

TITLE: AN EX-ANTE EVALUATION OF IMPROVED CASSAVA VARIETIES
ON GENDER RELATIONS IN MIGORI DISTRICT, KENYA

PRINCIPLE INVESTIGATOR: ¹Dymphina Andima

COLLABORATORS: ²Ogecha John, ³Onyango Sospeter and ⁴Otiego Norbert

ABSTRACT

The purpose of this case study is to document the development and testing of a gender-sensitive tool for impact evaluation of agricultural technology appropriate to conditions in Kenya. This tool, a modified Gender Analysis Matrix (GAM), was tested by KARI researchers from Kisii Regional Research Center and during an ex-ante evaluation of introduced pest-resistant cassava varieties in Migori district. Eight aspects of cassava production--labour, time, tools, land, cash, funds, food and social standing were included in the matrix. Men and women of different age categories examined these for possible changes in access to and control over the resources. Results indicated that as a result of the new technology, labour burdens would increase for young men and women of all categories while control over their labor will decrease. Conversely, it is anticipated that adult men will provide less labour, have greater access and exert more control over the resource in nearly all resource categories. Adult women stand to gain more access to most of the resources investigated, but it was unclear whether there would be an increase in control over these resources, especially land and cash. These and other results obtained directly from farmers and analyzed using the GAM during the exercise gave researchers a clear understanding of differential

impacts of this new technology on men and women farmers. The case discusses the utility of this gender-sensitive approach in ex ante impact of this and other technology. It also offers conclusions and recommendations for the use of the tool.

ACKNOWLEDGEMENTS

The author would sincerely like to give thanks to Ms. Rita Joldersma and Dr. John Curry for their advice, contributions and suggestions, without which this case study would not have been produced.

1. PROBLEM STATEMENT AND OBJECTIVES

Ex-ante evaluations address the question of the economic and socio-cultural feasibility of a proposed technology. They help to identify the most promising technology options to be tried out during the experimentation phase. When used in a gender-sensitive way, ex-ante evaluations assist in determining possible impact of technologies on gender and highlight reasons for adoption and non-adoption. They also assist in targeting of technologies to groups of people and communities based on opportunities and constraints. It may help research to become more efficient and effective, as resources will not be wasted on developing and experimenting technologies that are unlikely to be adopted. Information of ex-ante evaluations might be of interest to researchers, farmers, policy makers, extensionists and other relevant development actors. Several criteria can be used to assess the potential impact of a proposed technology on the intended target groups. A tool that can be used for ex-ante analysis is the Gender Analysis Matrix. This matrix developed by Parker (1993), offers a framework for presenting (possible) effects of a technology for men, women, households and the community taking into account factors like labour, time, resources and culture. So far, not many experiences are reported with use of the original GAM for agricultural projects, although Mubonda and Penninkoff used a similar tool and Penninkoff (1995), called the 'Technology and intervention pre-assessment framework.'

Objectives of this study were:

1. To test the ex-ante evaluation tool as a measure of differential impact on gender.

2. To determine the possible impact of the introduced technology on gender.

2 BACKGROUND

A Participatory Rural Appraisal was carried out in the study area (Migori district) in 1996. The objective was to identify farmers' problems concerning agriculture and to define research projects based on solutions and interventions proposed by farmers and the research team. Tools used for data collection were transect walks, matrix ranking of crop enterprises, pairwise ranking of problems and daily calendar of activities according to gender (see Rees et al., 1998). PRA results show that major subsistence crops ranked by farmers were cassava, finger millet, sweet potato, sorghum and maize, while the main cash crops were tomato, kale, cotton, groundnut and sesame. Most households in the study area grow cassava. Ranking of crop problems indicated that production problems related to cassava were mealy bug, wild game, water logging, drying of seed cuttings, termites and couch grass (Rees et al., 1998). One of the solutions mentioned to solving some of these problems was the introduction of improved cassava varieties. Variety characteristics preferred by farmers were early maturity, tolerance to mealy bug and high yielding.

Consequently, six improved varieties with the desired characteristics were chosen by farmers for on-farm testing, to be compared with two local varieties. A group of 20 farmers was selected by farmers themselves to participate in the on-

farm trials. It was agreed that both men and women in the farm would be involved in the on-farm trials, but that women would be more involved in the evaluation of the varieties. Of the 20 farm households, one is a female-headed household. Trial implementation started in 1996. In 1997, researchers from the Kisii Regional Research Centre participated in a gender training workshop. As a result of this workshop, they recognized the importance of gender analysis, and intended to test a modified Gender Analysis Matrix to assess the potential impact of the use of improved varieties on men and women.

