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Virus diseases of root crops in Africa: An overview

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Abstract. Virus diseases are some of the most economically important constraints to the production of the root crops: cassava, sweetpotato and yams in sub-Saharan Africa. Cassava is affected primarily by two virus diseases: cassava mosaic disease (CMD) and cassava brown streak disease (CBSD). CMD, caused by a group of cassava mosaic begomoviruses, is present in all cassavagrowing areas of Africa, on average affects half of all plants, and is responsible for continent-wide losses in excess of US$ 1 billion annually, arguably making it globally the most important plant virus disease. This impact is currently being exacerbated by a pandemic of an unusually severe form of the disease. CBSD, caused by cassava brown streak virus, an ipomovirus, is most important in coastal East Africa where it leads to lost production through producing a brown necrotic root rot. Recent reports suggest it may also now be damaging cassava in parts of central Africa. Sweetpotato in Africa is attacked by a large number of viruses, although only two are of major economic importance. Sweetpotato chlorotic stunt virus, a crinivirus, and Sweetpotato feathery mottle virus, a potyvirus, commonly occur in sweetpotato plants in mixed infection, giving rise to sweetpotato virus disease (SPVD). In farmers' fields, incidences of greater than 30% are frequent, particularly in the Lake Victoria zone of East Africa, where the disease is most damaging. However, perhaps SPVD's most pernicious effect is to prevent farmers growing superior high-yielding genotypes, particularly ones from outside Africa, as these are generally extremely susceptible to it. Yam is similarly affected by a broad range of viruses, but the most widespread and economically damaging is Yam mosaic virus (YMV), a potyvirus, which occurs throughout the major yam-producing zone of West Africa, commonly at incidences in excess of 50%. Other potyviruses, a badnavirus (*Dioscorea alata* virus), and other viruses (including a cucumovirus and a comovirus) cause leaf symptoms that result in chronic and sometimes severe tuber losses. Whilst the virus threat to African root crops appears to be as great as ever, substantial progress has been made in developing control methods, most notably through the development of virus resistant germplasm and by identifying appropriate cultural controls. The challenge for the future will be to combine these approaches into integrated management strategies and ensure that they reach the producers for whose livelihoods these root crops are so essential.