

FAO/ITA/NIU/01
POULTRY PRODUCTION IN A PERMACULTURE FARMING
SYSTEM

TERMINAL REPORT

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FARMING SYSTEM

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EXECUTIVE SUMMARY:

The Poultry Production in a Permaculture farming system in Niue is a new initiative and it has proven to be very popular to the majority of Niuean people. In regards to the pilot phase; five recipients were selected and acquired a unit each. A further five recipients were also included into the extension phase of this program.

The designs of the units are such that it will enable farmers to use some areas for vegetable gardens to be planted inside the enclosure which will provide fresh vegetables for the family contributing to improved nutrition in the home. The house provided chickens sleeping space and shelter from the rain and the sun, and enabled collection of chicken manure which is best for vegetable growing and soil rejuvenation practices, all in support of organic farming and sustainable land management. It is this method of production that it has attracted a lot of interests for this permaculture system to be expanded to other potential poultry farmers.

The extension phase of the project was implemented with improvements and amendments from the tasks experienced during the pilot phase of this project. Several sub-activities were initiated in support of this project such as trainings (both national and regional), regional seminars and meetings, farm trainings for Young Farmers and interested farmers.

This poultry permaculture project was a FAO/Niue initiative and it was the culmination of public requests during agricultural seminars and workshops held throughout the years.

Funding of the project was made possible by the Government and the people of Italy supporting the Regional Program on Food Security. Plans to expand these activities are already underway in the Food Security and Sustainable Livelihoods Programme and we hope this is the beginning of a viable venture for the people of Niue.

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1. INTRODUCTION:

Traditionally, poultry keeping in Niue practice a free range system, something common to other Pacific Nations. Approximately, 80-85% of household in Niue owns from a few to a lot of chickens as backyard farming. Local chicken breeds are common as there are very little improved chickens being introduced into the island hence their very low productive characteristics birds.

Families that practice traditional or backyard/free range chicken rearing can hold from a few birds to several hundreds but these are not sustainable. Free range chickens are left to look for their own food; they are prone to diseases and suffer huge losses due to predators. Although local chickens are greatly preferred to the imported frozen chickens, the time and cost involved in their preparation for consumption is a disadvantage. There is also the need to improve and increase production as well as knowledge in chicken husbandry measures.

Due to limited numbers and inconsistent supply of local chickens, several requests were made from the public to improve poultry systems to increase the numbers of chickens to enable the supply of chicken meat and eggs.

The proposal for a poultry production project was initiated. The project looked primarily at providing a secure 'home' for the chickens. The initial design was for a four-bay unit where farmers could rear chickens as well as utilise the manure for vegetable gardening. The four-bay units would help the farmer to rotate stock around their gardening programme as well. It would also provide sufficient space for the adult and young chickens to be separated so as to minimise losses due to fighting among the flock.

Niue's nutritional reliance is greatly dependent on imported frozen proteins, such as chicken and meats, which is also very expensive. Rising food prices has also put an increased burden on already low-income families. Thus, the extension phase was well suited to meet the needs of low-income households by providing assistance to shelter the chickens and the necessary training for improved production. The use of local chickens was supported throughout the first phase and the extension phase of the project because of their resilience to the climate in Niue and the fact that there were no known diseases at the time. Much of the limitation of their use in production; they are not big, meaty birds nor do they lay eggs frequently or in large sizes.

The need to introduce improved breeds was soon recognised by the farmers. They reported on low production rates and wondered if the confinement of the chickens was causing the problem. Future improvements to the project would require the importation of improved breeds of chickens to boost production of local stock as well as other production traits, like, egg and meat production. This should be monitored closely enabling the purity of these birds (see SSC expert Terminal Report).

The commencing date of the project was in October 2005 with the proposed budget of USD 35,124.00. The Extension phase of the project commences in August - September 2007, with the budget of USD 34,000.

2. PROJECT ORGANIZATION AND BUDGET ARRANGEMENTS:

At the national level; the Director of Agriculture, Forestry and Fisheries, Mr Brendon Pasisi was the Project Director who was continually advised of project progress and directed the work of the staff involved. The Minister for Agriculture, Forestry and Fisheries, Hon. Bill Motufoou was a key member of the working group who advised and directed project

activities. The National Project Coordinator was Gaylene Tasmania and the National Project Manager was Tom Misikea.

During the pilot/first phase of the project, Augustine Jeremiah was recruited as a National Project Implementation Assistant (NPIA). His main role was to seek quotations, follow up and procure materials from local suppliers, arrange logistics of trainings etc. During the extension phase of the project, it was felt his services were no longer required so as the funds could be fully utilised for project inputs such as materials and equipment.

