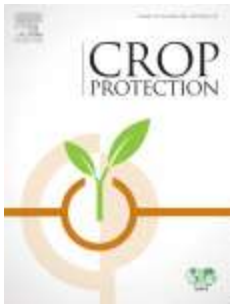

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Root and soil health management approaches for control of plant-parasitic nematodes in sub-Saharan Africa

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Highlights

•Plant-parasitic nematodes affect yield and quality of crops in sub-Saharan Africa.
•Therapeutic approaches of managing plant-parasitic nematodes are unsustainable.
•Soil health management approaches offer a sustainable option.
•Use of cover crops, organic amendments and crop rotation can be explored.

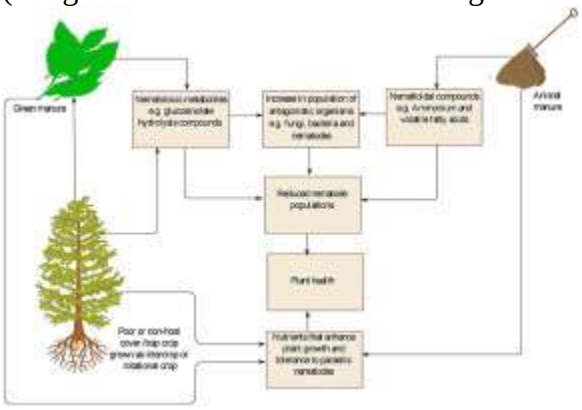
Abstract

Smallholder farmers in sub-Saharan Africa (SSA) face several challenges that include pests and diseases. Plant-parasitic nematodes (PPN) reduce crop yields and affect their quality. They are an emerging threat to smallholder agriculture with several species attacking economically important crops. In SSA, most PPN control strategies are therapeutic and therefore unsustainable. Cost-effective nematode management strategies that promote soil health and enhance soil suppressiveness against PPN are therefore needed. These strategies can fit into most smallholder cropping systems and in addition to controlling PPN, they also promote soil and plant health and tolerance to other diseases. Most smallholders in SSA still use traditional farming methods

although some countries have adopted conservation agriculture (CA) and integrated soil fertility management (ISFM). This review analyzes the potential impact of CA and ISFM on PPN communities and it also provides a concise summary of low-cost PPN control strategies and their efficiency against specific nematode species. Variations in their efficacy is also discussed. The strategies are proposed for adoption across SSA based on site-specific conditions.

Graphical abstract

Mechanism of action of cover crops, animal and green manure against plant-parasitic nematodes. (Images were obtained from the Integration and Application Network, University of Maryland).



Keywords

Cover crops; Nature-based solutions; Organic amendments; Root-knot nematodes