Project Working Paper No.14

KENYA FORESTRY RESEACH INSTITUTE

JAPAN INTERNATIONAL CO-OPERATION AGENCY

Main Survey Report for Training impact Evaluation (Kitui Centre)

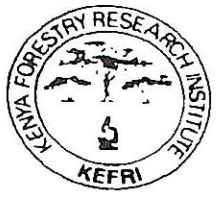
Presented by Working Group on Training Effect Evaluation
for Training Sub-Committee (TSC)

January 1996

Prepared by T. HIROTA

Kenya / Japan Social Forestry Training Project

Project Working Paper No.14



KENYA FORESTRY RESEACH INSTITUTE

JAPAN INTERNATIONAL CO-OPERATION AGENCY

Main Survey Report for Training impact Evaluation (Kitui Centre)

Presented by Working Group on Training Effect Evaluation
for Training Sub-Committee (TSC)

January 1996

Prepared by T. HIROTA

Kenya / Japan Social Forestry Training Project

Table of contents

List of illustration

Introduction

Implementation of Training Courses by the Kenya/Japan Social Forestry Training Project at its two Centres namely Muguga and Kitui started in August and December 1988 respectively. This was in response to the need for development of capability in Social Forestry training in Kenya in the short run, while promoting self-reliant tree planting activities by the rural populace to alleviate fuelwood crisis, environmental degradation and loss of forests and other natural resources, in the long run. Following this understanding, Surveys were conducted generally in five Provinces in the Country and specifically in the arid & semi arid Districts of Eastern Province to ascertain the actual training needs of these localities.

On the basis of data accruing from these surveys therefore, suitable Social Forestry curricular were developed to fit the various trainee categories identified during the Surveys. Development and administration of such curricular is charged to the Training Sub-Committee (TSC). The said curricular have been administered to course participants since then to date quite successfully, at both Centres.

Knowing that mounting of courses like the project does is quite expensive and therefore in a bid to justify the expenditure thereof in addition to the need to improve the curricular to address the intended objectives, Surveys to determine impact of training are undertaken. Two forms of Surveys, namely Pre-course (Pre-survey) and Post course (Main Survey) are done for every type of training course. Pre-surveys are intended to provide baseline information about trainees with regard to level of forestry knowledge, education, socio-economic standing and level of forestry activities achieved to hence form a basis for comparison with main survey. Pre-surveys' questionnaires are served to trainees as they report for training.

On the other hand, post course surveys (main surveys) are conducted one year or more after training at the Centre. This is understood to be time long enough for anything initiated by a participant to be seen or felt. The effect or impact of training is therefore arrived at by comparing results of the pre-survey and main survey.

This is the second main survey report. The 1st was reported on July 1995 as Project Working Paper No. 13. The second main survey under discussion was undertaken from May to August 1994. The survey covered participants of eight (8) courses, namely four for farmers (including women farmers), two for field technical assistants staff and two for teachers. All these courses were implemented at Kitui Centre in the period April 1992 to March 1993, after a lapse period of about two (2) years relative to the date of survey. Since it was not possible to follow-up every participant because of costs and other logistics, sampling was used for farmers / women and field technical assistants staff. However, the main survey questionnaires were mailed to all teachers who attended the two courses for them to fill and return for.

1. Farmers

Farmers form an importance category of trainees in the Kitui regional social Forestry Centre programme. They are owners of land have the discretion to plant trees or not. In essence, they are direct implementor of social forestry ideas at farm level. Training for farmers at the Kitui Centre therefore aims to equip them with the necessary know-how in its regard giving them the impetus they require.
In the training period April 1992 to March 1993, 3 Farmers' Course (included 1 Farmers' Course nominated women farmers only as per our course plan), 1 Women's Course were implemented, realizing a total of 93 participants, including 3 who did not present their Pre-survey questionnaires.
Participation of women farmers have increased and hence the need for gender issues to be taken into consideration as it will be touched upon later.

1.1. Sample selection

Since farmers who participated to the courses are distributed within the Project's nominating area of Eastern Province, coupled with limitations in aspects of cost, time and other logistics, only 30% (28 out of 90) participants randomly selected from 6 districts within the Province were surveyed. The data used from 28 farmers who responded to items of the main survey questionnaire. Their responses were analized and compared with pre-survey farmers' results. Figure 1.1 illustrates the sampling distribution pattern of the sampling survey.

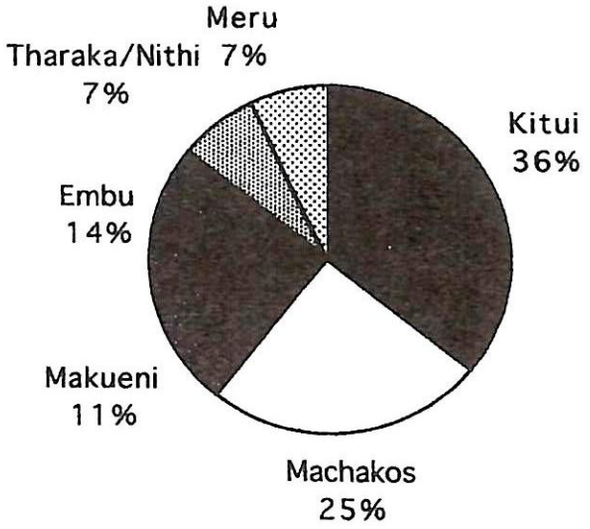


Fig. 1.1.1 Distribution of sampling

1.2. Sex distinction

Figure 1.2.1 shows man and woman ratio of the investigated persons. In the pre-survey time trained farmers consisted of 71% female and 29% male. The ratio was 61% of female and 39% male in main survey as they were chosen in consideration of the dispersion. In reality out of 4 courses surveyed 2 courses

were held only for women, since they are important persons who put into practice social forestry ideas in the rural areas individually or through the women group efforts.

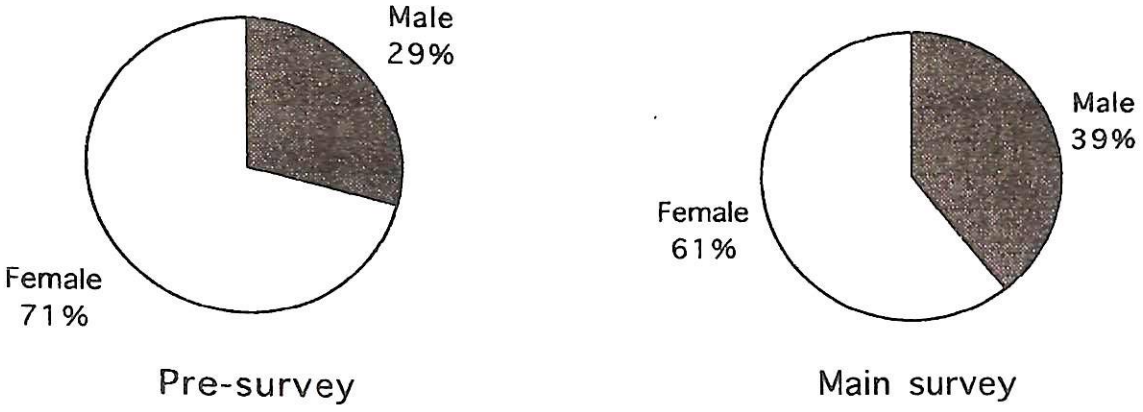


Fig. 1.2.1 Sex distinction

1.3. Tree planting

1.3.1. Number of trees planted to date

The main survey indicates that 79% (25%+43%+11%) of farmers interviewed planted so far more than 50 trees as compared to 56% (19%+15%+22%) reported in pre-survey (Figure 1.3.1). Therefore the number of trees planted has been on the increase. Particularly the farmers who planted 100 - 499 trees significantly increased from 15% to 43%. This means that the training was a provided some technical know-how and good incentive for the farmers to further extend their tree planting activities. And this shows almost similar tendency to the one in 1993 survey (Working Paper No.13).

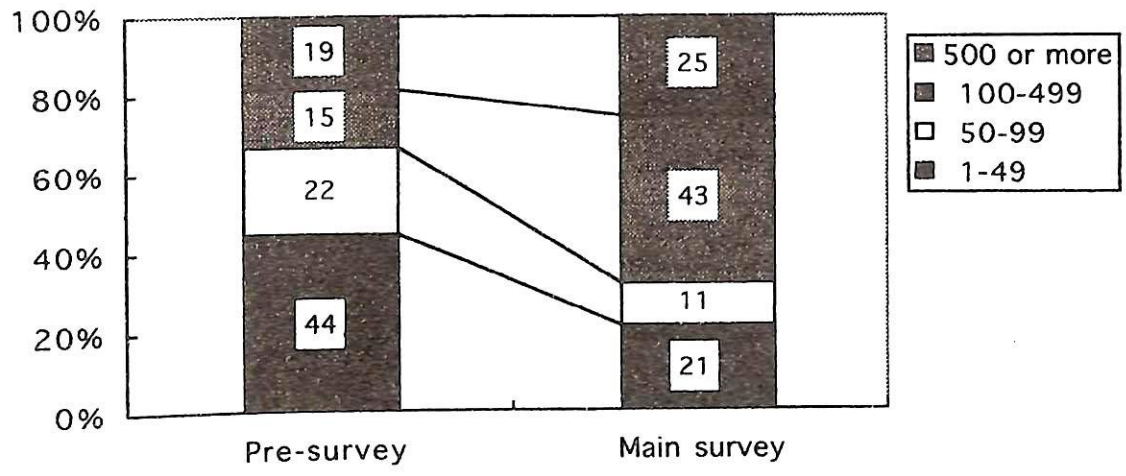


Fig. 1.3.1 Number of trees planted to date

1.3.2. Number of seedings planted within last one year

Figure 1.3.2 shows the number of seedlings that the farmers planted within the last one year proceeding the each survey.
Comparing between pre-survey and main survey, it shows that there was an increase in the number of farmers who planted 100 or more seedlings a year from 29% (22%+7%) to 53% (11%+42%). However those shown to have not planted any seedlings, which was none in pre-survey, accounted for 18% of farmers. It was observed that some of 18% did not raise seedlings in their nurseries because of water problem whereas some previously failed in tree planting for various reasons as drought, non-use of appropriate micro-catchment and hole sizes, those techniques were not used for already planted trees in the past.

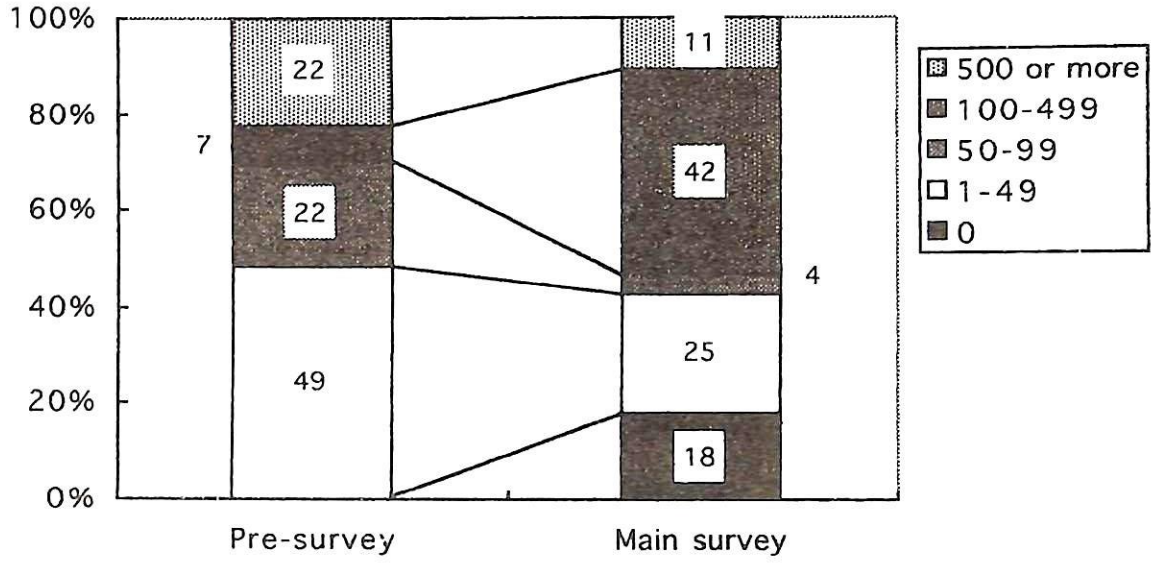


Fig. 1.3.2 Planted seedlings a year

1.3.3. Number of seedlings surviving

Figure 1.3.3 compares number of seedlings surviving during the pre-survey and main survey respectively. Taking the category of "over 499" seedlings as an example, 50% of the farmers planted such number of seedlings so far according Figure 1.3.1, however only 25% of the farmers have 500 seedlings/ trees or more at main survey time. This would suggest that the surviving rate is still an important issue although some of grown trees might have been already harvested and not replanted. It is likely that scarce rainfall in the planting season in the past few years affected mortality of the seedlings

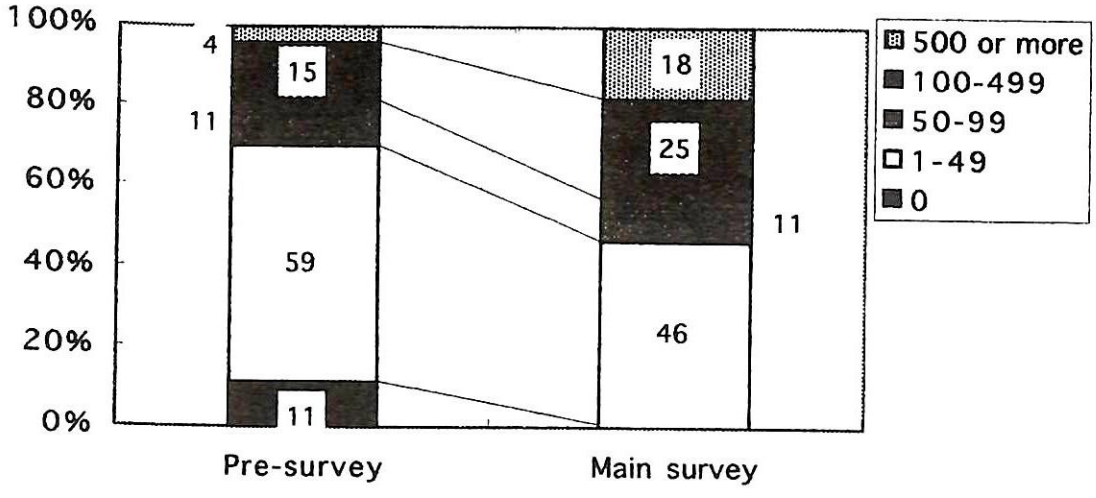


Fig. 1.3.3 Comparison of surviving seedlings

1.3.4. Level of technical skills

Figure 1.3.4 shows the level of farmers technical skills according to Dr. Iida's criteria of assessment. It is indicated by measuring activeness of tree planting; number of trees planted to date, planted seedlings a year, and surviving seedlings. Points are given 0, 1, 2, 3, 4, 5, according number of trees. If total points are more than 11, it is ranked in HIGH level, 6 to 10 points in MEDIUM level, and 5 points or less in LOW level.

Figure 1.3.4 indicates a double increase of HIGH level category from 19% to 43% between the two surveys, while MEDIUM level decreased from 74% to 53%. This obvious improvement in technical level of farmers shows positive effects on knowledge and techniques obtained at the training course which were later reflected to their field activities.

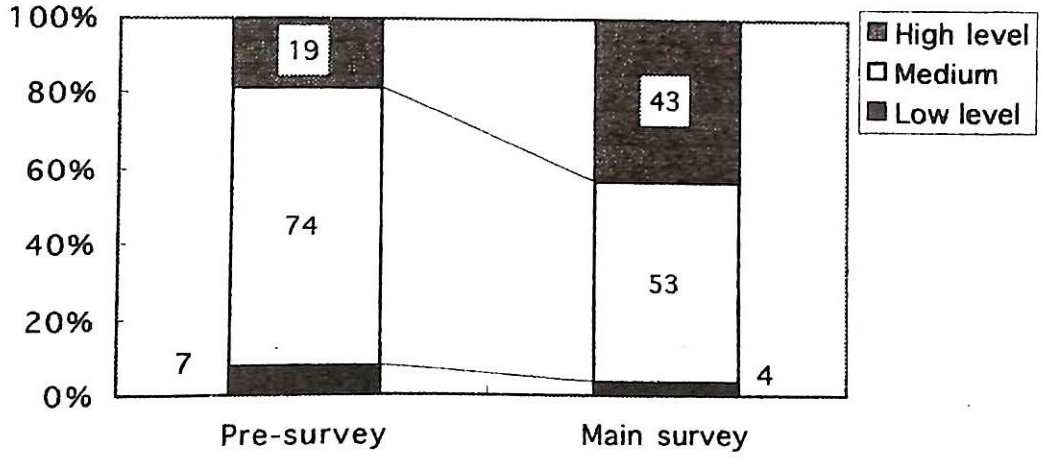


Fig. 1.3.4 Level of technical skills

1.3.5. Area description

The success of planted trees depend on several factors one being the quality of land use interm of its physical characteristics. Figure 1.3.5 shows the type of planted area evaluated by the farmers. 86% of the farmers' land was thought that they planted in non-difficult area and 14% in difficult area.
Difficult area implies that even if the farmer was equipped with all knowledge and techniques achieved through the farmers' course, severe environmental condition in his/her farm would make it difficult to carry out tree planting activities and to raise their survival rate.
More techniques are needed to more difficult area, to successfully establish planted trees, the project have been carring out experiences on establishment and tending of planted trees in ASAL and its recommendations are found in a handbook entitled "BASIC PLANTING AND TENDING TECHNIQUES IN THE ASALS (KITUI AREA)" by Mr. O. CHAHIRU & Mr. T. SAIRINJI, July 1995.
The handbook highly recommended for by farmers and grass-root extension agents. The newly developed techniques and innovations should be communicated through fora like Follow-up Workshops, On-field Seminar, and among others.

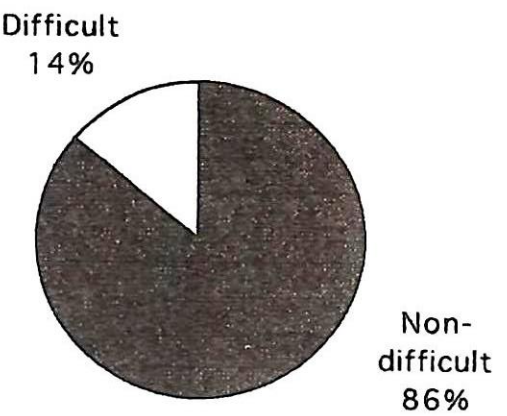
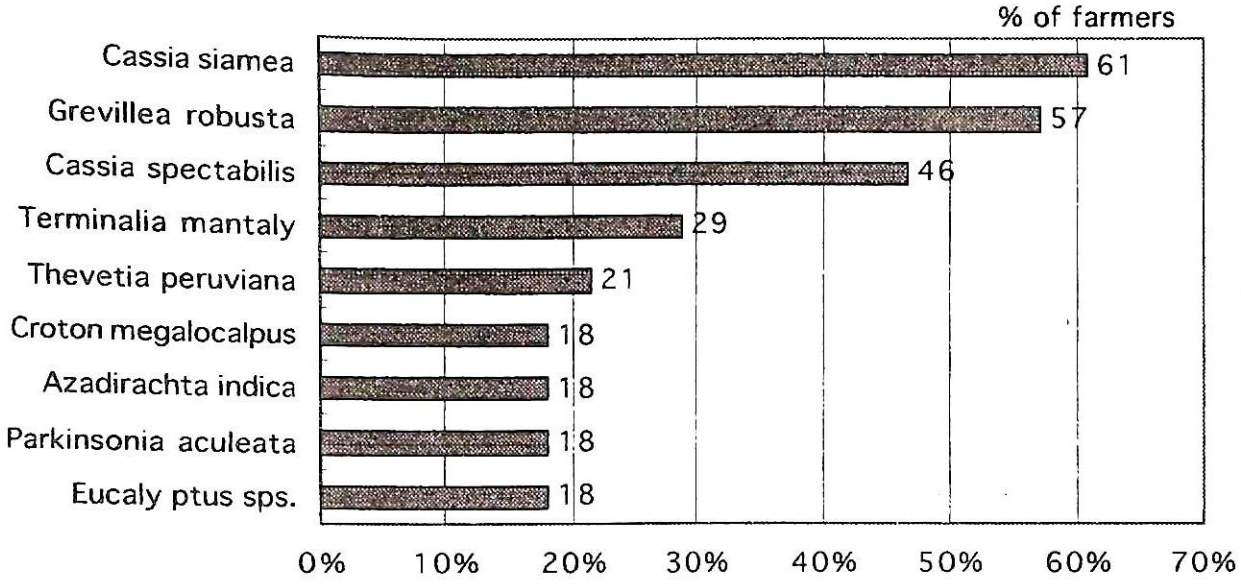


Fig. 1.3.5 Evaluation of area

1.4. Place and species planted

1.4.1. Compound

Most of the farmers planted *Cassia siamea* (61%), *Grevillea robusta* (57%), *Cassia spectabilis* (46%) in their compound. Average number of trees planted by farmer was 24 (*Grevillea robusta*), 7 (*Cassia siamea*), 6 (*Croton megalocarpus*). *Grevillea robusta* is still popular with farmers although it could be attacked by termites. *Azadirachta indica* was also planted by 18% of farmers. It is known for its ability to treat a wide range of diseases. Since a lecture suggested that a subject on "*Azadirachta indica*" only should be in the course curricula, the subject has been introduced by their voluntary since last July 1995 exceptionally.



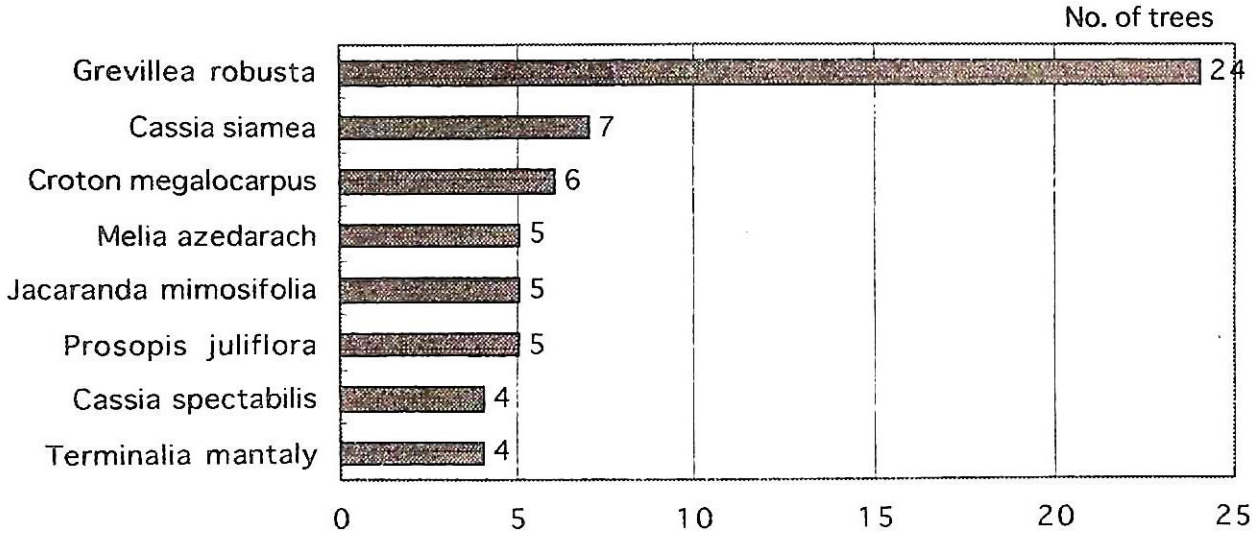
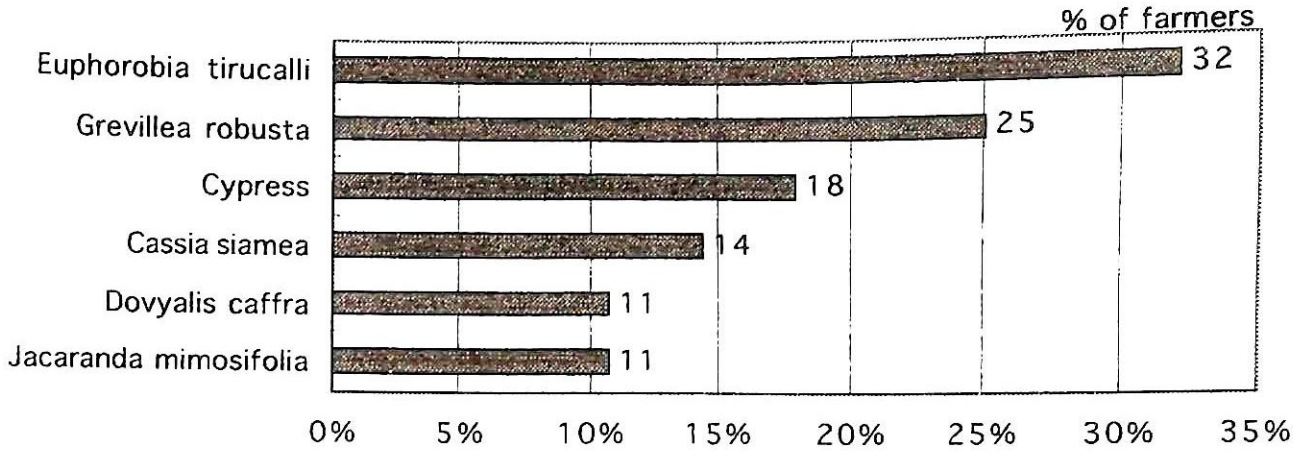


Fig. 1.4.1 Planted trees in their compound

1.4.2. Boundary of compound

32% of farmers planted *Euphorobia tirucalli*, which were planted by each farmer. *Grevillea robusta* was planted by 25% of farmers, and average number was 40 trees. Cypress was planted by 18% of farmers with the average number was 200 trees. *Dovyalis caffra* was also planted by 11% of farmers, 80 trees was the average number. These species are appropriate for fencing purposes.



