

Participatory Livestock Farmer Training for improvement of animal health in rural and peri-urban smallholder dairy herds in Jinja, Uganda

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Abstract Within the framework of a research project investigating methods to decrease mastitis incidence, farmer groups for participatory training in a modified Farmer Field School approach were initiated in order to improve animal health and farmer knowledge in mastitis control technologies in smallholder dairy farms in the Jinja district of Uganda. Two peri-urban groups and one rural group met for common learning and training two hours per fortnight during a 12-month period, facilitated by two local extension agents together with one or two scientists from Makerere University. Farmers rotated each time between farms owned by group participants, which demanded mutual trust, openness and respect. From their own assessment the farmers felt they had improved their milk production and reduced mastitis incidence on their farms. In an evaluation workshop, they articulated how they had built up common knowledge and experience from training in systematic clinical examination of animals, evaluation of the farm environments, and identification of

improvements. Much of the acquired new knowledge was about basic dairy cow management and husbandry practices. In addition, they gave examples of how they were now used as resource persons in their local communities. Principles of learning and empowerment are discussed.

Keywords Farmer field school approach · Mastitis · Participatory methods · Smallholder dairy farming

Abbreviations

FFS Farmer Field Schools
LFTG Livestock Farmer Training Groups
PIA Participatory Impact Assessment

Introduction

Smallholder livestock production in developing countries is constrained by several factors including diseases, limited feed resources, lack of marketing of the livestock products and poor herd management. Availability and accessibility of many new technologies and the accessibility of advisory services is still needed in order to improve farmers' knowledge as well as the entire livestock production systems (Byarugaba *et al.*, 1998).

In 2002, a research project was initiated in Jinja district in Uganda on smallholder dairy farms in order to identify and recommend mastitis control strategies that were cost-effective, sustainable, easily adopted and

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reduced drug-resistance risks. However, after the cross-sectional survey in the first phase of the project, it became clear that among participating farmers, increased awareness was needed about mastitis, especially sub-clinical mastitis, and risk factors for mastitis as well as its control strategies (Byarugaba *et al.*, 2003). Based on the recognition of this need and the wish to improve milk production efficiency, a 'Farmer Field School approach' was implemented for training farmers as one of three chosen intervention strategies to enable farmers to identify herd- and animal-specific problems and challenges, as well as potential solutions.

Farmer Field Schools is a concept of farmer participatory learning which was developed in Asia in the late 1970s for integrated pest management in rice farming (van der Fliert *et al.*, 1995), based on ideas from Kolb's principles of experiential learning (Kolb, 1984). It is now applied in a number of countries for livestock production improvement, e.g. in Kenya and Bangladesh, with the aim of identifying livestock production constraints and finding solutions among groups of farmers together with scientists and extension agents (ILRI, 2003). In our project, this concept was used as a source of inspiration to form three farmer groups for common learning, knowledge and experience exchange, and training with regard to animal health promotion with emphasis on mastitis.

Materials and methods

The location

Jinja district is located in the Eastern Region of Uganda in the Lake Victoria crescent along the shoreline of Lake Victoria. The district is relatively flat with high ridges and isolated hills, undulating lowlands and pediments between 1200 and 1500 metres above sea level with a typical tropical climate. Rainfall is 1200–1500 mm per annum with peaks in March–May and October–November and dry seasons between December and March and from June to July. Temperatures vary from 16 to 29°C. The District is divided into three Counties with a population estimated in 2002 at 289 476 inhabitants. About 85% of the farmers are engaged in crop production as their main activity; 12% are engaged in mixed farming and a much smaller portion of farmers are engaged in livestock keeping and fishing. The cattle population is estimated at 20 000 head,

of which about 7000 are improved dairy cattle of both exotic and cross breeds. Milk production varies depending on season and availability of feed resources. The farmer training groups were formed in three (Kakira, Mafubira and Butagaya) of the six subcounties where the project was implemented (Fig. 1).

