

Impacts of climate changes on food production in Brazil: what are we going to eat?

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Introduction

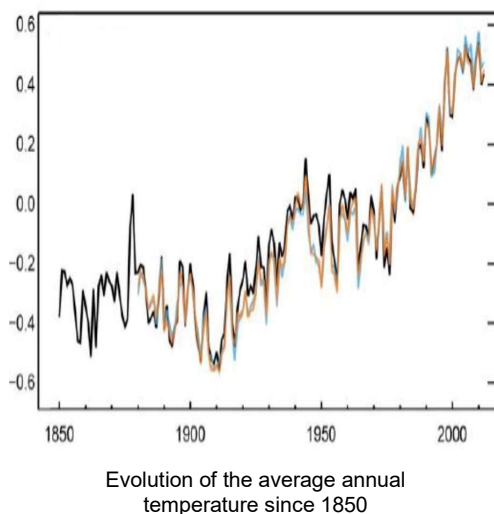
- Climate change is one of the most complex challenges of this century.
- In the food sector, it could affect the entire food chain, leading to changes in food safety.
- Global warming could put food production in Brazil at risk, one of the largest food producers on the planet, if no mitigation and adaptation measures are taken.
- These impacts tend to generate a drop in food production, with a consequent lack of food mainly in the poorest regions of Brazil.

Materials, Methods and Objective

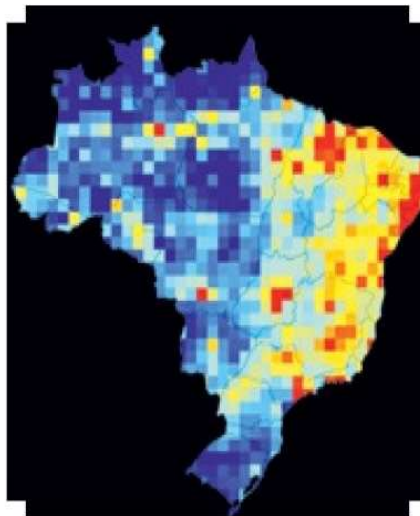
- An exploratory research on articles in Google Scholar, in order to elucidate the main impacts of climate changes on food production in Brazil.

Results

- The figure below shows the evolution of the average annual temperature since 1850:



- By 2050, it is expected a global reduction in food availability.
- This can influence the migration to a lower quality diet based on cheaper ultra-processed food with higher content of fat and sugars and less nutritional value.
- In addition, there would be a reduction on the fisheries and associated services.
- The figure below shows the Brazilian regions most susceptible to climate change according to each region's socioclimatic vulnerability index:



Socioclimatic vulnerability of Brazilian regions: the red areas are the most vulnerable

- Climate change will affect plant production, influencing the adaptation of some crops, with negative impacts.
- There are 9 crops responsible for 85% of Brazil's agribusiness GDP, but only sugarcane is expected to increase its potential cultivation area by 2050.
- If no significant technological innovations occur, all other crops are expected to lose something like 15% of their cultivated area.

- The worst case scenario would be for soybeans, with losses of about 35% of usable area.

Crops	2020	2050	2070
Cotton	11%	-	16%
Rice	9,7%	12,5%	14%
Coffee	9,48%	17,1%	33%
Beans	4,3%	10%	13,3%
Sunflower	14%	16,5%	18%
Corn	12%	15%	17%
Soybeans	23,59%	34,1%	40%

Estimated reduction of planting areas in 2020, 2050 and 2070

- Much of the Northeastern agricultural sector, especially the crops of cotton, soybeans, rice, corn and beans, would be strongly impacted by climate change, with the possible disappearance of cassava crops.
- The slow transition to the agroecological model in Brazil may threaten the climate, which directly influences food production in the country.

Conclusions

- The impacts of climate change are not only likely to hit food production in Brazil, but also provoke a change in habits in current and future generations.
- Only sugarcane will be able to maintain its cultivation area, unlike the other crops produced in Brazil that move 85% of the national GDP: rice, beans, corn, cotton, cassava, soybeans, coffee and sunflower.
- The most socioclimatically vulnerable regions are the most populated, with the Northeast region being the most impacted by climate change.