



Kingdom of Tonga

ROYAL ESTATE

Agriculture Development Initiative

A CASE STUDY OF 'API KO FATAI' ROYAL ESTATE – VAVA'U ISLAND

"Sustainable Development Based on 'Sufficiency Economy'"

July 26, 2021.



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'API-KO-FATAI DEMONSTRATION AND MULTIPLICATION PLOT



TALO

1. Lānu mata tuhituhi
2. Pingikī mālohi
3. Pingikī maama
4. 'Uli'uli makohikohi
5. Huli mama'o vāleti
6. Lau Kape huli mama'o
7. Lau Kape hinehina tuhituhi
8. Lau Kape Lānu mata mālohi
9. Lau Kape lānu mata vaivai
10. Lau Kape lānu mata sōtia
11. Lau Kape hinehina 'ata'ata
12. Samoa 1
13. Talo 'uli nōmolo
14. Talo Lau'ila



KAVA

1. Kava Leka'uli
2. Kava Lekahina
3. Kava Kula
4. Kava Kofekula
5. Kava Kofehina
6. Kava Fulufulu
7. Kava Valu



MANIOKE

1. Pēlū (Peru)
2. Fisi (Fiji)
3. Engeenga
4. Matakī'eua



KUMALA

1. Matatōa (Beni-imo)
2. Hawaii



KOANE

1. Koane Tonga
2. Sweet corn

OTHER CROPS

1. Ginger
2. Tumeric
3. Passion Fruits
4. Coffee
5. Vanilla



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INTRODUCTION

'Api ko Fatai Royal Estate is located in the village of Mataika on the island of Vava'u, 313km from the capital of the main island of Tongatapu. The royal estate has been gifted to the communities of Mataika and Feletoa for landless farmers to use. 80% of households from these communities have identified their income relies heavily on agricultural production for subsistence purposes and surplus is sold at local markets to meet their needs.

This Agricultural Development Initiative consists of 30 acres of royal estate earmarked for large scale cluster farming, the largest on the island of Vava'u. Launching of 'Api-ko-Fatai Agriculture Development Project means strengthening food security, promoting local healthy food, increasing resilience to impacts of climate change and feeding a nation through sustainable agricultural livelihood initiatives including cluster farming and innovate technology. Their Majesties King Tupou VI and Queen Nanasipau'u launched the project on Thursday 18 March 2021 with a Royal Visit to the project site where over 14,000 seedlings of taro were planted, the first of more than 10 different varieties of root crops, fruits and vegetables to be planted at the Royal Estate. 'Api-ko-Fatai replicates the demonstration and multiplication plot on the Royal Estate of Villa in Tongatapu and now is expanding to the outer islands.

The objective of this project is to promote climate resilience on tax allotments through climate cluster farming for the communities in Feletoa and Mataika. These two communities have identified over 80% of their population relying on agricultural farming mainly for subsistence with surplus produce sold at the local market as cash crops. Their livelihoods are predicated on farming however, restricted access to land, resources and skills have prevented them from leading sustainable livelihoods.

Food production is also being heavily hampered by climate change variability. The project will assist through provision of training, land preparation, fencing, provision of cultivars and so forth. It will also be the largest multiplication plot in the Kingdom growing up to 15 varieties of taro, 4 types of manioke, 7 varieties of noble grade kava, Hawaiian and Japanese originated sweet potato and 2 varieties of corn.

The *theory of change* for this initiative is that enhanced community capacity for sustainable planning linked with investment in resilient agriculture production systems, will contribute to improved and sustainable livelihoods for vulnerable households.

MAP OF TONGA

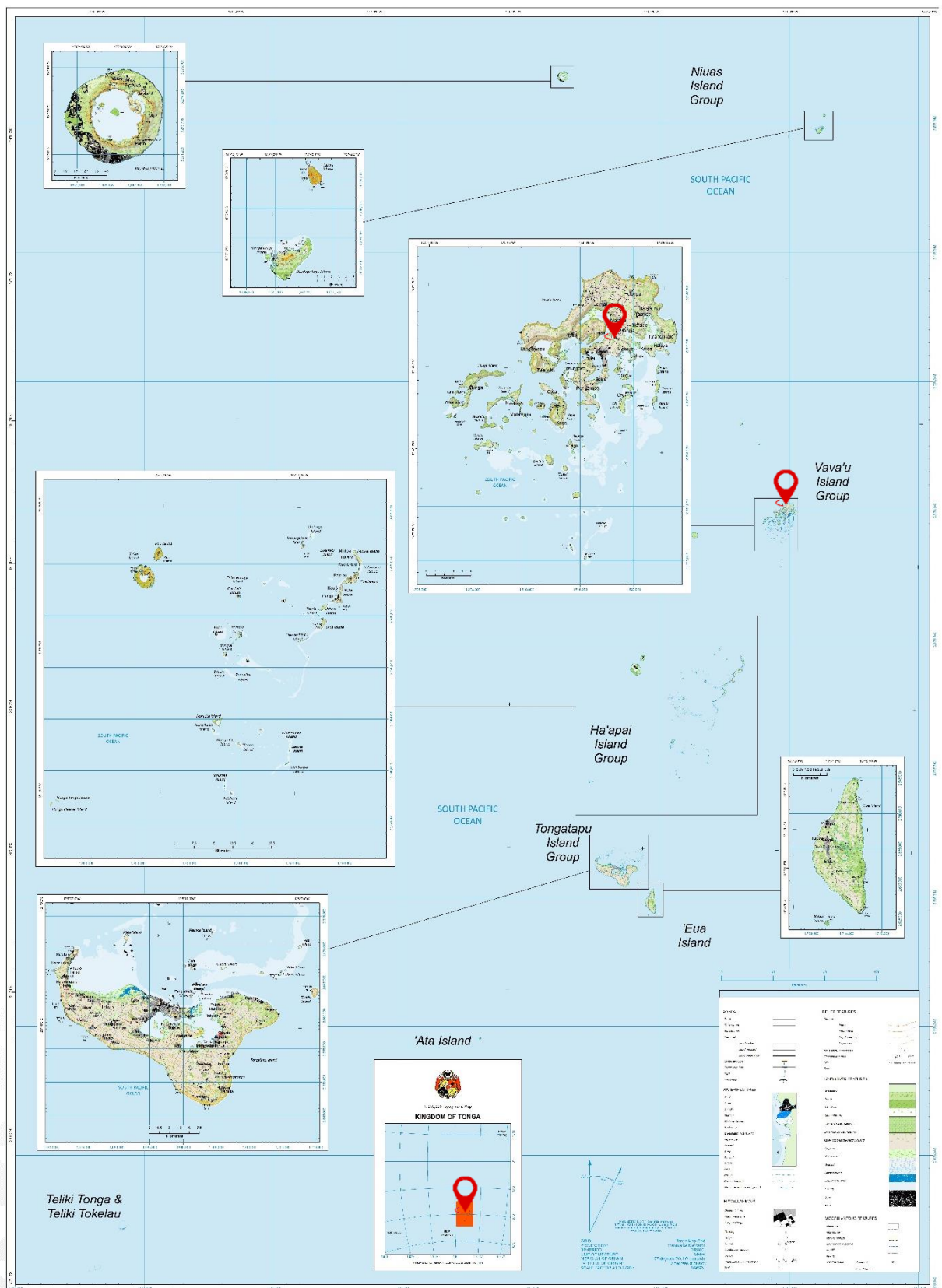


Figure 1 Map of Tonga – Fatai Location

MAP OF VAVA'U ISLANDS



Figure 2 Map of Vava'u Island groups, inset are target communities' of Feletoa and Mataika



There are 15 introduced taro varieties grown at 'Api-ko-Fatai. The Taro were propagated from Tongatapu and will continue multiplying in this demonstration plot.

BACKGROUND & COUNTRY CONTEXT

Background

The island Kingdom of Tonga is an archipelago located in the South Pacific that is made up of 172 coral and volcanic islands with a mere 40 islands inhabited. The archipelago is fragmented across an expanse of 800km from North to South (refer to Figure 1)¹. The island Kingdom is made of five island groups with six main islands which are: Tongatapu (260 km²), Vava'u (153km²), Ha'apai (130 km²), 'Eua (88 km²), Niuatoputapu and Niuafo'ou (71 km²). Tonga's combined total area of land is a mere 706 km² dotting the Pacific Ocean².

The total population is 100,651, over 74% live in mainland Tongatapu with 74% of the population living in rural areas. The urban and peri-urban areas are 1-2 meters above sea level³. The highest point on the mainland of Tongatapu lies South East only reaching 65 meters above sea level. One of the issues the Tongan islands as low-lying islands face is the availability of freshwater sources as most do not have surface waters except for the island of 'Eua.

Vava'u island group is scattered across an area of 21kms from east to west and 25kms north to south (refer to Figure 2). Vava'u's population in 2016 was at 13,738 (14% proportion of Tonga's population) and Leimatu'a District's population was a total of 2,489 (Feletoa and Mataika are under this district)⁴. The 2016 census showed the largest decline in people was in Vava'u with an estimated loss of 9 people per km² followed by Ha'apai and Tongatapu⁵.

Vava'u's topography is much higher in altitude than Tongatapu, the highest point on mainland Vava'u reaches 210 meters above sea level. The climate is warmer than Tongatapu akin to the weather conditions of Northern most islands of the Niua's, coupled with rich and fertile soil Vava'u is known to produce the best agricultural yields in all of Tonga.

An estimated 75% of the population in Tonga live in rural areas of which their livelihoods rely solely on fisheries and agriculture⁶. Over 95% of households engaged in agricultural activities are subsistence or semi-subsistence based with little than 5% engaged in commercial agriculture⁷. Food is central to church and cultural obligations and is what drives food security for these households. Annual and perennial crops dominate land use in the sector; however, reports show that almost half of the Tongan land is fallow due to land owners migrating offshore⁸.

According to TASP the pressures farmers face are declining soil quality and crop diversity, decline of population due to migration, lack of incentives to engage youth in the sector, an aging farming population, shortage of labor from youth as influx join seasonal workers program offshore⁹.

¹ Tonga 2016 Census Report [Population and Housing Census | Tonga Statistics Department \(tongastats.gov.to\)](https://tongastats.gov.to)

² *ibid*

³ Mimura, N. and Pelesikoti, N., 1997. Vulnerability of Tonga to future sea-level rise. *Journal of Coastal Research*, pp.117-132.

⁴ Tonga 2016 Census Report [Population and Housing Census | Tonga Statistics Department \(tongastats.gov.to\)](https://tongastats.gov.to)

⁵ *ibid*

⁶ <https://tongastats.gov.to/survey/hies-survey/>












⁷ [Agriculture Census | Tonga Statistics Department \(tongastats.gov.to\)](https://tongastats.gov.to)

⁸ *ibid*

⁹ [Tonga TASP Summary Paper.pdf \(spc.int\)](#)

The Project

Project Name:	'Api ko Fatai Agricultural Development Project – Vava'u Island <i>Sustainable Development based on Sufficiency Economy</i>
Project Goal	The goal of the project is to contribute to improved and resilient livelihoods for communities of Feletoa and Mataika.
Project Objectives:	Communities are enabled to plan and manage resilient livelihood activities including addressing food and nutrition security.
Project Outcomes:	Innovative economic activities for building maintenance. Community hall for social gathering and meeting for communities, committees, women, men and youth. It is an evacuation hall in times of hazards.

Project link SDG:	           
Project link TSDF:	Pillar 1: Economic Institutions Pillar 2: Social Institutions Pillar 3: Political Institutions Pillar 4: Infrastructure and technology inputs Pillar 5: National Resources & Environment Inputs
Project link TASP:	P-3 Sustainable livelihoods and healthy foods
Project link CDP:	Component 2.1: Increased resilience of economic livelihoods based on climate smart and nutrition sensitive agricultural production systems.