Herd characteristics

Farmers participating in an initial cross-sectional study of the project (Byarugaba *et al.*, 2003) were asked whether they would be interested in participating in a group for farmer learning. The selection of these farmers was based primarily on the fact that the farms in each group should be in walking distance, and the desire to form both rural and urban/peri-urban groups, each consisting of 12–15 farmers. Therefore, the groups organized were made available for farmers others than those who had participated initially in the cross-sectional study. The pre-conditions for participants were that they should commit themselves and give the whole group access to their own farm and participate fully in the activities in the groups. Herd characteristics for the majority of the participating farms are given in Table 1.

Framework for meetings in the three participatory Livestock Farmer Training Groups (LFTGs)

Two of the groups were categorized as peri-urban and one as rural (Table 1). All groups met for two

Table 1 Farm and farmer characteristics in the two peri-urban groups and one rural group at the project start. The numbers of farms and farmers are not the same for all variables, and there is a high number of missing values. This is mostly explained by the fact that 4 different persons were involved and the data collection was not complete for all farms. This data were collected within the three first months of the project

	Peri-urban	Rural	Total
Male/female participation	3/21	12/1	37 farmers
No. of cows per herd in average	2.1 (1–4)	2.4 (1–4)	37 herds
Floor: dirt + mud/concrete	6/9	5/2	21 farms
Housing area kept clean: yes/no	14/1	5/4	24 farms
Source of water piped/spring or well	16/0	1/5	22 farms

Map of Uganda showing the study areas in Jinja District

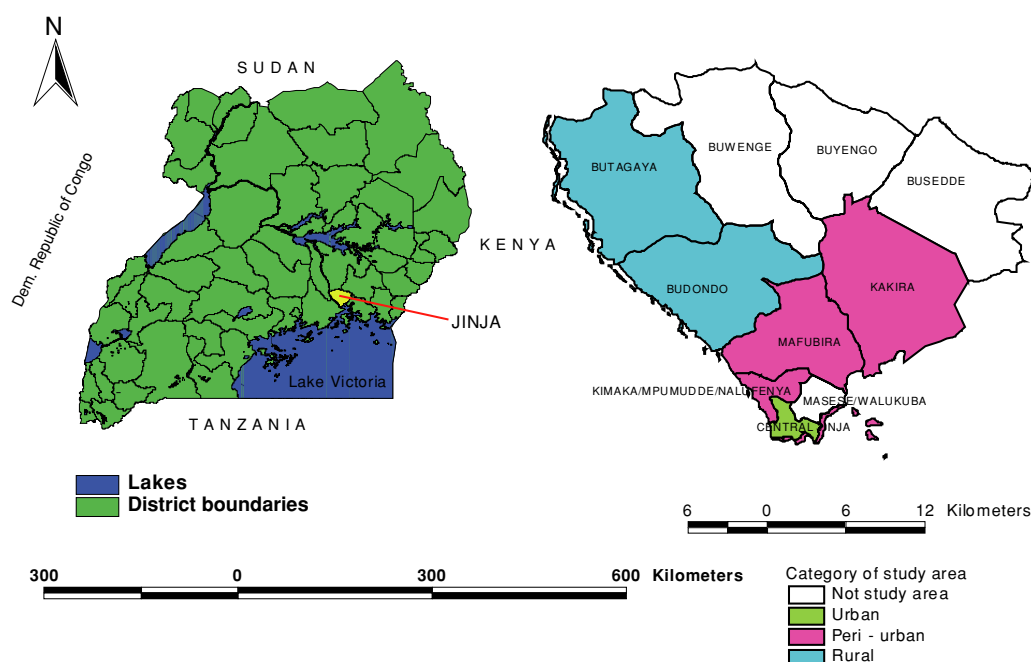


Fig. 1 The area of Jinja, where the three farmer groups were formed. In the text, the group originally categorized as 'urban' was re-categorized as 'peri-urban' because it was not considered

truly urban and carried many of the same characteristics as the original peri-urban group

hours twice monthly. All meetings were held at a farm belonging to one of the group members, and the groups rotated between all farms involved. Two facilitators (both extension agents) and two scientists from Makerere University were involved in the group meetings such that there would always be one facilitator present and occasionally one or more of the others.

