

Incorporating Subsistence Farmers' Perspectives into Extension Education and Dissemination of Technology on New/Underutilized Crops

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Abstract: The study surveyed the perspectives of subsistence farmers in the incorporation of new/underutilized crops into their farming systems using *Desmodium* sp. as a case study. Data were collected from a total of 200 respondents in the Suba region of Kenya and Western Nigeria. The analysis of data showed that the biological attributes of respondents like sex and age did not hinder the incorporation of *Desmodium* sp. into their farming system. The average age of respondents was 54 years, with majority (65%) being male. These perspectives were expressed by respondents in relation to the incorporation of new/underutilized crops into their farming systems: Adoption will be sustained even if new crop increases the workload of the farmer granted that the benefits outweigh the extra workload; a new crop that also possesses human nutritional value will be more readily accepted; adopting a new crop improves your social status as someone who is knowledgeable and enlightened and a crop that is easy to cultivate is preferable. Others include the accessibility to planting materials is important and enhances adoption/sustainability of adoption and the importance of a ready market for the crop and/or its product. The study concludes that in addition to awareness of the constituent needs and cooperation between service groups, the perspectives of farmers is important in any successful extension programme.

Key words: Farmers' perspectives, extension, new crops, respondents, incorporation

INTRODUCTION

Africa is endowed with a multi-variant climate and soil conditions and about 70% of the rural population depends on Agriculture for survival. With increase in birth-rates and a decrease in death-rates, without a corresponding increment in food production, household food security, income and sustainable agricultural development have become major regional issues. All these put additional pressure on extension to develop programmes and techniques that will not only increase the production of the few species of crops on which the world population increasingly depends to feed itself, but also to train farmers to appreciate and incorporate new/underutilized crops into their farming system. In practice, much of the land that needs to be brought into cultivation is not suited-whether for reasons of soil, slope or climate-for mechanized production of the current few crops on which we depend and there is a growing need for both diversity and novelty. Further, with an estimated 20% of the world's food coming from traditional farming sources,

the opportunity exists to build on the best practices of these traditional farmers, many of whom are not growing the major crops.

Desmodium sp. is a major component of the ICIPE-Rothamsted 'Push-pull' strategy for stem-borers and striga control. The 'push-pull' strategy is a biological pest control method which uses the resilience of nature to operate in man-made environments such as maize fields by manipulating the agro-ecohabitat. The approach is based on a carefully selected combination of companion crops to be planted around and among the maize plants. Of all the stem-borer repellent crops, *Desmodium* sp. was found to be most effective and was also serendipitously discovered to check the growth of striga weed on maize. *Desmodium* is a leguminous cover crop and has several other economic importances which include: Provision of nitrogen to the crop; fodder for domestic animals; prevention of erosion and Conservation of soil water. *Desmodium* seed is also a good source of income; increased maize yield as *Desmodium* suppresses striga and savings on fertilizer and farm labour. The lessons

learnt from the implementation of the 'push-pull' strategy motivated the study on how to solve the problems associated with the incorporation of new and/or under-utilized crops into farming systems among subsistence farmers.

The role of Agricultural Extension in solving problems in the Agricultural enterprise is challenging and multi-variant. Rapid and sustainable growth is necessary to ensure the reduction of poverty and malnutrition in Africa and the agricultural extension services have a key role to play to make this happen. This role will be better played if extension becomes much more entrepreneurial. This will make extension much less dependent on appropriated funds and the politics associated therewith, as well as increasing its efficiency in innovative local extension work (Sauer, 1998). Askew (2007) posited that:

There is no strict classification for scientist to entrepreneur. The best pig farmer I ever met, was a graduate from Mechanical Engineering! However scientists and technologists need to be aware of the real commercial world and the reverse. Sadly, we tend to work in fairly watertight boxes and that slows everything down. Communication problems are exacerbated by scientific gobbledygook and industry shorthand and jargon!

According to Chang (2007) a good scientist could also be a good entrepreneur. It not only gives scientist pay back but also reduces the gap between the academic research and the industry-produced market.

In any successful extension programme, there are 2 key components: awareness of the constituent needs and cooperation between service groups (Bowe *et al.*, 1999). Awareness of constituent needs produces a timely and practical extension programme, while cooperation between service groups extends the scope of the programme. This study focuses on a third component, though often ignored but nonetheless important-the perspectives of farmers. The perspectives of farmers are important in the dissemination and adoption of any technology, especially in the introduction of new crops into farming systems. The study aims at effectively incorporating this third component into the diffusion and adoption of new/underutilized crops into farming systems.

The research project under-taken in the Suba Region of Kenya and Western Nigeria were built upon 3 main objectives:

- Farmers' perspectives of new crops

- Role of extension education in the incorporation of new crops into farming systems.
- The economic importance of new crops in farming systems, using *Desmodium* sp. as a case study.

MATERIALS AND METHODS

This study builds on past studies in several key areas. Firstly, needs as perceived from the point of view of the programme beneficiaries will ensure the sustainability of the development intervention. Secondly, the incorporation of the views and perspectives of rural people in development intervention from the planning stages will enhance the success of the programme. Thirdly, extension programmes must be seen to be solving a particular problem and finally, incorporating the perspectives of programme beneficiaries will ensure the independence of the beneficiaries at the end of the programme.

