

SECTION IV.

RESULTS OF THE MIDTERM SURVEY

COMMUNITY DEVELOPMENT & GENDER SECTION

In order to gather data to evaluate the situation regarding community development and gender in the target areas, the survey team conducted two separate questionnaires.

The following sections (1.1 through to 1.4 below) describe the results of the main questionnaire, which covered 30 groups out of a total of 96 groups being supervised by WATCH during the Kanggime extension. This sample included 14 groups from Kanggime Sub-district and 16 groups from Kembu-Mamit Sub-district. The questionnaire was completed through a series of group discussions, each of which involved the majority of the registered members of each group.

The second questionnaire targeted individual respondents rather than groups and attempted to establish a picture of the skills, knowledge, relative wealth and well being of 140 individuals who were members of WATCH CD groups, compared with that of a control group of 96 respondents who were not members of WATCH CD groups. The results of this questionnaire are displayed and analysed in sections 2.1 and 2.2 below.

1. RESULTS OF THE GROUP QUESTIONNAIRES

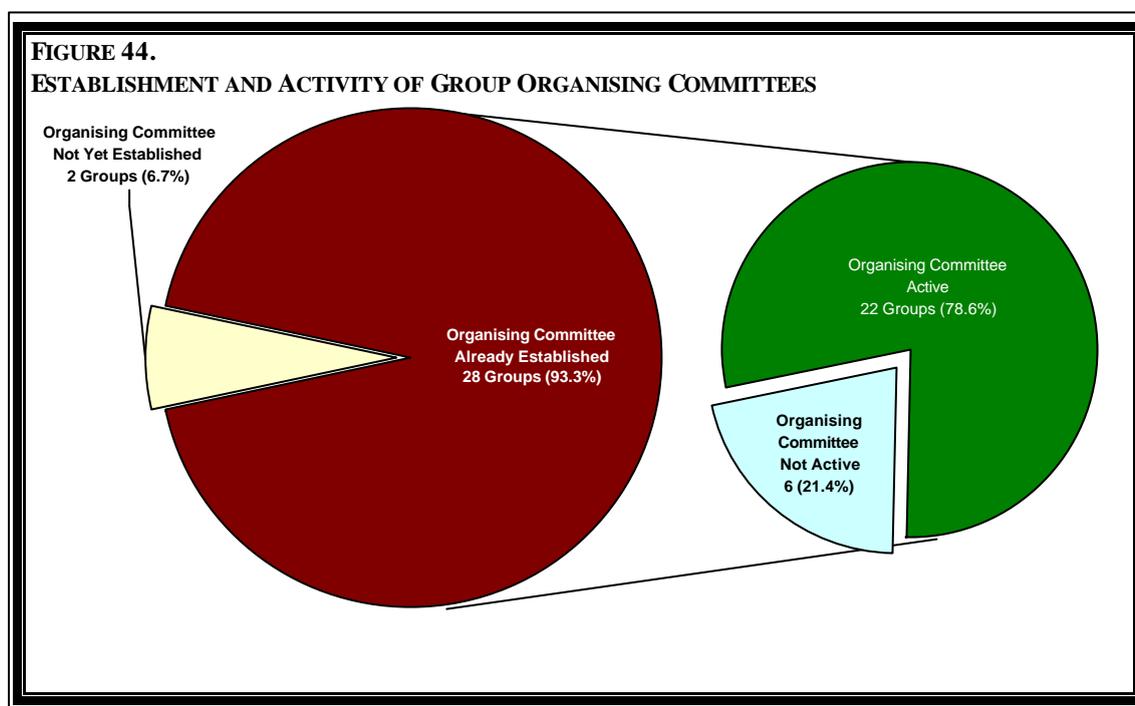
1.1 GROUP ORGANISATION

An adequate level of organisation within each of the community development groups was considered to be a prerequisite for the effective establishment and development of the group. WATCH recommended that the simplest form of group organization would have:

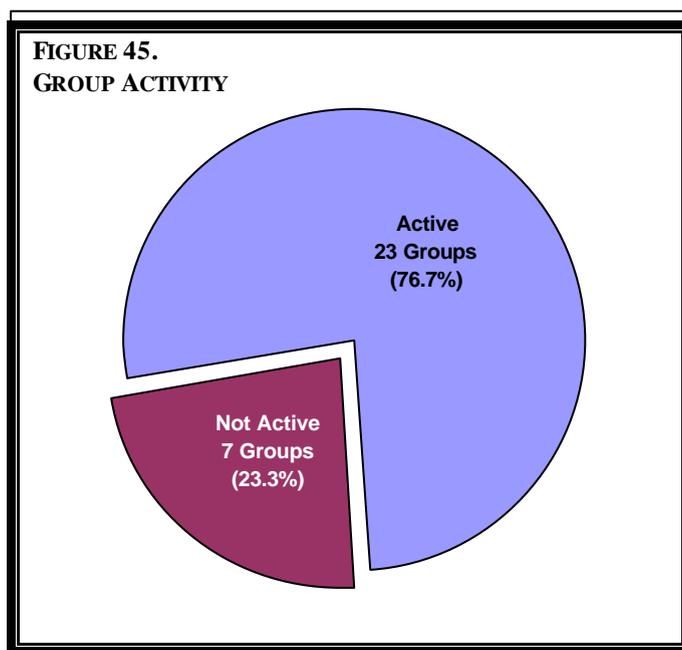
- An organising committee or directors whose identity and roles are clearly established;
- Membership that is clearly defined and members who are actively participants in group meetings and activities;
- Meetings that are conducted regularly;
- A work plan; and
- A location where group activities can be carried out.

1.1.1 GROUP ORGANISING COMMITTEE

As can be seen in figure 44 a great majority of groups surveyed had already established an organising committee. Most of the groups' organising committees comprised a group facilitator (who was also the CD *cadre* being trained by WATCH), a chairperson, a secretary and a bookkeeper.



When questioned regarding whether or not the organising committees were active in planning and organising group activities a total of 22 groups (78.6% of those groups which had an organising committee or 73.3% of the entire sample) said that their organising committee was active whereas 6 (21.4% of the groups who had already established an organising committee or 20% of the entire sample) said that theirs were not active.



The reasons which was given by several of the groups as to why their organising committees were not active as that the group organisers felt that it would not be possible to motivate group members without cash being made available to pay members for their labour and material inputs. Expectations of cash payment for involvement in community development / self-help activities throughout many parts of Jayawijaya has been influenced by other projects where cash was made available for the labour and material inputs of the communities involved.

1.1.2 GROUP MEMBERSHIP

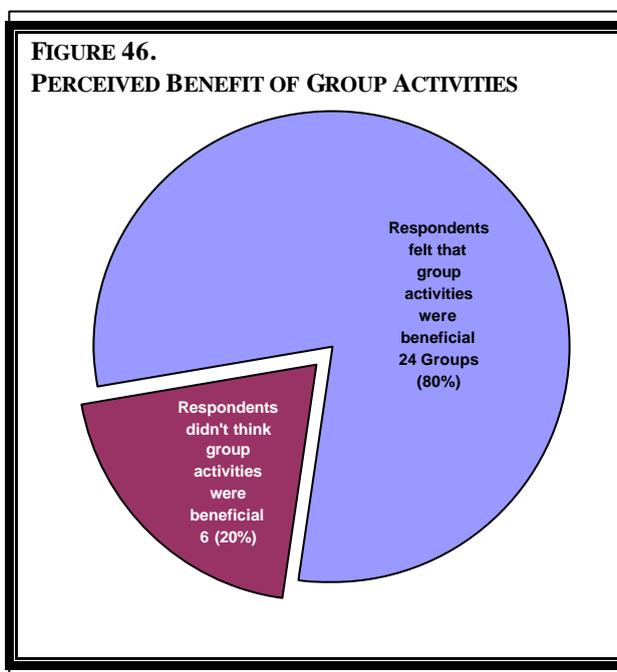
When respondents were questioned regarding the level of activity of group members just over three quarters (76.7%) of the respondents said that most of the members of their groups were actively involved in the planning and implementation of group activities.

In the course of this line of questioning the main reason given as to why some group members were not active or had lost interest in WATCH CD group activities was that, “*We feel unmotivated because we are only told to work without any financial assistance*” and “*because we have to wait too long for this work to bear fruit.*”

1.1.3 PERCEIVED BENEFIT OF GROUP ACTIVITIES

When questioned about whether or not there was any value or benefit in the group activities a total of 24 groups (80.0%) indicated that they felt that they were deriving a clear benefit. The members of 6 groups (20.0%) indicated that they could not see the benefit in the group activities. Perceived benefits from the activities include:

- (1) Being trained in agriculture, animal husbandry and other skills, which up until now had not been taught by the government or other institutions;
- (2) Having health status raised through raising awareness of the major types of diseases affecting us;
- (3) Being able to work together for our own development;
- (4) Feeling better prepared to face the modern world;
- (5) Encouraging us to work hard and help each other;
- (6) Helping us to increase our productivity;
- (7) Introducing us to a wide variety of new plant crops;
- (8) Receiving training in food processing and nutrition;
- (9) Receiving material assistance;
- (10) Receive support and supervision from people outside the local community. This has never really happened before, at least not to the extent of having field staff visiting all groups, even those in remote locations.



1.1.4 GROUP MEETINGS

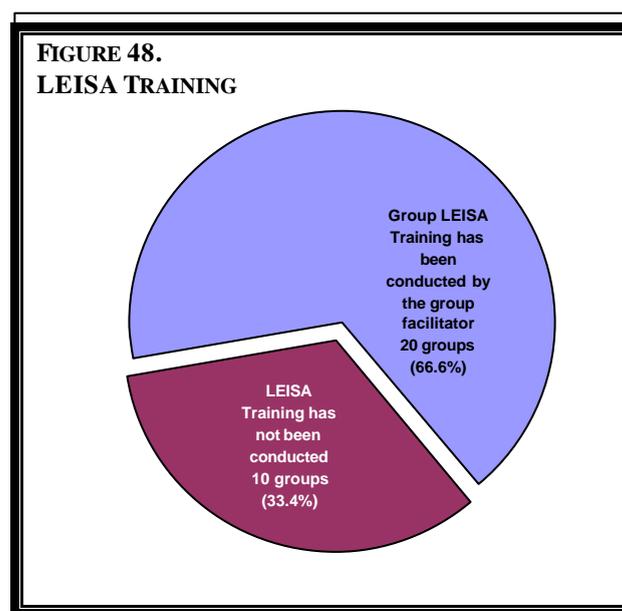
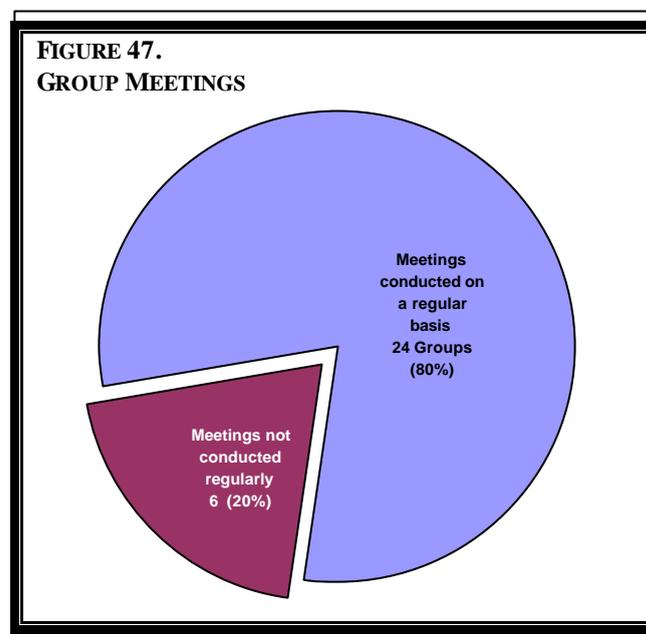
Figure 47 shows that a considerable majority (24 groups or 80%) of the groups surveyed had fairly regular group meetings to discuss the groups' development, problems encountered and to conduct further planning of group activities. These meetings were normally held on a monthly basis but a few groups held these meetings as often as once a week. The six groups (20%) who said that they rarely or never held group meetings correspond to the six groups who indicated they could not see any benefits from being involved in the program (see Figure 46). We can therefore conclude that the principal reason why some groups did not hold regular meetings was because of a lack of interest or motivation towards the group activities as a whole rather than because group members or organisers feeling that such meetings were unnecessary or inappropriate. Furthermore, it is also fair to conclude that almost all of those groups who felt motivated to actively participate in the CD group activities were conducting group meetings on a regular basis.

