Management of Pink Rot of Onion

**Introduction**
Pink root is a fungal disease caused by *Phoma terrestris*, which wreaks havoc on onion plants, destroying their root systems and resulting in leaf wilting and stunted growth. The disease is readily identified by the namesake pink roots exhibited by infected onions. The disease can spread to a variety of other crops, including garlic, cucurbits, corn, soybeans, and more. However, these plants sustain little damage, and primarily serve as reservoirs for the disease.

**Symptoms**
The wilting of leaf tips is the first symptom to appear after infection, regardless of whether the plant is a seedling or more established. After this, leaves will begin to die back prior to reaching full maturity. As the growing season progresses, the stunted growth of infected plants becomes increasingly obvious, especially when such plants are adjacent to healthy plants. Infected plants generally look similar to plants which are experiencing drought conditions or are severely nutritionally deficient. All the symptoms apparent aboveground are a product of the disease’s advances belowground. In the early stages of infection, infected roots turn yellow, then transition to pink, red, purple, and finally black, before shriveling and dying. Newly produced roots typically die quite quickly. When a badly infected plant is uprooted, most of the roots will be dead or entirely rotted away, with the remainder showing the disease’s namesake discoloration. In severe cases of pink root, onion bulbs will be stunted, and the scales may exhibit the same pink or red discoloration as the roots, and may be rotted as well. Even bulbs which appear healthy enough to be harvested may rot in storage. The disease rarely kills more established plants, though seedlings may die. The primary economic consequences of pink root result from the bulbs of infected plants being rendered unsellable due to stunting, softening of tissues, or rot. Symptoms are worst in plants which are infected in the spring, as their root systems are too badly damaged to keep up with water demands as summertime temperatures rise.
Life cycle

*P. terrestris* is an opportunistic fungus which can survive in a vast variety of plants. The fungus becomes most active during periods when temperatures are between 23- and 28 C, and onions grown in fields that are poorly drained are especially vulnerable. The fungus can easily survive for years in soil, feeding on plant debris where available. When onions or other susceptible hosts are planted, fungi inoculum migrate to the root surfaces, where they release enzymes which break down tissues and allow the fungi to gain entrance. The rate and severity of infection is often magnified in fields where other pathogens, such as *Pythium*, have already gained a foothold and have rendered plants more vulnerable.

Control

Pink rot due to its survival in soil is a difficult disease to manage. Once disease is detected in a field, a 3-6 year rotation should be observed. The most sustainable way is to prevent the disease by planting resistant varieties such as Red Passion F1 and Red Pinnoy F1. The crop remains should be deep ploughed after harvest to reduce disease inoculum. The farmer should use certified seed, seedlings from a reputable seed raiser and use the correct spacing. The onion field should be maintained weed free with avoidance of overhead irrigation. Use of sterile media in the nursery is effective in the management of soil borne diseases.

| Mandate Centres for Onion Crop Health | KALRO-Kandara, KALRO-Kabete, KALRO-Muguga South(Food Crops Research Institute) |
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Control options

Farmers from the respective counties will choose what management options to apply depending on the intensity of disease and prevailing conditions. Farmers can seek advice from extension or KALRO Centres as indicated above.

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