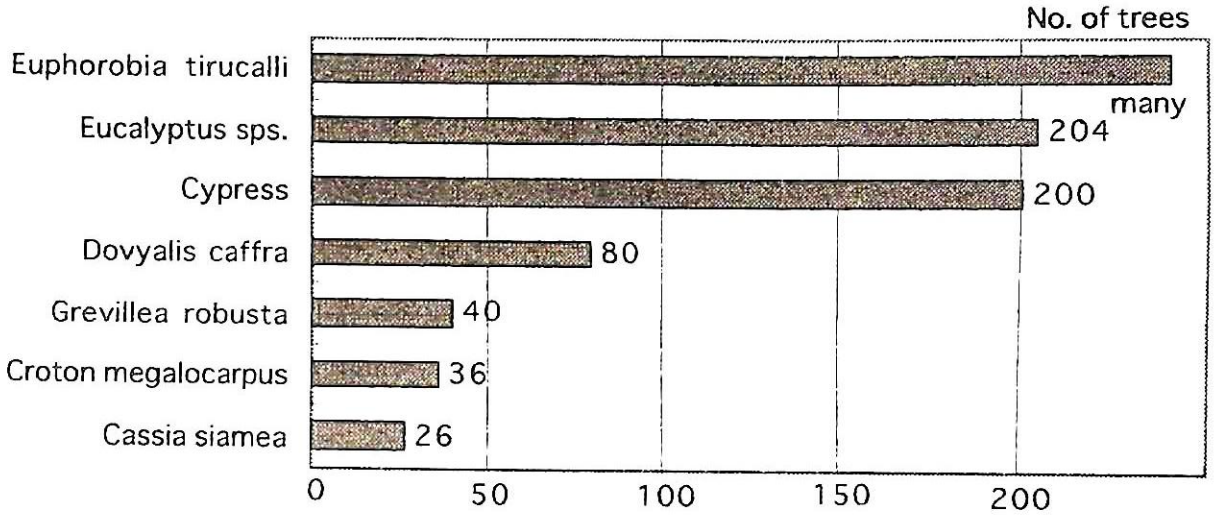


Fig. 1.4.2 Planted trees in the boundary of compound

1.4.3. Shamba

39% of farmers planted *Grevillea robusta* (many trees per person), 25% of farmers planted *Cassia spectabilis* (400 trees per person), 14% of farmers planted *Croton megalocarpus* (many trees per person) in their shamba.

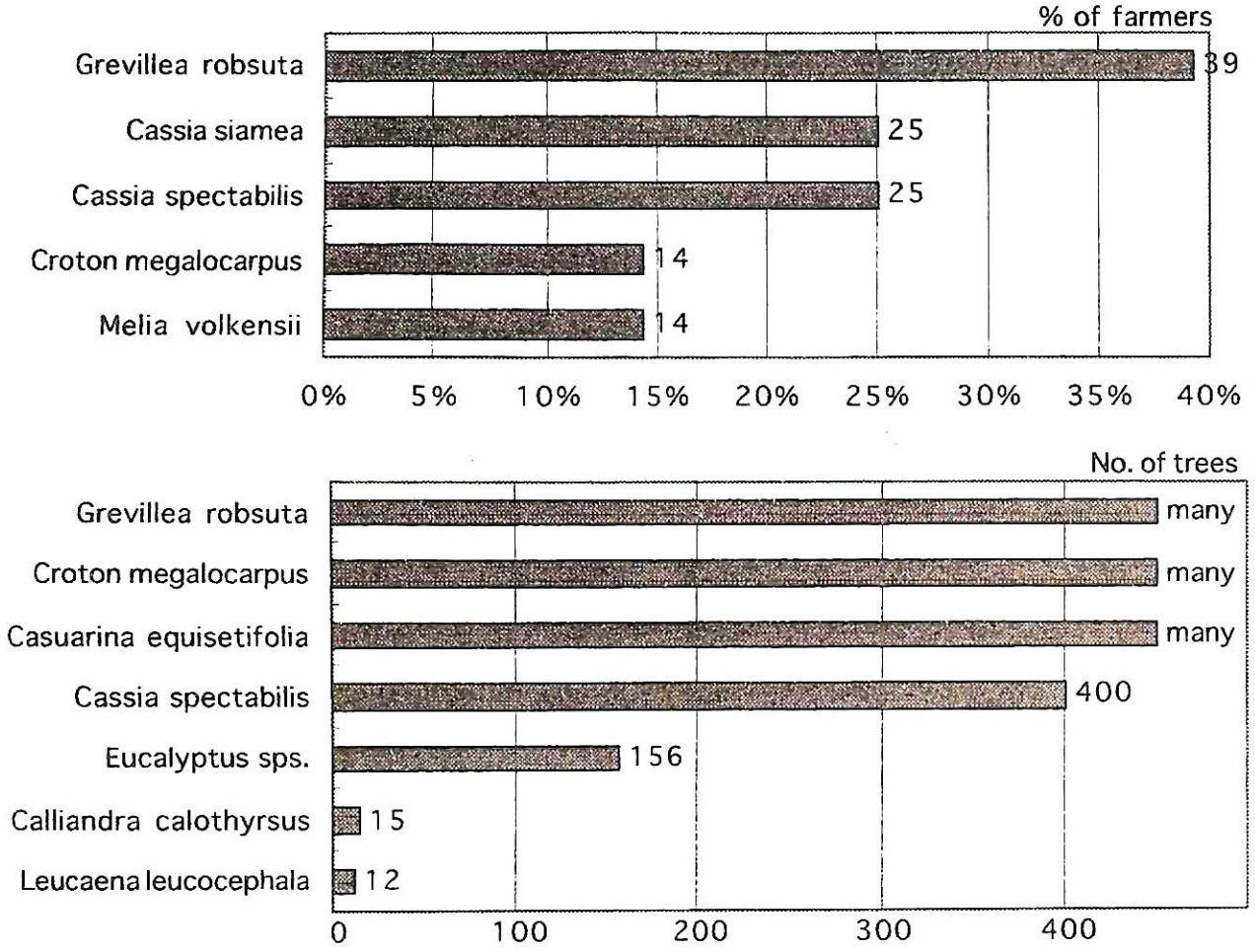


Fig. 1.4.3 Planted trees in shamba

1.4.4. Boundary of shamba

39% of farmers planted *Grevillea robusta* (33 trees per person), 14% of farmers planted *Euphorobia tirucalli* (many trees per person), and 11% of farmers planted *Jacaranda mimosifolia* (22 trees per person).

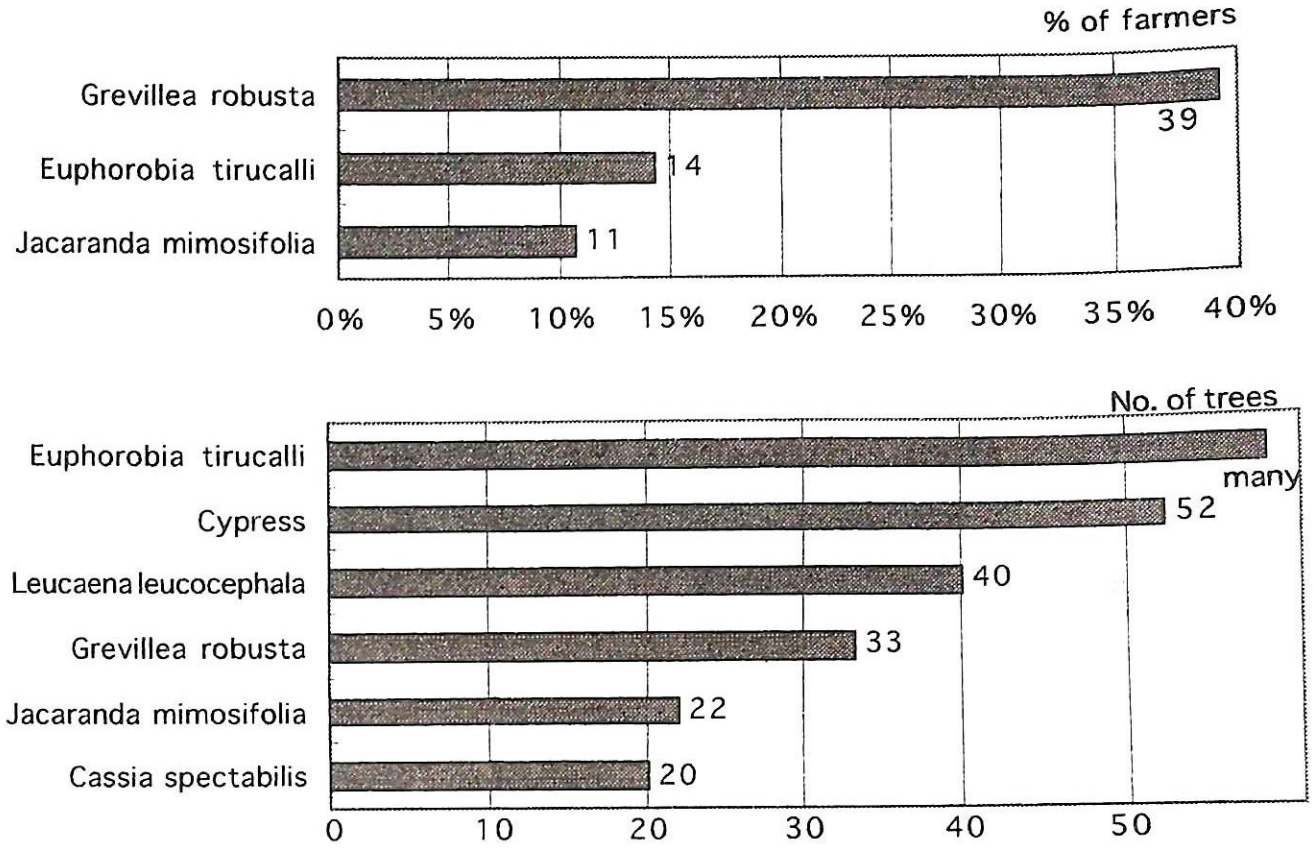


Fig. 1.4.4 Planted trees in the boundary of shamba

1.4.5. Grazing land

Only 4 farmers planted trees in grazing land, mainly Grevillea robusta, and Acacia tortilis, probably for fodder.

1.4.6. Others

3 farmers planted Grevillea robusta (167 trees per person) for woodlot, Eucalyptus saligna was also planted by 2 farmers (500 trees per person).

1.5. Nursery works

1.5.1. Nursery establishment

79% of farmers surveyed had established nurseries, either as individuals or collectively in groups. Figure 1.5.1 below depicts the situation. Compared with pre-survey results, nursery for raising seedlings therefore showed an increase from 70% to 79%. Those respondents who had not started a tree nursery planned to start one in the furture. However, many farmers in this category cited water shortage as their main handicap.

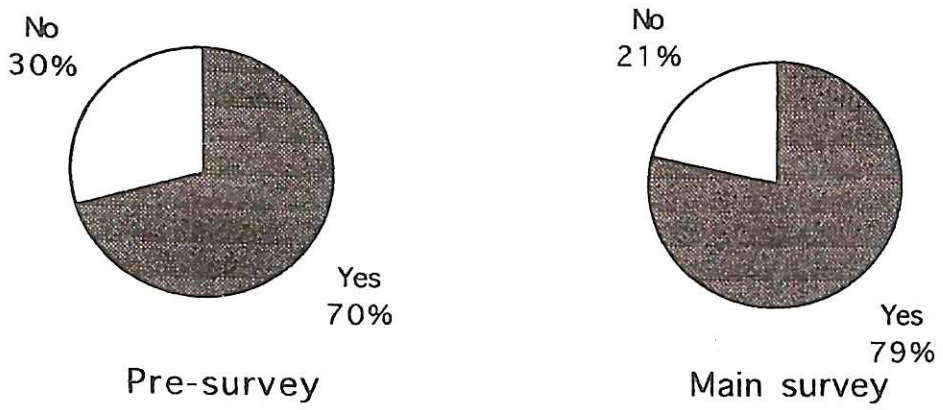


Fig. 1.5.1 Nursery establishment

1.5.2. Form of nursery and number of seedlings

The main survey shows that 50% of farmers who had established nurseries among those interviewed had private nurseries, raising an average of 312 seedlings. 73% of the farmers participated in group nurseries which raised an average of 3170 seedlings. Private nurseries were decreased in terms of both number of farmers and seedlings because of water problem.It seems group nurseries have advantages to private nurseries due to large labour force and choice of location.

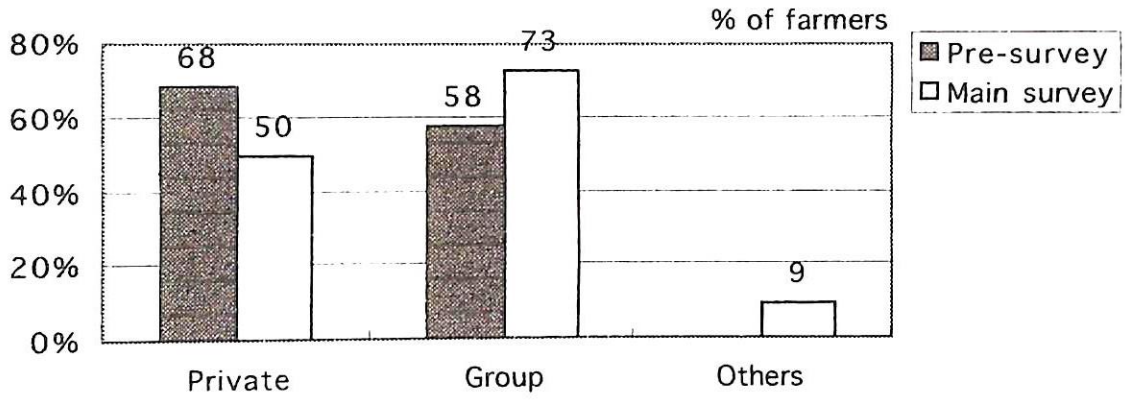


Fig. 1.5.2 Form of nursery

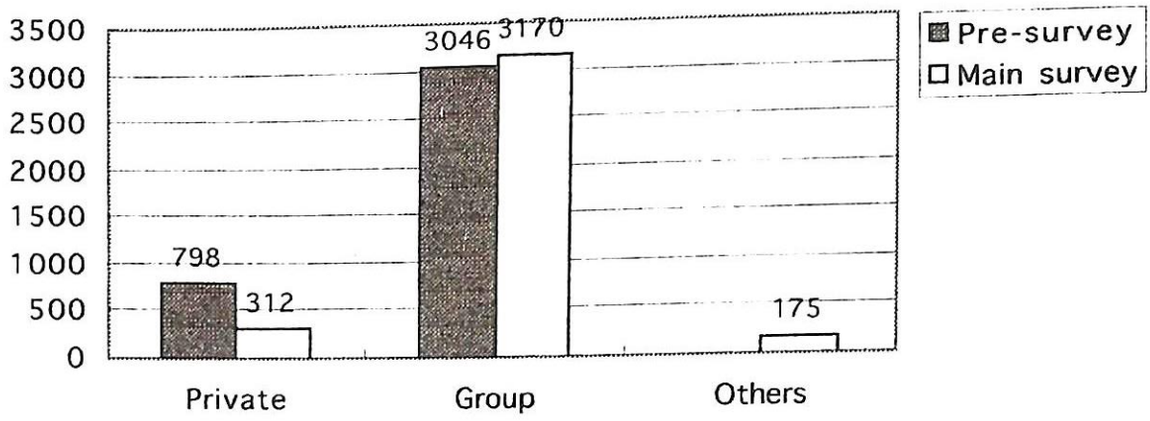


Fig. 1.5.3 Average number of seedlings produced in one nursery

1.6. New techniques

All farmers interviewed used the new techniques acquired at the Kitui Centre in their tree planting activities. Among the new techniques tried by farmers in their day-to-day farming activities were nursery techniques (57%), soil water conservation (54%), planting and tending (50%), organic farming (43%)(Figure 1.6). Other techniques included seed collection and grafting and budding. The figure directly reflects the training effects and also shows a very positive attitude and willingness of the farmers in adopting new techniques.

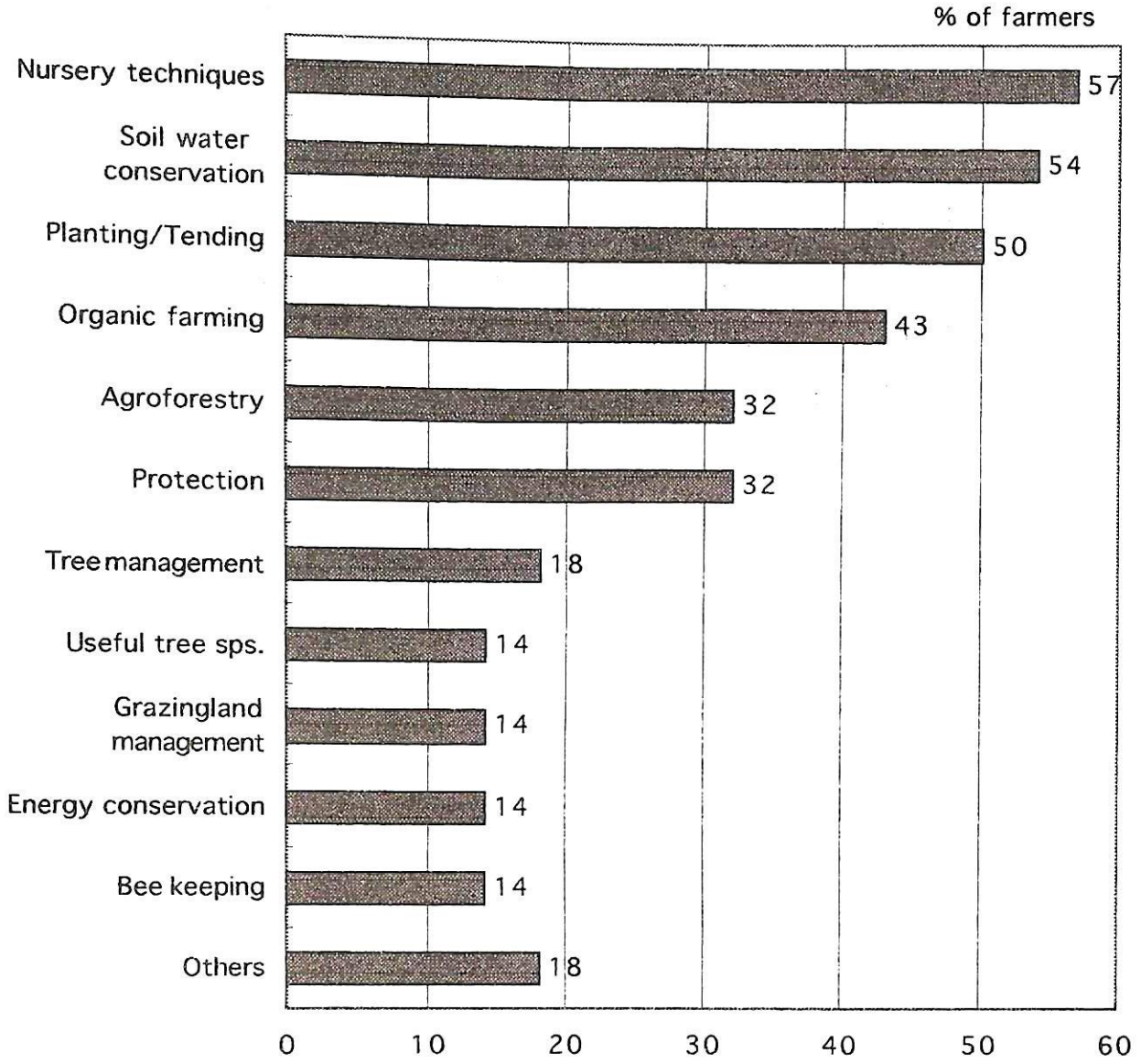


Fig. 1.6.1 New techniques carried out

1.7. Dissemination of techniques

All farmers said they had shared the newly acquired techniques with other farmers in their area. Figure 1.7.1 portrays to whom the farmers communicated the social forestry techniques. These are really prosperous and encouraging figures for the course organizers, because the effect of training for 30 farmers are spreading to hundred of farmers under their own initiatives.

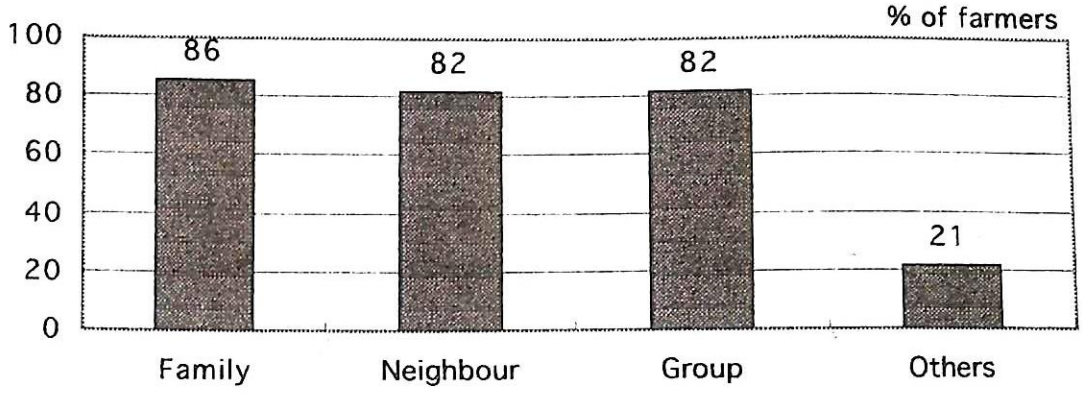


Fig. 1.7.1 Transmission of techniques

2. Field technical assistant staff (FTA's)

Field technical assistants (FTA's) are grass-root technical staff at the lowest level of administrative organization and are in constant contact with individual farmers, groups, etc. They are major organizers of planting activities and often act as consultant / instructors on technical matters related to tree planting in rural areas. In order to effectively address issues hindering tree planting, they ought to be conversant and being given a condition to address such problem. They also required to execute well-planned systematic extension activities in order to enhance tree planting in their areas of operation.

2.1. Selection of samples

The number of sampled FTA's for the main survey was 15 out of total of 43 (excluding 7 out of objects) participants in 2 courses. The samples used in the survey were randomly selected from the 6 districts. Their response to the main items of the survey questionnaire and subsequent analysis of the sampling distribution is the contents of the following part of this report. The geographical distribution of the surveyed FTA's is shown in Figure 2.1.1.

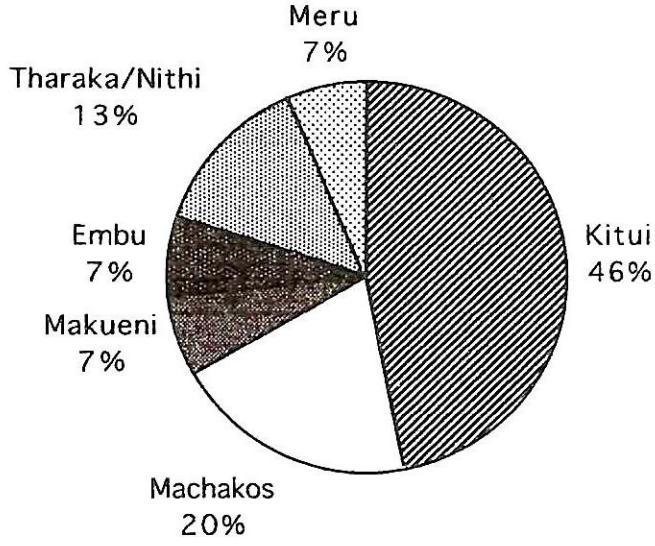


Fig. 2.1.1 Distribution of sampling

2.2. Level of formal education

According to Figure 2.2.1, 93% (20%+53%+13%+7%) of respodents had enrolled in secondary schools, and 53% of FTA's advanced to Form 3 or 4, and 20% of them reached Form 5, 6 or college, however only 7% of FTA's were out from the primary school.

