

# Feeding village poultry in the Solomon Islands (LPS/2003/054)

**Phil Glatz**

## Project information summary

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Project number	LPS/2003/054
Project title	Feeding village poultry in the Solomon Islands
Collaborating institutions	Australia: South Australian Research and Development Institute Solomon Islands: Ministry of Agriculture and Livestock; KastomGaden Association; Solomon Islands College of Higher Education
Project leader	Dr PC Glatz, South Australian Research and Development Institute
Project duration	1 Jan 2005-31 Oct 2008
Funding	\$655,055 total (\$523,159 ACIAR contribution)
Countries involved	Solomon Islands
Commodities involved	Poultry
Related projects	ASEM/2003/054, ASEM/2005/094, LPS/2006/149, ASEM/2010/053

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## ***1. Motivation for the project and what it aimed to achieve***

### **Use of local feed resources to feed poultry**

The use of local feed ingredients to develop cost effective diets for poultry in the Pacific Islands countries was a high priority developed by the South Pacific Commission. The need to undertake the Solomon Islands (SI) village poultry project was driven by the high cost of imported poultry feeds. In the SI there is a smallholder egg and chicken meat sector that could benefit financially from improved production methods. The farmers were demanding such information from service providers. Improved poultry production is an effective method of increasing income and improving household nutrition. Improved use of local feedstuffs was seen as the best option to improve current low levels of production that were unable to meet the rising demand for eggs and chicken meat.

### **Reducing poverty**

The SI smallholders operate independently from the commercial layer and broiler

industry and produce about 210,000 birds per year, selling eggs and live birds in local markets. The sale of chickens is one of the major sources of income for traditional smallholder farmers, with an estimated 21,000 families (about 40% of the rural population) currently producing eggs and live birds. Birds are fed household food scraps and other locally available feedstuffs. About 85% of the SI population live in rural regions with poor access for transport to the urban areas. Improving the productivity of village poultry systems could have a significant impact on national production and well-being of at least the rural communities. With an average of 30% of infants underweight due to poor nutrition, the regular addition of eggs, chicken meat combined with more green leafy vegetables in family diets, has the potential to reduce infant malnutrition that has a much wider cost to society.

## **Developing rations for poultry**

There is a wide variety of local feed resources available that could be utilized more effectively such as root crops, fruit, forages, bush plants and vines. Farmers in the rural areas are introducing new crops with higher nutritional value for poultry and many of these crops (such as sorghum, mung bean, pigeon pea, sunflower, amaranth and others) are available through the SI Planting Material Network, a national farmers network producing open pollinated seed for rural farmers. This project was conducted to identify effective rations for village birds based on the variety of potential feeds available and to educate farmers on feeding management. These initiatives were planned to support the promotion by KastomGaden Association (KGA) and the Ministry of Agriculture and Livestock (MAL) of farming village poultry as a means of increasing income and improving protein consumption in the village diet. Women in particular are often responsible for keeping and selling village chickens, making an important contribution to income for essential family needs.

## **Partner roles**

KGA undertook demonstration and extension activities of poultry production in the villages in collaboration with the MAL. The SARDI Pig and Poultry Production Institute (PPPI) coordinated the project, building on the experiences of establishing a feed testing facility for the smallholder broiler sector in PNG (ASEM/2001/077; ASEM/2005/094). The objective was to encourage smallholder farmers to use more suitable rations for their birds, and stimulate an increase in the number of village layers, increasing income and greater consumption of eggs and meat by village families. At the time of commencing the project, there were no research facilities in the SI for testing poultry diet formulations. Establishment of such a facility at the Solomon Islands College of Higher Education (SICHE) was seen as essential for the evaluation of the production performance of local village layers and to build SI poultry research capacity.

## **Aim of project**

The aim of the project was to develop rations based on local feedstuffs and test these diets in village-based layer and meat birds. This required staff training and the establishment of research facilities to enable sound scientific evaluation of the poultry rations. To disseminate the research findings there was close interaction with

farmers and farmer groups to communicate the value of local rations. This required training of provincial extension agents, NGO staff and farmer leaders in effective farmer communication strategies and poultry management; conduct of demonstration trials on-farm, at Farmer Schools and Rural Training Centres and production and distribution of fact sheets to service providers and village farmers.

