

## Dual-purpose cowpea for west Africa

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### Background

Cowpea (*Vigna unguiculata*) is grown as an intercrop with cereals in some 9 M ha of west Africa, mostly in the dry savanna. Though grain yields are low (circa 500 kg/ha), it is a nutritious food and dry season fodder. The haulms (leaves and stems) are cut and stored after grain harvest. Cowpea aids soil fertility by fixing soil N and returning N via manure from ruminants fed with haulms. Up to the early 1990s, research had focused on developing high grain-yielding varieties. Recognition of farmers' appreciation of multiple uses, in particular the fodder value and the increasing importance of crop residues as feed resources in much of west Africa, where expansion of agricultural land and intensification mean reduced availability of land for planted forages, led to joint research by ILRI and IITA from 1994, which identified "dual-purpose" varieties — with the potential to provide both good grain yields and quality fodder under farmer conditions.

### Potential impact

*Ex ante* impact assessment, combining information from community discussion groups, village and household level surveys with crop models and GIS database layers, has estimated the potential adoption and value of dual-purpose cowpea in west Africa from 2000 to 2020 (Kristjanson *et al.* 2001). Taking account of the heterogeneity in terms of market access and population density, two factors likely to influence adoption of dual-purpose cowpea, this study estimated that, of the 9 M ha of cowpea, dual-purpose varieties could be adopted on a consolidated area of 1.4 M ha of west Africa and potentially benefit 9.3 M people (assuming proportions of land and human population are equal), with an internal rate of return to research investment of 50 to 103% (71% being the baseline figure) and a benefit:cost ratio of 63 (subsequent sensitivity analysis gave a variation from 32 up to 127). Net present value (NPV), including a 5% discount, was estimated as US\$606 M. While it is not yet possible to assess the accuracy of these 20-year horizon estimations, information from current research and development efforts, especially those taking a holistic and farmer-focused approach (see Sanginga *et al.* 2003; Tarawali *et al.* 2003), suggests that such optimistic scenarios may not be unfounded.

### Reasons for success

Dual-purpose cowpea varieties enable farmers with little land to obtain human food and livestock feed from the same area. Cowpea has other economic, ecological and social benefits. Farmers familiar with its management find it easy to adopt. The extension and research services and established networks promote the probability and intensity of cowpea adoption. While cowpea varieties developed by ILRI and IITA were among the first to be promoted, the concept of including dual-purpose features in national research has expanded, as evidenced by the increased inclusion of fodder parameters in cowpea research (Singh and Rachie 1987; Singh *et al.* 1997; Fatokun *et al.* 2003). This gives cause for optimism for widespread adoption of such varieties.

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