Project Rationale	<p>Feletoa and Mataika have identified in their Community Development Plans the need to prioritize agricultural development. In particular, an interest in cluster farms which derives from the following reasons:</p> <ul style="list-style-type: none"> (1) not all households have access to land; (2) community find it easier to do farming in groups; and (3) allow new farmers to learn from others. <p>Food production in Feletoa and Mataika is highly vulnerable due to increasing climate variability and change. The agriculture system is constrained by altered frequency, timing and magnitude of climate variables such as precipitation and temperature. This project largely contributes to developing climate smart agricultural environment.</p> <p>The <i>theory of change</i> for this initiative is that enhanced community capacity for sustainable planning linked with investment in resilient agriculture production systems, will contribute to improved and sustainable livelihoods for vulnerable households.</p>
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Project Beneficiaries: Feletoa and Mataika	Primary Beneficiaries	
	No. of Households:	37
	No. of Men:	107
	No. Women:	80
	Total	187
	Secondary Beneficiaries	
	No. of Households:	2,708
	No. of Men:	6,759
	No. Women:	6,792
	Total	13,551

Climate Vulnerability

El Nino and recently La Nina phenomenon have only seen to the increase of frequency and severity of natural events. Tonga geological makeup coupled with its geographical situation further increases its vulnerability to natural events that include tropical cyclones, tsunamis and seismic activities. 76% disasters reported from the Pacific Islands have been from Tropical Cyclones from 1950-2004¹⁰. The warming of the oceans as part of climate change and rising GHG emissions globally has only exacerbated these conditions for Tonga.

Tropical Cyclone Gita in 2018 Category 5 saw to the damages affecting 75% of the population in mainland Tongatapu and the island of 'Eua. The damages caused by the TC amounted to the value of US\$164.1 million¹¹. Damages and loss to the agricultural sector amounted to TOP\$97.48 million, almost 50% of the productive sector¹². TC Harold of 2020 damaged 3,950 households in mainland Tongatapu and 'Eua and to some extent the islands of Ha'apai and Vava'u¹³. The event displaced 1,416 of which have sought shelter with families or evacuation centers¹⁴. A king tide decimated resorts dotted along the Western coast (a low lying and vulnerable area). Relief efforts for TC Harold were severely hampered due to constraints from COVID-19 lockdowns.



¹⁰ Bettencourt, S., Croad, R., Freeman, P., Hay, J., Jones, R., King, P., Lal, P., Mearns, A., Miller, G., Pswarayi-Riddihough, I., Simpson, A., Teuatabo, N., Trotz, U. and Van Aalst, M. (2006). Not if but when: Adapting to natural hazards in the Pacific Island region: a policy note. (World Bank: Washington.)

¹¹ Post Disaster Rapid Assessment – Tropical Cyclone Gita tonga-pdna-tc-gita-2018.pdf (reliefweb.int)

¹² *ibid*

¹³ Tropical Cyclone Harold – Initial Damage Assessment Report

¹⁴ *ibid*

Project Background



Sustainable development based on 'sufficiency economy' in Tonga

Partnerships between MORDI TT and rural communities are not new, however, the opportunity to access land through royal estate elevates the partnership to a new level of multiplication, demonstration and linkages to markets local and offshore.

Context

Food security, combating non-communicable diseases and promoting self-reliance through agricultural activities remains an important national objective for Tonga. SPC recognizes that, *"access to, and availability of, quality, hardy and nutritious food crops"* is an important element of achieving Tonga's objective and must be facilitated through partnerships to ensure a sustainable approach.

'Api-Ko-Fatai Royal Estate Agricultural Development Initiative is a tripartite partnership between His Majesty King Tupou VI, Smallholder Farmers and MORDI TT Trust established to facilitate the replication of demonstration plots, increasing planting material, advocating good agricultural practices, promoting import substitution, and most importantly access to land.

Demonstration and Multiplication Plot

Over 10,000 seedlings of taro were shipped from demonstration plots in Tonga to Vava'u and planted at the 'Api-Ko-Fatai Royal Estate. The multiplication plot plan for 'Api-Ko-Fatai includes 15 varieties of taro, 2 varieties of sweet potato, 4 varieties of manioke, 7 noble varieties of kava, and a variety each of corn and yam.

Food production is also being heavily hampered by climate change variability. The project will assist through provision of training, land preparation, fencing, provision of cultivars and so forth.

Community Mobilization

Consultation planning and community mobilization required a substantial amount of coordination and facilitation effort which included multiple consultation visits to the community, preparing them for the larger scale of work required, transiting from a purely kava focus plantation for income generation to a hybrid food security and commercial farming scale.

Behavioral change and conversion of farmers from kava planting alone to cluster farming and inter-cropping has its challenges especially convincing of the older generation who for many years have planted kava only and do not see the value of large-scale farming.

Project Beneficiaries

The project has primary and secondary beneficiaries who are directly and indirectly impacted by the project. The ripple effect of the project affects the most vulnerable households in Feletoa and Mataika in a positive way providing employment opportunities, food security, access to market and upskilling of agricultural practices. Outlined in the table below is a summary of project beneficiaries:

Primary beneficiaries

Community	Household	Female	Male	Total
Mataika	19	41	59	100
Feletoa	18	39	48	87
TOTAL	37	80	107	187

Secondary beneficiaries

Community	Household	Female	Male
Mataika	106	263	261
Feletoa	58	184	179
Greater Vava'u	2,581	6,425	6,426
TOTAL	2,745	6,872	6,866





The demonstration also features vegetables of which include; Lettuce, Cabbage, Carrots, Dwarf beans, Tomatoes, Cucumber, Sweet Corn and onionin.

Hybridization of implementation

TRIP II promotes innovation in project implementation and recognizes that implementation preference varies by geographical location, soil type and population size. While there are 3 different models implemented by island group, the objective is the same. MORDI TT recognizes it must adapt programmes to local conditions and create immersive learning platforms for all to participate in.

The model encourages partnership and promotes shared responsibility for each community's development activities- thereby ensuring equitable distribution of benefits for all. The model encourages sharing of knowledge and in turn the shared benefits are not only limited to the community itself but has a knock-on effect of positive effects to the greater island group (refer to Figure 3). These engaged communities from TRIP I also serve as champion or models to other communities not yet participating in the development of their CDP's. The successful engagement and progression of these communities encourage others to follow suit.

The table below outlines implementation arrangements undertaken by the project and the likes that follow it.

Island Group	Implementation Arrangement	Description
Tongatapu	Estate holder to Private Sector	Estate holders make direct arrangements with commercial farmers to demonstrate, multiply and export yields directly to the market.
'Eua	Private Sector to Community	Commercial farmers test new varieties of crops and transfer good agricultural practices with community small holder farmers and share planting materials for replication.
Vava'u	Estate holder to Community	Estate holder grants land access for small holder communities for demonstration and multiplication cluster farming and provides planting material from Tongatapu.

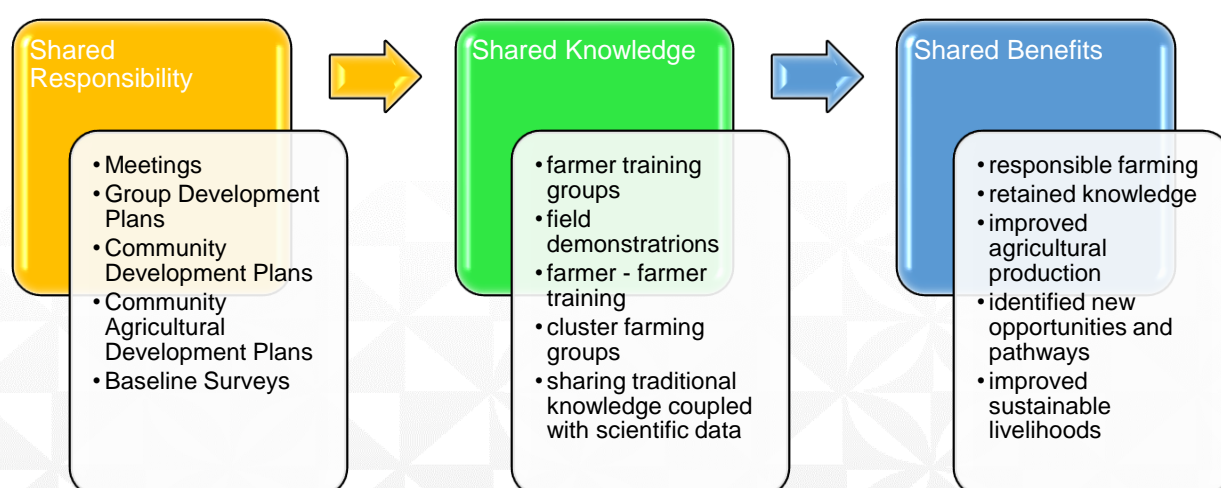


Figure 3 Model of implementation for TRIP II and project.



The success of the demo plot solely rests upon the willingness of the Community to adopt best agricultural practices. There are 4 types of Cassava, 2 types of sweet potatoes, including 7 noble grades of Kava grown at the 'Api-ko-Fatai.

Community Mobilization

Consultation planning and community mobilization required a substantial amount of coordination and facilitation effort which included multiple consultation visits to the community, preparing them for the larger scale of work required, transiting from a purely kava focus plantation for income generation to a hybrid food security and commercial farming scale.

Behavioral change and conversion of farmers from kava planting alone to cluster farming and inter-cropping has its challenges especially convincing of the older generation who for many years have planted kava only and do not see the value of large-scale farming.

Upskilling and Capacity Building

Farmer Field School (FFS) is integrated for cluster farming and vanilla plantations where farmers are trained on the full crop cycle from planting to harvesting. Cluster farms and crop plots are farmer schools where demonstration of planting, maintenance and harvesting knowledge are transferred to new farmers/growers. Furthermore, awareness of market access and consumption preference, selling vs reduction in food expenses, and increase in nutritional meals from home gardens are being promoted/advocated.

The FFS implementation plan is briefly summarized below and can further be explored in Vava'u:

Mother Trial

These are the large plots (such as the villa plot) and are considered the main trial. The purpose is to eventually capture some scientific analysis, not just an observation but to have data to prove the improvement in agricultural practices.

Replicate the Mother Trial

1 large FFS will partner with 10 FFS of small farmers (1 acre on average) where an analysis of 10 small FFS will be equivalent to the mother trial and participation rate can easily be quantified. Noting that the rate of adoption of interventions and technologies are higher on trial farmers.

Farmer Field School

Farmers and scientists will conduct the trials together on the field. For example, site and soil difference subject to rainfall, soil type etc which can address/influence more farmers' initiatives because the project cannot control what farmers grow but can influence through inventions of soil management. Shared responsibilities and resources are being adopted through a partnership approach. Farmers that value the partnership will invest and succeed, and vice versa. A critical part of the group formation is the selection/appointment of the leader who shall initially host the field visit, setting the standard of knowledge sharing and good practice. Each plot will capture discussions on achievements and improvement indicators (constructive impact); and

Station Trial

These are site specific, where farmers' affordability to plough 2 times vs 4 times are considered. This is a bottom-up approach and knowledge transfer amongst farmers as implementers through farmer-to-farmer exchange of experience and lessons learnt. The scientific justifications will fill/address any knowledge gaps.

Mr. Manase Siua a very successful Kava Grower and leading Kava distributor operating out of his home town 'Eua. During a recent visit to 'Api-ko-Fatai he was a part of a "Farmer to Farmer Exchange" with other Vava'u Kava grower.