Data collection

Participatory Impact Assessment (PIA)

Two PIA workshops were conducted by two trained facilitators, who were well-educated in carrying through participatory evaluations of development projects (Jackson and Kassam, 1998). One PIA workshop comprised the two peri-urban groups of farmers and the other consisted of the rural farmers. The Participatory Impact Assessment (PIA) is a widely used method of assessing impact among a group of participants in client-oriented research and dissemination projects.

Evaluation workshops

Two evaluation workshops were held after the completion of the activities in the Farmer Livestock Training Groups; one for the peri-urban and one for the rural group of farmers. Here, a PIA was not carried out, but the evaluation was based on group and plenary brainstorming, story telling and discussions.

Minutes from the farmer group meetings

The facilitator of the group wrote notes at each of the last 9–11 meetings in each of the three groups. This practice was gradually developed from all literate participants each writing their sets of notes to having a common 'group record book', which was held by the facilitator. These records were reviewed and analysed for the development of the learning process in the groups, the topics discussed by the farmers, and the attendance and other important issues raised regarding the improvement of the participating farms.

Participation observation and farmer records

The first author of this paper participated in two meetings in each group as an external observer and at all workshops, in addition to undertaking informal interviews across facilitators and checking meeting notes. Milk production and milk sample analysis was carried out quarterly during the project period to assess the impact of the project on mastitis levels.

Results

Conduct of meetings

Each meeting in an LFTG took 2½ hours.

1. The meeting started with an introduction and welcome of the participants to the farm.
2. The participants then moved to the cow shed and interviewed the owner about his or her farm and animals following a so-called agro-ecological systems analysis (AESAs) form (Minjauw *et al.*, 2003). The facilitator guided this process. Each farmer had a notebook, which was used according to their reading and writing skills to take notes for future reference when they revisited the farm.
3. One or two animals from the farm were then examined systematically, and the group evaluated the farm environment. Since the research project was on mastitis, topics related to udder health and mastitis were treated in depth. Everything that was discussed in the groups was linked to the actual farm through practical exercises and examples. At the end of this session, advice was given to the farmer from the other farmers, as well as from the facilitators. The farmer had the chance to comment on the advice, but did not necessarily commit himself or herself to carry out the recommendations, which remained as ‘advice’ in the records.
4. A selected topic regarding animal production was then discussed, with the facilitator playing the role of a teacher. These topics were carried out in a systematic way only during the second round of the meetings at the farms, because by the end of the first meeting round farmers felt that they needed to take up questions of general interest such as ‘causes of infertility’ (listed in Table 3 and described below). Many topics were suggested in all three groups, and

the facilitators carried some of them from one group to another. At each meeting, the next meeting’s topic was agreed by the farmers, as well as the site and time for the meeting.

Most farmers were present at the majority of meetings, but sometimes participation was very low and some meetings were cancelled because the number of participants was too small. This was primarily due to events taking place in the village.

Advice given at meetings

In Table 2, the range of advice given at various meetings is listed for both the rural and the peri-urban groups. As can be seen, similar points were raised in both settings, and even though advice was given for individual farms there were also repetitions, especially on issues regarding farm buildings and feeding.

Topics about basic management routines discussed at meetings

These ‘classroom lessons’ focused on selected topics were gradually formalized so that the topic of the next meeting was agreed on among all participants before leaving a meeting. Before these topics were made a formalized part of each meeting, more general themes and issues were sometimes discussed spontaneously as part of the discussion related to a specific situation either at the farm (e.g. the farmer wanted to buy a new animal—what to look for?) or during the examination of an animal (e.g. demonstrating Californian Mastitis Test as a part of examining a cow with mastitis, leading to a discussion about ‘cells in the milk’). The argument for including these lessons was so as not to leave important topics to be taken up more or less by coincidence but to be sure that they were discussed carefully. They were included also in order to supplement the agenda, which in the beginning was solely farm-focused and therefore became a somewhat repetitive even though the meetings took place on different farms. The themes for all groups are listed in Table 3.

