Planted forage legumes in west Africa

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Background

Planted forage legumes were introduced into west Africa circa 1950. Since then, a range of species and strategies for their introduction into farming have been evaluated. Approaches to both evaluation and use have changed considerably, especially in the past 15 years. Much of the early research was on-station and focused on using mainly *Stylosanthes* species as introduced pastures. The *Stylosanthes* "fodder bank" concept followed this, but with a fairly stringent "recipe" for farmers to manage and use the legume "bank" for strategic ruminant supplementation in the dry season. Later evaluation included more legume species, more participatory approaches, and identification of potential domains in relation to farmers' social, economic and biophysical situations. It also included a holistic view of the potential multiple roles of legumes in west Africa, especially in relation to the major mixed crop-livestock system, on which up to 80% of the population may depend. In the context of intensifying mixed crop-livestock systems, dual-purpose varieties of annual (food-feed) legumes (mainly cowpea and groundnut) are gaining popularity, especially in areas where farmers have good market access and pressure on land is high. (Dual-purpose legumes are not considered in the assessment of adoption and potential in this manuscript). Farmers in areas with poor market access and lower land pressure have adopted non-food legumes to a limited extent, especially *Centrosema pascuorum* (used as cut-and-carry from a 1-year planted sole plot), and to a lesser extent, *Aeschynomene histrix* (grazed *in situ* from a 1–2-year planted fallow), planted for forage and soil-fertility restoration.

Adoption and benefits

An *ex-post* impact assessment of planted forages in west Africa from 1977–1997 focused mainly on impacts attributable to ILRI (or its predecessor, ILCA) interventions, especially fodder banks. It reported positive returns to the research investments (Elbasha *et al*. 1999). The study reported that 27 000 farmers had planted about 19 000 ha of herbaceous legume forages in west Africa, a relatively small proportion considering the potential numbers of adopters and area in this region. Nevertheless, the estimated benefit by 1997 was $16.5 M from a research investment of $7 M, indicating a positive pay-off. Estimating to 2014 and using conservative estimates suggested a potential doubling of the benefits, with 40 000 adopters and an area of 32 000 ha. Benefits in this study included estimates for increased milk yield, weight gain, calving rate, calf and cow survival, crop-grain and residue yields (from rotational effects).

Because adoption was limited, recent studies addressed the holistic role of legumes in the system, including social and economic factors in various agro-ecological zones. Since adoption is unlikely to be homogeneous over a wide area, but rather niche-specific, these studies included an estimate of potential legume adopters based on known adoption rates in villages in different agro-ecological areas and over 4 different resource-use domains (related partly to population density and market access) over a 3-year period (2000–2002). Using some assumptions and extrapolations to the respective zones in west Africa, we estimate 33 000 potential adopters for *C. pascuorum* in the northern Guinea savanna (growing period, GP = 151–180 days), and 22 000 for *A.histrix* in the derived savanna (GP = 211–270 days).

The future

The perception of fodder legumes for west Africa has changed over the past few decades, from a view that such species provided the answer to many feed-related constraints, with the lack of adoption blamed on poor extension, seed availability, land tenure and fencing requirements (Tarawali *et al*. 1999), to an acceptance that legumes can address some fodder needs in certain niches at specific times. Current research addresses today's challenge, which is to understand the institutions and processes necessary to scale up and out a broad range of fodder innovations. It works closely with farmers, takes cognisance of social and economic circumstances, provides a variety of options, of which forage legumes are just one, and will contribute to ensuring that appropriate legumes are available for a variety of niches.

References

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