1.2 APPLICATION OF NEWLY INTRODUCED TECHNIQUES AND TECHNOLOGIES

One of the most important activities implemented through the WATCH project was the introduction and training of groups in new techniques and technologies as it aimed to help achieve group self-reliance. Through group training activities it was hoped that considerable skill transfers would occur between the project staff, the group facilitators and the group members, and that this would help groups to become more self-reliant and individuals to raise their general standard of living. The following section provides a picture of the extent to which groups accepted and applied the new techniques and technologies.

1.2.1 GROUP LEISA TRAINING

LEISA is an acronym for *Low External Input Sustainable Agriculture (LEISA)*, a package of sustainable, organic agriculture techniques and technologies for sloping terrain. In order to introduce more productive yet sustainable systems for agriculture, project staff provided each of the group facilitators with training in LEISA agriculture. After the initial training, facilitators were encouraged to return to their groups and carry out training for the other group members. Figure 48 shows that in 20 groups (66.7%), group facilitators had conducted follow-up LEISA training activities for all group members whereas in 10 groups (33.3%) such training activities had not yet been carried out.

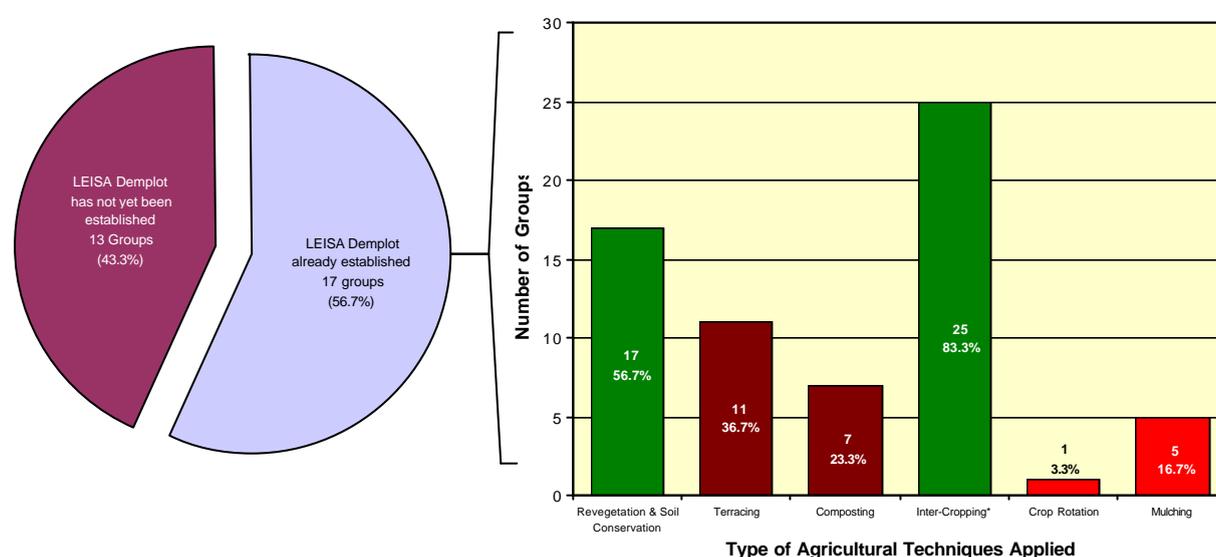


1.2.2 ESTABLISHMENT OF GROUP LEISA DEMONSTRATION PLOTS (DEMPLOTS)

After group training in LEISA, each group was provided with further support as well as technical and material assistance to establish a centrally located and group owned LEISA demonstration plot (demplot). In Figure 49 we can see that at the time of the mid-term survey just over half (56.7%) of the groups surveyed had established such a LEISA demplot.

When group members were questioned regarding exactly what elements of the LEISA package had been applied by their groups, it emerged that techniques such as revegetation / soil conservation and intercropping had proven very popular whereas crop rotation and mulching had only been applied by a small number of groups.

FIGURE 49.
ESTABLISHMENT OF LEISA DEMPLOTS



Notes: Inter-cropping was already fairly commonly practiced by people in the target areas so its application by groups was not taken as a specific indicator of the application of LEISA Training

Tree planting for revegetation and soil conservation

Being applied by 17 (56.7%) of the 30 groups surveyed, tree planting for revegetation and soil conservation proved to be one of the most popular elements of LEISA. This is in part due to tree planting being an already accepted part of Lani culture. Stands of trees are planted and maintained for fruit, fuel and soil enrichment and trees are also planted in male initiation rituals. Furthermore, since landslides are very common in the steep valleys of Kanggime and Kembu-Mamit Sub-districts, people are concerned about the loss of soils from their gardens. Simple earth retainers from wood or stones are often built around people's gardens.

Intercropping

Intercropping already exists in Jayawijayan agriculture systems and so it is not surprising that intercropping proved to be a readily accepted technique by the target communities with as many as 25 groups (83.3%) reporting they practiced intercropping. The challenge for WATCH in regards to improving intercropping techniques lay in encouraging groups to improve the combinations of crops being used so as to improve soil fertility and reduce pest problems.

Terracing

The number of groups to apply their training on terracing (11 groups or 36.7%) was quite promising given the amount of labour needed to initially establish terraced gardens. As has already been pointed out, soil erosion and land slides are a considerable concern for most people in Kanggime and Kembu-Mamit Sub-districts and some rudimentary forms of terracing have traditionally been practiced around sloping gardens. These factors have presumably led to the reasonable popularity of terracing despite the considerable labour inputs involved. On the other hand, in many parts of Jayawijaya WATCH personnel experienced some resistance to the idea of terracing because as a Javanese technique for wet rice agriculture, it would rot their sweet potato tubers. Even though the terracing system promoted by WATCH incorporated adequate cross-slope drainage, many people remained concerned about the possibility of rotting tubers and preferred their traditional systems which facilitate raised beds and drainage runnels. Another barrier to greater acceptance of terracing is that the great majority of agriculture is still conducted on a shifting or swidden basis. Many Jayawijayans find it strange or counterproductive to invest effort and energy into one garden site when you could just move on to another site if the existing garden becomes depleted or infested with pests. As terracing is an important element of the LEISA system the survey team's findings suggest that more work needs to be done to both refine the design of to inspire greater confidence amongst Jayawijayan agriculturists and also on the social marketing of this concept.

Composting

Composting had only been applied by 7 groups (23.3%). Traditionally Highland Papuan agriculture has been principally geared towards root crop production, which requires high levels of potassium and low levels of nitrogen. Consequently, when preparing gardens most refuse has been burnt in order to release potassium in the potash, rather than being allowed to break down into nitrogen and humus. Whilst many Jayawijayans are aware that many new leaf and fruit crops do not perform optimally under such conditions, the idea of composting is too alien to be readily accepted.

Mulching

Only 5 groups (16.7%) claimed to apply the technique of mulching. Depending upon the composition of the mulches used, mulching serves several functions including soil fertilisation and improvement of soil structure, soil moisture conservation, and weed reduction. As has already been pointed out, the value of nitrogenous fertilisers and high organic contents in soils are only becoming important as the non-tuberous agricultural production increases. In regards to soil moisture conservation, except in cases of extreme drought, water conservation has never been a significant element in Highland Papuan agriculture. On the contrary, most

Highland Papuan Agricultural systems place great emphasis on drainage. In relation to weed control, Lani women are extremely adept at removing weeds using a short stick or worn down spade and this tilling of the soil to remove weeds also helps to break up the soil around their tuber crops and thus allow the tubers to increase in size. These agricultural traditions would render perceptions of mulching as unnecessary and contribute to the poor uptake of mulching in the target areas.

Crop rotation

Crop rotation is a technique designed to intensify the productivity of a limited area of land whilst maintaining soil fertility and minimising the build up of populations of crop specific pests. It was the technique least often applied with only 1 group (3.3%) stating that they had attempted to establish a system incorporating periodic rotation of crops. In Jayawijaya where population densities are generally very low people have traditionally used a swidden agriculture system whereby land was rotated rather than crops. This means that crop rotation is a quite alien concept for the Papuan horticulturalist and so long as access to land remains great enough to facilitate swidden agriculture, most Jayawijayans are unlikely to readily accept this new technique.

Conclusions

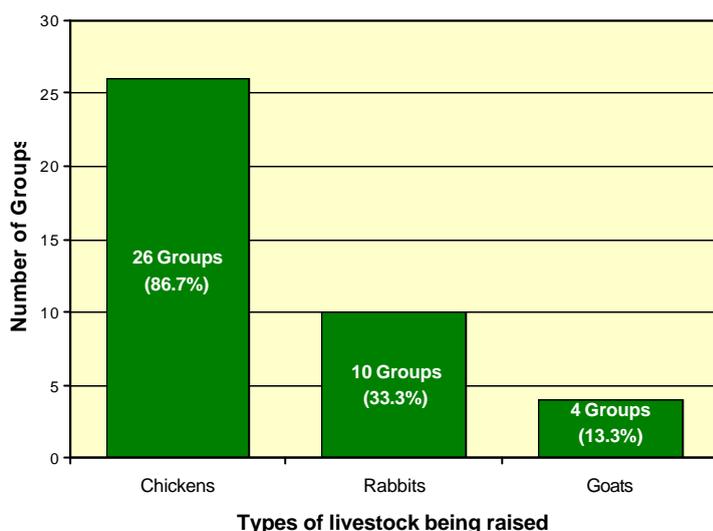
It should be noted that the ready acceptance of revegetation, intercropping and terracing has undoubtedly been supported by the fact that these concepts already existed to varying extents in indigenous Jayawijayan agricultural systems and because there was a clear need for them in the eyes of the target communities. On the other hand, intensive crop rotation and mulching are alien and unnecessary concepts to Jayawijayan agriculturists and so their acceptance is unlikely. This should not suggest that WATCH has failed to successfully introduce and acculturate these techniques. Rather, it should highlight the fact that the uptake of new ideas is heavily dependent upon how well such ideas fit with established techniques and whether or not people feel the idea will improve their existence.

1.2.3 ANIMAL HUSBANDRY

The use of pens or cages in animal husbandry is another production technology that was heavily promoted by WATCH. In particular WATCH encouraged groups to build pens for rabbits, chickens and goats³⁰ so as to increase productivity through minimising stock losses to predators, theft or strays and also to reduce environmental health problems. The project encouraged groups to build such cages by supplying training, tools and materials including wire and nails, and providing seed grants of livestock.

30 In the earlier stages of the WATCH Project the use of pens in pig raising was also promoted however, it was found that cultural resistance to this idea was so great as to make it counterproductive for the project to invest further time and resources in this direction.

FIGURE 50.
GROUPS THAT HAVE ESTABLISHED EXAMPLES OF CAGES FOR DIFFERENT
TYPES OF LIVESTOCK



It was a concern that penning livestock would lead to an increase in the workload allocated to women. This was considered a possibility since that once livestock have been caged they require keepers to collect fodder for them on a daily basis. In Highland Papuan societies most animal husbandry work is allocated to women. Indeed WATCH's own experience in other parts of Jayawijaya has shown that men often take a strong initial interest in animal husbandry

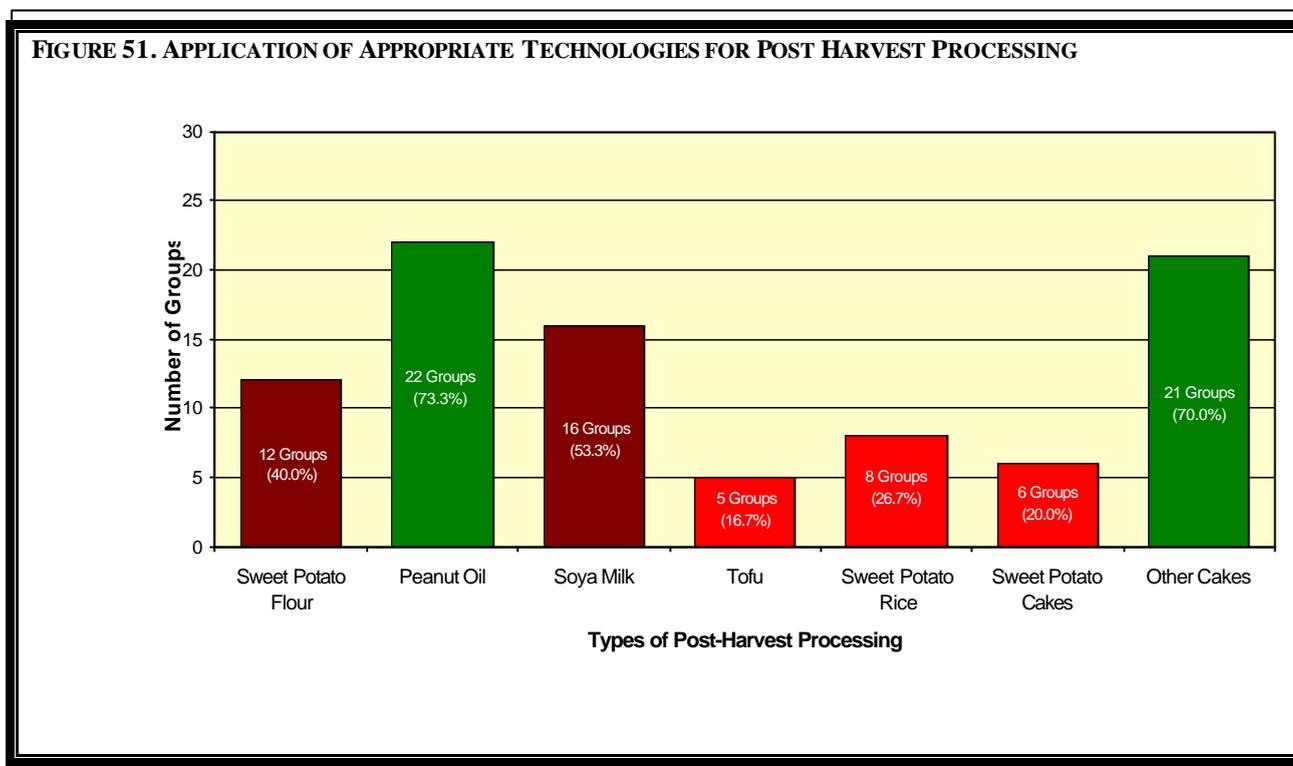
activities but they also often delegate most of the work to women after a few months.

