

## **Advances and challenges in the management of the main cassava diseases in Brazil** (Avanços e desafios no manejo das principais doenças da mandioca no Brasil)

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Cassava cultivation is an important economic activity for the different regions of Brazil, being strategic because it is a source of energy in human and animal food that can be produced in marginal soil and climatic conditions. Yields losses can be caused by at least 30 different diseases incited by bacteria, fungi, oomycetes, viruses, phytoplasmas and nematodes. Two of the most important diseases complex such as the Cassava Mosaic Disease (CMD) and Cassava Brown Streak Disease (CBSD) are fortunately not present in Brazil. In Brazil, different pathogens are found associated to the culture, with emphasis on the cassava vein mosaic disease (*Cassava vein mosaic virus*), cassava common mosaic disease (*Cassava common mosaic virus*), Cassava Frogskin Disease (CFSD) complex (caused by a putative association between virus and phytoplasma); Cassava Bacterial Blight (*Xanthomonas phaseoli* pv. *manihotis*), and by fungi, such as anthracnose (*Colletotrichum gloeosporioides* sensu lato) and root rot disease, the latter being caused by a wide variety of pathogen species. The use of resistant cultivars to different pathogens is the most effective management practice for cassava, however this is a medium to long term control strategy, making it fundamental to search for readily available management strategies that may be added to the cultivars already available in the different regions of the country, such as the use of plant-derived products, resistance inducers and biocontrollers, chemical treatment of vegetative seeds, and the use of diagnostic and cleaning tools for systemic pathogens. Despite the fact that Brazil is the center of origin of cassava and its importance in food and income generation in all regions of the country, when compared to other staple crops, there are few groups dedicated to research the main problems of this crop, which still generates a shortage of information about the main diseases, the role of the vectors in dissemination as well as tools for its management. In the last ten years, very relevant information has been accumulated on the occurrence of cassava diseases in Brazil, from the identification of previously unreported viral species in the country; to genomic selection actions for the development of resistant varieties. In addition, efforts have been devoted to regulating and consolidating a seed market, since this is one of the basic requirements in any high-performance crop production system, by ensuring the use of propagation material with phytosanitary and genetics quality. As well as for the recognition and regulation of phytosanitary barriers to prevent the main diseases absent in the country (CMD and CBSD) to be introduced in Brazil. Even with significant advances in recent years, the volume of basic information and/or for practical application still falls short of the demand from farmers and industry, which in this case includes everyone considering subsistence agriculture to large starch production industries, being mandatory the participation of new educational and research institutions in the national and international sphere.

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