Niue Island

Mainstreaming Ecosystem Services and Biodiversity through Agriculture Sector Development and Management to Minimize Dependency on Agrochemicals.

Overview Biodiversity for Food and Agriculture : NIUE

- Agriculture, Fisheries and Forestry are the main sources of local food availability on Niue.
- 2009 Census : 91% of households actively involved in Agriculture, 71% kept livestock (pigs and chickens), and 62% engaged in fishing, and 60% hunted for coconut crabs. (72%) held taro, (8.4%) coconut, (6%) yams and (5.4%) vanilla.
- Native biodiversity, Niue has about 19,000 hectares of native forest comprising approximately 70% of the island's land area.
- Major foods sourced from forests are edible ferns and yams, feral pigs and chickens, land crabs such as the coconut crab *Birgus latro* (uga), Pacific pigeons *Ducula pacifica* (lupe) and Tongan flying foxes or fruit bats *Pteropus tonganus* (peka) protected under the Wildlife Act 1972.
- Marine biodiversity, socio-economic assessment in 2011 Food Security Assessment and covering 50% of households yielded on average results of fresh fish consumption (both reef and pelagic fish) estimated to be 31.1 kg/person/year.
- Forests and other systems of natural vegetation also provide important ecological services including erosion control, protection from salt spray, soil improvement, flood/runoff control, animal/plant habitats, wind protection, weed/disease control.

Overview Biodiversity for Food and Agriculture : NIUE

- National Forest Inventory in 2008

Areas covered by forest in Niue Forest Type	Area (hectares)
Mature Dense forests	5,566
Regenerating medium dense forests	13,191
Other – Littoral (coastal) forests, fernland, non-forest	7,346
Total area of Niue	26,103

- About 15% of Niue's National Gross Domestic Product (GDP), which increased from NZD17.8 million in 2003 to NZD27 million in 2012, stems from agriculture, hunting, fishing and forestry sectors (source: Statistics Niue) – i.e. those directly based on biodiversity.

- Natural products made up 76% of total domestic exports in 2012 (nonu 38%, honey 24%, vanilla 6%, taro 5% and coconut 3%) (Source: Statistics Niue).

Overview Niue Agriculture Sector Plan 2015- 2019

- The Niue Agriculture Sector Plan (NASP) overarching framework that guide strategic actions for development and investments in the Agriculture sector for the period 2015-2019.

- NASP highlights the commitment of Niue Government and stakeholders in creating an enabling environment for sustainable management and utilization of all natural resources within the context of gaining food and nutritional security and economic development.
- With the commitment and support by Government to the Agriculture Sector as the backbone for economic development, the on-going key challenges faced by the sector such as *soil fertility problem*, *aging farming population* and *climate change impacts* , *invasive species* still play a fundamental role to influence implementation process of the NASP.

Goals & Objectives of NASP 2015-2019

- Derived from the Vision and the Goals of the two of the six development pillars :
- Pillar 3-*Economic Development*

- Pillar 5 –*Environment Protection*

- Articulated in the Niue National Strategic Plan (NNSP) with the vision for "Niue ke Monuina" (A Prosperous Niue).

Objectives of NASP 2015-2019

- 5 Key Objectives :

1.Improve food and nutritional security for all residents of Niue;

2.Development and promotion of sustainable food production and management systems;

3.Support sustainable economic growth and improve the balance of trade;

4.Strengthen Sustainable Land Management

5. Enhance capacity-building of stakeholders and Agricultural staff.

- The overall goal focusses on: *"All households in Niue are food, nutritionally, and income secure".*