Results from the PIA of the mastitis project at household and community level

The benefits of the mastitis research project as perceived by farmers participating in the project were

Table 2 The types of advice given at the meetings in the two peri-urban groups and the rural farmer group

Peri-urban group	Rural group
<ul style="list-style-type: none"> • Improve hygiene/cleanliness • Remove barbed wire • Increase/improve exercise yard • Make mineral lick available • Provide bigger container for water • Improve feeding/give more legumes; shorten chopping length • Repair crush/floor/shed • Improve heat detection • Dehorn bull/other animals • Deworm all animals • Cull non-productive cows • Supervise stockmen • Construct treatment crush • Improve drainage • Raise feeding troughs from ground 	<ul style="list-style-type: none"> • Remove weeds, reduce trees/shade • Improve drainage system • Improve feed, give more legumes such as calliandra • Give minerals • Repair roof, renovate building, repair feeding trough • Build treatment crush • Establish new pasture

Table 3 Thematic topics discussed in the groups. Most of these were treated in some form in all groups, with slightly different wording as indicated by the different titles of the themes on the same line. In most cases farmers participated in practical sessions such as mineral lick making, establishing legume gardens, and animal examination and handling

<ul style="list-style-type: none"> • Mastitis control • First aid/Animal emergency care • Methods of treatment and injection sites/drug abuse/treatments • Structure of the udder • Heat detection/Infertility • Buying a milking cow—what to look for? • East Coast fever control • Record keeping • Calving • Calf rearing • Farming as a business • Feeding milking cows/keeping legume gardens • Feed formulation, with practical demonstration
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evaluated at both farm and community level. The benefits at farm level are given in Table 4. Many of the same points are mentioned, although the groups of peri-urban farmers seem to rank the interactive and learning benefits highest, while the rural farmers valued more highly the more concrete input-oriented benefits, such as improved hygiene, reduction in mastitis cases, and supply of mastitis control inputs (which in these Livestock Farmer Training Groups was done to a very limited extent). Both groups seemed to have experienced increased milk production and either improved health or reduction in mastitis cases.

Table 4 The ranking of the benefits achieved at household level according to the groups of peri-urban farmers and the group of rural farmers at the PIA workshop, which was held as a mid-term event in the project

Group of peri-urban farmers	Group of rural farmers
1. Increased cooperation with veterinary professionals	1. Improved hygiene
2. Increased knowledge and skills	2. Reduced mastitis cases
3. Improved hygiene on farms	3. Increased Cooperation with veterinarians
4. Improved animals' health	4. Acquisition of mastitis control inputs
5. Decreased expenses	5. Improved record keeping
6. Increased milk production	6. Increased milk production

On a community level (Table 5), both groups acknowledged improved knowledge, and in this way it was described and discussed as a resource at community level. Both groups mentioned that milk quality had improved markedly on their own as well as their customers' judgement, which improved the market for both the individual farmer and the group and community.

Results from the evaluation workshop

At evaluation workshops at the end of the project, the farmers were asked to list what they had learned from the project within the farmer groups. The results of this evaluation are given in Table 6, where the order of

Table 5 The ranking of the benefits achieved at community level according to the groups of peri-urban farmers and the group of rural farmers at the mid-term arranged PIA workshop

Group of peri-urban farmers	Group of rural farmers
1. More knowledge acquired	1. Increased training
2. Improved animals' health	2. Increased awareness
3. Clean milk sold	3. Expenses reduced
4. More milk produced	4. Improved quality of milk
5. Group work improved	5. Increased milk production
6. More jobs available	6. Better market for milk available

topics is copied directly from the farmers' list, and does not reflect different levels of learning or any priority. Both groups listed 20 points, but were free to list as much as they wanted.