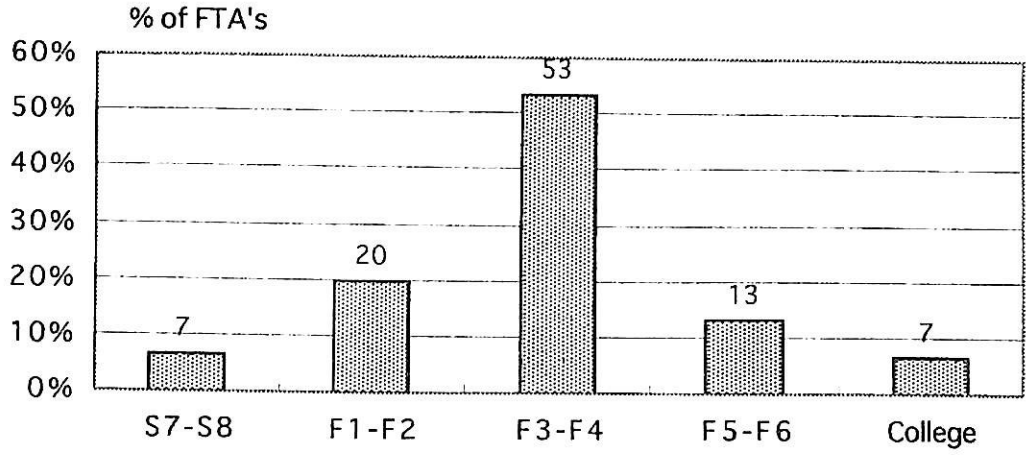


Fig. 2.2.1 Level of formal education of FTA's

2.3. Knowledge of FTA's in planting activities in their areas

According to "Evaluation method guidance" made by Dr. S. Iida, attempts are hereby made to analyze FTA's knowledge or their ability to grasp major tree planting activities in their respective areas. The evaluation is made from the view-point whether they know or can estimate numercial index on tree planting activities such as average number of seedlings planted by one farmer and number of nurseries. Points are given according to each category and with the total score of 6 points FTA's are grouped into three categories; Excellent (5 - 6 points), Good (3 - 4), and Poor (0 - 2). Figure 2.3.1 shows the evaluation results.
The results show that excellent category increased from 27% to 47% and none was in the Poor category, while Good category decreased from 66% to 53%. This indicates some positive effects of the training through raising their awareness on the present status of farmers' tree planting activities, which is very basic data to excute their extension activities.

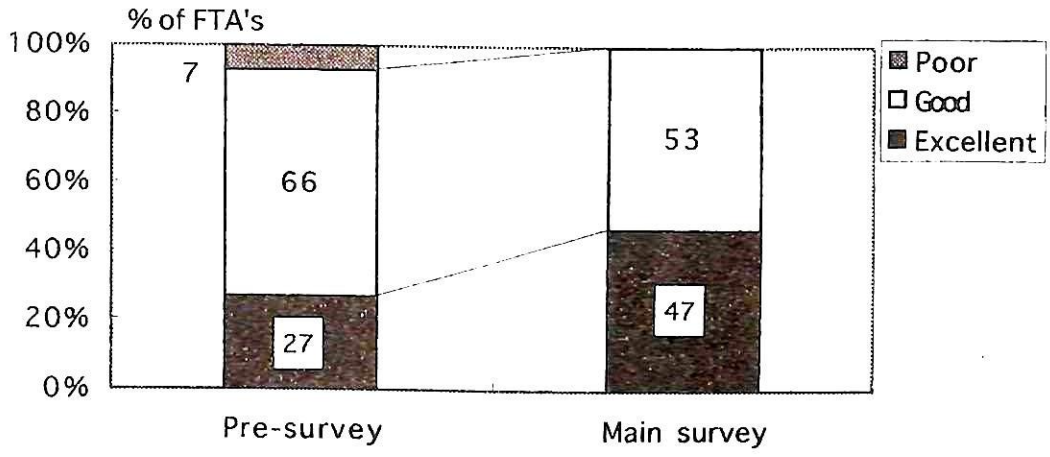


Fig. 2.3.1 Evaluation of abilities to grasp forestry activities

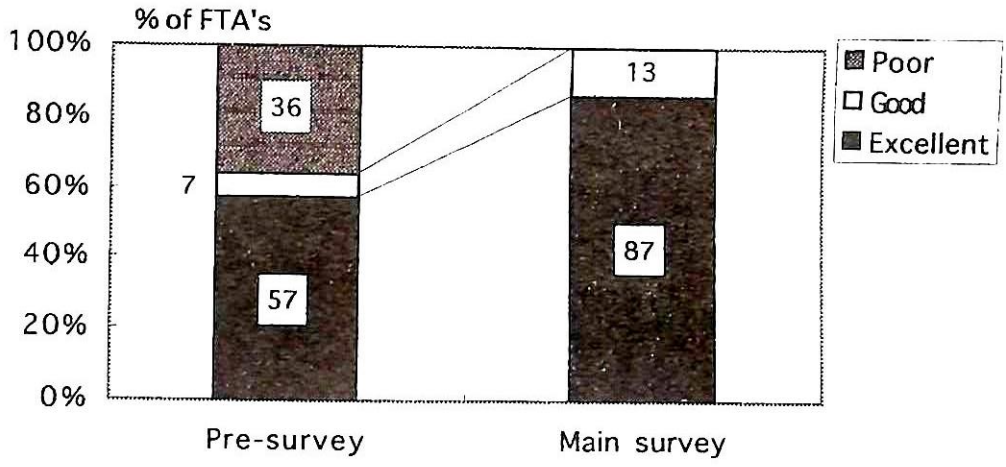


Fig. 2.5.1 Evaluation on extension activities

2.6. Extension methods

The FTA's in regard to the question in this section were expected to mark 1, 2, 3, 4, 5 according to importance of the extension methods they have used. The number indicated above are the average of the score mark; the smaller the number is the more important the extension techniques are. The methods evaluated were individual, group, mass media, farmer to farmer. Figure 2.6.1. shows that Mass media (seminar and Baraza) was the most popular, followed by Group method and Individual. It is observed that different tendency with previous report on main survey (Woking Paper No.13).

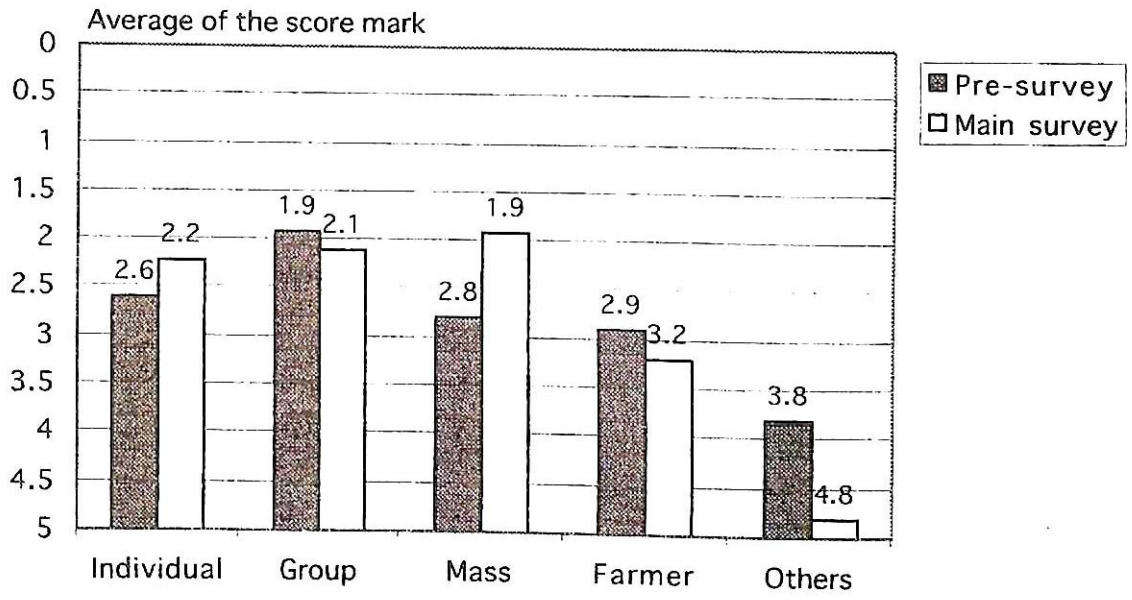


Fig. 2.6.1 Evaluation on extension method

2.7. Target groups of extension activities

This survey covered target farmers or groups by the FTA's i.e. how many types of targets such as farmers, women's groups, schools, etc. and number of these targets directly assisted by the FTA's. According to the evaluation criteria the FTA's who cover many types of groups and assist many individuals or groups can get high score. The Figure 2.7.1 shows the results.
It shows no FTA's in Excellent category and 73% in Poor category in main survey. This may suggest that the grouping criteria i.e. Excellent, Good and Poor used here should be reconsidered. In order to be in Excellent category one FTA needs to get, for example, about 10 farmers and more than 30 groups in variety of types under their direct assistance. A question is whether or not this target is too much demanding for a normal FTA.
The same obsevation was made in Working Paper No.13, however, the survey for this report had been carried out before that report was prepared. The result can only suggest difficulties for FTA's to increase their target farmers/groups probably because of insufficient transport and communicate measures, lack of budget, limited material support, etc.

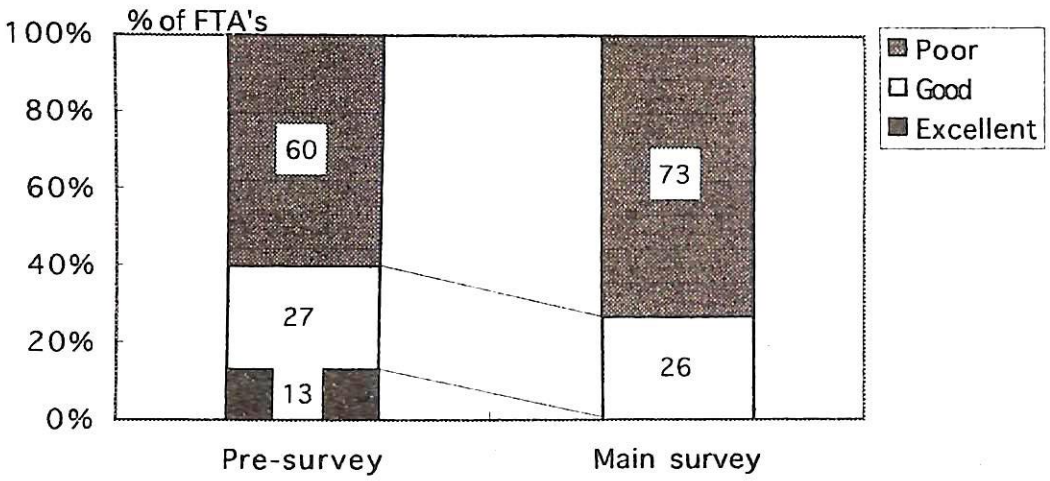


Fig. 2.7.1 Evaluation target groups for extension activities

2.8. Innovativeness and practical application of technology

This survey aimed at evaluating FTA's innovativeness and their ability to apply appropriate techniques which they learnt in the training course. Evaluation is made whether they put into practice variety of techniques against unfavourable circumstances such as water shortage or termites attack. They are grouped, out of total 17 points, into Excellent (12 - 16), Good (11 - 6), and Poor (0 -5). As this survey was not included in pre-survey, Figure 2.8.1 shows the result of main survey only.
The main survey results indicate that the Excellent FTA's were none, since all of FTA's tried only one or two methods against each problem. However, some FTA's mentioned other ways than those shown in Figure 2.8.2 to 2.8.5 as follows; In case of shortage of tubes, banana fibres pot, sugar polythene bags, etc were used. In case of shotage of water, using kitchen waste water, construction of sunken bed, etc. In case of termites attack, using chicken droppings, herbal mixtures,

chacoal pellets, old battery, etc. In case of seedling motality, stone or grass mulching, pruning, fencing, shading, timing planting, etc. Therefore the method of this evaluation needs to be reconsidered or at least choices in the questionnaire should be reviewed to reflect variety of techniques adaptable with locally available materials.

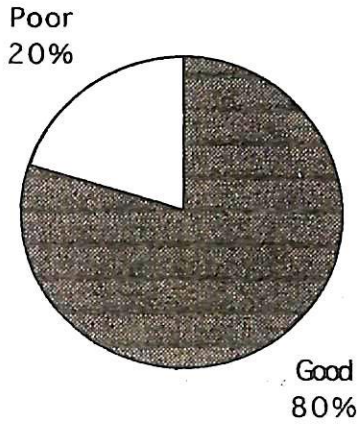


Fig. 2.8.1 Degree of innovation and technology application

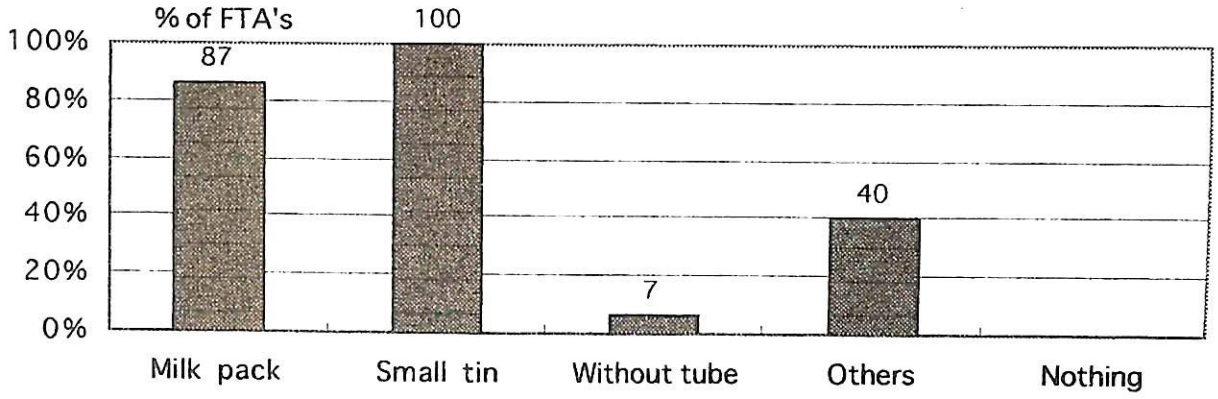


Fig. 2.8.2 Advice to farmers against lack of tubes

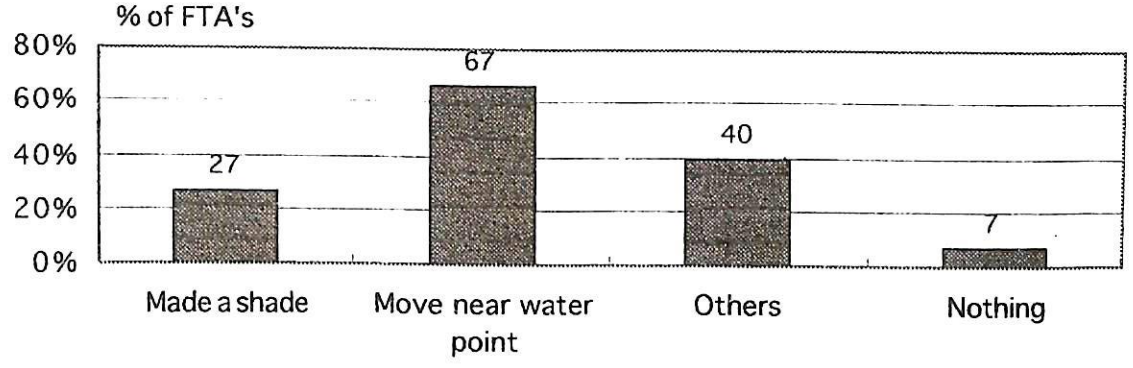


Fig. 2.8.3 Advice to farmers against shortage of water

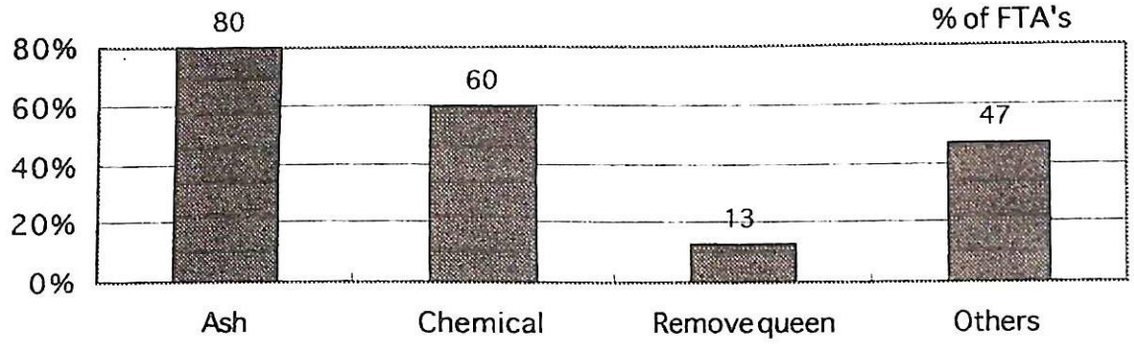


Fig. 2.8.4 Avdice to farmers against termites attack

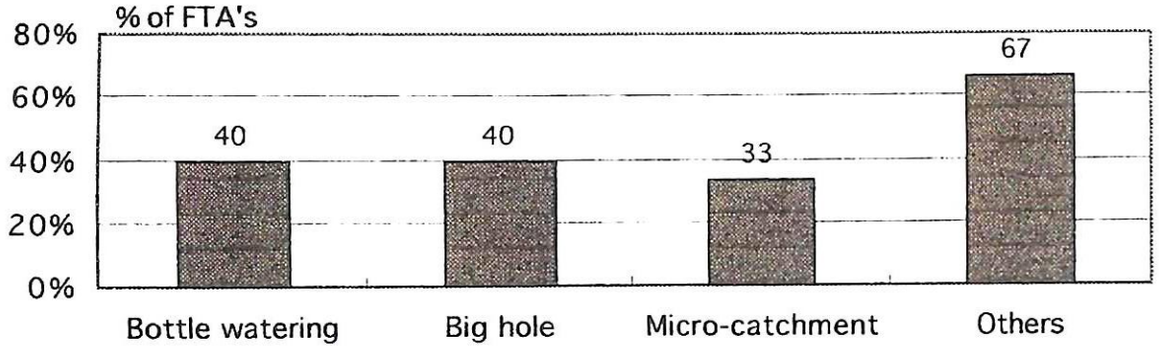


Fig. 2.8.5 Advice to farmers against sedlings mortality

2.9. Transport means for extension activities

This is an additional analisis which was not done in the previous main survey. FTA's assist individual farmers, women's groups, schools, and other communities that are usually scattered in remote areas. 60% of FTA's used their or organization's bicycles. Only 13% of FTA's can use motorcycle, and 27% of FTA's do their work on foot. These limited transport means are one of the major hindrances on effective and efficient extension activities.

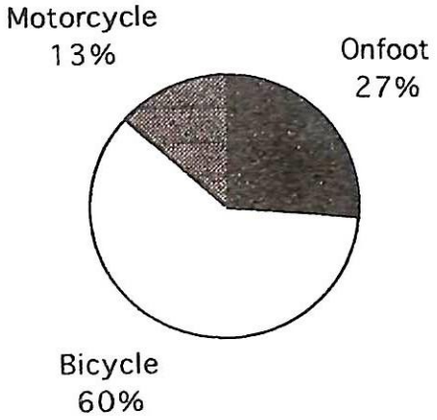


Fig. 2.9.1 Transport means for extension activities

2.10. Forestry activities

2.10.1. Use of new techniques

The FTA's indicated that they were able to transfer new techniques to their contact farmers or groups. 60% of FTA's adviced farmers on planting & tending techniques. However, during the main survey for farmers, most of the farmers did not construct micro-catchment, enough hole size etc. Planting & tending techniques should be emphasized to the farmers such as water catching system, weeding and micro-catchment method. 40% of FTA's adviced on organic farming which is a soil improvement measure using vegetation waste instead of expensive chemical fertilizers. 27% of FTA's adviced on Agroforestry practices, which is the main subject promoted by the project.

2.10.2. Technical problems

On problems which hindered their efforts to promote tree planting activities, 3 FTA's said they did not have technical problems, 12 FTA's had wide range of problems on forestry activities, for example poor germination, pest and disease, seedling mortality, tree management, lack of co-peration between the FTA's and local community leaders, cutting / removal by the peoples,etc. And some FTA's requested to be given an opportunity to attend the training course once more to further improve their extension skills.

2.10.3. Text book and handout

The project offers textbook and handout to trainees during social forestry training courses. 67% of FTA's said those materials were very useful as good reference source, and their contents were appropriate. However, the rest of FTA's said that more information was required on species, particularly more Agroforestry tree species. And an alternative method to stone mulching because of unavailability of stones to use in specific area, some techniques on seed treatment for farmers, and grafting & budding techniques also needed to be included and emphasized. There was similar request on grafting & budding techniques as mentioned in the last main survey reports (Project woking paper no. 13).

3. Teachers

Teachers can play an important role in tree planting extension activities i.e. as some kind of extension staff. Schools can be places of demonstrating tree planting activities and are in a position to teach pupils how to plant trees. Teachers are therefore in a suitable position to excute establishment of tree demonstration and to educate pupils on tree planting and related environmental issues.

3.1. Questionnaire respose

Questionnaire for trained teachers were sent through the District Education Officers (D.E.O) of respective districts. However, only 48% (25/52) of the teachers responded. Figure 3.1.1 shows the responses per district. Responses from Makueni district were the highest with 100% of teachers filling and returning their forms perfectly. Second was Embu district where 83% of the teachers responded. The least was Tharaka/Nithi district from which only 20% of trained teachers responded. The cause of low response is not clear but it is supposed trained teachers had been transferred frequently. To raise the rate of response, return envelopes and stamps were also sent to those teachers.

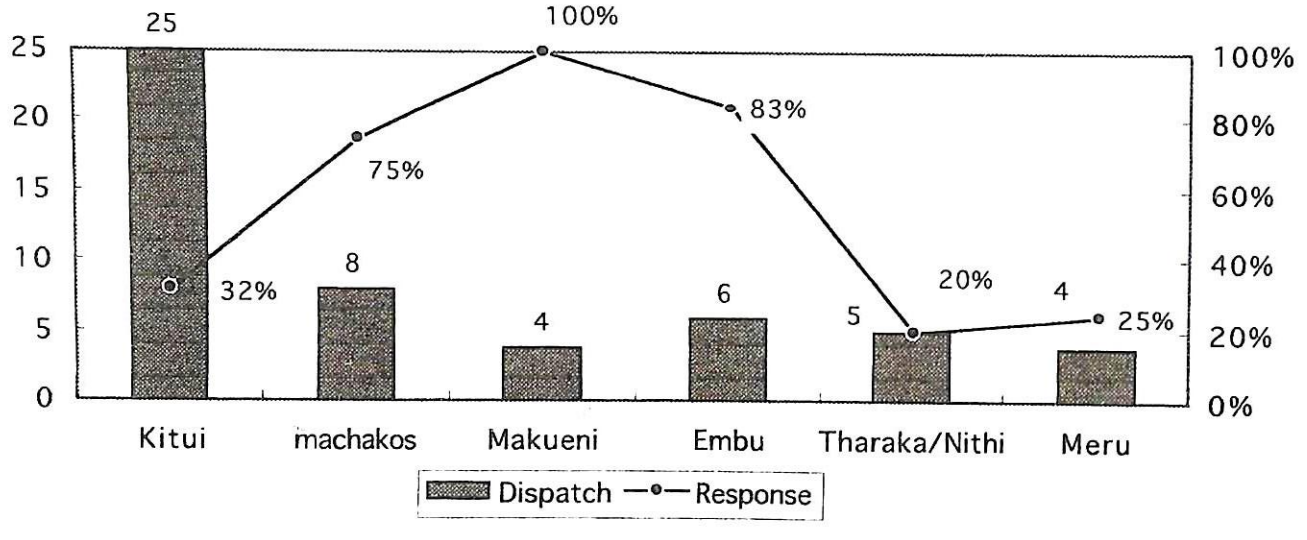


Fig. 3.1.1 The degree of questionnaire's response

3.2. Teaching level

Figure 3.2.1 shows the main teaching levels of surveyed teachers in pre-survey and main survey. The results indicate no major changes between the two surveys. Most of teachers were teaching from Standard 4 to 8.
Figure 3.2.2 shows the main teaching subjects of surveyed teachers. The results indicate no major changes between pre-survey and main survey. Most of surveyed teachers were teaching Agriculture and Science. Those subjects were closely associated with Forestry.