The following trainings are relevant and appropriate for fulfilling the roles and responsibilities of cluster farmers and is being rolled out alongside demonstration and planting activities:

Training Topics	Content
1. Climate Change	<ul style="list-style-type: none"> Current Forecast Impact on Agriculture <i>(based on Meteorology Advisory Presentation)</i>
2. Crop Calendar	Facilitate the formulation of a Community Crop Calendar
3. COVID-19 Awareness	COVID-19 Awareness Campaign
4. Good Agriculture Practice	Basic training on guidelines and methods for sustainable and safe production of food
5. Climate Resilient Plants	Introduction to climate resilient material <ul style="list-style-type: none"> a. <i>mucuna</i> b. <i>taro</i> c. <i>manioke</i> d. <i>kumala</i> e. <i>banana</i>
6. Compost Training	Training on how to establish and manage compost projects that both engage and serve the communities
7. Maintenance of Fruit Trees	Training on <ul style="list-style-type: none"> a. <i>pruning of breadfruit and sandalwood; and</i> b. <i>grafting citrus</i>
8. Farming System	Training on mono-cropping vs intercropping
9. Agro-Forestry Farming Systems	Training on land-use system for sustainable agriculture
10. CCDRM Integration	Disclosure of research paper "Evaluation of Community Based Climate Change and Disaster Risk Management Integration into Community Development Plans in Fiji and Tonga". <i>(Research led by the University of the South Pacific in partnership with MORDI TT)</i>
11. Post-Harvest Training	Gender initiatives of cooking recipes, food preservation and marketing of produce, dependent on harvest outcome.



The demonstration plot as seen from the access road. It is fast becoming an attraction site for all of Vava'u.



The Community members Feletoa and Mataika tending and maintenance the crops.

Project Sustainability

The project is considering the inclusion of post-harvest processing, added value and developing small commercial production units of pickles, jams, honey, processing and freezing of fruits (for smoothies) to households, coffee bars and restaurants. The project will trial food dehydration both modern and traditional methods. Increasing post-harvest processing for both domestic and export markets are still relevant for livelihood diversification, import substitution, health promotion, and addressing the large-scale harvest wastage as a result of food/yield abundance, in particular home garden vegetables. Furthermore, alternative options, include opportunities to export root crops to the Tongan diaspora in Hawaii, USA, New Zealand and Australia. MORDI TT's existing project partnership with Tokyo University of Agriculture provides support in nutrition content testing.

Relationship between the project and the COVID-19 Response Plan

The COVID19 global pandemic presents new challenges and is an opportunity for reflection especially in the agricultural and private sector. As prices of imported goods and services increase, the project presents an opportunity to maximize on local resources, ensuring an increase in local production and supply, and strengthening import substitution initiatives.

A COVID19 Assessment Report on the impacts on farmers, market vendors and consumers in Tonga, Fiji and Samoa, identifies the following results;

- Farmers in Tonga, Fiji and Samoa reported reduced farm access, difficulties in sourcing agricultural inputs (i.e. farm chemicals, seed and planting material, and farm equipment), hired farm labour costs had increased, and that there was less hired labour available. Farmers in Fiji and Samoa were more likely to identify an issue in sourcing seed and planting material, whereas farmers in Tonga were more likely to identify farm access and labour constraints.
- Farms on the main island of Tongatapu, particularly those in the Nukunuku district were more likely to report difficulties in selling their crop.
- Farms on 'Eua Island were more likely to have problems sourcing farm chemicals and travel restrictions.
- Postharvest loss has increased in Tonga, Fiji, and Samoa as a result of COVID-19. Postharvest loss was particularly problematic amongst farmers in Fiji, and market vendors in Tonga and Fiji.
- Vendors in Tonga, Fiji and Samoa reported issues in sourcing product, that there were fewer customers and that customers were purchasing less fruits and vegetables.
- Vendors on Tongatapu Island were more likely to report problems sourcing product and that consumers were buying less, compared to vendors on 'Eua or Vava'u Islands.
- Most vendors in Tonga and Fiji had not changed where they sourced product from as a result of COVID-19 restrictions.
- Most consumers in Fiji (64%) and to a less extent Tonga (43%) found it more difficult to buy fresh fruits and vegetables, highlighting travel restrictions, increased prices, fewer types of fruits or vegetables to purchase (possibly reflecting less imported product) and reduced product quality and freshness.
- Almost a quarter of market vendors in Tonga (22.9%) indicated that they had reduced their consumption of fruits and vegetables as a result of COVID-19. Females in Fiji (18.6% of all Fiji survey participants) and Tonga (16.5% of all Tongan survey participants) were more likely to have reduced their consumption of fresh fruits and vegetables

Thematic message from the King



The King has been steadfast in his campaign to ensure food security, improved nutrition, sustainable agriculture and action towards adapting and mitigating climate change are priorities to development for Tonga. His Majesty has addressed the nation in his speeches to the Parliament, he has spoken in various international platforms including but not limited to the opening of the 38th Session of the Governing Council for IFAD, and the UN General Assembly 72nd Session.

Over the years the nation has witnessed devastating natural events that have hampered sustainable development.

"We have and continue to experience the negative impacts of ocean degradation to our livelihoods and culture due to anthropogenic activities and interrelated devastating effects of climate change. We already actively contribute to implementation of SDG 14." His majesty addresses the UN General Assembly.

"To us and our people successful implementation of SDG 14 is critical for the pathway towards sustainable development and its interconnection with achieving other goals such as those related to food security, water and sanitation, health, economic growth and sustainable production and consumption."

"Finally," he said, "sustainable development, whether it be, [among others], through good health and well-being, climate action, life below water, or affordable and clean energy, can only be realized through international peace and security."

"We continue to look to the Security Council to protect the innocent from threats to international peace and security in whatever form, be they traditional threats such as armed conflict, or newer threats like climate change, to ensure no one is left behind," concluded King Tupou VI.

In His Majesty's closing remarks of 2018/2019's parliamentary session, King Tupou VI's first highlighted key area was the importance of preparedness now that Tonga has to endure the effects of climate change¹⁵. Addressing the impacts of climate change is paramount as it directly affects families, education, the private sector, communication and reputation, as well as State and Religion.

The challenges faced as natural disasters become more severe and recovery is slower, addressing the impacts of climate change is paramount as it directly affects all sectors from household level to nation-wide level economically, socially and politically.

The project is a vehicle, pushing the agenda for building resilient communities to the impacts of climate change. The royal estate is freed up allowing the communities of Feletoa and Mataika to participate in agricultural production and will also serve as the largest multiplication plot to date, following is another royal estate located in South and North Villa. These initiatives are one of the many the King has taken leadership in while collaborating with many agents willing to make transformational changes to the agricultural sector.

¹⁵ [King's closing remarks of parliamentary 2018/2019 sessions highlight nine key areas](#)



Set-up of posts for dragon fruit cuttings to use as support as it grows.

POLICY RELEVANCE

Sustainable Development Goals

'Api-ko-Fatai Agriculture Development Initiative directly addresses and contributes to 11 Sustainable Development Goals (SDGs) which is an urgent call for action by all United Nations member countries – developed and developing – in a global partnership of the 2030 Agenda for Sustainable Development.

Goal 1 No Poverty – End poverty in all its forms everywhere.

The data gathered b MORDI TT further supported by HIES report from the Department of Tonga statistics show that up to 80% of rural communities are dependent on agriculture¹⁶. Both communities rely on agriculture for subsistence purposes and surplus is sold in local markets. The initiative will enable the continuation of these practices in efforts to alleviate poverty.

The initiative also features a demonstration plot that will grow other agricultural crops that are attractive as cash crops such as the kava plants. Other agricultural inputs are available for cultivation that will assist with not only the consumption of the households but for the Vava'u population in general if yields exceed needs of the households.

Goal 2 Zero Hunger – End hunger, achieve food security and improved nutrition and promote sustainable agriculture.

With proper agricultural skills, the cluster farming groups will be able to maximize their agricultural yields especially when climate change is ever changing conditions for the farmers. 2020 to first quarter of 2021 has predicted by the Bureau of Australian Meteorology to be La Nina season¹⁷. La Nina brings about increased rainfall, warmer ocean temperatures and increased likelihoods of frequent and increased impacts of tropical cyclones for Western Pacific and Northern Australia¹⁸.

The initiative is to further drive efforts of food security especially to the communities of Feletoa and Mataika whose community members are landless and with nascent resources and agricultural inputs. Furthermore, MORDI TT has invested in expanding climate and pest resilient crops of which has been piloted in demonstration plots in Villa Royal Estate in Tongatapu. These cultivars have been multiplied from a previous joint venture between SPC (CePaCT) and MORDI TT.

Goal 3 Good Health – Ensure healthy lives and promote well-being for all at all ages

The HIES report further explains that 36% of diets of outer islands are purely derived of root crops – with 9% derived of meat consumption¹⁹. This far outweighs the diet of those in urban Nuku'alofa and Tongatapu in general.

The implications for investment in this project will see to the increased availability of fresh produce from root crops, furthering healthier diets for the households and be beneficial for the greater population of Vava'u and surrounding communities.

Goal 4 Quality Education – Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.

With increased agricultural products and expansion into local market, the households are able to increase their income generation. With an increase in economic income for the households they will be able to provide better education for their household members.

The skills being taught by MORDI TT through training and use of demonstration plot within the initiative – promotes knowledge transfer. The MORDI staff utilize scientific knowledge, traditional farming skills as well as years' worth of knowledge and skills gained from working with experts and local farmers. The initiative is open for all households to join from the communities of Feletoa and Mataika, which essentially

¹⁶ <https://tongastats.gov.to/survey/hies-survey/>

¹⁷ <http://media.bom.gov.au/social/blog/2507/what-la-nia-means-for-australias-severe-weather-season/>

¹⁸ ibid

¹⁹ <https://tongastats.gov.to/survey/hies-survey/>

is an entry point for those wanting to participate in farming – there are no barriers to gender, age or disability and provides a great learning platform for all.

Goal 8 Decent Work and Economic Growth – Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.

As previously explained, the initiative ties into provision of decent work and the promise of economic growth for the communities of Feletoa and Mataika. Of growing concern for most nationals are the unemployed and high school drop-out youths of rural communities. Many have identified in stakeholder meetings and surveys that the youth are labor force for the communities. The initiative will provide pathways for youths and all to find work in agricultural production to even marketing.

There are also opportunities for the convergence of the youth's skills and expertise in ICT to be incorporated into the value chain of agricultural production.

Goal 11 Sustainable Cities and Communities – Make cities and human settlements inclusive, safe, resilient and sustainable.

Reports of Gender Based Violence (GBV) have been around the issue of household income²⁰. If the initiative is able to provide a sustainable pathway for households to alleviate these pressures, then it is envisaged that families will be safe. The initiative as aforementioned will provide inclusive opportunities for all and coupled with efforts for training and skills investment – this SDG will further be supported through the project's efforts.

Food security in the face of a warming world will contribute to resilient communities. Investing in communities to build their resilience to climate change through provision of skills and agricultural input that are pest and disease resistant also adds to these goals of resiliency and sustainability. The production of these foods will promote and bolster local food systems in Vava'u. It will provide communities to food alternatives that address Non-Communicable Diseases (NCD's) which is a leading cause of deaths for the Tongans.

A clear demonstration of resiliency has been the ability of the communities to cope with the shockwaves induced by COVID-19. Shipping routes have always been inconsistent in Tonga affecting exports and imports of goods. The communities have been able to withstand pressures developed countries face during the global pandemic speaking to the resilience of the Tongan rural communities.

Goal 12 Responsible Consumption and Production – Ensure sustainable consumption and production patterns.

The project will provide the households of Feletoa and Mataika with training for responsible production of crops that in turn will ensure sustainable consumption. A post-harvest study conducted by a collaboration between MORDI TT and the University of Sunshine Coast (USC) that studied post-harvest loss along the value chain. The valuable insights of which will be introduced to the cluster farmers to save food wastage from production.

Goal 13 Climate Actions – Take urgent action to combat climate change and its impacts.

Climate change has further complicated and seriously hampered food production, however smart and sustainable agriculture can still provide a way forward. As previously discussed, MORDI TT will invest in promoting and encouraging adaptation and mitigation measures to the farmers of the initiative. The initiative will also provide.