From the results of the evaluation workshops and in the individual interviews it was considered that the collaboration and group formation in the local communities had led to changes in social networks and interactions within the community. In the participants' families, improved communication between husband and wife as well as improved teaching of the farm workers also emerged as positive changes.

Improvement of animal health and production during the project period

Three times during the project period the milk production and some key measures describing the presence of mastitis were collected. Results are given on a farm level as shown in Table 7.

Table 6 describes what the farmers had learned and achieved during the project. They felt that they had improved many of their routines as a result of improved knowledge. Some farmers mentioned the costs of some of the disease control measures (e.g. equipment to indirectly measure the somatic cell counts of cows) as restricting their use, but they still found the demonstrations of these various control methods useful, because it gave a general understanding of mastitis and of the fact that the disease could be present at a subclinical level.

Follow-up two years later

A follow-up two years later revealed that all three groups still met, once every month (two groups) or fortnightly (one group). The two peri-urban groups had

registered as a farmer organization, which also involved other dairy farmers in the area and had started to work for the common improvement of market conditions and cooling facilities for milk.

Discussion

The development of content and conduct of meetings

The three Livestock Farmer Training Groups were initiated because a cross-sectional study showed that the level of general knowledge on animal husbandry and disease management was poor. The high prevalence and incidence of mastitis was not caused by a lack of 'simple technologies' (e.g. medication programmes) but was a result of complex farm situations and combinations of many different risk factors. Throughout the project, the dialogue took its starting point in the daily practice and life of the host farmer. The themes discussed at meetings reflect that a more whole-farm-oriented perspective was taken and acknowledged as being important and justified, even though the focus of the project was udder health and mastitis. This was important because the ultimate aim of mastitis control was improved milk production, through improved animal health and welfare condition of the animals and improved milk quality. The inclusion of practical examples from the participants' own farm and their questions ensured that the topics were kept relevant to their practical life and farm situations. The farmers listed what they had learned (Table 6), and this clearly reflected their prior level of knowledge about basic issues of farming. There is no formal farmer education in Uganda, so these groups of farmers had an opportunity to improve their knowledge in basic animal husbandry. Towards the end of meetings, the group and the facilitators gave advice and discussed potential improvements at the host farm. There was no obligation on the host farmer to commit himself or herself to these improvements, or to explicitly reject them.

Learning from practical life and real farm situations

All farmers gave access to their own farms to the whole group and exposed their own practices and herds. Thus, each farmer had guidance from colleagues on his or her own farm, where the whole family, and in some cases also the milker and workers, were present, and learned

Table 6 Things that farmers learned and achieved during the project as given by farmers at the evaluation workshop after the project activities were ended

Group of peri-urban farmers	Group of rural farmers
1. How the udder is infected	1. Prevention of mastitis, milking place, etc.
2. Prevention of mastitis	2. Causes of mastitis
3. The cause of mastitis	3. Incidence of mastitis has been reduced
4. Milking techniques	4. How to treat mastitis
5. Maintenance of cow sheds	5. Farming is a business
6. First aid	6. Easily detect mastitis in animals by checking the udder regularly
7. Estimating the weight of animals	7. How to feed an animal properly
8. Temperature taking	8. Good management
9. Proper feeding	9. Identify a good milking animal
10. Preparation of mineral lick and dairy meal	10. First aid
11. Examining the cow	11. Being able to visit one another during the sessions and learning from each other
12. Examination of milk	12. Calf rearing
13. Types of grasses and management	13. Identifying an animal on heat
14. Treatment methods (techniques)	14. Types of pastures good for animals
a. Injection in the muscles	15. Record keeping and management
b. Under the skin	16. Improved relationship with the veterinarians and neighbours
c. In the vein	17. We have learned to work together as a family
d. Injection sites	18. The structure of the udder, and how and why an udder gets spoiled
e. Dosage	19. Physical examination of the cow
f. Drenching	20. How to make dairy meal, a mineral lick, and mix a feed ration. If you buy the ingredients you save money when mixing it yourself
g. Deworming	
15. Calf rearing	
16. Heat signs	
17. Diseases caused by ticks	
18. Signs of calving and how to assist	
19. Milk hygiene, e.g. equipment and cleanliness	
20. Record keeping	

from a number of different situations at the colleagues' farms. This contrasts with meetings that take place outside the farms, where only the owner participates (e.g. not the milker or the person taking care of the feeding). Learning situations based on classroom teaching, demonstration plots or central farms usually involve the owner, who may not be the one responsible for routine management of the animals. The farm comprises an activity system (Seppänen, 2002), where all relations and activities shared between people should be taken into account, both on daily action level and on long-term strategic level.

