Abstract

Maize smut occurs globally wherever maize is grown. The disease reduces yields drastically through stunting and formation of galls on the above ground parts of the plant especially on the developing cob and the tassel. In the recent past increased incidence of head smut disease caused by Sphacelotheca reliana (Kuhn) has been observed in parts of central province of Kenya, where maize is the staple diet. Infection usually becomes apparent when grain filling starts when it is often late to commence intervention measures. The pathogen causes enlargement of host tissues with the grains being converted into inedible structures filled with masses of dark spores of the pathogen. Observations indicate that most of the maize varieties grown in these regions are susceptible to infection with incidence reaching upto 50% in many farms. Infection appears to be exacerbated by the close integration of maize farming and dairy animal production through the zero grazing system in the region.

The use of infected maize residues as fodder increases disease spread since pathogen spores pass through animal gut undamaged and are returned to the farm in manure, thus serving as sources of primary inoculum for maize crops in the following season. In addition, the pathogen also infects Napier grass which is also widely grown for fodder in the region. Napier not only provides an alternate host for this pathogen but also plays a key role in the continuity of pathogen cycle. Normally, when there is no maize in the fields, farmers ensure there is napier so as to secure fodder supplies, thus the pathogen is assured of a host continuously. Further, the practice of continous maize cultivation on the same pieces of land (without rotation) also favours disease spread since the pathogen's teliospores can survive in crop debris and in soil, where they remain viable for several years. Considering the increasing incidence and severity of smut infection on maize, and the associated threat to food security, it is necessary that efforts be made to investigate the disease and develop effective management measures. Intervention should consider raising farmer awareness on the management measures, especially the importance of regular scouting and timely removal of the smut galls before they break open and release the spores. Studies are needed to determine the extent of loss being incurred by farmers; to characterize the linkage between dairy farming and smut spread, and to identify resistant maize varieties.