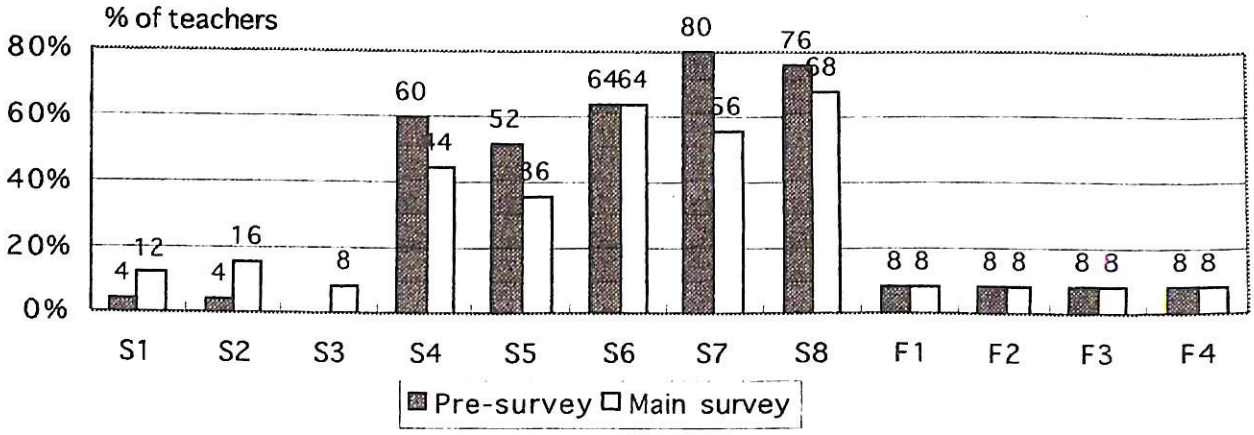


Fig. 3.2.1 Teaching level

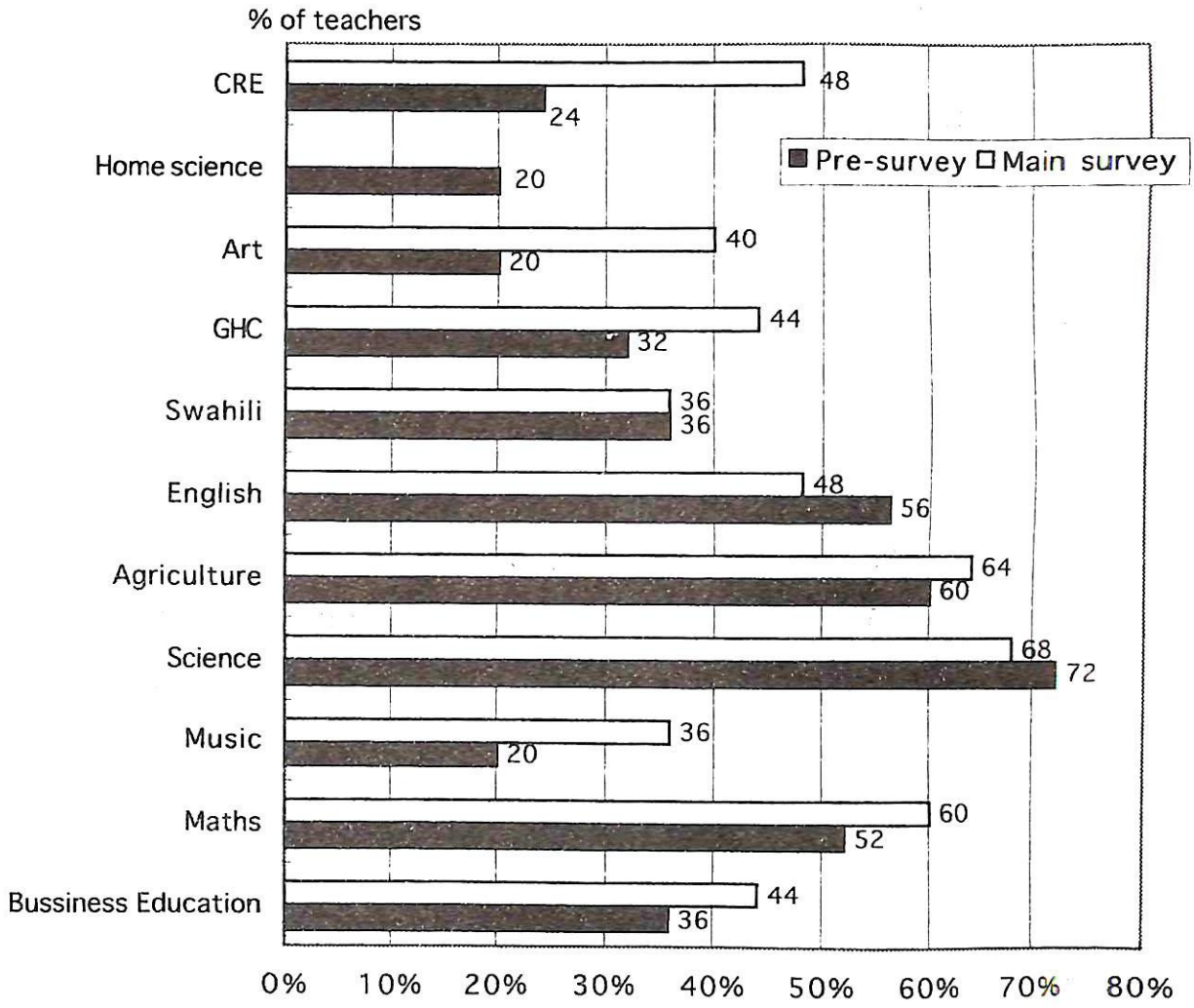


Fig. 3.2.2 Teaching subjects

3.3. Planted trees in schools

On the number of trees planted in schools, Figure 3.3.1 compares the pre-survey and main survey results. For example 76% (8%+16%+52%) of teachers planted more than 100 trees at the pre-survey time. The figure slightly changed to 72% (12%+16%+44%) at the main survey time. No major changes were observed in terms of number of trees planted. They had problem like shortage of water as detailed later.

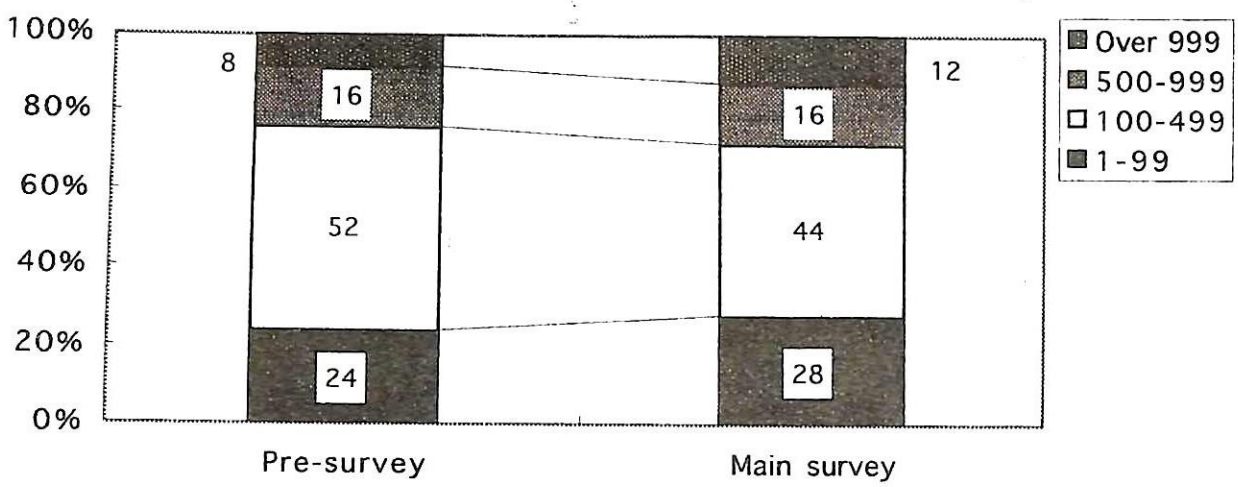


Fig. 3.3.1 Planted trees in schools

3.4. Tree nursery

According to the survey results shown in Figure 3.4.1, 76% of teachers who responded in the main survey had started a school tree nursery as compared to 64% in the pre-survey. All the other teachers (24%) said that they had problems of shortage of water. For example oneof the schools was located in a rocky site where soil was very thin for tree nursery to be established. One teacher was still collecting seeds, and another did not raise seedlings at this main survey time because of drought.

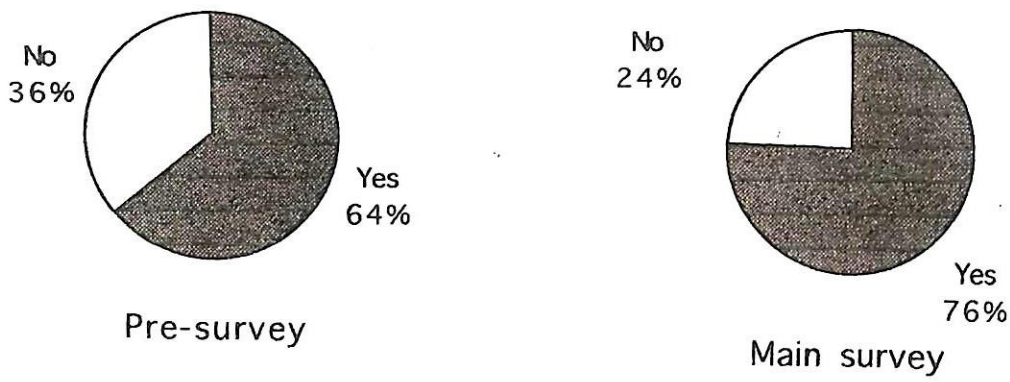


Fig. 3.4.1 Establishment of nurseries

Figure 3.4.2 indicates the number of seedlings raised in school nurseries in one year previous to each survey. Teachers who organized their schools to raise more than 100 seedlings almost remained at the same level. It was observed that they had limited water resources, seeds, and tubes etc. which may have been the limiting factor for expansion of nursery scale.

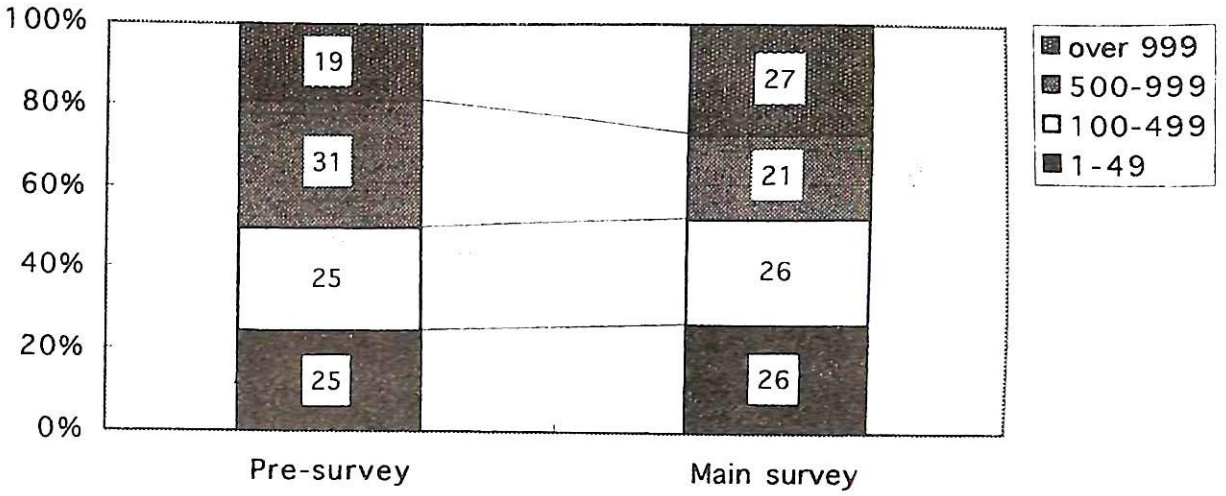


Fig. 3.4.2 Number of seedlings raised for the last one year

3.5. Teaching on tree planting activities

Figure 3.5.1 indicates that the number of schools which taught some aspects on tree planting activities increased from 48% to 88%. Some trained teachers communicated individual farmers and groups on social forestry. Based on the above changes it is assumed that the training had some impacts on tree planting teaching in schools.

Figure 3.5.2 indicates that the classes which taught tree planting activities concentrated in Standard 4 to 8. Those pupils are in better position to retain the technology and attitude if they take the farming occupation after the 8 years schooling.

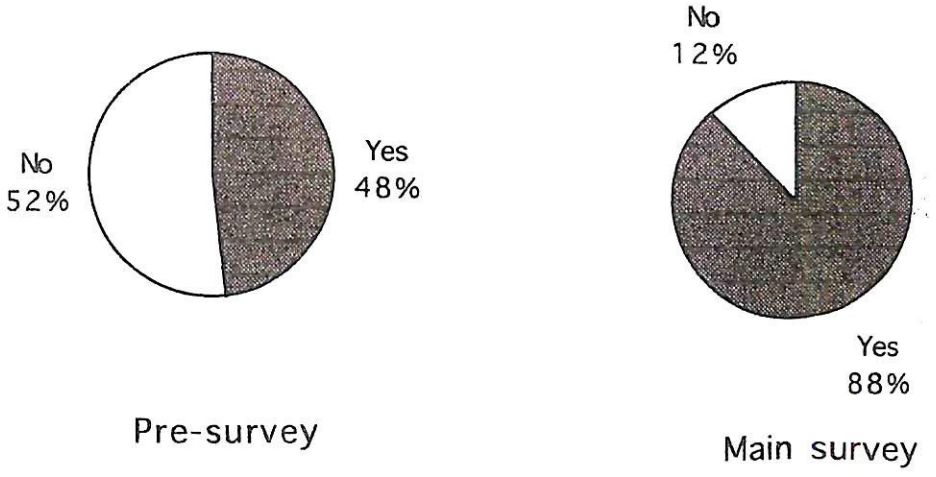


Fig. 3.5.1 Teaching of tree planting activities

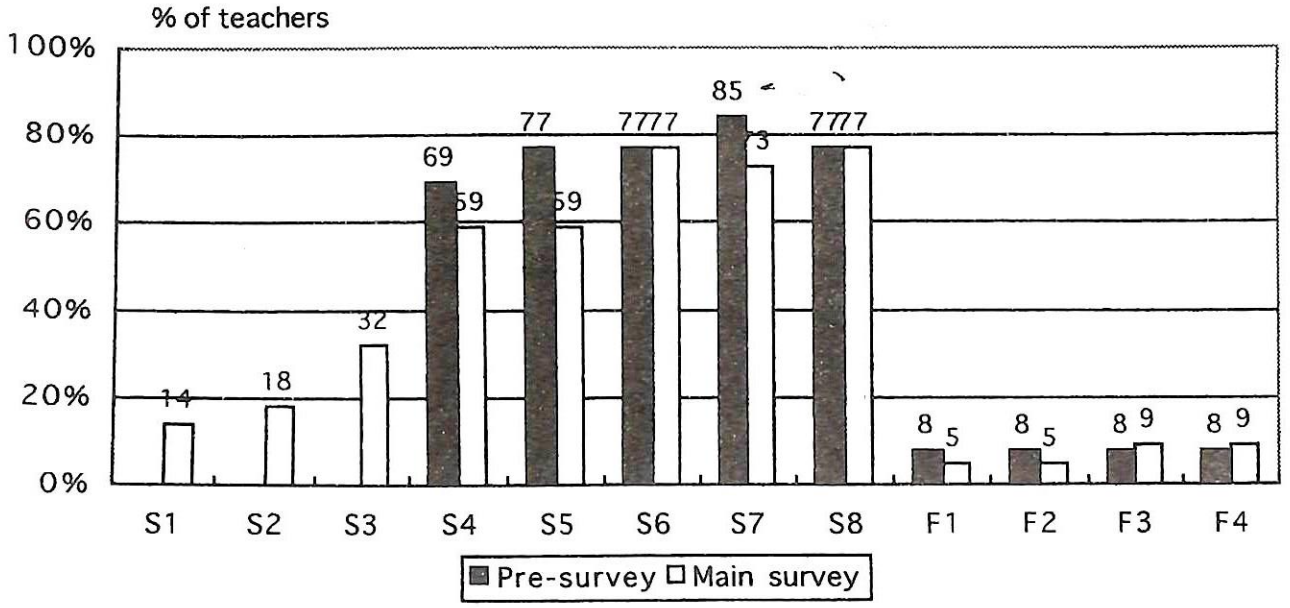


Fig. 3.5.2 Classes teaching tree planting activities

3.6. Club activities on tree planting

Although 52% of the schools had organized clubs which were active in tree planting at the pre-survey, it was increased to 72% in the main survey.(Figure 3.6.1)

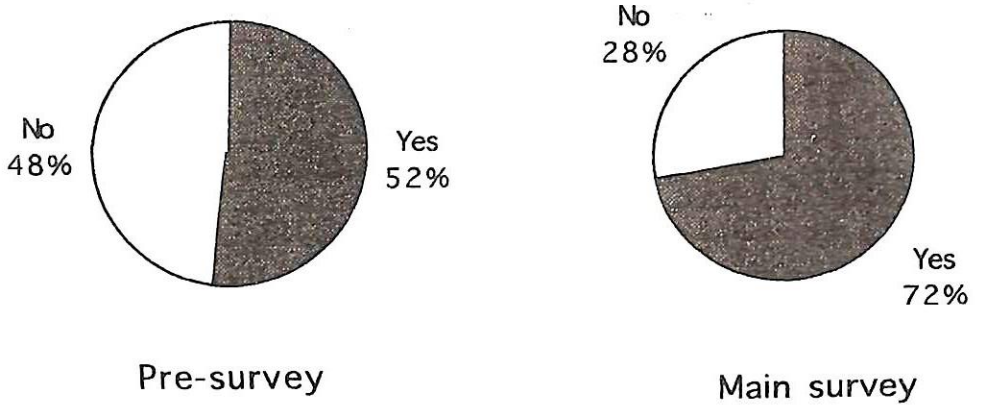


Fig. 3.6.1 Organization of clubs for tree planting

Figure 3.6.2 shows the number of pupils that belong to the clubs. Number of schools which had more than 50 pupils in the club increased from 54% (23%+31%) at the pre-survey to 61% (6%+22%+33%) at the main survey. This implies more pupils were exposed to social forestry ideas.

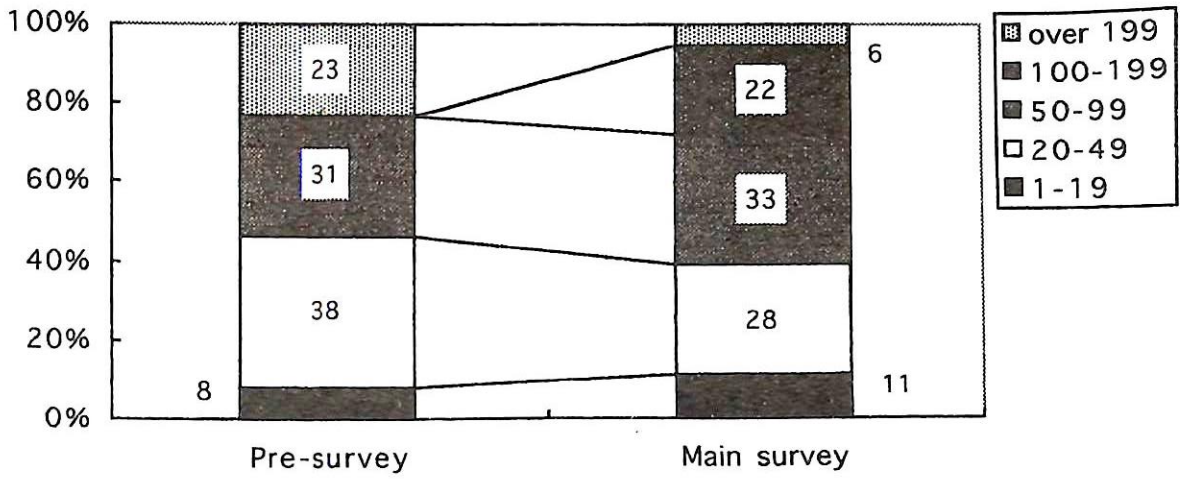


Fig. 3.6.2 Number of pupils that belong to clubs

Clubs which had their meetings twice a week or more increased from 62% (23%+8%+31%) to 67% (17%+22%+28), however, there were no major changes as a whole (Figure 3.6.3).

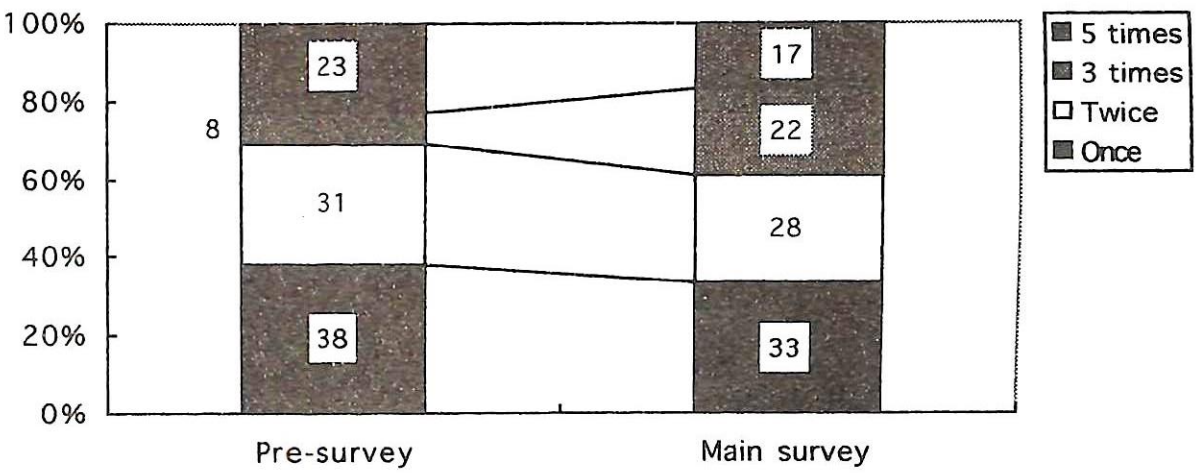


Fig. 3.6.3 The frequency of the clubs meeting a week

Figure 3.6.4 shows social forestry activities carried out in schools. It indicates 80% of teachers carried out tree planting, 60% of them did nursery work, and seed collection by 60% of them. Distribution of seedlings is important for extension of forestry activities to the villagers and was carried out by 52% of the teachers. Other development activities in their school (44%) included establishment of vegetable garden, construction of bore hole and water tank,etc.

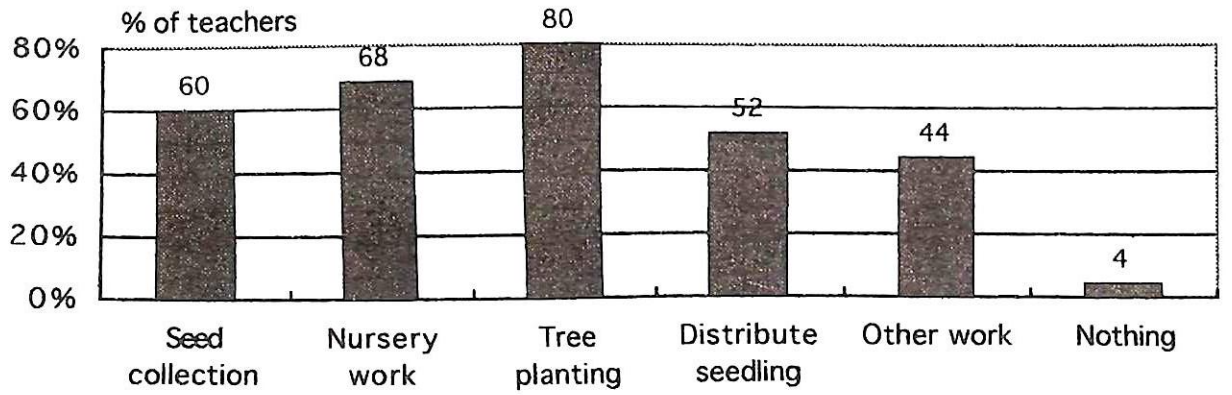


Fig. 3.6.4 Social forestry activities

3.7. Teaching materials

Figure 3.7.1 shows the type of teaching materials used in the schools for tree planting either supplied by the project or made by the teachers. The most broadly used is the text book "Social Forestry Techniques - Part one", and the second is handouts that the project provided. The materials by the project were very useful for most of the teachers, however, some requested more information on grafting & budding and pest control.

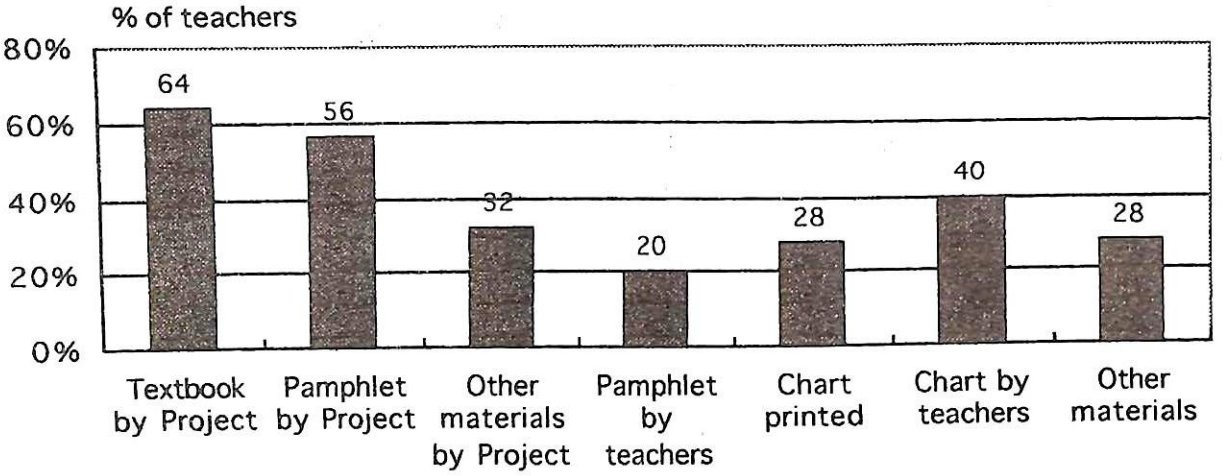


Fig. 3.7.1 Teaching materials

3.8. Technical problems

Because the answer in this section was descriptive, the comparison was difficult between pre-survey and main survey. However, 80% of teachers had problems in shortage of water, 40% in seed collection, 28% in animals damage, 20% lack of tubes or termites attack, and 16% had theft problem in the main survey time.