Figure 50 illustrates that out of most groups surveyed, 26 (86.7%) had established demonstration chicken coops, 10 groups (33.3%) had established rabbit hutches and just four groups (13.3%) had established goat pens. If we compare this to the data displayed in figure 54, which illustrates how many groups were involved in chicken, rabbit and goat raising we can see that:

- All of the groups surveyed were raising chickens but only 86.7% of them had built cages;
- A total of 11 groups (or 43.3% of the entire sample) were raising rabbits of which 10 groups (or 91%) were using cages; and
- A total of 7 groups (or 23.3% of the entire sample) were raising goats of which 4 groups (or 57.1%) were using cages.

1.2.4 APPLICATION OF APPROPRIATE TECHNOLOGIES FOR POST HARVEST PROCESSING

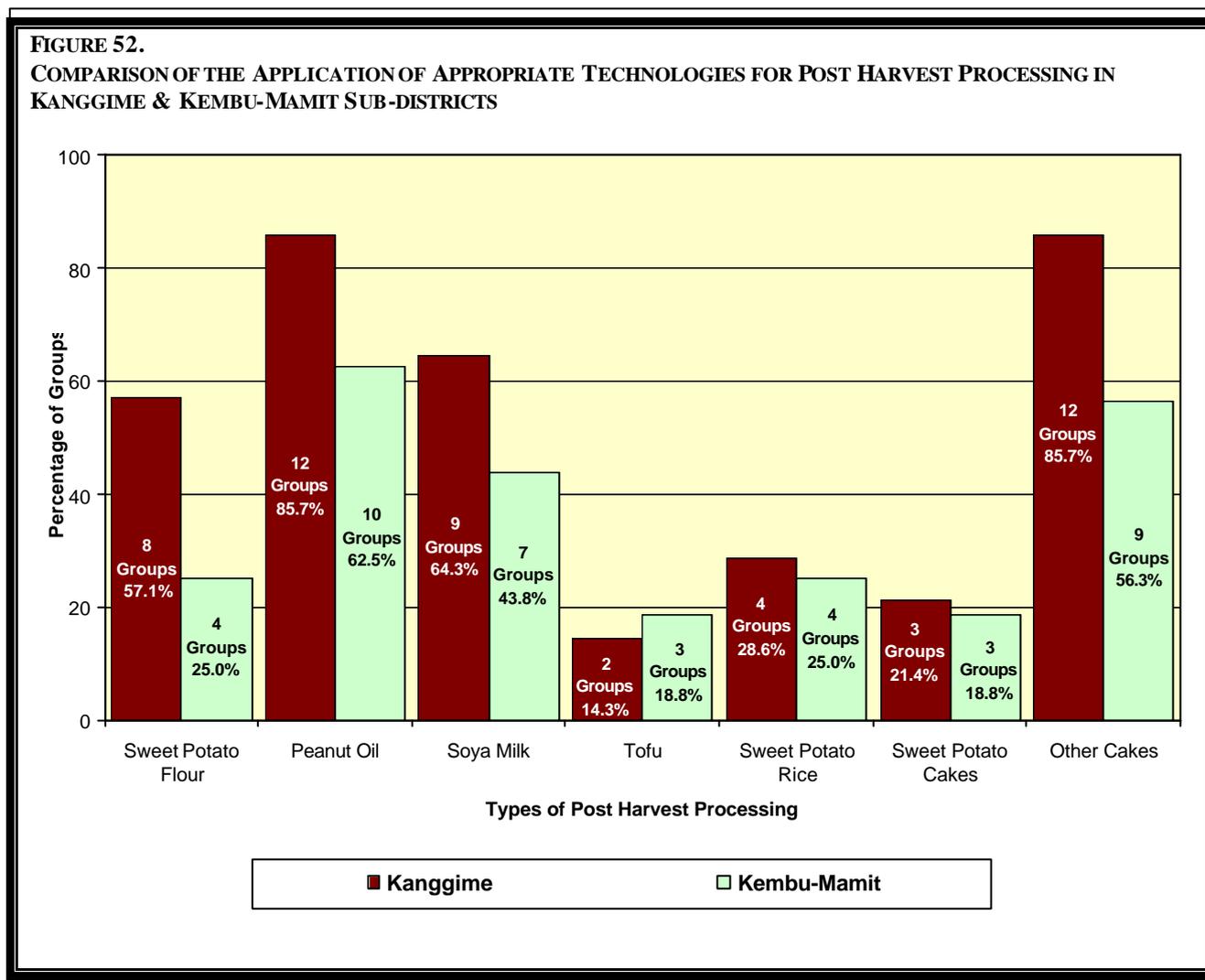
From Figure 51 we can see that the food processing technologies to have proved most popular in the target areas where the production of peanut oil and the making of cakes from local materials (ie. cassava, bananas, corn and taro).



These food-processing technologies proved popular because community members enjoy cooking with oil and consuming cakes. When funds are available people will even spend cash on purchasing such products. Some enterprising group members have already been producing these cakes for sale to other community members at the local markets. Furthermore, both of these techniques are relatively easy to apply and materials are available locally. Aside from oil and cakes, WATCH have promoted the making of sweet potato flour (for use as super oralite), baby weaning porridge and soya milk and these have been attempted by a reasonable percentage of groups. Tofu, sweet potato rice and cakes made from sweet potato flour did not appear popular. The poor acceptance of these technologies relates to the fact that they are all slightly more involved, the community have not yet developed an interest in producing these products for their own consumption and there is as yet no local market for them either. Tofu in particular has proved to be extremely popular amongst many WATCH CD groups during earlier phases of the project, however, this popularity has been largely based on its commercial potential and its application has thus been largely limited to areas where considerable numbers of non-Papuan people (the main consumers of tofu) live.

Comparing the percentage of groups in each sub-districts (as is displayed in Figure 31) highlights how groups in Kanggime have been somewhat more selective in regards to what new technologies they accept. In Kembu-Mamit the groups sampled were less likely to attempt applying almost any new technologies other than tofu making. Yet as the overall distribution of responses from Kembu-Mamit is flatter we can speculate that

whilst they are less likely to apply new technologies, they were more likely to try a wider range. This trend is probably a reflection of the people in Kanggime having experienced greater exposure to development projects that could ensure the development a higher degree of selectivity in what innovations they wish to apply. Greater selectivity in accepting technologies should therefore been seen as a positive result for it implies the community is becoming more self-reliant and willing to make its own choices *vis-à-vis* development.



1.3 INCOME GENERATING ACTIVITIES

WATCH staff considered economically productive activities to be extremely important for establishing self-reliance with the community development groups. Yet severe market constraints made it very difficult for the target communities to transform increases in productivity into increases in their cash income. This has led WATCH to focus on the subsistence sector to promote income-generating activities during the Kanggime extension. In particular WATCH focused on agriculture and animal husbandry, with home industry and commercial activities playing a less significant role. The main focus here has been on training and introducing new crop varieties and livestock breeds. The groups were then encouraged to multiply and disseminate throughout the members of the group and ultimately the broader community.

1.3.1 MULTIPLICATION OF VEGETABLES & PULSES

During the WATCH Kanggime Extension, the main distribution of plant propagules has occurred as part of the nutrition garden or *kebun gizi* activities. Under this program each of the 96 CD groups in Kanggime and Kembu-Mamit were provided with what were called a nutrition starter pack, containing planting materials (mostly seeds but in a few cases plants) for a range of vegetables, pulses, fruits and other nutritious and productive crops. Each group was encouraged to establish a communal demonstration plot nutrition garden (*demplot gizi*) where these plants could be grown and multiplied for distribution, first to group members, but ultimately to the broader community. Each group was supplied with a self-reliance starter pack, containing agricultural tools to ensure that the group had adequate tools to maintain the crops supplied in the nutrition starter packs.

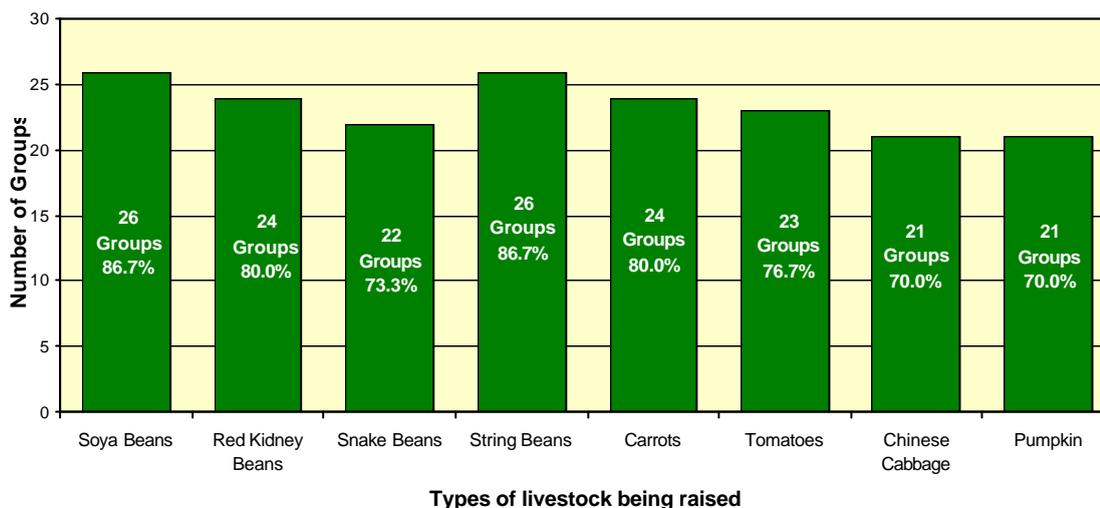
From the data displayed in Table 23 we can see that by the time the mid-term survey was conducted, all of the CD groups in Kanggime and all but two groups in Kembu-Mamit had already received their nutrition starter and self-reliance packages. We can also see that just over half of the groups in both sub-districts had received these packages around the middle of 1999, between April and July, whilst around 42% - 43% of the groups in both sub-districts received these packages in January-February 2000.