Equality and potentially asymmetric power relations

Equality among the participating group members is necessary in order to create a stable and fruitful learning

environment for common experiential learning. It is of crucial importance to work in closed groups, where the basis of the experiential learning from practice consists of a combination of allowing access to one's own farm to the whole group and also learning from the group members' farms as well. This demands mutual respect, trust and openness within a group and between group members. Letting farmers participate who do not allow group members access to their own farms can build up an asymmetric relationship within the group.

Ownership of the learning process

In line with the FFS concept, themes concerning general animal health and production matters were always discussed towards the end of the session. The fact that farmers gradually identified and requested topics of

Table 7 Description of milk production, mastitis indicated by indirect measurement of somatic cell counts in a Californian Mastitis Test (CMT), and teat hygiene evaluation, collected at project start and nine months after project start

	Peri-urban		Rural	
	Project start	After 9 months	Project start	After 9 months
<i>Milk production, average litres per month per cow</i>				
0–100	9	0	6	3
101–200	3	6	5	2
210–400	6	6	5	8
>400	1	2	0	0
Total number of farms involved	19	14	16	13
<i>Teat hygiene on cow basis evaluated by visual scoring</i>				
Clean	9	13	2	9
Not clean	9	1	5	4
Total number of farms involved	18	14	7	13
<i>Prevalence of mastitis on cow basis</i>				
CMT positive	7	8	5	5
CMT negative	12	6	10	6
Total number of farms involved	19	14	15	11

their own to be taken up created a stronger feeling of ownership of the entire process. The main objective of the research project was to improve milk production through improved mastitis control, but milk production is influenced by a number of other issues, which it was also important to address.

The role of the facilitator

The two facilitators shared the task of facilitating group work. They met this task by guiding the activities and the discussions as much as possible, and by stimulating the farmers to participate actively in the discussion. During the last half-year of the project, they also took the role of ‘teacher’ possessing professional knowledge in relation to the themes that were taken up on request of the farmers. A potential asymmetric power relation could emerge between the farmers and the facilitator, which could lead to a situation in which the knowledge of the group is not used in such a way that all participants can build up common conclusions about practical solutions, but rather in which the facilitator, representing professional knowledge, would automatically know ‘what was best’.

The farmers felt that collaboration with their veterinarians had improved during this project (Table 4). During the process, the modes of communication changed and the farmers and extension agents formed new ways

of mutual understanding, which clearly changed the former relationship in which the farmers felt that the extension agents were ‘authorities’ with whom they could not communicate equally.

Mutual respect: Farmer empowerment reducing the role of extension agents

The farmers improved their knowledge base during the project, and also their understanding of many aspects of management of their animals, herds and farms. This must be characterized as empowerment on a personal level. They improved their ability to take control over their farm management decisions, whereas they had previously left all decisions to others, usually the extension agent. This empowerment of farmers could have the consequence of negating the role of extension agents along the process where ‘professional knowledge’ was improved among the farmers in the group. This did not seem to happen because of three important aspects of the group process:

1. The respect felt for the facilitators; the facilitators shared their own knowledge and enabled a dialogue within the group, contributing to the empowerment of everybody in the group.
2. Discussions were not only about ‘technology transfer’ but also addressed both technological

knowledge and farming life, involving both rational and emotional aspects of reasoning and acting. This made communication and learning far more effective and constructive in terms of mutual trust and understanding (Ison and Russell, 2000).

