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### Cassava brown streak disease pandemic continues to spread in south-eastern Democratic Republic of Congo

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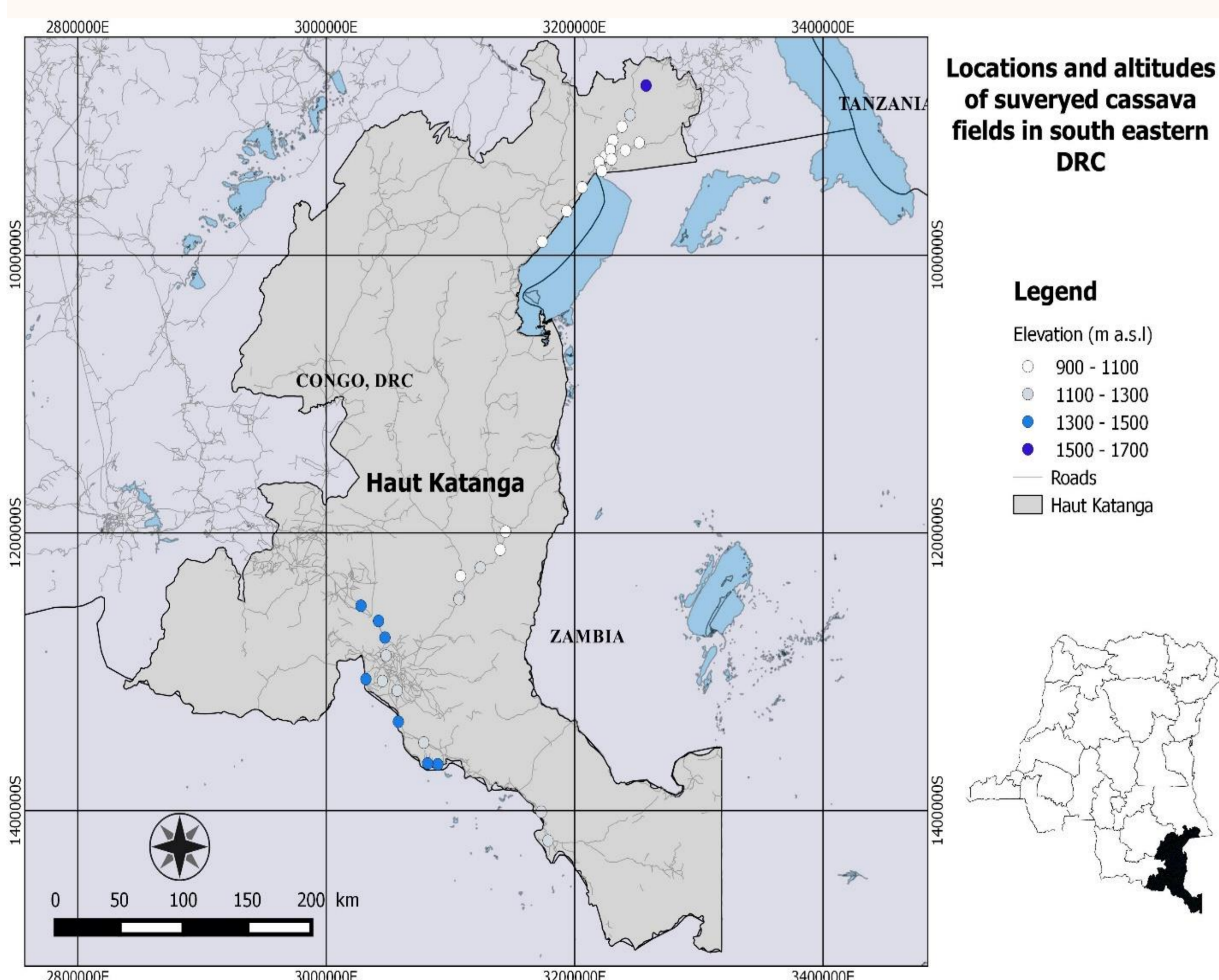
## Introduction

Cassava has a high socio-economic value in small-holder farming systems in the Democratic Republic of Congo (DRC). Unfortunately, it is attacked by several pests and diseases, of which the most dangerous is cassava brown streak disease (CBSD). Viruses that cause the disease are spread by whiteflies and infected cuttings. There is very little published information on CBSD in DRC apart from a report of CBSD-like symptoms from the west of the country (Mahungu et al. 2003) and confirmation of the occurrence of one of the causal viruses, *Ugandan cassava brown streak virus* (UCBSV) and *Cassava brown streak virus* (CBSV) from the east (Casinga et al. 2018).

## Materials and Methods

In August 2018, together IITA with UNIKIS and INERA (Mulungu) researchers, an IITA team inspected 36 cassava fields in villages in the south-eastern DRC Province of Haut-Katanga. Young cassava fields were primarily targeted but occasionally older fields were assessed for the presence of the root necrosis characteristic of CBSD. Leaf samples for species level identification (CBSV and UCBSV) were dried and subsequently analyzed with Real-Time PCR diagnostics at the IITA-Kalambo molecular biology laboratory using the TaqMan real-time PCR protocol. The relation between elevation and CBSD was inferred through the second order polynomial non-linear regression model using the nlme and minpack.lm packages implemented in R (R Development Core Team, 2015; Pinheiro et al. 2018)

**Symptoms:** CBSD affects all parts of cassava plants, but notably the storage roots, making them unsuitable for consumption. Yellow blotching and/or veinal chlorosis are seen on lower leaves and occasionally stem lesions (Plates a-d).