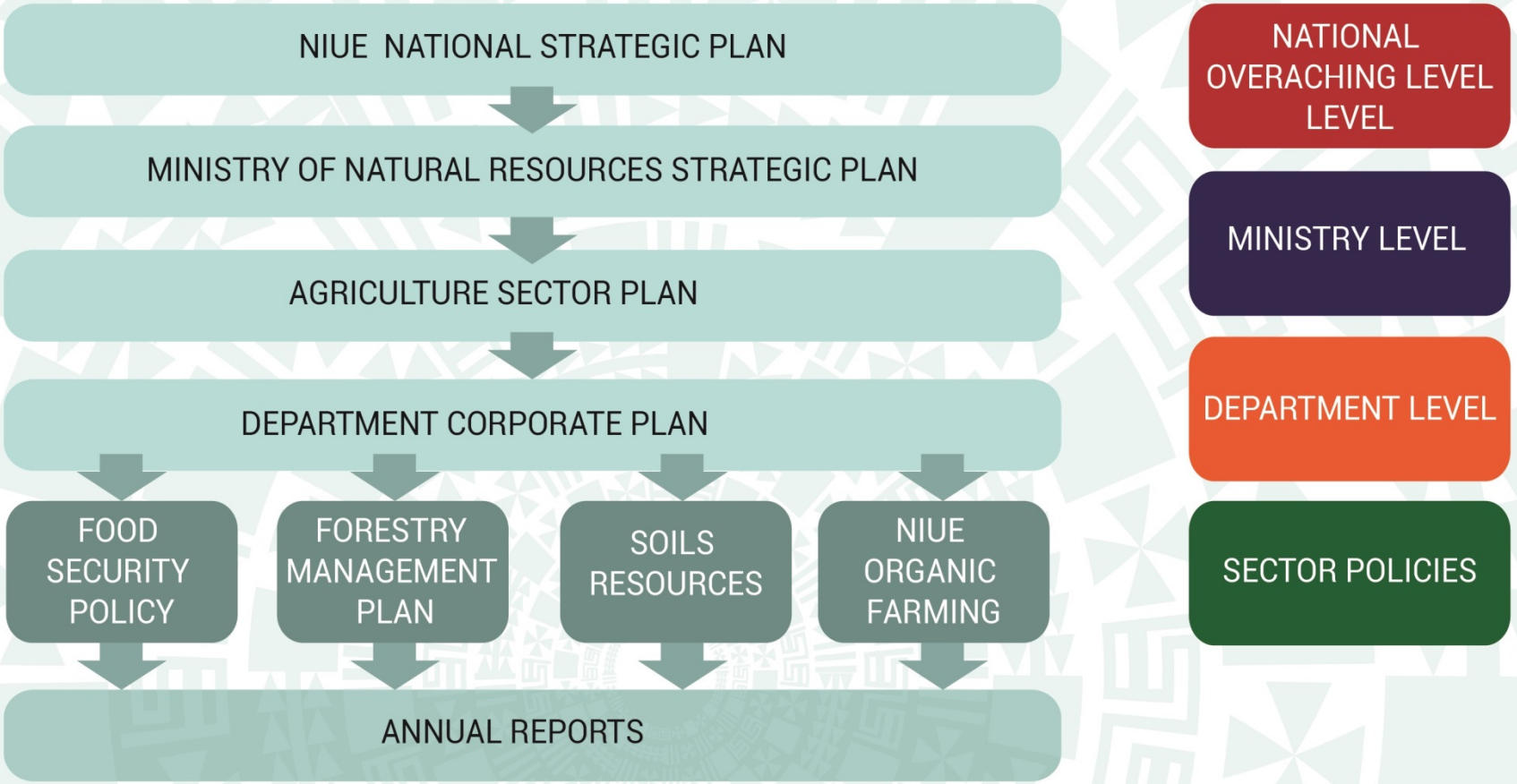
ASP Objectives 2 & 4: Targets Ecosystem Services and Biodiversity in Ag. Production & Management