TABLE 23.
NUMBER OF CD GROUPS WHO HAVE RECEIVED SELF RELIANCE AND NUTRITIONAL STARTER PACKAGES DURING THE WATCH KANGGIME EXTENSION 1999 – 2000

SUB-DISTRICT	TARGET NUMBER OF GROUPS TO RECEIVE PACKAGES	APRIL MAY 1999	JUNE 1999	JULY 1999	JANUARY FEBRUARY 2000	TOTAL	PERCENTAGE OF TARGET ACHIEVED
Kanggime	46	11	15	0	20	46	100%
Kembu / Mamit	50	14	0	13	21	48	96%

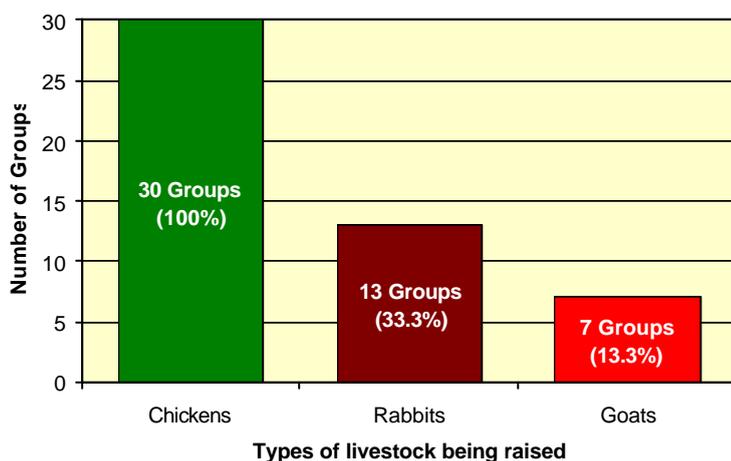
From the midterm survey data displayed in figure 53 we can see that, of the eight varieties of vegetables which were examined in this survey question, nearly all of the CD groups (between 70% and 86.7%) claimed to have been active in planting and harvesting the crops as well as had used the seeds obtained from these crops to further expand the plantings of both the group and its individual members. The reasons why around 13.3% - 30% of the groups surveyed had not multiplied the nutrition starter pack materials are not entirely clear but this outcome is presumably relate to crop failures, economic pressures encouraging people to sell rather than reinvest the plant material, and also to the fact that some groups had only recently received the nutrition starter packages at the time of the survey and had thus not had adequate opportunities to multiply these crops.

FIGURE 53.
MULTIPLICATION OF PLANT PROPAGULES PROVIDED TO THE COMMUNITY DEVELOPMENT GROUPS



From figure 53 we can also see that soya beans and string beans appear to be the most popular crops (with 86.7% of the groups surveyed claiming to have multiplied these crops) followed by red kidney beans and carrots (which had been multiplied by 80% of groups). Pumpkin and Chinese cabbage appears to be the least popular of these varieties, with only 70% of groups reporting that they had multiplied these varieties.

FIGURE 54.
MULTIPLICATION OF BREEDING STOCK PROVIDED TO THE COMMUNITY DEVELOPMENT GROUPS



1.3.2 ANIMAL HUSBANDRY

From figure 54 we can conclude that all of the groups surveyed claimed to have multiplied the number of chickens owned by the group whilst 33.3% had been active in breeding rabbits and 13.3% had increased the size of their goat herds, which had initially been received as assistance from WATCH. If we compare this data to the data already discussed on animal husbandry, it is apparent that for all three of these types of livestock, basically 100% of the

groups who were currently attempting to raise each of these breeds claimed to be increasing the numbers of livestock they have. This result looks very positive but is also possible that some groups are claiming success when in fact they may have actually experienced some setbacks in their animal husbandry activities. They may not have reported these setbacks to project staff for fear of losing the projects patronage.

1.3.3 LONG TERM/ TREE CROPS

From figure 55 we can see that a considerable proportion of the groups have one or more types of longer term productive crops including coffee (73.3%), citrus (53.3%), pineapples (40%) and bananas (86.7%). The figure for bananas seems to be low, as basically all Lani have stands of both plantain and table bananas. It can be presumed that at least some groups referred solely to the recently introduced varieties such as the Cavendish bananas.

1.3.4 OTHER ECONOMIC ACTIVITIES

The development of other economic activities, which are more focused on the generation of cash income, amongst the CD Groups during the Kanggime extension has been quite limited due to the limitations imposed by the weakness of the cash economy in the target areas. This is apparent from the data displayed in figure 56, which shows that only 6 groups (or 20% of the sample) had established some type of home industry activities and even fewer, 3 groups or 10% of the sample, said that they had established a kiosk or small store.

FIGURE 55.
GROUPS' DEVELOPMENT OF LONG TERM/ TREE CROPS

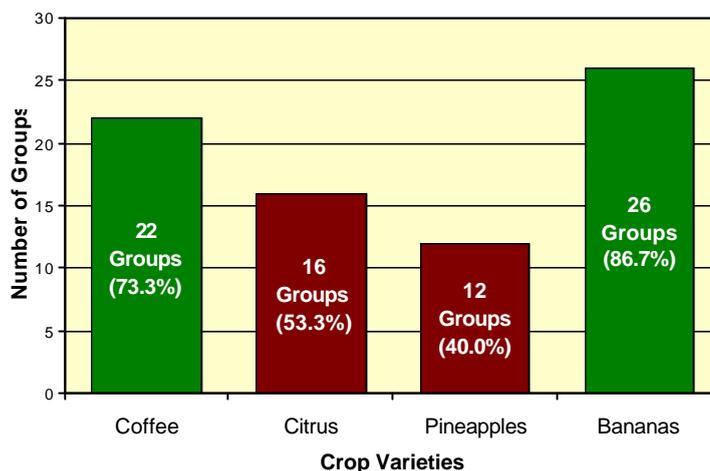
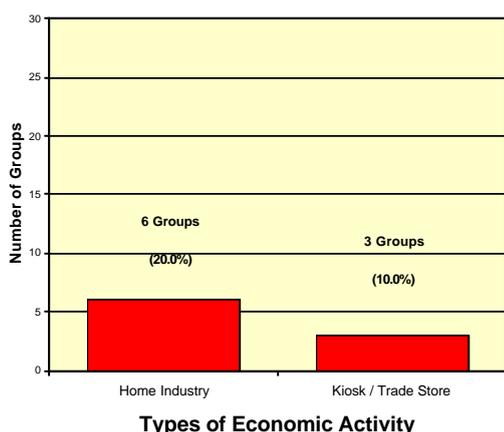


FIGURE 56.
OTHER ECONOMIC ACTIVITIES

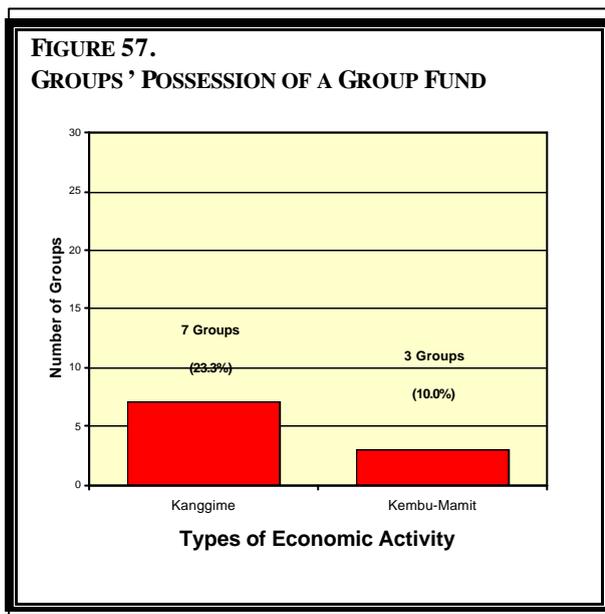


1.3.5 GROUP SAVINGS

The establishment of a group bank account has also been identified as an indicator of group progress as it indicates that a group is generating sufficient income to warrant such an account. Moreover, the existence of a group bank account implies a groups' access to working capital and so is considered likely to strengthen a groups' capacity to implement further income generating activities and thus sustain the active participation of members. From the survey of groups in Kanggime and Kembu-Mamit, as displayed in figure 57, we can see that only a minority of groups (23.3% in Kanggime and 10% in Kembu-Mamit) have already established group bank accounts. Whilst these figures appear to be quite poor, it

should be remembered that, due to local market constraints, the opportunities for cash income generation in Kanggime and Kembu-Mamit are extremely limited. Also, as the nearest bank branches are located over 80 kilometres away, it is very hard for group members to establish such accounts

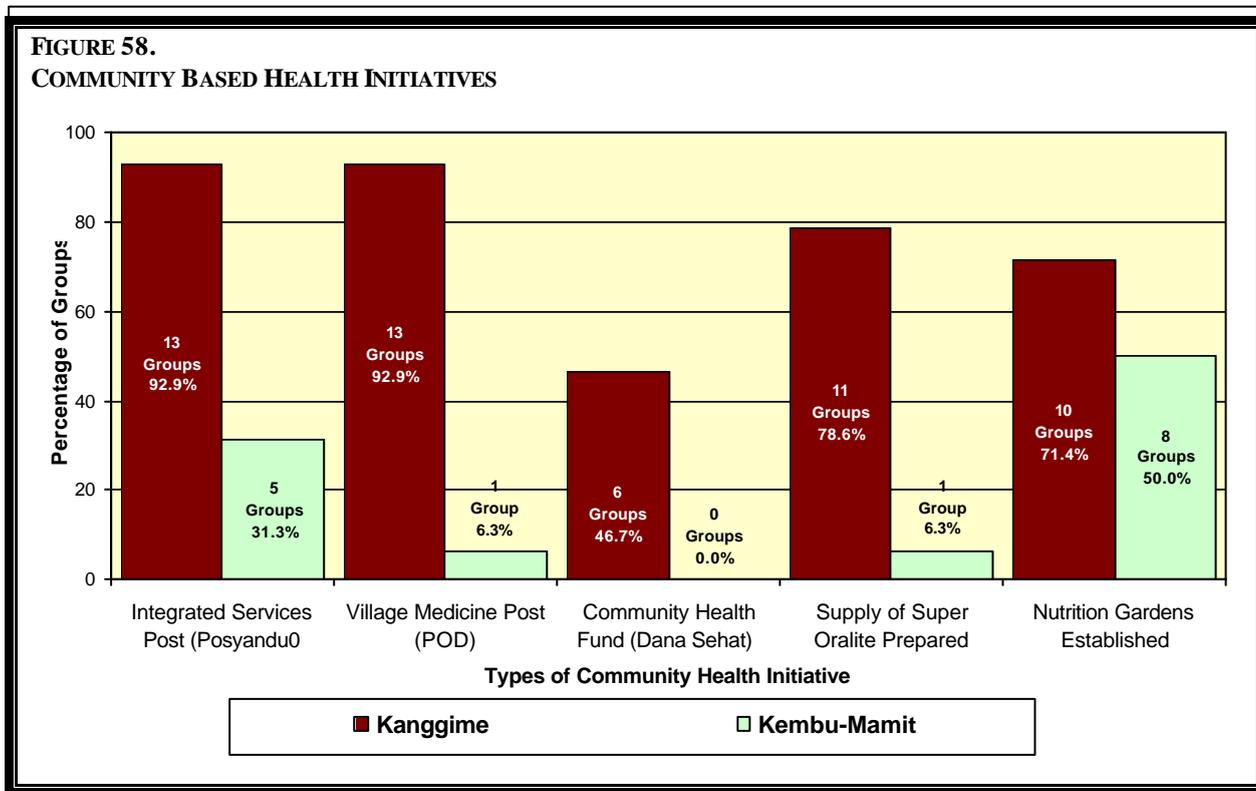
1.4 COMMUNITY BASED HEALTH INITIATIVES



Another indicator of group progress was the extent to which the CD Groups played an active role in community based health activities and most importantly in establishing and running a *Posyandu* and *POD* clinics as well as community health insurance funds (*Dana Sehat*).

From figure 58 we can see that groups' from Kanggime have been particularly active in establishing *POD* and *Posyandu* clinics and to a lesser extent in establishing nutrition gardens, health insurance funds and nutrition gardens. By comparison, the groups from Kembu-Mamit appear to have performed quite poorly in all areas except in the establishment of nutrition gardens. It should however

be pointed out that the results from Kembu-Mamit are deceptive because the data listed in figure 58 refers only to activities that were established through the facilitation of the CD Group. From the data on the distribution of health services in Kembu-Mamit (see section III / 1.2.1) we can see that there were already a several *Posyandu* clinics established in each *Desa* in Kembu-Mamit, which therefore makes it difficult or even counterproductive for the CD Groups to establish new *Posyandus*.