The implementation of the Pilot Phase of the project was the responsibility of the Agriculture Department and available staffs, and due to staffing shortage, during the extension phase of the project, the units were constructed under contractual arrangement with several community groups.

3. PROJECT OUTPUTS:

The following outputs are outputs that were achieved during the first phase and extension phase of the project. The Logframe for the extension phase of the project is in Annex 1.

OUTPUT 1: Recommended chicken diet by the SSC expert;

The following dietary ration for chickens was formulated and recommended by Mr. Hu Yuanzhi (SSC Expert). He looked at what local feed resources were available and could be used in formulating a feed ration for local chickens.

Table 1. Locally Available Feedstuff in Niue

| Serial | Plants/fish | Source | Parts used as feed | Availability |
|--------|-----------------|------------------------------|---|---|
| 1 | Coconut | Plantations | Whole meat, meat after extracting the cream | Year-round |
| 2 | Taro | Bush gardens | Roots, leaves and skins | Year-round |
| 3 | Cassava | Bush gardens | Roots and leaves | Year-round |
| 4 | Breadfruit | Bush gardens | Fruits | Year-round |
| 5 | Papaya(pawpaw) | Homelots, bush gardens | Fruits and leaves | Year-round |
| 6 | Kitchen scraps | Homes | Kitchen wastes and left-over foods | Year-round |
| 7 | Melon | Bush gardens | Fruit peels | Seasonal |
| 8 | Banana | Homelots, bush gardens | Leaves, pseudostem and fruits | Year-round |
| 9 | Pumpkins | Bush gardens | Leaves | Seasonal |
| 10 | Sweet potato | Bush gardens | Roots and vines | Year-round |
| 11 | Fish/tuna | Niue Fish Processing Plant | Heads, skins and off-cuts | Year-round |
| 12 | Fish/tuna | Fishing boats. | Innards and gills | Not available. Possible to arrange with fishing boats, particularly the last set of fish catch. |
| 13 | Ata | Bush | Leaves, bark | Year-round |
| 14 | Ti (Cordyline) | Homelots, bush | Leaves | Year-round |
| 15 | Pepe (Leucaena) | Roadides, seashores and bush | Leaves | Year-round |

| | | | | |
|----|---------|------|--------------|------------|
| 16 | Malege | Bush | Leaves, bark | Year-round |
| 17 | Fue sea | Bush | Leaves | Year-round |

Mr Hu developed the following guidelines for use of farmers so that they have an idea of the breakdown of feed components suitable for chickens. It was pointed out to Mr Hu that it is difficult for farmers to measure in percentage and therefore the feedstuff materials should be translated into quantities like handfuls or cups so that the farmers can understand and apply these feedstuffs.

Table 2: Use all Locally available feedstuff to develop the alternative diets for chickens

| Serial | Feedstuff Materials (% in feed) | Grower | Breeder |
|--------|--|--------|---------|
| 1 | Fish head, fish wastes and Kitchen scraps | 10% | 20% |
| 2 | Papaya (pawpaw) | 10% | |
| 3 | Locally energy feedstuff and protein feedstuff** | 30% | 30% |
| 4 | Locally Green leaves feedstuff*** | 50% | 50% |
| TOTAL | | 100% | 100% |

** Locally available energy feed: Coconut, taro, breadfruit, melon, banana, Pumpkins, Sweet potato, etc.

*** Locally available Green leaves feed: green and young leaves of Ate, Ti (Cordyline), Pepe (Leucaena), Malege, Fue sea, Taro, cassava, potato, papaya, etc.

The usual feedstuff given to chickens is coconuts. Most farmers either scrape the coconut to feed to the chickens, particularly the younger ones, or they split a dry coconut and leave out for the chickens to peck. Water is not usually provided for chickens during feeding time, it is understood that most farmers believe they do not need to provide fresh water because the chickens source their own when they scavenge.

The existing chicken units in full operation to date confirmed that the chickens inside the pens are 75 - 80% organically grown. Commercial compound feed takes up 20 - 25% of the chicken ration. Given these ratios, it is possible for these chickens to be labelled as 'organic' if only local feedstuffs were used.

