehuacan, in the central Mexican state of Puebla, laying the foundation for permanent settlements in the Americas.

But in the past few years, more frequent and longer droughts have forced many farmers in the area to give up corn and other cereals in favour of alternatives requiring less water, such as pistachio nuts and cactuses.

Agricultural experts predict parts of Mexico will feel the effects of climate change more than many countries, not least because its location - between two oceans and straddling the Tropic of Cancer - exposes it to weather volatility.

Sol Ortiz-Garcia, director of the agriculture ministry's climate change group, noted that 75 percent of Mexico's soil is already considered too dry to cultivate crops. In regions such as Tehuacan, temperatures may rise more than the global average.

"We know there are areas where the increase is going to be greater. That will obviously affect rain patterns, and in turn, agriculture and food security," Ortiz-Garcia said.

The area under corn cultivation in Tehuacan decreased 18 percent to about 40,000 hectares between 2015 and last year, shows a Reuters news agency

calculation using statistics by the agriculture ministry, outstripping a nationwide decline.

In the five years before that, the area planted with corn had been slowly increasing in Tehuacan. Nationally, the area under corn cultivation declined four percent from 2015 to 7.4 million hectares last year.

While factors leading farmers to switch crops are complex, in Tehuacan farmers and local officials describe a fast-changing climate as a leading cause. Mexico's rainy season last year was the driest since 2011, which in turn was one of the driest on record, numbers from the country's national water agency showed.

Climate change is expected to cause substantial declines in yields of corn globally, especially in the tropics, concluded a 2018 study published in the Proceedings of the National Academy of Sciences of the United States of America.

There may be exceptions. The corn belt in the US Midwest is so vast that one recent study concluded the expanses of lush fields were actually helping increase rainfall locally and also cut temperatures, thus allowing even more corn to be grown.

Under this model, intensive farming meant more moisture being released into the atmosphere from plants on a scale great enough to create more rainfall. The greater humidity also contributed to summers up to one degree Celsius cooler, concluded the study, by the Massachusetts Institute of Technology.

Stunted cobs

In Tehuacan, however, conditions are fast changing for the worse. In a field where dried-out plants have been lingering in the dust since the last drought, farmer Porfirio Garcia, holding a stunted cob, was struggling to make sense of it all.

Corn has for thousands of years been a symbol of Mexican pride, a staple of local and national cuisine from tortillas to tamales and the backbone of civilizations that gave rise to modern Mexico. But climate change has jeopardised that.

Garcia, who has 12 children, half of them working with him on the farm, recalls how one hectare in some years yielded as many as four tonnes (8,800lbs) of corn. In the past five years, he said, with luck that hectare yielded 700kg (1,543lbs).

"The corn harvest has shrunk because in the months of June, July, August and September there was no rain," said Garcia, 59, who uses ancestral farming

techniques to grow corn, beans and pumpkin, an ancient system called a "milpa". "Our lives center on corn, so what do we do without it?"

Eusebio Olmedo, director of rural development, agriculture and livestock in Tehuacan, recalls that it began to get hotter at the turn of the millennium. Having worked in the department for five years, Olmedo said the area used to be characterised by a "very pleasant, very benevolent" climate.

Last year was the warmest on record in the state of Puebla - where Tehuacan is located - with thermometers reaching an average maximum temperature of 26.8 Celsius (80 F). In 1985, the first year that state records were available, Puebla registered an average maximum temperature of 24.7 Celsius (76 F).

A 2016 study commissioned by the environment ministry and backed by the United Nations Development Programme concluded that climate change in Mexico will mean less rain, lower yields for basic grains such as corn, beans and wheat, as well as "unexpected effects on food security".

"When rain patterns change, agriculture becomes risky," Olmedo said.

Mexican corn farmers have suffered major shocks in the past - most notably the arrival of cheap imports from the US under the North American Free Trade Agreement in the 1990s. In the north of Mexico, where large cornfields are irrigated, climate change may initially have little impact, studies show.

But in the south, where the oldest corn strains on Earth are grown using traditional methods without irrigation, the changing rain patterns and temperatures are already being felt. Agricultural consulting group GCMA estimates Mexican corn production will continue to decline in 2020, and that corn imports mainly from the US will reach a record 18 million tonnes.

Adapting

Mexico is now the world's second-largest corn importer thanks to a reliance on US grain for animal feed. President Andres Manuel Lopez Obrador calls that "a contradiction", and has implemented programmes to boost national production.

Garcia, however, chose to diversify into other crops, planting 300 trees of pistachio, a desert plant that can withstand temperatures between minus 10C (14F) and 40C (104F).

Nearby farmer Natalio De Santiago also abandoned the corn that he, his father and his grandfather used to plant for other crops that require less water. Those include maguey, a raw ingredient for mezcal, a Mexican liquor.

"I stopped sowing [corn] because the weather is changing," said De Santiago, 56. "Now I plant maguey because it needs less water."

Wearing a cowboy hat to shield his face from the sun, he said he irrigates 400 maguey plants every month with a litre of water each. When he planted corn, he said, his crops needed four months of rain.

Others in the area gave up agriculture altogether and sold land to real estate developers. In an attempt to stop this trend, local authorities developed a bank of native corn seeds that are more resistant to pests and that need less water.

"We have to adapt to climate change, and these are the best varieties to recover food self-sufficiency," Olmedo said of the seeds.

Other government measures meant to help farmers adapt to and mitigate the effects of climate change include agricultural insurance, alternative crops and campaigns to reduce agricultural burning.

"It's very difficult to reverse the tendency to increase CO2 [carbon dioxide] in the atmosphere," said the agricultural ministry's Ortiz-Garcia. "That's why we're prioritising adaptation."

"Climate change is here to stay," she added.

SOURCE: Reuters news agency