

## Estimating the numbers of farmers planting fodder shrubs in East Africa

STEVEN FRANZEL, FRED MAWANDA AND GEORGE AIKE

As the number of farmers planting fodder shrubs in East Africa increases, so does the difficulty in counting them! Of course, we do not actually count planters – we use several different methods to estimate their numbers, depending on the circumstances. But before discussing these, it is important to understand the reason why estimating numbers of planters is important. First, it helps us document progress in disseminating a new practice. In fact, most donor organizations have a strong interest in learning about such progress in the projects they finance. Second, estimating numbers helps us understand where there are bottlenecks in the adoption process and where uptake is low, so we can target research and extension activities to help solve the problems. For example, estimating the numbers of fodder shrub planters as a proportion of the number of farmers in an area or better, the number of farmers owning cows, can provide insight into the problems of promoting adoption in different areas. Estimating these proportions in different climatic zones or areas with different degrees of access to markets can help better understand the adoption constraints and how to solve them, e.g., through identifying shrub species for marginal environments or by improving market access.

We can sometimes estimate numbers of farmers using a practice as a by-product of a farmer survey conducted for other reasons. For example, researchers may conduct a survey of farmers to assess factors affecting adoption of a practice and then use their data to estimate the numbers of adopters in a particular area. In other cases, a well-designed survey looking at a specific research issue will not

be suitable for estimating numbers of adopters.

In areas where we know there is a relatively high density of farmers planting for instance, over 10%, sample surveys may be used. For example, Wanyoike sampled 300 farmers in 30 clusters of Embu District, where we knew the planting of fodder trees was relatively high. The main objective of his study was to assess factors affecting adoption and dissemination of *Calliandra calothyrsus* but the data were also useful for estimating numbers of farmers planting the shrub. He found that 11% of the farmers in one division had planted and 21% in another. This cluster sampling approach can be very inaccurate in areas of low adoption because we know that planting of fodder shrubs often occurs in clusters, that is, there are many planters in one village where a project operated, but none in several villages around it. A survey using cluster sampling would have a high likelihood of overestimating numbers (if some of the sample villages landed in clusters where planting was taking place) or underestimating (if all sample clusters landed in villages with no planters).

Many organizations promoting fodder shrubs assemble lists of numbers of farmers who plant. We are very careful about making sure that such lists or records are valid. We always ask to see the lists or records. We also make sure that the numbers can be broken down, that is, if an organization is working in three districts and says that 800 farmers have planted, then they should be able to tell us how many farmers have planted in each district. In several cases, we have declined to use numbers provided by certain organizations because they have not

been able to convince us that their numbers were valid.

One non-governmental organization that conducts very thorough surveys and keeps excellent records on numbers of planters is ViAgroforestry. Their surveys give very accurate estimates of the number of farmers growing fodder shrubs in each of 6 zones of Trans Nzoia District. In 2001, they found that the proportion of farmers growing fodder shrubs ranged from 19% to 31% across the 6 zones and that the total number of growers was 7,260.

In Uganda, we conducted a survey of 51 organizations promoting fodder shrubs to learn about their extension strategies, messages, and impacts. About three-quarters were able to estimate the numbers of farmers they had helped to plant fodder shrubs and to convince us that their numbers were accurate. Some of the remaining organizations were unable to make estimates, others gave us estimates that we did not consider valid. In a few cases, we suspected that two organizations were each counting the same farmers and therefore we reduced numbers for both.

Whereas many organizations keep track of the numbers of farmers they help plant, few examine the numbers that *their farmers* help to plant. In central Kenya, we examined the factors affecting such “farmer-to-farmer extension” and as a by-product of the study, we were able to estimate the numbers of farmers planting. We started the exercise with a list of 150 farmer groups in central Kenya comprising 2,600 farmers who had planted fodder shrubs. We selected 13 groups at random from the list. From each group, we randomly selected seven farmers.

We thus interviewed 94 farmers and found that, three years after planting, each had disseminated on average to 60 other farmers. We interviewed a random sample of the farmers they had disseminated to and found that about three-quarters had successfully planted. We thus estimated that the 2,600 farmers in the 150 groups had helped about 12,480 other farmers to plant. But we cannot assume that farmers in other areas or countries will disseminate at this rate. In central Kenya, most farmers have dairy animals so it is likely that the farmer-to-farmer dissemination rate is higher there than in western Kenya, where less than 10% of farmers have them.

How many farmers are planting? Using the above methods, we developed charts of farmers planting fodder shrubs (Table 1) and mapped them by district. We have solid evidence that 32,000 farmers have planted in Kenya and 23,000 in Uganda (Table 2). Map 1 shows the distribution of farmers planting by district, in 2004 in Kenya. Nyeri, Trans Nzoia, and Embu districts had the greatest number of fodder shrub planters. We know that our numbers are underestimated, because we have not been able to get data from many partners that we know have been

involved in fodder shrub planting, nor from places where we know fodder shrubs have been planted. The main problems are that some projects do not keep records on numbers of farmers planting, that few sample surveys have been conducted, or that a project has ended and no data are available. In other cases, partners may be keeping records but we have not visited them to find out. In Kenya, our rough estimate of the number of farmers planting outside the areas where we have records is about 16,000. A rough

estimate of the total number of planters for Kenya is thus about 48,000.

We are conducting similar exercises in Rwanda and Tanzania. For the region as a whole, we have evidence that 57,000 farmers have planted fodder shrubs and our rough estimate of the total number is 86,000. We will be able to further refine our estimates through a DFID-financed study assessing factors affecting the performance of extension programs promoting fodder shrubs.

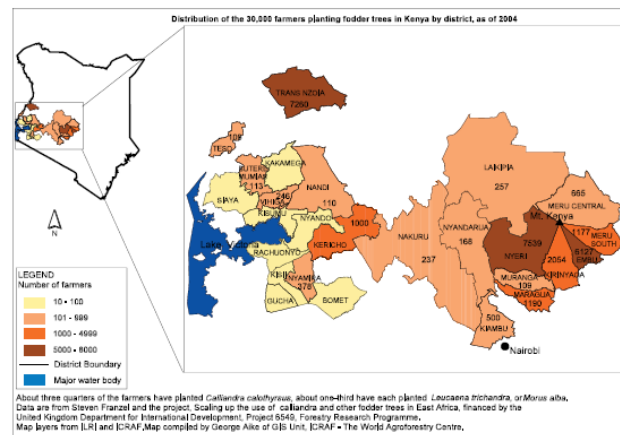


Table 1. Example of part of a monitoring table on farmers planting fodder shrubs, Kenya

Area	Lead organizations	No. of farmers	Trees/farmer	Species (in order of importance)	Method	Source
Trans-Nzoia District	Vi Agroforestry Project	7260	Not known	<i>Sesbania sesban</i> , <i>Calliandra calothyrsus</i> , <i>Leucaena trichandra</i> , Mulberry	Random sample of farmers surveyed	Mukoya and Wafula (2003)
Western Kenya (16 districts)	ICRAF, Heifer International, Ministry of Agriculture	1298	178	<i>Calliandra calothyrsus</i> , <i>Leucaena trichandra</i> , Mulberry	Farmer group lists	Hellen Arimi (2003)

Table 2. Estimates of numbers of farmers planting fodder shrubs in Kenya, Uganda, Rwanda, and Tanzania, January 2005

Country	Numbers of farmers according to our records	Rough estimate of additional farmers planting but not in our records	Total
Kenya	32,000	16,000	48,000
Uganda	23,000	10,000	33,000
Tanzania	1,450	1,000	2,450
Rwanda	700	3,000	3,700
Total	57,150	30,000	87,150