## ***2. Outputs – what the research project produced***

### **Capacity outputs**

*The 3 major capacity outputs produced by the project were; 1) development of poultry research and demonstration infrastructure; 2) training of SI village farmers, technical and academic staff; 3) ongoing collaboration between service providers in the SI and with NARI in PNG.*

#### ***Infrastructure***

Infrastructure developed in the project involved the construction of poultry research facility at SICHE which is run in collaboration with MAL. The facility comprised a poultry shed with 16 pens that enabled replicated feeding trials to be undertaken to evaluate rations for village chickens based on local feed ingredients. The feed resources used to develop the rations were those recommended by a village poultry farmer's research advisory committee established by KGA. In addition a poultry facility to demonstrate best practice village poultry farming was constructed at KGA headquarters at Burns Creek in Honiara. The facility was used to train village farmers while they were undertaking training attachments at KGA on how to establish a smallholder village poultry business.

#### ***Staff and farmer training***

SARDI staff designed specific training programs for MAL, SICHE and KGA staff to assist them to undertake poultry feeding trials and to conduct demonstration and training programs for village poultry farms. Joseph Wahanui (SICHE lecturer) and Hilda Karani (KGA-technician) undertook on-the-job training at SARDI in 2005. The training included working with SARDI staff carrying out daily husbandry activities associated with a feed trial, assisting with bird dissections, preparing samples for storage and visiting commercial farms where an on-farm research trial was being conducted. In addition, Thecla Vapusi (KGA village farmer's network coordinator) was trained on-site in the SI by SARDI staff. Both Hilda and Thecla learnt how to run demonstration trails at KGA and also the importance of good record keeping. This training improved their skills in training village farmers who participated in the attachment programs at KGA. Joseph Wahanui learnt the scientific methodology required to set up and run feeding trials and was responsible for the R&D conducted at the SICHE facility. He also provided considerable support to MAL and KGA staff as well as teaching SICHE students best practice village poultry farming. A JAF was awarded to Barney Keqa (MAL) to undertake a Masters Degree at the University of New England to examine the genetic traits of village poultry in the Solomon Islands. He has also developed significant knowledge in monogastric and ruminant nutrition.

Since being awarded his masters degree he has been appointed Director of the Livestock Section in MAL.

Village farmer poultry feeding fact sheets were developed by SARDI to assist KGA and MAL to undertake farmer workshops on improved poultry feeding and management village farmers in Guadacanal, Makira, Malaita and Western Provinces. KGA hosted farmer attachment programs (1-6 months duration) at the Burns Creek demonstration poultry facility. When the attachment participants returned to their home village most of them put into practice the poultry feeding and management skills learnt. The farmers learnt how to feed, house and care for village poultry including running of the business.

### *On-going collaboration*

The participation of MAL and KGA in the SI ACIAR poultry project has helped key persons in each organisation to maintain collaborative linkages including the development of a five-year EU livelihoods project run by NARI in PNG with outputs from poultry projects in PNG (ASEM/2003/054, ASEM/2005/094) being implemented into the SI and also Vanuatu.

### **Technical**

*The major technical outputs produced by this project and associated ACIAR poultry projects were; 1) pamphlets demonstrating how to feed village birds and 2) facts sheets and video on how to feed meat birds using a concentrate ration developed in PNG*

### *Information pamphlets on feeding village layers*

The technical information produced by the project was obtained by running four feeding trials at SICHE. Information was initially obtained on current feeding practices used by village farmers. The survey showed that most farmers thought chickens were easy to care for and a good enterprise to provide cash and extra food for the family. Other farmers were interested in farming but there was a shortage of village chickens. The problems farmers faced were a lack of available information and training on local chicken management and local feed ingredients to use. Many villagers had tried keeping poultry, but lacked knowledge on how to manage them. A village poultry farmer's research advisory committee was formed after the survey to recommend to the research team the feed ingredients farmers had available to use in poultry rations.

Following the survey experiments were undertaken at the SICHE research facility to evaluate the performance of village chickens on diets made from local feed ingredients compared to an imported commercial ration. The local diets included various combinations of sorghum, pigeon pea grain and leaves, fresh coconut and cassava, paw paw fruit and leaves, corn, mung beans and fish meal. The results showed that use of the local rations were more economical to feed to poultry than the costly imported commercial feed.

One-page information pamphlets leaflets on best practice feeding methods for village poultry were developed by SARDI in collaboration with KGA, MAL and SICHE. The

pamphlets have pictures of the feed ingredients, how they are prepared, amount of each ingredient to include in the diet based on a using a 'half coconut' as a volumetric measurement guide and how the diet is mixed and fed to birds. Fact sheets were distributed to farmers by MAL, SICHE and KGA.

