

# **Women's Voices in the Food Chain: Shouts and Whispers from PNG Women in the Natural Resource Sectors**

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## **Introduction**

With funding support from AusAID funded project ACNARS, NARI was able to conduct three workshops in three of the four regions of PNG. The first workshop combined the New Guinea Islands with Mamose regions whilst the second workshop focused on issues raised within the Highlands region and the third workshops concentrated on issues raised by women in the Southern Region.

The convening of the three workshops was made possible with planning assistances provided by FPDC, national and regional DAL in collaboration with NARI.

A major outcome from these series of workshops was the production of the workshop proceedings which is published in two volumes. The first volume contained issues raised from the three workshops whilst, Volume 2 is a compilation of actual papers presented at the three workshops.

Papers arranged in this volume do not appear as per the workshops session, rather they are organised according to issues. Also noted in the beginning of this volume are papers by Mr Kambori giving the welcome speech and the opening speech by Lady Roselyn Morauta, with a closing by Mrs Susan Setae. Although there were different keynote speakers for each of the workshops, at the last two workshops, keynote speakers did not show case and therefore their presentation being excluded in this volume.

## **Welcome Address**

*Valentine Kambori<sup>1</sup>*

The event today marks another one of those important steps in the NARI strategic planning processes in so far as setting research and development agenda is concerned. That step is the identification of key players and participants in agriculture and agribusiness in the food sector and creating a forum for meaningful discussion on issues, constraints, opportunities and capturing those issues and constraints and opportunities in a structured and systematic manner for result driven action.

In this case today, those gathered here are particularly involved in food production and food business from the farm to the plate; whether it is village based, or estate based, in the informal sector, or in the formal sector, I am informed you are active players in one way or another and your activity in one way or another contributes to the availability of food supplies to the meal tables in this country and elsewhere as well.

Some of you gathered today contribute to government policy and intervention programmes. Some of you come from an involvement that is in one of the front line development agencies both government and non-government that facilitates food production, marketing, and processing. Others of you are the real players in the thick and thin of the business of buying and selling food. Some of you are the farmers, others of you are research scientists, others of you are involved in training and extension and some of you are aspiring players in the food business.

Regardless, whether policy maker or farmer, or development worker or trader, or research scientist or processor, trainer or extension worker, all of you are part and parcel of this whole process that makes food available to the nation and makes food available to be on the meal tables of people and families throughout this land. In fact without you, the food security of the nation may be a myth. In circles of government and state agencies we talk and write about 'food security' but it is not a reality without you players. You are truly important players and your participation today is paramount to the NARI research and development agenda setting process and to the national considerations to implement the national Food Security Policy.

The results of this workshop will have many implications. It will contribute to setting research programmes, it will contribute to developing information and extension programmes, it will contribute to setting up market and trade facilities, and it may even contribute to addressing credit problems and contribute to credit policies. All these come under the NARI mandate to seek national government policy intervention and development initiatives under the government Food Security Policy and Indigenous Enterprise Development in the food sector.

The issue of the reality check on national institutions like NARI is a key strategic question. Your participation today is one of the reality checks on the NARI thinking process. NARI cannot work in isolation from the realities on the ground. That reality is where you as the players are and the real situation of what food production, food processing and food marketing is. Without you real players there is no such thing as food on the table. That is why I would like to say again that you are very important people, if not, the most important people in the food chain.

It is a pity this workshop cannot have all the people we would like to have. But that is the reality of forums like this where we can only bring a small number. However the key issue is that you are representatives of the many out there and you are going to make a point in this workshop that is going to be the representative expression of the many you represent. Make

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that point heard and marked so that the action plan arising from this workshop does include your issue. This is the opportunity for you so make the most of it.

NARI, as a national institution, must create a process of meaningful and mutual dialogue to take stock of the real issues on the ground, and assess them for research and development intervention to address real problems, constraints and opportunities. The real issues of the food chain must drive the research and development planning process to bring desired results for the betterment of the players and participants and the country as a whole. Research and development must capture the real issues and players in the food chain.

It is a strategic consideration in setting the NARI research and development agenda that NARI cannot hit the mark in terms of the relevance nor measure the impact of its research programmes until it responds to people and issues on the ground. Therefore this workshop is another one of the many already run all with the basic aim that real issues and real players must be captured to bring relevance and to create impact in institutional work planning and programming.

NARI has, since 1998 after being in operation for one full year, conducted a number of strategic planning workshops the results of which are now making impact in research and development planning. They were the commodity-based workshops like the Vanilla Workshop, the Vegetable Workshop, the Poultry Workshop, the Cassava Workshop, the Sheep and Goats Workshop, and in a broader sense; the Horticulture Workshop and a Publications workshop. The commodity-based workshops created a process of reporting, dialogue and discussion and created the opportunity to take stock of production and marketing issues to identify researchable issues and development needs.

It is NARI's hope and best intention that this workshop does provide the opportunity to capture the real issues of the food chain as it operates on the ground in PNG today especially in your various areas or regions where ever you came from. I must say it is incumbent both on the convenors and facilitators and you as participants in this workshop to make it work so that the results can offer to NARI and other sister institutions like the Department of Agriculture and Livestock and development agencies key reference points to serve you better and more meaningfully.

NARI and the Department of Agriculture and Livestock and other development and policy agencies are at your service but they can only serve you better through being meaningfully informed and brought into reality. That is the issue at stake with this workshop so I sincerely ask that you please use this opportunity to the fullest but in a structured and constructive way.

This workshop, like the others mentioned, come from a very effective contribution by the AusAID Project in NARI called ACNARS, and one of the key outcomes of the ACNARS project is to improve NARI capacity to identify farmer's and producer's needs and to develop research programmes to address those needs. This workshop also falls under that strategy and I would like to take this opportunity to thank the ACNARS team Sue Philpott, Joy Sahumlal, and Rob Shelton for making this a reality. I have no doubt you will one day look back and be proud of this event.

Finally, Participants, NARI and the Department of Agriculture and Livestock and sister agencies in research and development in agriculture regard the women's voice in the food chain as very significant as the major player in putting food on the table. Therefore, your involvement today is very important to the setting of new and better horizons for the betterment of women in food production, processing and marketing.

It now gives me the greatest pleasure to declare the "Women's Voices in the Food Chain Workshop" OPEN!!

## Opening Address

*Lady Roselyn Morauta<sup>2</sup>*

*(Paper read by Valentine Kabori, Director-General, National Agricultural Research Institute)*

Traditionally in PNG society, the cycle of subsistence food production and harvesting through to food preparation has been principally the task of women whilst major garden preparation tasks, and aspects of fishing and hunting were largely the men's preserve.

With the advent of greater trade, notably cash crop marketing (including vegetables and other food-stuffs) women have maintained the primary role in vegetable production and sale in the fresh produce markets, as well as purchasing the food out of available earnings from the sale of cash crops, such as coffee. The production and marketing of at least the larger livestock remains largely the preserve of the men.

Even in the larger scale production and more commercial marketing of fresh produce many women are in the forefront, alongside various male controlled businesses. Examples include Betty Higgins, with vegetables and trout from Gembogl, commercial women producers near Mt Hagen, etc.

Around the country women are the principal horticulturalists, and are also field researchers and innovators, trialling new varieties and cultivars, or adapting farming systems, such as an active demonstration farmer at Woitape, in the Goilala District, who is now producing a range of fruits, including exotics such as strawberries and vegetables, as well as looking after a small fish pond and cattle, and producing milk.

### CONSTRAINTS AND OPPORTUNITIES

Major constraints to the fresh produce trade, such as poor infrastructure, including poor roads, unreliable and infrequent coastal shipping, prevent produce from readily or cheaply reaching market. There is a lack of capacity and poor facilities at fresh produce markets, lack of refrigerated containers, poor marketing and extension advice with respect to linking production to market demand. Markets suffer from, poor quality control and product inconsistency.

Most of the fresh produce markets were established many years ago. The market supply and demand has grown substantially since then. Investment in new facilities is needed, but the facilities need to be suitable and safe for women. Male-dominated Councils control most larger scale markets, and there is poor consideration of the needs of the women using the facilities (such as shade, adequate security and washing facilities, both for the produce and for the women and children who may be sitting for hours selling marketing produce). There is a need for the markets to come under greater control by those who use them most, namely the women.

The mini-market scheme, being developed by National Capital District Commission (NCDC) and supported by some European Union (EU) funding, brings higher standard local market facilities closer to both the buyers and some of the sellers. These facilities will be safer (i.e. not in the middle of fast roads) and include shade and water supply.

Many women have no desire to be involved throughout the marketing chain. They really just wish to produce and sell their output locally but many are forced both to produce and market their output to the final consumers in distant cities, by the lack of alternatives, notably inadequate and uncompetitive bulking of produce.

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Finance, including affordable credit, needs to be available particularly for private sector traders to be able to invest in wholesale and other bulk marketing facilities, such as depots, refrigerated containers, etc., as well as mini- and micro finance for small women producers. A more competitive market, with lower margins, should enable business-minded farmers to concentrate more on the supply and quality control aspects,

Market intelligence and awareness is required, notably through Fresh Produce Development Company (FPDC) working with private bodies and the radio stations, to ensure that the thousands of (largely women) fresh produce farmers and fisher folk, are aware of prevailing consumer needs, produce prices, quality standards, trading avenues and costs. The recent appointment of an economist, to FPDC, is designed to help plug this marketing gap. The expected support from the EU to improve marketing systems and undertake training and awareness in fresh produce marketing, should be of immense value.

This improved marketing should try to take into account, not just the produce trade from the Highlands to the National Capital and other centres, but also supplies from other producing areas, such as the mountains and coastal hinterland to Port Moresby, and supplies of coastal crops to the Highlands. Working with retail and other outlets, NARI, and other parties, have opportunities for pursuing the packaging and selling of new fruit and nut crops (such as Galip nuts, Okari and Pandanus Karuka).

The former network of National and Provincial nutritionists has now largely broken down, and the system of Maternal Child Health (MCH) clinics is no longer operative in many Districts. Some NGOs, particularly church based organizations, have been undertaking valuable work in this field, such as the Salvation Army in Eastern Highlands Province (EHP), Baptists in Enga, Lutherans (with *Yangpela Didiman*) and Catholics (with vocational schools, etc), SDAs etc. Sound advice needs to be made available through the radio, while misleading information, sometimes provided by manufacturers of commercial products, needs to be overcome (e.g. the suggestion that noodles have a high protein value is based on a picture on the front).

Awareness and opportunities must go hand in hand. This requires that literacy amongst women needs to be raised and making market and nutritional information more readily available, for example. Limited opportunities, with poor transport access, low literacy and awareness, and other factors, reduce the community's opportunities to sell produce surpluses or cash crops and hence also to supplement food intake from trade and purchases during periods of subsistence shortage (*taim hangre*). High risks are also associated with over-dependency on a few crops, or products, especially those more prone to pests and diseases (e.g. taro).

The inclusion of women agricultural researchers and extension staff, and sound links with women farmers in field trials is important, to ensure suitable design and adaptation of food crop and related research to farmers needs. Exploring ways to improve agricultural production to provide more balanced food and other needs suited to different farming systems, is crucial. This includes reducing risks and needs to take into account the levels of tasks performed by the members of the households, as well as agronomic aspects. This research must include methods of practical intensification for areas under increasing land use pressure, including the growth of populations on urban fringes or atolls.

## Closing Address

Susan Setae

Congratulations NARI for providing this important opportunity to build and strengthen the chain of knowledge and understanding among the key partners in the Food Chain. I am most grateful that you have identified your participants through the women's network and thank you for strengthening the capacity and the network of National Council of Women.

### WOMEN ARE THE FOOD CHAIN

(Small exercise)- All women join hands to signify that women are the Food Chain.

Food is part and parcel of a woman's life, it is her daily chore, and she handles food every day from the rising of the sun to the setting of the sun. A woman strives to ensure that whatever little she can acquire is prepared with great care so that there is enough for everyone to share.

Women are farmers, fisher women, bakers, preservers, distributors, sellers, buyers, advisors and teachers of traditional and modern food technology. These rich human resources ought to be tapped into, and their expertise recognized and utilized in order for our households, villages, provinces and country to be self sufficient with locally grown and produced food. In the last three days of workshops NARI, with the funding assistance of AusAID, has aimed to identify these important human resources (the women) and empower them with appropriate and relevant information and skills so that women can be effective in the production and marketing of food.

National Council of Women (NCW) is a member of the National Agriculture Council and has close linkages with Gender Desk of DAL in relation to the Food Security Program. These linkages are very important, as they will enhance women's greater participation in economic programs in food production etc, so that the quality of life is improved and lead to the elimination of the high rate of poverty and unemployment in our country.

NARI must play an important role in providing research information on land, soil, crops and the methods of controlling pests and diseases. These are a threat to the farmers. We need to enhance good production and profitability.

NARI can also assist by researching the possibility of creating markets within the NCW, farmers and CBO networks using the similar methodology of barter system to enhance and strengthen the *Women in The Food Chain* concept. NARI is urged to assist NCW to do research on the methods of inter-provincial transportation, packaging and costing to promote the principles of the food chain concept.

PNG Women's Credit Scheme is executed through the NCW network. Integration between the Food Security Program and the Food Chain concept is important to encourage more women to be involved in self employment projects to generate income and profit.

A week before the Independence celebration in September this year, NCW is staging the first PNG *Women's Economic Festival* on the theme *PNG Women Progressing in Development*, in Port Moresby. The aim is to encourage women to seriously go in to business, promote locally grown food, use local menus, arts and crafts, etc. It will also aim to identify and strengthen the network of women entrepreneurs, small and large, women farmers and fisher women. It will be a time of celebration but at the same time tell PNG about the involvement of women in developing this country economically. We will need NARI and NRI to provide us with the

data of women farmers etc.

This week has proven to be very successful and I believe the participants have learned new information and the importance of building strong and effective networks with NARI to make the concept of the Food Chain successful.

Let me challenge each and everyone of you that the onus of encouraging more women to be in decision-making positions and become policy makers, is in our hands. We have to be united and embrace each other's skills and talents to be utilized at higher levels. Time for backbiting and jealousy is over; we are living in era that is economically challenging and difficult. We need each other and need to build each other so that together we can work as a team to fight against poverty, violence, illiteracy, low life expectancy and inequality in our society. We don't expect any miracles to happen to solve our problem.

Let me once again thank NARI and AusAID for conducting this workshop to empower us for a greater participation.

I congratulate you for your valuable contribution to the welfare and well being of our families and the services we have rendered unselfishly for this nation. I wish each and everyone God's blessings and every success in your future endeavour.

I have the greatest pleasure in declaring this successful workshop officially closed.

SECTION ONE

**SOCIAL, ECONOMIC AND TECHNICAL ISSUES  
AFFECTING WOMEN'S PROFITABLE  
PRODUCTION OF FOODS**

## **Socio-Economic Perspectives on Women's Voices in the Food Chain**

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# 1 INTRODUCTION

Women's voices can be heard clearly and evidently in clearing, felling, weeding, sowing, harvesting, transporting, processing, and selling which are all components of semi-subsistence food production. But it is now time women need to move on to another arena in agriculture where their whispers can be developed into audible voices of large-scale production (i.e. greater degree of commercialism).

According to the 1990 census, majority of Papua New Guinean women are engaged in agricultural production. Forty seven per cent (47%) are engaged as either subsistence, semi-subsistence gardeners or are involved in fishing and only four per cent in the formal sector.

Women contribute about 50 to 70 per cent of labour towards agricultural production in this country.

The agriculture sector plays a vital role in transforming the welfare and standard of living of the women and rural families of Papua New Guinea. The question to ask is: why is life expectancy of women so low at approximately 53.6 years, with high fertility rates resulting in high infant mortality, health problems such as malnutrition and general poverty?

To address the above problems, women's perspectives, attitudes, views and appreciation of agriculture will have to change now. This will lead to improvement in the standard of living for women and their families. Agricultural farms should be run as a business entity and this mentality should be embraced and exercised from the start of production down through the marketing and processing chain. For too long the women may have waited on the government for information and knowledge needed to do certain projects but these were not forthcoming. Therefore, they are faced daily with the following constraints

that affect their agricultural productivity; namely:

- The need to allocate time between agricultural production and domestic chores such as home food preparation and processing, collection of water and firewood, child care as well as the time factor involved in walking to and from the food gardens (Vatnabar, 1999).
- The lack of technical extension support facilities and financial advisory services directed to women on food crop cultivation and marketing.
- The lack of access to relevant information and technology on intensive cultivation techniques and cash crop management.
- Lack of micro-credit facilities to assist women farmers in the purchase of appropriate technology.
- The lack of non-formal education programmes for rural women aimed at improving nutrition and the quality of life in rural households.
- The lack of access to a proportion of earnings from cash-crops (Melissa, 1987)

The question that goes back to the women is: "Are we going to sit back and wait for the government to come to our aid or are we tired of waiting and will we begin to help ourselves, our families and our nation?" We hold the key to development in our hands and we can change our destiny. What we need is a change in our attitudes and the negative views we have towards agriculture and to look at alternatives to address these constraints that hinder our productivity.

The bible specifically tells us that a man or woman without a vision perishes. We have to have a vision in what we are doing whether it is food production, food marketing or food processing. A vision is the ability to think about or plan the future with great imagination or wisdom (Oxford Advanced Learner's Dictionary, 1995). It is not looking at the now, it is

looking at the future. For example, if we have been planting and allocating 0.5 hectares to kaukau, banana, taro and aibika for the family's consumption and only selling on an adhoc basis then, now is the time to take it one step further.