Primary data were collected from a total of 200 subsistence farmers in the Suba region of Kenya and Western Nigeria in 2004 and 2007, respectively, using purposive sampling technique. The use of focus group discussions and individual/personal interviews were employed. The survey instrument was open and close-ended interview schedules. The survey instrument contained personal characteristics related questions, extension need assessment in relation to incorporation of *Desmodium* sp. as well as questions on the perspectives of respondents on the incorporation of *Desmodium* and/or other new/underutilized crops into their farming system. Communities surveyed included Kuria, Kisii, Rachuonyo, Vihiga and Butere (Kenya). Others were Iwo, Amere and Inisha (Nigeria).

RESULTS AND DISCUSSION

The incorporation of a new crop (*Desmodium* sp.) into the farming system of respondents was not hindered by their socio-economic characteristics as shown on Table 1. Mama Marie, a 70 years old woman was one of the first to adopt the technology because "I like development and I have seen people who adopted new projects in the past benefiting and I didn't want to miss out on this one". The average age of respondents was found to be 54 years, with a dominant age of 55 (45%) years. Respondents were mostly male (65%) with a dominant household size of 7 persons (50%), with 70% being married. The dominant primary occupation of respondents was found to be farming (85%), 40% had a farm area of about 2.5 ha, with a dominant income level of \$500.00 (55%) per month.

Table 1: Socio-economic Distribution of Respondents (N = 200); Mean Age Dominant Indicator 54-55 years

Age (years)	(%)
30 and below	5
31-40	15
41-50	20
51-60	35
61-70	15
71-80	10
Sex	
Male	65
Female	35
Education	
Primary	45
Marital status	
Married	70
House-hold size	
7 persons	50
Primary occupation	
Farming	85
Income/month	
\$500	55
Total farm size (ha)	
2.5ha	40

Source: Field data, 2004 and 2007

The study also identified the following perspectives of farmers on the incorporation of new and/or underutilized crops into their farming system, using *Desmodium* sp. as a case study:

- Adoption will be sustained even if new crop increases the workload of the farmer granted that the benefits outweigh the extra workload.
- A new crop that also possesses human nutritional value will be more readily accepted.
- Adopting a new crop improves your social status as someone who is knowledgeable and enlightened.
- A crop that is easy to cultivate is preferable.
- The accessibility to planting materials is important and enhances adoption and sustainability of adoption.
- A ready market for the crop and/or its product is important.

For a successful incorporation of new crops into farming systems, extension must ensure that, the crop meets an identified need as perceived by the farmers and there should also be cooperation between service groups in the region. The extension package should include training in entrepreneurial skills and management, as well as handling of bumper harvest.

CONCLUSION

The study concludes that the perspectives of farmers are important in the incorporation of new crops into their farming systems. It is also important for extension to devise strategies that will emphasize the economic

importance as well as the nutritional value of any new crop to be introduced, especially to resource-poor subsistence farmers. The marketing of the product is equally important.

EDUCATIONAL IMPORTANCE, IMPLICATIONS AND APPLICATION

Several important findings from the study deserve reiteration.

Firstly, the incorporation of *Desmodium* into farming systems in Africa in areas infested by striga and/or stem-borer is desirable considering its environmental friendliness, the simplicity of application, cultural compatibility and economic benefits. This has far reaching implications in the introduction of new/underutilized crops into farming systems especially in Africa bearing in mind that most farmers are subsistence, resource poor and without formal schooling.

Secondly, responding to the practical requirement of mankind in the area of food in the coming years will entail a lot of trial and error, especially in the unorthodox. This may involve the cultivation and consumption of unfamiliar crops and species.

Thirdly, the following implications were derived from the survey of the perspectives of subsistence farmers on the incorporation of new/underutilized crops into their farming system in the Suba Region of Kenya and Western Nigeria, in 2004 and 2007, respectively:

- Making the nutritional value of new crops known to all stakeholders will enhance adoption and sustainable incorporation of the crop into cropping systems.
- There is a need for crop scientists to collaborate with food scientists and food/nutrition experts to develop recipes for new crops and also collaborate with extension services to disseminate same to stakeholders.
- There is a need for extension organizations to collaborate with relevant service agencies in ensuring a ready market for new/underutilized crops and also make contingency plans to checkmate market glut. This will ensure that subsistence farmers do not suffer as a result of trying something new or unpopular and also lead to a sustained adoption of the crop.
- It is also necessary for extension services to ensure that all potential adopters have easy access to planting materials and all relevant information on the crop and at the appropriate time. This will sustain the tempo of the adoption process.

- Agricultural extension services should be strengthened by adequate funding and capacity building to effectively disseminate and monitor the adoption of these crops. Capacity building for effective agricultural extension may be required at the levels of individual, non-governmental group and institutional and policy actors. Capacity, being the ability of people, organizations and society as a whole to manage their affairs to achieve set goals. The existence of capacity is indicated by the functional presence of a combination of most of the following factors: viable institutions and related organizations, commitment and vision leadership, financial and material resources and skilled human resources (Eremie, 2006).
- Increased funding of researches on new/underutilized crops will make them readily available and supplement the short-fall in the few major food crops.
- The age, sex, income, household size and educational level of the respondents did not hinder adoption as the emphasis of the farmers was on the perceived benefits of the new crop. This implies that even when innovations may not conform strictly to the norms of a particular community, the perceived benefits from the point of view of intended beneficiaries will play a deciding role on its adoption, especially if the social system is an open one.

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