3. STUDY AREA CHARACTERISTICS

The research was carried out in the Nyatike Division of Migori district, one of the 12 districts of the RRC Kisii mandate area. The major ethnic group in the area is the Luo. The division has a population of 96,300 with 18,900 farms and a population density of 83 person per Km². The Division falls under agroecological zones LM3-LM5, with an annual rainfall ranging from 700-1200 mm. Data from the 1996 PRA indicate that average land owned per homestead is about 5 acres, of which 70% is planted on ridges to improve water harvesting and soil retention capacity. As the division is located near Lake Victoria, fishing is an important source of income, followed by crop farming and livestock keeping. Income from off-farm employment was not considered very important. Cassava was introduced in the area in the 1930s. Yield trend and pricing of cassava indicate that for the last ten years, the yield per acre was stable at around 8 bags of dried chips from 1986 until 1990, when the cassava mealybug invaded the area,

reducing yields to nearly zero in 1993 and 1994. Farmers responded by planting a bitter variety less susceptible to mealybug, and also natural enemies of the mealybug introduced in the area by KARI made the damage reduced, so that yields stabilized at the 1980s levels (Rees et al., 1998). Data obtained from the PRA and secondary data indicate that as far as cassava production is concerned, men are the main decision makers concerning clearing the land, ploughing, planting, pest and disease management. But cassava is considered to be mainly a woman's crop, as most operations are carried out by them including storing of produce and marketing.

4. METHODOLOGY

The testing of a gender-sensitive ex-ante evaluation tool came up as a result of a gender training workshop held at the Regional Research Centre. The testing of cassava varieties on-farm was already on-going, but an ex-ante evaluation had not been included at the initial project phase. The research team considered it still appropriate to obtain farmers' perception in an early stage of the trial. The tool proposed was a modified Gender Analysis Matrix (GAM). Researchers had not yet gained practical experience with the use of this tool.

The GAM developed by Parker has four levels of analysis (men, women, household and community) and four categories of analysis, i.e. the potential changes in labour, time, resources and socio-cultural factors. Together with the community (both men and women, or if necessary in separate groups) the matrix is filled in. For each level (women, men, etc.) the impact of the intervention on each category is assessed. For the modified Gender Analysis Matrix, two levels

were identified (men and women, but specifying adult and young) and the following categories of analysis were considered: labour, time, tools, land, cash, funds, food and social standing. Changes as a result of the introduction of the technology were to be reported in an increase or decrease in the access and control of the resource, using arrows. The assumption behind the ex-ante evaluation was that improved varieties may have other demands on resources than those presently used by farmers and that improved varieties will result in increased cassava production, which needs decisions to be taken on use of inputs and produce.

This may involve and affect men and women differently. A farmers' workshop was organized in 1997 by a multi-disciplinary team consisting of an entomologist, extension agent and a socio-economist. Researchers for use in data collection developed a checklist. A total number of fifteen farmers, all involved in the on-farm trials, attended the workshop of which fourteen were male and one female. Therefore, views captured were mainly from the male farmers, which may have biased the results obtained.

Farmers were asked to give their views on what would happen to the resources mentioned if new cassava varieties were adopted. Responses were summarized in terms of arrows, put by researchers into the matrix. The whole exercise took about 8 hrs. It was not very easy to understand and interpret the data obtained in the matrix. Part of it may be due to the inexperience of researchers with the tool, which resulted in a not optimal facilitation, which may have affected the degree of

farmers' understanding of the exercise. Difficulties in interpreting were also due to the fact that not much detailed information was available on activities and responsibilities of both men and women in cassava production, which might have helped in explaining farmers' perceptions of changes in access and control. Therefore, it was decided to collect additional data of the existing situation, making use of the activity and access and control profiles. These data were collected during a farmer utilization workshop in May 1998 and during biophysical data collection on the trials in June 1998. This took, together with the collection of technical data, about 2 days. During this workshop, 11 men and 9 women participated. The participants evaluated the varieties, using parameters (proposed by researchers and added upon by farmers) concerning taste, cookability, tuber numbers, yield, etc. At the same time, researchers together with extension agents made an activity profile through interviewing and discussions. Researchers together with the extensionists divided farmers into two groups in which interviews were carried separately for men and women. Interviewing women was done when they were cooking the varieties and took about three hours; interviews with men took two and a half hours. Then a plenary session was held, which took 4 hrs in which the information was verified by all participants. The points of disagreement that arose concerning the activity profile were related to purchase of cassava cuttings, ridging, transportation, processing and utilization.