The farm will have to be planned again this time with a profit motive because it is a business entity and not just a 'garden'. The land will have to be divided up with 0.2 hectares of crops for the family's consumption and the other 0.3 hectares of crops strictly for sale and run as the farm business. All money received from these 0.3 hectares should be used to buy seeds, fertilisers, or other inputs and what is left over are saved in a passbook account created for the farm business. If a farmer has only allocated a few hectares to farm production and still has some hectares lying idle, then production should be increased in order to increase yield and in turn, income.

The use of fertilisers can increase the yield of a crop. The introduction of high yielding varieties can also increase production and in turn, income. Pests and diseases can be controlled by either chemical or biological means. The application of practises such as the best crop combinations, or crop rotations, can also increase farm income. Diversification of different crops, livestock and cash crops can be used to insure the farm against periods of price fluctuations, which may affect the income of the farm family.

This is where NARI's role becomes evident in the food chain as a research organization that has been entrusted to carry out research into all aspects of food production and food security of this nation. It is NARI's responsibility to build that bridge between research and the farmer. It is the farmer who is going to be the implementer of the research findings. If NARI does not build the bridge, the research findings will not reach the farmer and research will not achieve its objectives. It is very important to go into partnership with the farmer from the start.

It is now up to NARI to disseminate this information of high yielding varieties, the use of inputs, crop practises and techniques, pest control and the safety measures involved. NARI will have to look seriously at measures to address the constraints faced by women that affect their productivity and efficiency as food producers as well as conducting research into and designing appropriate technology that will eliminate the drudgery faced by women, especially in regards to the task of weeding of food crops.

The breeding and introduction of buffaloes could be considered as a means of transportation of food produce, firewood, water and young children so that the load is actually taken off the women and time is saved to do other roles.

NARI may respond by saying that the problem of delivery is in the existing extension delivery system. Has the alternative of using women master trainers to train women in the different communities as agents of extension to bridging the gap between research and the farmers been researched? If not, it may be worth considering.

## **2 FOOD PRODUCTION**

### **2.1 What is food production?**

Food production in the PNG context involves clearing and burning of bush and soil preparation for the planting of seeds, suckers, runners, etc to get an edible crop for the family's consumption to meet their daily energy, vitamin and mineral intake. Any surplus food is sold at the market to buy goods and services, which supplement the family's diet as well as meet other needs of the family to improve their standard of living.

In PNG, food production is an area that women have been involved in as far back as when

our ancestors were cannibals. It was always seen as 'women's work'. There is both a negative and a positive side to this mentality.

The negative side is that most of our male children today grow up lazy, unresourceful and are not self-reliant resulting in underutilisation of labour in the food production systems. This is simply because of the 'mentality' instilled in them at childhood that, digging the soil, weeding, harvesting, cooking and looking after children is woman's work. Only the 'girl child' is supposed to do this. Mothers, sisters, I urge you to break away from this mentality if you are to develop the next generation of males who will be caring, responsible, self-reliant, hardworking men who would give unreservedly to see the development of this nation through their sisters, wives and their female colleagues. This is a potential resource for development that is not fully utilized at present because of this type of mentality. Women have so much to give in the area of food production, but are limited by some of these attitude problems that have come about because of our customs and traditions.

Lets keep the customs and traditions that are positive to the development to our nation and what is negative, let's do away with them.

### **3 EXAMPLES OF CUSTOMS HAVING NEGATIVE IMPACTS**

Certain aspects of farming are tagged as 'women's work', resulting in an over burdening of the girl child affecting her health and development from early childhood. This may be a contributing factor to the low female life expectancy, which in 1996 was estimated to be about 53.6 years. PNG is one of the few countries in the world where female life expectancy is lower than male life expectancy (NPO, 1996).

Another example of a custom having a negative impact is the tradition where males are given the best and largest part of protein and quantity of the meal before the women and growing children. This is true among the Kobau people of the Finschhafen district in the Morobe Province. (National Planning 1999). This is also a general phenomenon in the Morobe area. This custom may be a contributing factor to high rates of malnutrition. As a region, Momase has the highest percentage of malnourished young children in PNG with an average of 37 percent (From 1982 survey).

NARI as a driving force in the Women's Voices in the Food Chain should take an integrated approach towards increasing food production. New varieties and findings from research should be translated into a language that can be read and applied by the farmer.

If literacy is very low in a production or project site, then the approach should be firstly literacy based and secondly, delivery of the new innovation to increase food production. It is 'killing two birds with one stone'. The literacy problem is being addressed as well as delivery of the new innovation. If it's the other way around then there is a high probability that the project will not achieve its targeted output.

Also NARI will have to look into research of appropriate technology especially, to remove the drudgery faced by women in food production. That is, by making available appropriate tools that reduce time allocation to weeding of crops.

### **4 FOOD MARKETING**

It is a common sight especially in developing countries to see women at market places selling small quantities of processed food, agricultural crops or livestock to earn an income which is used to purchase protein and other imported food to supplement their family's diet (Vatnabar, 1999). In PNG the surplus food crops that are sold bring in a continuous income for the family. This income is also used to pay for school fees, clothing and other basic items that the

family needs

In contrast to the women providing for their own family's food security, they are also addressing national food security by catering for the urban population with a supply of fresh fruits, vegetables, staple root crops, fish and other local protein (Vatnarbar 1999).

Also in PNG, despite the majority of women who participate in marketing activity, most marketing boards are still dominated by males. This may lead to the possibility of having gender-blind policies, which are a disadvantage to women sellers.

It is time for the whispers in the food chain in the area of marketing to become louder where it is not just using the market place as a venue to sell but women would become members of the marketing boards. The whispers could even become louder and heard that women in PNG are venturing into operating women's marketing co-operatives, or food co-operatives. This has been done in many developing countries.

An example of this is in India where women have formed dairy co-operatives through a programme called 'Operation Flood'. A recent review of the programme revealed that there was great potential and benefits to flow to the women if they formed women-only co-operatives and by employing female staff at all levels.

## **5 FOOD PROCESSING**

Food processing is another area that women have been involved in for a very long time as far back as the cave people. At that time there was some form of food processing such as grinding of maize between two stones, or smoking of fish so that it could be kept for long periods or even the storage of fresh meat in brine solution so it could store for longer periods.

The processing of fruits into jams, chutneys, dried banana chips, and smoking of fish and other fish preservation, preparation, and processing methods have been tried out in PNG.

It is now time to look at the economics of it whether it is viable on a medium or larger scale. There is a large potential in this industry which needs to be researched thoroughly. PNG is blessed with many tropical fruits such as pineapples, pawpaws, guavas, watermelons, mangos etc.

Issues such as supply, demand, quality, packaging, transportation, marketing, exporting etc. need to be addressed. PNG would also have to look at the potential for niche markets that may be interested in some of our own exotic fruits and nuts such as the galip nut and pandanus nuts. In the line of oils, we can investigate what the potential of coconut oils, oils from our local nuts, sunflower, nutmeg and other essential oils hold.

One of the major commodities that rank high on our import list is rice. At present there are projects put in place throughout the country to increase rice production. These should be evaluated carefully especially; studies on women's labour input should not be neglected. Also the effects of milling on employment and the income-earning capacity of the female, especially the single-headed household, should be investigated.

The potential of freezing and packaging of 1 kg plastic bags of certain varieties of taro and bananas and exporting them to countries that have a large population of Papua New Guineans and taro eating population, should be investigated. Fiji has been able to successfully do this with cassava.

The beef industry is one area that our women can try to team up in and address. There would have to be training in the management side as well as the animal husbandry side of things with funding assistance to come from the government for this to be successful.

## **6 CONCLUSION**

In conclusion, whether it be food production, food marketing or food-processing, women's attitudes and perspectives towards agriculture has to change if they are to see an increase and further development in these three areas.

Women should now view and treat agriculture as a business and run their agricultural activity with a profit motive. By addressing their agricultural based income generating activity in this way they are able to empower themselves to address other problems such as unemployment, low life expectancy, high fertility rates, malnutrition and general poverty.

Women should now move out and take steps to help themselves by having a self-reliant type of approach where they are looking for other alternatives to address their constraints rather than waiting on the government.

This does not mean that the government has no role to play here. The government still has a great role to play in information delivery, assistance in funding, and extension delivery and research. NARI on the other hand is the bridge between research and the farmer and will have to go into a partnership with the women farmers where it can use them as extension agents.

The voices of the women in the food chain are loud, clear and evident in their traditional roles of food production, food marketing and food processing. But it is now time that the whispers in the new areas of food production, marketing and processing will grow and develop to audible voices in the food chain as the women move forth with a vision and a change in attitude and perspectives towards agriculture.

## **Women's Issues on Peri-Urban Agriculture**

*Maia Wamala<sup>4</sup>*

## **1 INTRODUCTION**

Papua New Guinea is faced with a problem of urban drift where potential farmers are moving to cities in search of formal employment. Annually the drift of youths and families increases and this is evident by the increase of squatter settlements in the cities. Port Moresby is no exception. In many cases these youths eventually start raising families in settlements without success in finding formal employment. They become poor and resort to growing food crops in the back yard and on unused government and traditional land to earn a bit of income to support their families. It is not surprising that Port Moresby is becoming an under-served mega-city crowded with squatters, employed and unemployed people in search of prosperity.

The increase of PNG's population at the rapid rate of 3.8%, particularly in towns, must be in parallel with the increase in food production through peri-urban agriculture. In this food production concept women play a vital role in sustaining the families basic food requirements and generating daily income.

The main objectives of this paper are to:

- Highlight women's social issues that affect peri-urban food production.
- Address constraints and opportunities for women's groups going into peri-urban agricultural business.
- Analyse physical factors contributing to women's interest in participating in peri-urban agriculture.

## **2 PERI-URBAN AGRICULTURE**

Peri-urban agriculture involves any agriculture or farming activities taking place in communities and villages located at the periphery of rapidly changing cities and towns. Laloki, Koiari, Vanapa, and other peri-urban villages in Kairuku-Hiri and Rigo districts actively participate in agriculture and food production, and supply the Port Moresby markets.

These villages are strategically located with good road and market access. They have great potential in generating thousands of kina from sales of vegetables and staple crops. There is abundant traditional land and excess unemployed youths, young men and women. Land is often under-utilised and requires improvements to its value. The available women and youths must be seen to actively participate in increasing food production in an effort to alleviate both rural and urban poverty.

## **3 CURRENT WOMEN ISSUES IN PERI-URBAN AREAS**

Women in peri-urban villages have advantages in resource ownership and utilisation and yet they are isolated from opportunities. Women need to be educated on the importance of their role in peri-urban agriculture and most importantly their involvement in farming as a business/peri-urban agribusiness. Women must come out openly from their contemporary religious world and be empowered to explore income generating opportunities.

It is generally observed in the Southern Region that women are embraced by their Christian values and commitments that prevent them from actively participating in economically viable activities. While it is also important that youths and young men and women spend a lot of their time on social and related church activities, they are strongly encouraged to be involved in income generating activities. It is understood that in many women's fellowship groups there are subgroups that play a role in educating others on certain skills related to crafts, sewing etc. However this could be expanded into farming skills for farming as a business.

Women who participate in fellowship activities are rarely seen in city markets selling garden produce to generate income for their families. Though such women may be observed as spiritually rich, they may physically poor in daily income. An example can be seen in Port Moresby markets where the majority of women actively selling vegetables and making money are from other provinces.

Women must be open-minded and prepared to explore opportunities into actively participating in economic activities. Women must not remain as subsistence farmers, but progress into agribusiness.

Generally, rural women have limited knowledge on new farming techniques to improve production. The flow of agriculture information required to increase production is lacking with women left out of agriculture extension programs. The former agriculture extension service by women DPI officers has stopped. Government Agencies need to support them.

Women must be educated on income generating enterprises. It is obvious that women in the region are tangled in their Christian world, not realising others becoming successful in living. Women also must be supported by their husbands in their struggle to meet their household requirements as well as venturing into farming as a business.

#### **4 SUGGESTIONS TO IMPROVING WOMEN'S VOICES IN THE FOOD CHAIN**

- Improvement of farming systems on marginal land
- Introduce new crop varieties and techniques
- Promote women's active participation in farming as a business
- Women can form groups with an objective to develop crop enterprise projects e.g. spices, bulb onion, taro, vegetables etc.
- Southern Region office of DPI can establish a women's farming training centre.
- Introduce low-input irrigation systems.
- Revitalise and improve the women extension DPI programs.

#### **5 CONCLUSION**

Women's Voices in the Food Chain must be heard and given organisational and financial support in their effort to be successful as food entrepreneurs. Their voice must also gain political support that must be sustained over years, Churches that claim ownership to many women groups must focus on involving women to participate in meaningful economically viable activities specifically on increasing on food production. Women must not concentrate only on spiritual well being but also on what their family requires. It is obvious that at the end of the day, what will be available in the kitchen for the family is a must. We cannot expect goodies to fall from heaven. The regular involvement of women and youths in the church activities has made them lazy to work their land and therefore they have become unproductive.

## **Issues of Production: How I Managed**

*Betty Higgins<sup>5</sup>*

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<sup>5</sup> Private Commercial Farmer, Member of NARI Council, C/. Smugglers Inn, P.O. Box 303, Madang

## **1 HOW I STARTED**

In 1987 I bought land in Simbu at the foot of Mt Wilhelm and in 1991 I established a market for vegetables in Lae with Andersons Foodland. From 1991 to 1993 I slowly constructed a fish farm just working from fortnight to fortnight. Then in 1993 I imported 50,000 fish eyed eggs from Tasmania. Import duty was 50 per cent and this really put me off but I pursued it and I brought in 50,000 eggs again. This time the import duty went up by another 5 percent to 55 percent. I sought to get the import duty removed but with no success. For the third year running I imported another 50,000 eggs and by then I had gained some knowledge and experience. Feed was a problem even in the beginning however, with the high kina value, I used to import high quality feed as I was aiming to go commercial.

When the PNG Kina got devalued against the Australian Dollar that gave me major problems and I gave us just eighteen months to survive. Then we found out that fish meal can be bought in-country from Barnes cannery in Madang. We are now buying fish meal and making our own wet feed to feed the fish so we are still farming. Ever since we went into farming the challenge is still very high. I had to keep trying every way possible to stay in the business.

## **2 VEGETABLE PRODUCTION**

When I started my own vegetable production business I used to be a wholesaler. I bought food and supplied Andersons Foodland. Because my aim was to supply only high quality I was able to keep in the business for six years. The demand for high quality produce is unlimited but because of the high cost of packaging and airfreight to cope with the poor road conditions and law and order problems, I stopped supplying Andersons.

Since 1991 nothing much has changed with infrastructure and also the high cost of production and packaging. If these conditions improve I would buy again. This would create employment and also improve the living standard in the Mt Wilhelm areas.

In Mt Wilhelm we grow only the best and mostly organic produce and we have a big opportunity to export as well. We can sell the A grades (high quality) but the B grades are thrown away. We need a processing plant locally so farmers are selling everything they grow to fresh food markets or the processors.

Being a farmer is very challenging.

# **The Commercial Viability of Farming Spices and Fruits for Women in Papua New Guinea**

*Vele Kagena<sup>6</sup>*

# 1 INTRODUCTION

This paper will discuss the commercial viability of farming spices and fruits in Papua New Guinea and will focus on the status of spice and fruit industries, and potential for development and production

## 2 OVERVIEW CHARACTERISTICS OF SPICES AND FRUITS IN PNG

### 2.1 Spices

Spices cover a wide range of diverse crops, with the potential to provide an alternative source of cash income to farmers in different parts of PNG. Many are adapted to a range of environments from lowlands (eg. Vanilla) to highland (eg. Cardamom), or high altitude highlands (e.g. pyrethrum). Erratic and often low world prices of export tree crops have stimulated considerable interest in alternative cash crops by farmers in highlands and lowlands. Little downstream processing or consumption of most alternative cash crops exists as production is predominantly for export markets. Most plantings are still immature.

The quality of alternative cash crops sold/exported is very variable due to processing practices and this can have a marked effect on price to the farmer. There is little regulation of processing and quality standards for spices. There are relatively few buyers/exporters in the market place, but these are increasing with supply. There is a need to assess the production potential, market size and competitiveness of PNG producers

The alternative crops that are planted relatively widely are shown in Table 1

### 2.2 Fruits

Fruits are an important seasonal nutrition supplement for over 85 percent of the people living in the rural areas. It was estimated

(1990 census) that 324,020 household grew fruit (excluding banana and nuts) compared to 206,109 households growing coconuts and 254,979 coffee. The value of fruits imported in 1990 was estimated at K2,032,692 whilst fruit based products imported was valued at K7,543,433.00. This represents an important economic opportunity.

Many tropical and some temperate fruits grow well in PNG and have in the past played a complementary role in the diet. Of the 324,020 households that grew fruits nationwide in 1990 about 49% said they produced for cash and consumption. A few have developed at a semi-commercial scale. In the highlands citrus, avocado and pineapple are developing more rapidly whilst in the lowlands there has not been any development of significance although there is commercial interest in large-scale development of mango and banana.

Smallholders produce nearly all fruits for local consumption or trading at informal local markets (see Table 2). This traditional activity is based on unmanaged or neglected trees in backyard old gardens and even from natural forests. Little downstream processing takes place in the country. PNG tree fruit development has not yet reached the stage where it can enter the international market. The aim at present is to improve the national diet, food security and supplement or replace imports.

