

Adoption of Planted Forages by Smallholder Milk Producers in Kenya

Increasing milk production at lower costs will not only improve the nutritional status of resource-poor communities but will also improve the incomes of smallholder dairy farmers. Greater adoption of planted forages, such as Napier grass, should help to overcome one of the major constraints limiting dairy production in Kenya – inadequate feeding of dairy cattle.

Background

The smallholder dairy industry in Kenya is estimated to produce 80% of the marketed milk. Although milk production is increasing, it is not keeping pace with consumer demand. There are considerable market opportunities to develop sustainable dairy production around the two largest urban areas, Nairobi and Mombasa. This could be a major incentive to smallholder dairy farmers. If these opportunities are to be exploited, research and extension services must provide smallholders with appropriate technologies for increasing dairy production on their farms.

Inadequate feeding of smallholder cattle is a major technical constraint limiting dairy productivity in Kenya. To overcome this problem, high-biomass-yielding Napier grass has been introduced for cut-and-carry systems.

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Typical shamba (smallholding) in Central Kenya with a range of forages of potential value to dairy cattle.

More recently, efforts have been made to introduce forage legumes into smallholder crop/livestock systems. Adoption and utilisation of these planted forages need to be evaluated; also the factors influencing the farmers' decisions on whether or not to plant improved forages need to be assessed.

Research highlights

A survey investigated the reasons why Napier grass is widely adopted in the Kenyan Highlands. Over 75% of the 365 randomly selected agricultural households in the Kiambu District, north of Nairobi, kept dairy cattle and of those, 70% have adopted the

practice of growing Napier grass. However, relatively few smallholder farmers have taken up other complementary planted forage technologies for improving dairy performance.

Another important source of fodder is maize which is generally planted as a dual-purpose (grain and fodder) crop. The areas planted to both maize and Napier grass varied between 25% and 44% of the smallholdings, which are usually of less than one hectare in size. Other planted forages, mainly herbaceous and shrub legumes, were also found but adoption by the smallholder dairy farmers was low.



Cut forage being transported for feeding to dairy cows in Kenya.

Advice on planted forages and dairy cow feeding were the topics most frequently covered by extension agents. Dairy farmers cited feed shortages as the main constraint to milk production. Such shortages necessitated the purchase of fodder if cows were to maintain production.

Uptake

The survey confirmed the importance of milk production as a smallholder enterprise. The significant role that Napier grass plays in the intensification of smallholder dairy production was highlighted. However, other planted forages, in particular the fodder legumes promoted by extension, have had little impact, and maize as a source of fodder has been largely ignored or neglected by livestock extension and research. The lack of farmer participation in technology development is thought to have inhibited adoption of the uptake of other planted forages, although high-value milk production and land scarcity are said to favour adoption.

Linkages

An econometric analysis examined the contribution of bio-physical and socio-economic factors to farmers' decisions on whether or not to adopt Napier grass, and the area planted. The investigation was complemented by qualitative analyses of planted fodder management and farmer perceptions of Napier grass.

A series of seminars was held to promote dissemination of the project's findings at the KARI Rural Research Centre at Embu for the staff of KARI, the Ministry of Agriculture, Livestock Development and Marketing (MALDM) and the private sector dairy industry.

Project findings were incorporated in the work-plan of the DFID bilaterally funded MALDM/KARI/ILRI collaborative project of research and development support to smallholders supplying milk to the Nairobi market. Through participatory approaches, this project developed interventions to improve the adoption and utilisation of planted forages and of major dual-purpose crops such as maize. Complementary Livestock Production Programme projects include R7955 on strategies for feeding smallholder dairy cattle on intensive maize production systems and implications for integrated pest management; R7010 on production of silage from drought-resistant legume crops for milk production from cross-bred cows in the semi-arid region of southern Africa; and R7321 on improving market mechanisms, processing and marketing efficiency, and reducing public health risks in developing peri-urban smallholder dairy systems.

Relevance to sustainable livelihoods

Technical and economic strategies need to be developed to assist resource-poor milk producers. In particular, the wider use of Napier grass and the adoption of forage legumes will help to overcome the main constraints to increased productivity. These include inadequate feed resources and the need to purchase fodder. Increased milk production at lower cost will improve the incomes of resource-poor smallholder dairy farmers. Increase in the availability of milk, in keeping with consumer demand, will help to improve the nutritional status of poor rural and urban communities and provide a more regular cash income.

Selected project publications

- Mureithi, J.G., Njunie, M.N., Muinga, R.W., Ali, R., Thorpe, W. and Mwatate, C.D. (1998) Adoption of planted forages by smallholder dairy farmers in coastal lowland Kenya. *Tropical Grasslands*, **32**: 221–229.
- Irungu, P., Mbogoh, S., Staal, S., Thorpe, W. and Njubi, D. (1998) Factors influencing adoption of Napier grass in smallholder dairy farming in Kiambu District, Kenya. 11 pp. In: *Proceedings of the Sixth Scientific Conference of the Kenya Agricultural Research Institute, 9–13 November 1998*. KARI, Nairobi, Kenya.

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