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Impact of climate change on agriculture sector in Egypt and China

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Egypt is highly vulnerable to climate change impacts, this due to the large and tightly packed population, and if climate change makes Egypt's climate drier or warmer pressure on agriculture would intensify. Also, competition -among the limited water resources States for water could escalate (even without climate change) in addition to increased warming, droughts and evaporation, reduced flow in the Nile would further worsen Egypt's problems, and the country could face an explosive situation.

Projected climate changes may have disastrous effects on agricultural production in the Arab world including Egypt. As a number of studies have shown, increased temperatures cause much higher water needs in summer crops. Water scarcity in the Egypt is projected to increase rather than decrease, and therefore agriculture and in turn the Arab region's food security – is highly vulnerable to climate change, with the risk of 50% decrease in food production if current practices continue.

The impact of climate change on the Egyptian agriculture

Challenges for Egypt in the 21st century

* Climate Change (Sea level raise)
* Food Security (Land-, water-, and nutrients availability)
* Poverty (income of farmers in rural Egypt)

In all these dimensions agriculture plays a crucial role. It is threatened by climate change, responsible for food supply and employs about 30% of Egypt's labor force.

Thus, a new paradigm, "sustainable agriculture", is needed which addresses all these issues simultaneously! "Sustainable Agriculture" and Climate Change Adaptation Potential Adaptation through adapting cropping patterns

- Salt resistant crops (sea level rise in agri. areas) – jojoba, Quinoa
- Less water intensive crops
- Heat resistant crops
- Adaptation through adapting crop characteristics

Economic studies in China show that climate change will affect not only agricultural production, but also agricultural prices, trade and food self-sufficiency. The research presented here indicates that producer responses to these climate induced shocks will lessen the impacts of climate change on agricultural production compared to the effects predicted by many natural scientists. This study projects the impacts of climate change on China's agricultural sector under the A2 scenario developed by the Intergovernmental Panel on Climate Change (IPCC), which assumes a heterogeneous world with continuous population growth and regionally-oriented economic growth.

The effect of climate change on rural incomes in China is complicated. The analysis shows that the average impact of higher temperatures on crop net revenue is negative, but this can be partially offset by income gains resulting from an expected increase in precipitation. Moreover, the effects of climate change on farmers will vary depending on the production methods used. Rain-fed farmers will be more vulnerable to temperature increases than irrigated farmers, and the impact of climate change on crop net revenue varies by season and by region. China faces several challenges, however, as it seeks to reduce emissions and adapt to climate change. Fertilizers are a major component of nitrous oxide emissions, and recent studies indicate that overuse of fertilizer has become a significant contributor to water pollution. Application rates in China are well above world averages for many crops; fields are so saturated with fertilizer that nutrients are lost because crops cannot absorb any more. Changing fertilizer application practices will be no easy task. Many farmers also work outside of agriculture to supplement their income and opt for current methods because they are less time intensive.

Biography

Zakaria Abdalla is a Research Scientist at National Research Centre, Egypt.

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