By 2050, Africa’s population is projected to exceed 2 billion. Africa will have to increase food production more than 50% in the coming 50 years to meet the nutritional requirements of its growing population. Nowhere is the need to increase agricultural productivity more pertinent than in much of Sub-Saharan Africa, where it is currently static or declining. Optimal pest management will be essential, because intensification of any system creates heightened selection pressures for pests. Plant-parasitic nematodes and their damage potential are intertwined with intensified systems and can be an indicator of unsustainable practices. As soil pests, nematodes are commonly overlooked or misdiagnosed, particularly where appropriate expertise and knowledge transfer systems are meager or inadequately funded. Nematode damage to roots results in less efficient root systems that are less able to access nutrients and water, which can produce symptoms typical of water or nutrient deficiency, leading to misdiagnosis of the underlying cause. Damage in subsistence agriculture is exacerbated by growing crops on degraded soils and in areas of low water retention where strong root growth is vital. This review focuses on the current knowledge of economically important nematode pests affecting key crops, nematode control methods and the research and development needs for sustainable management, stakeholder involvement and capacity building in the context of crop security in East and Southern Africa, especially Kenya, Tanzania, Uganda and Zimbabwe. © 2015 Society of Chemical Industry