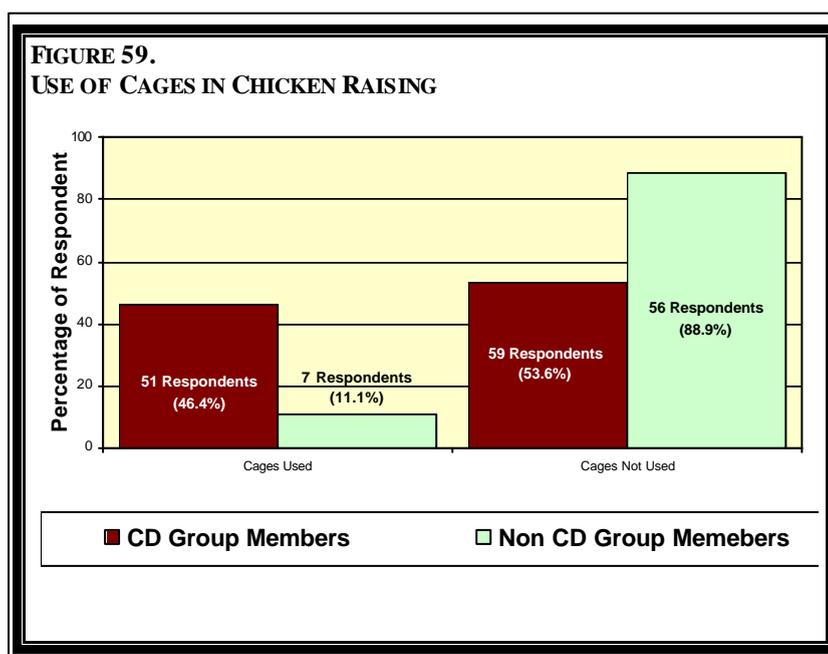
2.1 TRANSFER SKILL/TECHNOLOGY

The data displayed and discussed in the following sections are the results of a comparative survey of a total of 249 individual respondents from Kanggime and Kembu-Mamit. This sample of respondents was drawn from both sub-districts and, as can be seen from the breakdown of respondents provided in Table 24, was divided between two sub-groups of respondents. The first of these was comprised of people who were members of the WATCH CD groups (accounting for just over 60% of the sample) whilst the second was made up of people who are not members of WATCH CD groups (accounting for just under 40% of the sample). These two sub-groups enabled WATCH staff to compare factors between the groups such as skill levels, rates of application of new technologies and wealth or well being. From this they could develop a better picture of what variables may effect the success of project activities amongst group members and the broader community.

TABLE 24.
BREAKDOWN OF RESPONDENTS TO THE MID-TERM COMMUNITY DEVELOPMENT COMPARATIVE SURVEY

	KANGGIME	KEMBU-MAMIT	TOTAL
Members of WATCH CD Groups	49 RESPONDENTS (19.7%)	101 Respondents (40.6%)	150 Respondents (60.2%)
Not members of WATCH CD Groups	53 Respondents (21.3%)	46 Respondents (18.5%)	99 Respondents (39.8%)
Total	102 Respondents (41.0%)	147 Respondents (59.0%)	249 Respondents (100%)

2.1.1 USE OF CAGES IN ANIMAL HUSBANDRY



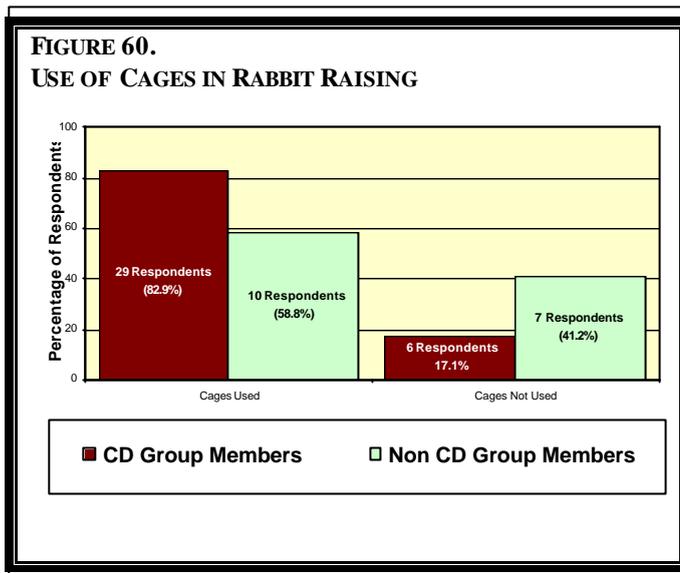
CHICKEN RAISING USING COOPS

The raising of chickens with cages has only been applied by 46.4% of the group members and 11.1% of non-group members. This data suggests that members of WATCH CD groups are about 4 times as likely to keep their chicken's in cages than is the case amongst people who are not group members. These figures also indicate that even amongst group members, the use of chicken cages is still not as common as WATCH would hope and that

further attention should be paid to their promotion.

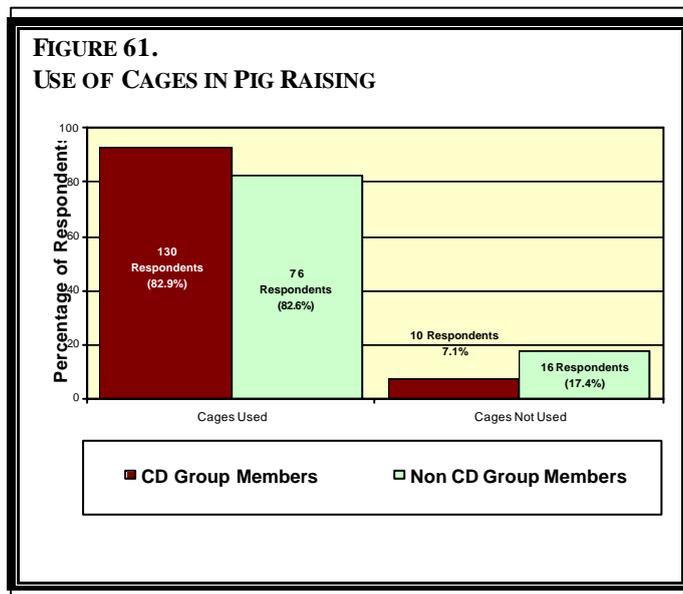
RABBIT RAISING USING HUTCHES

From the data displayed in figure 60 it is apparent that cages or hutches have been quite widely accepted, both by group and non-group respondents, as a necessary element of successful rabbit raising. Almost all of the group member (85%) had built rabbit hutches whereas just under 60% of the non-group members had built rabbit hutches. Once again this suggests that WATCH had a positive effect in encouraging the use of rabbit hutches.



PIG RAISING USING PIG STIES OUTSIDE THE *SILIMO*

From the results displayed in figure 61 we can see that a large majority of both group member and non-group member respondents claimed that they already had pig sties established outside of the confines of their *silimos*. WATCH promoted the separation of pigs from the human living environment so that there would be



less pollution of the human living environment and thus help raise community health standards. However, it should be pointed out that the construction of these pigsties has not entirely removed pigs from the immediate living environment. In fact the sties appear to be generally used for housing the larger boars and sows overnight. Many of the younger pigs still seem to stay overnight in the family houses and all of the pigs continue to be released during the day to forage by themselves. Whilst WATCH personnel believe that the establishment of a fully caged system of swine husbandry would both reduce

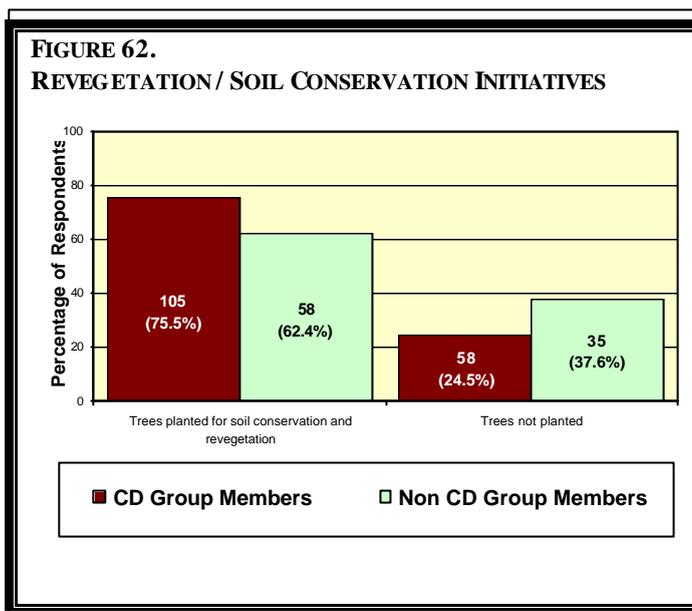
human health problems and increase the productivity of the communities pig herds, this approach continues to be problematic for most members of the target communities. They feel that such an arrangement would unnecessarily increase their workload, particularly for women who would be required to collect and carry large amounts of food each day.

Furthermore, fully caging pigs would have repercussions for the fertility of their gardens, as gardens are reliant on pigs for post harvest fertilization and tillage.

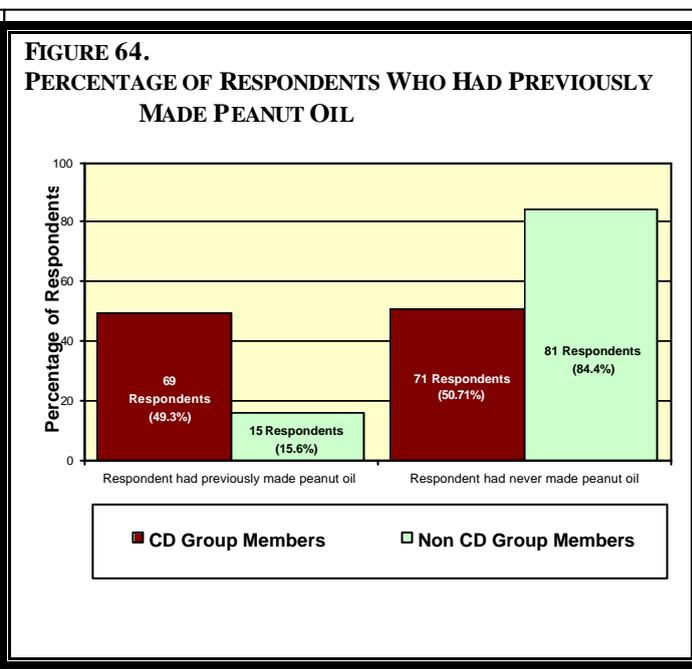
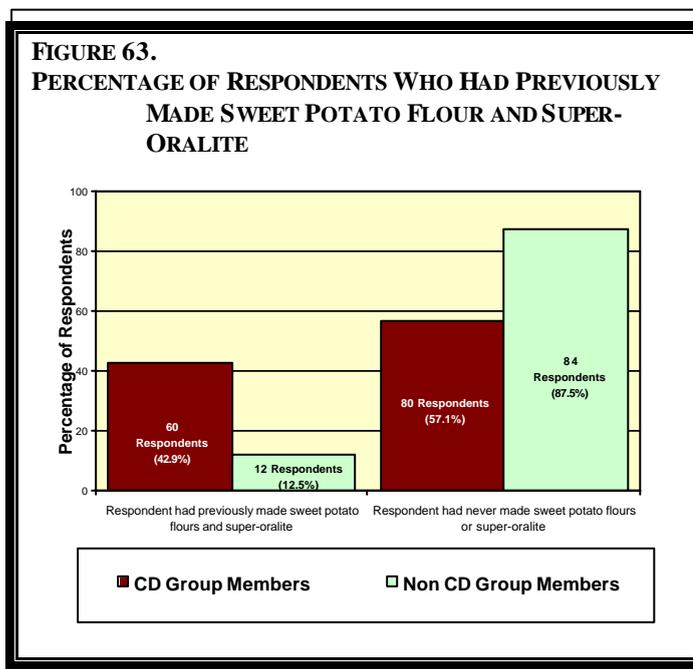
2.1.2 LEISA (LOW EXTERNAL INPUT SUSTAINABLE AGRICULTURE) / THE PLANTING OF SOIL AMELIORATING TREE SPECIES

From figure 62 we can see that a large percentage of both group member and non-group member respondents have already initiated planted nitrogen fixing trees (such as Casuarina, Acacia or Albizzia) to help reduce erosion and land slide and revitalize depleted soils. Although WATCH promoted this activity it should be remembered that the planting of nitrogen fixing and erosion controlling trees seems to have been practiced before contact and that the RBMU missionaries have also promoted the planting of such species during the

1960-1980s. However, from the disparity between the percentage of group member and non-group member respondents who have planted these types of tree we can conclude that WATCH has had some impact in reinforcing these messages and encouraging more planting of soil ameliorating trees.



2.1.3 APPLICATION OF APPROPRIATE TECHNOLOGIES FOR POST HARVEST PROCESSING



Figures 63 to 67 illustrate that the main types of appropriate technology applied by both group and non-group members were peanut oil production. This was followed by the production of sweet potato flour for use as super oralite that could be used instead of commercially available oralite. From these results we can assume that the types of appropriate technology that interest the target communities the most are those which respond to

the specific needs of the community and also that are quite easily learnt and applied. For the remaining months of the project the WATCH appropriate technology campaigns were to focus upon training members of the target communities in those technologies in which they have already displayed a strong interest in rather than attempting to continue training them in a variety of technologies in which they have already displayed limited interest.

