Dissemination strategy

In an effort to enhance the uptake of technologies developed, the project adopted the following strategies:

1. **Stakeholder meetings** are held annually to give stakeholders an opportunity to influence the research agenda and get feedback on results.
2. **Linkages with promotion partners** – working with and training extension providers (public and private). To ensure they are likely to promote the technologies in a sustainable way, a week long training course was held in Kenya in November 2004 and additional funding is being sought to complete this aspect of our exit strategy in 2005.
3. **Farmer field days** were held in 2002 and 2004 to disseminate the findings to the farmers and extension providers
4. **Farmer exchange visits**
5. **Participatory on-farm research**
6. **Dissemination leaflets** for farmers and promotion partners have been published in English and Kikuyu.
7. **Project web-site**

http://www.apd.rdg.ac.uk/Agriculture/Research/CropScience/Projects/IntegratedWeed/index.htm

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The University of Reading

Integrated Weed, Pest & Disease Management of Maize Forage Dairying

Left: maize stover at Githunguri. Right: streaked maize

Theme: More forage from maize for more milk

A collaborative research project between the Kenya Agricultural Research Institute (KARI), the International Livestock Research Institute (ILRI), the University of Reading (UK) and (initially) PAN Livestock Services Ltd (UK).

The research team consists of forage and livestock specialists, crop protectionists and socio-economists from both Kenya and the UK.

Apart from the main institutions above, other collaborators include Land O' Lakes and the Kenya Institute of Organic Farming (KIOF).

Project Goal

To improve the livelihoods of smallholders growing maize and producing milk by developing and promoting integrated pest, weed and disease management strategies maize that increase the seasonal availability of forage from maize and weeds and hence greater milk production.

Project justification

Dairying is an important source of household income on most smallholder farms in Kenya. However, forage shortage results in low milk production, long calving intervals, high calf mortality and low weight gain in young stock. The shortage of forage is especially pronounced during the dry season.

As land holdings decrease in size due to sub-division, small-scale farmers cannot generate sufficient forage for dairying. In central Kenya it is estimated that Napier grass (*Pennisetum purpureum*) provides only about 40% of the forage and the proportion is decreasing. The maize crop is increasingly being grown continuously for forage as well as food on small-scale farms. Weeds from crop land are also an important source of forage for livestock.

Practices that aim at maximising forage production from the maize crop are being adopted. These include high density planting each season. Some of the plants are then thinned to provide forage for dairy animals. Weeds are also left to grow longer before the second weeding. In addition to the long-term effects of such practices on weed infestations, implications for diseases and pests are being monitored.

Most importantly, this project is investigating the impact of diseases and weeds on the grain and forage yield and quality. Integral socio-economic studies quantify economic benefits of the IPM strategies.

Target group

Farmers that the project is designed to benefit include relatively resource poor small-scale dairy farmers including (where applicable) landless men and women in the Central Kenyan Highlands.

Project activities include

1. The effect of maize cultivars, dense planting and maize streak virus disease on grain yield and forage yield and quality.
2. The effect of different weeding regimes on grain yield and the yield and quality of forage from maize and weeds.
3. Integrated disease, weed and pest management to optimise grain and forage production – including the pull-and-push system of reducing maize stalk-borer.
4. Evaluate farm-level economic implications of IPM strategies
5. Small-scale forage conservation.

All the activities have an on-station and on-farm components. All off-station activities now include farmer participation. The pull-and-push system of reducing maize stalk-borer comprised a preliminary evaluation and further validation is still desirable.

Some Project Highlights

Farmers identified maize streak virus disease (MSVD), maize stem borer and weeds as the three main biotic constraints in Kiambu.

The hybrid cultivars KH521 and PAN67 have performed well on and off-station and are now commercially available. Farmers confirmed that they are resistant to MSVD and that flavour and appearance characteristics are satisfactory. The open-pollinated variety, SADVEB, and local landrace , GIKUYU also had some resistance.

Dense planting maize reduces weeds, but thinning for forage must be carried out carefully to avoid reducing grain yield.

The project has developed and where feasible evaluated options to address three main biotic constraints to maize forage and grain production. An outstanding feature is to provide options to solve these problems in participatory research with small-scale maize-dairy farmers, extensionists, socio-economists, crop protectionists, forage and livestock specialists.