### *Information pamphlets on feeding village meat birds*

The method used to feed meat birds using a concentrate diet mixed with sweet potato or cassava is being demonstrated to village farmers in the SI by the PNG National Agricultural Research Institute (NARI) as part of a European Union (EU) funded project titled "Generation and adaptation of improved agricultural technologies to mitigate climate change-imposed risks to food production within vulnerable smallholder farming communities in Western Pacific countries." The meat bird feeding method with associated fact sheets and video was developed in PNG by NARI in collaboration with SARDI in projects ASEM/2003/054 and ASEM/2005/094.

### **Policy**

Policy that was adopted by the city council in Honiara and major provincial towns on poultry farming in suburban areas drew on advice from MAL on best practice poultry farming obtained during the project on housing and feeding of village poultry. The Ministry of Health in the SI is now advocating confinement of poultry using the KGA and MAL village poultry farming model.

### **3. Adoption – how the project outputs are being used**

*The major outputs from the project were; 1) development of poultry research and demonstration infrastructure; 2) training of SI village farmers, technical and academic staff; 3) collaboration between service providers in the SI; 4) pamphlets demonstrating how to feed village birds.*

#### *Infrastructure*

The first project output involved the development of the poultry research facility at SICHE and a village poultry demonstration unit at KGA. These facilities continue to be used for training purposes. There are 185 students who are taught poultry production at SICHE each year and are involved in hands on training with birds housed in the research facility. A poultry breeding facility constructed at SICHE to support the research activity is being used as a temporary classroom pending the construction of new class rooms. The breeding facility will then return to its original role of providing birds for the research facility. Since the completion of the project no research trials have been conducted by MAL or SICHE due to lack of funds. At KGA the poultry demonstration facility continues to be used for farmer attachment training.

#### *Staff and farmer training*

The second major project output involved training of village farmers, technical and academic staff.

Hearly Aleve (MAL) and Joseph Wahanui (SICHE) attended an AusAid funded Pacific Islands poultry workshop run by SARDI in Sydney in 2010 in association with

the Australian Poultry Science Symposium. Hearly and Joseph picked up the latest information on poultry health and production issues in the Pacific from Australian experts in the field.

KGA indicate they have trained about 1000 village poultry farmers (up to July 2012) since the completion of the project. Information is being provided to farmers on poultry diets developed and demonstrated during the project. MAL have trained 500 village poultry farmers in association with the Seventh Day Adventist Church and World Vision. Therefore about 1500 farmers of an estimated 21,000 village poultry farmers in the SI have received training on how to prepare poultry diets from the project. The constraint to training of village poultry farmers is largely due to the geography of the SI. There are 992 islands in the SI and village farmers are spread sparsely across these islands making it difficult to communicate with them and to attend training. The SI has a poor road network, unreliable inter-island transport, high transport costs, lack of trained staff to deliver training programs and lack of financial support and interest by donor organizations to support training and development of the smallholder and semi-commercial poultry industry. Nevertheless the village poultry market is very lucrative for farmers particularly in urban areas. The Chinese community in the SI have a high demand for village poultry and will pay SI\$80/bird fed on local feed which is equivalent to price paid for commercial meat chickens that are fed on imported feed. This is driving the demand for information on village poultry diets developed in the project.

### *On-going collaboration*

The third major output of the project was the maintenance of on-going collaboration of SARDI with the SI staff after the project was completed. This involved organising an AusAid funded workshop on poultry production for SI, Tonga, PNG and East Timor staff in Sydney in 2010. In addition SARDI have continued to provide advice to KGA, MAL and SICHE staff on technical queries about poultry as they arise. NARI staff from PNG have developed a 5 year EU project with MAL and KGA which is demonstrating meat bird feeding methods to villagers including other sustainable livestock and agriculture systems. The broiler feeding methods were developed in ACIAR projects in PNG managed by SARDI.

The Solomon Islands Development Trust (SIDT) is committed to improving livelihoods in the SI and has a large network of village farmers. They indicate an interest in working with MAL and KGA to include information on the poultry diets in their livelihood program.

### *Information pamphlets on feeding village layers*

The final major output from the project and the associated ACIAR projects in PNG was providing village farmer's information from the project on use of local feeds for village poultry. KGA have provided details of the village layer feeding method to about 4000 farmers in their distribution network. They report that the number of new members in their network is growing by 5% per annum. The SIDT are proposing to collaborate with MAL and KGA to also distribute details of the village poultry feeding method to 3000 villages in their independent network.