In response to climatic variances, newer varieties of crops have been introduced such as the Peruvian Manioc that is ready to harvest in 3 months. This is of great importance especially post disaster when prolonged droughts and heavy rainfall can greatly impact root crops.

²⁰ <https://tongastats.gov.to/survey/mics-survey/>

²¹ <https://evaw-global-database.unwomen.org/-/media/files/un%20women/vaw/vaw%20survey/tonga%20vaw%20survey.pdf?vs=2915>

Goal 15 Life on Land – Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

By teaching the farmers in this initiative to maintain smart agricultural practices, teaches them to protect the environment and reduces unsustainable farming practices that degrades the land and has adverse effects on the environment.

We recognize the impact heavy rainfall can have whereby leaching of nutrients occur, run off from land can impact water resources (underground aquifers are major sources of national water) and its impact on marine biodiversity as shown to be the case with banana plantations affecting the Great Barrier Reef in Australia²². It has been shown that fertilizer run off has fed the explosion of coral eating Crown of Thorns population²³.

Goal 16 Peace, Justice and Strong Institutions – Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.

The project will strengthen food security that is crucial to maintaining peace and decreases likelihoods of conflict. It also plays a role in stemming out migration due to food insecurity, Nuku'alofa is already experiencing a burgeoning population within a vulnerable area.

It is clear that the project plays a part in building resilience, reinforcing peace and stability, promoting sustainable livelihoods. The Community Development Plans of which the two communities have engaged with also empower the communities in participatory approaches making their voices be heard through development planning.

Goal 17 Partnerships for Goals – Strengthen the means of implementation and revitalized the global partnership for sustainable development

TRIP II learned from TRIP I that the remote rural communities can be empowered to become more self-reliant and are often sources of innovative solutions in identifying local solutions.

The partnerships MORDI TT has established with community, academia, private sector, NGO's, Church affiliates, Government, International Donor Agencies have all converged in sharing knowledge to support the implementation of the project.

Furthermore, partnerships are valued and encouraged through this initiative. The two communities are able to share knowledge and practices of which through M&E their stories are told to external stakeholders that can galvanize further assistance and cooperation.

²² <https://www.qld.gov.au/environment/agriculture/sustainable-farming/reef/reef-regulations/producers/bananas>

²³ <https://www.qld.gov.au/environment/coasts-waterways/reef/preserve-the-wonder/fertiliser-runoff>



The demonstration plot also features timber trees (variety – Pacific Kauri) which planted to mark the farm boundaries and also act as wind breaker for other crops planted.

Tonga Strategic Development Plan

The Tonga Strategic Development Plan (TSDF) 2015 – 2025, sets out Tonga's development priorities which is largely implemented by development partnership programs including TRIP II in the sectors of community development and agriculture.

The TSDF promotes inclusive and sustainable development to meet the needs of the present without compromising the ability and opportunities of future generation. Seven (7) National Outcomes in pursuit of “a more progressive Tonga supporting a higher quality of life for all” National Outcome B is “a more inclusive, sustainable and balanced urban and rural development across island groups.”

The TSDF recognizes that:

- Population dispersion across small islands presents challenges for inclusive development through access to infrastructure and services; and
- There is a need for an improved balance, and therefore resource allocation, between urban and rural development across the island groups.

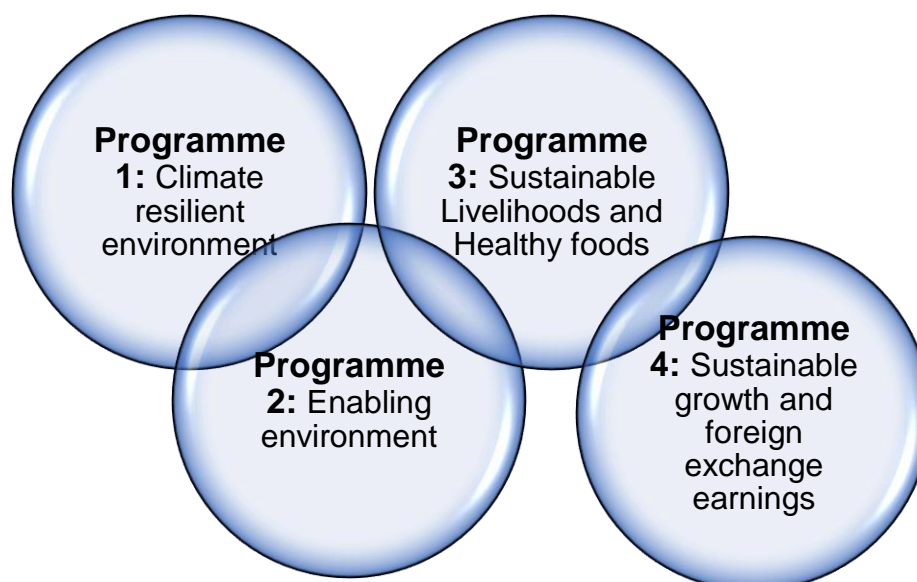
The project contributes to the following list of National Outcomes²⁴:

Pillars	National Outcomes
1. Economic Institutions	1.2 Closer public/private partnership for economic growth
	1.3 Strengthening business enabling environment
	1.4 Better access to, and use of, overseas trade and employment, and foreign investment
2. Social Institutions	2.1 Improved collaboration with & support to civil society organizations and community groups
	2.2 Closer partnership between government, churches & other stakeholders for community development
	2.3 More appropriate social and cultural practices
	2.4 Improved education and training providing life time learning
	2.5 Improved health care and delivery systems (universal health coverage)
	2.6 Stronger integrated approaches to address both communicable and non-communicable diseases
	2.7 Better care & support for vulnerable people, in particular the disables
	2.8 Improved collaboration with the Tongan diaspora
3. Political Institutions	3.3 Appropriate decentralization of government admin with better scope for engagement with the public
	3.6 Improved collaboration with development partners ensuring programs better aligned behind government priorities
4. Infrastructure & Technology Inputs	4.5 Improved use of research & development focusing on priority needs based on stronger foresight
5. National Resources & Environment Inputs	5.1 Improved land use planning, administration & management for private and public spaces
	5.2 Improved use of natural resources for long term flow of benefits
	5.4 Improved resilience to extreme natural events and impacts of climate change

²⁴ [Strategies and Plans | Ministry of Finance www.finance.gov.to/index.php/strategicplans](http://www.finance.gov.to/index.php/strategicplans)

Tonga Agriculture Sector Plan

The TASP that came into effect in 2016 has 4 programmes which contribute to achieving National Outcome B for a balanced urban & rural development across all island groups, and aims to maximize agriculture's contribution to Tonga's economic growth, food security and nutrition, import substitution and sustainable livelihood in the face of a changing global economy, climate change and increased natural disasters.



Adapted from TASP: 4 sub-sectors and programmes TASP focuses on²⁵

Programme 1: Climate Resilient Environment

The project looks at strengthening subsistence farming with a mixture of semi-commercial farming. It is supporting diverse root crops resilient to climate change that exacerbates pests and diseases and climate variability. These cultivars have been passed on from previous engagement with SPC (CePaCT) thereby creating climate resilient farming systems and reinforcing food and nutritional security and improving livelihoods. The immediate benefits will be seen in the two communities but a greater onset of benefits is predicted to be felt in the greater Vava'u and all of Tonga.

In combination with investment in diverse agricultural inputs and resources for the farmers, the project will also invest in teaching the necessary requirements for the farmers to practice agricultural farming systems that will preserve key natural resources and decrease degradation to vital ecosystems. Regular training and examples taught through Farming Schools and through demonstration plots will lead the way in ensuring preservation of the environment.

Programme 3: Sustainable livelihoods and healthy foods

The project will allow the target communities the opportunity to market surplus products to local markets and provides a pathway to engage with private business to link to formal markets offshore. The root crops provide a great source of vitamins to the diet. These have been a large part of the Tongan diet from time immemorial. The prevalence of NCD's amongst the Tongan population has been due to additional consumption of imported foods that are high in fat such as the import of mutton flaps.

²⁵ [Tonga TASP Summary Paper.pdf \(spc.int\) https://pafpnet.spc.int/attachments/article/613/Tonga%20TASP%20Summary%20Paper.pdf](https://pafpnet.spc.int/attachments/article/613/Tonga%20TASP%20Summary%20Paper.pdf)

Community Development Plan (CDP's)

The Community Development Plans (CDPs) use a participatory approach by which the communities are mobilized by the District and Town Officer. The participants in the planning phase must meet a threshold requirement of men, women, youth and representatives of disability. This democratic decision encourages the communities to be able to prioritize their needs. The planning phase is divided into distinct groups for men, women, youth and disability, this is done to reassure the groups to contribute and have their voices be heard rather than one person dominating the whole process.

When the Group Development Plans are collated, another round of discussions as a whole community takes place to agree upon the grading of their priorities. The CDP is the end result of these engagements, it is purely driven by the community for the community.

Upon further investigation of Mataika and Feletoa CDP's, it reflects the priority basic needs of both communities with poor agricultural tools and access to land. These have been identified as barriers to farmers expanding their yearly crop and advancing food and nutrition security. TRIP I played an important role in addressing the most important priority needs of the community including water supply systems, provision of a community hall/evacuation center. Currently, TRIP II plays a facilitating role in linking farmers to estate holders to address the project-related priorities already outlined.

The village of Mataika in their CDPs²⁶ ranked poor agricultural tools and access to land as priority 6, 8 and 9 respectively with water and sports field as a higher priority. Please see page 39 for details.

The village of Feletoa in their CDPs²⁷ ranked agricultural tools and plantation roads as priority 1 and 6 respectively with water, community hall/evacuation center and roaming livestock as a higher priority. Please see page 35 for details.



HM King Tupou VI during Royal visit to 'Api-ko-Fatai Demonstration Plot. The Royal Estate has granted land access for communities of Feletoa and Mataika. As expressed in their CDP's land access has been a constraint to Agriculture.

²⁶ Vava'u CDP | [tlocalg \(tongalocal.gov.to\)](http://tlocalg.tongalocal.gov.to) www.tongalocal.gov.to/vavau-community-development-plans

²⁷ Vava'u CDP | [tlocalg \(tongalocal.gov.to\)](http://tlocalg.tongalocal.gov.to) www.tongalocal.gov.to/vavau-community-development-plans



Vanilla creepers are planted alongside fig tress for support. Passionfruit cuttings are also grown in this lot which are intercropped with taro.

Challenges of the Agriculture and Rural Development Sector

	Core constraints to agriculture and rural development	Project interventions
1.	Seasonal worker programmes in Australia and New Zealand result in reduced availability of farm labour particularly youth - and returnees often do not re-engage in the sector, resulting in declining land use and production.	The large-scale production of agricultural produce will demonstrate that small holder farmers can earn equivalent to what they earn on the seasonal workers program. The initiative will provide an opportunity for returnee seasonal workers to re-engage in the sector and utilize agricultural skills they have obtained from the labor mobility program.
2.	The land titling and allocation system is not conducive to a more modern sector, and results in limited investment in longer-term crops.	The tripartite arrangement is a more sustainable approach with the adoption of the sufficiency economy philosophy (SEP). Additional challenges are forecast if land is allocated but landholders do not have the right skills to management and guarantee investment in long-term crops.
3	Access to working and investment capital is constrained - past failures with export crops (and loss of confidence between growers and exporters) are partly to blame for this situation.	TRIP II provides training, resources and planting material for growers and exporters. It plays an important role in linking growers to exporters. And provides training on value chain for farmers, and familiarization training for exporters to inform them and increase their understanding on how growers operate in the community level.
4.	Technical and management skills of District and Town Officers (DOs and TOs, who are elected Government representatives in communities) remain variable, with those engage in the TRIP I having improved skills, but the remainder requiring increased support and capacity building.	The community engagement and participation is led by the District Officer of Leimatu'a and has become the model for other DOs and TOs from other villages/districts. The project provides leadership training and ongoing technical and management support.
5.	The widespread dependence on rain-water, lack of rural water storage and reticulation, coupled with limited groundwater reserves and potential overuse of irrigation, and a poor understanding of the current soil fertility status are two unfolding constraints.	Mulching demonstrations are conducted to share knowledge on how it adds plant biomass to the soil surface, act as a weed control, maintain soil moisture (drought control), buffer for insect pests and diseases (staking of yams), and improvement agent for soil conditions and structures.
6.	Varying levels of remittances in accordance with world economic conditions - and limited investment of these funds in the agriculture sector.	Despite the varying level of remittances, the CDPs raises the importance of recognizing that community level resilience is dependent on first dealing with communities' basic needs (social needs) to increase their adaptive capacity and further consider investment in agriculture.