OUTPUT 2: Demonstration sites for Research activities and Trainings;

The 5 recipients for the Pilot Phase project are;

| Site Number | Location | Farmer |
|-------------|--------------------|----------------|
| A1 | Tuapa village | Rebekah Tukuha |
| A2 | Liku village | Moua Salafielu |
| A3 | Mutalau village | Tekena Vakaafi |
| A4 | Hakupu village | Wydean Misikea |
| A5 | Hikutavake village | Leo Pita |

The project recipients of the first phase had poultry pens the size of 20m x 20m dimension. This was divided into four compartments, with enough space for gardening on a rotational basis. It was felt that the space required for households to raise enough chickens for their own needs was only half the size of the original units and could even be less. Therefore, the units constructed during the extension phase of the project was reduced to 20m x 10m and divided into two compartments so that the farmers could still

sub-divide the unit and be able to have enough room for a vegetable garden or other garden where the chicken manure could be of benefit.

The following people are recipients of the 5 additional units constructed under during the extension phase.

Extension Phase Recipients:

| Site Number | Location | Farmer |
|--------------------|-----------------|--------------------|
| B6 | Alofi village | Morris Tafatu |
| B7 | Avatele village | Aokuso Pavihi |
| B8 | Mutalau village | Sisitama Makatogia |
| B9 | Avatele Village | Lava Mokalei |
| B10 | Lakepa village | Ualiu Konelio |

OUTPUT 3: Publish a Poultry Guide/Manual for farmers;

The Poultry Guide is pending technical clearance. Translation of the manual into the local Niuean language is also still pending approval of the English version

OUTPUT 4: Raising chickens and other products for sales as organic foods;

All units were completed (100%) and two units have generated some income by selling surplus chickens and eggs. Other recipients are utilising the chickens and eggs for their own family's needs. Up-to-date records are not available of the income generated by the farmers but they have reported verbally that they have generated a reasonable amount of income from the poultry units.

OUTPUT 5: Availability of chicken manures to support organic farming;

Project recipients provided bags of chicken manure to interested vegetable farmers. Some recipients preferred to use the chicken manure themselves in their own gardens.

NB: Niue was very fortunate for additional funds to execute and add more recipients to the existing permaculture program which the following outputs were additional to the pilot project outputs;

OUTPUT 6: Develop a chicken breeding nucleus at government research farm;

Materials were procured to re-establish the old poultry unit at the Vaipapahi Research Farm so to provide a centre for improved breeds for distribution to interested poultry farmers. In addition, the unit would add to the integrated farming system being demonstrated at the research farm.

OUTPUT 7: Participatory farmer's consultation and training;

Two national training activities conducted 4 poultry farmers' participatory seminars. The initial workshop attracted some 34 interested and potential farmers which the SSC technician was able to present his findings from his research into local feed ration. Feed making grinder was utilised with feed mixing which enable participants to see and experience feed processing activity demonstrated;

Training on small business and cost and return analysis was provided by Mafeo Bejo for project recipients so that they could understand how to develop their poultry units into economical ventures.

OUTPUT 10: A sound and effective Project Monitoring and Evaluation system;

Develop a Monitoring and Evaluation process which simplified operational progress of the project;

4. MAJOR ISSUES AND CONCERN IN PROJECT IMPLEMENTATION

1. Lack of human resources in implementing the Permaculture program;
 - As mentioned previously, that due to shortage of Departmental Staffs to implement the project, it has taken a “stop, start” work as other works are vested on project managers which resulted in delaying of conclusion of project at specified dates;
 - The NPIA was recruited (following the visit of the Budget Manager) to assist and support the project in obtaining quotes, arranging trainings etc, but the NPIA was not recruited for the extension phase.
2. SSC Chinese Technician (Mr. Hu Yuanzhi);
 - Because of language difficulties, the program finds it quite difficult to consult and converse with the technician and quite frustrated at times as wrong interpretations of messages.
3. Procurements of Materials and Equipments;
 - Niue only has a few suppliers for needed materials so some had to be imported from NZ.
 - If local suppliers did not have enough materials in stock, delays were experienced as more stock was ordered.
4. SSC Local Available feed resources trial;
 - The trial was incomplete as there were inadequate and insufficient supply of locally available feed resources to carry out a complete trial, thus an alternative of imported feeds were purchased to compensate for local feed resources;
 - The trial by the SSC technician used imported pre-mix so we needed to add them to local feed before which was proved to be more costly than the complete feed which is normally imported.

5. CONCLUSIONS

Overall, the project met its objectives. Not only did the recipients benefit from the project but also the project staff and other staff of the Dept. who were involved in the trainings and workshops and also having worked with the SSC technicians and learn some new ideas. Although, the objective outlined in the initial Project proposal was quite broad, the project was able to fulfil these tasks and with the assistance from the SSC program.