Whilst the percentages of respondents to have tried applying the various types of food processing technology remained quite low (between 10% and 49.3% for group member respondents and 7.3% and 15.6% for the non-group member respondents) these results could be interpreted as indicating that there is increasing interest amongst members of the target communities for at least some of these new technologies. Certain community members trained in these techniques were beginning to promote them throughout the broader community especially when economic gain is to be had from this. Making cakes for sale at the local markets was by far the most popular food processing activity.

FIGURE 65.
PERCENTAGE OF RESPONDENTS WHO HAD PREVIOUSLY MADE RED PANDANUS OIL

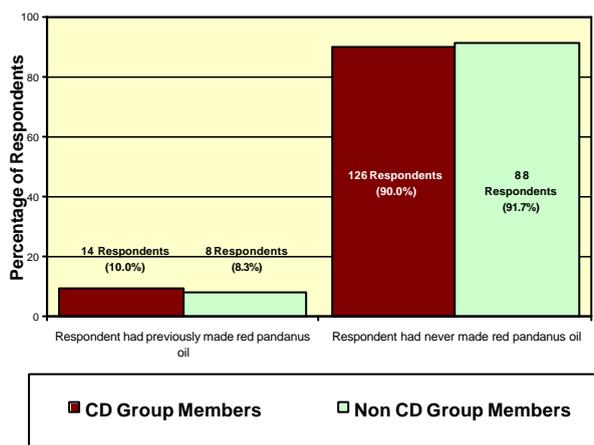


FIGURE 66.
PERCENTAGE OF RESPONDENTS WHO HAD PREVIOUSLY MADE SOYA MILK

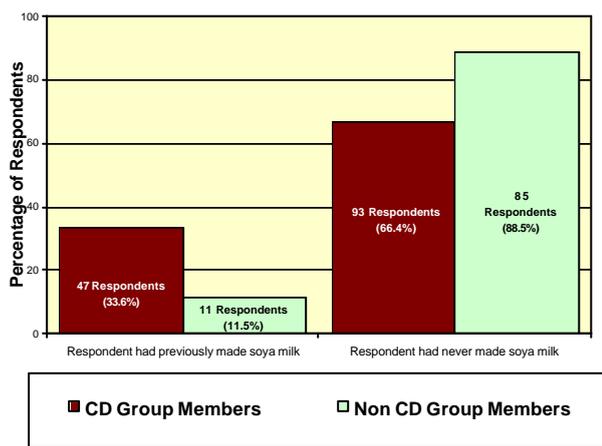


FIGURE 67.
PERCENTAGE OF RESPONDENTS WHO HAD PREVIOUSLY MADE SWEET POTATO RICE

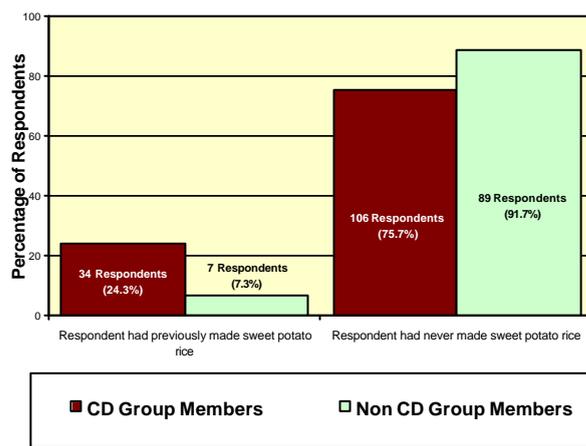
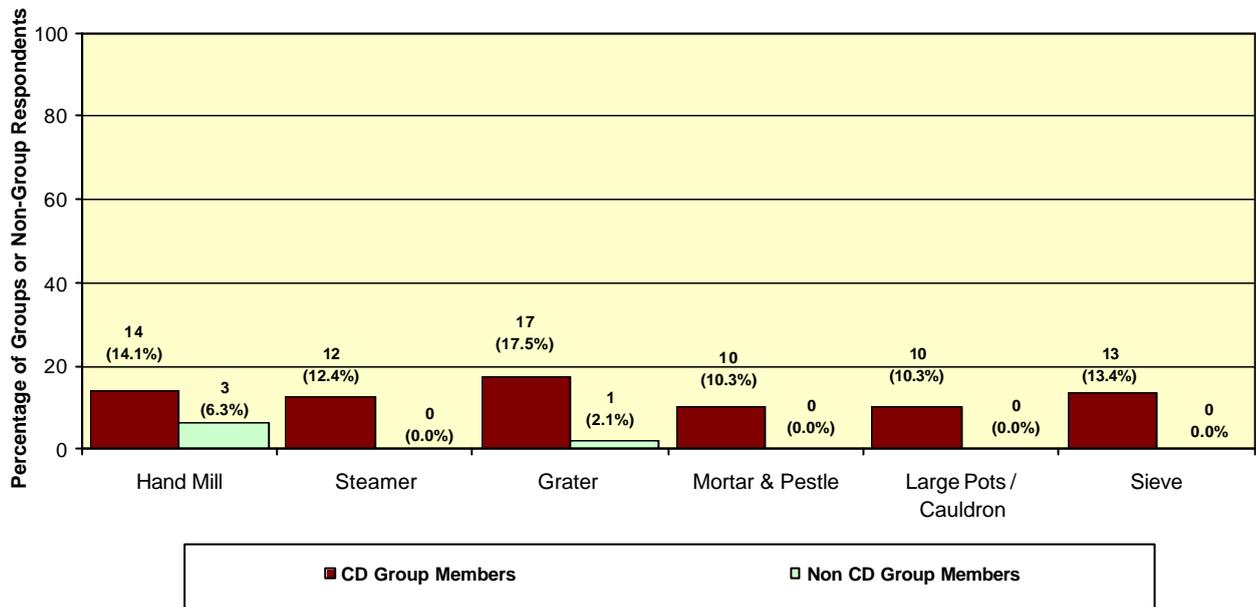


FIGURE 68.
PERCENTAGE OF GROUPS AND NON-GROUP RESPONDENTS WHO POSSESSED IMPLEMENTS FOR POST-HARVEST FOOD PROCESSING



2.1.4 POSSESSION OF UTENSILS FOR POST-HARVEST FOOD PROCESSING

From the results in figure 68 we can see that most respondents did not have direct access to the equipment required for the various forms of post-harvest processing technologies being promoted by WATCH. Only 10% and 17.5% of group-member respondents claimed to possess these various utensils whereas, apart from a few individuals who said that they had graters and hand mills, none of the non-group respondents owned these types of utensils.

The main reason for such low levels of ownership of such utensils relates to the fact that cash income in the target areas are very low and up until now most community members were loath to invest their limited cash resources in the necessary utensils as they have not seen the economic potential of post-harvest processing. Whilst most people do not have direct access to these utensils, many respondents claimed that they were able to borrow them from other neighbors if and when they wished to process their garden produce. In order to overcome these constraints, WATCH put forward the idea of establishing a small workshop that could produce utensils locally and sell them throughout the community. The establishment of such a workshop requires further consideration and research, as local demand for these types of utensils may not be sufficient to make such an enterprise viable. Moreover, production costs are likely to be very high as labour costs are high and there is no local supply of scrap metal, which means that most of the raw materials would have to be purchased with cash and then shipped to the target area.

2.2 THE LOCAL ECONOMY AND INCOME GENERATION

2.2.1 SOURCES OF INCOME

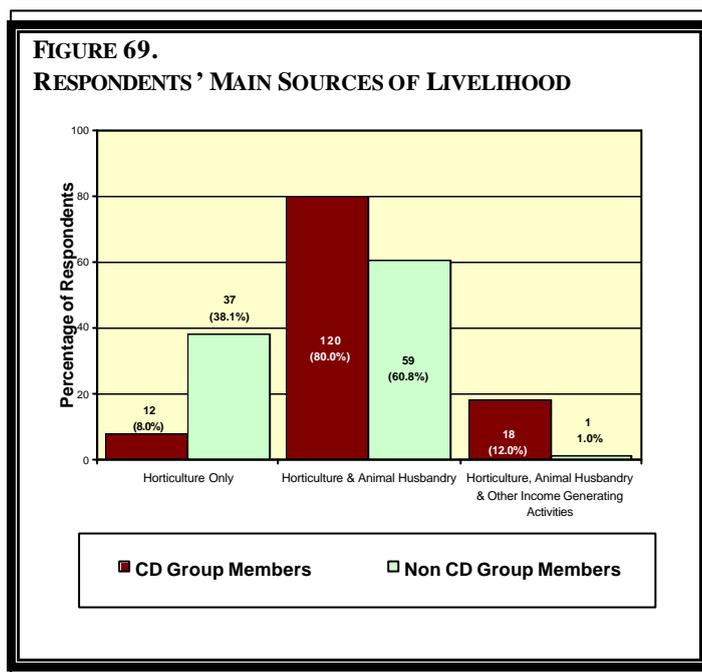
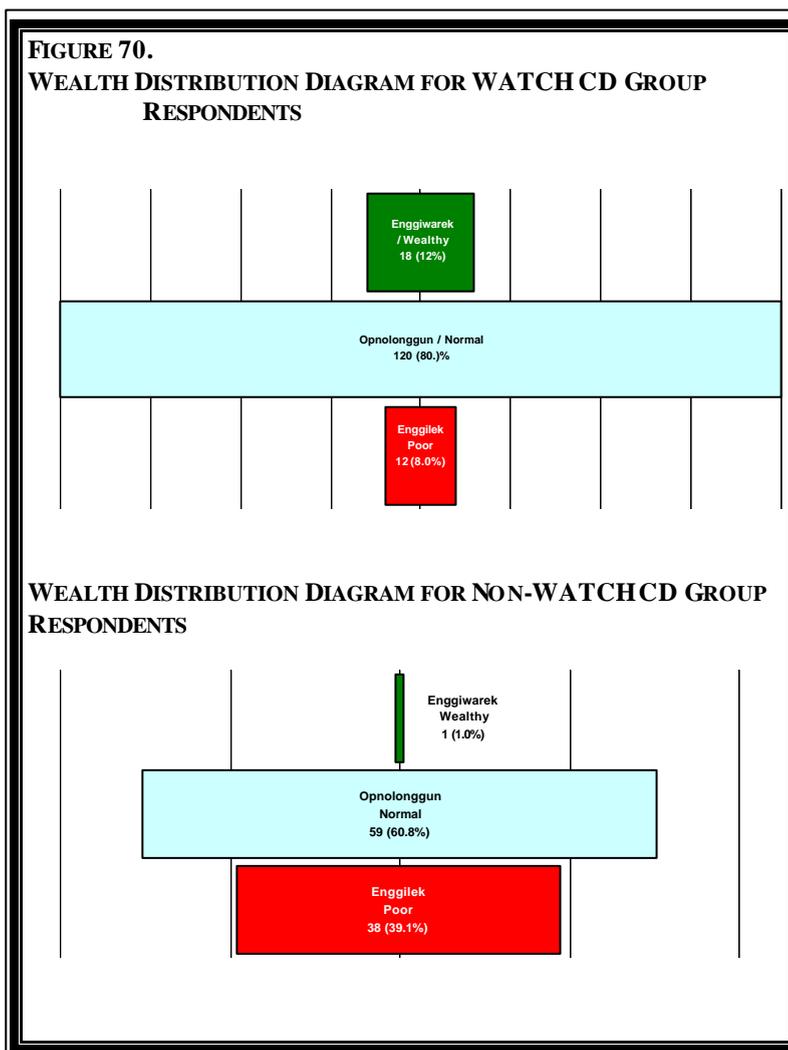


Figure 69 highlights that the majority of respondents derive their sustenance and income from horticulture and animal husbandry. Only 8% of the group member respondents said that horticulture was their only source of income, compared to 38% of the non-group member respondents. Conversely, 18% of the group member respondents claimed to have the ability to generate income from horticultural, animal husbandry and other enterprises whereas only 1 non-group member respondent said claimed to have any source of income outside of horticulture and animal husbandry.

