**MEDIA RELEASE  
  
18 OCTOBER 2014**

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**Limpopo’s tomato growers have to face up to climate change**

Limpopo Province produces 66% of the total annual tonnage of tomatoes grown in South Africa. The province is also deemed particularly vulnerable to the impact of climate change, partly because it is exposed to extreme weather events. A new study demonstrates the extent to which current climate change scenarios are likely to impact tomato production and proposes possible methods for farmers to mitigate the impact.

For his doctoral theses, Freddy Milambo Tshiala, of the Department of Geography at the University of Pretoria set out to determine how climate change might influence the distribution of a tomato pest – a species of leafminer fly ­– in the Limpopo Province. Tshiala made use of different population parameters and variability of temperatures over different climatic periods in processing his data. He has done a detailed analysis of annual seasonal trends in minimum and maximum temperatures, as well as the daily temperature range over Limpopo Province for the period 1950-1999.

Daily data from 30 catchments were used to analyse the trends. Overall there was an increase of 0.12°C per decade in the mean annual temperature for the 30 catchments, over the 50 year period. A non-uniform pattern of changes in temperature was evident across the different catchments. The seasonal trends showed variability in mean temperature increase, of about 0.18°C per decade in winter and 0.09ºC per decade in summer. The significance of this work lies in the linkage of temperature to the hydrological cycle.

The long term fluctuation in temperature has been represented by computing the linear trends in the data records. Although, the variability of temperature trends exhibits a spatial dependence, the trends are undoubtedly real and the warming is large enough to have significant impacts on the hydrology and ecosystems of the region.

## Selecting appropriate adaptation strategies

In this study it was demonstrated that frequent exposure to drought causes agricultural production to be out of equilibrium with seasonal conditions. It is therefore recommended, especially for most smallholder farmers, that they adjust land use to climate variability. In order to maintain or increase tomato yields, given the continuing trends of climate change, assessment studies have to be done to identify present yield thresholds, and to help select appropriate adaptation strategies to support tomato cropping systems in future.

In this study temperature was the climatic factor used in the study on the impact of climate variability on tomato production in Limpopo. The recommendation would be to future researchers to use some other factor as well, like rainfall, humidity or water vapour to extend the study.

According to the Intergovernmental Panel on Climate Change (IPCC) Africa will be hit hardest by climate change as larger areas could be struck by yield decreases of over 50% by the year 2020 because of an increasingly hotter and drier climate. This will threaten food security and the livelihoods of people in most parts of Africa.