4. Analysis classified by sex

Women play important roles in promoting social forestry and they usually participate in tree planting and other related activities more activitely than men do. In June/July 1995, a short-term expert on gender issues, Ms. K. Nishino, visited the project in Kitui and provided guidance on gender issues and analysis. One of her suggestions was to carry out gender analysis on forestry activities if women occupy substantial propotion of the participants. As the ratio of women was quite high in this survey, 61% being female among the farmers surveyed, the data were analyzed again from the view-point of gender difference.

4.1. Distribution of sampling

Number of the surveyed farmers were 28, consisting of 17 females anf 11 males. The samplings were distributed to each district by sex in Figure 4.1.1. It indicated that 46% of female were from Kitui district in spite that only 18% of males came from same district. On the contrary 18% of females were from Machakos district with 37% of males from same district.

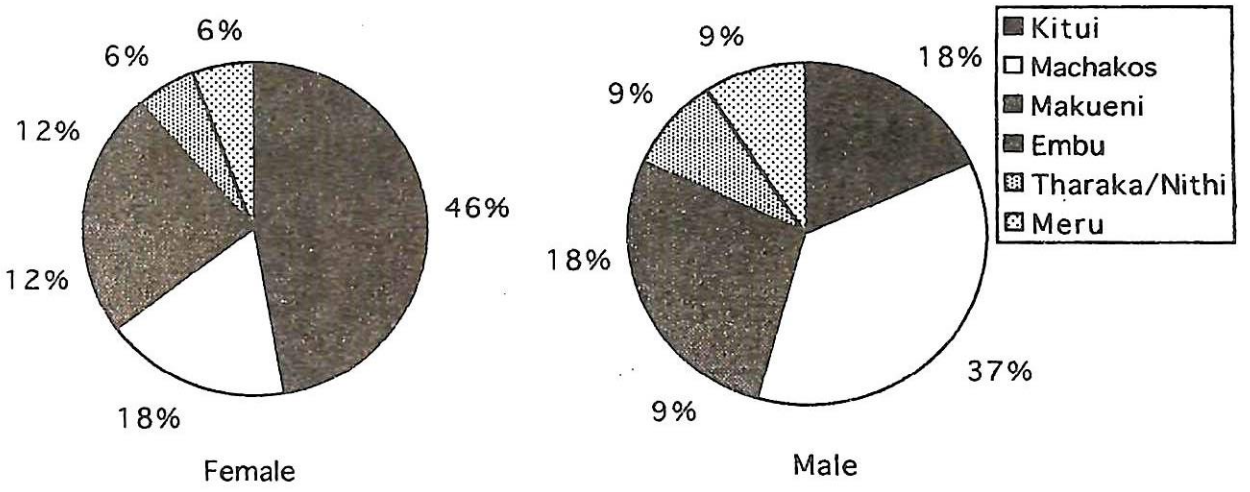


Fig. 4.1.1 Distribution of sampling

4.2. Number of trees planted to date

The main survey shows that 76% of females interviewed (18%+46%+12%) planted so far more than 50 trees as compared to 36% (18%+18%) reported in pre-survey. In the case of male farmers, 90% (20%+40%+30%) of them fell into the same category in pre-survey which was slightly reduced to 82% (37%+36%+9%) in main survey. Although male shows an increase in the category of 500 seedlings or more (20% to 37%), there seems a general tendency that females showed more improvement after the course in terms of number of planted seedlings than males did.

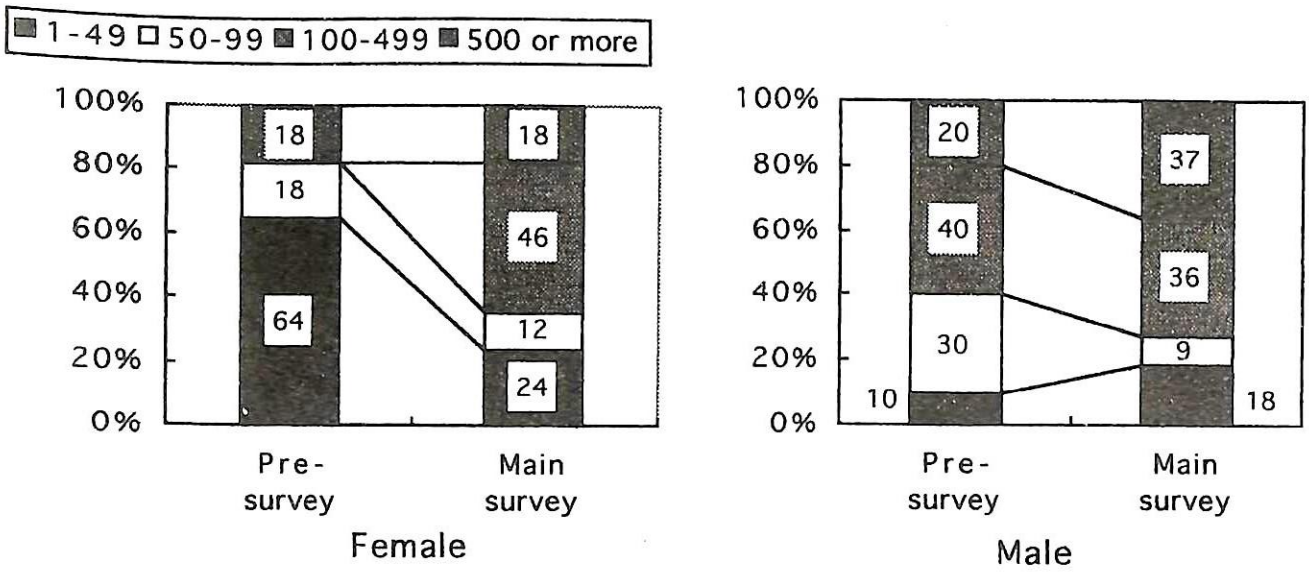


Fig. 4.2.1 Number of trees planted to date

4.3. Number of seedlings planted within last one year

Figure 4.3.1 shows the number of seedlings that the female / male farmers planted within one year before the each survey. Comparing between pre-survey and main survey by sex, it shows a different tendency, that female farmers who planted 50 or more seedlings increased from 30% (18%+12%) to 58% (12%+46%), however male farmers in the same category decreased from 90% (30%+20%+40%) to 54% (9%+36%+9%). And 24% of females and 9% of males did not plant at main survey time. It was observed that their planting activities were not carried out continuously.

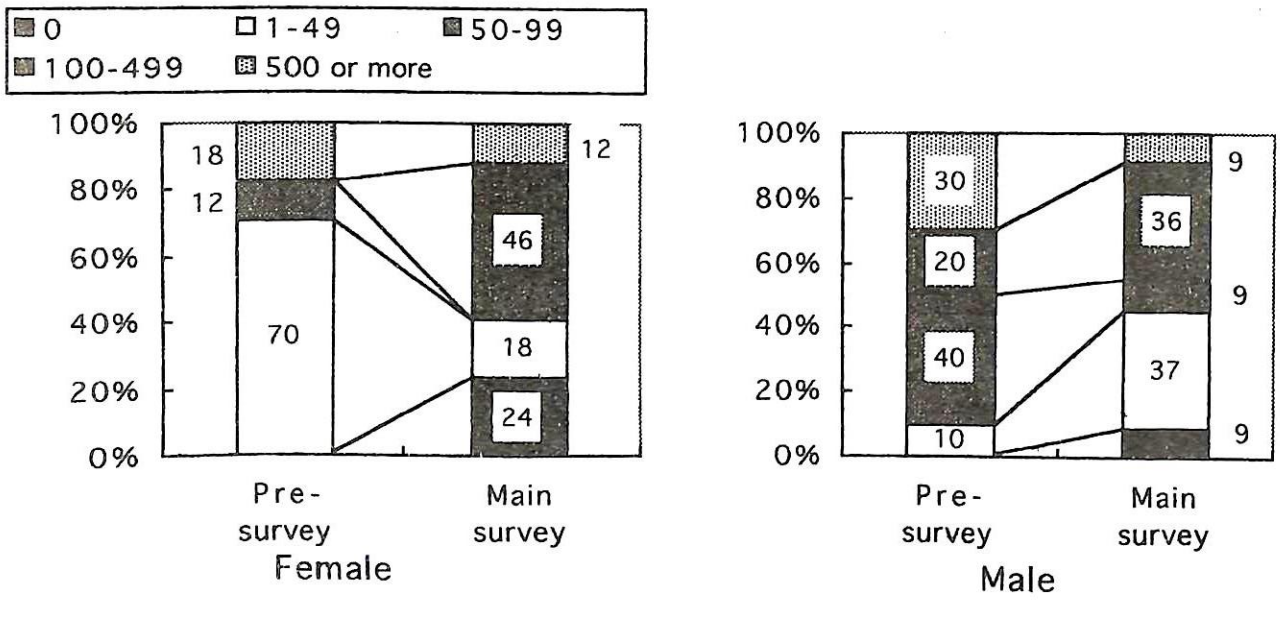


Fig. 4.3.1 Number of seedlings planted within last one year

4.4. Number of seedlings surviving

Figure 3.4.1 compares number of seedlings surviving during the pre-survey and main survey respectively. Females who had more than 50 surviving seedlings, increased from 24% (6%+12%+6%) to 53% (12%+29%+12%), and males also increased from 40% (20%+20%) to 54% (27%+18%+9%). However the rate of the above increase is much bigger in females (more than doubled) and also those female farmers who had no surviving seedlings decreased from 18% at pre-survey to 0% at main survey.

This quite rapid improvement of female's planting activities comparing the one of male could have reflected the influence of women's course of the project although other factors like extension works and other projects may not be disregarded. From the figures in Para.4.2 it seems that a more bottom-up effect can be observed in case of female farmers rather than male one.

This might be because females had less chances in the past to participate in such training courses than males did and, therefore, they might have had more room and willingness to absorb knowledge and techniques leading to rapid improvement. Another possible reason would be that the results from tree planting e.g. fuelwood, fodder, shade, etc. are more directly connected with female's daily life than the male's.

Comparing to this trend of females, males seem to be showing a tendency of deviding into two categories, i.e. very active and not active. The former, like the category of 500 seedlings or more, might have been motivated by successful sales of their tree products. This is just a preliminary observation and, of course, can not be concluded from the limited data.

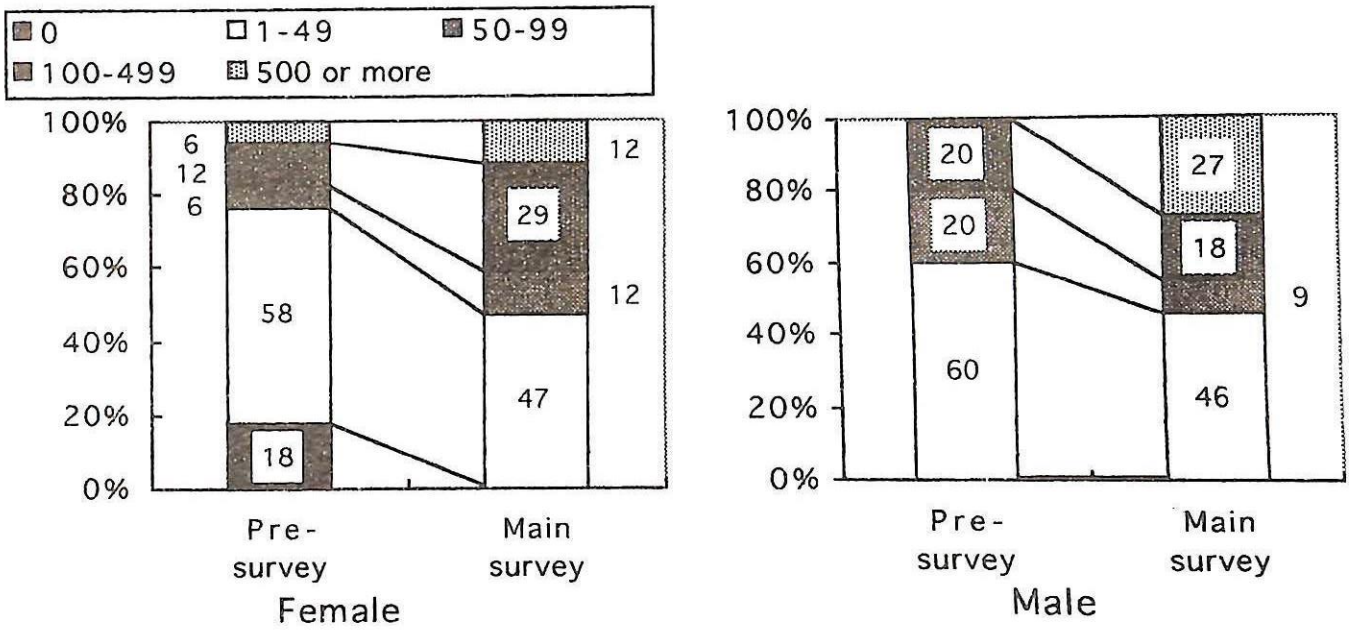


Fig. 4.4.1 Number of seedlings surviving

4.5. Level of technical skills

Figure 4.5.1 indicates that female farmers in High and Medium categories increased from 82% (18%+64%) to 100% (35%+65%), while male decreased from 100% (20%+80%) to 91% (55%+36%). In particular female farmers in Low level

decreased from 18% to 0%, however male farmers increased to 9%. This also shows a general tendency of females in rapid bottom-up type improvement while males show a division in active and inactive groups.

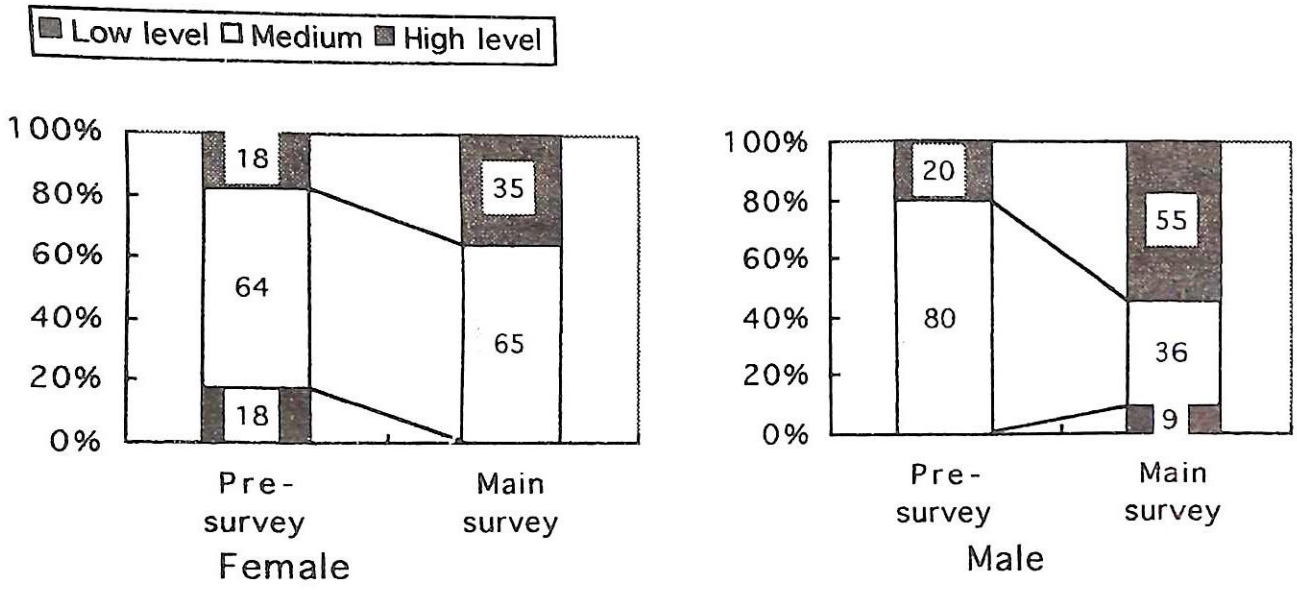


Fig. 4.5.1 Level of technical skills

4.6. Area description

Figure 4.6.1 shows the type of planting area evaluated by interviewees. The condition for tree planting was similar, such as only 12% of female's lands and 18% of male's lands were difficult area to plant seedlings. There was no significant difference between females and males in evaluation of their area for planting trees.

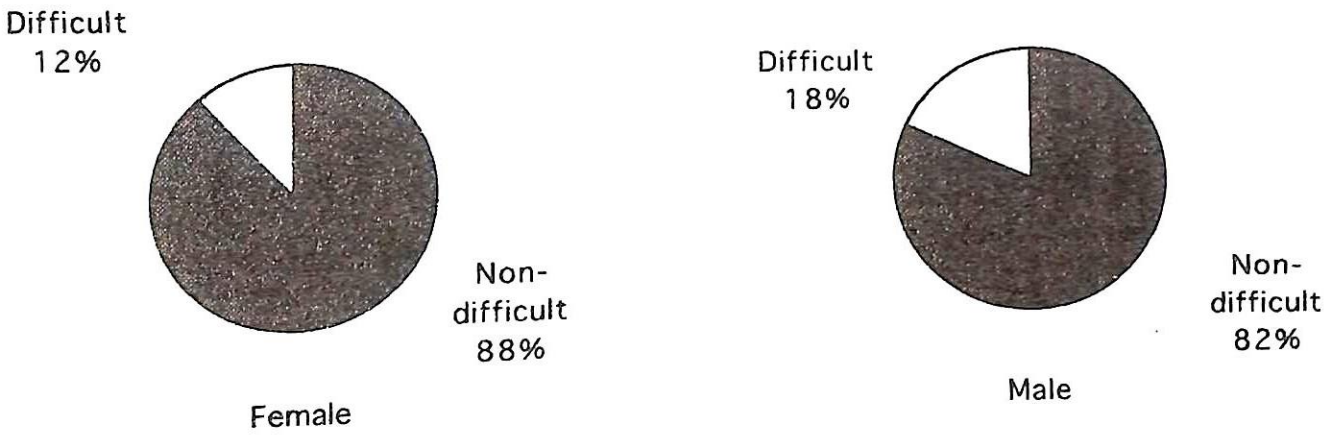


Fig. 4.6.1 Evaluation of area

decreased from 18% to 0%, however male farmers increased to 9%. This also shows a general tendency of females in rapid bottom-up type improvement while males show a division in active and inactive groups.

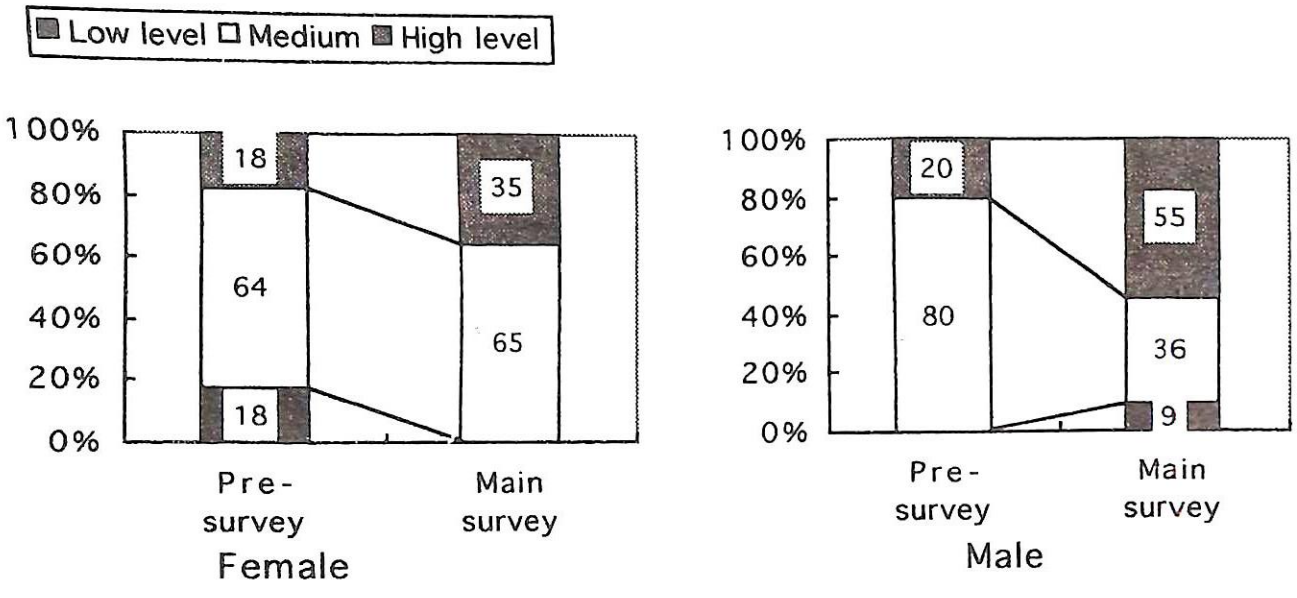


Fig. 4.5.1 Level of technical skills

4.6. Area description

Figure 4.6.1 shows the type of planting area evaluated by interviewees. The condition for tree planting was similar, such as only 12% of female's lands and 18% of male's lands were difficult area to plant seedlings. There was no significant difference between females and males in evaluation of their area for planting trees.

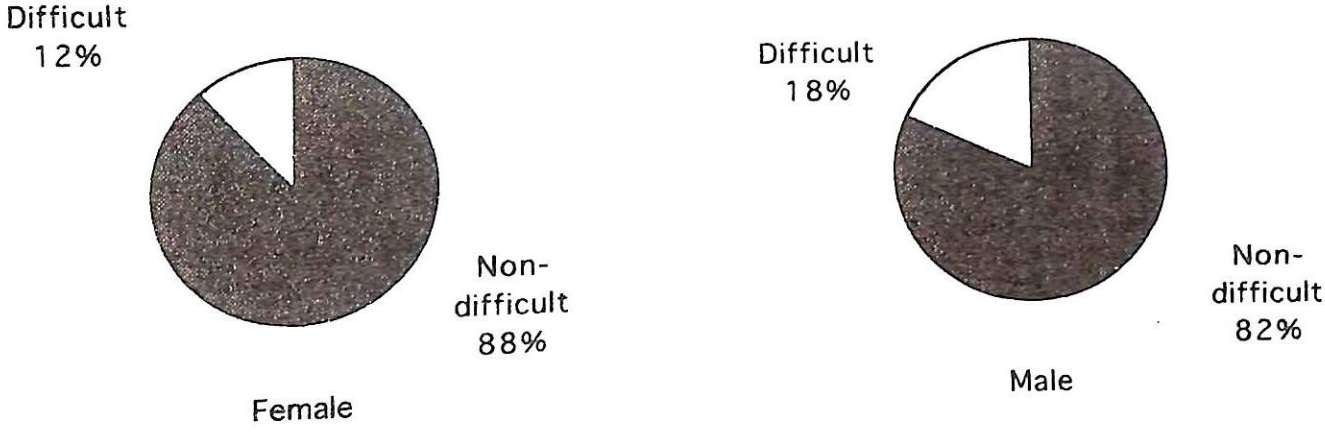


Fig. 4.6.1 Evaluation of area

4.7. Nursery establishment

The performance of female / male farmers in nursery establishment are shown in Figure 4.7.1. Female farmers who established nurseries increased from 65% to 82%, while the males decreased from 80% to 73%. This clearly shows a difference between men and women in their improvement or willingness in tree planting after the training courses.

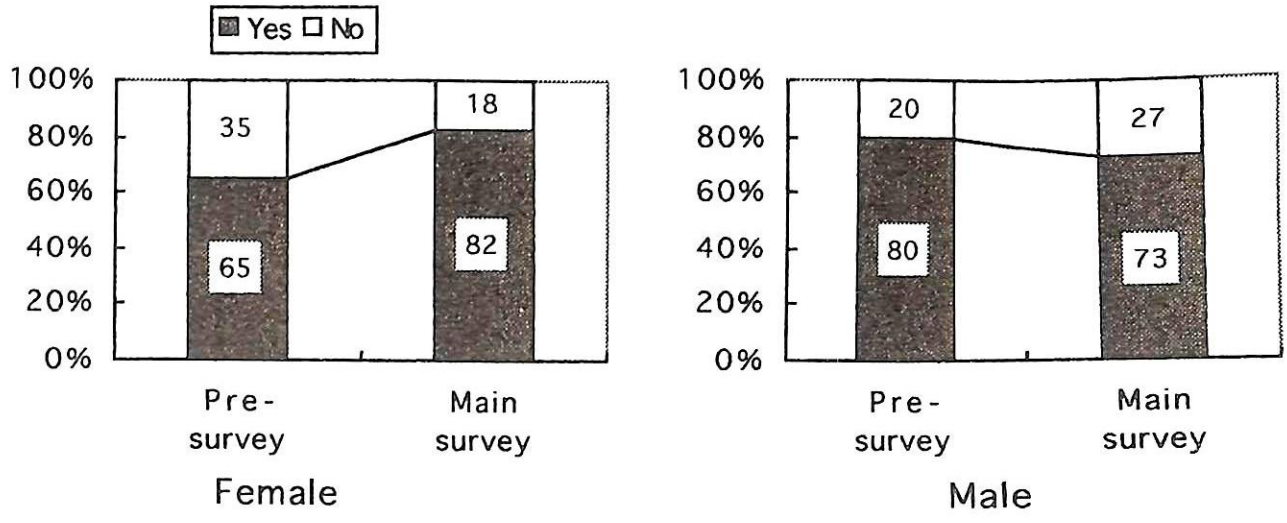


Fig. 4.7.1 Nursery establishment

4.8. Form of nurseries and number of seedlings

Figure 4.8.1 shows both females and males indicate decrease of private nurseries and increase of group nurseries. It would indicate a general tendency in preference of group nurseries to the private ones probably due to some advantages of the former e.g. availablity of water or work force.
Figure 4.8.2 shows no major changes in the number of seedlings raised in pre-survey and main survey by sex. Compared number of seedlings raised by males and females, male's nurseries produced much more than female's one.
It suggests a difference in the scale of male's and female's nurseries and, considering that there was no significant difference in the number of seedlings planted in the last one year between males and females according to Figure 4.3.1, it would indicate that the seedling production was more sales-oriented in case of men, and more for self or group consumption in case of women.