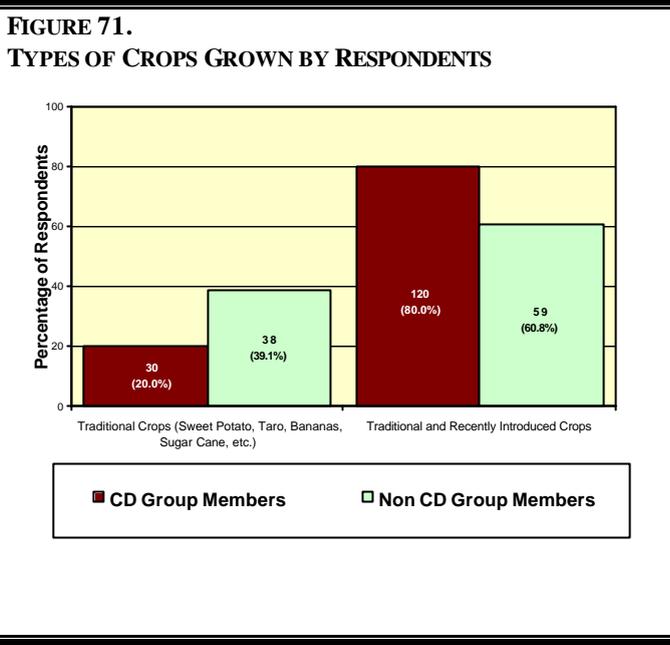
2.2.2 COMMUNITY WEALTH / WELL-BEING RANKING

If we apply the data from figure 69 as the basis for a rapid wealth-ranking exercise (as has already been described in detail in section II / 8.7) and display the data in the form of wealth distribution diagram, as is displayed in figure 70, we can see that the group member respondents were, as a whole, clearly much better off than those respondents who were not group members. Furthermore, these diagrams reinforce the conclusion drawn from the baseline wealth ranking exercises that the distribution of wealth in Lani communities tends to be fairly well distributed with apparently all members of the community enjoying adequate access to land and nobody being forced to sell their labour in order to meet subsistence needs.



2.2.3 MARKET ORIENTATION

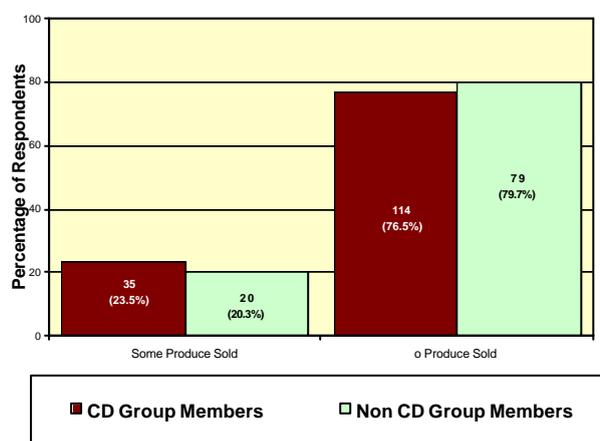
From the data displayed in figure 71 we can see that 80% of group member respondents and just over 60% of the non-group member respondents claimed that besides traditional crops such as sweet potatoes, taro, bananas and sugar cane, they also normally planted one or more varieties of more recently introduced crops, such as peanuts, soya beans, carrots and cabbages. This indicates that as the cash economy expands and more regular markets become established in or near the target areas, the community will be well prepared to take advantage of increased economic opportunities.



2.2.4 MARKETING OF PRODUCE

Whilst the results displayed in figure 71 indicate quite strong prospects for greater community participation in the market economy in the future, when respondents were questioned regarding the marketing of their

FIGURE 72.
PERCENTAGE OF RESPONDENTS WHO HAD SOLD PRODUCE DURING THE PRECEDING MONTH



produce a much less promising picture emerged. As can be seen from the results displayed in figure 72, only 23.5% of the group member respondents and 20.3% of the non-group member respondents claimed that they sold some of their garden produce. The remaining 76.5% of group respondents and 79.7% of non-group member respondents claimed that they did not bother to take their produce to the sub-district level markets because they are located too far away from their homes and if they took their produce to the market it was likely to go unsold because demand was very limited and the markets were already over supplied.

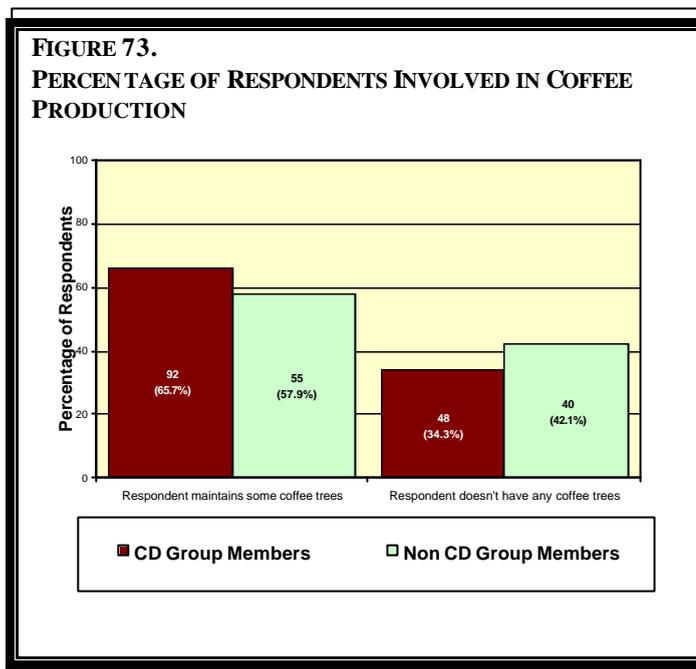
Apart from a few crops such as peanuts and cabbages, most of the respondents said that they didn't really like to eat most of the new crops themselves. Consequence it would appear that the majority of non-traditional foods grown in the target areas were left to rot. This situation is considered to be of considerable concern because it could result in the community members becoming disillusioned with the new crop varieties and thereby limiting their future prospects for both economic and dietary diversification. Further approaches need to

be researched in order to stimulate market activity as well as a greater volume of trade with Wamena and other urban areas in Irian Jaya. Also, community members should continue to be encouraged to consume a larger percentage of their new crops.

2.2.5 COFFEE PRODUCTION

Figure 73 shows that a large percentage (over 60%) of the population from the target areas appear to have established small plantings of coffee bushes with only a slightly higher percentage of group member respondents claiming to be producing coffee.

These findings have reminded project staff that there is a need to seek better ways for the communities to process and market their coffee, most of which is currently poorly processed and sold in small quantities at either the sub-district or district level markets at low prices.



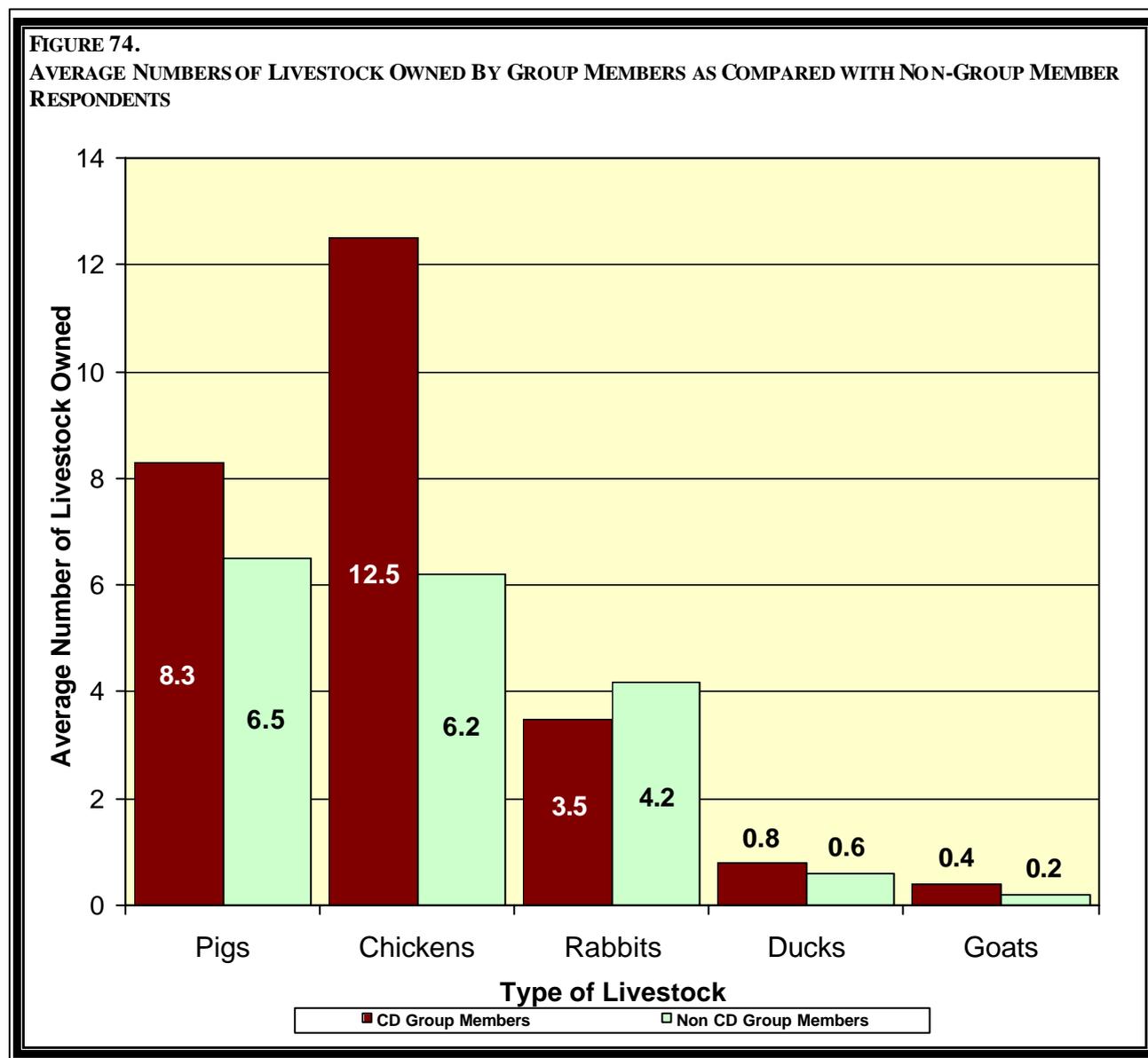
Importantly, WATCH Project personnel believe that because coffee growing in the target areas is popular, people need to be encouraged to not convert too much of their productive land into coffee plantations. As the price of coffee can fluctuate considerably, an over-reliance on a coffee at the expense of normal subsistence horticulture can cause considerable hardship in times of low coffee prices.

2.2.6 OWNERSHIP OF LIVESTOCK

Many people in the target communities are already increasing the diversity of productive animal breeds besides their traditional pigs (see figure 74). This is considered to be a highly positive situation because it is likely to have direct benefits for the nutritional status of the target communities as small livestock, such as chickens, ducks, rabbits and goats are more likely to be eaten on a regular basis than pigs, which are almost always reserved for feasts or exchanges. Furthermore, possession of a range of livestock is likely to help raise local cash incomes.

From figure 74 we can also determine that, on average, the group member respondents owned between 25% and 50% more pigs, chickens, ducks and goats but the non-group respondents owned an average of 20% more rabbits. The reasons for greater numbers of rabbits owned by the non-group member respondents is not apparent but it may relate to their more limited access to other, more desirable, breeds, such as chickens or goats. From figure 74 we can also see that there are still only a very limited number of ducks and goats in the target areas. This should not however indicate that these breeds are unpopular, as findings from the baseline survey

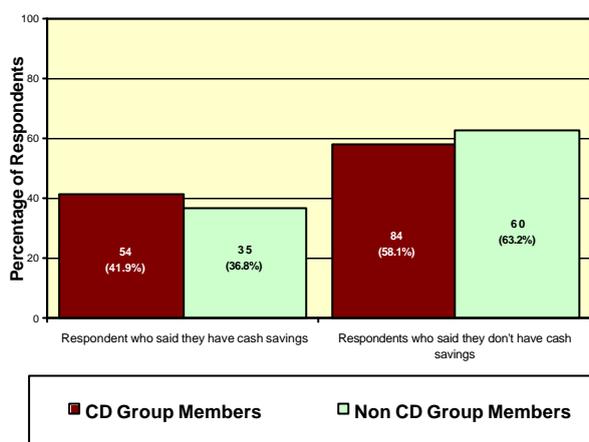
suggested that the members of the target communities were very interested in these breeds. Rather, we believe this to be caused by the fact that these breeds have not yet been adequately promoted to the target communities. In addition the limited pool of breeding stock in the target areas has prevented more widespread ownership of these two breeds. It is therefore recommend that future projects in Jayawijaya should promote ducks and goats and that further breeding stocks should be made available to the communities.