The Project Coordinator and the Project Manager were able to attend a FAO, regional meeting with other project coordinators and managers from other small island states (held at FAO, Samoa), they were able to learn of the policies and guidelines as manifested by the FAO. Most participants at the meeting expressed concern regarding these conditions as set out. However the workshop help shed some light to the proper procedures to the participants.

Several workshop type meetings were also held to assist with the progress of the projects within each country, which the Monitoring and Evaluation workshop was very helpful in developing log frames for the project and reported as accordingly. This workshop and training should start at initial phase.

The pilot poultry units were completed and several trainings were conducted which the public support this program as a better management practices for poultry keeping in a permaculture system. These demonstration areas saw some very keen farmers compared to others. The trainings were basics of chicken rearing and caring from predators and requirements for chicken survival. The trainings were conducted by the Project manager, the assistant livestock officer Mafeo Bejo and supporting staffs.

According to the SSC expert's terminal report, he stated the importance of introducing a much more vigour breed of chicken to boost production. The breeding nucleus at the government farm should be able to breed chicks from imported chickens for further distributions to project recipients and other farmers with similar units. This has been strongly recommended as a long term venture or support to be provided to strengthen the outcomes of this project.

Human resources to implement the infrastructure of the project remain the main drawback issue. The contractual agreements are a better alternative to get the works done.

6. RECOMMENDATIONS:

The following recommendations are based on the experiences and lessons learned from the implementation of the pilot and the extension programmes that will ensure the sustainability of the project.

1. That the Niue government should;
 - continue to support and therefore monitor project recipients and other poultry farmers;
 - continue to assist this program by injecting some funding assistants for maintenance in a sustainable manner;
 - investigate the importance of importing of day old chicks for breeding purposes;
 - investigate business opportunities to enhance the results of the project, improve food and nutritional security.

2. That FAO/ITA programs should;
 - provide project management trainings as well as FAO policies and conditions at pre-commencing of regional projects as part of the inception phase of the projects;
 - continue to provide technical assistances on project direction and expert advise on relevant project plans and prepare and provide regular visits to project sites etc;
 - continue the ongoing technical support of donor organisations similarly to the SSC program.

7. ACKNOWLEDGEMENTS

Firstly and foremost, on behalf of the “Poultry Production in a Permaculture Farming System” implementing team and its recipients, together with the Government of Niue, we wish to acknowledge with a big “*Fakaue Lahi*” to the tremendous financial contributions which was generously sponsored by the Government and the People of Italy. This fund was made possible by the FAO headquarters in Rome through the FAO office, Apia, Samoa, and is a great gift to the grassroots of Niue which has accepted it with sincerity.

Thank you for making possible the extension phase that also completed additional poultry units. This sure is the greatest gift of all, which the Niuean people have prayed and hoped for. Acknowledgement also goes to the beneficial contributions of other SIDS’s at meetings by sharing experiences and lessons learned from their country projects, it helps in directing us to the right pathway.

Grateful gratitude’s towards the FAO headquarters, Dr. Vili Fuavao, (FAO Sub-Regional Representative for the Pacific), and your ever dedicated staffs (RPMU) for all possible assistances and pathways that you has bestowed upon our people, whether small, direct or indirect, it all complimented towards the true purpose of this program, **FOOD SECURITY** at grassroots level.

Last, but not least, is the heartfelt *Fakaue Lahi* to DAFF Department staffs (Sisitama Makatogia, Charlene Funaki, Tamuta Utalo, Brandon Tauasi, Poi Okesene), Young Farmers (Joeseeph Mahakitau, Falepoe Misileki, Tekena Vakaafi, Whydean Misikea, Rebecca Tukiuha, Doreen Heaki), NPIA (Augustino Jeremiah), Recipients (Moua Salatielu and family, Leo Pita and family, Humphrey Pipitolu, Tea Tukiuha, Tom Jnr Misikea), SSC expert (Mr. Hu Yuanzhi) and SSC partners (Mr Xiabo Luo, Mr Yang Jingzhao, Ms Liao Xinhui, Project-coordinator (Mrs. Gaylene Tasmania), Director of DAFF (Brandon Pasisi) , and mostly to the former Minister (Hon. Bill Motufoou) and current Minister of Agriculture (Hon. Poko Sipeli) who showed their support to the program and to all people who contributed to the implementation of the project.

May the Good Lord continue to bestow upon each and everyone his fruitful blessings that our future generations will acknowledge and reap in bountiful our actions today.