	Core constraints to agriculture and rural development	Project interventions
7.	Strong rural to urban drift from the outer island to Tongatapu - resulting in declining farm labour and high youth unemployment.	Replicating cluster and large-scale farming linked the self-reliance and commercial opportunities in the outer islands means people will stay back in the outer islands and rural areas and farm their land because resources, planting material and skills transfer is being provided.
8.	High sea transport costs from the outer islands to Tongatapu mean that only non-perishable and high value products can be sold in the main domestic and/or export markets.	Low volume, high value crops such as vanilla is being included in the project with also a focus on import substitution.
9.	The Ministry of Agriculture, Food, Forestry and Fisheries' (MAFFF's) agriculture extension services are under pressure from declining operations budget and an aging work force.	The opportunity to bridge and link the working relationship with key stakeholders to strengthen the extension services to growers and farmers have been observed over the years. While there are difference perspectives of how extension services should be delivered, the project has fostered the relationship with MAFF in delivering joint trainings in data collection and exchange of planting material (new and original varieties). A shift from the traditional method of extension services (a group of technical experts leading the FFS) to the new approach of farmer-to-farmer shared knowledge (based on traditional knowledge and experiences from the field) is been promoted. The project's role as a facilitator is crucial to providing the enabling environment for this transition of implementation approach.
10.	Free roaming livestock (pigs and cattle) mean that expensive, secure fencing is essential if agriculture production is to increase.	TRIP II provides fencing as part of the project.
11.	Lack of crop and livestock genetic diversity, and limited adoption of new farming systems, result in stagnant production levels and increasing land degradation.	New varieties, inter-cropping and Good Agriculture Practice (GAP)/Farmer Field School (FFS) training.
12.	Tropical cyclones and droughts impact directly on agricultural productivity and on the mental state of farmers.	MORDI TT are first responders in events of natural disasters and actively participates in initial rapid assessments, followed by recovery plans and implementation.
13.	Infrastructure such as roads, water tanks and wharves (particularly on the outer islands) are generally in a state of disrepair, compounded by heavy seasonal rains and cyclones.	'Api-ko-Fatai Royal Estate is located in the village of Mataika, Vava'u and is directly accessed from the main roads, namely Tu'i Road and Laifone Road. The adjacent road connecting these two roads have been upgraded as part of the Government's Road upgrade and maintenance project.
14.	Land tenure issues, land rights are often captured through inheritance and by eldest son. Tongan diaspora are not willing to relinquish titles to families in Tonga. Landless males are left contesting land with females.	The royal estate has been delegated for the use of the two communities. This is solving the issue of looking for land in order to increase food security for households. It is available for cluster groups of same interests that includes youth and women.

Feletoa Community Development Plan 2019 ~ 2022

Lisi 'o e Palopalema (List of Problems Prioritised)	Ngaahi me'a 'oku ne fakatupunga(Causes)	Ngaahi Uesia (Impacts)	Ngaahi Solova'anga (Possible Solutions)	Ngaahi me'a 'e hoko (Possible Output)	Ngaahi Ola (Possible Outcome)	Fakafe'atungia (Threat)	Kaunga Ngāue (Partners)
1. 'Ikai ha fale hūfanga (No evacuation centre) / 'Ikai ha holo fakakolo (No community hall)	<ul style="list-style-type: none"> Si'i e ivi fakapa'anga (Lack of fund) Mamafa totongi e naunau langa (High cost of construction materials) Mamafa hono tute e koloa (High cost of tariff) Si'i e kole tokoni (Lack of seeking for assistance) 'Ikai ha naunau (No equipments) 'Ikai ha kau ngāue fakatufunga (No constructors) 'Ikai ha kōmiti langa holo (No hall construction committee) 'Ikai ke ngāue fakataha (Not working together) 	<ul style="list-style-type: none"> 'Ikai ha feitu'u malu 'e hola ki ai e kakai he taimi afa (No evacuation centre during cyclone) Mole pa'anga he totongi holo (Money wasted on hiring other halls) Uesia ngaahi siasi mo e holo kehe he fakataha 'a e kolo (Churches activities and other halls are being affected) 'Ikai lava fakataha fakakolo (Cannot carryout community meetings) Uesia mo'ui e kakai he taimi tō ai fakatamaki fakaenatula (People's life is affected during natural disasters) Uesia e lalanga finematu'a (Affect women's activity – weaving) 	<ul style="list-style-type: none"> Kole tokoni naunau langa (Seek assistance for construction materials) Feinga pa'anga (Fund-raise) Ke holoki e totongi e tute koloa (Decrease in tariff) Kumi ki ha fale'i ki he kole tokoni fale hūfanga (Seek advice with assistance for an evacuation centre) Langa e holo (Construction of hall) Fokotu'u mo e kōmiti langa holo (Formulate construction hall committee) Feinga pa'anga fakakolo e.g. koniseti, kalapu (Fund-raise) Ngāue fakataha 'a e kolo (Community working together) 	<ul style="list-style-type: none"> Ma'u naunau langa (Received construction material) Ma'u pa'anga ngāue 'a e kolo (Received money for the community) Ma'ama'a tute (Tariff decreased) Lahi taukei 'a e kolo ki he kole tokoni (More skilled in seeking for assistance) Ma'u e holo (Hall been constructed) 'I ai e kōmiti langa holo (Formulated construction hall committee) 	<ul style="list-style-type: none"> Fiefie e kolo (Happy community) Malu mo hao mei he Matangi (Safe and secured from strong wind) Lava ai mo e ngaahi ngāue kehe 'a e kolo (Other working activities for the community are also being held out) Maa mo faaitaha e kolo (Togetherness in the community) Lelei e tu'unga fakaako fānau e.g. ngāue'aki e holo ki he poako (Better standard of education for students, eg. the hall is used for the night classes) Fiemalie mo tau'atāina fakahoko lalanga e finematu'a (Women in the community satisfied and freely carryingout their work) Tu'umālie e kakai e fonua (Wealthier community) 	<ul style="list-style-type: none"> Afa (Cyclone) Putu (Funeral) Nounou fakapa'anga (Financial Hardship) 	<ul style="list-style-type: none"> PTH (Pacific Timber and Hardware) Aust Aid NZ Aid Custom MORDI TT Trust (Mainstreaming of Rural Development Innovation Tonga Trust) Kōmiti Fakakolo (Community committee) Kakai kolo (Community) Fakafofonga Falealea (Representative to Parliament) Sonasi (EM Jones) Pule Fakavahe (District Officer) Ofisakolo (Town Officer) Kainga muli (Relatives in overseas) MIA (Ministry of Internal Affairs) JICA (Japan International Cooperation Agency)
2. Si'isi'i mo maumau e tākaki'anga vai inu / vai fakakolo (Fewer and damaged drinking / community water storage) / Si'i tākaki'anga vai (Tangikē vai) (Lack of water tank)	<ul style="list-style-type: none"> Si'i tākaki'anga vai inu (Lack of drinking water storage) Motu'a sima vai inu (Drinking water tanks are old) Si'i ma'u'anga pa'anga 'a e kolo (Community have fewer source of money) Matemate e pamu vai fakakolo (Pump water not well functioned) Si'i e matavai kolo ki he ma'u'anga vai (Fewer pore holes in the community) Maumau sima (Damaged water tanks) Kovi e fakatali (Poor condition of gutters) Mama e filita vai (Damaged water tanks) 	<ul style="list-style-type: none"> Mahamahaki kakai e kolo (Community prone to be unhealthy) 'Uli ma'u'anga vai (Unclean water source) Lahi e mole pa'anga he fakatau vai (More money wasted on purchase water) Uesia e ako fānau (Affects students' education) Uesia e fanga monumanu (Affects the livestock) Uesia e ngāue faka'aho kakai e kolo (Affects people's daily work) 	<ul style="list-style-type: none"> Kole tokoni tangikē vai inu mo e fakakolo (Seek assistance for drinking / community water tank) Kole ha misini vai fo'ou (Seek for new water-pump machine) Feinga pa'anga fakakolo (Fund-raise) Ngāue fakataha kolo (Community working together) Kumi ha matavai fo'ou (Drill new pore holes) Fakalelei'i / fakaivia e ngāue 'a e kōmiti (Empower committee) 	<ul style="list-style-type: none"> Ma'u tangikēvai mo e vai fakakolo (Received drinking and community water tank) Ma'u misini vai fo'ou (Received water-pump machine) 'I ai e pa'anga hū mai 'a e kolo (Income flows in the community) Fakatali fo'ou (New gutters) 	<ul style="list-style-type: none"> Mo'ui lelei kolo (Healthy community) Fiefie e kolo (Community live in harmony) Tau'atāina kakai ki he 'enau takitaha ma'u'anga vai (People in the community feel free to use their own water storage) Si'isi'i fakamole he fakatau vai (Less money spent on purchasing water) Feau e fiema'u vai 'a e fāfili (Fulfil family need for water) Lele lelei e ako (School well operated) Mo'ui lelei fanga monumanu (Healthy livestock) 	<ul style="list-style-type: none"> Matangi fakaenatula (Natural Disaster) Putu (Funeral) Nounou fakapa'anga (Financial hardship) 	<ul style="list-style-type: none"> MOH (Ministry of Health) MJ Water Tank MORDI TT Trust (Mainstreaming of Rural Development Innovation Tonga Trust) Kainga Feletoa he kolo (Feletoa community) Ofisa kolo (Town Officer) Pule Fakavahe (District Officer) US Aid Poate Vai (Tonga Water Board) Kāinga nofo muli (Relatives in overseas) Kau fakafongfa falealea (Representative to Parliament)