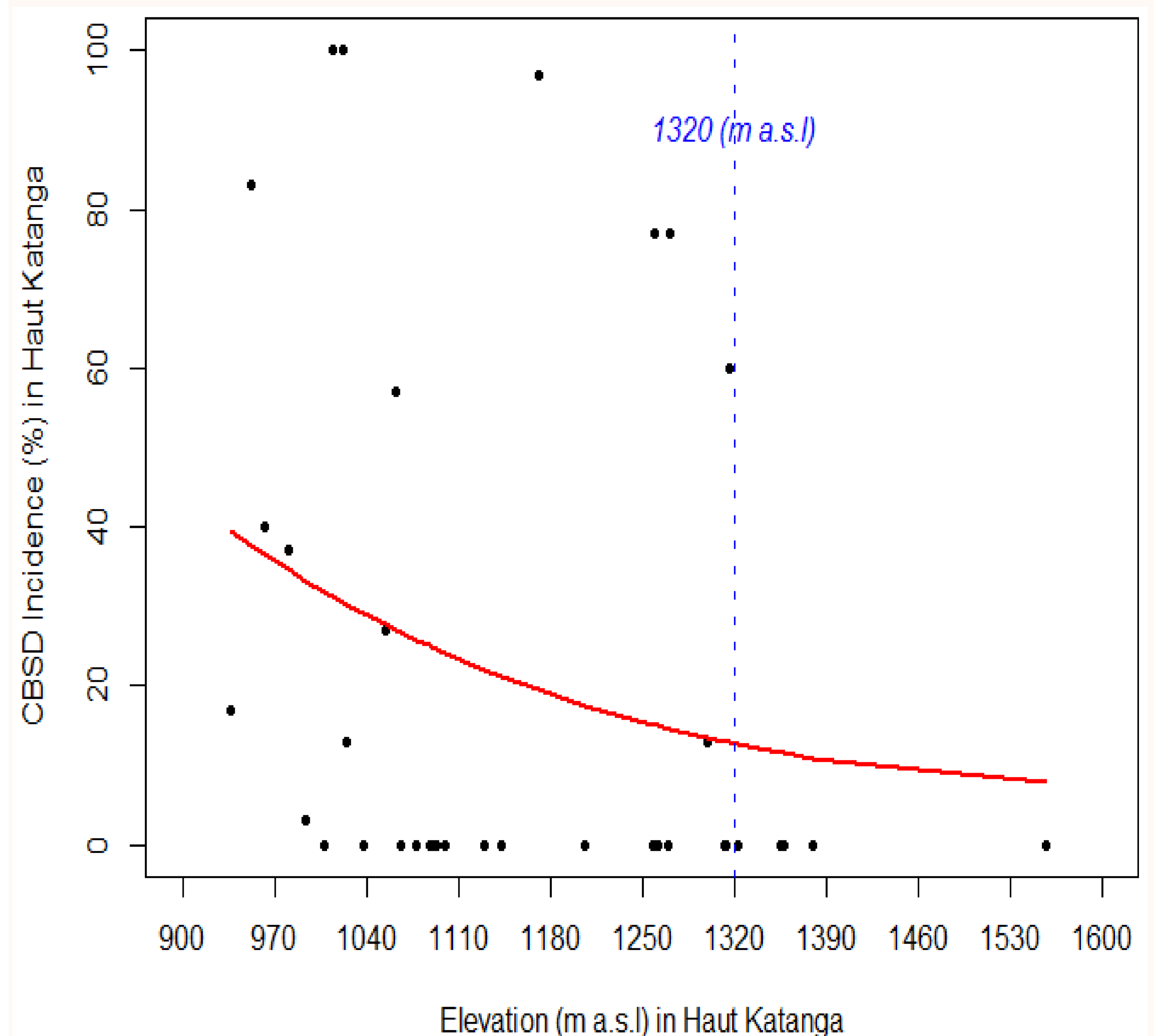
## Objectives

To identify areas where CBSD have never previously been reported in South-eastern DR Congo.

## Results and Discussion

Fifteen of the 36 fields/villages were affected by CBSD. Average incidence in affected fields was 53.4%, with two fields that had a 100% incidence. Species-level identifications using real-time PCR revealed that 78/360 samples that tested positive were infected with CBSV.

We ran non-linear regressions using the nlme and minpack.lm packages implemented in R in order to establish the link between the altitude and CBSD incidence.



The non-linear regression results show that CBSD incidence decreases as altitude increases. All fields/villages with an altitude of 1320 m a.s.l. and above had an incidence equal to 0 (absence of disease) (Fig.2) and the highest incidence predicted by the regression was at the lowest altitude. This pattern is probably best explained by the generally higher abundance of the whitefly vector (*Bemisia tabaci*) of cassava brown streak viruses at lower altitudes.

## Conclusion

This first report of CBSV in south-eastern DRC confirms the westward spread of CBSD threatening cassava in Central and West Africa, and highlights the need to target control interventions to prevent this.

## References

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