2.2.7 POSSESSION OF BANK ACCOUNTS

Figure 75 shows that whilst still in the minority, an increasing proportion of people in the target areas are using bank accounts to store at least part of their cash savings. The main factors believed to limit the target communities from utilizing formal banking services include their limited access to a cash income, the remoteness of their villages from the nearest banks in Wamena, their limited capacity for financial planning, their limited understanding of cash economics and concepts like ‘interest’ and ‘collateral’, and possibly also a mistrust of formal banking institutions. Possible approaches that could be applied to overcome some of these

FIGURE 75.
PERCENTAGE OF RESPONDENTS WHO HAVE BANK ACCOUNTS

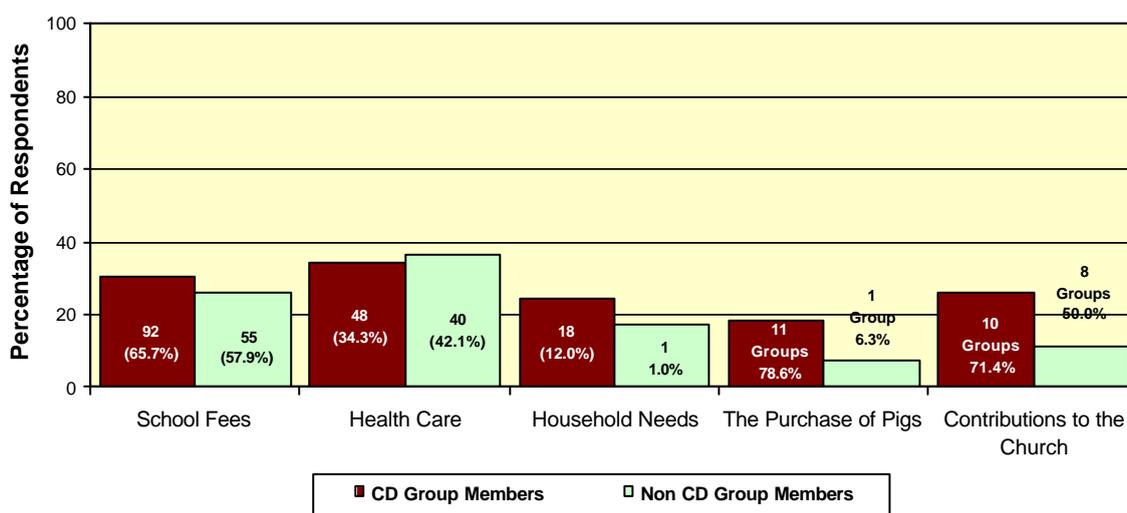


problems include the establishment of mobile banks, such as been done in many areas of rural Java³¹ or the establishment of community based microfinance institutions such as the “Wok Meri” schemes formerly founded and run by women’s groups around Goroka in PNG³². However, such approaches are beyond the scope of the current project.

2.2.7 ALLOCATION AND UTILISATION OF CASH RESOURCES

As displayed in figure 76X, the highest stated spending priority was the payment of health treatment fees and pharmaceuticals. This was followed by school fees, household needs (such as salt, sugar, MSG, and occasionally also clothes and cooking utensils) and church donations. The purchase of pigs ranked as the lowest spending priority amongst both the group member respondents and the non-group member respondents alike. At first glance it appears positive that health care was the highest spending priority because it indicates that the community’s are aware of the relative importance of health care. However it could also be true that the survey respondents may simply be responding in a manner they believe would please the interviewers.

FIGURE 76.
COMPARISON OF BUDGETARY PRIORITIES FOR GROUP AND NON-GROUP RESPONDENTS



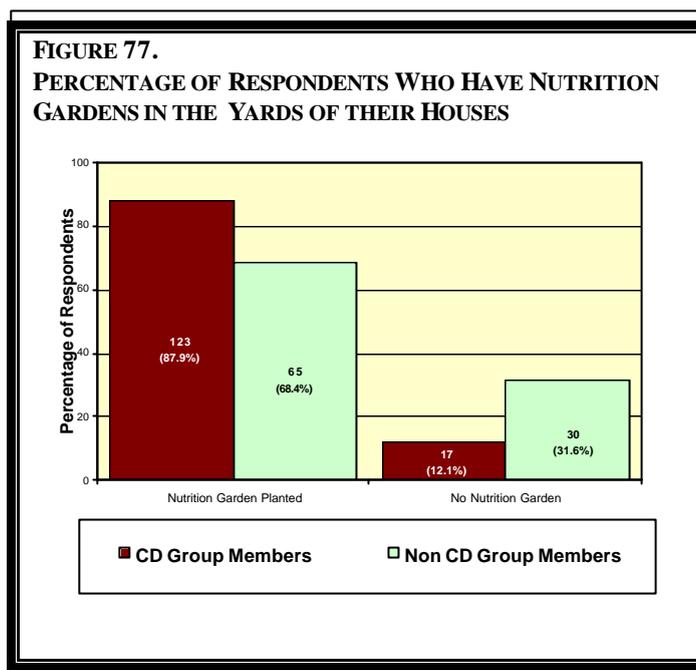
Notes: The percentages shown in this graph relate only to the 54 (41.9%) Group Member Respondents and 35 (36.8%) non-group members who stated that they kept cash savings.

31 See Parhusip (2000).

32 See Sexton (1980).

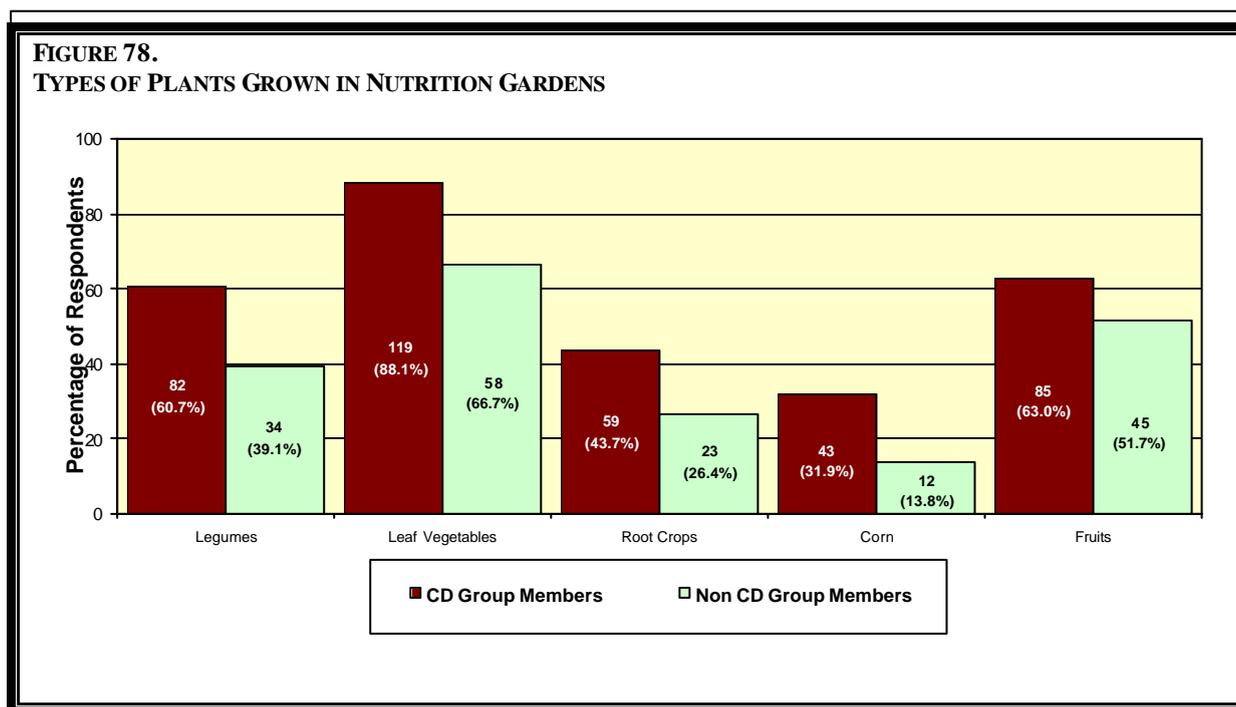
2.3 COMMUNITY HEALTH INITIATIVES

From the data displayed in figure 77 we can see that almost all of the group member respondents (87.9%) said that they had established a nutrition garden, containing a variety of food plants, within or nearby their *silimo* whereas only 68.4% of non-group member respondents claimed to have established such gardens. From figure 78 below we can also get some idea of the range of crops planted in these gardens. From this data it appears that leaf vegetables, fruits and legumes are the types of crops most commonly grown in the nutrition gardens whilst com and sweet potatoes were only occasionally planted in these garden.



The fact that greens, fruits and pulses are being more widely planted in the nutrition gardens around people's homes is considered to be ideal, because the aim of the nutrition gardens is to increase dietary diversity to include more green vegetables, fruits and high protein legumes. On the other hand, more work needs to be done in order to:

- Ensure that 100% of the WATCH CD groups establish such nutrition gardens,
- Extend the practice of home nutrition gardens throughout the broader community;
- Increase the diversity of nutritious crops grown in each garden; and
- Promote the regular consumption of nutritious foods from these gardens.



3. DEVELOPMENT OF CIVIL INSTITUTIONS WITHIN THE COMMUNITY

By far the most influential and important institution in the target areas is the local church, a locally run branch of the Evangelical Church in Irian Jaya (*Gereja Injili di Irian Jaya – GIDI*). Besides the church, there are very few civil institutions and those that do exist are generally not functional. Whilst a number of missions and local churches in Jayawijaya, such as the Australian Baptist Mission Society (ABMS) and the Netherlands Reform Church (NRC) have maintained a consistent focus on the socio-economic fortunes of their congregations, this has not been a strong point of the RBMU and GIDI, which have to date, largely focused on the communities spiritual development and the provision of health services. By establishing CD groups along the lines of the church parishes and working with the local church at the same time as maintaining a close working relationship with local government institutions, WATCH has been able to influence the attitudes within the local church leadership. As a result, issues concerning social and economic development seem to be taking on increased weighting in the churches agenda.

In Kanggime Sub-district, a significant percentage of the community development groups have become the basis for the establishment and management of *Posyandu* clinics and almost all groups have either already or are currently planning to establish village medicine posts (*POD*) and community health insurance funds (*Dana Sehat*). Such achievements strongly support the concept of community participation in village based health care.

WATCH has made considerable efforts to support the establishment or better management of community economic institutions, such as cooperatives (*Korporasi*) community enterprises (*Usaha Bersama – UB*) and community foundations (*Yayasan*) with a view to expanding such institutions to function as a umbrella organisations for other community development activities. However, despite WATCH's efforts, all such institutions in the target areas remain quite marginal. Actually, a number of community enterprises, foundations and/or mini-cooperatives existed in the target areas prior to the commencement of the WATCH Project Kanggime Extension, but the development and progress of these institutions has been very sluggish. Such retardation of community socio-economic institutions can be in part attributed to the constraints imposed by an extremely limited market sector in the target areas and the exchange based culture of the local people. It can be argued though that the most significant factor obstructing the development of such institutions is the difficulties involved in finding suitably skilled and trustworthy managers. In order to help alleviate these problem WATCH has sent a number of people from Kanggime and Kembu-Mamit to Solo in Central Java to attend a training course in the management and financial administration of community foundations. In addition the heads of cooperatives and community enterprises have been given the opportunity to undertake financial management training and WATCH has also continued to work with and supervise the activities of such institutions in the field.

4. CONTINUITY / SUSTAINABILITY OF ACTIVITIES

Field observation, surveys and other ongoing monitoring activities indicate a number of changes occurring within the target community towards greater self-reliance. Related to this is the evidence that activities established during the course of the Kanggime Extension will be sustainable well beyond the end of the project period. Such changes include:

- The adoption of various agricultural, animal husbandry and technological innovations;
- The development of greater capacity for management and program delivery on the part of several local social and economic institutions;
- The shift from largely subsistence based agriculture towards more market-oriented approaches; and
- An increase in skills and knowledge amongst CD and Health Cadres.

Perhaps the strongest indication of the project's sustainability manifests as certain behaviours. Many CD groups in the Kanggime Sub-district have become increasingly selective in what elements of the project they wish to apply or participate in. Whilst this has created a number of problems for project staff and appears as a low rate of uptake of WATCH's initiatives when measured in quantitative terms, we believe that these low scores indicates that group members have developed an ability to make informed development choices and that this may in fact be the most important impact of the project.

5. GENDER PROFILE

Information concerning the situation in terms of gender issues and women's empowerment are not covered in this report due to difficulties experience in the collection of appropriate field data. In order to overcome this deficiency within its approach to annual monitoring and evaluation surveys, WATCH has been considering the application of alternative survey methods, such as in-depth interviews, case studies and focus group discussions.

6. GROUP STATUS

Figure 79 shows that during the previous phase of the project WATCH personnel were involved in the supervision of a total of 21 groups in Kanggime and 12 in Kembu-Mamit. At the outset of the Kanggime Extension the number of community development groups was considerably expanded, up to 46 groups in Kanggime and 50 in Kembu-Mamit.