Lisi 'o e Palopalema (List of Problems Prioritised)	Ngaahi me'a 'oku ne fakatupunga(Causes)	Ngaahi Uesia (Impacts)	Ngaahi Solova'anga (Possible Solutions)	Ngaahi me'a 'e hoko (Possible Output)	Ngaahi Ola (Possible Outcome)	Fakafe'atungia (Threat)	Kaunga Ngāue (Partners)
3. 'Uli 'ātakai (Unclean environment) / Uesia mo'ui he toileti Tonga (Health affected by pit toilet) / 'Ikai ha me'a ngāue ke tauhi'aki e kolo (Misini kosi) (No equipment to look after the community with -lawn mower) / Uli'i e 'ātakai (fakataka puaka) (Unclean environment - free roaming pigs)	<ul style="list-style-type: none"> ▪ Lahi fakataka puaka (Increase number of roaming pigs) ▪ Si'i 'ā puaka (Fewer pigsty) ▪ 'Ikai ha me'angāue fakama'a kolo (No community cleaning equipments) ▪ Si'i ivi fakapa'anga (Lack of fund) ▪ Mamafa e koloa langa (High cost of construction materials) ▪ 'Ikai ke lahi taukei kole tokoni (Not much skills on seeking for assistance) ▪ Hala ha kōmiti kene tokanga'i 'a e 'ātakai (No environment committee) ▪ 'Ikai ke faaitaha e kolo (Community disunity) ▪ Fiekaia fanga puaka (Pigs not well fed) ▪ 'Ikai malu e 'ā (Pig's fence not secured) ▪ Hala ha pini veve (No public rubbish bins) 	<ul style="list-style-type: none"> ▪ Mahamahaki kakai kolo (Community prone to disease) ▪ 'Ikai ke matamata lelei kolo (Unpleasant image of the community) ▪ Lahi kaiha'a puaka (Increase in theft) ▪ 'Uli e ātakai (Unclean environment) ▪ Mole tau'atāina fakataautaha (Lost of individual freedom) ▪ Maumau ngoue (Damaged crops) ▪ Kaiha'a (Theft) ▪ Mole matamatalelei (Unplease community image) 	<ul style="list-style-type: none"> ▪ Fakatau uaea 'ā puaka (Purchase fencing wires for pigsty) ▪ Fakatokosi'i fanga puaka (Reduce number of pigs) ▪ Kumi me'angāue fakama'a kolo (Procure community cleaning equipments) ▪ Kole tokoni ngaahi 'ā puaka (Seek assistance on constructing pigsty) ▪ Feinga pa'anga (Fund-raise) ▪ Kumi ha fale'i ki he founga kole tokoni (Seek advice with asking assistance) ▪ Fokotu'u e kōmiti ngoue (Formulate agriculture committee) ▪ Fa'u lao ki he 'ātakai (Establish law for the environment) ▪ Fafanga e fanga puaka (Feed pigs on daily basis) ▪ Kole tokoni pini veve (Seek assistance for public rubbish bin) 	<ul style="list-style-type: none"> ▪ Ma'u 'a e uaea 'ā (Received fencing wire) ▪ Ma'u me'angāue fakama'a kolo (Received community cleaning equipments) ▪ Ma'u tokoni naunau langa (Received construction materials) ▪ 'I ai pa'anga ngāue 'a e kolo (Income to the community) ▪ 'I ai kakai kolo 'oku nau taukei he kole tokoni (More people in the community with skills in seeking for assistance) ▪ 'I ai kōmiti 'oku ngāue ki he palopalema (Existing committee for proplems) ▪ Ma'a e 'ātakai (Clean environment) ▪ Ma'u pini veve (Receive public rubbish bins) ▪ Ma'u 'ā puaka (Constructed pigsty) 	<ul style="list-style-type: none"> ▪ Faka'ofa'ofa e kolo (Beautiful environment) ▪ Ma'a e 'ātakai e kolo (Clean environment of the community) ▪ Tokolahi kau folau 'eve'eva 'ahia e kolo (More tourists attraction) ▪ Mo'ui lelei kakai e kolo (Healthy community) ▪ Fiefia e kakai kolo (Community live in harmony) ▪ Fakalakalaka ki mu'a e mo'ui haisini e kolo (Hygiene lifestyle more improved for the people in the community) ▪ Longo mo'ui kakai e kolo (Community be active) 	<ul style="list-style-type: none"> ▪ Putu (Funeral) ▪ Mahaki faka'auha (Deadly disease) ▪ Afa (Cyclone) ▪ Hala ha kōmiti (No committee) ▪ Hala he pa'anga (No fund) 	<ul style="list-style-type: none"> ▪ Kakai kolo (Community) ▪ 'Ofisa kolo (Town Officer) ▪ MOH (Ministry of Health) ▪ PTH (Pacific Timber and Hardware) ▪ Potungāue Takimamata (Ministry of Tourism) ▪ JICA (Japan International Cooperation Agency) ▪ US Aid ▪ Ngaahi fāmilī mei muli (Families from overseas) ▪ Ngaahi kalapu (Clubs) ▪ Sonasi (EM Jones) ▪ Kōmiti Kakai Fefine (Women's Committee) ▪ Potungāue Takimamata (Ministry of Tourist) ▪ 'Ofisakolo (Town Officer) ▪ Pule Fakavahe (District Officer) ▪ MIA (Ministry of Internal Affairs) ▪ Ngaahi siasi (Chūrches)
4. Tokakovi hala mo e si'si'i maama hala (Poor road construction and lack of street lights) / 'Ikai ha side walker ('Ikai ke 'i ai ha side walk) / 'Ikai ha maama hala he 'u hala loto (No street lights for the inside roads)	<ul style="list-style-type: none"> ▪ Si'i'si'i ivi fakapa'anga (Lack of fund) ▪ Mamafa maama hala (High cos of street lights) ▪ Hala ha kōmiti ke ne tokanga'i e maama hala (No committee to look after the street lights) ▪ Mamafa totongi 'a e loli maka (High cost of gravel truck) ▪ Lahi hono maumau'i he ngaahi palau (More damages caused by tractors) ▪ Fasi'i e hala pule'anga (Main road too narrow) 	<ul style="list-style-type: none"> ▪ 'Ikai toe lahi 'a e 'alu ki 'uta (Fewer farmers go out to the bush) ▪ Faingata'a e fefononga'aki (Difficulties in transportation) ▪ 'Ikai malu kakai fefine he 'alu po'uli (Females not safe when travelling at night time) ▪ Vaoa 'api 'uta (Abandoned bush allotment) ▪ Fakapo'uli e kolo (Community unilluminated) ▪ Anoano e hala Pule'anga (Swampy road) ▪ Fakatu'utāmaki ki he fefononga'aki (Dangerous for transportation) ▪ Lahi e kaiha'a (More theft) 	<ul style="list-style-type: none"> ▪ Koniseti feinga pa'anga (Fund-raise) ▪ Fakatau ha maama hala (Procure street lights) ▪ Kole ha ki'i totongi makehe ma'ae kolo fekau'aki moe loli maka (Ask for discount on gravel trucks) ▪ Fokotu'u e side walker (Constructed side walker) ▪ Fokotu'u ha kōmiti hala (Formulate road committee) ▪ Kole tokoni koloa langa (Seek assistance for construction materials) ▪ Kole tokoni ki he Tonga Power Ltd (Seek assistance from Tonga Power Limited) 	<ul style="list-style-type: none"> ▪ Ma'u pa'anga ngāue 'a e kolo (Community with financial support for community activities) ▪ 'I ai 'a e maama hala he kolo (Community with street lights) ▪ 'I ai mo e kōmiti 'oku ngāue (Active committee) ▪ Holo totongi 'a e loli maka (Price for gravel truck is being discount) ▪ 'I ai e side walker (Constructed side walker) ▪ Tokalelei e hala (Well road constructed) 	<ul style="list-style-type: none"> ▪ Fiefia mo matamata lelei 'a e kolo (Harmony and beautiful community) ▪ Ong'o'i malu e kolo he fefononga'aki he po'uli (People of the community feel safe and secure during transportation at night) ▪ Holo kaiha'a (Decrease in theft) ▪ Si'i e pa'anga mole he ngaahi me'alele (Less money spent on fixing tires) ▪ Faingofua ange e fefononga'aki e kakai e he po'uli (Easier for community's transportation at night) ▪ Fiemalie ange ai e kolo (Satisfied community) 	<ul style="list-style-type: none"> ▪ Afa (Cyclone) ▪ Hala ha kōmiti (No committee) ▪ 'Ikai ha me'angāue (No equipments/materials) ▪ Nounou ivi fakapa'anga e kolo (Financial hardship) 	<ul style="list-style-type: none"> ▪ Potungāue 'Uhila (Tonga Power Limited) ▪ MORDI TT Trust (Mainstreaming of Rural Development Innovation Tonga Trust) ▪ Kakai e kolo (Community) ▪ 'Ofisa Kolo (Town Officer) ▪ Pule Fakavahe (District Officer) ▪ Luna'eva ▪ MOI (Ministry of Infrastructure) ▪ Kōmiti 'a Feletoa 'i muli (Feletoa committee in overseas) ▪ Ngaahi Kalapu (Clubs) ▪ Fakafofonga Pule'anga (Representative to Parliament)
5. 'Ikai ha mala'e va'inga (No playing field) / 'Ikai malu fānau va'inga he	<ul style="list-style-type: none"> ▪ 'Ikai ha kelekele (Lack availability of land) 	<ul style="list-style-type: none"> ▪ Holo e tu'unga talēniti sipoti 'a e fānau (Sports) 	<ul style="list-style-type: none"> ▪ Fakalelei'i e mala'e va'inga (Renew playing field) 	<ul style="list-style-type: none"> ▪ 'I ai e mala'e va'inga (Existing playing field) 	<ul style="list-style-type: none"> ▪ Mo'ui lelei ange kakai e kolo (Healthier community opportunities for overseas) 	<ul style="list-style-type: none"> ▪ Me'a ngāue e.g. louta (Equipments – loader truck) 	<ul style="list-style-type: none"> ▪ Pule fakavahe (District Officer) ▪ 'Ofisa kolo (Town Officer)