### *3 Status of Spice and Fruit Industries in PNG*

The Spice programme was one of the Commodity Development Programmes implemented from 1987-1994. This programme was begun in Central, East New Britain and Eastern Highlands followed by Western, Enga and Simbu Provinces. The growth of the industry is encouraging but there is inconsistency of activities taking place among the 28,000 farmers of 682 villages involved with spice production. The focus was on cardamom and chilli, however, pyrethrum, pepper, nutmeg, ginger, tumeric and vanilla were also planted. Vanilla is now becoming the main activity as more farmers divert their attention to this lucrative crop

Coupled with the necessary Government budgetary support, climate conditions, information, marketing and promotion extension work, there can be significant increase in farmers' interest in cultivating these crops. Production and export figures of various spices are given by the Chief Executive Officer of the PNG Spice Industry Board, M.Waisime, in PNG Journal of Agriculture, Forestry and Fisheries (2000) 43(1): 108-119.

#### **3.1 Fruits**

Fruits produced include bananas, pineapples, pawpaw, mangoes, citrus, avocado, soursop, guava, breadfruit, durian, rambutan and mangosteen.

Pineapple is one of the important fruits of which there are significant commercial plantings. The per capita consumption of pineapples in the country is in excess of 2.2 kg per year.

Pawpaw is widely grown. A pink flesh variant is grown only at low altitude and Hawaiian pawpaw has been introduced for possible commercialisation. Pawpaw is relatively free of pest and disease problems in PNG and is widely consumed. There is potential for market in Australia and New Zealand.

Mango performs well in lowlands areas with a marked dry season, which is necessary for fruit production. Efforts are being made at present to develop a mango industry for smallholders in suitable regions.

The most commonly grown citrus are mandarins, limes, oranges, pomelos and rough melons. Mandarins and oranges are the most important citrus in many local markets but limes are becoming more common at local markets. The citrus production of is unable to meet the national demand. Imports are approximately 600 tonnes of fresh citrus annually. Oranges comprise 80% of imports. In addition about 1.4 million litres of juice and 30 tonnes of marmalade are also imported each year. Local production is projected to increase to approximately 200 tonnes from the highlands. There is a general increase in production of citrus juices and jams in Eastern and Western Highlands and other parts of the country where there is support from Provincial and the National Governments.

It is estimated that 1,500 tonnes of apples are imported annually at a cost of K0.4 million. There is no immediate plan for apple production locally but trials conducted at Aiyura indicated that a few varieties have potential.

Passionfruit plantings by smallholder farmers in the highlands have been encouraged as a result of installation of pulp-extracting plants at Mt Hagen and Goroka. Intensive production of fruit jam at Goroka may generate income and employment in the area.

## **4 DEVELOPMENT AND PRODUCTION POTENTIAL OF SPICE IN PNG**

The 1996 study by the Commonwealth Secretariat (for DTI) revealed the potential of a viable

spice industry at approximately K 180 million annually but it would need to be more than small-scale farmer production. Past experience in Madang (spice), Simbu (cardamon) and Enga (pyrethrum) suggest that good management and adequate capital must be in place if a commercial operation is to succeed.

Spices can provide diversification for small farmers and currently good prices are obtained for vanilla, chillies and cardamon in various parts of the country. Vanilla is currently the biggest market in E.Sepik, Manus, Morobe, East New Britain with *V. fragrance* and *V. tahitensis* dominant. Returns for high quality vanilla can exceed K10,000 per hectare at current prices. The future is promising especially after the discovery of carcinogenic substances in the artificial vanilla essence used as a substitute. Central processing may be necessary to promote high quality from PNG.

Chillies were produced since the 1970s (average over 200 tonnes annually) but inefficient marketing and low quality resulted in the loss of PNG reputation on the international market. Similarly, Cardamon was widely produced in the 1970s (Madang, Simbu) when high prices existed but slumped in the mid-80s. Smallholders now have little interest. Pepper prices are always low and there are high labour requirements to get a good crop. Lack of extension support and no market was a problem.

Ginger is a well known crop everywhere in PNG. Current production of all varieties is for domestic use and data is sketchy. The Asian community in PNG uses turmeric and the crop is grown in East New Britain for export. A high yield (20,000 – 35,000 kg/hectare) is possible under irrigation and both quality and yield are improved if it is grown at higher altitude. As always, quality and price competitiveness are the key factors if going for export markets.

Nutmeg and mace are internationally oversupplied. Prices have dropped by 80 percent over the 5 years from 1987-1992. Nutmeg would grow in Milne Bay and New Ireland Provinces. NARI, Keravat is trialling superior trees and grafting.

The oldest alternative cash crop in PNG is pyrethrum. Although production and processing were failures in early days, Enga is reinvesting in the factory to export the extract to overseas refineries. A minimum of 420 tonnes dried flowers each year are needed to keep the factory operating.

Despite low prices, they are stable and the Spice Industry Board and DAL needs to promote the industries for farmers to access the identified export markets. Intermediaries are needed for small farmers to sell their produce. Only 30 registered companies now exist. Problems remain to ensure a reliable supply of the quantity needed and of the quality demanded.

## **5 GENERAL CONSTRAINTS AFFECTING THE GROWTH OF ALTERNATIVE INDUSTRIES IN PNG**

The constraints are well known by government and the private sector.

### **5.1 Management**

Districts and Provinces need to take responsibility to achieve sustainability of the industry for their population. Managers and traders need to coordinate with government. There are insufficient staff of suitable quality to do the work. There should be surveys to get data from farms and set up time plans for short and long term strategies. Services should be centralized and have appropriate monitoring and evaluation.

A strong coordination network is essential for success.

## **5.2 Research**

Effective research is the foundation for agro-industry promotion. Evaluation of past failures would assist in finding solutions. These surveys/databases should be supported by consultations and sharing of ideas before proper strategies can develop. On-farm trials are needed to produce recommendations to farmers. Promotion requires strong links with extension services, farmers and NGOs

## **5.3 Policies and Funding**

Due to Structural Adjustment programme, clear policy is needed supported by internal and external funding. Provincial and district support is essential to cover infrastructure needs, purchase and distribution of inputs, equipment, centralized services and running costs.

## **5.4 Extension support**

This is needed to promote the crops, adapt recommendations to suit farmers and to gain access to local and export markets.

## **5.5 Social Issues**

Social factors have contributed to the failure of the crops (Highlands). Family models are needed to get the work done. Public and private sectors need to collaborate to promote fruits and spices as a business.

## **5.6 Economics**

The devalued Kina has made spice or fruit imports costly. This should stimulate local production on competitive basis to take up the local demand and also to go on a commercial scale to supply overseas. Downstream processing is needed to create employment opportunities.

## **5.7 Training**

The first important requirement is to get the research-based recommendations appropriate. Leading farmers then need training in technologies and then transfer them to others. Different target groups will need different training. A critical mass of staff and farmers are needed to develop the industry.

## **6 CONCLUSION**

High potential alternative crops are vanilla, cardamon, pyrethrum, mango, pawpaw, pineapple and citrus. Import substitution and export are possible. Downstream processing must be seriously considered.

**Table 1. Current production status of alternative crops in PNG**

<b>Crop</b>	<b>Current Production Status</b>
Cardamom	Most important in mid-altitudes (600-1400masl); significant production was developed at Karimui (Simbu Province) and in the Bainings (East New Britain). Plantation production at Karimui has ceased, but the crop is still being grown and exported from the Bainings. PNG share of the world market is tiny.
Chilli	A major attempt to develop this crop was made the Minor Crops Expansion and Development Project, but this was largely unsuccessful. Harvesting cost (labour) for Birdseye chillies are high and returns not particularly attractive. However, chillies are easy to grow and can provide a source of cash income where other export crops are not available.
Kava	A major attempt to develop this crop was made the Minor Crops Expansion and Development Project, but this was largely unsuccessful. Harvesting cost (labour) for Birdseye chillies are high and returns not particularly attractive. However, chillies are easy to grow and can provide a source of cash income where other export crops are not available.
Pyrethrum	Once important in Enga Province as a source of alternative cash income; processing factory at Kagamuga (Mt Hagen) is being refurbished. Interest by Enga Provincial Government to develop the crop. Production and quality is best at high altitude (>2000masl).
Vanilla	Major expansion of this crop has occurred since 1992. There are now estimated to be about 10,000 farmers growing the crop with major production in East Sepik, East New Britain and Manus, but farmers' interest is also high in all other lowland provinces.

**Table 2. Census data related to household activity in spices and fruits in Southern Region**

<b>Province</b>	<b>Activity</b>	<b>Active Involvement in Fruit (%)</b>	<b>Active Involvement in Spices (%)</b>
Western	Production	61	16
	Income source	45	27
Gulf	Production	60	10
	Income source	43	41
Central	Production	55	11
	Income source	46	42
Milne Bay	Production	72	17
	Income source	47	44
Oro	Production	65	19
	Income source	53	52
Total for Southern Region		64	15
		46	42

## **Bio-diversity and Management**

*Sharryl Ivahupa<sup>7</sup>*

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<sup>7</sup> PNG Project Manager, Conservation Melanesia

## 1 DEFINITION

**Biodiversity** - The existence of a large number of plants and animals which make up a balanced environment.

**Conservation** - The protection of the natural environment or the act of protecting something from being wasted, lost, damaged or destroyed.

**Management** - The act of running and controlling a business or similar organization or the skill or business of dealing with people or the things around you in a successful way.

What is the importance of Biodiversity Conservation & Management?

- For the future generation.
- For our identity.
- For sufficient supply of resources for the population.
- For prevention of natural disasters.

How can we ensure the Conservation of our plants and animals?

- Encourage sustainable development options.
- Set aside areas as Protected Areas.
- Awareness campaign to key population.
- Lower impact harvesting methods (i.e. traditional methods)
- Where do we get advise/assistance on Biodiversity Conservation and Management?
- Office of Environment and Conservation agent/Office.
- Relevant NGO
- Schools

## **Women's Role in the Conservation of Plant Genetic Resources**

*Rosa Kambuou<sup>8</sup>*

Plant genetic resources (PGR) are defined as the genetic diversity or variation in plants that are useful to people. Germplasm resources (term commonly used) therefore describe the total genetic diversity of domesticated plants and their wild relatives, much of which may be valuable to plant breeders.

For the purpose of this workshop, I will be specifically referring to the PGR of PNG food crop species.

Plant genetic resource diversity is the key component of any agricultural production system. The interaction between the environment, genetic resources and management practices determines the continuation of the evolutionary processes (eg. hybridisation between cultivars). Without the genetic resource diversity, these evolutionary processes are not possible. Agriculture would not have the basic raw materials for their introduction, domestication and improvement programmes.

Conservation and sustainable utilization of PGR is the essential element in improving agricultural productivity and sustainability. These contribute to national development, food security, poverty alleviation and sustenance of rural livelihood.

For thousands of years the rich plant genetic diversity has been 'housed' in the natural forest habitats and in farmer's fields or gardens. However, these habitats are now under increasing pressure from human interventions including; mining activities, agricultural projects, logging activities and urbanisation as well as ongoing socio-economic and technological changes. Calamities such as floods, landslides, earthquakes, fires and cyclones and climate change are other causes for 'genetic erosion' under *in situ* (natural) environments. The results are habitat fragmentation and destruction, abandonment of traditional agricultural and natural resources management practices and replacement of farmer's landraces or cultivars by modern varieties.

Plant species have always become extinct and landraces gone out of fashion of course, but the current pace of 'genetic erosion' is increasing at an alarming rate today. Traditional diverse cultivars are being replaced by one or a few superior or improved varieties, thus narrowing the genetic base and that can contribute to the genetic vulnerability of the crop.

As major producers of food crops for our families, communities and the country, we women need to take an active interest in ensuring that the valuable genetic diversity of our traditional food crops are properly maintained and conserved on-farm. We have to do that now before it is too late. We cannot sit back and let our forest habitats continue to be destroyed. We have to shout out and be involved in the planning process of any developmental projects that will have some effect on our forest habitats and our ways of farming.

Papua New Guinea (PNG) is very rich in genetic diversity, in fact it is a secondary centre of diversity for traditional root and tuber crops, bananas and green leafy vegetables and a centre of origin for New Guinea 'noble cane' (Highlands sugarcane). Almost all landraces and farmers cultivars of our traditional food crops are currently being maintained on farmers' fields and their wild progenitors are growing under *in situ* conditions in the wild. These rich resources have contributed in many ways to the development of our culture and traditions. The wild genetic resources for example, the fruits, nuts and leafy vegetables species from the forest habitats which are being depleted at an alarming rate today, are important food sources for the 85% of our people living in rural areas, especially in times of drought and *taim hangre*. They depend solely on the genetic diversity of food crops and the wild relatives from the forest habitats during these difficult times.

The rich PGR we see today are the fruit of billions of years of evolution, shaped by natural processes and by the influence of people. Therefore it is vitally important that we, as primary food crop producers, continue to take care and conserve our rich genetic diversity of these

crops so that we can pass them to our future generations. It is also very important that farmers understand the importance of PGR as 'sources' for food security and continue to maintain diversity on-farm. We need to bear in mind that once this rich genetic diversity in food crops is lost they are irreplaceable. This treasure house is now shrinking in some areas in the country as modern commercial agriculture focuses on relatively few crop varieties and species. The loss of diversity in food crops can reduce farm productivity. **If we are careless in looking after our food crop diversity, we will be creating the greatest food security crisis for our future generations.**

As a national institute, NARI has been given the mandate to help people look after the rich valuable genetic resources diversity of crops and livestock species of the country. NARI's PGR Research Programme has played an active role in collecting the plant genetic diversity from farmer's fields and from the wild. These are currently being conserved and maintained on four Research Programme locations in the country. Over a thousand sweet potato accessions are maintained in *ex situ* field collections at Keravat and Aiyura, around 500 accessions of taro are maintained at Bubia, while 309 accessions of banana, 81 aibika, 78 cassava and 24 yams are being maintained at Keravat.

Apart from collecting and conservation work, the NARI research team is also describing, evaluating and documenting the information on our rich genetic resources diversity. The *ex situ* field collections may not cover all genetic materials out there in farmer's fields. There is a need for further collecting expeditions to capture all possible genetic diversity of the country.

There are other complementary conservation approaches that are used in the world today, apart from the *ex situ* field collections. These approaches include; *in vitro* slow growth and cryopreservation storage, *in situ* management approach and seed storage under cool-room conditions. NARI is currently conserving the germplasm diversity in *ex situ* field collections and will be going into *in vitro* storage once facilities are set-up. We are interested in doing *in situ* on-farm conservation work with interested farmers. This interest has to become a reality soon to avoid further depletion of the rich genetic diversity of food crops on-farm.

The women of our traditional societies have played a significant role in conserving and maintaining crop diversity on-farm. The crop diversity is maintained either through seeds, planting materials (cuttings, suckers, tubers, etc.) or through seedlings transported from one garden site to another. Our women provided the custodianship role for our rich valuable diversity of foods. The traditional societies were able to maintain this diversity for different purposes, all contributing to the well-being and livelihood sustenance of the community. This practice is now changing because of monetary gains and interests and other social activities that takes priority over food crop production. Our farming women in rural areas know the best techniques and ways of planting materials. This indigenous (traditional) knowledge (IK) has been developed and adapted by the farming communities for centuries. We need to learn and build on these IK.

NARI programmes for food crops production should emphasise production of local staples and other food crops species, where our rural women have most knowledge. Some possible ways of encouraging women to maintain diversity on-farm is for the Government to create 'niche markets' for selling 'variety' of produce grown under organic conditions. Another way is for the government to organise 'diversity fairs' or 'shows' for the farmers to display their food crop diversity. Farmers who display diversity of food crops are given recognition by the government. I believe these initiatives will encourage our rural women to feel that they are contributing something very valuable to the development of the country. We need to start on such initiatives soon to avoid further 'genetic erosion' on farmers' fields.

I would like to conclude with this small poem.

*The plant genetic diversity is ours, but the time marches on.*

*And the things that we leave behind will be here when we are gone  
The diversity is ours, but the morning is theirs  
Walking our garden sites in the golden sunshine.*

*The diversity is ours, but it's our children's dream  
To travel the world and then come home again  
Before the madmen came, to ask where they have been  
They could possess a thousand different grains*

*The diversity is ours, but we don't respect it  
It's just another record in a book  
It will turn on us, if we neglect it.  
It will pay us back for destroying it*

## **Impacts of Oil Projects on Women and Children's Health**

*Wendy Haro<sup>9</sup>*

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## 1 INTRODUCTION

Lake Kutubu is located in Nipa district in the Southern Highlands Province. Lake Kutubu has two tribes, the Foes and Fasmus. Agricultural activity differs between the two groups of people.

Modern agriculture started with the introduction of the silk worm followed by cardamom in the early 1980s and 1990s. They all failed. Chilli and vanilla are popular currently due to high market demand. There is still a need for training and transfer of knowledge, skill and technology in agriculture in the area.

Poor agricultural development has caused poor nutrition and has led to a high malnutrition rate of children. Women and children's health suffers especially in Kutubu with high malnutrition.

Agriculture development has been seen as not important despite the fact it has been with us since our ancestors' days. There is a lot of talking and policies are developed by the authorities but how are these to be implemented at village level? Who will do it and when? An integrated approach has to be used because of the complexity. This is a two way approach:

- Government agencies, NGOs and other organizations teaching the villagers the skills, knowledge, changing technologies, best practices, planting materials, etc.
- Government agencies, NGO and other organizations learning from the current practices and improving from what the villagers know, what they have and what they can afford.

