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ORIGINAL RESEARCH article

Farmer and field survey in cassava growing districts of Rwanda reveals key factors associated with cassava brown streak disease incidence and cassava productivity

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Chantal Nyirakanani (https://loop.frontiersin.org/people/1403147/overview)[1, 2*], Jean-Pierre Bizimana (https://loop.frontiersin.org/people/1402549/overview)[1, 3*], Yves Kwibuka (https://loop.frontiersin.org/people/1269107/overview)[1], Athanase Nduwumuremyi (https://loop.frontiersin.org/people/1315933/overview)[3], Vincent Paul Bigirimana (https://loop.frontiersin.org/people/1514435/overview)[2], Charles Bucagu[3], Ludivine Lassois[1], Eléonore Malice[4], Nicolas Gengler (https://loop.frontiersin.org/people/623669/overview)[1], Sebastien Massart (https://loop.frontiersin.org/people/1019845/overview)[1], Claude Bragard (https://loop.frontiersin.org/people/45482/overview)[5], Michael Habtu[6], Yves Brostaux[1], Cecile Thonar (https://loop.frontiersin.org/people/295533/overview)[1] and Herve Vanderschuren (https://loop.frontiersin.org/people/54786/overview)[1, 7*]

[1]Gembloux Agro-Bio Tech, University of Liege, Belgium
[2]University of Rwanda, Rwanda
[3]Rwanda Agriculture Board, Rwanda
[4]Walloon Agricultural Research Centre, Belgium
[5]Catholic University of Louvain, Belgium
[6]Mount Kenya University, Kenya
[7]Biology, KU Leuven, Belgium

Cassava (Manihot esculenta Crantz) is a vital crop in Rwanda where it ranks as the 3rd most consumed staple. However, cassava productivity remains below its yield potential due to several constraints including important viral diseases such as cassava brown streak disease (CBSD). Because various factors can be addressed in order to mitigate the impact of viral diseases, it is essential to identify routes of virus contamination in the cassava agrosystems from the seed system to farmer's practices and knowledge.
The present study aimed at 1) assessing the current cassava seed system, farmers' practices and their knowledge of the biotic constraints to cassava production, 2) to determine the status of CBSD as well as critical factors associated with its spread through the seed system channels as well as 3) factors which influence cassava productivity in Rwanda. A cross sectional study was carried out from May to September 2019 in 13 districts of Rwanda. A total of 130 farmers and cassava fields were visited and the incidence and severity of CBSD were evaluated.

CBSD was detected in all cassava producing districts. The highest field incidence of CBSD was recorded in Nyanza district (62%; 95%CI = 56% - 67%) followed by Bugesera district (60%; 95%CI = 54% - 65%) which recorded the highest severity score of 3.0 ± 0,6. RT-PCR revealed the presence of CBSD at the rate of 35.3%. Ugandan cassava brown streak virus was predominant (21.5%) while cassava brown streak virus was 4% and mixed infection was 10%. Informal cassava seed system was dominant among individual farmers whereas most cooperatives used quality seeds. Cassava production was found to be significantly influenced by the use of fertilizer, the size of the land, the farming system, the cassava viral disease and type of cassava varieties grown ($p<0.001$). Disease management measures were practiced by a half of participants only. Factors found to be significantly associated with CBSD infection ($p<0.05$) were source of cuttings, proximity to borders, age of cassava and knowledge of CBSD transmission and management.

Keywords: cassava, seed system, CBSD, Field survey, Cassava production, Rwanda

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*** Correspondence:**
Mrs. Chantal Nyirakanani, Gembloux Agro-Bio Tech, University of Liege, Gembloux, B-5030, Namur, Belgium, chantoska@gmail.com
Mr. Jean-Pierre Bizimana, Gembloux Agro-Bio Tech, University of Liege, Gembloux, B-5030, Namur, Belgium, Jean.Bizimana@uliege.be
Prof. Herve Vanderschuren, KU Leuven, Biology, Leuven, 8092, Belgium, herve.vanderschuren@ulg.ac.be

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