Objective 2: Develop and promote sustainable crop and livestock management systems	***(i) Increased adoption of sustainable management systems (ii) Increased in crop area and production (iii) Increased in livestock numbers and production***					
Output 2.1: Appropriate crop, livestock, forestry management practices developed and promoted Output 2.3: Pests and diseases identified and control methods developed and promoted Output 2.4 Promote utilisation of organic farming practices	(i) (ii) (iii) (iv) (v) (vi) (vii) (viii) (ix) (x) (xi)	Sustainable soil management technologies developed and adopted Adaptable crops selected Agro-forestry technology and organic farming methods developed and adopted Crop production technologies developed and promoted Crop water management technologies developed and adopted Improved livestock management developed and adopted National waste management strategies developed and adopted Feral pigs effectively controlled Sustainable land-use policy developed Code of land use developed Environment bill enforced	• Mostly relying on bush/fallow land – previous baseline soil data analysis • Crop species adaptable to drought • Documentation of agro-forestry and organic farming systems. • Inventory of crop production technologies for both commercial and domestic markets. • Predominantly rainfed • Mostly traditional systems • Animal waste basically not managed • Poor fencing is a major cause • No land use policy	• Some fertilisers, compost, green manure, silage and legume cover crops used • Adaptable varieties for some crops selected • Ecological sustainability status established • Potential solutions tried on-farm • Water management technologies like mulching and drip irrigation trialled • Improved systems tried – pens and feeds • Waste management strategies like composting promoted • Proper fencing promoted • Policy guidelines developed	• Improved soil health • Adaptable varieties for most crops selected • Master plan and organic farming systems develop • An agro-forestry master plan and agro-forestry systems developed • Some improved technologies adopted • 10% of commercial farmers will adopt improved water management technologies • % of livestock farmers adopt management systems • 10% farmers adopt waste management strategies • 90% of pigs properly fenced • land-use policy enacted	• Soil test • CePaCT/DAFF report • NIOFA Reports • DAFF reports • Agricultural Census report • Niue Statistics • DAFF and Environment reports • DAFF and Environment reports

ASP Objectives 4:

Objective 4 Strengthen Natural Resource management	***(i)*** ***(ii)***	***Sustainable farming practices developed*** ***Climate resilient farming systems evaluated and documented***				
Output 4.1: Traditional knowledge preserved digitally, enhanced, utilised and acknowledged	(i) (ii) (iii) (iv)	Innovative products developed using traditional knowledge Increased proportion of traditional methods of food preparation and preservation used Level of traditional knowledge on different farming methods obtained, documented and shared. Preparation of a local cropping/hunting calendar.	• Inventory of traditional products • Inventory of traditional food preservation and preparation methods • Inventory of local knowledge from community and Taoga Niue • No calendar available to date.	• Some products developed and promoted • Some methods promoted • Knowledge obtained from local communities and their consensus on traditional farming practices. • Methods in traditional cropping calendar adopted by community groups.	• Communities producing products • Communities using methods to produce or preserve foods • Traditional knowledge obtained, documented and shared • Planting and hunting calendar produced and adopted by community groups	• DAFF reports • Taoga Niue Report
Output 4.2 Vulnerability of production systems to climate change stressors and non-climate change stressors assessed, and mitigation and adaptation strategies developed and implemented	(i) (ii) (iii)	Vulnerability analysis (VA) for agriculture conducted Awareness programme developed and implemented	• No vulnerability assessment • Little awareness	• Vulnerability analysis completed with adaptation plans • Awareness programme developed and implemented	• Adaptation plan operational • Large percentage of community awareness	• DAFF/SPC report
Output 4.3 Biodiversity restored, conserved and promoted including forest invasive species	(i) (ii) (iii) (iv) (v)	Resource Management plans developed Niue agro-biodiversity evaluated and documented % of degraded land reforested Number of new agroforestry species introduced	• Ongoing resource management plans being developed • Limited documentation on agro-biodiversity • Eroding knowledge on biodiversity	• Resource management guidelines developed • Agrobiodiversity evaluation guide developed • At least 3 new agro-species promoted	• At least 5 community resource management plans developed • Agro-biodiversity documented and promoted • 50% degrade land reforested with fruit trees	• DAFF Reports
Output 2.4 Strengthen Invasive Prevention and Control	(i) (ii)	Number of awareness programs conducted Invasive control measures	• Limited awareness on invasive issues • Limited capacity on	• Awareness program developed • Surveillance system	• Community awareness programs conducted • Effective partnership	• DAFF reports • GEF Reports