5 RESULTS

5.1: Results of the Modified Gender Analysis Matrix

Table 1 shows results of the modified GAM. Increasing or decreasing tendencies are shown by the arrows as given by the participants.

Table 1. Expected changes as a result of introduction of improved varieties

		Men		Women	
		Young	Adult	Young	Adult
1. Labour	Amount	↑	↓	↑	↑
	Control	↓	↑	↓	↓
2. Time	Access	↑	↑	↑	↑
	Control	↓	↑	↓	↓
3. Tools	Access	↑	↑	↑	↑
	Control	↑	↑	↑↓	↑↓
4. Land	Access	↑	↑	↑	↑
	Control	↑↓	↑	↓	↓
5. Cash	Access	↑	↑	↑	↑↓
	Control	↑↓	↑	↓	↓
6. Funds	Access	↑↓	↑	↓	↑
	Control	↑↓	↑	↓	↑
7. Food	Access	↑	↑	↑	↑
	Control	↓	↑	↑	↑

8.Social	Access	↑	↑	↑	↑
Standing	Control	↓	↑	↓	↑↓

1. ↑ Increase 2. ↓ Decrease 3. ↑↓ No change

Labour

According to the interviewees, adoption of new varieties is likely to increase the amount of labour for young men, young and adult women. The young will need to spend more time to learn about practices for the new varieties. Adult women are involved in nearly all the activities, and improved varieties will require more work (e.g. for weeding). The interviewees indicated that the amount of labour for adult men would decline. They stated that generally men do not do much work in cassava production, they mainly make decisions as heads of households, which they consider a God-given role. They used the same argument to explain an increase in control by adult males. At the same time, this means a decrease in control of labour for the adult woman and the young male and female. As the majority of the farmers present were male farmers, the perception might be biased. It did not come out clearly, what changes in labour were expected when comparing the new varieties to the existing ones and what exactly young men and women would be required to

7

do as normally they just assist in daily routine activities.

Time

According to the participants, the amount of time required for cultivating new cassava varieties will increase for all age groups, as more time will be needed

for ploughing (as some will use fallow lands), harrowing, weeding (as improved varieties need more frequent weeding). The adult men will have increased control, organizing the activities of the other members of the household.

Tools

All the age groups will use the available tools, which was translated by farmers as increased access to tools. However, male farmers decide on hiring (e.g. of tractors), purchasing or borrowing of tools for cultivating and make them available to the others. From experience so far, it is not quite clear whether the new varieties need other specific tools or more or less use of the same tools (To verify with agronomist).

Land

According to the interviewees, all categories will have increased access to land. Control of land will increase for the adult men and remain the same for the young men and adult women. Young women will have decreased control since according to the farmers, they are expected to be married off and therefore are considered temporary household members. When reflecting on these data, it was not quite clearly indicated whether land is owned, hired or communal land. Communal land is scattered, and using it may have increased the amount of time needed.

Cash

According to the participants, access to cash proceeds from cassava will increase for all categories except for the adult women. The fact that the adult men are the decisions makers and control the cash might explain this. For

Example, farmers indicated that the young have increased needs and therefore will have increased access to cash. From the table, it can be read that if adult women spent more time and labour on cassava production, they will not benefit from extra cash.

Funds

The term 'funds' was interpreted as savings from cassava production.

According to the participants, adult men and adult women will have increased access and control to funds. As spouses, they will need more frequent consultations on planning for the family well being, on requirements and use.

The young do not really have a role to play as far as uses of funds are concerned, as they are still considered to be learning.

Food

All age categories will have increased access to food because it will be available with no limits attached to consumption in the household. Farmers indicated that men will have reduced control of food while women will have increased control. Reasons given were that men do not deal with matters related to handling of food.

8

From the results it is not quite clear why men indicated reduced control, as at present they are also not involved in food handling.

Social standing

All age groups will have increased social standing attributed to increased living standards (better health, more income etc.), and therefore increased Prestige to the household within the community.

5.3 RESULTS OF ACTIVITY PROFILE

To better grasp the existing situation, data were collected on activities and access and control of resources. Table 2 shows results of the activity profile, also indicating farmers' estimation of time required for the activity. Women felt that processing and utilization were important activities mentioned separately.

