Global warming could spell disaster for corn crops

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(PhysOrg.com) -- If corn producers continue using the same cultivars, plants selected for their desirable characteristics, global warming could cause production to drop from 1.3 to 10 percent between 2010 and 2039.

A study by Kenel Delusca, a PhD student at the Université de Montréal Department of Geography, analyze three potential weather scenarios that may come over the next three decades. The first scenario was hot and dry with a temperature increase of 2.2 degrees Celsius and a rainfall increase of 3 percent. The second scenario was cool and humid with a temperature increase of 1.2 degrees Celsius and a rainfall increase of 8 percent. The third was a median scenario with a forecast temperature increase of 1.7 degrees Celsius and a rainfall increase of 5 percent.

“It's important to work with several scenarios given the several variables

regarding hours of sunlight, level of greenhouse gases, fertilizing impacts of CO2, regional phenomena such as El Niño and the various policies countries will adopt over the next 30 years," says Delusca.

Each scenario led to the same conclusion: a decrease in corn production if the fertilizing impact of CO2 isn't taken into account. The least devastating outcome is in the hot and dry scenario, which predicts a 1.3 percent decrease in production.

The problem, stresses Delusca, are cultivars. "A dozen cultivars used in Quebec alone are replaced every four to five years. Several others exist for hotter climates, which are used in the southern United States."

Delusca used the same scenarios with other cultivars that would benefit production. "In that case, projections of an increase of up to 52 percent are possible if we take the fertilizing impact of CO2 into account," says Delusca. "But the harvest would come later in the year."

From an economic perspective, the question remains whether consumers would wait longer to purchase local products while imported products are readily available? Delusca's research was conducted under the supervision of Professors Bhawan Singh and Christopher Bryant.

Provided by University of Montreal

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