4.7. Nursery establishment

The performance of female / male farmers in nursery establishment are shown in Figure 4.7.1. Female farmers who established nurseries increased from 65% to 82%, while the males decreased from 80% to 73%. This clearly shows a difference between men and women in their improvement or willingness in tree planting after the training courses.

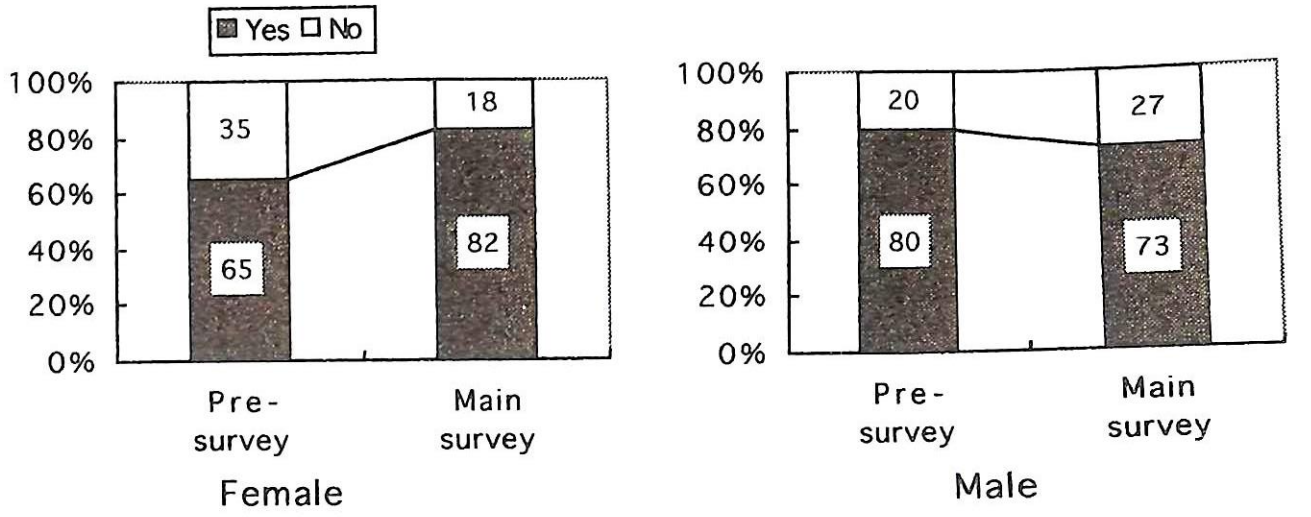


Fig. 4.7.1 Nursery establishment

4.8. Form of nurseries and number of seedlings

Figure 4.8.1 shows both females and males indicate decrease of private nurseries and increase of group nurseries. It would indicate a general tendency in preference of group nurseries to the private ones probably due to some advantages of the former e.g. availablity of water or work force.

Figure 4.8.2 shows no major changes in the number of seedlings raised in pre-survey and main survey by sex. Compared number of seedlings raised by males and females, male's nurseries produced much more than female's one.

It suggests a difference in the scale of male's and female's nurseries and, considering that there was no significant difference in the number of seedlings planted in the last one year between males and females according to Figure 4.3.1, it would indicate that the seedling production was more sales-oriented in case of men, and more for self or group consumption in case of women.

4.7. Nursery establishment

The performance of female / male farmers in nursery establishment are shown in Figure 4.7.1. Female farmers who established nurseries increased from 65% to 82%, while the males decreased from 80% to 73%. This clearly shows a difference between men and women in their improvement or willingness in tree planting after the training courses.

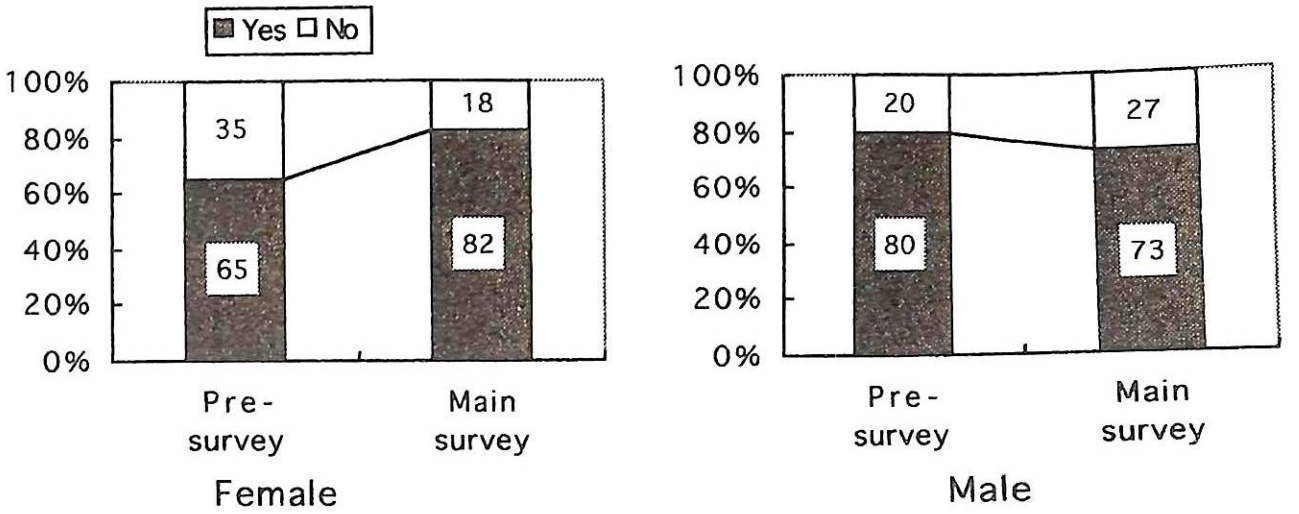


Fig. 4.7.1 Nursery establishment

4.8. Form of nurseries and number of seedlings

Figure 4.8.1 shows both females and males indicate decrease of private nurseries and increase of group nurseries. It would indicate a general tendency in preference of group nurseries to the private ones probably due to some advantages of the former e.g. availablity of water or work force.

Figure 4.8.2 shows no major changes in the number of seedlings raised in pre-survey and main survey by sex. Compared number of seedlings raised by males and females, male's nurseries produced much more than female's one.

It suggests a difference in the scale of male's and female's nurseries and, considering that there was no significant difference in the number of seedlings planted in the last one year between males and females according to Figure 4.3.1, it would indicate that the seedling production was more sales-oriented in case of men, and more for self or group consumption in case of women.

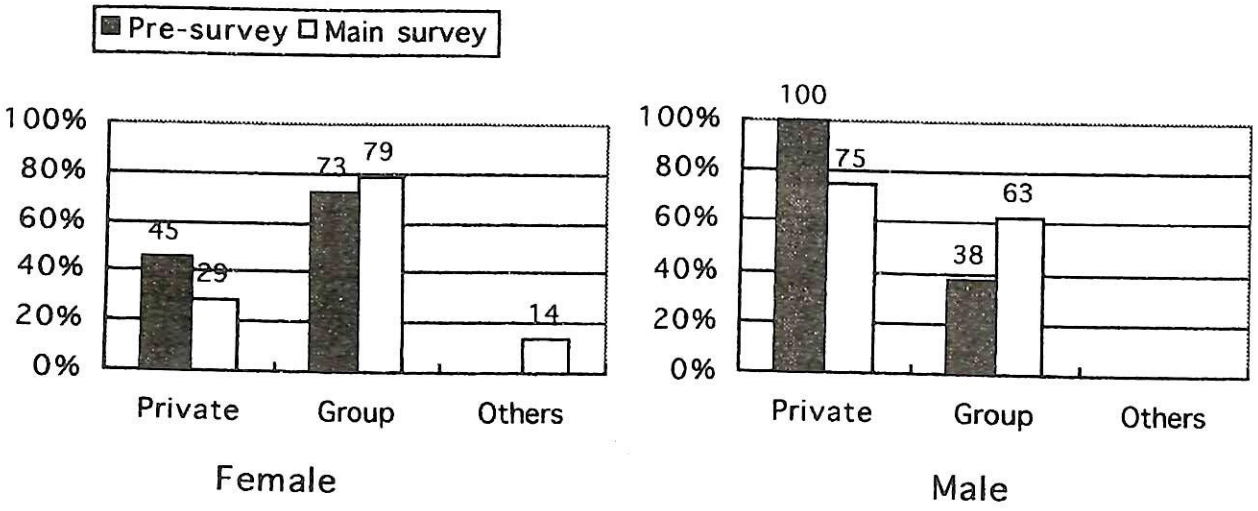


Fig. 4.8.1 Form of nursery

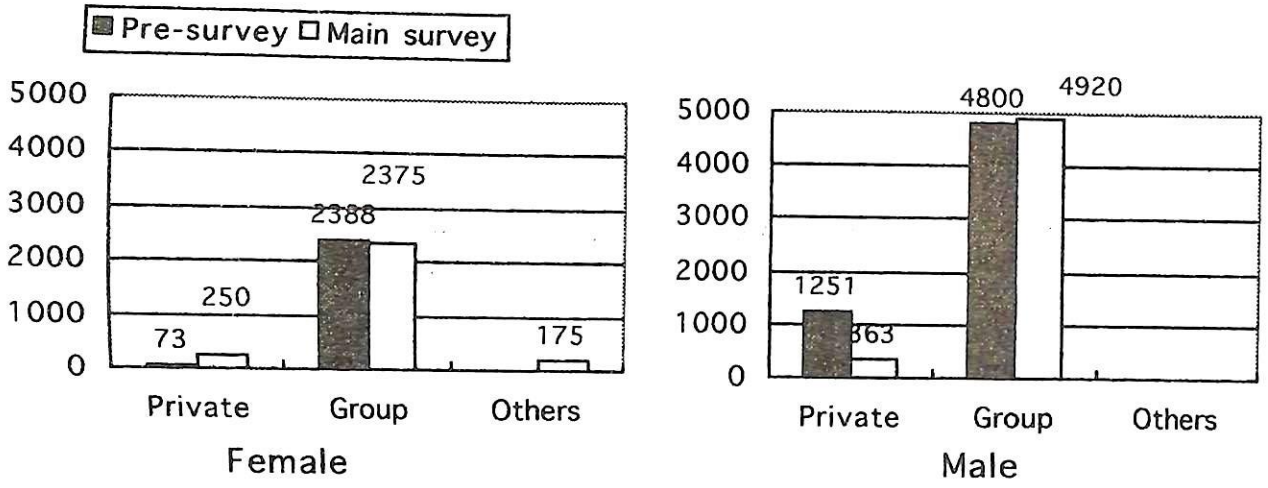


Fig. 4.8.2 Average number of seedlings produced in one nursery

4.9. New techniques

Figure 4.9.1 shows new techniques put into practice by both female and male farmers. One noteworthy item is techniques on energy conservation that was used only by women. This should be deeply concerned with the fact that women are responsible for cooking and fuelwood collection. On the contrary techniques on bee keeping and grazing land were much more tried by men as traditionally they have the control on these resourses.

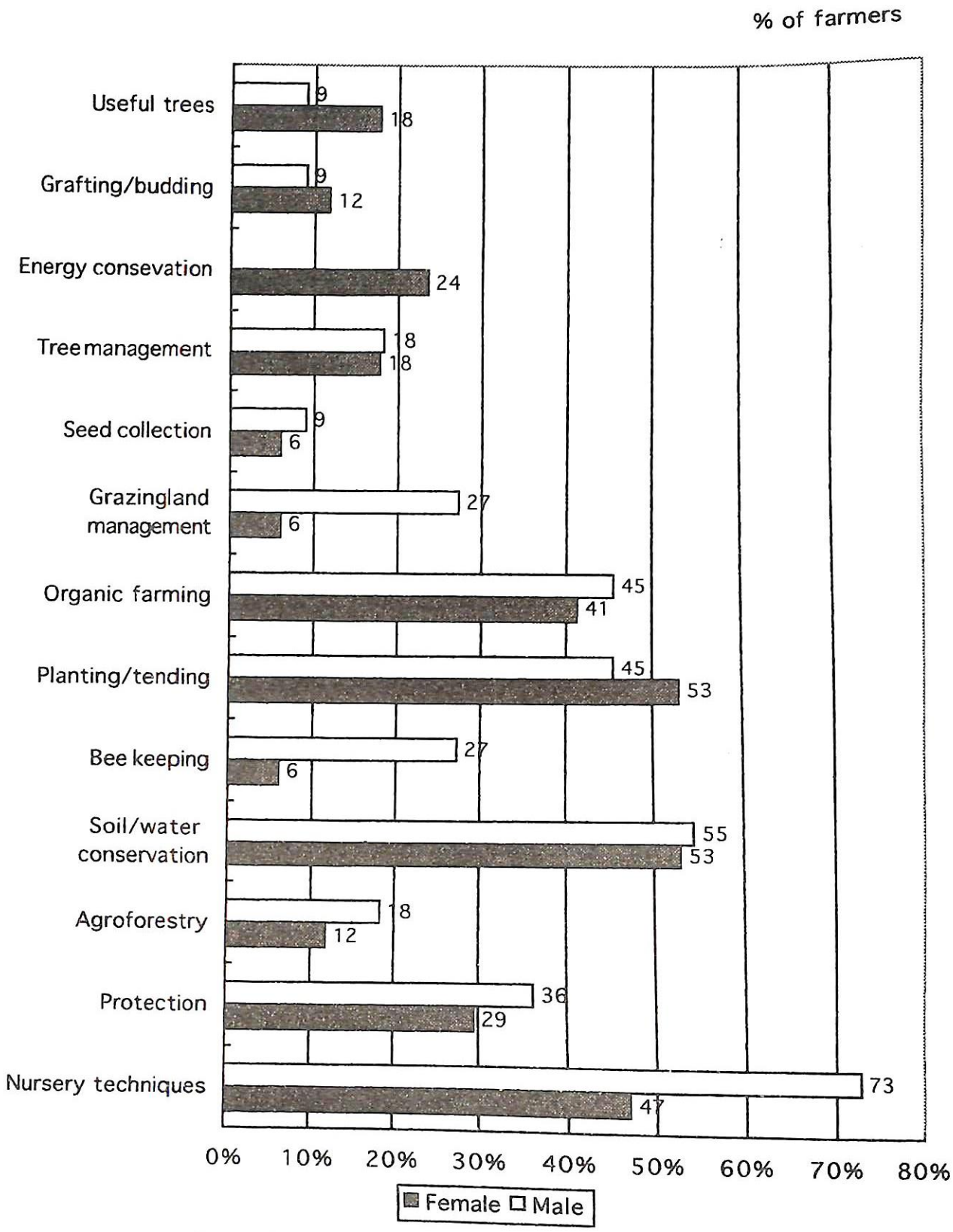


Fig. 4.9.1 New techniques carried out

4.10. Dissemination of techniques

Figure 4.10.1 portrays how male and female farmers disseminated the newly acquired knowledge on social forestry activities. Male farmers communicated their ideas to family member and neighbours whereas female farmers apart from the two above transmitted to their group members.

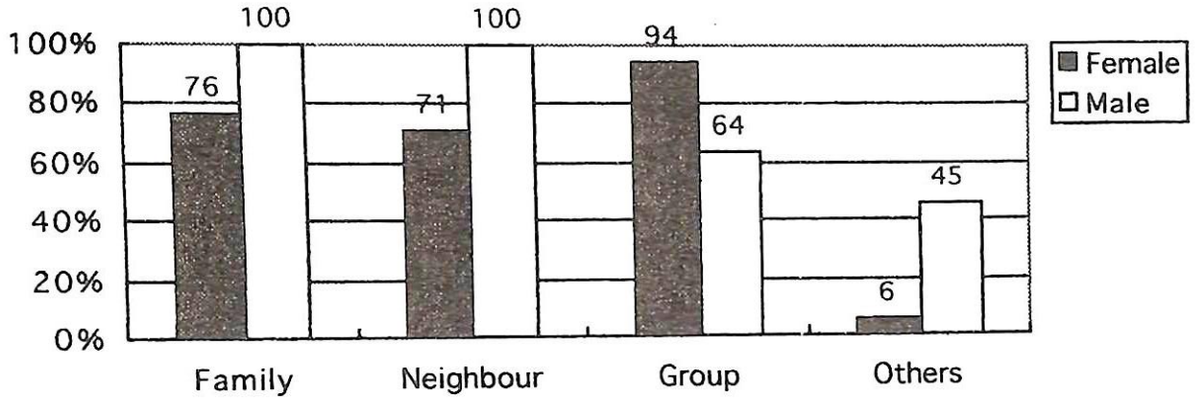


Fig. 4.10.1 Transmission of techniques

Conclusion

As previously mentioned, the results of main survey in 1993 were compiled into Working Paper No.13. Comparing it with this report of 1994 survey, there are several common tendencies in the changes between pre-survey and main survey. They are, for example, increased number of trees planted and surviving in case of the farmers, and promoted tree planting activities as well as teaching of related subjects in class by the trained teachers. FTA's also showed better performance than before in conducting their extension works although the effects were not very evident comparing to the farmers and teachers because surveyed items were not same.

These figures in the two surveys indicate several favorable effects of the training courses provided to these participants which improved their knowledge, techniques, attitude and willingness in promoting tree planting and related activities. It is also shown in the variety of techniques tried and put into practice in the field by the participants. Although there might have been some other factors outside the training, it was difficult to take them into consideration in this evaluation process, and we can still evaluate positive results of the training from these figures.

One new trial of this report is analisis of the data from farmers by gender difference. The results in general show more rapid improvement or more active participation in tree planting activities by women than men after the training. This trend may be attributed to social and traditional gender differences in their roles in daily lives , and hence to their respective roles in tree planting activities and the benefits to be gained.

In Kitui Centre some 40% of the trainees in the Project Phase Ⅱ were women because of newly introduced Women's course. Although women are not in a position to control the rural economy, because they are generally hard-working, diligent and more conscious to improvement of their daily lives and environment, their active participation and improvement of conditions to facilitate their participation will be essential to the success of social forestry activities.

Data of farmers,94

	District							Sex		So far how many trees planted					Surviving Seedlings					Seedlings planted in last 1 year					Level of technical skills				Raising seedlings in a nursery					New techniques		Whom did you teach ?						Area			Awareness				
	KTI	MKS	MKE	EMB	THR	MER	NYM	M	F	0	1-49	50-99	-499	over499	0	1-49	50-99	-499	over499	0	1-49	50-99	-499	over499	1	2	3	T	Yes	No	Private	Group	Others	Yes	No	Yes	No	Family	Neighbor	Group	Others	(a)	(b)	(c)	(a)	(b)	(c)	(d)	(e)
1		1						1						1					1				1		5	5	4	14	1		30			1		1		1	1			1			1				
2			1					1			1					1					1				2	2	2	6	1		400			1		1		1	1			1				1			
3	1							1			1					1				1					2	2	1	5		1				1		1		1	1	1				1		1			
4		1						1					1			1					1				4	2	2	8	1			9000				1		1	1	1	1	1			1				
5							1	1						1			1						1		5	3	4	12		1				1		1		1	1		1	1						
6				1				1					1					1				1			4	4	3	11	1		200	8000		1		1		1	1	1		1			1				
7		1							1				1					1		1					4	4	1	9	1			10000		1		1				1		1			1				
8			1						1				1					1					1		4	4	4	12	1		420	1200	150	1		1		1	1	1	1	1			1				
9		1							1			1				1				1					3	2	1	6	1			150		1		1				1			1					
10	1								1				1					1					1		4	4	4	12	1			400		1		1				1			1					
11	1								1				1			1							1		4	2	4	10	1		0	300		1		1		1		1			1					
12			1						1				1				1			1					4	3	1	8	1		300			1		1		1	1				1					
13					1				1		1					1					1				2	2	2	6	1		30	50		1		1		1		1		1						
14	1								1					1					1					1	5	4	5	14	1			23		1		1		1	1	1		1						
15				1					1				1				1			1					4	3	1	8		1				1		1		1	1			1						
16		1						1						1					1					1	5	5	5	15	1			6300		1		1		1	1	1		1						
17	1							1				1				1					1				3	2	2	7		1				1		1		1	1	1		1						
18	1								1				1			1							1		4	2	4	10	1			10000		1		1		1	1			1						
19		1						1					1					1					1		4	4	4	12	1		150	300		1		1		1	1			1						
20				1				1					1			1					1				4	2	2	8	1		500	1000		1		1		1	1	1			1					
21					1			1						1					1				1		5	5	4	14	1		900			1		1		1				1						
22		1							1				1						1				1		4	5	4	13	1		500			1		1		1	1			1						
23						1			1		1							1					1		2	4	4	10	1				200	1		1		1	1			1						
24				1					1					1					1					1	5	5	5	15	1			1000		1		1		1	1			1						
25	1								1			1				1							1		3	2	4	9	1			2300		1		1		1	1			1			1				
26	1								1		1					1					1				2	2	2	6		1				1		1		1	1			1				1			
27	1								1		1					1					1				2	2	2	6		1				1		1			1						1		1		
28	1								1					1		1							1		5	2	4	11	1			700		1		1		1	1			1			1				
Total	10	7	3	4	2	1	1	11	17	0	6	3	12	7	0	13	3	7	5	5	7	1	12	3					22	6	311.8	3170	175	27	0	28	0	24	23	23	6	24	0	4	17	8	2	0	0

Data of farmers,94

	Compound trees planted																										Boundary of compound																					
	Cr/m	C/sp	C/si	M/az	G/r	T/m	T/in	Th/p	Pa/a	Az/i	Mo/a	Acro	Euca	Jaca	Sp/ni	Pr/j	A/me	Do/c	Leuc	Casu	Me/v	Cypr	Fi/be	A/po	Teco	Bomb	Total	C/sl	C/sp	Cr/m	A/me	E/tu	Leuc	G/r	Cypr	Jaca	Pa/a	Az/i	M/az	Do/c	A/h	Cl/ca	Euca	Th/p	T/br	A/po	Pr/j	Total
1	14	8	7	6	2																						37	4	2	65	5																		76
2					8	12	2																				22																						0
3	11	2	10					4	1																		28					∞																∞
4		1	10		5		8	3	4	2	1																34					∞	5	5														∞
5	2		3	4	7																						16					∞		13														∞
6			6		5	4						3															18	75							42	1													118
7													1														1							100														100
8		6	4	6	6			3	3	5			2	8	5										3		51		18					6		20	6	5	25								80
9	1	5	6													4											16				∞																∞
10					20																						20														400						400
11	1	1	4										1	5			1	4							3		20																					0
12		5																									5																					0
13		2	7										3						1								13				∞																∞
14		7	9	6	14	3	2			6			5	1						5	3						61								7				3								10
15					1																						1					8	5														13
16								2																			2			6	∞																∞
17		3	20		2	4																					29	11											200						211
18			3													5											8																					0
19																											0							200	10												210
20			12		21																						33	14				∞		11														∞
21																											0							250														250
22		5			8	4																					17						36					15		5	7					63
23																											0						10														10
24			10		280	1																3					294						200														200
25		4	6		1			4	2					4											2		23				∞																∞
26			1		1					2																	4				∞																∞
27						1		1																			2																					∞
28		2	3		2	1			1	1					1								2	1			14																	4	3				7
Total	5.8	3.9	7.1	5.5	24	3.8	4	2.8	2.2	3.2	1	3	2.4	4.5	3	4.5	1	4	1	5	3	3	2	1	2.5	3	769	26	10	36	5	∞	6.5	40	120	6	20	6	5	80	3	5	204	4	3	0	0	∞

c.f.

