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Climate Change Impacts on Future Wheat Growing Areas

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Abstract : Climate is undergoing continuous change and this trend will affect the cultivation areas ofmost crops, including wheat (Triticum aestivum L.), in the future. The current suitable cultivation areas may become unsuitable climatically. Countries that depend on wheat cultivation and export may suffer an economic loss because of production decline. On the other hand, some regions of the world could gain economically by increasing cultivation areas. This study models the potential future climatic suitability of wheat by using CLIMEX software. Two different global climate models (GCMs) were used, CSIRO-Mk3.0 (CS) and MIROC-H (MR), with two emission scenarios (A2, A1B). The results of this research indicate that the suitable climatic areas for wheat in the southern hemisphere, such as Australia, are expected to contract by the end of this century. However, some unsuitable or marginal areas will become climatically suitable under future climate scenarios. In North America and Europe further expansion inland could occur. Also, the results illustrate that heat and dry stresses as abiotic climatic factors will play an important role in wheat distribution in the future. Providing sufficient information about future wheat distribution will be useful for agricultural ministries and organizations to manage the shift in production areas in the future. They can minimize the expected harmful economic consequences by preparing strategic plans and identifying new areas for wheat cultivation.

Keywords : Climate change, Climate modelling, CLIMEX, Triticum aestivum, Wheat
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