People from different levels of education, environment, location and gender perceive agriculture from different viewpoints. Here are some commonly heard views:

- Agriculture work is for women only.
- It is a dirty job.
  
- It is work for the uneducated and or unemployed people.
- Farmers are poor people.
- Agriculture is growing food crops for consumption (subsistence).
- Agriculture can be raising livestock for markets.

It is important to understand the importance of agriculture and the role each and everyone in the family, community, at the government and NGOs and other private organization plays towards agriculture development. Otherwise we cannot improve the health and living standard. However, we need to adapt our well-known practices to meet the needs of our changing world.

| How can this be done? Is it by food production only or buying manufactured food from the store? Should we have more women trained in agricultural colleges? And how do we get an integrated knowledge of all basic issues related to agriculture? This will need knowledge in health, business development and education.

## 2 ISSUES AND CONSTRAINTS FACED BY WOMEN IN THE KUTUBU AREAS

- Oil production – most men are employed and thus prefer manufactured goods.
- Women are involved in a lot of daily activities and cannot spend enough time in the food production.
- Men are served the best food rather than the women and the children.
- Lack of extension services in the area by government agencies.

- Lack of knowledge and skills by farmers.
- Barriers caused by customs that impact on the women and children.

All the above are causes of the high rate of malnutrition in the area.

### **3 POSSIBLE (LONG-TERM) SOLUTIONS**

- Integrated extension approach by all social sectors – agriculture, health, education, and community development with all NGOs and other related organizations.
- Agriculture becomes the core subject in the education system.
- Encourage collaboration in agricultural development through NGOs and other private organizations for village projects.
- Introduce mini funds (credit) for agriculture for very small villagers to emphasise food security.

### **SUMMARY**

Agriculture is a very complex subject. It is important for our daily living and our livelihood. Everything from food production to food security is needed to get good nutrition and a happy family.

## SECTION TWO

# **ESSENTIAL INPUTS AND INSTITUTIONAL SUPPORT FOR THE FOOD CHAIN TO FUNCTION – ACCESS TO EDUCATION, INFORMATION, FINANCE AND MARKETS**

## **Empowering Women Through Education to Participate Actively in the Food Chain**

*Lily Sar<sup>10</sup>*

*"I emphasize again the multiplier effect of educating women. When women are educated, the quality of life of a whole family is often improved" (Lady Carol Kidu, The Independent March 15, 2001).*

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## **1 INTRODUCTION**

Most women who live in the rural areas are illiterate. Although they play a vital role in agriculture production, children's education and the preservation of cultural identity, they rarely have an opportunity to make their voices heard and rarely exercise their rights, including the right to education.

Daily these women struggle for the welfare or even the very survival of their families. The day's activities leave them very little time for leisure and still less for educational activities. But necessary time and resources will have to be found because education will be the surest instrument to bring about an improvement in their difficult condition. Education must be firmly anchored in the everyday reality of their lives and culture, and must meet their needs.

## **2 EDUCATION AND THE VOICES OF WOMEN IN THE FOOD CHAIN**

Education in this context is defined as providing general awareness that involves information regarding development. It involves opening people's minds that have been imprisoned as a result of a lack of access to education. They may thus be introduced to new innovations, new agricultural techniques and generally be opened up to information.

Information is shared through communication. Communication can be defined as "... a social process, that is the flow of information, circulation of knowledge and ideas in human society" (Poostchi, 1986:317). It is through communication that people can learn new ideas of new technologies. They can be stimulated by the changes conveyed to them and understand what is happening around them. One must be conscious of what is happening in order to recognize and participate when the opportunities arise.

The significance of communication is the process of linking people which enables easy access to information. Women are generally illiterate and are unable to obtain information from written media so radio is the only way of reaching them, especially in remote areas. Even then, women hardly have the time to sit down and listen to the radio.

However, the effectiveness in communicating information for the empowerment and development of women (that will allow them to participate effectively in the food chain in their communities) is hindered by cultural practices and perhaps because the women themselves lack the confidence to venture out into the unfamiliar.

Delivering information to the women could be done through extension services, Non Government Organizations (NGOs), Community Based Organizations (CBOs) and government services. NARI's role here could be to prepare appropriate information to go into extension materials that target women. Information could teach women to grow crops that have high nutritional value, alternate cash crops as well as using downstream processing for better storage and value adding of tropical staples.

Literacy can be used as a medium to equip women with the necessary skills to enable them to be confident in their own abilities. Literacy is the acquisition of basic knowledge and technical skills enabling fundamental needs to be satisfied and the quality of life improved. UNESCO (1990) defined literate rural woman as "a person who possesses sufficient knowledge of reading, writing and arithmetic to guarantee an improvement in the quality of her own life and that of her family, and to participate fully in the development of the group and community".

Through literacy training women could contribute to higher earnings and improve the living conditions of rural women by helping them to escape from poverty, marginalisation and inferiority. It should also enhance personal well-being, greater confidence and self-respect, an

awareness of their own value as women and of their creative ability, while at the same time bringing about a realization that limitations imposed upon them can be changed.

Appropriate literacy should enable women to improve the living conditions of their families through better health and nutrition. There should also be an increase in productivity and earnings, better conditions for their children; they should gain an understanding of new technologies; and have easier access to credit facilities.

Female extension officers can disseminate information about funding agencies from which women could obtain finances to run agri-businesses. This is an excellent way of conveying information regarding agricultural activities as most of the target groups are illiterate. Other means of information such as the print media may be beyond their means.

An educated woman will be more likely to change the traditional family relationships and to break the imbalance that places her at a disadvantage and makes her the victim of discrimination. She will be able to manage her finances, budget her money so that she provides nutritious food for the family and still be able to pay for the educational expenses of the children. Thus Education has a great impact in changing many of the social differences between men and women.

NARI could contribute to the process of improving literacy of the women of PNG through increased recruitment of competent women scientists who will be mentors, role models and change agents to other women. In addition, NARI could recruit relevant staff such as Rural Sociologists, Anthropologists and Socio-economists to identify research and development issues affecting women in rural areas. NARI could also promote science through identifying and tracking female students from secondary schools to universities in line with the Institute's current initiative "NARI-Secondary School Research Alliance" and offer cadetships to them so they can pursue a career in Science.

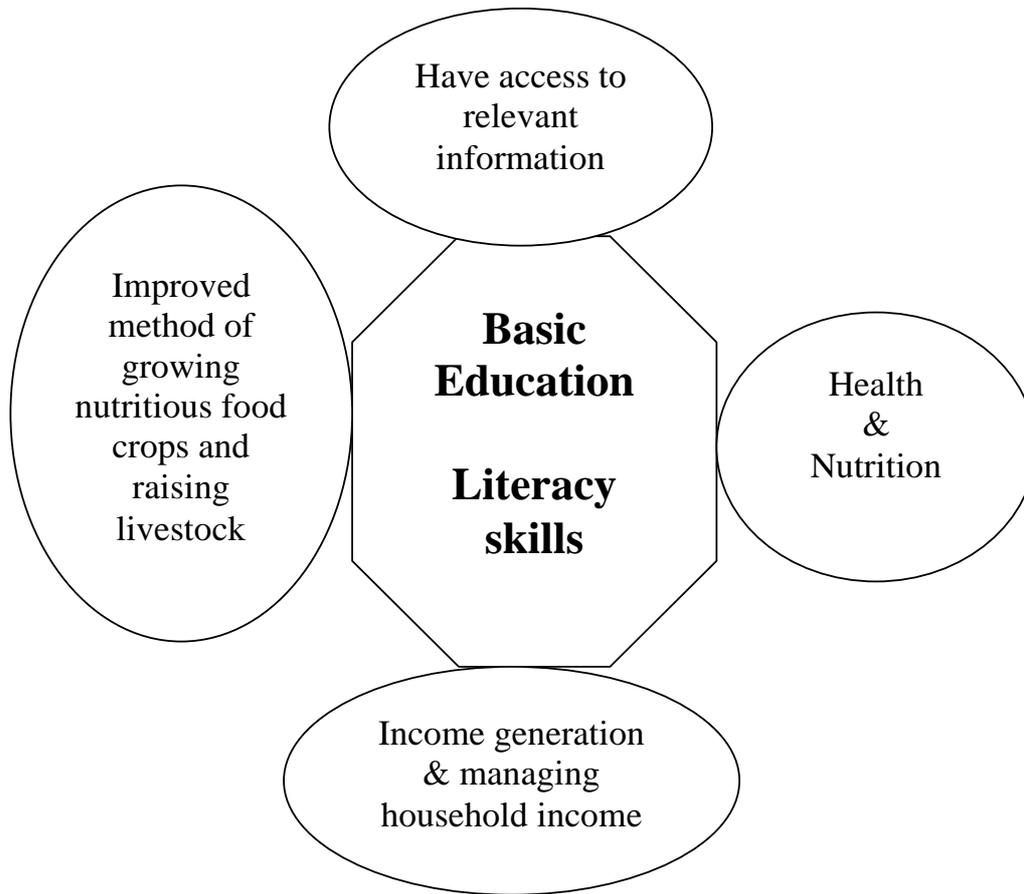
If literacy results in high income, it will enable women to increase agricultural productivity further through projects that improve the general well being of their families through better health and nutrition. To this end they will better understand and use new technologies adapted to their needs. Thus literacy training for women may trigger a dynamic process which will have interdependent and self-reinforcing multiplier effects.

In conclusion, educating women through literacy training in the rural sector leads to a healthy and happy home and as well as equal and meaningful participation by women in the economy.

### **3 DISCUSSION QUESTIONS**

What are the appropriate methods to educate women so that they can participate in the food chain?

What policies and strategies can be established to lift the women and girls through education to decent work and sustainable livelihood, a more equitable sharing of resources, full access to information and to communication technologies to help women to actively take part in the food chain?



## **Women and Food Markets**

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# 1 BACKGROUND TO PAPER

This brief discussion paper has been prepared as a contribution to your discussion on the role of food markets in PNG. It is not a comprehensive paper, nor is it the work of an expert. It is a summary of observations, reflections and suggestions. These points are derived from living in rural areas and working alongside women for many years, and also from conducting small research at markets in Angoram (ESP) in 1998, and in Kundiawa (Simbu) in 1992. The recent studies of the FPDC gender program have confirmed our findings about the importance of women's market earnings for family well-being. Daily observations and interaction with market women confirm the problems that are a routine part of this vital link in the food chain; problems that are hardly seen, and rarely discussed. There are new and old problems and increasing problems; some are critical to the quality and sustainability of food markets from a buyer's point of view. There are many problems that are fundamental to the well-being, rights and opportunities of women as key food producers and suppliers.

It took me a long time to recognise and appreciate the role of women at food markets and to understand the huge effort behind it and the risks associated with it. We used to think that we were advanced and correct in focussing on women and food gardening as the foundation work for rural women's groups. It was a decade before we all realised that food marketing was probably the most important area for us to target and support. The gatherings and activities of functioning women's groups in other rural development programs intended to provide health extension or non-formal education services are often in competition with the need and drive of rural women to go to market.

Since I understood this, and when I also understood how invisible, taken for granted and often exploited and abused women market sellers are, I have always looked at markets through gender lenses. I try to see, hear, and count women and girls. I take note of their physical conditions (sun, rain, mud, benches too high, too crowded, too dark) and of the way they are spoken to or treated. I also try to take note of the way they juggle their responsibilities and activities (babies, children, barter and the mutual support networks and exchanges with other sellers). I try to see how much they are left with at the end of the market day and what they do with it (dump, exchange, sell for next to nothing). I ask them where they came from, how they got there, and the cost, why they carry a three day or three month old baby with them.

I watch the way the ticket sellers treat the women. The way they speak to them, the way they demand and extract from them. I talk to the women about the market taxes, and to the tax collectors. I count and do my sums and I still believe that women and girls provide a huge subsidy to local governments, some private market operators and to town authorities.

In Angoram and Simbu we have monitored and followed the market tax collection and can confirm that there is no proper system of financial accountability between market collections and formal accounting. There is no moral accountability to put some of that money back into the improvement of conditions for the sellers. The collectors and end beneficiaries always dispute and deny the total taxes they are collecting. Why?

- It is useful to have a gender perspective on women and food markets. It helps us to look with new eyes and realise that:
- Women and girls play a central and dominant role in food marketing
- The cash generated by women and girls plays an important role in supporting family wellbeing and in giving the women and girls a degree of economic independence
- The planning preparation, and problems that lie behind the women selling at food markets is not recognised, appreciated or understood and not addressed in development projects
- There is little or no care for the physical conditions of food markets, (where there is, it is from concern for the buyers rather than sellers)

- That violence in the form of fear of rape and sexual assault, harassment, bullying, exploitation and humiliation accompany women to and from and at the food markets

Gender is the learned behaviour, attitudes, values and sense of one's own value. It is the experience and condition of being a boy and becoming and being a man or being a girl and becoming or being a women, that results, not from biological differences, but from the social, cultural, religious, economic and political factors that shape our lives from birth.

Girls growing up in PNG follow the family and community role models, abide by the family decisions and fulfil the expectations that lead to becoming a farmer, marketer and household manager. Most women place the highest priority on feeding the family, improving that household (cooking, bedding, lighting facilities) and meeting the expenses of health care, education and child-rearing. This will often be in competition with their own opportunities to access education and health care.

Most boys in PNG will grow up to expect that the female members perform this routine productive and reproductive work, without ever thinking of it as work. They will often think that the role and responsibilities filled by women are merely a natural extension of their biological capacities. From the male perspective, it is believed and often stated, that: *As wives and mothers... that is their job!* And further that: *If they don't fulfil their domestic responsibilities to the satisfaction of the men in the household... they deserve to be rebuked, hit and hurt.*

Research in PNG clearly shows that one of the common reasons men give for committing violence against women is that they ***failed to fulfil their domestic responsibilities.***

For many rural women, the decision to travel to food markets, sit there selling and risk the uncertainty of transport and sales, is accompanied by a lot of anxiety and risk. Will they make it? Will they be able to sell? What will I do if I can't sell? Will my earnings be enough to pay the transport, market taxes and be enough to buy some food supplements and bring some cash and gifts (buai, brus etc.) back to husband and family? Will there be transport home? Will there be any trouble...fights in town, drunkards or 'drug bodies' around the market, harassment and threats? Rain?

Women's leaders, Local Level government and district planners, provincial planners, rural development project planners, agricultural extension workers, health extension workers, literacy trainers and non-formal educators... all who claim that they intend to reach women and support them as participants and beneficiaries in the development process, need to look at markets with new eyes, ears, and frameworks for understanding women's role, opportunities and constraints.

We need to think about the following:

## **ACCESSIBILITY**

- Where are the markets?
- How near or far?
- What are the days and hours of operation?
- What transport is available?
- How much does it cost?
- Are women being ripped off?
- Do they have any voice to protest, complain? (if not, why not)

## **TIME FACTORS**

- How long does it take to get to/from
- At what time must women be on the road?
- How much do they do before/after daylight?
- What kind of waiting/uncertainty is involved at the market?

## **SECURITY FACTORS**

- What risk is involved in waiting walking/PMV travel?
- What can go wrong at the market?
- How safe are young girls who want to market independently?
- What is the risk of theft? Physical assault? Verbal abuse?
- What rules, standards, protections are there?

## **THE REAL ECONOMICS**

- How many girls and women sell food at the market regularly?
- How often?
- What are their incomes per week? per year?
- How do these total incomes per family compare with cash crop or other incomes?
- How are the incomes used? For the immediate/extended family/ for themselves?
- How much control do women/girls have over their income?
- How much understanding do women have of the real costs/income?
- How much do they plan and manage these matters?
- What is the annual total of market taxes collected, and how is this applied?
- How much is spent annually on improving the markets?
- Who makes the plans and decisions about market improvements?
- Are the women and girl sellers consulted?

## **SUSTAINABILITY**

- What land, labour, transport, law and order, environmental and political changes and issues are affecting food markets? In what way?
- Does food marketing get harder or easier?
- Why?
- Are men getting more or less involved?
- What are the interest, concerns, and levels of awareness of LLG and town authorities?

## **SAFETY AND SECURITY**

- What protections are in place?
- What standards can be set?
- How should they be developed, enforced
- How can women be involved in market management?
- Who cares and who will advocate and lobby for women?

## **GO TO THE MARKET WOMEN ...BRING SERVICES TO THEM**

- Where are the markets? When do they operate?
- How can we assess the real time and effort spent on the markets?
- How can we make more use of that time for the women and for service providers who need to reach women, girls and children?
- Can we bring supplies and services into the market? Seed sales, technical information (written or verbal), information booths, food processing demonstrations, sales
- What educational media can we use - broadcast radio, billboards and murals, notice boards?
- What more could be done in and around markets?
- How can women's organizations, health, information and education services engage with and provide for women at the market.
- What diversity can be encouraged?

These and many more questions need to be asked. Food markets in rural and urban areas are essential links in the food chain, yet they are the link that we take least interest in and know least about. Markets constitute the link where women dominate most and are most vulnerable to exploitation, harassment and victimisation. Markets could be much better and they could be much more...for the women sellers, the buyers and for the communities, stations and towns where they exist. Some people already take advantage of the food market as a place where thousands of people gather, often every day. Different groups bring popular theatre, important public events and political rallies to the market. But too often these ignore, compete with and exclude the women sellers.

You might brainstorm some of these issues at this meeting. You may come up with many great ideas...but how can you follow through to do something and who should do that?