NIUE POLICYHIERACHY CHART OUTLINE OF SECTOR POLICIES & LINKAGES TO NATIONAL DEVELOPMENT STRATEGY



Linkages to Aichi Targets.

- **Target 7 :** By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.
- **Target 8:** By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.
- **Target 13**
- By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.
- **Target 14**
  By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.

Agrochemicals: Pesticides –Overview in Niue

- Agriculture Department sole main importer and supplier of Pesticides into Niue (1970's -90's).
- Currently 2 x Main plus 3 Other Importers
- Currently –**Pesticides Act 1991** in place.
- Pesticides Committee recently Re- activated
- Niue yet to be a party to the Rotterdam Convention but a party to the Stockholm Convention on POP's
- Developed a Report on Inventory of Chemical Imports and use in Niue under POP's Project 2004.
- Previous – Report by Dr David Mowbray – Pesticides Use in the South Pacific –UNEP,SPREP 1988.
- Currently rely on Customs for pesticides data (Import/Export Entry)

Pesticide Issues –Overview in Niue in the Past

Table 13 Import of formulated pesticides into Niue in 1981.

Pesticide Group	Formulations quantity (in metric tons or kilolitres)	Value (in '000 $US)
Insecticides	1.5	12.0
Herbicides	1.5	22.5
Fungicides	0.5	4.0
Total	3.5	38.5

The major chemicals used include paraquat, mancozeb and copper oxychloride.

Pesticide Issues –Overview in Niue Recent

Data from Inventory of Chemical Imports and Use in Niue : Niue POP's Project 2004.

Pesticide Group	Approx. Amount(L)2004
Insecticide	**500L**
Herbicide(Paraquat)	**2300L** (Approx. 9L/Sq.Km)(1.5l/per)
Fungicide	**100L**

Pesticide Legislation and Issues

- **Niue Pesticides Act 1991**
- Principal Act for the regulation of import, sale and use of pesticides.
- Provision for constituting and function of Pesticide Committee who will approve issuing of permits for importing, sale, distribution and use of pesticides.
- When Committee approves issuing of permit, they may impose conditions on such things as **use**, **handling** and **storage** of pesticides.
- Chairperson of Committee is the Director of Agriculture, other members including the Director of Health, representative for Importers and a representative for Pesticide Users. Committee may regulate its own procedure as it see fits, including the appointment of other members to be included in the Committee.

