

Beyond the *Badza* (Hand-hoe)

Cotton production is the main source of income for farmers in Muzarabani, northern Zimbabwe. The deep alluvial soils of the Zambezi Valley, coupled with the lure of potentially high returns from cotton, attract an ever-increasing number of new settlers – about four out of ten farmers have been farming in the area for less than five years. Cotton is a very demanding crop and farmers spend a great deal of time and expense applying chemicals to overcome a vast array of pests and diseases. It is perhaps surprising then, that this same approach is not matched in weed management.

A survey of 150 households revealed that 94% of farmers have never used a herbicide, relying instead on either a hand-hoe, known as a *badza*, or animal-drawn ploughs or cultivators. Hand weeding with a *badza* is a laborious task, usually carried out by women and children, and it presents an increasing challenge to farmers, due to declining availability of labour through AIDS and urban migration. However, the consequences of not weeding properly – or at the right time – are serious. It is not unusual to see whole areas that were once devoted to cotton abandoned simply because the weed burden became too great.

As a result, CPP project R7474 has been working with farmers in the Zambezi Valley to explore viable weeding alternatives, including the use of low cost herbicides. Various combinations have been tried to cater for the range of resources available to farmers, including pre- or post-emergence herbicides, with or without mechanical weeding (cultivators, ploughs or hand-hoeing). A promising technique, which is suitable for all farmers, is the use of a pre-emergence herbicide mixture (alachlor + cyanazine) applied in a 30-cm band straddling the cotton row using a knapsack sprayer. Although the inter-row weeds were controlled with a *badza*, the labour requirement was still significantly less. Furthermore, higher yields were obtained with

this technique compared to conventional weeding by *badza* and, once the costs of herbicide and labour were taken into account, farmers achieved a 27% higher return compared to hand-hoe weeding alone. Similar results were achieved applying the herbicide in the same way but using a plough to remove inter-row weeds.

So why aren't more farmers using this technology? Many believe it is too costly, but more importantly, farmers as a whole have limited knowledge of working with herbicides and require training in their handling and effective application. This issue is being addressed through training programmes aimed particularly at farmers and extension workers. Ultimately, farmers must be made aware of all the options available to them so that they can make the most appropriate decisions on how to control the ever-present problem of weeds in their cotton.



Weeding cotton with a hand-hoe, or badza, in Zimbabwe

R7474: *Weed management options for cotton-based systems of the Zambezi Valley*

Contact: *Jim Ellis-Jones, Silsoe Research Institute*