

Climate deadline looms for African food crops

By Mark Kinner
Environment reporter, BBC News

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Beans are sensitive to night-time temperatures, making them particularly vulnerable to climatic changes

Researchers have produced a timescale of how projected climate change is set to alter the face of agriculture in Sub-Saharan Africa.

Climate change is widely projected to have a significant adverse impact on food security if no adaptation measures are taken, they explain.

In their study, the team provides timings of the "transformations" needed to help minimise these impacts.

The findings have been published in the journal *Nature Climate Change*.

Agricultural activities are considered to be one of the main drivers to reduce poverty and improve food security among the planet's undernourished population, which is estimated to be 800-850 million people.

Climate change is widely expected to have a destabilising effect on food production systems, the authors observe, and previous studies have concluded that adaptation "will be required if food production is to be increased in both quantity and stability to meet food security needs during the 21st Century".

Co-author Julian Ramirez-Villegas from the University of Leeds, UK, said the study carried out by the CGIAR research programme on Climate Change, Agriculture and Food Security (CCFAS) set out to quantify for the first time when changes to food production were likely to happen.

"Rather than focusing on what we need to do by a certain time, we know that there is a range of options and then we put deadlines on these options," he told BBC News.



Maize was one of three staple crops that researchers found to be vulnerable to future climate change

The team assessed when areas growing nine of Sub-Saharan Africa's staple crops - which account for half of the region's food production - would have to undergo "transformational adaptation", which refers to a fundamental shift in an area's food production system. For example, stop growing crops and switch to livestock farming instead.

Dr Ramirez-Villegas said the study found that six of the nine crops assessed were "stable in respect to transformation and adaptation".

"It does not mean there will not be impacts, for example the yields might decrease," he added.

"But there are three - beans, maize and bananas - that are more unstable and are therefore projected to have large amounts of area under transformational change.

"In the case of beans, in particular, we see about 60% of the area in need of transformation and adaptation (under a high warming scenario - +3.0C/5.4F) because the climate shifts away from the conditions where you can actually grow the crop."

'Climate-smart' crops

However, he added that it was not all bad news as technological advancements offered hope of increasing resilience to changes in the growing conditions.

One example was "climate smart" crop varieties. In 2015, researchers reported a breakthrough in the development of temperature-resilient beans that could help sustain a vital source of protein for millions of people around the globe.

"Also, in the longer term, where transformation is unavoidable, you can shift crops," Dr Ramirez-Villegas explained.

"Just because people are no longer able to grow one crop, it does not mean that people have no options. In most cases, we find that there are alternative crops that remain suitable for those places."

He said the team found that there were only "very specific pockets" where farmers would have to shift away from the nine staple crops that were assessed in the study.

"In those cases, livestock might constitute an alternative livelihood option, or people might completely change their livelihood by migrating, for example, or by completely changing the land-use," he suggested.

In order to maximise the options available to farmers to cope with projected climatic changes, Dr Ramirez-Villegas said that there were two areas that needed addressing.

"We need to work on the barriers to the adoption of technologies, as we know that in Sub-Saharan Africa, adoption levels are sometimes low," he observed.

"What we also need to do is to put planned adaptation into national development plans."

In a separate study, published in *The Lancet*, researchers warned that climate change could be responsible for more than half-a-million deaths by the middle of the century.

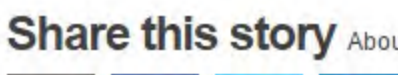
The research was described as the strongest evidence yet that "climate change could have damaging consequences for food production and health worldwide".