A/h Acacia holoseriea
A/m Acacia mellifera
A/ni Acacia nilotica
A/p Acacia polyacantha
A/to Acacia tortilis
Acro Acrocarpus fraxinifolius
Al/f Albizia falcataria
Az/i Azadirachta indica
Avoc Persea americana
Bomb Bombax rhodognaphalon
Cl/ca Calliandra calothyrsus
C/si Cassia siamea
C/sp Cassia spectabilis
Casu Casuarina equisetifolia
Cr/m Croton megalocarpus
Cypr Cypress
Do/c Dovyalis caffra
Euca Eucalyptus sps
E/m Eucalyptus maculata
E/sa Eucalyptus saligna
E/tu Euphorobia tirucalli
Fi/be Ficus benjamina
G/r Grevillea robusta
G/sp Gliricidia sepium
Jaca Jacaranda mimosifolia
Leuc Leucaena leucocephala
Mang Mangifera indica
M/az Melia azedarach
Me/v Melia volkensii
Mo/a Morus alba
Pa/a Parkinsonia aculeata
Pr/j Prosopis juliflora
Se/s Sesbania sesban
Sp/ni Spathodea nilotica
T/in Tamarindus indica
T/m Terminalia mantaly
Th/p Thevetia peruviana
T/br Terminalia brownii
Teco Tecoma stans

Data of farmers,94

	Shamba																					Boundary of shamba												Grazing land						Others							
	Cr/m	C/si	C/sp	G/sp	Euca	G/r	Az/i	Me/v	T/in	Jaca	M/az	A/to	Leuc	E/sa	T/m	Cl/ca	Casu	Mang	Avoc	Al/f	Total	E/tu	G/r	C/si	Cypr	Pa/a	Jaca	Euca	Leuc	C/sp	Cr/m	Casu	Total	A/to	G/r	Se/s	A/po	Pr/j	Total	G/r	Euca	E/sa	E/m	C/si	Jaca	Do/c	Total
1	3	6	4	400																	413	∞										∞						0								0
2					12																12											0						0								0
3						1	2	5													8		1									1						0								0
4		6	3						2												11	∞										∞						0								0
5						1				1											2		1									1						0								0
6		6				50		2													58		80	10								90						0								0
7					26														32		58				52							52						0								0
8	2	14	10			15					6										47		5			13						18						0								0
9	1	4	2																		7	∞										∞						0								0
10						400															400											0						0								0
11																					0											0						0								0
12		5																			5											0						0								0
13		24	2																	4	30	∞										∞						0								0
14			5					3	2		6	1									17											0	20					20								0
15						45							15								60		18				11	24				53						0	300	300			50			650
16						200								150							350		2									2						0	100		500	80		4		684
17										1			20		2						23						20					20						0								0
18																					0											0						0								0
19						10															10		8				35		40			83						0			500					500
20						7															7		20									20						0								0
21			3			400				1											404		32							20		52						0								0
22																15					15		15					11			10	36		50				50							1500	1500
23	∞					∞											∞				∞											0						0								0
24																					0		180								4	184						0	100							100
25							1	1										1			3											0			1			1								0
26							1														1											0						0								0
27																					0											0						0								0
28													1				1				2											0	1			1	1	3								0
Total	∞	9.3	4.1	400	19	∞	1.3	2.8	2	1	6	1	12	150	2	15	∞	1	32	4	∞	∞	33	10	52	13	22	18	40	20	10	4	∞	11	50	1	1	1	74	167	300	500	80	50	4	1500	3434

c.f. Woodlot No.15, No.16, No.19, No.24
Livefence No.22

Data of farmers,94

		Number of tree planting					Plant within last 1 year					Surviving seedlings					Level of technical skill				Number of seedlings in nursery								Carried out new techniques											
		0	1-49	50-99	-499	500-	0	1-49	50-99	-499	500-	0	1-49	50-99	-500	500-	1	2	3	T	Yes	No	Private		Group		Others		Nur	Prot	Agro	So/W	Bee	Plant	Orga	Graz	Seed	T/ma	Energ	Graf	Sps
1	30-3				1				1				1				4	3	2	9		1							1	1	1	1									
2	30-9			1					1				1				3	3	2	8	1		1	360					1			1	1	1	1						
3	30-10				1			1					1				4	2	2	8	1		1	200	1	1000							1	1		1	1	1			
4	30-14			1					1					1			3	3	3	9	1		1	3600	1	7400			1			1		1							
5	30-19				1					1			1				4	4	2	10	1		1	100	1	6000			1	1				1							
6	30-24			1					1				1				3	3	2	8		1							1			1									
7	32-6		1					1					1				2	2	2	6		1																			
8	32-8		1					1					1				2	2	2	6	1		1	150	1	100			1			1		1		1	1	1			
9	32-12		1					1					1				2	2	2	6	1				1	500			1			1		1	1						
10	32-13		1					1						1			2	2	3	7	1				1	10000				1									1		
11	32-15					1					1				1		5	5	4	14	1				1	1400			1			1							1		
12	32-16			1				1					1				3	2	2	7	1		1	100	1	1100						1									
13	32-18			1					1				1				3	3	2	8		1							1			1		1	1						
14	32-22		1					1					1				2	2	2	6	1				1	2000			1	1		1		1	1	1		1			
15	32-23					1					1				1		5	5	4	14	1				1	4000					1	1		1						1
16	36-6		1								1			1			2	5	3	10	1		1	800					1	1		1		1			1			1
17	36-10																			0														1	1	1				1	
18	36-12		1					1				1					2	2	1	5	1		1	100						1			1		1				1		
19	36-13				1					1			1				4	4	2	10	1		1	50					1		1					1				
20	36-17					1					1				1		5	5	4	14	1		1	900					1	1		1	1		1					
21	36-20					1					1				1		5	5	4	14	1		1	4000											1					
22	37-3			1					1				1				3	3	2	8	1				1	4			1		1				1					1
23	37-11		1					1				1					2	2	1	5		1							1			1					1			1
24	37-13					1					1					1	5	5	5	15		1							1					1			1			
25	37-15		1					1					1				2	2	2	6		1															1			
26	37-16		1					1					1				2	2	2	6	1		1	5									1							
27	37-17		1					1					1				2	2	2	6		1								1		1								
28	37-19		1					1				1					2	2	1	5	1		1	10									1					1		
Total		0	12	6	4	5	0	13	6	2	6	3	16	3	4	1					19	8	13	798	11	3046	0	0	16	9	4	15	4	14	12	4	2	5	4	3	4
																													57	32	14	54	14	50	43	14	7	18	14	11	14

Presurvey data same as main survey's farmers

Data of FTA's,94

	District						Sex		Education level					Grasp situation					Number of groups					Number of seedlings					% of farmers plant				No trees planted by a farmer				Plan of work						Who plan			
	KTI	MKS	MKE	EMB	THA	MER	Male	Fale	S7-8	F1-2	F3-4	F5-6	Dip	I-1	I-2	I-3	I-4	Total	W.G	Sch.	Chu.	Othe	Total	Chief	Women G	Church	School	Other	Total	-25	-49	-74	75-	50	99	499	500-	II-i	II-ii	II-iii	Total	No.seedling	No.G	You	DFEC	Chief	Othe
1		1					1			1				1	1	4	4	6	6	4			10		900	500	400	1000	2800	1				1				2	2	2	6	3500	8	1	1		
2	1						1					1		1	1	2	2	4	42	8			50		150000		20000		170000			1			1				2		2	100000		1			
3	1						1				1			1	1	3	3	5	10	15		16	41		10000		9750	1000	20750			1		1				2	2	2	6	100000	26	1			
4		1					1				1			1	1	2	2	4	2	2			4		2000		1000		3000			1		1				2	2	2	6	50000	10	1	1		
5			1				1				1			1	1	1	1	3	3				3		3000				3000	1				1				2	2	2	6	9000	17	1			1
6					1		1					1		1	1	3	3	5	2	6	6		14		1000	3000	3000		7000				1	1						2	2		2	1	1		
7				1			1		1					1	1	2	2	4	2	1			3		5000		2000		7000				1			1		2	2	2	6	100000	5	1			
8	1						1				1			1	1	3	3	5	3	6		4	13		2000		20000	6000	28000		1					1		2	2	2	6	7100	6	1		1	1
9						1	1				1			1	1	2	2	4	5	2			7		500		300		800			1		1				2	2	2	6	10000	5	1	1		
10		1						1			1			1	1	3	3	5	5	2		6	13		8000		5000	4000	17000				1	1				2	2	2	6	5000	15	1	1		
11	1						1			1				1	1	2		4	8		2		10						0			1		1				2	2	2	6	8000	6		1		
12					1		1				1			1	1	2	1	4	4	1			5		5000				5000				1			1		1		2	3		4				1
13	1						1			1				1	1	3		5	10	2		5	17		10000		15000	5000	30000		1				1			2	2	2	6	81000	10	1			
14	1						1						1	1	1	3		5	12	8		2	22						0	1					1			1	1	2	4		4	1	1		
15	1						1				1			1	1	1		3	12				12						0			1						1			1	360		1			
	7	3	1	1	2	1	14	1	1	3	8	2	1						8.4	4.8	4	6.6	24		16450	1750	7645	3400	29245	3	2	6	4	8	2	5	0					39496.67	9.1	13	7	1	3

Data of FTA's,94

	Activities						Method					Assistance							Advice on tubes						Advice on water					Advice on termite								Advice on seedlings							Transport mean				Planning work on seed										
	a	b	c	d	e	T	a	b	c	d	e	1	2	3	4	5	6	T	a	b	c	d	e	T	a	b	c	d	T	a	b	c	d	e	f	g	T	a	b	c	d	e	T	T	a	b	c	d	a	b	c	d	e	f	g	h	i	j	k
1	1	1	1	1	1	5	3	1	2	4		3	1	1	1	1		7	1	1	1	1		4	1				1	1	1		1			1	4			1	1		2	11	1	1			1	1									
2	1	1	1	1	1	5	2	3	1			3	3	0	0	2		8	1	1		1		3		1	1		2	1	1					1	3				1		1	9				1										
3	1	1	1	1	1	5	4	1	3	2	5	3	3	3	0	3		12	1	1				2		1			1	1	1					1	3			1	1		2	8	1				1	1									
4	1	1	1			3	2	3	1				1			1		2	1	1				2		1			1	1	1						2	1	1	1	1		4	9	1			1	1		1							1
5	1	1	1		1	4	2	3	1	4		3						3	1	1				2		1			1	1	1						2		1		1		2	7		1				1								
6	1	1	1	1		4	1	3	2	4	5	2	1			1		4	1	1				2	1	1			2	1						1	2	1	1		1		3	9	1	1												
7	1	1	1		1	4	2	3	1			2	1					3	1	1				2					0								0						0	2			1		1								
8	1	1	1	1	1	5	1	2	3	4	5	3	2	1		3		9	1	1				2		1			1	1						1	2	1					1	6	1		1		1	1		1					
9	1		1		1	3	4	3	1	2		3	1			1		5	1	1				2			1		1	1	1						2		1	1	1		3	8	1				1			1					
10	1	1	1	1		4	1	2	3		4	3	1			1	1	6	1	1		1		3		1	1	1	2	1	1					1	3	1			1		2	10	1				1				1	1		
11	1	1	1		1	4	3	1	2				2		1			3	1	1		1		3		1			1	1							1	1		1			2	7		1			1							
12	1	1	1		1	4		2	3	1		3	1			1		5		1				1		1			1								0						0	2				1	1					1		
13	1	1	1	1		4	2	3	1	4	5	1	2			1		4		1		1		2			1		1							1	1		1			1	5	1		1		1	1				1	1		
14	1	1	1		1	4	2	1	3	4	5			1		1	3	5	1	1		1		3	1		1		2	1	1		1				3	1	1		1		3	11	1	1			1	1				1		
15	1	1	1		1	4		1	2			2	3					5	1	1				2	1	1	1		3	1	1						2				1		1	8		1										
	15	14	15	7	11		2.2	2.1	1.9	3.2	4.8								13	15	1	6		35	4	10	6	1	20	12	9	0	2	0	0	7	30	6	6	5	10			9	6	3	3	11	6	1	1	1	2	1	2	1	2	1

a : Grevillea robusta
b : Cassia siamea
c : Sesbania sesban
d : Melia volkensii
e : Cordia abyssinica
f : Terminalia mantally
g : Croton megalocarpus
h : Azadirachta indica
i : Psidium guajava
j : Eucalyptus maculata
k : Casuarina equisetifolia

Data of FTA's,94

	Grasp situation				Number of groups					% of farmers plant				No trees plant by farmer				Plan of work				No of	No of	Activities								Methods								Assistance							
	(1)	(2)	(3)	Total	W.G.	Schoo	Churc	Other	Total	-25	-49	-74	75-	-50	-99	-499	500-	(1)	(2)	(3)	Total	seedling	groups	a	b	c	d	e		Total	a	b	c	d	e		1	2	3	4	5	6	Total
1	1	1	2	4	1			1	2			1				1		0	2	2	4	10000	4	1	1		1	1	T & V	4	3	2	1	5	4	Demo	2	1	1	1	1		6
2	1	1	4	6	56	18	11	1	86				1			1		1	2	2	5	150000	60	1	1	1	1	1	FD nursery W.	5	4	1	2	3	5	Issue seedling	3	3	2	1	3	1	13
3	1	1	2	4	20	18			38				1		1			2	2	2	6	10000	10	1	1	1	1			4	2	1	4	3			3	2	1	0	2	1	9
4	1	0	3	4	2	1	1		4			1									0				1					1	3	2		1										0
5	1	1	3	5	3	1		3	7	1				1							0			1	1	1	1	1	Agriculture	5	1	3	2	4	5	Demo	1	1			1		3
6	1	1	1	3	2				2	1				1				2	2	2	6	1000	2	1	1	1	1			4	5	3	4	2	1	T & V	3	3	1		1	1	9
7	1	1	1	3	1				1	1				1				2	2	2	6	15000	2	1						1		1					3	3					6
8	0	0	3	3	6	10		6	22									2	2	2	6	50000	6	1	1	1	1			4							2	1	2		2	2	9
9	1	1	2	4	6	4			10			1		1				2	2	2	6	10000	9	1	1					2	1	2	3				3	1			1		5
10	1	1	4	6	2	2	1	1	6		1			1				2	1	2	5		6	1	1	1	1			4	2	1	3	4			3	3	3	1	3		13
11	1	1	2	4	10	5			15	1				1						2	2		10		1					1	3	2	4	1			2	2			1		5
12	1	1	2	4	4	5			9				1		1			2		2	4		4		1	1	1			3	2	4	1	3			3	1			1		5
13	0	1	2	3	13	4			17							1		2	2	2	6	2000	13		1					1		1	2				1	3			1		5
14	1	1	3	5	20	4	1	10	35			1		1						2	2		10	1	1		1	1	Demo	4	2	1	3	5	4	Demo	3	3	2		3		11
15	1	1	0	2					0	1				1							0									0	3	2	4	1			2	1	1		1		5
					10.4	6.5	3.5	3.7	24	5	1	4	3	8	2	3	0					31000	11.3								2.6	1.9	2.8	2.9	3.8								

Presurvey data same as Main survey's objects

Data for Teachers,94

	District						Sex		No. of	Teaching level											Teaching subjects										No of trees planted					Tree nursery					Activities							Teaching on forestry										
	KTI	MKS	MKE	EMB	THA	MER	M	F	Pupils	S1	S2	S3	S4	S5	S6	S7	S8	F1	F2	F3	F4	a	b	c	d	e	f	g	h	i	j	a	b	c	d	e	Yes	No	a	b	c	d	e	f	(e)	Yes	No	S1	S2	S3	S4	S5	S6	S7	S8	F1	F2	F3	F4
1	1						1		520						1	1	1					1	1	1	1	1									1	1			1			1	1	1		1	vegetable plant		1											
2		1					1		330		1												1	1	1		1	1	1	1	1			1			1				1		1	1	1	1	1	Train P &T	1			1	1	1	1	1	1				
3			1				1		280				1	1	1	1	1					1	1		1				1		1			1			1		1				1	1	1	1	Collect seed	1						1	1	1				
4	1						1		160		1					1						1	1	1	1	1	1	1	1	1	1		1			1				1		1	1	1	1			1			1	1	1	1	1				
5		1					1		390				1	1	1	1	1						1				1		1	1			1			1		1					1	1			Gardening	1		1	1	1	1	1	1	1				
6	1						1		295														1		1		1					1					1						1					1			1	1	1	1	1				
7			1					1	400				1	1	1		1															1					1		1					1				give community	1						1	1	1				
8			1				1		386						1	1	1					1	1			1							1				1						1	1	1	1	1	1	Conserve soil		1											
9					1		1		500				1	1	1		1					1			1	1	1			1	1				1			1							1					1						1						
10	1						1		265					1	1	1	1						1		1	1		1	1	1	1				1		1					1		1	1	1	1	1	give community	1					1	1	1				
11				1			1		320						1	1	1							1		1	1			1			1			1			1				1	1	1	1	1	Bore hole	1			1	1	1	1	1	1				
12				1			1		150	1	1	1	1	1	1	1	1					1	1	1	1	1	1	1	1	1	1		1				1			1				1	1	1	1	Water tank	1		1	1	1	1	1	1	1				
13				1			1		107			1										1	1	1	1	1	1	1	1	1	1		1			1		1					1					1			1	1							
14			1				1		300				1	1	1	1	1						1				1		1		1		1			1			1					1					1			1	1	1	1	1	1				
15		1					1		172				1	1	1												1	1		1		1				1			1				1	1	1	1			1		1	1	1	1	1	1				
16						1	1		500									1	1	1	1				1						1	1				1			1					1		1	1	1								1	1	1	1
17				1			1		400				1		1	1	1					1						1	1		1	1		1			1					1		1					1												
18	1							1	218	1												1	1	1	1	1	1	1	1	1	1		1				1							1																			
19		1					1		600						1	1	1							1	1					1			1				1							1																	
20				1			1		560				1			1	1							1	1	1					1	1				1							1																	
21	1						1		150		1				1	1	1					1			1	1							1				1			1					1	1															
22		1					1		500				1	1	1	1	1							1		1	1			1	1				1			1				1	1	1	1	1	Conserve soil	1				1	1	1	1	1				
23	1						1		600									1	1	1	1					1	1				1					1						1	1	1	1	1	1	National relies	1											1	1
25	1						1		44	1			1										1			1						1					1			1																				
26		1					1		400						1	1	1					1	1	1	1	1							1				1				1																				
	8	6	4	5	1	1	23	2	341.9	3	4	2	11	9	16	14	17	2	2	2	2	11	15	9	17	16	12	9	11	10	12	0	7	11	4	3	19	6	5	5	4	5	15	17	20	13	11	1		22	3	3	4	7	13	13	17	16	17	1	1	2	2

a : Bussiness Education
b : Mathematics
c : Music
d : Science
e : Agriculture
f : English
g : Swahili
h : G.H.C.(Geography/History/Civics)
i : Art/Craft
j : C.R.E(Christian religious Education)

Data for Teachers,94

	Clubs												Teaching material								New techniques															Problems												
	Yes	No	a	b	c	d	e	1	2	3	4	5	a	b	c	d	e	f	g	(g)	a	b	c	d	e	f	g	h	i	j	k	l	m	n	a	b	c	d	e	f	g	h	i	j	k	l	m
1	1				1							1									1	1		1											1	1	1	1									
2	1			1					1				1	1	1		1	1	1	Pied crow	1	1	1	1	1	1	1								1	1		1	1								
3	1			1				1					1	1				1	1	Visit ministry's	1						1							1	1			1	1	1						
4	1			1				1					1	1	1	1	1	1				1		1														1			1	1				
5	1				1							1	1	1									1			1	1		1					1	1				1		1					
6		1															1	1	1															1												
7	1				1				1							1	1		1			1	1												1											
8	1					1			1				1	1	1		1	1	1	Landscaper		1													1	1						1	1			
9		1											1	1					1	Pied crow		1				1	1								1	1		1								
10	1					1		1														1							1					1					1			1	1		
11	1						1			1			1	1	1	1	1	1	1	Visit Ministry's															1	1		1							1	
12		1																	1	School's				1											1										
13		1											1									1																			1				
14		1												1							1														1										1
15		1											1	1	1						1	1	1	1							1				1		1		1			1			1
16	1					1		1					1						1				1	1												1			1						
17		1											1											1											1										1
18	1			1				1					1	1								1		1											1	1		1	1	1			1		
19	1				1					1			1	1	1							1													1			1			1				
20	1			1				1					1											1											1	1									
21	1		1						1				1	1																					1			1							
22	1				1			1													1											1	1						1						
23	1					1			1				1	1	1	1	1	1	1	A V aid		1																							
25	1		1									1										1	1												1										
26	1				1					1				1				1	1			1		1			1							1	1			1					1		
	18	7	2	5	6	4	1	6	5	4	0	3	16	14	8	5	7	10	7		6	14	6	10	1	3	4	1	1	1	1	1	1	1	20	10	1	5	7	5	5	4	2	2	4	1	3

a : Seed collection
b : Establishment Nursery
c : Nursery techniques
d : Planting & tending
e : Pre-treatment
f : Grafting budding
g : Soil conservation
h : Fruit tree
i : Organic farming
j : Protection
k : Tree management
l : Agroforestry
m : Micro-catchment
n : Bee keeping

a : Water
b : Seed collection
c : Tree species
d : Chemical
e : Protection for animals
f : tubes
g : termites
h : theft
i : Pest
j : Seed treatment
k : Tool
l : Money
m : Soil

Data for Teachers,94

	No. of	Teaching level												Teaching subjects											No of trees planted					Tree nursery					Teaching on forestry														Clubs										
	Pupils	S1	S2	S3	S4	S5	S6	S7	S8	F1	F2	F3	F4	a	b	c	d	e	f	g	h	i	j	k	a	b	c	d	e	Yes	No	a	b	c	d	Yes	No	S1	S2	S3	S4	S5	S6	S7	S8	F1	F2	F3	F4	Yes	No	a	b	c	d	e	1	2	3	4	5
1	400						1	1	1					1	1	1	1	1						1			1			1				1		1					1	1	1	1	1					1			1							1
2	330				1	1	1	1	1					1			1	1	1		1		1				1			1				1		1					1	1	1	1	1					1			1							1
3	251				1	1	1	1	1					1	1		1					1					1			1				1																1										
4	160				1	1	1	1	1						1				1	1	1	1	1	1			1			1		1				1					1	1	1	1	1					1		1							1
5	440				1	1	1	1	1					1	1		1		1	1							1			1						1															1										
6	449				1			1	1								1		1	1					1					1						1															1										
7	360				1	1	1	1	1								1	1	1	1	1		1				1			1				1		1									1	1					1										
8	398				1	1	1	1	1					1	1		1	1									1			1				1		1					1	1	1	1	1					1				1			1			
9	260				1	1	1	1	1						1					1				1		1			1						1															1										
10	261					1	1	1	1					1	1		1	1	1			1	1	1				1			1				1		1					1	1	1	1	1					1						1	1			
11	420						1	1	1							1		1	1		1							1			1				1					1	1	1	1	1					1						1	1			
12	200				1	1	1	1	1						1		1										1				1																				1										
13	136				1										1		1		1			1		1		1				1																				1										
14	260				1	1	1	1	1						1				1	1	1						1				1																				1										
15	125				1											1			1		1				1				1		1				1															1										
16	400									1	1	1	1				1											1	1		1				1																1				1			1			
17	460				1	1	1	1	1					1			1	1	1		1	1	1				1				1				1																1										
18	220					1	1	1						1	1		1	1	1	1								1						1	1									1	1	1					1			1			1			
19	670							1	1								1	1		1							1			1				1										1	1	1	1	1					1			1			1	
20	490						1	1	1						1	1	1	1	1								1			1				1																1										
21	120				1	1	1	1	1						1		1	1	1		1		1				1			1				1																1										
22	520							1	1								1	1		1							1			1				1										1	1	1	1	1					1		1			1		
23	520									1	1	1	1				1	1									1			1				1																1										
25	25	1	1															1									1			1				1																1		1				1			
26	301				1			1	1					1		1		1									1			1				1																1			1				1			
	327	1	1	0	15	13	16	20	19	2	2	2	2	9	13	5	18	15	14	9	8	5	6	5	0	6	13	4	2	16	9	4	4	5	3	12	13	0	0	0	9	10	10	11	10	1	1	1	1	13	12	1	5	4	0	3	5	4	1	0	3

This is Pre-survey data same as main survey

a : Bussiness Education
b : Mathematics
c : Music
d : Science
e : Agriculture
f : English
g : Swahili
h : G.H.C.
i : Art/Craft
j : C.R.E
k : Home sience

Data for Teachers,94

	Problems						(a)					(b)										(e)					(f)						
	a	b	c	d	e	f	1	2	3	4	5	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	1	2	3	4	5	6	7
1	1	1	1	1	1	1	1	1	1			1	1	1	1	1	1	1	1	1	1	1					1	1	1	1	1		
2	1		1	1	1	1				1												1					1						
3			1		1	1																1	1										
4	1	1	1	1	1	1	1	1			1	1		1					1		1	1					1	1	1	1		1	
5	1	1	1	1	1	1		1	1				1		1							1									1		
6					1	1																		1						1			
7	1	1	1	1	1			1					1	1								1											
8	1	1	1	1	1	1		1					1								1	1										1	
9		1			1	1						1	1	1	1				1														
10	1	1	1	1	1	1		1					1							1	1						1						1
11			1	1																													
12	1	1	1	1	1	1	1	1																									
13	1	1			1	1		1				1	1	1	1							1											
14			1																														
15	1	1	1			1	1	1						1	1				1		1	1											
16	1	1			1	1	1	1					1	1					1		1				1								
17																																	
18	1	1		1			1	1	1					1							1												
19	1	1		1	1	1	1						1	1								1					1						
20	1	1	1	1					1					1							1												
21		1				1															1											1	
22	1	1	1	1	1	1		1						1		1					1					1	1					1
23	1	1	1									1		1	1																		
25	1	1			1							1	1	1					1		1												
26	1	1	1	1	1	1		1						1		1					1					1							
	18	19	16	14	17	17	7	13	4	1	1	6	10	14	6	3	1	1	6	2	12	10	1	1	1	2	6	2	2	3	2	3	2