I deeply regret that I cannot be with you to facilitate and share in this discussion. I do hope that these points are useful. I wish you a successful meeting.

# **Food Crop Marketing by Smallholder Farmers in the Markham Valley - Morobe Province**

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# 1 INTRODUCTION

In this paper I will make special reference to women food crop farmers from Intoap village in the Markham Valley. They have been heavily involved in food crop production and marketing since the FAO/DAL Special Programme on Food Security was introduced in 1996. Farmers were encouraged to grow and market their own produce to the supermarkets, food bars, and Lae's main market as a means to provide for their own employment, generate cash incomes, improve nutrition, and raise the general standard of living.

We will look at some of important aspects involved in the marketing chain such as packaging, transport, and the effect of wet and dry seasons on the supply and demand for fruits and vegetables and how this affects prices and incomes. We will also look at some constraints faced by women farmers and recommend ways to improve the system so that women can benefit more.

## 2 OBJECTIVES OF MARKETING

Women have several reasons why they have to sell extra food from the farm to earn money. These include:

- Pay for other household goods, including processed food items from stores, which can supplement the family's daily nutritional requirement.
- Pay for family care, such as school fees, clothes, and medicine.
- Help their husbands to build better houses for the family to live in.
- Meet other social obligations which the family may encounter.

## 3 SOME ASPECTS OF FOOD CROP MARKETING

### *3.1 Quantity and Quality of Produce*

The food that is produced in the Markham valley is of very high quality, almost organically grown (i.e. without chemicals) and in great quantities per week which mean they are able to supply the whole market for food in the city of Lae as well as other centres.

### *3.2 Harvesting and Packaging*

Crops are harvested late in the afternoon, sorted, packed in bags and cartons and readied for transport. Fruits like ripe bananas and highly perishable vegetables like tomatoes are normally packed in cartons to avoid damage during transport while staple crops like bananas and taro are packed in bags.

### *3.3 Mode of Transport*

One means of transport is via P.M.V and costs the farmer around K7.00 per trip to Lae i.e. K5:00 for the farmer and K2:00 per bag for the transport of produce. The farmer leaves as early as 5 a.m. in the morning in order to be in front of the stores around 8:00 a.m. in order to sell and to get new orders. Unless the P.M.V picks up the farmer on time she stands to lose the income for that day.

If the farmer has his/her own vehicle it makes it easier to transport the produce on time but the fuel cost for the whole tank is around K50:00 per trip to Lae. If the farmer secures a market in town he/she will be able to recover the money spent on fuel. The whole journey to Lae takes approximately 2-3 hours travelling.

### **3.4 Retail Outlets**

There are about ten (10) retail shops in Lae at which the farmer sells her crop. The most common ones are; Papindo, Best Buy, Andersons, some food bars and the main market. Prices offered in these outlets differ from crop to crop, and the quantities required also differ. Table 1 below shows prices of different crops and outlets located in the city of Lae.

The farmers have very little say on the price but take whatever is given. Sometimes the shop manager refuses to take the order and the farmer is left stranded in the street not knowing where to sell the crop. There is also a price difference of about 10-30t per kg between the farm gate and the retail outlet in Lae and between the supermarkets and the main market by about 33t/kg. The variation in prices between different outlets means that farmers have to make extra effort to find out which outlet offers the highest price so they can sell their produce.

### **3.5 Food Supply and Demand**

Seasons affect the supply of food on the market. During the wet season, between October-March, there is a surplus of vegetables, the demand for many vegetables drops along with the incomes earned by the farmer due to the drop in price. Growers can still negotiate for better price for off-season crops like watermelons and mangoes where the demand is high.

During the dry season, between April-September, there is a surplus of mangoes and watermelons but the vegetable supply drops. Demand increases and farmers can expect a better price for their crop. Some farmers in the valley are able to earn up to K800 per month while others have enjoyed even better incomes. The prospects for farm business are good if well managed.

### **3.6 Farm Incomes**

Women farmers in Intoap already have some information about the quantity demanded by the retailers and the prevailing price in the market when they first visit the shops to sell their produce. So that in the second order, they know how much quantity to bring and how much income they can expect. The level of income differs per seller and one could expect between K50-K100 per day.

### **3.7 Storage and Handling**

There is not much storage practised as farmers harvest late in the afternoon and take crops to the market early in the morning. Farmers in the Markham Valley have a comparative advantage over the farmers in the Highlands who bring their produce all the way down to the coast. This takes many hours over rough roads that sometimes cause spoilage of produce being delivered. The Markham farmers have shorter distances to bring in their produce which is still fresh in the morning, there is less damage and the goods are attractive to the buyers in town. This should encourage Morobe women to produce more range of food crops including, where practical, some sold by highlands women in Lae. Morobe women can also supply other provincial centres, especially mining towns.

## **4 CONSTRAINTS AND ISSUES FOR MARKET DEVELOPMENT**

- The present practice used by the women farmers in marketing of their produce is highly inefficient as it puts a lot of strain and burden on women, especially when they have to wake up early in the morning, leave their family and other household duties and travel the whole day looking for a place to sell their produce.
- The transport system is so unreliable that sometimes farmers are unable to market their produce

on time, crops are wasted and, consequently, the farmer makes a loss.

- There is a lack of proper storage facilities to handle large quantities of food supply to well established markets in the city and other outlets.
- There is a lack of market information being relayed to the farmer on a timely basis to assist farmers to sell their crops.
- There is greater competition from the imported foods taking up the market share for local produce.

## 5 RECOMMENDATIONS

- That the Government (National, Provincial and Local Government) establish joint funding and establishment of District and Provincial Food Marketing Depots for collection, storage and marketing of local produce, and that such depots be managed by appropriate agencies (e.g. F.P.D.C), on a financially sustainable basis.
- That the National Government places a temporary ban on the import of some food crops e.g. bulb onions, and encourages production and supply of locally available crops to supply the markets.
- That the Government makes available weekly food market information through the media e.g. Post Courier, Radio-Toksava program, and Information Bulletins to assist farmers to market their produce.

**Table 1. Food prices in supermarket in Lae**

Crops	Price offered by Lae buyers Kina/kilo.				
	Papindo	Andersons	Lae Inter.	Main Market	Unitech.
Yam					1.5
Cucumber	0.65	0.65	1.20	0.59	
Watermelon	0.65	0.75	1.1	0.65	
Tomato	1.20	1.60	1.60	0.97	
Capsicum	1.60	1.60	2.0	1.80	
Cabbage-Head	0.65	0.65	0.65	0.88	
Pak choi	0.65	0.65	0.65	1.05	
Chinese cabbage	0.65	0.65	0.65		
Egg plant	0.65	0.65	0.65	0.83	
Bulb Onion		2.00		1.83	
Spring Onion	0.20	0.20	0.20	1.06	
Pawpaw		0.80		1.22	
Banana-cooking	0.65	0.80		0.63	

## **Roles of Existing Structures, Organisations and Marketing**

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## 1 BACKGROUND/RATIONALE

Women's work in the subsistence sector is vital for the survival and wellbeing of the nation's families and communities, and it serves as the basic foundation for all formal sector economic activity. One of the four main goals for the PNG National Women's Policy is to enhance women's critical contributions to development as the primary food producers, processors, and distributors, as the mainstay of family and community health, and as the principal educators of future generations. The strategies associated with this goal place emphasis on the means to improve women's economic status and productivity in subsistence and commercial agriculture.

The informal market sector reflects the vital role women play in the national economy. It has been observed that a greater percentage of women participate in informal sector activities than men, generating income through marketing, fisheries, and small-scale commodity production. Increasingly, women are producing food for cash and selling surplus produce at local markets. They travel long distances, usually by foot, to markets in provincial and district centres, carrying heavy loads of produce on their backs. The income women generate is spent on family and household needs, such as food, children's school fees, kerosene, soap, and transportation costs, in contrast to men's earnings which are frequently squandered on beer and gambling. Often women are unable to retain control of their earnings from the sale of their market produce, but are required to hand over income to their husbands or male relatives.

Although women provide the bulk of agricultural labour and make up the majority of workers in the informal sector, they are not supported by basic extension services, and their activities are restricted by the lack of adequate market facilities and infrastructure. In addition, women are constrained by traditional land tenure systems, which tend to limit their access to clan land for market gardening.

A major move towards land conversion and registration is that women's tenure rights and women's ability to make decisions on inheritance are being overlooked because the management structures of incorporation are dominated by male interests.

## 2 THE INVISIBLE AND SILENT STRUGGLES OF THE SIMBU WOMEN MARKET SELLERS

This action research, done by the Simbu Women's Council and principal researcher Josephine Gena in 1995, brought to the forefront of policy and decision makers the fact that women continue in silence to be the most active and productive agriculturists and marketers regardless of tough geographical and structural conditions. The study showed that though women were marginalised in the formal rural development or agricultural activities, women continue in these activities. It highlighted the barriers to their important productive, role and responsibilities.

Deleted: .

This study was funded by the International Women's Development Agency (Australia)(IWDA) under their small grants program. The study was presented to the local Authorities and the North Simbu Rural Development Project (NSRDP), a bi-lateral funded project involving IFAD, AusAID, and GoPNG. Donors were interested in ensuring that the needs identified by the study was addressed. The Market Sellers Collective Action Group was established to follow up the recommendations from 1996 – 98.

NSRDP began working on improving the market conditions using both AusAID and IFAD support over four years to 2001. The new Kundiawa Town Market will look like the Lae Town Market with all market facilities. A major re-development work is now continuing.

The Kundiawa Town Market has since been expanded three times to provide adequate facilities and services. However, the local authorities have not seriously attended to recommendations made in the 1995 study for basic improvements in service delivery and facilities.

Examples of problems include:

- Fluctuating and unpredictable market gate fees are still collected and the gatekeepers have not changed their aggressive and uncaring attitudes.
- No water supply or toilet facilities are available (since 1994).
- No storage facility or security exists for unsold produce to stay in the market overnight.

The Market Sellers Collective Action Group's attempts to the Urban Authority to improve basic services, particularly the gate fees, have fallen on deaf ears. This Group is seen as troublemakers instead of fighting for their rights.

Women were excluded from management decisions regarding the market re-development /facilities. Women's ideologies and experiences do not seem to count anymore.

From the management and decision making aspects, the women have been excluded in the planning process. Yet it was the women's study, action research, documentation, and presentation, which brought about the major funding and work on the Kundiawa Town Market. The Project has become a men's project, dominated by men in management, decision making, and employment.

It is the women through their active marketing and regular payment of heavy taxes (up to 30 percent of the actual value of their produce) who provide substantial revenue for the smooth operations of Kundiawa Town, the provincial political and administrative centre.

The inequality in this organization is very obvious. Women's issues are marginalised in the provincial development context. There is nowhere in the current development structure, program, and processes of Simbu, for women to have a genuine place for their participation except in the political arena. Similar arrangements in other development programs totally neglect women and make women invisible even though they are productive in all spheres of life and development activities.

### **3 WOMEN'S ECONOMIC EMPOWERMENT**

Women have traditionally played a significant role in marketing and have accumulated important experience. A critical issue in considering the marketing question is that women have important skills and capabilities in relation to marketing, but modern business practices exclude women and make activities, such as distribution and promotion, difficult for women to undertake.

1975 was the year Simbu women mobilized and formed the Women's Council. They mobilized around Yangpela Didiman program and were quite successful in food production, animal husbandry, knitting, sewing and some baking. Such skills and products grew, however, lack of marketing skills and infrastructure forced women to confine these activities to small-scale activities in order to supplement family needs.

From 1984 – 89 these business activities were formalized with the establishment of Women's Handicraft and Pastoral Supplies shop. Green housing/Vegetable seed distribution and marketing was encouraged when the Women's Development Program came under the administration of the Commerce Division.

In 1993 the Women's Coffee Shop was established with A\$3,000-00 from IWDA. The shop aimed at providing an alternative eating place, promoting local fresh and processed food, and nutritious and balanced meals. However, due to a number of thefts and management

problems, the shop closed in 1998.

The Provincial Govt. has now given the shop away to private individuals and the revenue goes to the Internal Revenue collection of the SPG. The Women's Council needs to re-claim their ownership of the building, as it was a revenue base for them.

From 1987-96, the Simbu Women's Council received seed funds for micro-credit schemes. However, lack of management skills, marketing, and general business skills coupled with middle-men management problems caused the program to be a failure for some women's groups while others continued to operate at a minimal success rate. Learning from past failures the NSRDP supported a micro-credit scheme that became a success story after less than three years of operation. It is still operating successfully, self-supporting its operations. The Government should boost this programme with at least K500, 000 or more.

We are looking at the rural base at a small-scale level on what women are able to do. If we look on a broader scale and dream about what Simbu women can do at a local level, the dream would be:

- Women own machinery at the market re-development site acquired by collective women's group in a form of bank loan and subsidized by a Govt. Guarantee Scheme. And women are employed doing construction work and as gate keepers at the market place. After all, it was their research paper, which brought in the major funding.
- Women starting food processing / packaging, jam and honey production, use of sheep by-products for knitting/sewing, for both local and regional markets
- Women starting cottage industries.
- Women need to think big and mobilize in order to compete with the current economic changes taking place. However, government structural adjustment programs and globalisation have already seriously disadvantaged women

#### **4 MARKETS ARE ESTABLISHED AND AVAILABLE**

Simbu has the following market infrastructure available:

- Poultry Abattoir.
- Vegetable Marketing Depot.
- Spice Marketing.

Also planned are a fish cannery and sheep abattoir for general meat supplies.

#### **SUMMARY AND RECOMMENDATIONS**

The popular statement made in policy submission, development plans and projects is that *"women constitute 50.1 percent of the total population and are the focal point in the wellbeing of the family unit"*. And to quote Dr. Mila Gena, *"Women are crucial, yet a silent segment of the community. Funding agents, particularly the provincial and local level governments should endeavour to increase the participation of women in all processes of development, especially within the decision making area"*.

The highest demand for the most effective women's development program, in my view, revolves around:

- Providing locally relevant learning opportunities
- Supporting and strengthening efforts, initiatives and existing programs
- Mainstreaming women's concerns and interests in development plans and projects.

The learning opportunities become functional to the degree that they support the basic productive and reproductive roles of women and sustainable development of local natural

resources. High levels of meaningful local participation in planning, research, and development significantly increase program effectiveness. Women in the Food Chain must be trained in the whole range of production, business skills, including marketing research, promotion, quality control, pricing, and distribution.

The success of policies and measures aimed at supporting or strengthening the promotion of gender equality and the improvement of the status of women should be based on the integration of the gender perspective in general policies relating to all spheres of society as well as the implementation of positive measures with adequate institutional and financial support at all levels.

The Market Collective Action Group is a great example of how women can mobilize to pressure technical assistance agencies, governments and training institutions to make skills and resources available for the development of effective and appropriate marketing strategies. Capitalizing on the initial action is the big problem.

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Sellers

## **Farming and Selling Poultry for Chicken Meat: How I Managed**

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# 1 INTRODUCTION

This is a brief history of my poultry farming business.

I started this business in 1985 and this is my sixteenth year. I farm and sell chickens for meat under the brand name of *Mumu Kakaruk*. My chickens are ready for sale after nine weeks and about 200 chickens are slaughtered, packed and sold at any one time.

I had to consider many factors before I could be able to start this project. These are outlined below.

## 2 WHAT I HAD TO DO

I had to conduct a market survey to determine a number of factors:

- *Determine my market and customer base:* I went around to the village, plantation, open market to find reliable and constant market and customer base. I also had to go to Minz and Banz to find out if I can be able to sell my chickens there too.
- *Determine viability of selling live and frozen chickens:* I talked to people who would be willing to buy my chickens and sell as frozen considering indirect costs I may incur if I had to do the selling myself.
- *Compare prices by talking to buyers:* I had to determine how fast I am able to sell my chickens and agree on a price with my buyers.
- *Transportation costs:* My family was also running a service station and I had to consider if I can be able to open a credit account with the service station and pay on a monthly basis.
- *Labour input:* I went around looking for workers who would work for me to carry out the various tasks involved in looking after the chicken.
- *Packaging and Quality control:* How much time involved and who should do the work. The type of package to use and postharvest handling techniques.
- *Storage time:* How fast I can be able to sell to reduce storage time. Indirect costs involved such as electricity costs etc.

After the market survey I went ahead and started the business.

## 3 PROBLEMS ENCOUNTERED

Having been involved in this business for the last 16 years these are some of the problems I encountered.

- *Transport unavailability:* I lose my customers when I do not deliver on time.
- *Sellers:* I needed to find people to sell my chicken at the open market. I also needed extra money to pay these workers
- *Market Outlet:* My outlets for frozen chickens at Waltongpa, Banz Butchery, JPM Amulba Trading are not reliable any more and I have lost my buyers
- *Supply and Demand:* Many people are selling and there is excess supply on the markets so on a day I may not sell all my chickens especially at the open market.
- *Abattoir:* Require hygienic place to carry out slaughtering of chickens.
- *Chicken house:* The demand for space increases as the number of chickens increase.
- *Finance:* Need extra finance to pay for feed, workers, transport, packaging and storage.

These are lessons I have learnt after having been in the business of farming chickens and selling as meat, either live or as frozen, for the last 16 years.

## **The Importance of Information and the Contribution of DAL to Agricultural Information in PNG**

*Chris Dekuku<sup>15</sup>*

# 1 WHAT IS INFORMATION?

Information is knowledge. Information is news, and information can enrich you and make you intelligent in the particular subject matter.

