Climate change impacts on sugar cane and other crops in Latin America

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Future climate trajectories
Climate change in Latin America and the Caribbean

All 9 climate models project:

A. **Temperature** increases of between 1°C and 3.4°C

B. Changes in **precipitation** in the range of +/-30%
We can use science and estimations based on economic models to help reduce uncertainty about the future. What changes in temperature and precipitation will climate change bring? What is the worst case scenario? What is the response of the crop to climate change? What is the impact on yields as a biophysical response under climate change? What role will the global food system and economic factors have in shaping production under climate change?

Climate modeling → Crop modeling → Economic modeling
### Crops, models and attributes

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<thead>
<tr>
<th>Crop</th>
<th>Tipo de Modelo</th>
<th>Modelo</th>
<th>Atributo modelado</th>
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<td>Maiz</td>
<td>Modelo de cultivo-mecanístico</td>
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Sugarcane

Average change in suitability for sugarcane (%)
Sugarcane vs other crops - % change in suitability

Colombia

Costa Rica

Peru

Dominican Republic
Sugarcane vs other crops - % change in suitability

Guatemala

- Banano
- Café Arábica
- Café Robusta
- Caña de Azúcar
- Ñame
- Papa
- Yuca
Sugarcane under climate change: Area harvested (000s ha)

Area harvested for sugarcane under different climate models (world)

Area harvested under different climate models (selected LAC countries)
Sugarcane under climate change: Production (000s mt)

Sugarcane production under different climate models (world)

Sugarcane production under different climate models (selected LAC countries)
Climate impacts on crops – country level view

Sugarcane may be exposed to high temperatures (+2 °C) along with increased precipitation (20%).

Banana may be exposed to a reduction in precipitation and high temperatures.
Changes in suitability – country level view

Colombia

Bananas

Sugarcane

Cassava
Further reading –

• Forthcoming publication *Climate Change Vulnerability and Economic Impacts in the Agricultural Sector* funded by IDB (results presented here)

• Climate change vulnerability in the agricultural sector in Latin America and the Caribbean, [https://cgpace.cgiar.org/handle/10568/96121](https://cgpace.cgiar.org/handle/10568/96121) (Report on which original modeling for this exercise is based, 2015)

• Situación rural de América Latina y el Caribe con 2 grados de calentamiento, [https://blog.ciat.cgiar.org/es/este-es-el-panorama-para-america-latina-y-el-caribe-con-2c-de-temperatura/](https://blog.ciat.cgiar.org/es/este-es-el-panorama-para-america-latina-y-el-caribe-con-2c-de-temperatura/) (2019)


• Climate smart coffee in **Central America**: [https://hdl.handle.net/10568/103803](https://hdl.handle.net/10568/103803) (2019)

• Climate smart cocoa in **Central America**: [https://hdl.handle.net/10568/103775](https://hdl.handle.net/10568/103775) (2019)
Thank you!

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