1: Tree species
2: Tubes
3: Chemical
4: Reference books
5: Fertilizer

1: Panga
2: Wheel barrow
3: Jembe
4: Spade
5: Prunning knife
6: Bucket
7: Slasher
8: Rake
9: Pipe
10 Watering can

1: FTA's advice
2: Nursery management
3: Seed collection
4: Nursery techniques
5: Grafting & budding

1: Termite
2: Insect
3: Bird
4: Fungal disease
5: Cooperation with P & T (Including Villegers)
6: Theft
7: Animal

Data for Teachers,94

	Problems						(a)					(b)										(e)					(f)						
	a	b	c	d	e	f	1	2	3	4	5	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	1	2	3	4	5	6	7
1	1	1	1	1	1	1	1	1	1			1	1	1	1	1	1	1	1	1	1	1					1	1	1	1	1		
2	1		1	1	1	1				1											1	1					1						
3			1		1	1															1	1											
4	1	1	1	1	1	1	1	1			1	1		1					1		1	1					1	1	1	1		1	
5	1	1	1	1	1	1		1	1				1		1							1									1		
6					1	1																		1						1			
7	1	1	1	1	1			1					1	1								1											
8	1	1	1	1	1	1		1					1								1	1										1	
9		1			1	1						1	1	1	1				1														
10	1	1	1	1	1	1		1					1							1	1						1						1
11			1	1																													
12	1	1	1	1	1	1	1	1																									
13	1	1			1	1		1				1	1	1	1							1											
14			1																														
15	1	1	1			1	1	1						1	1				1		1	1											
16	1	1			1	1	1	1					1	1					1		1				1								
17																																	
18	1	1		1			1	1	1					1							1												
19	1	1		1	1	1	1						1	1								1					1						
20	1	1	1	1					1					1							1												
21		1				1															1											1	
22	1	1	1	1	1	1		1						1		1					1					1	1						1
23	1	1	1									1		1	1																		
25	1	1			1							1	1	1					1		1												
26	1	1	1	1	1	1		1						1		1					1					1							
	18	19	16	14	17	17	7	13	4	1	1	6	10	14	6	3	1	1	6	2	12	10	1	1	1	2	6	2	2	3	2	3	2

1: Tree species
2: Tubes
3: Chemical
4: Reference books
5: Fertilizer

1: Panga
2: Wheel barrow
3: Jembe
4: Spade
5: Prunning knife
6: Bucket
7: Slasher
8: Rake
9: Pipe
10 Watering can

1: FTA's advice
2: Nursery management
3: Seed collection
4: Nursery techniques
5: Grafting & budding

1: Termite
2: Insect
3: Bird
4: Fungal disease
5: Cooperation with P & T (Including Villegers)
6: Theft
7: Animal

Data of farmers by sex,94

	District						Sex		So far how many trees planted					Surviving Seedlings					Seedlings planted in last 1 year					Level of technical skills				Raising seedlings in a nursery					New techniques		Whom did you teach ?						Area			Awareness				
	KTI	MKS	MKE	EMB	THR	MER	M	F	0	1-49	50-99	-499	over499	0	1-49	50-99	-499	over499	0	1-49	50-99	-499	over499	1	2	3	T	Yes	No	Private	Group	Others	Yes	No	Yes	No	Family	Neighbor	Group	Others	(a)	(b)	(c)	(a	(b	(c	(d	(e
7		1						1				1					1		1					4	4	1	9	1			10000		1		1			1				1					
8			1					1				1					1					1		4	4	4	12	1		420	1200	150	1		1		1	1	1	1	1			1				
9		1						1			1				1				1					3	2	1	6	1			150		1		1			1				1					
10	1							1				1					1					1		4	4	4	12	1			400		1		1			1				1					
11	1							1				1			1							1		4	2	4	10	1		0	300		1		1		1				1					
12			1					1				1				1			1					4	3	1	8	1		300			1		1	1	1	1			1		1			
13					1			1		1					1					1				2	2	2	6	1		30	50		1		1	1		1				1					
14	1							1					1				1						1	5	4	5	14	1			23		1		1	1	1	1				1					
15				1				1				1				1			1					4	3	1	8		1				1		1	1	1	1				1					
18	1							1				1			1							1		4	2	4	10	1			10000		1		1	1	1	1				1					
22		1						1				1						1				1		4	5	4	13	1		500			1		1	1	1	1				1					
23						1		1		1							1					1		2	4	4	10	1				200	1		1	1	1	1				1					
24				1				1					1					1					1	5	5	5	15	1			1000		1		1	1	1	1				1					
25	1							1			1				1							1		3	2	4	9	1			2300		1		1	1	1	1					1				
26	1							1		1					1					1				2	2	2	6		1				1		1	1	1	1					1				
27	1							1		1					1					1				2	2	2	6		1				1		1		1				1		1				
28	1							1					1		1							1		5	2	4	11	1			700		1		1	1	1	1				1		1			
Total	8	3	2	2	1	1	0	17	0	4	2	8	3	0	8	2	5	2	4	3	0	8	2					14	3	250	2375	175	17	0	17	0	13	12	16	1	15	0	2	10	5	2	0	0

	District						Sex		So far how many trees planted					Surviving Seedlings					Seedlings planted in last 1 year					Level of technical skills				Raising seedlings in a nursery					New techniques		Whom did you teach ?						Area			Awareness				
	KTI	MKS	MKE	EMB	THR	MER	M	F	0	1-49	50-99	-499	over499	0	1-49	50-99	-499	over499	0	1-49	50-99	-499	over499	1	2	3	T	Yes	No	Private	Group	Others	Yes	No	Yes	No	Family	Neighbor	Group	Others	(a)	(b)	(c)	(a	(b	(c	(d	(e
1		1					1						1					1				1		5	5	4	14	1		30			1		1	1	1			1			1				
2			1				1			1					1					1				2	2	2	6	1		400			1		1	1	1			1				1				
3	1						1			1					1				1					2	2	1	5		1				1		1	1	1	1			1		1				
4		1					1					1			1					1				4	2	2	8	1			9000				1	1	1	1	1	1	1	1			1				
5						1	1						1				1					1		5	3	4	12		1				1		1	1	1		1	1							
6				1			1					1						1			1			4	4	3	11	1		200	8000		1		1	1	1	1		1			1				
16		1					1						1					1					1	5	5	5	15	1			6300		1		1	1	1	1	1	1			1				
17	1						1					1			1					1				3	2	2	7		1				1		1	1	1	1	1	1				1				
19		1					1						1					1					1	4	4	4	12	1		150	300		1		1	1	1	1		1			1				
20				1			1						1		1					1				4	2	2	8	1		500	1000		1		1	1	1	1	1			1	1					
21					1		1						1					1				1		5	5	4	14	1		900			1		1	1	1			1			1				
Total	2	4	1	2	1	1	11	0	0	2	1	4	4	0	5	1	2	3	1	4	1	4	1					8	3	363.3	4920		10	0	11	0	11	11	7	5	9	0	2	7	3	0	0	0

Data of farmers by sex,94

	District						Sex		So far how many trees planted					Surviving Seedlings					Seedlings planted in last 1 year					Level of technical skills				Raising seedlings in a nursery					New techniques		Whom did you teach ?						Area			Awareness				
	KTI	MKS	MKE	EMB	THR	MER	M	F	0	1-49	50-99	-499	over499	0	1-49	50-99	-499	over499	0	1-49	50-99	-499	over499	1	2	3	T	Yes	No	Private	Group	Others	Yes	No	Yes	No	Family	Neighbor	Group	Others	(a)	(b)	(c)	(a	(b	(c	(d	(e
7		1						1				1					1		1					4	4	1	9	1			10000		1		1								1				
8			1					1				1					1					1		4	4	4	12	1		420	1200	150	1		1		1	1	1	1	1			1				
9		1						1			1				1				1					3	2	1	6	1			150		1		1			1					1				
10	1							1				1					1					1		4	4	4	12	1			400		1		1			1				1					
11	1							1				1			1							1		4	2	4	10	1		0	300		1		1		1		1				1				
12			1					1				1				1			1					4	3	1	8	1		300			1		1		1	1	1			1		1				
13					1			1		1					1					1				2	2	2	6	1		30	50		1		1		1			1			1				
14	1							1					1				1						1	5	4	5	14	1			23		1		1		1	1	1			1				
15				1				1				1				1			1					4	3	1	8		1				1		1		1	1	1			1				
18	1							1				1			1							1		4	2	4	10	1			10000		1		1		1	1	1			1				
22		1						1				1						1				1		4	5	4	13	1		500			1		1		1	1	1			1				
23						1		1		1							1					1		2	4	4	10	1				200	1		1		1	1	1			1				
24				1				1					1					1					1	5	5	5	15	1			1000		1		1		1	1	1			1				
25	1							1			1				1							1		3	2	4	9	1			2300		1		1		1	1	1				1				
26	1							1		1					1					1				2	2	2	6		1				1		1		1	1	1					1			
27	1							1		1					1					1				2	2	2	6		1				1		1			1				1		1			
28	1							1				1			1							1		5	2	4	11	1			700		1		1		1	1	1		1			1				
Total	8	3	2	2	1	1	0	17	0	4	2	8	3	0	8	2	5	2	4	3	0	8	2					14	3	250	2375	175	17	0	17	0	13	12	16	1	15	0	2	10	5	2	0	0

	District						Sex		So far how many trees planted					Surviving Seedlings					Seedlings planted in last 1 year					Level of technical skills				Raising seedlings in a nursery					New techniques		Whom did you teach ?						Area			Awareness				
	KTI	MKS	MKE	EMB	THR	MER	M	F	0	1-49	50-99	-499	over499	0	1-49	50-99	-499	over499	0	1-49	50-99	-499	over499	1	2	3	T	Yes	No	Private	Group	Others	Yes	No	Yes	No	Family	Neighbor	Group	Others	(a)	(b)	(c)	(a	(b	(c	(d	(e
1		1						1					1					1				1		5	5	4	14	1		30			1		1		1	1			1			1				
2			1					1		1					1					1				2	2	2	6	1		400			1		1		1	1			1			1				
3	1							1		1					1				1					2	2	1	5		1				1		1		1	1	1				1		1			
4		1						1				1			1					1				4	2	2	8	1			9000				1		1	1	1	1	1	1			1				
5						1	1						1			1						1		5	3	4	12		1				1		1		1		1	1							
6				1				1				1					1				1			4	4	3	11	1		200	8000		1		1		1	1			1			1				
16		1						1					1					1					1	5	5	5	15	1			6300		1		1		1	1	1	1			1				
17	1							1				1			1					1				3	2	2	7		1				1		1		1	1	1	1				1				
19		1						1					1					1				1		4	4	4	12	1		150	300		1		1		1	1			1			1				
20				1				1					1		1					1				4	2	2	8	1		500	1000		1		1		1	1	1			1		1				
21					1			1					1					1				1		5	5	4	14	1		900			1		1		1	1			1			1				
Total	2	4	1	2	1	1	11	0	0	2	1	4	4	0	5	1	2	3	1	4	1	4	1					8	3	363.3	4920		10	0	11	0	11	11	7	5	9	0	2	7	3	0	0	0

Data of farmers by sex,94

	Compound trees planted																										Boundary of compound																									
	Cr/m	C/sp	C/si	M/az	G/r	T/m	T/in	Th/p	Pa/a	Az/i	Mo/a	Acro	Euca	Jaca	Sp/ni	Pr/j	A/me	Do/c	Leuc	Casu	Me/v	Cypr	Fi/be	A/po	Teco	Bomb	Total	C/si	C/sp	Cr/m	A/me	E/tu	Leuc	G/r	Cypr	Jaca	Pa/a	Az/i	M/az	Do/c	A/h	Cl/ca	Euca	Th/p	T/br	A/po	Pr/j	Total
7													1														1								100														100
8		6	4	6	6			3	3	5			2	8	5										3		51		18						6		20	6	5	25								80
9	1	5	6													4											16					∞																∞
10					20																						20															400						400
11	1	1	4										1	5			1	4								3	20																						0
12		5																									5																						0
13		2	7										3						1								13					∞																∞
14		7	9	6	14	3	2			6			5	1						5	3						61									7				3								10
15					1																						1						8	5														13
18			3													5											8																						0
22		5			8	4																					17							36						15		5	7					63
23																											0							10														10
24			10		280	1																3					294							200														200
25		4	6		1			4	2					4											2		23					∞															∞
26			1		1					2																	4					∞															∞
27						1		1																			2																		4	3			7
28		2	3		2	1			1	1					1								2	1			14																			∞	∞	∞
Total	1	4.1	5.3	6	37	2	2	2.7	2	3.5	###	###	2.4	4.5	3	4.5	1	4	1	5	3	3	2	1	2.5	3	550	###	18	###	###	∞	8	63	53	7	20	6	5	20	3	5	204	4	3	0	0	∞

	Compound trees planted																										Boundary of compound																									
	Cr/m	C/sp	C/si	M/az	G/r	T/m	T/in	Th/p	Pa/a	Az/i	Mo/a	Acro	Euca	Jaca	Sp/ni	Pr/j	A/me	Do/c	Leuc	Casu	Me/v	Cypr	Fi/be	A/po	Teco	Bomb	Total	C/si	C/sp	Cr/m	A/me	E/tu	Leuc	G/r	Cypr	Jaca	Pa/a	Az/i	M/az	Do/c	A/h	Cl/ca	Euca	Th/p	T/br	A/po	Pr/j	Total
1	14	8	7	6	2																						37	4	2	65	5																			76
2					8	12	2																				22																							0
3	11	2	10					4	1																		28					∞																∞
4		1	10		5		8	3	4	2	1																34					∞	5	5														∞
5	2		3	4	7																						16					∞		13														∞
6			6		5	4						3															18	75								42	1													118
16								2																			2			6		∞																	∞
17		3	20		2	4																					29	11													200							211
19																											0								200	10												210
20			12		21																						33	14				∞		11														∞
21																											0								250														250
Total	9	3.5	9.7	5	7.1	6.7	5	3	2.5	2	1	3	###	###	###	###	###	###	###	###	###	###	###	###	###	###	219	26	2	36	5	∞	5	9.7	164	5.5	###	###	###	200	##	###	###	###	###	0	0	∞

c.f.

A/h	Acacia holoseriea	Cr/m	Croton megalocarpus	Me/v	Melia volkensii
A/m	Acacia mellifera	Cypr	Cypress	Mo/a	Morus alba
A/ni	Acacia nilotica	Do/c	Dovyalis caffra	Pa/a	Parkinsonia aculeata
A/p	Acacia polyacantha	Euca	Eucalyptus sps	Pr/j	Prosopis julflora
A/to	Acacia tortilis	E/m	Eucalyptus maculata	Se/s	Sesbania sesban
Acro	Acrocarpus fraxinifolius	E/sa	Eucalyptus saligna	Sp/ni	Spathodea nilotica
Al/f	Albizia falcataria	E/tu	Euphorobia tirucalli	T/in	Tamarindus indica
Az/i	Azadirachta indica	Fi/be	Ficus benjamina	T/m	Terminalia mantaly
Avoc	Persea americana	G/r	Grevillea robusta	Th/p	Thevetia peruviana
Bomb	Bombax rhodognaphalon	G/sp	Gliricidia sepium	T/br	Terminalia brownli
Cl/ca	Caliandra calothyrsus	Jaca	Jacaranda mimosifolia	Teco	Tecoma stans

Data of farmers by sex,94

	Shamba																				Boundary of shamba												Grazing land						Others							
	Cr/m	C/si	C/sp	G/sp	Euca	G/r	Az/i	Ma/v	T/in	Jaca	M/az	A/to	Leuc	E/sa	T/m	Cl/ca	Casu	Mang	Avoc	Al/f	Total	E/tu	G/r	C/si	Cypr	Pa/a	Jaca	Euca	Leuc	C/sp	Cr/m	Casu	Total	A/to	G/r	Se/s	A/po	Pr/j	Total	G/r	Euca	E/sa	E/m	C/si	Jaca	Do/c	Total
7					26														32		58				52								52						0								0
8	2	14	10			15					6										47		5			13						18						0								0
9	1	4	2																		7	∞										∞						0								0
10						400															400												0						0								0
11																					0												0						0								0
12		5																			5												0						0								0
13		24	2																		30	∞										∞						0								0
14			5					3	2		6	1								4	17											0	20					20								0
15						45							15								60		18				11	24				53						0	300	300			50			650
18																					0												0						0								0
22																15					15		15					11			10		36		50			50							1500	1500
23	∞					∞											∞				∞												0						0								0
24																					0		180									4	184						0	100							100
25							1	1										1			3												0			1			1								0
26							1														1												0						0								0
27																					0												0						0								0
28													1				1				2												0	1			1	1	3								0
Total	∞	12	4.8	###	26	∞	1	2	2	###	6	1	8	###	###	15	∞	1	32	4	∞	∞	55	###	52	13	11	18	###	###	10	4	∞	11	50	1	1	1	74	200	300	####	##	50	###	1500	2250

	Shamba																				Boundary of shamba												Grazing land						Others							
	Cr/m	C/si	C/sp	G/sp	Euca	G/r	Az/i	Me/v	T/in	Jaca	M/az	A/to	Leuc	E/sa	T/m	Cl/ca	Casu	Mang	Avoc	Al/f	Total	E/tu	G/r	C/si	Cypr	Pa/a	Jaca	Euca	Leuc	C/sp	Cr/m	Casu	Total	A/to	G/r	Se/s	A/po	Pr/j	Total	G/r	Euca	E/sa	E/m	C/si	Jaca	Do/c	Total
1	3	6	4	400																	413	∞										∞						0								0
2					12																12											0						0								0
3						1	2	5													8		1									1						0								0
4		6	3						2												11	∞										∞						0								0
5						1				1											2		1									1						0								0
6		6				50		2													58		80	10								90						0								0
16						200								150							350		2									2						0	100		500	80		4		684
17										1			20		2						23						20					20						0								0
19						10															10		8				35		40			83						0			500					500
20						7															7		20									20						0								0
21			3			400				1											404		32							20		52						0								0
Total	∞	6	3.3	400	12	∞	2	3.5	2	1	###	###	20	150	2	###	∞	###	###	###	∞	∞	21	10	###	###	28	##	40	20	###	###	∞	###	##	###	###	###	0	100	###	500	80	###	4	###	1184

Data of farmers by sex,94

	Shamba																				Boundary of shamba													Grazing land						Others							
	Cr/m	C/si	C/sp	G/sp	Euca	G/r	Az/i	Me/v	T/in	Jaca	M/az	A/to	Leuc	E/sa	T/m	Cl/ca	Casu	Mang	Avoc	Al/f	Total	E/tu	G/r	C/si	Cypr	Pa/a	Jaca	Euca	Leuc	C/sp	Cr/m	Casu	Total	A/to	G/r	Se/s	A/po	Pr/j	Total	G/r	Euca	E/sa	E/m	C/si	Jaca	Do/c	Total
7					26														32		58				52								52						0								0
8	2	14	10			15					6										47		5			13							18						0								0
9	1	4	2																		7	∞											∞						0								0
10						400															400												0						0								0
11																					0												0						0								0
12		5																			5												0						0								0
13		24	2																	4	30	∞											∞						0								0
14			5					3	2		6	1									17												0	20					20								0
15						45							15								60		18				11	24					53						0	300	300			50			650
18																					0												0						0								0
22																15					15		15					11			10		36		50				50							1500	1500
23	∞					∞											∞				∞												0						0								0
24																					0		180									4	184						0	100							100
25							1	1										1			3												0			1			1								0
26							1														1												0						0								0
27																					0												0						0								0
28													1				1				2												0	1			1	1	3								0
Total	∞	12	4.8	###	26	∞	1	2	2	###	6	1	8	###	###	15	∞	1	32	4	∞	∞	55	###	52	13	11	18	###	###	10	4	∞	11	50	1	1	1	74	200	300	####	##	50	###	1500	2250

	Shamba																				Boundary of shamba													Grazing land						Others							
	Cr/m	C/si	C/sp	G/sp	Euca	G/r	Az/i	Me/v	T/in	Jaca	M/az	A/to	Leuc	E/sa	T/m	Cl/ca	Casu	Mang	Avoc	Al/f	Total	E/tu	G/r	C/si	Cypr	Pa/a	Jaca	Euca	Leuc	C/sp	Cr/m	Casu	Total	A/to	G/r	Se/s	A/po	Pr/j	Total	G/r	Euca	E/sa	E/m	C/si	Jaca	Do/c	Total
1	3	6	4	400																	413	∞											∞						0								0
2					12																12												0						0								0
3						1	2	5													8		1										1						0								0
4		6	3						2												11	∞											∞						0								0
5						1				1											2		1										1						0								0
6		6				50		2													58		80	10									90						0								0
16						200								150							350		2										2						0	100		500	80		4		684
17										1			20		2						23						20						20						0								0
19						10															10		8				35		40				83						0			500					500
20						7															7		20										20						0								0
21			3			400				1											404		32							20			52						0								0
Total	∞	6	3.3	400	12	∞	2	3.5	2	1	###	###	20	150	2	###	∞	###	###	###	∞	∞	21	10	###	###	28	##	40	20	###	###	∞	###	##	###	###	###	0	100	###	500	80	###	4	###	1184

Data of farmers by sex,94

		Number of tree planting					Plant within last 1 year					Surviving seedlings					Level of technical skill				Number of seedlings in nursery							Carried out new techniques											
		0	1-49	50-99	-499	500-	0	1-49	50-99	-499	500-	0	1-49	50-99	-500	500-	1	2	3	T	Yes	No	Private		Group		Others	Nur	Prot	Agro	So/W	Bee	Plant	Orga	Graz	Seed	T/ma	Energ	Graf	Sps
7	32-6		1					1					1				2	2	2	6		1																
8	32-8		1					1					1				2	2	2	6	1		1	150	1	100		1			1		1			1	1	1		
9	32-12		1					1					1				2	2	2	6	1				1	500		1			1		1	1						
10	32-13		1					1						1			2	2	3	7	1				1	10000			1									1	
11	32-15					1					1				1		5	5	4	14	1				1	1400		1			1							1	
12	32-16			1				1					1				3	2	2	7	1		1	100	1	1100					1								
13	32-18			1					1				1				3	3	2	8		1						1			1		1	1					
14	32-22		1					1					1				2	2	2	6	1				1	2000		1	1		1		1	1	1		1		
15	32-23					1					1				1		5	5	4	14	1				1	4000				1	1		1						1
18	36-12		1					1				1					2	2	1	5	1		1	100					1		1		1				1		
22	37-3			1					1				1				3	3	2	8	1				1	4		1		1			1						1
23	37-11		1					1				1					2	2	1	5		1						1			1						1		1
24	37-13					1					1					1	5	5	5	15		1						1					1			1			
25	37-15		1					1					1				2	2	2	6		1										1							
26	37-16		1					1					1				2	2	2	6	1		1	5					1		1		1						
27	37-17		1					1					1				2	2	2	6		1										1	1				1		
28	37-19		1					1				1					2	2	1	5	1		1	10					1				1						
Total		0	11	3	0	3	0	12	2	0	3	3	10	1	2	1					11	6	5	73	8	2388	0	0	8	5	2	9	1	9	7	1	1	3	4	2	3
																												29	18	7	32	4	32	25	4	4	11	14	7	11

		Number of tree planting					Plant within last 1 year					Surviving seedlings					Level of technical skill				Number of seedlings in nursery							Carried out new techniques											
		0	1-49	50-99	-499	500-	0	1-49	50-99	-499	500-	0	1-49	50-99	-500	500-	1	2	3	T	Yes	No	Private		Group		Others	Nur	Prot	Agro	So/W	Bee	Plant	Orga	Graz	Seed	T/ma	Energ	Graf	Sps
1	30-3				1				1				1				4	3	2	9		1						1	1	1	1								
2	30-9			1					1				1				3	3	2	8	1		1	360				1			1	1	1	1					
3	30-10				1			1					1				4	2	2	8	1		1	200	1	1000						1	1		1	1	1		
4	30-14			1					1					1			3	3	3	9	1		1	3600	1	7400		1			1		1						
5	30-19				1					1			1				4	4	2	10	1		1	100	1	6000		1	1					1					
6	30-24			1					1				1				3	3	2	8		1						1			1								
16	36-6		1								1			1			2	5	3	10	1		1	800				1	1		1		1			1			1
17	36-10																			0													1	1	1			1		
19	36-13				1					1			1				4	4	2	10	1		1	50				1		1				1					
20	36-17					1					1				1		5	5	4	14	1		1	900				1	1		1	1		1					
21	36-20					1					1				1		5	5	4	14	1		1	4000										1					
Total		0	1	3	4	2	0	1	4	2	3	0	6	2	2	0					8	2	8	1251	3	4800	0	0	8	4	2	6	3	5	5	3	1	2	0	1	1