3. Identification of areas where the farmer benefited from the professional knowledge of the extension agent and defining where this knowledge seemed relevant in his particular circumstances. This was based on improved self-confidence and competence among the farmers. Chipeta (2006) points to the fact that motivation to improve production and the capacity to formulate the demand are prerequisites for demanding services, e.g. from extension agents.

Nelson and Wright (1997) describe different models of the relationship between empowerment and power, where one of the models—'power to'—represents a situation in which 'growth' of one person does not necessarily affect another, e.g. by clarifying which capacities and developments can potentially be carried out collectively. In this case, the improved relationship seems to have 'empowered' both farmers and extension agents each in their own way.

Although one of the facilitators had a masters degree in general agricultural extension, the facilitators were not educated or trained in facilitating typical FFSs, but were only introduced to the concept through initial meetings with the research team. The personal skills and characteristics of the two facilitators seemed to contribute to the mutual respect within the groups, and the facilitators were open to others' suggestions and opinions. There was close contact with the research team, which led to frequent discussions about equality, learning, and facilitation. Training of facilitators must be recommended when scaling-up this and similar schemes, as emphasized by Chipeta (2006).

Social action and empowerment at community level

Changes were experienced in social networks and interactions within communities and families, between farmers and farm workers, and between farmers in the groups and extension agents. One clear interaction with the surrounding society is the benefit from improved milk quality. Many farmers reported that they now sold the milk from their home to neighbours, and not on the market, because of high milk quality in terms of taste. The formation of and participation in farmer groups

prompted other farmers to approach group participants for advice. We therefore suggest that seeing farmers improve collaboration and social networking through participation in farmer groups may inspire, stimulate and create new action among other farmers in the village, and in this way facilitate a change in knowledge and learning at local community level. At the evaluation workshops, farmers clearly demonstrated their common consciousness about the development in the herds and groups. This development has happened both with regard to knowledge, skills and empowerment and to improvement of their lives. We find it very important for the empowerment at community level that improvements and processes are made explicit as a part of the learning process.

The concept of 'Farmer Field Schools'

Gallagher (2003) emphasizes the requirement for an empowering environment first of all, e.g. through good, skilled facilitators, nurturing programme leaders, transparent budgets and open management. Some of the well-known key principles of the FFS approach focus on the relationship between learning and experience, the importance of letting the learner decide what to discover and learn, and that learning is a collaborative process. In this project, mastitis was a focus area, but mastitis control was also put into a broader perspective on improved animal production. This enabled the farmer groups to discuss the whole farm enterprise and relate all types of factors that limit milk production.

Khisa (2003) describes an FFS as a group of 20–30 farmers who work in a 'study enterprise' following a life cycle of, for example, a crop. They meet in a 'school without walls', where they learn together through practical experiences and small experiments on common study plots. In this project, the focus was on cattle, which have to be studied in another way because dairy cows cannot be kept on common plots. By meeting on group participants' farms, farmer commitment was stimulated because the whole group met on their own farm at least twice during the project. They also knew that the group would come again to their farm, which stimulated them to consider the recommendations and advice given by others in the group, including the facilitators. Many different complex farm situations were presented to the group. This created a broad understanding of how things can work under many different conditions, and that often farm-specific solutions

to problems have to be found. The groups consisted of 12–15 farmers, who all took part in the whole session and therefore shared the same discussion. This is in contrast to the classical Farmer Field School approach in which a larger group is split into smaller groups for some group discussions.

Okoth and colleagues (2003) emphasize that the success of a FFS will often depend on its economic sustainability, and a FFS often involves a self-finance element, where all participating farmers have to pay an amount of money at the initiation of the FFS in order to ensure commitment, or together raise more funds than the FFS uses (Gallagher, 2003). The funds can be used for common development, e.g. buying seeds or improving the access to water, common marketing of milk, or whatever the group may commonly decide. According to Munene and colleagues (2005), the objectives of participation in farmer groups include empowerment, capacity building, goal attainment and cost sharing. The element of including micro-finances and raising funds in any way was completely lacking in the project, as it was part of a research project in which there were no possibility for this. The approach was introduced by the research team and not demanded by the farmers. Despite this, the feedback from the farmers indicated that the learning element of the process had been of great value. The farmer groups still existed and the Farmer Association formed by the peri-urban groups was still working after two years. This indicated that the individual participants in this case had benefited from the project to a degree that promoted its sustainability in this local area.