Lisi 'o e Palopalema (List of Problems Prioritised)	Ngaahi me'a 'oku ne fakatupunga (Causes)	Ngaahi Uesia (Impacts)	Ngaahi Solova'anga (Possible Solutions)	Ngaahi me'a 'e hoko (Possible Output)	Ngaahi Ola (Possible Outcome)	Fakafe'atungia (Threat)	Kaunga Ngāue (Partners)
mala'e va'inga lolotonga (Children not safe while playing in the playing field)	<ul style="list-style-type: none"> ▪ 'Ikai ha pa'anga (Lack of fund) ▪ 'Ikai ha me'angāue (louta) (No equipments – loader truck) ▪ 'Ikai ha me'a ngāue ke tauhi'aki (No equipments to look after the playing field with) ▪ Hala ha 'ā (No fencing wire) ▪ Hala ha naunau sipoti (No sports equipment) ▪ Tokakovi e mala'e va'inga (Poor condition of playing field) ▪ Tōnōnou fakafetu'utaki (Lack of communication) 	<p>less interesting for the youth</p> <ul style="list-style-type: none"> ▪ Uesia e mo'ui lelei e kakai e.g. sisino (Healthy lifestyle affected) ▪ Tolalo tu'unga fakapa'anga (Low standard of income) 	<ul style="list-style-type: none"> ▪ Kumi e me'angāue ke tauhi'aki e mala'e (Procure equipments for looking after the playing field) ▪ Fakamalo'i'i ngāue 'a e kōmiti sipoti 'a e kolo (Enforce community sports committee) ▪ Feinga pa'anga e kolo (Fund-raise) ▪ Kole tokoni naunau sipoti (Seek assistance for sports equipments) ▪ Ngaahi e 'ā ki he mala'e sipoti (Construct fencing for playing field) ▪ Kole tokoni ki muli (Seek assistance from overseas) 	<ul style="list-style-type: none"> ▪ Tupulaki 'a e ngāue kōmiti (Committee being developed) ▪ Ma'u e pa'anga (Receive fund) ▪ Tokolahi kau fakamalo'hisino (More people exercising) ▪ Naunau sipoti (Sports equipment) ▪ 'Ā ki he mala'e va'inga (Fence for playing field) 	<ul style="list-style-type: none"> ▪ Ma'u e pa'anga fāfili (Families with financial support) ▪ Kaka'u lelei e fānau he sipoti (Better future for children) ▪ Tu'umālie ai e to'utupu (Wealthier youth) ▪ Fiefia e to'utupu e kolo (Community live in harmony) ▪ Kaha'u lelei e fānau he sipoti (Better future for children with sports talent) 	<ul style="list-style-type: none"> ▪ 'Ikai ha kelekele (Lack availability of land) 	<ul style="list-style-type: none"> ▪ Fakafongonga falealea (Representative to Parliament) ▪ Kakai e kolo (Community) ▪ MORDI TT (Mainstreaming of Rural Development Innovation Tonga Trust) ▪ MIA (Ministry of Internal Affairs) ▪ FIFA (Federation International Football Association) ▪ TASA (Tonga Amateur Sports Association) ▪ Kāinga muli (Relatives in overseas) ▪ Kosilio 'a e kolo (Community Counsel)
6. Si'i me'angāue fakangoue (Palau, Hūo) (Lack of agricultural equipments – tractors, hoes) / Tokakovi hala ki he ngoue'anga / lahi maumau fanga monumanu (Poor Road construction to bush road / Roaming livestock damaged)	<ul style="list-style-type: none"> ▪ 'Ikai ha me'angāue (No equipments) ▪ Si'i ivi fakapa'anga (Lack of fund) ▪ 'Ikai ha kōmiti ngoue (No agriculture committee) ▪ Lahi e kaiha'a (More theft) ▪ 'Ikai ha 'ā ki he ngoue (No fencing wire for the crops) ▪ Si'isi'i e palau (Fewer tractors) ▪ 'Ikai ke sai 'ā ki he fanga monumanu (Fencing wire not in a good condition) 	<ul style="list-style-type: none"> ▪ 'Ikai lahi e fua e ngoue (Less agricultural production) ▪ 'Ikai ke makona e fāfili (Family not well fed) ▪ 'Ikai ke feau e ngaahi fiema'u e fāfili (Family obligations not fulfilled) ▪ Tu'unga fakapa'anga (Financial standard) ▪ Honge fonua (Land experiences famine) ▪ Lahi kaiha'a ngaahi me'alele (More theft of vehicles) 	<ul style="list-style-type: none"> ▪ Kole tokoni me'angāue fakangoue (Seek assistance for agricultural equipments) ▪ Tauhi e ngaahi me'angāue ke malu mo tolonga (Keep equipments safe and last long) ▪ Fakasi'isi'i e kaiha'a e me'angāue (Reduce in theft) ▪ Fokotu'u ha kōmiti ngoue (Formulate agricultural committee) ▪ Ngaahi 'ā fanga monumanu (Construction of wire for fencing) ▪ Tuku kaiha'a (Stop theft) ▪ Kole tokoni palau (Seek assistance for tractor) 	<ul style="list-style-type: none"> ▪ Lelei e ngoue (Sufficient in agricultural production) ▪ Ma'u e me'angāue fakangoue (Received agricultural equipments) ▪ Ngoue faka'ofa'ofa (Fakalakalaka) (Improve in agricultural development) ▪ Hala fo'ou (New road) ▪ 'Ikai toe palopalema me'alele (No more problems with vehicles) ▪ Palau fo'ou (New tractor) ▪ 'Ā fo'ou (New fencing wire) ▪ Lahi e pa'anga (More income) 	<ul style="list-style-type: none"> ▪ Faingofua e ngāue (Easier to work) ▪ Saiange e hala (Better road) ▪ Si'isi'i kaiha'a (Less theft) ▪ Lelei tu'unga fakapa'anga (Better in financial standard) ▪ Tolonga e me'alele (Vehicles last long) 	<ul style="list-style-type: none"> ▪ Tokakovi hala (Poor road construction) ▪ Si'isi'i kelekele (Lack availability of land) ▪ Fakatamaki fakanatula (Natural Disaster) ▪ Putu (Funeral) 	<ul style="list-style-type: none"> ▪ MAFF (Ministry of Agriculture Food and Forestry) ▪ Kau Fa'a he kolo (Farmers in the community) ▪ Kōmiti Ngoue (Agricultural committee) ▪ 'Ofisakolo (Town Officer) ▪ Pule Fakavahe (District Officer) ▪ MORDI TT (Mainstreaming of Rural Development Innovation Tonga Trust) ▪ Kāinga e kolo (Community) ▪ Fakafongonga falealea (Representative to Parliament) ▪ Kosilio e kolo (Community Council)
7. 'Ikai ha tali'anga pasi / si'isi'i pasi ako 'i Vava'u / 'Ikai ha pasi ako e kolo (No proper bus shelter / fewer school buses in Vava'u / No school bus for the community)	<ul style="list-style-type: none"> ▪ Ngata'anga pe ia ivi fakapa'anga (Financial hardship) ▪ Mamafa e tute (Increase in tariff) ▪ 'Ikai faaitaha e kōmiti (Committee not uniting) 	<ul style="list-style-type: none"> ▪ 'Uheina fānau ako (Students exposed to rain) ▪ Mo'ui fānau ako (Students lives) ▪ Sino'i pasi fakaako (Community school bus) 	<ul style="list-style-type: none"> ▪ Feinga'i ha pasi fo'ou (Procure new school bus) ▪ Feinga pa'anga (Fund-raise) ▪ Kole tokoni pasi ako (Seek assistance for school bus) ▪ Fakatokolahi kōmiti ako (Add more people to the committee) 	<ul style="list-style-type: none"> ▪ Ma'u e pasi ako (Procured school bus) ▪ Pasi fakakolo (Community bus) ▪ Tali'anga pasi (Proper bus shelter) 	<ul style="list-style-type: none"> ▪ Ma'u ako fānau (Punctual students) 		<ul style="list-style-type: none"> ▪ MOE (Ministry of Education) ▪ PTH (Pacific Timber and Hardware) ▪ Kōmiti To'utupu (Youth committee) ▪ Pule Fakavahe (District Officer) ▪ 'Ofisakolo (Town Officer) ▪ Kakai e kolo (Community)



Breadfruit trees planting on the demonstration plot in an orchard style.

Mataika Community Development Plan 2019 ~ 2022

Lisi 'o e Palopalema (List of Problems Prioritised)	Ngaahi me'a 'oku ne fakatupunga (Causes)	Ngaahi Uesia (Impacts)	Ngaahi Solova'anga (Possible Solutions)	Ngaahi me'a 'e hoko (Possible Output)	Ngaahi Ola (Possible Outcome)	Fakafe'atungia (Threat)	Kaunga Ngāue (Partners)
1. Palopalema e vai (tānaki'anga vai, vai pamu, misini vai) (Problematic with community water supply – Water storage capacities, water pump) / Kovi ma'u'anga vai pamu / si'i mo maumau tanaki'anga vai 'uha (Poor underground water supply system / Lack of and broken water storage facilities)	<ul style="list-style-type: none"> Si'isi'i e tānaki'anga vai (Lack of drinking water storages) Si'isi'i ma'u'anga vai lelei (Lack of water boreholes) Si'i taukei (Lack of technical skills) Si'isi'i e pa'anga (Lack of funds) Lahi mama 'a e vai (Water leakages) 'Ikai ha naunau fe'unga ke ngaahi 'aki (Lack of tools for water maintenance) Toutou maha tisolo he misini pamu vai (Water pump fuel ran out) Tokolahi ange kakai 'oku nau nofo'i e kolo (Increase community population) Taimi 'oku la'ala'ā ai 'oku si'i e vai (Too much sunny day will reduce the drinking water supply) Si'i e matavai (Lack of water boreholes) Maumau e pamu sola (Broken solar water pump) 	<ul style="list-style-type: none"> Lahi e mahamahaki (Unhealthy community) Uesia e feime'atokoni (Cooking affected) Uesia e 'ātakai (Dirty environment) Honge vai (Water shortages) Si'isi'i pamu vai (Decline in the water pump operation routine) 'Ikai feau e fiema'u vai e fāmili (Families daily water needs unable to fulfil) Uesia e ngoue moe fangamanu (Livestock's and plantation yield affected) 	<ul style="list-style-type: none"> Feinga pa'anga e kolo (Community fund raised) Ngāue fakataha e kolo (Community collaboration together) Tokoni pule fakavahe mo e Minisitā (Assistance from District Officer and Member of Parliament) Fakatau ha ngaahi tangikē vai (Purchasing of storage water tanks) Kole ha tokoni ke toe 'omai ha filita ke lahi (Increase capacities of water storages) Tokanga ange ke fakapopototo'i e ngāue'aki e vai (Advice community to use water wisely) Kole ha minisi vai fo'ou (Seek new water pump) Kumi sola (Purchase new solar power pump) Hiki totongi vai (Increase monthly water bill payment to generate more funds) Kumi mo vili ha matavai fo'ou (Find and drill new water boreholes) 	<ul style="list-style-type: none"> Lahi e tānaki'anga vai (Increase storage water tanks) Ma'u e pa'anga (Fund Received) Fakalakalaka e ma'u'anga vai (Improved water supply) Mo'ui lelei (Community health) Ma'u tānaki'anga vai lahi (Water tank received) Ma'u e misini pamu vai (Water pump received) Ma'u e tokoni (Assistance received) Ma'u e pamu sola (New solar power pump) Ma'u e matavai fo'ou (New water borehole drilled) 	<ul style="list-style-type: none"> Toe lelei ange langa fakalakalaka 'i he kolo (Improved community development) Fakalakalaka e ma'u'anga vai (Improved community water supply) Ma'a e 'ātakai (Clean and hygienic environment) Feau e ngaahi fiema'u fakavai e fāmili (Improved community water supply) Mo'ui lelei ange e fanga monumanu (Healthy livestock) Lele lelei vai (24hrs) (Improved community water supply 24 hours) Lahi e vai 'oku tānaki ke tufaki ki he kolo (Increase capacities of water collected and distribute to the communities) Si'i e fakamole pa'anga ki he fakatau vai (Decline in buying of waters) 	<ul style="list-style-type: none"> 'Apisia (Community funeral) Fakatamaki fakaenātula (Natural Disasters) 	<ul style="list-style-type: none"> MORDI TT Trust (Mainstreaming of Rural Development Innovation Tonga Trust) JICA (Japan International Cooperation Agency) Kalapu Lotali (Rotary Club) 'Ofisa kolo (Town Officer) Pule fakavahe (District Officer) Kakai e kolo (Community) MIA (Ministry of Internal Affairs) PTH Ltd (Pacific Timber and Hardware Limited) EM Jones Ltd Fakafongia Falealea (Member of Parliament) Kainga 'ofa (Family and friends)
2. Kovi e tanu hala he kolo / si'i e maama hala (Poor road maintenance / community street lights) / Kovi e hala pea si'i mo e maama hala (Poor community road and lack of community street lights)	<ul style="list-style-type: none"> 'Ikai ke 'i ai ha pa'anga (Lack of funds) Hala ha ngaahi ngāue fakakolo (Lack of community work) 'Ikai ha maama hala (Lack of community street lights) 'Ekisiteni he hala (Accident on the roads) Si'isi'i e kole tokoni ki he tanu hala (Lack of seeking assistance for road maintenance) Masiva pa'anga ke kumi'aki ha maama hala (Lack of community funds) 	<ul style="list-style-type: none"> Maumau e ngaahi salote misini pea lahi ange ai e mole e pa'anga (Increase damages to vehicles increase spending) Fakapo'uli ange ai e kolo (Dusky community) Uesia fefononga'aki e fāmili (Road transportation affected) Si'isi'i e 'alu ki 'uta (Decrease in number of farmers) Faingata'a pe fefononga'aki (Community accessibility affected) 	<ul style="list-style-type: none"> Ngāue fakataha e kolo (Community collaboration together) Feinga pa'anga fakakolo (Community fund raised) Tanu e hala pea valitā ke tolunga (Repair road with tar seal for sustainability) Kole tokoni ki he MOI (Seeking assistance) Kumi e maama hala ki he kolo (Bought community street lights) Kole tokoni me'a ngāue ke tanu hala (Seek assistance of machinery for road maintenance work) 	<ul style="list-style-type: none"> Ngaahi e hala (Road fixed) Ma'u e pa'anga (Fund Received) Lava e kolo 'o ngāue fakataha (Community work together) Hala kuo tanu (Road repaired) Maama hala kuo fokotu'u (Installed community street lights) Ma'u e tokoni (Assistance received) Valitā pea tanu maka e hala (Road fixed with tar seal and coral fills) 	<ul style="list-style-type: none"> Toe vave ange e ngāue (Improved community work) Si'i e fakamole e.g. ngaahi me'alele (Reduce spending on vehicle repairs) Sai e fefongo'aki he hala (Faingofua mo vave) (Improved community road accessing) Maamangia e fefononga'aki he po'uli e.g. lotu, poako (Improved community night light for travelling e.g. church, night school etc) 	<ul style="list-style-type: none"> 'Apisia (Community funeral) Fakatamaki fakaenātula (Natural Disasters) Fakatamaki fakaenātula (Natural Disasters) Masivesiva e kakai e kolo (Shortage of funds) Masiva fakapa'anga (Shortage of funds) Lahi 'uha (tafea) (Heavy rains) Hala me'a ngāue ngaahi hala (No road maintenance machinery) 	<ul style="list-style-type: none"> MORDI TT Trust (Mainstreaming of Rural Development Innovation Tonga Trust) MOI (Ministry of Infrastructure) Tonga Power Limited 'Ofisa kolo (Town Officer) Pule fakavahe (District Officer) Kakai kolo (Community) Fakafongia falealea (Member of Parliament)