TABLE 2: CASSAVA ACTIVITY PROFILE

Activity	Gender	Time
Bush clearing	M	15 days – 6 hours daily
Fencing	M	60 days – 4 hours daily
Ploughing	M/F	10 days – 4 hours daily
Planting	F/m, F/c	10 days – 10 hours daily
Ridging	M/F	10 days – 4 hours daily
Collection of cuttings	F	14 days – 10 hours daily
Purchase of cuttings	M/f	14 days – 10 hours daily
Weeding (1 st , 2 nd , 3 rd)	F/c	15 days – 10 hours daily
Processing and utilization		
1 st harvesting	F	Piecemeal
Peeling	F	Piecemeal
Curing	F	3 days – 36 hours
Drying	F	1 day – 12 hours
2 nd harvesting	F/m	30 days – 10 hours
Selling	F/m	7 days depending on supply and

		demand
Milling	F	2 kg tin takes about 20 minutes

M/F- Equally male and female, F/m- Predominantly female,

M/f- Predominantly male, M- Exclusively male, F- Exclusively female

M/c- Adult male and child, F/c -- Adult female and child

Men do fencing and bush clearing. Purchasing of cuttings is predominantly a male activity, although women may be involved. There was a lot of debate going on between male and female participants on the purchase of cuttings. They decided a distinction should be made between purchase and collection of cuttings, as collection of cuttings is a female activity. As one male farmer said, "Since when did a woman purchase seed?" Male farmers argued that they are involved in off-farm employment (fishing, odd jobs, etc.) which procures them with cash, and they are also the ones deciding when it comes to the use of money. Women argued that collection of cuttings takes quite some time, as this involves walking distances to gather them from neighbors and friends.

Ploughing and ridging is done by both men and women, although initially there was some disagreement on who was involved most in ridging, but in the end men and women agreed that they were equally involved. Women are predominantly doing the planting and the weeding. All harvesting and processing activities are done by women, although men may assist in the second harvesting and be involved in the selling. As for transportation of cassava to the market, arguments were based on modes of transport. When the mode of transport was by head, the

women felt it was their responsibility, but when by vehicle, and sometimes by bicycle, it was the responsibility of the male farmer. Women felt that processing and utilization of cassava especially during curing and drying involved a lot of work for them and required too much of their time as cassava is susceptible to theft, bird damage and rotting and might require uprooting and replanting. After the activity profile was established, farmers were asked whether they expected any changes in these activities if improved cassava varieties were adopted. The results are shown in Table 3.

TABLE 3: Expected changes in activities

Activity	Who	Impact
Fencing	M	↑
Bush clearing	M	↑↓
1 st ploughing	F/M, F/c, M/c	↑
2 nd ploughing	F/m, F/c, M/c	↑↓
Gathering planting materials	F/c, F	↑
Purchase of planting materials	M/f	↑
Planting	F/m, F/c	↑
First weeding	F/c	↑

Second weeding	F/c	↑
Third weeding	F/c	↑
Transportation of cuttings	F/m	↑
Harvesting	F	↑
Peeling	F/c	↑
Curing	F	↑
Drying	F/c (Specifically girl child	↑

M/F-Equally male and female, **F/m**- Predominantly female,

M/f- Predominantly male, **M**- Exclusively male, **F**- Exclusively female

M/c- Adult male and child, **F/c** -- Adult female and child

Farmers expected changes for fencing, 1st ploughing, gathering and purchase of seeds, planting, first and second weeding, seed transportation, harvesting, peeling, curing and drying. Fencing might increase due to rotting and putting the material into other uses such as fuelwood, which requires re-fencing. First ploughing may take more time and labour if new varieties are planted on fallow land. Labour amount will remain the same during the second ploughing as the soil is fine and therefore does not require much work. Labour for third weeding does not show any changes since tubers are already formed, do not require regular weeding and there is weed suppression from canopy protection. Labour during harvesting will increase, as new varieties require more time and is done several times. Another factor affecting labour is too much rain, which requires faster harvesting. Labour for processing and utilization will increase as activities

such as peeling, drying, watching against theft will be done at the same time. Also, activities that will be affect the female adult and children are milling, pounding, sieving, etc. Reasons given were that it was a learning process for the female child, their work, God-given and tradition.

5.4 DISCUSSION OF RESULTS

The test of the Modified Gender Analysis Matrix shows that it was not easy to use. Terms were not always clear to both researchers and farmers, and summarizing changes in terms of 'access' and 'control' might not yield sufficient information. Therefore, measuring ex-ante impact was only achieved to some extent. Furthermore, female farmers were not well represented and therefore the results did not sufficiently transpired the views of both men and women.