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Formation participative des éleveurs de bétail pour l'amélioration de la santé des animaux dans les troupeaux de bétail laitier de petites fermes rurales et péri-urbaines à Jinja, en Ouganda

Résumé – Dans le cadre d'un projet de recherche examinant des méthodes de diminution de l'incidence de la mastite, des groupes de fermiers invités à une formation participative dans le cadre d'une approche modifiée d'enseignement de fermiers sur le terrain ont été initiés dans le but d'améliorer la santé des animaux et la connaissance des fermiers dans le domaine des technologies de contrôle de la mastite dans de petites fermes laitières du district de Jinja en Ouganda. Deux groupes péri-urbains et un groupe rural se sont réunis pour une formation et un apprentissage en commun deux heures tous les quinze jours durant une période de 12 mois, sous l'égide de deux agents de vulgarisation locaux avec un ou deux hommes de science venant de l'Université de Makerere. Les fermiers ont chaque fois été soumis à une rotation entre des fermes possédées par des par-

ticipants du groupe, en exigeant une confiance mutuelle, une ouverture et du respect. D'après leur propre évaluation, les fermiers ont estimé qu'ils avaient amélioré leur production de lait et diminué l'incidence de la mastite dans leurs fermes. Dans un atelier d'évaluation, ils ont formulé combien ils avaient accumulé de connaissances et d'expérience communes grâce à la formation, et ce dans le domaine de l'examen clinique systématique des animaux, de l'évaluation des environnements des fermes et de l'identification des améliorations. Une grande partie des nouvelles connaissances acquises avait trait à une gestion de base des vaches laitières et aux pratiques d'élevage. Ils ont en outre donné des exemples sur les façons dont il était maintenant fait appel à eux à titre de personnes de ressources dans leurs communautés locales. Les principes de l'apprentissage et de l'autonomisation sont discutés dans le présent article.

Instrucción participativa de granjeros con ganado para mejorar la salud animal del ganado lechero rural y periurbano de granjas pequeñas en Jinja, Uganda

Resumen – Este estudio se llevó a cabo en el marco de un proyecto de investigación dedicado a estudiar los métodos para disminuir la incidencia de mastitis. Se iniciaron sesiones de gru-

pos de granjeros para instrucción participativa, con un enfoque modificado de Escuela de Campo de Granjeros, para mejorar la salud animal y el conocimiento del granjero en cuanto a tecnologías de control de la mastitis en granjas lecheras pequeñas del distrito de Jinja en Uganda. Dos grupos de la periferia urbana y un grupo rural se reunieron para aprender y recibir instrucción conjunta dos horas por quincena durante un periodo de 12 meses, facilitado por dos agentes de extensión local junto a uno o dos científicos de la Universidad de Makerere. Los granjeros seguían un sistema de rota entre granjas que eran propiedad de los participantes del grupo, lo que exigía confianza mutua, apertura y respeto. A partir de sus propias evaluaciones, se vio que los granjeros sentían que habían mejorado su producción lechera y reducido la incidencia de mastitis en sus granjas. En un seminario de evaluación, expresaron cómo habían cimentado sus conocimientos y experiencia común a partir de la instrucción en el examen clínico sistemático de animales, la evaluación del entorno granjero, y la identificación de mejoras. Gran parte del conocimiento nuevo adquirido versaba sobre prácticas básicas del manejo de vacas lecheras y de la crianza de animales. Además, dieron ejemplos de cómo ahora eran tratados como personas de recursos en sus respectivas comunidades locales. En el artículo se discuten principios de aprendizaje y de refuerzo de autoridad.