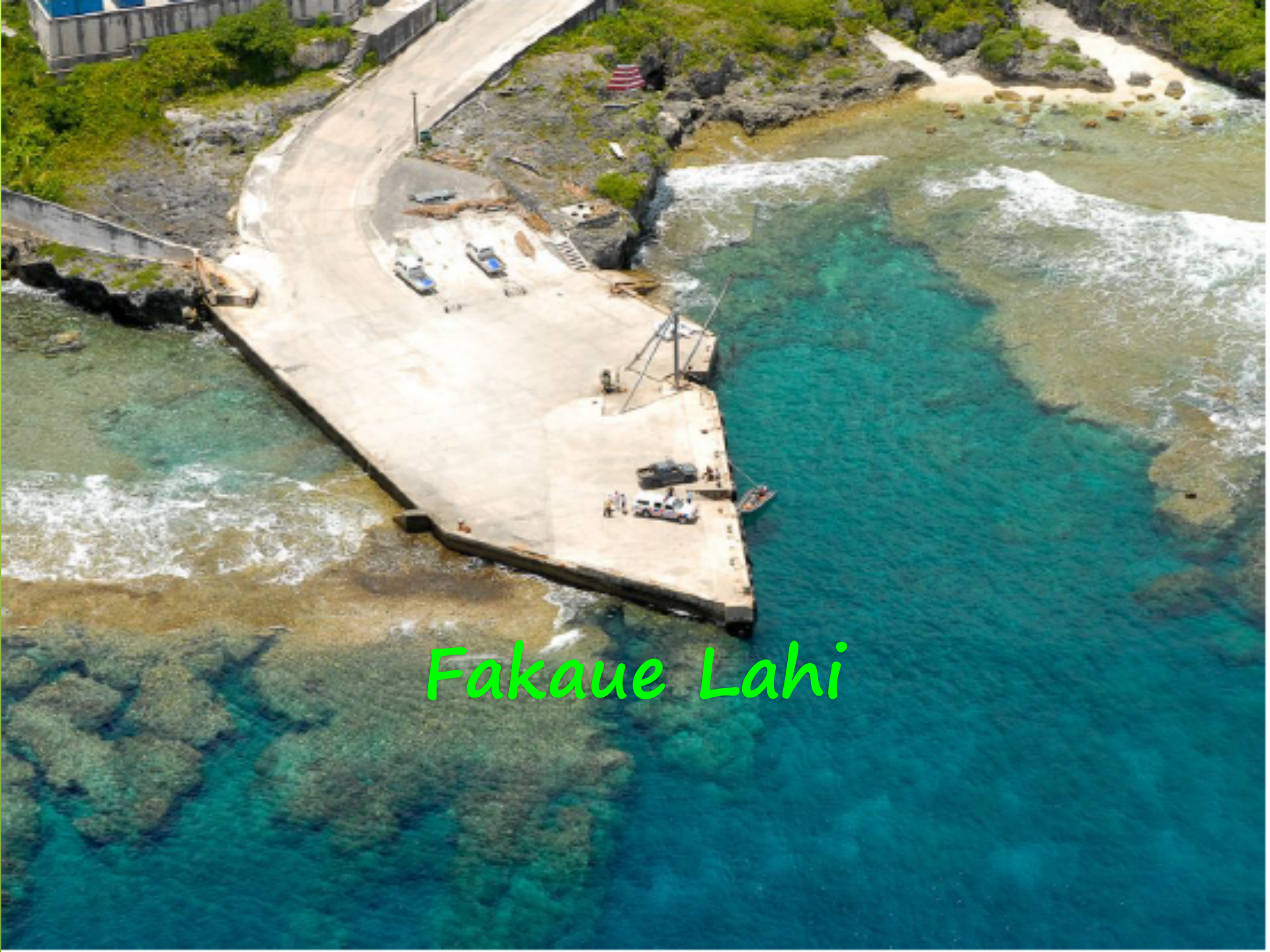
POSITIVE ASPECTS IN PESTICIDES ACT

- Provision for supporting services from Customs Department include the control of entry of pesticides. A Customs Officer must not allow the release of pesticide imports if the importer does not hold a permit to import.
- Provision in Act for DAFF Director to keep and maintain a register of all registered importers and all registered pesticides.
- Provision for revocation and suspension of permits
- Powers for search and seizure of unregistered pesticides at importers premises without a warrant.
- Provision for penalties and fines.

Pesticide Legislation and Issues

CHALLENGES

- Pesticides Committee was Inactive : Recently Re-activated.
- Lack of available data for past Agro-Chemicals Imported
- Hard to monitor private importation of Pesticides/Agro-Chemicals into Island.
- Lack of awareness on proper protocols for people to follow.
- Large number of Farmers still prefer Paraquat as a means for effective, cheaper, Weed Control.
- Still in Process of seeking a cost effective/eco-friendly alternative to Paraquat.


Fakaue Lahi