## 2 SOURCES OF INFORMATION

- From Friends/ Colleagues/Teachers etc
- Radio
- Television /Cinema
- Newspapers / books
- Internet
- Telephone

## 3 TYPES OF INFORMATION

**Visual:** What we see; **Verbal:** What we hear or say; **Feel or touch:** What we perceive by touch; **Smell:** What we perceive as odours or scents.

## 4 FOR INFORMATION TO BE USEFUL

- Information must be simple, easy to understand and follow, short and addressed to the need of the specific audience if it is to achieve its purpose.
- To be effective in information production and delivery, you must know your audience, and target your information to their level, their language and their needs.
- Complicated and difficult to understand information serves no purpose, and is not recommended.

## 5 INFORMATION MATERIALS AVAILABLE FROM THE DAL INFORMATION BRANCH

The Department of Agriculture and Livestock [DAL] has been in the forefront in the production and dissemination of agricultural information since 1950, and this has continued up to date. We produce and distribute the following:

- Bulletin: Fortnightly internal newsletter.
- Didimag: Quarterly newsletter devoted to agricultural topics.
- Farming Notes, Horticulture Notes, Plant Pathology Notes: Publications targeted at agricultural extension materials, for farmers and extension staff.
- Rural Development Series: Extension material, directed at Extension and Technical staff.
- Field Pocket Books: Pocket size books for extension and technical staff and farmers, on agricultural field programs/ subjects.
- Harvest Journal: Directed at Extension, technical staff and educated farmers.
- PNG Journal of Agriculture, Fisheries and Forestry [PNGJAFF]: Directed towards, scientists, researchers and college or university students.
- Research Bulletins: Contains reports on experiments and studies, for technical, extension and scientific staff.
- Technical Reports: Contains reports on Experiments and studies; Targets scientists and technical staff.
- Posters: On selected topics: For general audience.
- Videos: On selected subjects of interest: for general interest.

## **6 DISTRIBUTION AND COSTS**

- The Bulletin is distributed free within DAL and to Statutory Agricultural Boards and Institutions.
- The Didimag is distributed free of charge to all subscribers.
- The Harvest Journal and PNGJAFF are distributed free to subscribing libraries, scientists and extension and technical staff and sold to others.
- Field pocket books, Horticultural notes, Plant pathology notes, Rural development series and posters are being sold at K2 - K5 per copy.
- Videos cost K20 approximately.

To get an update on DAL Publications and costs, you may ask for 'What's in Print'. This is updated yearly, and is sent free to all who ask for it.

## **OUR ADDRESS AND CONTACT NUMBERS**

DAL Information Branch, PO Box 417, Konedobu, NCD, Papua New Guinea.

Telephone: 320 2884, 320 2885, 320 2886, 320 2899

Fax: 320 2883

Email: [dalit@daltron.com.pg](mailto:dalit@daltron.com.pg)

## **CONCLUSION**

You have seen displayed some of our publications, you also have our contact numbers, so you could contact us for your information needs when you need to.

You have heard today that; for information to be useful, it must be simple, easy to understand, short and addressed to the needs of the audience. Since information has to be short, to be useful, I'll end here without taking too much of your time. Thank you all.

## **Financing Agriculture Development through Women: The Rural Development Bank Perspective**

*Cathy Rumints<sup>16</sup>*

## **1 INTRODUCTION**

In the days of our forefathers, women were the backbone of society in Papua New Guinea. They were, and are still subsistence farmers. The women worked hard (and still do), toiling and labouring on the land in the village, carrying out their duties of growing food for their families, looking after pigs and other wealth and caring for their families. When they grew surplus food they would exchange it with other women for different variety. We therefore can claim that our women were in the food chain right in the beginning.

However, when modern developments started taking place, money was introduced into our societies, women came to realize that they could exchange their surplus food for cash, so today they bring their extra produce to the markets and sell for money. It is evident when you go to the markets in any town in Papua New Guinea that women have moved from the subsistence economy into the cash economy. This again is women in the food chain, however, on a small scale.

While most women still stay within their traditional social and economic environment, some who have saved money from sale of their produce have taken another step and broadened their activities further into the wider business world. Those who have been fortunate enough to know about them have approached financial institutions for assistance.

## **2 THE RURAL DEVELOPMENT BANK EXPERIENCE**

From my experience as a manager, I am happy to say that the Rural Development Bank (RDB) has helped such industrious women. Women in the highlands have had access to agriculture oriented loans and commercial loans too. Some of their ventures in agriculture have been for growing kaukau (sweet potato), English potato, peanuts or for vegetable gardening, growing vegetables like

cabbages, carrots, lettuce and tomatoes. Other have obtained loan to raise bees for honey, some have started poultry, piggery and cattle projects.

The bank has also loaned for Papua New Guinea's traditional food crops like winged bean, sugarcane etc in an endeavour to promote traditional food crops.

Some women needed financial assistance to grow cash crops like coffee. Women are shareholders in some of the large coffee plantations that have been established in the highlands. They also buy coffee pulpers to pulp coffee cherry into parchment for sale.

Commercial oriented loans have been given to stock up trade stores in villages and towns to help women get freezers and electricity generators for village stores.

Loans have assisted the tourist industry in helping women erect and manage guest houses and construct roads.

The few women who have had access to loans have made success of it and have thriving businesses to date. As more and more women become aware of business opportunities available, it is hoped that they will approach financial institutions for assistance. But they can only go if government or bank officials explain how. Unfortunately some officials presume women are aware of the possibilities so they do little to pass on what they know.

There is no discrimination between men and women in banking policy. Women should feel as free to do business as men.

### **3 WOMEN'S ONLY CREDIT EXPERIENCE**

A good example of lending to women's success in a big way has been RDB's experience with women Credit in the Western Highlands in the early 1990s. The women at grassroots level across that province benefited from credit made available only to women at that time by the Bank.

Over 90 percent of loans given at that time were toward food production.

Cooperation mainly between the Provincial Council of Women, DAL, Business Development Officer (BDO) and Rural Development Bank (RDB) and sheer hard work with a lot of self-sacrifice by the female farmers ensured success of that scheme.

That experience formed the nucleus of what is now a successful and ongoing credit scheme in the Western Highlands Province. That scheme is now directly managed by the women's network in that province, the Western Highlands Provincial Council of Women.

### **4 GOVERNMENT**

The Rural Development Bank has helped boost the interest of rural women in business through it lending so many women have improved their lifestyle in villages. The bank has done this in line with the government's Eight Point Plan and its policy of equal participation by women in business and all activities of the community.

Resources are not unlimited. We recognized there are difficulties. Most women are illiterate. But if the government is serious it could identify potential projects (e.g. providing credit to existing lending institutions for lending to women only etc.) examine them carefully to ensure that the plans and aims are achievable.

### **5 PROBLEMS WOMEN ENCOUNTER**

There are some problems that affect women in business or even cause their ventures to fall. The wantok system can work against women who may also become victims of *puri puri*. Here in the highlands destructive tribal fight over which we women have no control over can ruin our businesses and our livelihood.

All over this country the activities of rascal gangs who steal and damage women's cash and other belongings are a problem quite apart from women's fear of personal attack.

Liquor can be a problem. Sometimes the men get drunk with the hard earn cash women have brought home. Others who are employed themselves spend their wages on drinking and poker machines so that their families have nothing to spend and cannot even buy food and clothing. Perhaps the government approves too many liquor outlets. These are few of the issues.

From my experience with the Rural Development Bank, I know Papua New Guinean women, whether in the rural or urban communities can succeed in business and I have seen them get help to start their own ventures. It is interesting to note that about 90 percent of these business ventures are agriculture based that revolve around the food chain.

### **6 CONCLUSION**

Women carry the heaviest load of responsibilities and work the hardest. They are the major force in food production. They rightfully should be the cornerstone of development. It is only fair that the country's resources should be made available to women to use and develop for their families. This will in turn benefit the community and so further the aims of national

development.

## **Cooperative Movements and Women Sharing Ideas and Comments**

*Anna Yamane<sup>17</sup>*

# 1 INTRODUCTION

Agriculture is the backbone of many people's existence in the world including Papua New Guinea. The economic state of a country is highly influenced by the agricultural developments taking place. Production resources must be effectively and efficiently managed to achieve high production whether it be cash crops or food crops. This paper discusses some important lessons learnt during my recent visit to USA which could be integrated into PNG agriculture.

## 2 OBSERVATIONS MADE IN USA

### 2.1 Arrangement of US agriculture

#### 2.1.1 Farming Methods

- All mechanised farming
- Use new hybrid seeds (Genetically Modified seed)
- Heavily dependent on non-organic farming (use chemical inputs)
- Few organic farmers

#### 2.1.2 Land Use

- 150-300 acres farm size
- 50-100 years in operation in many places
- Family owned land (where I visited)

### 2.2 Role of American Farm Bureau

- Non-profit making organization.
- Set up basically to assist farmers.
- Condition—all farmers (individual/group) must be affiliated to a cooperate body / association before they are represented in the Farm Bureau.
- Established in all states, countries and small communities.
  
- Represent farmers in Congress/house of representatives.
- Influence the decision makers by lobbying for subsidies and benefits.

### 2.3 Cooperate Bodies/Association

- All farmers/growers belong to a cooperate body – Motto – “United we stand together – Divided we fall”. Eg. Corn Growers Association. Soya bean growers association, Beef Growers Association, etc.
- Affiliate to group.
- Select chairman/executive officer.
- Find markets for products.
- Processing – passing HACCP concept, etc.
- Exporting – Standards of other countries must be met.
- Producing to meet customer desires

### 2.4 Sustainable Agriculture

- Questions on food safety of genetically modified products
- High cost of production
- Promotion of organic farming (which is safer for consumption)

- Small market who prefer these products

### **2.5 Research and Extension**

- Main function of extension – find out what the customers prefer, then
- Assist growers to grow what is demanded.

### **2.6 How can PNG integrate these ideas**

- Formation of commodity growers associations.
- Associations need to be at district/provincial levels.
- Promote organic farming.
- Promote domestic food production and supply.

## **3 ISSUES OF CONCERN**

### **3.1 Constraints on Production Resources**

- Time, money, land, labour and capital. All these are well known.

### **3.2 Population Pressure – Need for More Food**

- 6 million people (latest census)
- Growth at 3.1 percent per annum
- Food production growth rate 1.7 – 1.8 percent.

### **3.3 Consistency in supply is needed**

- Raw materials (food processing/preservation would reduce losses).
- Adequate food (household food supply must meet basic needs).

## **4 RECOMMENDATIONS**

- Need for formation of a food crop grower association, especially for women,
- Need to establish a Food Processing Board to assist food processors/producers,
- Financial assistance should be provided where requested especially for women.

## **CONCLUSION**

Where are we heading for? These situations call for all farmers to work together in whatever part of the food chain we are in. . As women form the majority of food producers, every request by women should be given high priority.

## **History of Women in Fisheries Development Programmes**

*Alberta, I. Tumonde*

## 1 HISTORICAL TIME LINE

Year	Description
1991	UNDP reviewed PNG Development Sector and stated the need to assess training needs, develop appropriate training content and coordinate a training programme covering all levels of the fisheries sector
1992	Women in Fisheries Development Officer employed by Division of Fisheries & Marine Resources under Morobe Province Administration
1993	Reviewed secondary data (6 months); implemented the recommendations from secondary data, sought donor assistance (6 months)
1994-1995	Obtained financial assistance from CARE Australia to, implement Morobe Fisher-women Training Project
Dec 1995	Project review and replanning took place
March 1996	Review completed and Report prepared on the 3-year Women in Fisheries project
1997-2001	Identification, organising, planning and implementation of marketing of fish products produced by Women in Fisheries Project

## 2 ROLES AND FUNCTION (OF COORDINATOR)

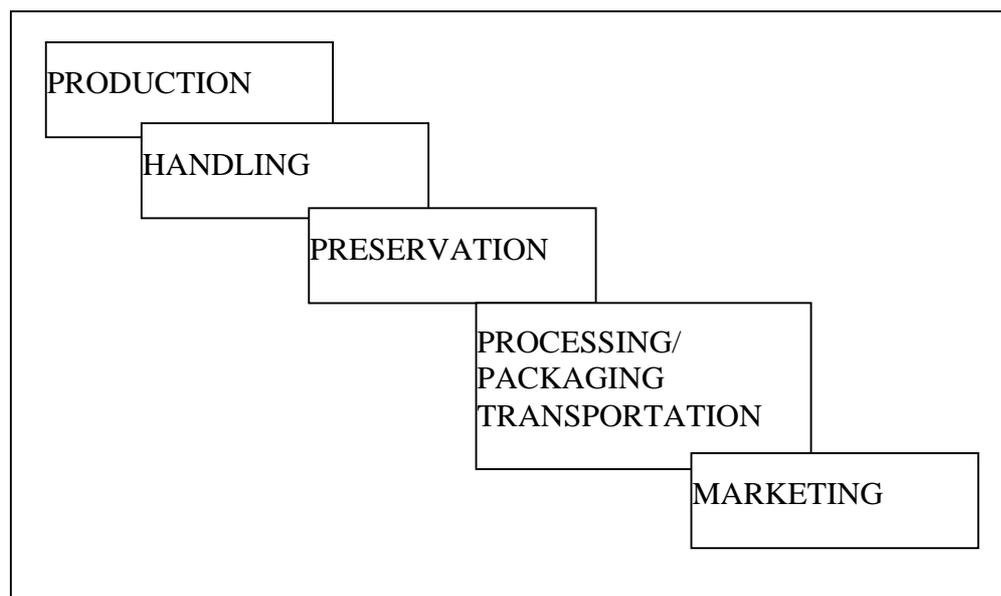
### 2.1 At the Provincial Level

Identify activities and projects which promote women through utilization of fisheries and marine products.

### 2.2 At the Project Area

- Organising market facilities.
- Buying of fresh and processed fish and marine resources
- Proper handling and preservation
- Grading and categorizing of fish products
- Marketing of the products

### 3 MARKETING FLOW CHART



### 4 Data Summary for Women in Fisheries 1997 – 2000

#### FISH PRODUCTION BY WOMEN AS PERCENTAGE OF PROVINCIAL CATCH

	Weight in Kg	Value in Kina
Production by women	56,658	151,117.33
% of Morobe Total	12.4	10.6

	Weight in Kg	Value in Kina
Sale by women	16,250	83,906.81
% of Morobe Total	4.1	5.0

#### Women's groups involvement in fish production: 1996-2000

Fishing Group	Production Kg	Value Kina
Lanbu (Awasa-Busama)	7,496	15,437.00
Luther (Buakap)	1,654	4,555.13
Panu (Mandok Island)	16,974	47,942.36
Tibong (Buakap)	3,606	7,688.03
Ubuk (Aronaimutu Is.)	13,899	46,356.90
Welum (Lutu-Busama)	13,046	29,137.91
Total	56,658	151,117.33

## **5 ECONOMIC BENEFIT**

**Direct:** Family income contributes to improve household

**Indirect:** Contributes to village economy, which enhances the living standard in the community

## **6 CONSTRAINTS EXPERIENCED**

### ***6.1 Programme Level***

- Insufficient manpower.
- Insufficient funds made available to the section.
- Other organization not cooperating
- Financial institution (bank) not cooperating.
- Duplication of activities done by other organization.

### ***6.2 Project Level***

- Transportation is not reliable.
- Marketing agent not cooperating.
- High cost of services and goods.

## **Livestock as a Means of Income Generation for Women**

*Wari Venua*

## **1 INTRODUCTION**

Women do not play an active role in decision-making or activities with livestock for income or for home consumption. In traditional societies, women play a minor role in animal keeping of pigs and village poultry, except in the Highlands region where pigs are a source of household wealth and women play an important role. During the last 26 years livestock activities have been transferred to all provincial governments and this had a bad effect on the general livestock industry. There are more than two million village pigs and perhaps 1.7 million village poultry but our rural daily diets are very low in protein due to traditional practices and obligations.

The idea of women being involved in the male dominated activities is an alternative approach but progress is slow even though we could work together. Men and women are partners for life so we must help one other. There are many factors affecting the failure of livestock projects in rural areas. One of them is a man ignoring a woman because he believes she is incompetent. But the success of women can be easily measured in daily household upkeep and as the woman is the centre of sustainable family life. So men have been involved in these activities for centuries in a Melanesian society but they fail. Can we, from this workshop, offer some alternatives for success?

## **2 TRADITIONAL LIVESTOCK DEVELOPMENT**

It has taken many years to improve our traditional livestock to an acceptable level. Maybe other regions have progressed but the Southern Region has traditional beliefs and practices that will not improve our lives today or tomorrow. It is therefore time for us to work together in rural communities with common objectives. We should introduce other introduced breeds to cross with our traditional stock to obtain better performers to meet the market demand. There must be selected (farmer breeder) and the weaner pigs should be sold out to the households for fattening for few months before selling them to the permanent, established, meat processing markets. The traditional practice of keeping pigs for a long time must be minimized. The farmer must become effective and create regular profit from their efforts.

The same principle must be applied to the village poultry, where the breeder farmer produces day-old chickens and distributes them among the households for 8-12 weeks before selling them to the market. All farmers must be technically trained in order to be successful in these activities. Women groups must coordinate these programs in collaboration with any rural cooperatives that exist.

