TECHNOLOGY DEVELOPMENT OF PASTURE SEED PRODUCTION FOR SMALL SCALE FARMERS IN UGANDA

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ABSTRACT
Pasture seed production by smallholder farmers in Uganda is hardly developed. The stages of development since the early 1960s are described as initial forage evaluation for adaptability and productivity of various species, seed production trials in relation to plant population, fertilizer requirements and the use of support systems for climbing forage legumes. Annual seed production by smallholder farmers, under an informal seed production system, is reported to have risen from 1,200kg in 1989 to over 35 metric tonnes of forage legume seed in 1995. This was attributed to the availability of appropriate seed production technology and the presence of a ready market for the produced seed.

KEYWORDS
centro, desmodium, market, natural grasslands, siratro, support

INTRODUCTION

Pasture seed production is yet to become an important economic activity in Uganda. This is because the activity is a relatively new endeavor from the view point of scientific investigation and production by farmers. Most livestock farmers are small scale and the majority of them depend on grazing natural grasslands on a communal basis (Lusembo, 1993). Nevertheless, some attempts have been made to produce some pasture seed. The information provided in this presentation is obtained from reviewing annual reports of two research institutes and other publications on forage seed development by the authors since 1987.

EARLY RESEARCH WORK

Active pasture seed production research was initiated at Serere Agricultural and Animal Production Research Institute, Eastern Uganda, in the early sixties. Most of the research work put emphasis on forage legume seed production. This was because natural grasslands contain a diversity of grass species whose forage value could be improved by incorporation of adapted forage legume species (Tiley, 1965). In the beginning studies aimed at determining the potential seed yields of adapted species under natural conditions. Subsequent studies focused on defining the general seed crop management inputs like plant populations, fertilizer requirements (Bajunirwe-Butsya, 1972) and control of pests (Dradu and Ogwang, 1976; Byaruhanga *et al*., 1977). Results showed appropriate plant populations and pest control measures that would lead to optimum seed yields under experimental conditions. Despite the generalization that most soils in Uganda are low in phosphorus, results of the above studies did not show any significant effect on seed yield of all the tested species under the influence of various levels of single superphosphate. Later studies attributed lack of response to phosphorus to the presence of Vesicular Arbuscular Mycorrhiza (VAM) in soils (Lusembo *et al*., 1993a). It appeared that most of the research efforts up to the early eighties tried to address technological constraints appropriate in locations where economical and sociological development standards favour mechanization. For instance no research work was carried out on the use of support systems although it is known that seed yields of climbing plants are always improved by provision of some form of support. Adoption of such systems is not possible in developed countries due to the high cost of labour required in the construction of support systems and also in the harvesting of seed. Support systems deserve attention in countries like Uganda due to the shortage of seed and the relatively low cost of labour (Lusembo, 1993). For this reason the use of support systems for improving seed yields of climbing forage legumes was extensively studied in the mid-eighties to date. Conventional support (stakes) has been compared with intercropping legumes with commonly grown crops that have erect growth habits, like cassava. Such plants could provide support and also provide their usual products. Dramatic seed yield increases were reported from all the studies when some form of support was provided. Although the conventional support systems improved seed yields more than intercropping with cassava (Table 1), partial budgeting indicated that in a smallholder farming system intercropping was more economically viable (Lusembo *et al*., 1993b; Lusembo *et al*., 1994). In another study a positive correlation was observed between seed yield of Siratro (*Macroptilium atropurpureum*) and staking height of up to 3m (Lusembo, 1993). Harvesting of up to 3m is affected by use of tripod stands which are commonly used in homesteads of Uganda. This technology is appropriate because it maximizes seed yield per unit area of land, thus leaving the rest for production of other crops.

PASTURE SEED PRODUCTION BY FARMERS

Since the early studies on forage seed production there was no active pasture seed production by farmers until 1988. The small quantities of seed that used to be available were harvested opportunistically or else produced in research institutes. In 1988 a project (Dairy Development Committee, DDC) was set up to revive the dairy production (UNDP/FAO, 1988). Funds were set aside to purchase seed, especially forage legumes, from farmers around Namulonge Agricultural and Animal Production Research Institute (NAARI). Pasture seed could not be procured from the Uganda Seeds Project (USP) which is mandated to provide seed of all the crops in the country. This is because pasture seed has a low effective and often inelastic demand due to the perenniality of well maintained pastures and the reliance of most livestock farmers on natural grasslands. The seed was then distributed to livestock farmers under the project area. Within two years the project had purchased more seed than it had anticipated (2 t) and thus ran short of funds (Table 2). The farmers were greatly disappointed. The success of producing seed by the smallholder farmers around NAARI was partly attributed to the availability of a market for seed and a spill-over of technological knowledge of pasture seed production from the research institute. Most producers were once employees of NAARI and had access to available technologies. A new World Bank Project (Livestock Services Project, LSP) was created to take over the activities of DDC. Pasture seed was still the major constraint to improved pasture productivity. In order to ensure revived interest of the farmers in producing seed the LSP made a contract to pay for all the produced seed within the following three years. By the end of the contract period (i.e. 1995) over 35 t of seed was produced in that year alone.

During the project period livestock farmers learned that pasture seed was produced by farmers around NAARI. Those who were not under the project area used to go direct to farmers and purchase seed. Hence after the project an informal seed trade developed. This was because the dairy industry had been revived and three milk processing plants had been established in the country. This development has ensured a ready market for most of the produced milk. At the moment the

farmers, under the guidance of the Uganda National Farmers Association, have transformed themselves into a registered cooperative society called Pasture Seed Producers Association. The objectives are geared towards improved and diversified production, quality control and marketing of pasture seed. After a lot of forage legume seed has been produced it has been observed that the limiting factor to improved pasture productivity is now grass seed. Hence the farmers are venturing into grass seed production as well.

THE ROLE OF RESEARCH AND MARKET AVAILABILITY

One of the major constraints to successful seed production is ignorance about the requirements of various species. The specialist nature of seed production requires the generation of appropriate technology by research in collaboration with the farmers. However, the presence of a ready market for seed would greatly motivate farmers to look for knowledge from research institutes and also make them take initiatives towards generating their own technology.

CONCLUSION

Sustained pasture seed production in Uganda will depend on the availability of appropriate seed production technology and, more importantly, on a strong dairy industry which requires highly productive pastures, hence a ready market for seed.

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Table1
Seed yield of climbing forage legumes under various forms of support at Namulonge

	Support system			
Species	Staked	Growing with cassava	Unsupported	Reference
Centro	520	430	220	Lusembo et al., 1993
Desmodium	-	Nil	110	Lusembo et al., 1995
Siratro	1770	-	130	Lusembo, 1993

Table 2
Recorded seed sales by smallholder farmers around NAARI (1989-1995)

Year	Quantity
1989	1113
1990	2019
1991	1529
1992	1740
1993	3738
1994	13238
1995	37570

Source: Annual Report, Livestock Services Project, 1995