When considering the outreach activities of MAL it is likely that the distribution of information on the poultry feeding method will reach about 30% of the SI village farmers in the next 2-3 years. These activities are being augmented by the EU project in the SI run by NARI which is demonstrating the meat bird feeding method to 300 village farmers developed in the ACIAR PNG poultry projects. There is also a distribution of the poultry feeding systems fact sheets developed in the ACIAR poultry projects (ASEM/2003/054, ASEM/2005/094, LPS/2006/149) to African, Caribbean and Pacific (ACP) countries through an article requested by the Technical Centre for Agricultural and Rural Cooperation. The article is raising awareness of developments in poultry feeding systems in developing countries. This has implications for agriculture and rural development to facilitate policy formulation, implementation and priority setting for poultry industry development in ACP countries.

#### ***4. Impact – the difference the project has or is expected to make***

##### ***Development of poultry research and demonstration infrastructure***

The development of the poultry research and demonstration facility continues to have impact in the SI. The facilities have provided a resource in which SICHE students and village farmers are trained. The research activities have not continued despite MAL staff wishing to further examine the role of local dietary ingredients on production of commercial hybrids and local chickens. However there is a strong demand for using the research facility to teach poultry production to students at SICHE. The poultry rations that were developed for village poultry are included in the teaching program for students and for the village farmers involved in training programs run by KGA and MAL. The demonstration facility at KGA is used to teach best practice poultry farming to village farmers who are on training attachments. The KGA facility will be further enhanced with the building of a facility to provide different strains of village poultry under a restocking program to 3 project sites in the EU project; Aruligho in Guadalcanal Province, Hunda and Kena Islands in Western province and Buma in Malaita province. A link has been made with the ACIAR poultry project to use local feed resources to feed village chickens plus demonstrate to village farmers the meat bird feeding system developed in PNG.

##### ***Training of SI village farmers, technical and academic staff***

Staff involved in the ACIAR project are still active in the poultry sector reflecting the impact of the training they received during the project. Joseph Wahanui (SICHE) has returned to his village to establish a poultry business. Barney Keqa (MAL) Director of Livestock is developing a strategic livestock plan for MAL in collaboration with the World Bank's SI Rural Development Program. The World Bank program aims to improve local infrastructure and service delivery; improve agriculture services and improve rural business development. MAL are undertaking to build a R&D facility for pigs, poultry and cattle, expand research and extension capability to meet the needs of the expanding livestock sector in the SI. Barney is drawing on his experience in the ACIAR project of establishing the research facility at SICHE and his academic training to support him in the development of the strategic plan. He has submitted two papers from his Master's thesis to an International poultry journal.

Hearly Aleve (MAL) who attended the AusAid funded Pacific Islands poultry workshop run by SARDI in Sydney in 2010 has been actively involved in running para-vet courses for livestock staff in the Solomon's. He incorporates information on the village chicken feeding system established in the ACIAR project to the trainees as part of his holistic approach to training of para-vet staff. The impact of the training for KGA female technical staff, Hilda Karani and Thecla Vapusi has been substantial. They have learnt how to run demonstration trails, the importance of good record keeping and they have become very confident and affective trainers of poultry farmers.

### *Collaboration between service providers in the Sland with other countries*

The ACIAR poultry project established a good partnership between MAL, KGA and SICHE who previously had worked independently. In addition there has been an additional impact with the strengthening of the partnership of SI partners with NARI in PNG and the Vanuatu Department of Agriculture and Rural Development. There will be a substantial spill over of PNG ACIAR poultry project outputs into the SI which are likely to have an impact on village farm profit in the next 5 years.

### *Use of village poultry diets*

There has been a significant impact on rate of egg production reported by farmers who have used the village poultry diets developed during the project. When village birds are fed a balanced diet made from local ingredients they can double egg production compared to egg production of scavenging birds. The increase in demand for village chickens by ethnic groups in the SI is driving the demand for village chicken meat and eggs. The meat chicken sector is also expanding in the SI with 400,000 birds being distributed to poultry farmers servicing the major towns in the SI. It the next 2-3 years it is forecast there will be about 30% market penetration of the project technology. On this basis it could be assumed (based on cost benefit calculations in PNG) that the benefit cost ratio of the economic impact of the ACIAR project R&D&E in the SI would be about 15:1.

See full report for project "Feeding Village poultry in the Solomon Islands" at <https://www.aciar.gov.au/node/9756>



Phil Glatz with Solomon Island village farmer preparing to feed chickens



Phil Glatz with Solomon Islander village farmer viewing village chickens



Solomon Island village farmer with mixed feed for chickens



Meeting of project partners



Signage for new poultry research facility in Honiara



New Solomon Island poultry facility



Phil Glatz, Zhihong Miao and Bob Hughes at opening of poultry research facility in Honiara



Poultry feeding demonstration facility in Solomon Islands



Kastom Gaden poultry feeding demonstration facility in Solomon Islands