The major weaknesses of the tool are:

- It is specifying decrease and increase, which might not always be an appropriate way of summarizing and appreciating changes. Arrows are confusing, as they also do yield information whether a change is seen as positive or negative. The original GAM has certain advantages, as men and women were to describe the expected changes and appreciate these changes as positive, neutral or negative.
- Terms are not very clear: e.g. funds and the difference between cash and funds as well as the interpretation of labour. There is an overlap with time and labour, unless labour is specified as requiring new skills, doing heavier, more dirty work.

- Categories were determined beforehand by the researchers. It would be good if farmers could give their own criteria for appreciating new technologies. The criteria used by researchers might not be necessarily relevant in comparing improved and existing varieties, as for some categories only minor changes might be expected (e.g. tools and land). Other criteria are rather indirect, e.g. increase in cash supposes that the total production increases, through higher yield and/or higher acreage, and that the variety is marketable and fetches good prices. In case the exercise focuses too much on filling the matrix and indicating the arrows, reporting an increase or decrease in cash will not be very useful if the reasons behind it are not known or understood. The exercise itself also had shortcomings as participants were mainly men and no separate opinions of men and women were captured. The researchers themselves were not very conversant with the tool, resulting in a not optimal facilitation. The activity profile is easier to use than the GAM and should be made before doing a GAM. A separate evaluation was done to compare the individual varieties. Criteria used here were related to taste, cookability etc. This type of evaluation might be more useful than the GAM used. It is important that both men and women express their views while evaluating these varieties, as they have different roles and responsibilities in cassava production. As this example shows, it will be difficult to do a GAM without having sufficient detailed information on who is doing what and who controls what, which means that activity, access and control profiles should be made separately by men and women so that views of both gender are captured.

6. CONCLUSION AND LESSONS LEARNED

The GAM may be a very useful tool in various phases of the technology development cycle or the Farming Systems Approach to Research, Extension and Training. In the planning phase it may help in comparing the existing situation with a possible new situation, if the right criteria are used. Possible effects on men and women identified during the planning phase, should be monitored during the other phases of the technology cycle (including an ex-post evaluation). The GAM can help to;

- . encourage farmers to express themselves,
- . check whether the technology will have the intended benefits;
- . identify whether additional research needs to be done to reduce any possible negative effects;
- . formulate indicators for Monitoring & Evaluation during the dissemination phase. Results of the GAM can be compared with data from other parts of the country where a similar technology has been introduced. The modified GAM used in this ex-ante evaluation was not very useful for gaining insight in what type of changes might be expected and how farmers appreciate these changes.

The original GAM would have given probably more relevant information. In any case, it is important that those using the tool know how to facilitate the exercise and make the objectives of the GAM clear to farmers. Points of view of men and women on expected changes need to be obtained separately. Lessons learnt from the evaluation are that not all the criteria used in the GAM may be relevant,

e.g. most likely the use of tools will be the same for all the varieties. However, cash proceeds will most likely be different for all the varieties since high yielding and low-yielding will fetch different prices. It is important to collect data on labour division, access and control of resources and benefits to be able to better interpret the results of a GAM. The comparison of the individual varieties (both improved and existing) may yield more relevant information. Criteria like taste, marketability, drying and processing may differentiate one variety from another. The comparison should take into account farmers' criteria.

7. RECOMMENDATIONS

The criteria to be included in a GAM could be left open for discussion by farmers and researchers. In order to avoid farmers to fix on the GAM categories of labour, time, resources and culture, another option would be to leave it more open and classify changes after an initial brainstorming. The format as presented in Box 1 would be a possible to option to do this (Joldersma, 1998).

Box 1. Example of simplified Gender Analysis Matrix.

	Positive possible effects	Negative possible effects	Possible actions to reduce negative effects
Women			
Men			
Household			
Community			

REFERENCES

Joldersma, R., 1998. Gender Analysis Matrix. Concept paper for training purposes. KARI/NLO.

Mubonda, N. and P. Penninkhoff, 1995. Gender in Farming Systems Research and Agricultural Development in Western Province, Zambia. KIT, Amsterdam.

Rani Parker, A., 1993. Another point of view. A manual on gender analysis training for grassroots workers. UNIFEM, New York.

Rees, D.J., E.K. Njue, F.W. Makini and D.M. Mbugua, 1998. Participatory Rural Appraisals of the Farming Systems of South West Kenya, 1995 & 1996. Kisii Regional Research Centre, Kisii.

