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Cotton and Climate Change: Impacts and Options to mitigate and adapt.

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Climate change will have major impacts on cotton production and trade depending on production location. This report to be presented analyses the impacts of climate change on cotton production and trade in the main producing areas world-wide, and the options available to mitigate and to adapt to these impacts.
Cotton production is both a contributor to climate change and subject to its impacts. Agricultural production, processing, trade and consumption contribute up to 40% of the world's emissions when forest clearance is included in the calculation. Cotton production contributes to between 0.3% and 1% of total global GHG emissions.
Cotton has a certain resilience to high temperatures and drought due to its vertical tap root. The crop is, however, sensitive to water availability, particularly at the height of flowering and boll formation. Rising temperatures favour plant development, unless day temperatures exceed 32°C. New production areas may be established where cotton was not grown before. Increases in atmospheric CO_2 will also favour plant development. In turn, increased pests, water stress, diseases, and weather extremes will pose adaptation challenges.
Overall, the negative impacts of climate change on cotton production relate to the reduced availability of water for irrigation, in particular in Xinjiang (China), Pakistan, Australia and the western United States. Heat stress risks creating depressed yields in Pakistan in particular, while in other countries limited increases in temperatures could favour cotton plant growth and lengthen the cotton growing season. The impacts of climate change on rainfall will likely be positive in the Yellow River area (China), in India, the south-eastern United States and south-eastern Anatolia (Turkey). Impacts on rainfall in Brazil and West and Central Africa are unclear.
Mitigation and adaptation to climate change in cotton production, as in agriculture in general, should be oriented towards the integration of, and conversion to, more natural production and land management practices that are less dependent on carbon-based fuel, are far more rational and efficient in the use of irrigation water, and rely on reduced tillage for soil conservation.