Implication Statements – Cassava Toxicity

Cassava consumption information based on TNTv14.5 kcal/capita/day results.

RCP2.6 drought results based on *Lu et al., (2019) Uncertainty and hotspots in 21st century projections of agricultural drought from CMIP5 models. Scientific Reports.*

Relevant calibrated statements:

- Average temperature (increasing)
- Drought (increasing)

Tanzania

High emission scenario (RCP8.5) – LT

Mid century

Droughts are likely to occur on a yearly basis, with associated increases in cassava toxicity of around 4x. Given varieties of cassava in the region are 'bitter', this may make processing cassava to reach World Health Organization safety guidelines (10ppm) difficult.

As cassava production becomes proportionally a smaller part of overall production and the overall diet, the impact of cassava toxicity on health is likely to be smaller than in the HT scenario. However cyanide concentrations will still likely be high enough during droughts that consumption of cassava will pose health risks.

End of century

Increasing temperatures and frequency of droughts mean increases in cyanide toxicity of up to 6- 7x may occur on a yearly basis in some parts of Tanzania. Given varieties of cassava in the region are 'bitter', this may make processing cassava to reach World Health Organization safety guidelines (10ppm) very difficult.

As cassava production becomes proportionally a smaller part of overall production and the overall diet, the impact of cassava toxicity on health is likely to be smaller than in the HT scenario. However high temperatures and frequent droughts conditions means that cyanide concentrations in cassava will still likely be high enough that regular consumption of cassava will pose health risks, unless there is a switch to less bitter varieties of cassava, or significant improvements in processing of cassava.

Low emission scenario (RCP2.6) – LT

Mid century

Droughts are likely to occur on a yearly basis, with associated increases in cassava toxicity of around 4x. Given varieties of cassava in the region are 'bitter', this may make processing cassava to reach World Health Organization safety guidelines (10ppm) difficult. Reductions in cassava consumption may help to offset this, however cassava consumption is expected to be higher than in the RCP8.5 scenario.

End of century

Droughts will become more common than in the mid-century period, with associated increases in cassava toxicity of around 4x. Given varieties of cassava in the region are 'bitter', this may make processing cassava to reach World Health Organization safety guidelines (10ppm) difficult. Reductions in cassava consumption may help to offset this, however cassava consumption is expected to be higher than in the RCP8.5 scenario.

High emission scenario (RCP8.5) – HT

Mid century

Droughts are likely to occur on a yearly basis, with associated increases in cassava toxicity of around 4x. Given varieties of cassava in the region are 'bitter', this may make processing cassava to reach World Health Organization safety guidelines (10ppm) difficult. Reductions in cassava consumption may help to offset this.

End of century

Increasing temperatures and frequency of droughts mean increases in cyanide toxicity of up to 6- 7x may occur on a yearly basis in some parts of Tanzania. Given varieties of cassava in the region are 'bitter', this may make processing cassava to reach World Health Organization safety guidelines (10ppm) very difficult. Reductions in cassava consumption may help to offset this.

Low emission scenario (RCP2.6) – HT

Mid century

Droughts are likely to occur on a yearly basis, with associated increases in cassava toxicity of around 4x. Given varieties of cassava in the region are 'bitter', this may make processing cassava to reach World Health Organization safety guidelines (10ppm) difficult.

As cassava production becomes proportionally a smaller part of overall production and the overall diet, the impact of cassava toxicity on health is likely to be smaller than in the LT scenario. However cyanide concentrations will still likely be high enough during droughts that consumption of cassava will pose health risks.

End of century

Short-term droughts will become more common than in the mid-century period, with associated increases in cassava toxicity of around 4x. Given varieties of cassava in the region are 'bitter', this may make processing cassava to reach World Health Organization safety guidelines (10ppm) difficult.

As cassava production becomes proportionally a smaller part of overall production and the overall diet, the impact of cassava toxicity on health is likely to be smaller than in the LT scenario. However cyanide concentrations will still likely be high enough during droughts that consumption of cassava will pose health risks.

Malawi

High emission scenario (RCP8.5) – LT (cassava production similar to baseline)

Mid century

Droughts are likely to occur on a yearly basis, with associated increases in cassava toxicity of around 4x. Given varieties of cassava in the region are 'bitter', this may make processing cassava to reach World Health Organization safety guidelines (10ppm) difficult.

As cassava production becomes proportionally a smaller part of overall production and the overall diet, the impact of cassava toxicity on health is likely to be smaller than in the HT scenario. However cyanide concentrations will still likely be high enough during droughts that consumption of cassava will pose health risks.

End of century

Increasing temperatures and frequency of droughts mean increases in cyanide toxicity of up to 6- 7x may occur on a yearly basis in some parts of Malawi. Given varieties of cassava in the region are 'bitter', this may make processing cassava to reach World Health Organization safety guidelines (10ppm) very difficult.

As cassava production becomes proportionally a smaller part of overall production and the overall diet, the impact of cassava toxicity on health is likely to be smaller than in the HT scenario. However cyanide concentrations will still likely be high enough during droughts that consumption of cassava will pose health risks.