## **3 OTHER LIVESTOCK ANIMALS-SHEEP, GOAT AND RABBIT**

There are many open lands in rural areas which could be put to better use by animal grazing. Women should be introduced to these animals such as sheep, goats and rabbits. Similar methods can be used as advocated earlier. Breeder farmer can sell out to the villagers who will develop small holding paddocks of 5 - 10 hectares for small fattening stock. After 6 - 10 months, the fattened animals should then be sold.

Other usage benefit from these animals could be developed for rural activities - like wool from the sheep and milk from the goat. Also, the hide or the skin can become an industry at later stages. This downstream processing is particularly important for women to make a profit.

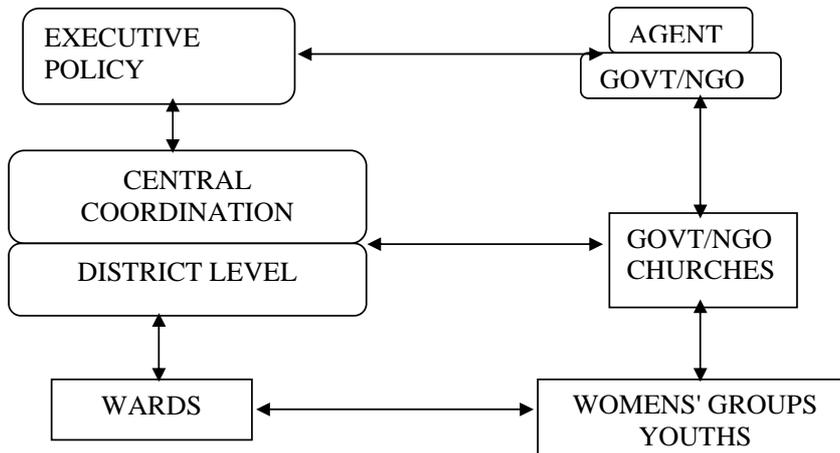
## **4 CONCLUSION**

Traditional barriers between man and woman are not needed. Whether the ideas are initiated by man or woman, we should all stand together as one unit towards achieving a common satisfactory sustainable life.

## 5 RECOMMENDATIONS

- A study must be made in all 89 rural districts of PNG to reveal the potential capacity for livestock development aimed at marketing the meat.
- A training program must be set up at all districts to improve livestock and other agricultural skills in order to improve food production and improve nutrition.
- Before engaging with the people in rural development programs and projects, rural co-operatives might develop situation reports and assess potential benefit.

### Model - Livestock Activity And Model Organisation Chart



SECTION THREE

**VALUE ADDING IN THE FOOD CHAIN –  
POST-PRODUCTION HANDLING  
AND PROCESSING**

## **Food Processing Can Start From Your Home**

*Niamet Kusunan-Henry<sup>18</sup>*

# 1 INTRODUCTION

Every woman in the world knows how to process food as they do it every day when preparing meals for their families. However, to think of food processing in a broader term, it is not just food preparation and cooking, instead, it involves the application of scientific principles to slow down or stop the natural process of food decay caused by micro-organisms, enzymes in food or the environmental factors such as heat and sunlight and so preserve the food.

By preserving food, it can have longer shelf life and then can be consumed in time of shortage and natural catastrophe. Some of these methods are dehydration, canning, freezing, refrigeration, and chemical additives, to name a few.

On the other hand, food processing can become an income generator, either on a large scale or a small scale. Small scale processing often starts from one's kitchen using domestic equipment. However, the processor must be able to produce uniform quality foods under hygienic conditions with strict standards of cleanliness and production control to avoid the risk of harming or even killing consumers by allowing the growth of food poisoning organisms in what one processes or manufactures.

Women therefore can become food processors in their own kitchen providing they adhere to strict standards of cleanliness and production controls, keeping their customers satisfied with their products.

## 2 WHAT IS FOOD PROCESSING?

Food processing means the whole process of turning raw materials into a finished product. Simply put in other words, you catch a fresh fish and, through processing, you get a tinned fish as your finished product. However, it is easier said than done. The process is carried out in a **schematic order** of handling starting with sorting, washing and cleaning of your

raw material. Secondly, the actual processing of the raw material through what are called unit operations such as putting fish into cans. This can be done manually (as was done in the past) or mechanically in today's industry. This is followed by canning, sterilization, cooling, labelling, finally packaging and getting them to the consumer.

## 3 WHY PROCESS OUR FOOD?

Foods are biological materials whose composition (what they are made up of) changes after harvesting. Some changes can be caused by microbiological spoilage, others by heat and other weather conditions, pests and other environmental factors. Some fruits and vegetables are seasonal that may come around once a year. Most raw materials are highly perishable and will spoil quickly after harvest or slaughter. For some of these reasons, we must process our foods to prolong their shelf-life.

Some people process foods to create employment and generate additional income. This can be on small-scale type food processors. Others process to preserve it from perishing and to keep it for later consumption. Currently, large-scale food processing is done by big companies who mainly process foreign type foods. They include companies such as the bakeries, canning companies (IFC, RD Tuna, Ox & Palm), Ramu Sugar, Niugini Table Birds, and Trukai Rice. They are established to make a profit but also into food production to meet the demands or needs of people doing other specialised jobs who live in towns and cities today.

## **4 WOMEN'S ROLE IN FOOD PRODUCTION/PROCESSING**

Women in the past and even today have been the mainstay in small-scale food production and processing in Papua New Guinea. Processing our traditional foods (sago, smoking fish or pork, cassava flour, etc.) is still being done in the rural areas where most of our people still live.

The changing lifestyle in Papua New Guinea can urge women to go into improved technology, small-scale food processing in order that they can become self-reliant and generate additional income to support their families. These can also be seen as a means to alleviate poverty in the rural and peri-urban areas.

Food is one of the most basic needs for every human. It is readily available in the form of raw materials and, in PNG, there is usually a lot of surplus. Food processing technology is suitable for small-scale operations and is affordable. Food processing on a small-scale can start from the home, using domestic cookware. Compared with other technologies, small-scale food processing is particularly suitable for women.

## **5 HOW CAN WE ASSIST?**

The joint project with Food Processing and Preservation Unit and the Department of Applied Sciences at Unitech has expertise to carry out research and consultancy work in the areas of food processing and preservation. We can disseminate information and carry out research and consultancy.

## **CONCLUSION**

Food processing is not new to all women. But it is a term that is used a lot more in a broader way. It is the big companies who are into food production on a large scale to meet the supply and demand for export. They meet the demand for town dwellers who cannot make their own gardens or smoke their fish like in the past.

On a smaller scale, women should now utilise their ability in preparing and cooking food for their families into a more skilful way to improve their life style. They can improve their skills by learning new ways of food processing and preserving using improved technology and applying strict standards of cleanliness and production control even from the kitchen. This can be a profitable business and improve out lifestyle.

## **Practical Application of Food Quality and Nutrition**

*Miriam Maima<sup>19</sup>*

# 1 INTRODUCTION

The topic itself is very broad and can be broken down into two subtopics: Food Quality and Nutrition.

**Food Quality** is, by my definition, food with characteristics that shows that food is good and fit for human consumption. Food that is spoilt or rotten is therefore not fit for human consumption and is normally discarded or dumped in the bin, as we mothers normally do. You don't need education to tell about obvious food quality, but you should appreciate that you have that knowledge implanted into your brains by your Creator God. Even an uneducated mother will automatically throw away any food that is bad, right from the harvest or in the garden.

However, there are certain things that your naked eyes could not see, which also determine the quality of food and they are the parameters that may sometimes make you or your children sick. According to scientists these things are known as food contaminants. Contaminants are chemical or biological factors that make the food go bad and could cause some kind of disease in your bodies. A few examples of contaminants are things such as aflatoxins and histamine.

Aflatoxins are toxic chemical compounds that are formed by certain fungus (mould) *Aspergillus flavus*, when environmental conditions are warm and very humid (17% humidity). Aflatoxins are found in products such as peanuts, corn, wheat, rice, cottonseed, copra, nuts, milk, eggs, and cheese products. They are highly toxic and can cause cancer in the liver. There are certain steps of handling food crops, especially peanuts, so that this contaminant does not develop. Food crops or products must not be kept wet, but must be dried thoroughly to remove moisture and must be kept or stored in a well-ventilated area.

Histamine is also a chemical compound that is commonly formed when contaminating bacteria produces histamine and other tissue breakdown products in certain kinds of spoilt fish such as tuna and mackerel. The result is

an allergic reaction in the consumer like rashes. Proper storage of fish will prevent the formation of histamine and that is to quickly chill fresh fish below 4°C or freeze it.

**Nutrition** means the process of supplying and receiving nourishment; the sciences of food values (Oxford Advanced Learners dictionary). That is, the values of food or qualities of food that can help human beings grow. The three food groups that help the human bodies to grow are Energy Foods, Protective Foods and Body Building Foods. The foods from each of the three food groups must go together so that the body can grow well. Every food has its own function or role to play in our body system

Your bodies require protein for cell growth, carbohydrates and fats for energy, minerals and vitamins to help in the chemical reaction that occur in the cells. If the food you eat contains all these food types, then you have balanced diet. Another essential part of diet is fibre, something that is not digested or broken down by the body digestive system so it passes through the system as waste. Fibre is found in fruits, vegetables and cereals (grains). Lack of fibre leads to problems such as constipation and incomplete digestion.

Balanced diet means you are healthy and have no sickness. But lots of fatty foods without fresh vegetables and fruits can increase the chances of having heart problems. Therefore it is important for mothers in our society to know the importance of our traditional food crops and what nutritive values are present in each crop. (Food Composition).

Basically, my work involves finding out exactly how much protein, fat, carbohydrate, energy, minerals, and vitamins etc are present in all types of food crops.

## **2 CONCLUSION**

The quality of food that you harvest from your garden or buy from the market is very important because it determines the nutritive values that is present in each food and thus will enable your children to grow properly or well. We must remember that we are made up of what we eat. Anything that is bad to our body system may kill us.

## **3 OVERVIEW OF CHEMISTRY LABORATORY AT NARI**

The Chemistry Lab is equipped with nearly all of the modern state-of-the art computerised instruments such as Atomic Absorption Spectrometer (AAS), Inductively Coupled Plasma (ICP), High Performance Liquid Chromatography (HPLC), Gas Chromatograph (GC), UV-Visible Spectrophotometer, automated CNS and analyser LECO 2000, Kjellec Nitrogen analyser and Fibretec extractor and analyser, plus other bench-top equipment for chemical testing.

Types of food testing carried out might include protein, moisture, ash, fibre, minerals, vitamins, carbohydrates, fat, aflatoxins and histamine, vanilla quality testing and other spices like cardamom, pyrethrum. We also do rubber testing. Soil and leaf tests are also carried out.

## **Do You Want to Grow Vegetables For Market?**

*Sergie Bang<sup>20</sup>*

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<sup>20</sup>Research Programme Leader, NARI High Altitude Highlands Programme, P.O. Box 120, Mt Hagen, Western Highlands Province

## **1 INTRODUCTION**

As a highlands person, do you want to grow vegetables to make money? If yes, then, before you pick up your spade to dig the soil to plant, you must ask some serious marketing questions. What vegetables have a good market? Can you make a profit? Are you able to supply the amount the market wants consistently every time? Will the quality be acceptable? Do you have suitable packaging and transport to deliver produce to market satisfactorily? If the answers to the above questions are yes, then you can go into the vegetable business. If not, then you should not.

Before a vegetable can be grown, the grower must be certain there is a demand for it. If there is no market, the vegetable should not be grown. Such information can be obtained from Fresh Produce Development Co. or Wholesale Vegetable Buyers. As there would be more than one vegetable in demand, the grower should select those, which would give a higher return or gross margin. That means a budget should be done for each vegetable line to decide which is more profitable.

## **2 GROWING VEGETABLE TO MEET MARKET DEMAND**

Two questions need asking are; can acceptable produce be supplied on time and is suitable packaging and infrastructure available? If not, you should not go into this activity.

It is very important to market produce that the buyer or consumer wants, in terms of the quality and quantity supplied. It is essential to harvest at the right time, grade properly and take proper care during transit to market.

Crops need to be cultivated weekly to satisfy your market requirement adequately. If there is no consistency in supply of produce or quality is unacceptable, the market can be lost and money invested would be lost also.

### **2.1 Some Statistics**

In a survey conducted by FPDC in 1995, a total of 27,920 tonnes of fresh vegetables were sold through retail per annum. The estimated retail value (at 1995 prices) was K49.2 million. The vegetables mostly sold were English cabbage (12,995 tonnes), aibika (3,193 tonnes), carrot (2,200 tonnes), tomato (1,724 tonnes) and capsicum (1,135 tonnes).

Over the last 12 years, on average, 1, 500 tonnes of potato and 1, 400 tonnes of sweet potato are have been shipped to Port Moresby from the highlands annually.

Vegetable imports ranged from 1,732 to 2, 520 tonnes per year between 1996 and 1998. By far the largest amount was bulb onion (1, 429 to 2, 111 tonnes). This is an opportunity for growers!

### **2.2 Infrastructure**

For the Fresh Produce Industry of PNG, infrastructure includes packaging, depots, chiller containers and transport. Current packaging available are expensive unless purchased in large quantities. Cheap wooden crates can be made locally. There are vegetable buyers in each main town in the highlands with some packaging.

There are limited chiller containers for shipment of produce from the highlands to Port Moresby. The national highway has been allowed to breakdown and needs urgent rebuilding. There is limited capacity to fly produce out of the highlands.

### **2.3 What is Feasible From the Highlands?**

Given limited capacity in airfreight to move vegetables and limited chiller containers for road/sea freight, it would be sensible to grow vegetables to sell in the local markets only. From the highlands, produce that can travel well should be sent to distant lowland markets. These crops include sweet potato, potato, cabbage, carrot and bulb onion.

SECTION FOUR

**POLICY – THE START OR THE END OF THE  
FOOD CHAIN**

**Department of Agriculture and Livestock Perspective on  
Women in Agriculture**

*Cecilia Kagena<sup>21</sup>*

## 1 INTRODUCTION

PNG like many developing countries is experiencing a rapid population growth of 28% per annum, compared to agricultural production growth of 1.7% per annum. According to an FAO/UN report in 1999, PNG is one of the 77 countries classified as a Low Income Food Deficit Country (LIFDC). This is based on the increasing food imports as well as per capita dietary energy supply. This situation is alarming considering the fact that the majority of PNG's population is rural based. Agricultural growth is an essential condition for economic development and being the primary sector it has to take a leading role in economic transformation if PNG is to address these deficiencies.

In Papua New Guinea (PNG) women play an important and primary role in food production, including fisheries, and forestry, which directly feeds a large proportion of the population, particularly in rural areas.

It is eminently clear that women in all regions of the country are the producers, processors and marketers of traditional staple crops as well as introduced vegetables. The women perform the critical role of production, harvesting, transportation and marketing to support family earning. The cash income received by the women from the sale of agricultural produce gets effectively spent to feed, cloth and educate their children.

Although this is a factual situation faced by Papua New Guinea women they are disadvantaged in almost all aspects of rural life. They do all this in the face of constraints and attitudes that conspire to undervalue their work and responsibilities, reduce their productivity, place upon them a disproportionate work burden, discriminate against them and hinder their participation in decision making and policy-making.

This paper basically gives a brief overview of DAL's perspective on women in agriculture and its policies, major constraints affecting women, and the challenges that must be accepted to address these issues.

## 2 DAL'S POLICIES IN ADDRESSING WOMEN'S ISSUES

Considering the fact that women are responsible for 60-70% of work involved in food production, storage, marketing, processing, preparation and consumption in many developing countries, including PNG, women must be integrated into all activities as decision makers and as resource developers.

The Department of Agriculture and livestock in accordance with the Papua New Guinea's Constitution under the National Goals and Directive Principles second goal "*calls for all citizens to have equal opportunity to participate in, and to benefit from the development of the country*", incorporated this principle into its White Policy Paper, 1996-2000, Policies For Women In Agriculture, which includes:

- The government should actively encourage women in all aspects of agricultural development, including, research, extension, policy planning, training, non-formal education, vocational education, and voluntary and formal organizations.
- The government should assist DAL to promote research on and development of methods and techniques, oriented towards eliminating drudgery of women, increasing productivity and equitable returns for their labour.

To achieve this policy, the following strategies were implemented:

- The training of women as professionals and farmers as a priority in the medium to long term as they are major contributors to agricultural production, and important decision makers in the household units. This policy was implemented in 1975 when 20% of women entered agricultural colleges and was later, in 1996, raised up to 30% when scholarships were given to female through

a joint New Zealand and GoPNG sponsorship. This scholarship is now only applied at Vudal and the University of technology, and no longer for the Highlands nor Popondetta Agricultural Colleges.

- In 1996 the Government through the Department of Agriculture and Livestock facilitated the Small Agricultural Credit Scheme (SACS), which is based on a revolving fund concept. The scheme in 1997 was given an initial seed money of K10 million. The Rural Development Bank is managing the lending and repayment of loans, while appropriate agricultural corporations carry out the loan applications. The maximum loan a farmer can apply for is K10,000.00 with a fixed interest rate of 5%. The SACS, since its implementation, has been very popular as it is the only micro-credit scheme available in the sector to smallholder farmers including further loans in areas of Cocoa, Coffee, Oil Palm, Coconuts, Livestock and Food crops, except for Spices and Rubber, which has never been used.
- The Department of Agriculture and Livestock in honour of the commitments made at the 4<sup>th</sup> United Nations World conference on women, which produced what is known as the **Beijing Platform of Action**, endorsed, at its annual National Agricultural Council (NAC) meeting in Alotau in 1996, the establishment of the Gender in Agriculture Development Unit.
- The rationale of the unit was that DAL being a lead agency on agriculture should have in place a formal Women's Unit that will be responsible for co-ordinating, facilitating and monitoring all agricultural activities executed by women in PNG.