I know that as a Project Manager for the Poultry Permaculture Farming System, I have not been very well versed of FAO programs and procedures but through the numerous trainings and exposure, I wish to acknowledge the FAO unit for these deliberations and trainings and especially the Regional Project Coordinator that we were able to share ideas and find reasonable solutions to technical matters relevant to our local situation, and will continue to do so with the support and coordination of FAO office, Apia and support of FAO headquarters in Rome. Thank you all.

ANNEX 1: LOGFRAME FOR FAO/ITA/01 – Poultry Permaculture System.

EXTENSION PHASE JUNE 2007 – DECEMBER 2008:

| | Intervention logic | Objectively verifiable indicators | Sources and means of verification | Assumptions |
|------------------------|--|---|--|--|
| Goal | Improved agricultural production and household incomes for food security | | | |
| Project Purpose | Increased food production, income generation and reduced meat importation through poultry production | Country Performance Indicators: 1. No. of locally produced chicken 2. No. of farmers earning income from chicken farming 3. Quantity of meat products substituted with local production | Ministry of Agriculture records National statistics Project records, site visits | Continuous Government and relevant departments' commitment and support No avian pest incidence |
| Outputs | 1. Additional household-scale poultry pens constructed 2. Breeding nucleus established 3. Participatory farmer consultations carried out 4. Training materials translated, printed and distributed 5. Training on standard poultry farm management conducted 6. Project effectively monitored and evaluated | 1. No. of poultry pens improved 2. No. of poultry pens constructed 3. No. of chicken bred and distributed 4. No. of consultations carried out 5. No. of manuals printed and distributed 6. No. of farmers trained 7. No. of reports submitted | Project reports Site visits Project records Training reports Attendance forms Monthly reports Quarterly reports | Government support provided Farmers' interest continues Inputs procurement process runs smoothly Production inputs available |
| Activities | 1. Construct additional household-scale poultry pens 1.1 Purchase building materials, supplies and equipment 1.2 Hire labour to construct poultry pens 2. Establish breeding nucleus at Vaipapahi Research Farm 2.1 Select suitable breeders as initial flock 2.2 Maintain breeding nucleus and distribute selected stocks to farmers | Inputs Human resources: NPC, PM Field Technicians Consultant Training facilitator Labour/contractors Material resources: Improved breeds of chicken Building materials/equipment | Costs (USD) Consultant: 380 Labour: 7,600 Training: 1,140 Printing: 2,280 Expendable materialst: (Building materials, feeds) 15,384 Non-expendable equipment: (Feeders | Continuous support and commitment from the Government Individual farmer's continuous interest in poultry raising and relevant training Smooth procurement procedures Availability of veterinary supplies and feed supplements |

| | | | | |
|--|---|--|---|--|
| | <ul style="list-style-type: none"> 3. Conduct participatory farmer consultations <ul style="list-style-type: none"> 3.1 Identify farmer recipients and interested farmers 3.2 Formulate project designs with farmers 4. Publish training/extension materials on poultry production <ul style="list-style-type: none"> 4.1 Review poultry manual developed during the pilot phase 4.2 Translate manual in Niuean language 4.3 Print and distribute poultry manuals in both English and Niuean versions 5. Conduct training on standard poultry farm management <ul style="list-style-type: none"> 5.1 Request for training funds, including resource person to facilitate training 5.2 Conduct training 5.3 Submit training report 6. Monitor and evaluate project <ul style="list-style-type: none"> 6.1 Monitor project implementation 6.2 Submit monthly, quarterly and final reports | <ul style="list-style-type: none"> Feeders and drinkers Incubator, candling lamps etc. Feeds and feed supplements Fuel and oil | <ul style="list-style-type: none"> and drinkers, lamps, etc.) <li style="text-align: right;">3,420 GOE <li style="text-align: right;">3,800 Total <li style="text-align: right;">34,004 | |
|--|---|--|---|--|

ANNEX 4: PROJECT BUDGET FOR PILOT PHASE

ANNEX 5 PROJECT BUDGET FOR EXTENSION PHASE:

ACRONYMS:

| | | |
|------|---|--|
| SSC | - | South South Cooperation; |
| TCDC | - | Technical Consultant and Development Coordinator; |
| RPMU | - | Regional Project Management Unit; |
| DAFF | - | Department of Agriculture, Forestry and Fisheries; |
| FAO | - | Food and Agriculture Organization; |
| NPIA | - | National Project Implementation Assistant; |
| SIDS | - | Small Islands Development States; |