Low emission scenario (RCP2.6) – LT (cassava production proportionally the same)

Mid century

Droughts are likely to occur on a yearly basis, with associated increases in cassava toxicity of around 4x. Given varieties of cassava in the region are 'bitter', this may make processing cassava to reach World Health Organization safety guidelines (10ppm) difficult. Reductions in cassava consumption may help to offset this.

As cassava production becomes proportionally a smaller part of overall production and the overall diet, the impact of cassava toxicity on health is likely to be smaller than in the HT scenario. However cyanide concentrations will still likely be high enough during droughts that consumption of cassava will pose health risks.

End of century

Droughts will become more common than in the mid-century period, with associated increases in cassava toxicity of around 4x. Given varieties of cassava in the region are 'bitter', this may make processing cassava to reach World Health Organization safety guidelines (10ppm) difficult. Reductions in cassava consumption may help to offset this.

As cassava production becomes proportionally a smaller part of overall production and the overall diet, the impact of cassava toxicity on health is likely to be smaller than in the HT scenario. However cyanide concentrations will still likely be high enough during droughts that consumption of cassava will pose health risks.

High emission scenario (RCP8.5) – HT (cassava production doubles, but proportionally lower)

Mid century

Droughts are likely to occur on a yearly basis, with associated increases in cassava toxicity of around 4x. Given varieties of cassava in the region are 'bitter', this may make processing cassava to reach World Health Organization safety guidelines (10ppm) difficult. Reductions in cassava consumption may help to offset this.

End of century

Increasing temperatures and frequency of droughts mean increases in cyanide toxicity of up to 6- 7x may occur on a yearly basis in some parts of Malawi. Given varieties of cassava in the region are 'bitter', this may make processing cassava to reach World Health Organization safety guidelines (10ppm) very difficult. Reductions in cassava consumption may help to offset this.

Low emission scenario (RCP2.6) – HT (cassava production doubles, but proportionally lower)

Mid century

Droughts are likely to occur on a yearly basis, with associated increases in cassava toxicity of around 4x. Given varieties of cassava in the region are 'bitter', this may make processing cassava to reach World Health Organization safety guidelines (10ppm) difficult. Reductions in cassava consumption may help to offset this.

End of century

Droughts will become more common than in the mid-century period, with associated increases in cassava toxicity of around 4x. Given varieties of cassava in the region are 'bitter', this may make processing cassava to reach World Health Organization safety guidelines (10ppm) difficult. Reductions in cassava consumption may help to offset this.

Zambia

High emission scenario (RCP8.5) – LT

Mid century

Droughts are likely to occur on a yearly basis, with associated increases in cassava toxicity of around 4x. Given varieties of cassava in the region are 'bitter', this may make processing cassava to reach World Health Organization safety guidelines (10ppm) difficult.

As cassava production becomes proportionally a smaller part of overall production and the overall diet, the impact of cassava toxicity on health is likely to be smaller than in the HT scenario. However cyanide concentrations will still likely be high enough during droughts that consumption of cassava will pose health risks.

End of century

Increasing temperatures and frequency of droughts mean increases in cyanide toxicity of up to 6- 7x may occur on a yearly basis in large parts of Zambia. Given varieties of cassava in the region are 'bitter', this may make processing cassava to reach World Health Organization safety guidelines (10ppm) very difficult.

As cassava production becomes proportionally a smaller part of overall production and the overall diet, the impact of cassava toxicity on health is likely to be smaller than in the HT scenario. However high temperatures and frequent droughts conditions means that cyanide concentrations in cassava will still likely be high enough that regular consumption of cassava will pose health risks, unless there is a switch to less bitter varieties of cassava, or significant improvements in processing of cassava.

Low emission scenario (RCP2.6) – LT

Mid century

Droughts are likely to occur on a yearly basis, with associated increases in cassava toxicity of around 4x. Given varieties of cassava in the region are 'bitter', this may make processing cassava to reach World Health Organization safety guidelines (10ppm) difficult. Reductions in cassava consumption may help to offset this.

End of century

Droughts will become more common than in the mid-century period, with associated increases in cassava toxicity of around 4x. Given varieties of cassava in the region are 'bitter', this may make processing cassava to reach World Health Organization safety guidelines (10ppm) difficult. Reductions in cassava consumption may help to offset this.

High emission scenario (RCP8.5) – HT

Mid century

Droughts are likely to occur on a yearly basis, with associated increases in cassava toxicity of around 4x. Given varieties of cassava in the region are 'bitter', this may make processing cassava to reach World Health Organization safety guidelines (10ppm) difficult. Reductions in cassava consumption may help to offset this.

End of century

Increasing temperatures and frequency of droughts mean increases in cyanide toxicity of up to 6- 7x may occur on a yearly basis in large parts of Zambia. Given varieties of cassava in the region are 'bitter', this may make processing cassava to reach World Health Organization safety guidelines (10ppm) very difficult. Reductions in cassava consumption may help to offset this.b

Low emission scenario (RCP2.6) – HT

Mid century

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