The objectives of the gender in Agriculture Development Unit are:

- To mainstream gender issues and support and strengthen women in all areas of agriculture, fisheries and forestry planning.
- Collect and collate gender-disaggregated data for women in agriculture for the purpose of sound agricultural planning.
- Co-ordinate with collaborating Departments, Agencies and Provincial Division of Primary Industry (PDPI) gender awareness workshops for agricultural planners, extension workers and women farmers.
- To establish networks for communication and dissemination of agricultural information to women farmers.
- To assist women farmers to have access to agricultural extension services.
- To facilitate group based credits for women-specific programmes in agriculture and fisheries and for small business development.
- To introduce training and demonstration programmes on soil management and inter-cropping for sustainable development in agriculture.
- To develop and support agricultural subsistence improvement programme for women using appropriate technology.
- To facilitate the creation of markets for subsistence women farmers with subsidies for transporting produce to the nearest market.
- To conduct research on each family members contribution to households activities and national food security.
- To identify and facilitate short courses for women to learn various methods of food processing, preservation, and downstream processing particularly fruit canning, jam making, sweet potatoes, yams, bananas and breadfruits.
- To recognize and support women as the traditional agriculturalist and facilitate training to improve technical and management skills in agriculture.
- To encourage agricultural practices that increase productivity and are environmentally, socially and economically sustainable.

The Food Security Policy of the Department, which was approved by NEC in May 2000, has complimented the implementation of these objectives.

The Food Security Policy is the recent document that the Department has formulated in addressing Food security problems.

The Goals of the National Food Security Policy are:

- To increase food production and to improve access to food at the household level as a means to the eradication of food insecurity and rural poverty.
- To improve the nutritional status and standards of living of PNG.

**Hearing Women's Voices Nationally: Input of Women into  
Policy, Planning and National Research**

*Ruby Isaiah Zarriga<sup>22</sup>*

## **1 INTRODUCTION**

May I take this opportunity to thank the organisers of this Workshop for including the Department of National Planning in the “Women’s Voices in the Food Chain” Workshop Program.

A chain in itself symbolises the importance of being linked together and is part and parcel of the whole thing.

We may all come from a variety of backgrounds, however, being together in a joint force, much can be achieved, in particular in relation to this sector.

This was the main motive behind the formation of the Women’s Network in the early 70s.

Women had to form the women’s global and national networks in order to be heard and noticed. In PNG, we witnessed the establishment of the National Council of Women. They realised that as individuals or individual countries they could not make much impact on the development agenda, but as a network of women they could be heard or influence government decisions etc.

In 1979, the National Council of Women was enacted through an Act of Parliament, and thereafter extended its network to all provinces of the country. Specific projects aiming at improving the status of women were introduced and continue to be so up till now both at the international, national and regional levels.

## **2 POLICY BASIS FOR DEVELOPMENT**

Let me begin by posing this question. What is a Policy? Indeed, a Policy is some form of direction an organization sets out to take in order to achieve a particular goal. On a broad level, in PNG since 1975, or at independence, the National Constitution and the 5 National Goals and Directive Principles were introduced. The 7<sup>th</sup> of the National Aims calls for the equal participation of women in all forms of development.

The PNG National Constitution, therefore, provides the broad base-environment and sets out development direction for the country.

Within the overall framework of the national constitution, each of the sectors of government sets out specific policy direction e.g., Agriculture – White Paper, the National Health Plan and Defence White Paper etc.

The Medium Term development Strategy (MTDS - 1997 - 2002) sets out the specific area of focus which is in the sectors of Health, Education, Infrastructure, and the Private sector.

## **3 CURRENT STATUS OF WOMEN**

Despite the noble principles of our National Constitution and the project initiatives and all the focus on women, the situation of women has not improved at all. The Human Development Report reflects the following; short life expectancy and very high maternal mortality rate with a high incidence of sexual and domestic violence directed at women to mention a few.

In addition, economic growth in PNG has been and continues to be generated by the mineral sector to create broad based economic opportunities in other economic sectors such as agriculture, forestry and fisheries so that people are provided with opportunities to raise their own living standards in a sustainable manner. This trickle down process has yet to be realised.

## **4 DEVELOPMENT INDICATORS**

As mentioned earlier, our current development indicators are not reflective of all the efforts.

**Table 1. Development Indicator**

Indicator	Male	Female	Year
Life expectancy	55 years	54 years	1999
Adult Literacy	35%	21%	1999
Combined Gross School Enrolment	30%	27%	1999
Political Participation	107 members	2 members	1999

What went wrong? How can we change the situation and how can we influence Policy direction?

Amongst the major roles of the Department of National Planning when it was created was the role to establish a sustainable development direction for the government to ensure that important development issues having real potential to make a difference in people's lives (men, women, and children's lives), are mainstreamed into planning and decision making processes of the government or country. Cross-sectoral issues such as Population, Gender, Environment, Human Rights, and Poverty are development issues that are addressed at Regional Workshops for Provincial Planners and Officers.

Maybe we ought to begin identifying the best interventions that can cause a difference. Women should not be seen as a sector but be seen as part of each sector. For example, women in education, women in agriculture, and women in sports.

## 5 HOW CAN I INFLUENCE POLICY AND RESEARCH

For gender issues to be addressed in Government, it requires processes and procedures to be put in place, human resources and institutional capability to be developed so that these issues are effectively addressed and on a sustainable base.

Through much awareness raising on the role of women in development and on gender issues, over the past 10 years, there are now better deals for women, but much could still be improved.

Women's contribution to development must be taken beside their multiple roles; production, family care, child bearing and caring, decision making and community participation or involvement.

Their involvement in policy development within these roles will be of vital importance and in the long run encourage greater partnership between men and women and at the same time have in place gender responsive plans, policies, programmes and projects.

Current policy interventions whereby women can influence policies and research include women's representation at the various levels of government required under the New Organic Law on Provincial Government, as well as on the various Boards where women are currently represented.

The government, through efforts to attain good governance through the Public Sector Reform process, encourages the participation of women at both the 4 regional fora and at the Economic Development Forum. At other times they are co-opted into the Consultative Implementation and Monitoring Council sector-working committees.

These are avenues whereby women can create and impact on sector policies and plans and research.

## **6 CONCLUSION**

The opportunity for women to influence research and policies are available and accessible. However, it is up to women and agencies set up to assist them to make sure they have the appropriate information, skills and support to actively participate in this development process.

Finally, the gap between policy makers, researchers, community-based organizations and frontline farmers must be minimized through regular consultations such as this one.

## **How Can NARI's Research Programmes be Responsive to Issues of Women's Voices in the Food**

*Betty Higgins<sup>23</sup>*

It is a pleasure to be invited to this workshop, as I am involved with NARI as a Board Member of the NARI Council during the last four years. There have been challenges and at the same time some progress made.

Research is an ongoing process in agriculture growth, disease and pest control, soil structures and investigation of new products suitable for growing in various areas of PNG. New products are needed especially in the highlands where produce like rice, wheat, oats and various types of European vegetables are being grown in an effort to help the people earn a living by growing produce. This should provide cheaper food for the people of PNG as a whole.

Aquaculture is a growing industry in the highlands. It is a renewable and viable source of growth for the grass root farmers of the highlands, as the seas and oceans of the world are being overfished and farmers can produce quality fish for the domestic market and for overseas markets.

Whoever introduced lamb flaps into this country introduced a slow form of genocide. Research must be conducted to produce good healthy meat for the people, for example goats, rabbits, sheep, poultry, deer and cattle. Meat, in this country is far too expensive and good research should lower the cost of meat production to benefit the people. Then they could get rid of lamb flaps that cause heart attacks. Other countries sell lamb flaps as dog food.

In any food chain, sooner or later marketing is involved. Farmers who produce perishable food like fresh vegetables and fruits are the ones who find it hard to market their produce. Every national government since independence has promised the grass roots farmers that the rural industries will grow and yet, today, we see no decent highways in the highlands, no feeder roads not even decent bush tracks. So how do the farmers get their produce to markets? Farmers cannot use airfreight as the extremely high costs have to be paid in advance and it is beyond the thought for small farmers. Government would have to subsidise freight costs for them.

Australia repays some of the freight costs to farmers in their country if they are exporting their produce, but in PNG we do not know how the 10% VAT is used for but it does not help farmers.

The PNG farmer does not seem to count because he or she cannot compete with imports, so research into marketing will never succeed until the government of PNG starts developing highways and roads in the rural areas of the highlands and stops developing the area around Port Moresby.

Another benefit for the farmers in the highlands would be a food preservation unit for examining if meat, poultry, fruit and vegetable products could be snap frozen, juiced or canned in the highlands. Lae is too far for the highlands farmers to travel to with food that should be processed as fresh as possible. If the produce from the highlands were processed nearby, it would cut the cost of transport and create a market for the farmers. It would create work in cottage industries and at the same time PNG products would be on the supermarket shelves along with the imported products but maybe at a cheaper price to the consumer.

At the end of the day, NARI scientists should work closely with stakeholder farmers in the food production sector and elsewhere in the food chain. Up to now NARI research scientists are not working closely with farmers, especially women. A woman should produce food for her home and also be able to sell the surplus for cash income so she could buy other necessary household products and be able to pay school fees and medical costs etc. NARI should not continue with the old kind of issues like aibika and taro production but must concentrate on another kind of research that will help us farmers process and preserve

vegetable and animal foods that can grow in the highlands. Crop and livestock research is essential but it must be for us all to see the benefit. NARI needs pilot processing and preserving projects in all areas so farmers get their products on the shop shelves in this country.

## **Women's Issues in the Food Chain**

*Fungkec Samana<sup>24</sup>*

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<sup>24</sup> Woman Farmer

## 1 INTRODUCTION

Papua New Guinea is a very diverse country represented by thousands of ethnic groups speaking over 900 different and distinct languages. The country's population growth rate is 2.8%. It is predicted that by the year 2030 our population may reach 10 million. This is an alarming rate of population growth when one considers the ability of the country to provide and maintain an efficient and adequate level of services to the people.

Natural resources development in this country involving foreign capital and modern technology in mining and petroleum industries has placed Papua New Guinea in the world of international resource development trade. Foreign exchange earnings from non-renewable petroleum and mineral resource development have superseded earnings from agriculture. The country's rich natural resources are being extracted at a fast rate at the expense of much needed rural infrastructure development.

After almost 30 years of independence, Papua New Guinea's rural infrastructure (transport and communication) is poorly developed or non-existent in some areas. Lack of attention to rural development has influenced rural/urban migration significantly. Increasing urbanization creates additional burdens on families; in particular, on women who have to take on additional tasks and responsibilities.

Agriculture in developed countries is as a commercial activity while in developing countries subsistence agriculture is seen as a way of life. All developing countries depend heavily on agriculture for their livelihood. Lack of infrastructure and technology development hinders efficiency in food production and marketing.

## 2 SOCIO-ECONOMIC CONDITIONS

Despite the country's rich natural resource earnings there are growing differences between different social classes of the population as well as regional imbalances in

development. The differences are more obvious when one compares salary levels of top executives and those of the lowest paid public servants and minimum wages between urban and rural centres.

Social services such as education and health are not accessible to all the people in this country, especially rural areas. Despite the efforts in education reforms we do not seem to solve the problem facing future generations. Inadequate government budgetary support and few specific policies to improve the quality of education have left the system with problems resulting in thousands of young people being pushed out of the system as dropouts.

Health indicators show a very poor image on PNG's performance to provide basic health services to the majority of the population. Malnutrition among children is always increasing, the infant mortality rate is amongst the highest in the South Pacific, and rate of maternal death amongst women is extremely high. Signs of poverty in the land of plenty shows clearly that there is something drastically wrong in governments' development strategies.

Costs of nutritious staples and traditional vegetables in the local markets are expensive, partly due to lack of infrastructure development. Cheap imports of canned meat and fish products and lamb flaps are flooding the towns and cities. These dietary changes have contributed to the deteriorating health conditions of many people.

Given this deteriorating socio-economic condition of the population PNG needs to critically evaluate its policies and strategies of development and redirect its attention specifically to addressing the problems of rural underdevelopment and its impact on rural-urban migration and social and economic inequalities.

Social unrest and urban crime has increased since independence. The resulting law and order programs divert attention from development issues and needs of rural people.

### **3 STATUS OF AGRICULTURE IN PNG**

Papua New Guinea is basically a subsistence economy where 75 percent of the population live in rural areas deriving their basic livelihood directly from the land. Agriculture sector of the economy will continue to provide the greatest opportunity for employment, income and quality of life for the majority of the rural population.

With declining commodity prices, food crop production and marketing provides an alternative and additional source of income for the family. The development of the food crop sector as an industry has not been fully explored. Lack of vitally needed support given to food crop sector continues to undermine the potential and opportunities that can boost the productive involvement of women in rural areas. The pattern of agricultural production continues to follow what was established during colonial period. Many bureaucratically managed agriculture programs by government agencies have failed since then. Only in recent years have provincial and national governments given some consideration to food production within policy development.

Much of the country's efforts in food production are carried out by the informal, subsistence sector comprising rural women. Papua New Guinea never adequately accounted for the significant role women play in agriculture and food production in any official statistical information. The semi-subsistence and subsistence farmers produce the bulk of the nation's food supply and maintain the livelihood of the majority of the rural population.

#### **3.1 International Development Support**

In the past international development support played a part in cash crop production and neglected financial support for programs on food. The World Bank has recently shifted its position by giving some emphasis to food crop production. However, international financial and technical assistance for food supply should be directed to the women farmers not on establishing systems and salaried positions where kinas are wasted.

#### **3.2 Increasing Food Imports**

Since independence the rate of food imports has increased at a faster rate than the rate of population growth. The total food import bill in 1990 was K190 million. It must be increased by now.

The government continues to subsidise the tree crop sector. At the end of 1996 the price support scheme was valued at K340 million. There is no support for food producers.

### **4 STATUS OF SUBSISTENCE AGRICULTURE IN PNG**

After 30 years of independence agriculture policies and programmes have not been revised to respond effectively to the multi-functional roles of the subsistence production system. Agriculture policies and programmes of successive governments since independence continue to play a lip service to subsistence food producers.

Over years women food producers have been denied support services such as:

- Properly trained extension staff for training and extension
- Appropriate research programs to assist women in food production
- Access to roads to transport their produce
- Marketing and communication system

- More credit facilities to be made available for food production and marketing

High priority should be given to improving subsistence agriculture. Common sense suggests that the first priority of any family, community or the nation is to provide for the basic human need, such as food, water and shelter.

## **5 ROLE OF WOMEN IN AGRICULTURE, FOOD PRODUCTION, MARKETING AND PROCESSING**

We all know that women in PNG play an important and primary role in food production which directly feeds a large proportion of the population particularly in the rural areas. Women are producers, processors and marketers of traditional staple food crops, local vegetables as well as introduced vegetables. Women perform the critical role of production, harvesting, transportation, preparation and marketing to support family income. Women work hard to earn an income from food to feed, clothe and educate their children.

Women's contribution in food production is rarely recognised and is often taken for granted. Women are never compensated or acknowledged for their contribution to nation building. Women are never compensated with improved services to better their abilities in food production.

Despite the lack of official support, women continue to bear the burden of providing the nation's basic food supply.

### **5.1 Empowerment of Women, Eradication of Poverty and Job Creation**

So long as the rural population are denied basic infrastructure, skills and opportunities to improve food production in order to increase their income, poverty is likely to increase as population increases and opportunities for employment become scarce.

Empowerment of women through education and skills development is vitally important in improving productivity in agriculture. It will also strengthen the informal sector to further enhance income earning opportunities for the family and the community as a whole and promote long term food security. Women have experience, appropriate skills and significant indigenous knowledge which can be effectively utilised in sustainable resource management.

Women in PNG have the freedom to apply their energies and time in productive work on a daily basis with little or no supervision at all. This is a very important factor to consider, in terms of women's role in agriculture production.

### **5.2 Marketing**

Women undertake the task of harvesting, packaging (in bilums or bags) and carrying the food on their backs to the nearest road to transport them to the nearest market, usually at an urban centre where they also sell their produce.

Transportation costs are paid by the women. Given the multiple roles women play, the distance and cost of travel, compared to the amount of products sold and the income gained, the current informal market system is inefficient and burdens the women. Definitely it is not an economical proposition for the women.

In this inefficient market system, the major functions of marketing, which includes production, harvesting, packaging, transportation and retailing, is done by the semi-subsistence farmer whose operation is extremely hampered by a lack of efficient and reliable communication and transport infrastructure.

In some cases, gang hold ups on the way to and from the market has been a painful experience to the women who end up going home empty handed.

### **5.3 Food Processing**

In food processing there are two broad areas that need to be addressed:

- 1) Small scale production aimed at home consumption. At the moment we only have the resources to process what is surplus to household need
- 2) Processing for value added products for sale. Commercial processing can only take place after we meet the fresh food demands in the country.

### **CONCLUSION**

Women in rural areas of Papua New Guinea must be recognized as agriculturalists in their own right. Direct engagement of women as producers will be the key to the successes of attaining food supply for the family and, in the long term, national food security.

Women must be given the opportunity to improve their role and capacity as food producers. By empowering the women the nation can attain self-sufficiency in food production and effectively reduce national food security risks and increasing food imports.