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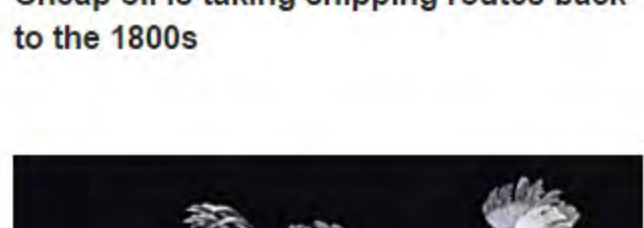
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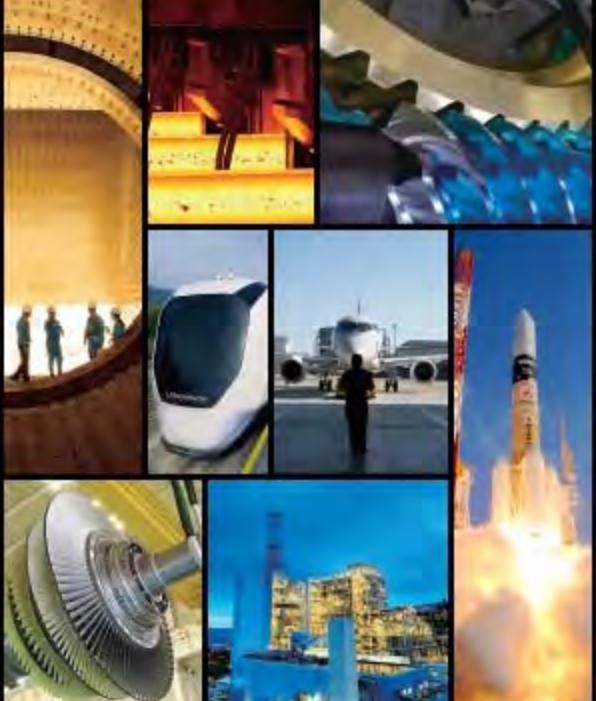
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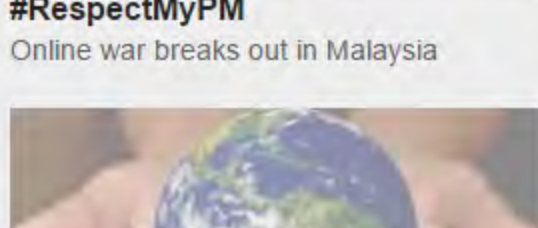
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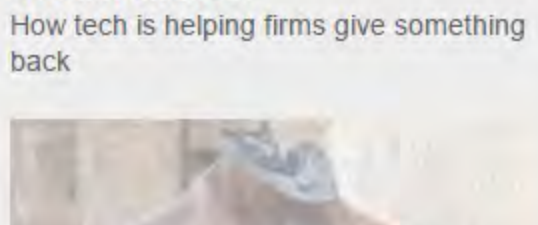
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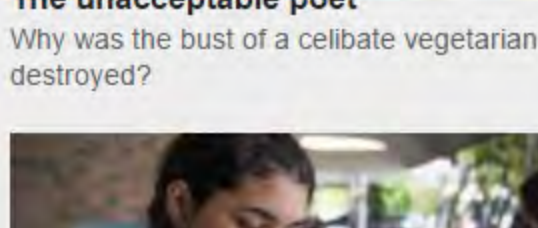
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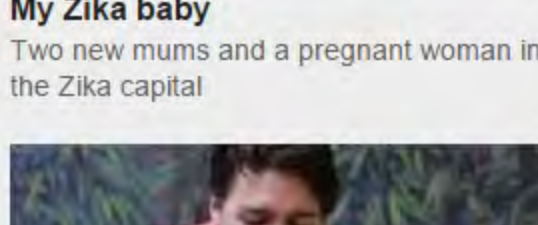
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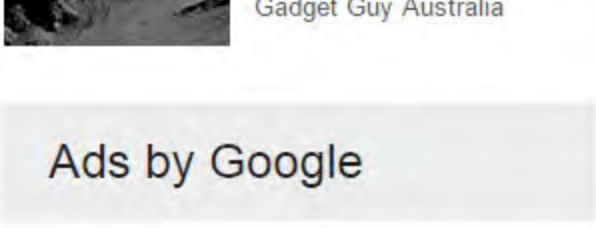
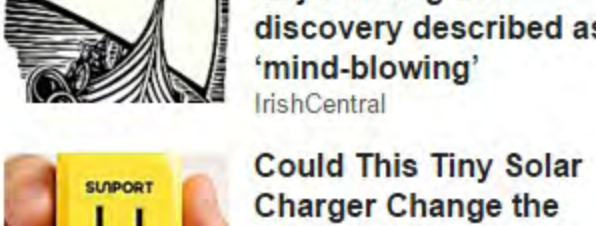
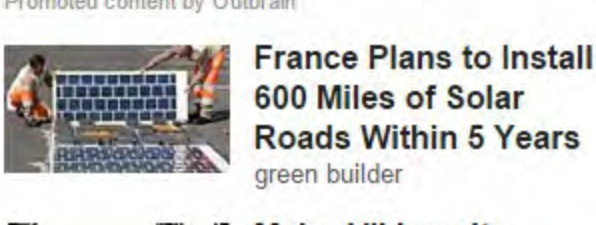
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