Lisi 'o e Palopalema (List of Problems Prioritised)	Ngaahi me'a 'oku ne fakatupunga (Causes)	Ngaahi Uesia (Impacts)	Ngaahi Solova'anga (Possible Solutions)	Ngaahi me'a 'e hoko (Possible Output)	Ngaahi Ola (Possible Outcome)	Fakafe'atungia (Threat)	Kaunga Ngāue (Partners)
	<ul style="list-style-type: none"> Si'i e me'angāue Pule'anga (Lack of road maintenance machinery in the Government) Te'eki mahino vahevahe hala ki he kakai (Road map not clear to the community) 	<ul style="list-style-type: none"> 'Uli e kolo (Dirty environment) 	<ul style="list-style-type: none"> Tanu makamaka e hala ki 'uta (Fix agricultural road with coral fill gravels) Lukuluku seniti kakai e kolo ke tanu'aki hala (Fund contribution from the community) 		<ul style="list-style-type: none"> Tupulekina e ako fānau e.g. lahi e poako ko e faingofua e fe'alu'aki (Improved children academic performance e.g. children frequently attending night school) Si'isi'i e faihia (Reduction in crime rates) 		
3. 'Uli 'ātakai (maumau e fanga monumanu) / Lahi e uesia e mo'ui he toilet tonga / 'Ikai ke fe'unga mo e 'ū peito lolotonga (Dirty environment – livestock damaged / community affected from pit latrine toilet / Poor standard of existing community kitchen) / Maumau e fanga monumanu (Damages cause by livestock)	<ul style="list-style-type: none"> Fakataka holo fanga monumanu (Increase roaming of livestock) Lahi e toilet tonga 'ū 'api (Still too much pit latrine toilet in the community) 'Ikai ke sai e peito lolotonga (Poor kitchen) Lahi e laku noa'ia e veve (Increase community littering) 'Ikai ha 'ā fe'unga ki he fanga monumanu (No secured fence for the livestock) 'Ikai ha kelekele ke ngaahi ha 'ā pulu (No available land for cattle fences) Tupu tokolahi e fanga monumanu (Increase livestock population) 'Ikai ke tokanga'i lelei kinautolu (Poor livestock management) 'Ikai ha pa'anga (Lack of funds) Si'i e 'api tukuha (Lack of bush allotment area) 	<ul style="list-style-type: none"> Tō ha mahaki pipihi e.g. taifoti (Communicable diseases outbreak e.g. typhoid) Palakū e 'ātakai (Community environment unsecured) Tō lalo fakame'atokoni e kolo (Community agricultural yield affected) 'Uli e 'ātakai (Dirty environment) Uesia e mo'ui lelei e kolo (Community health affected) Fakatupunga e fetōkehekehe'aki kakai (Enhance families feud) Uesia e ngoue (Community agricultural yield affected) 	<ul style="list-style-type: none"> Ngāue fakataha e kolo (Community collaboration together) Feinga pa'anga e kolo (Community fund raised) Fakatau mai ha me'angāue fakama'a kolo e.g. misini kosi, kapa veve (Purchasing of cleaning equipment and rubbish bins) Langa ha ngaahi toilet palangi (Build new flush toilets) Langa ha peito 'oku malu mo ma'a (Build development kitchen that are secured and clean) Kole ha tokoni ki he 'ā (Seeking assistance) Toe tokanga ange ki he tauhi / tokanga'i monumanu (Empower livestock owner on management skills) Ngaahi mo monomono e 'ā lolotonga (Mending of existing fences) Fakatokosi'i e fanga monumanu (Reduce number of livestock) 	<ul style="list-style-type: none"> Ma'u e misini kosi mo e kapa veve (Lawn mower and rubbish bin received) Ma'u e toilet palangi mo e peito 'osi langa (Build flush toilets and development kitchen) Lava kakai e kolo 'o ngāue fakataha (Ability of communities to work together) Ma'a e 'ātakai (Clean community environment) Tokosi'i e fakataka e monumanu (Reduce roaming of livestock) Ma'u 'ā (Fences constructed) Ma'u e pa'anga (Fund Received) 	<ul style="list-style-type: none"> Ma'u pale ma'upe kolo he Vava'u Masani (Community award for clean community) Mo'ui lelei e kakai (Healthy community) Fiefie e kakai (Community satisfied) 'Ikai toe 'i ai ha toilet ponu he kolo (Remove all pit toilets from the community) Fiemālie kau vaivai mo e fānau (Easy accessibility for elderly and children) Faka'ofa'ofa mo ma'a ange e 'ātakai e kolo (Clean and hygienic environment) Malu e fanga monumanu (Livestocks secured) Si'i e longoa'a hono maumau'i ngoue (Less community feud) Mahu fakame'atokoni e kolo (Community plantation are secured) Lelei e tu'unga e nofo 'a e kolo (Improved standard of living) 	<ul style="list-style-type: none"> 'Apsia (Community funeral) Fakatamaki fakaenātula (Natural Disasters) Hala kelekele (No available land) 	<ul style="list-style-type: none"> MORDI TT Trust (Mainstreaming of Rural Development Innovation Tonga Trust) JAPAN Kalapu Lotali Pule'anga Tonga (Government) Kakai e kolo (Community) 'Ofisa kolo (Town Officer) Kau tauhi monumanu (Livestock owners) Pule fakavahe (District Officer) Falealea (Member of Parliament) Kainga 'ofa (Family and friends)
4. Si'i e me'a fefononga'aki ki he ako / 'Ikai ha tali'anga pasi (Lack of children school transportation / bus stop shelter) / Lahi ta'ema'u ngāue (High community unemployment's)	<ul style="list-style-type: none"> 'Ikai ke 'i ai ha pa'anga (Lack of funds) Tōmui e fānau ki he ako (Children late to school) Si'isi'i e me'a fononga ki he ako (Lack of school transportation e.g. school bus) Nofo kei si'i he ako (Children early school drop-out) 	<ul style="list-style-type: none"> Tō lalo e tu'unga fakaako fānau (Decline in children academic performance) Li'aki ako (School drop-out) Si'i ai pe ivi fakapa'anga e 'api (Lack of family income) Uesia e 'ātakai (Dirty environment) Uesia e mo'ui e to'utupu (Community health affected) 	<ul style="list-style-type: none"> Ngāue fakataha e kolo (Community collaboration) Kumi ha me'alele ako pe pasi (Purchase new school bus) Kole tokoni ke ma'u ha pa'anga ke fua'aki e ako e fānau (Seek assistance to fund children school fees) Ngāue fakataha e kau faiake mo e matu'a (Parent 	<ul style="list-style-type: none"> Ma'u e pa'anga (Fund Received) Ma'u e pasi (New bus bought) Lava e ngāue fakataha (Community working together) 'Ikai ke tōmui ki he ako (No late to school) 	<ul style="list-style-type: none"> Malu pea pau (Safe and secured) Fakalakalaka e fefononga'aki ki he ako (Improve school transportation) Mo'ui fiefie (Happy and satisfied families) Fiemālie'anga e nofo 'a e sosaieti (Ensure peace and harmony of the community) 	<ul style="list-style-type: none"> Fakatamaki fakaenātula (Natural Disasters) Lahi e hake mai e fakalakalaka e.g. 'aisi mo e maliuana (Modern lifestyle influence e.g. importing of drugs) 	<ul style="list-style-type: none"> MORDI TT Trust (Mainstreaming of Rural Development Innovation Tonga Trust) Japan Si'i kae Ola ASCO Ltd 'Ofisa kolo (Town Officer) Fakafofonga falealea (Member of Parliament) Kakai e kolo (Community)

Lisi 'o e Palopalema (List of Problems Prioritised)	Ngaahi me'a 'oku ne fakatupunga (Causes)	Ngaahi Uesia (Impacts)	Ngaahi Solova'anga (Possible Solutions)	Ngaahi me'a 'e hoko (Possible Output)	Ngaahi Ola (Possible Outcome)	Fakafe'atungia (Threat)	Kaunga Ngāue (Partners)
	<ul style="list-style-type: none"> ▪ Si'isi'i e ngāue'anga (Lack of employment available) ▪ 'Ikai ma'u ha ola lelei mei he ako (Unable to get a job from the current qualification standard) ▪ Mamafa e lolo (Increase fuel prices) ▪ Si'isi'i e kole tokoni 'a e kolo (Lack of seeking assistance by the community) 	<ul style="list-style-type: none"> ▪ Tokolahi e fānau kae si'i e me'a fononga ki he ako (More children but less school transportation) ▪ Lahi ange ai e faihia mo e fakakina e to'utupu (Increase youth feuds and crimes) ▪ Maumau e nofo ma'uma'uluta e kolo (Enhance community insecurity) 	<ul style="list-style-type: none"> ▪ and teachers' collaboration together) ▪ Kole tokoni ha pasi ako (Seeking assistance for a new school bus) ▪ Feinga pa'anga e kolo ke kumi ke fakalahi me'a fononga ki he ako (Community fund raised for purchasing of school bus) ▪ Matu'a ke akonaki'i e fānau mo teke pe 'alu ki he ako (Parents to discipline their children and school them) 	<ul style="list-style-type: none"> ▪ Tokolahi fānau foki ki he ako (More student went to school) ▪ Lahi tamaiki 'oku ma'u ako (Increase school attended) 	<ul style="list-style-type: none"> ▪ Lahi e ma'u ngāue (Increase rate of employment in the community) ▪ Vaveange e 'alu ki he ako (Improve transportation to school) ▪ Lelei ange e tu'unga fakaako (Improve children academic performance) ▪ Lahi e ako lelei pea tu'umālie ange ai e ngaahi fāmili (Improved community income generates) 		<ul style="list-style-type: none"> ▪ Matu'a tauhi fānau (School children Parent) ▪ Pule fakavahe (District Officer) ▪ Potungaua ako (Ministry of Education)
5. Tokakovi mala'e sipoti mo 'ikai ha naunau sipoti (Poor sports field and no sport equipments)	<ul style="list-style-type: none"> ▪ Si'isi'i e pa'anga (Lack of funds) ▪ Lahi maumau fanga monumanu (Increase livestock damages) ▪ Pelepela mo e 'uha (Rain and mud pool) ▪ 'Ikai me'angāue ke tauhi'aki mala'e va'inga (Lack of equipment for sporting field maintenance) ▪ 'Ikai longomo'ui e komiti to'utupu kolo (No youth empowerment activities) 	<ul style="list-style-type: none"> ▪ Uesia e taleniti sipoti e fānau (Sports talent affected) ▪ Lahi e fakapikopiko (Laziness of communities) ▪ Sisino mo mahamahaki e kakai (Community health affected) ▪ Lahi ange e fakakina he kolo (Increase youth feud and crimes) 	<ul style="list-style-type: none"> ▪ Kole tokoni me'angāue ke fakalelei'i'aki e mala'e (Seek assistance for sporting field maintenance tools) ▪ Ngāue fakataha e to'utupu mo e kolo (Community collaboration together) ▪ Feinga pa'anga ke kumi ha me'angāue ke tauhi'aki e mala'e (Community fund raised to purchase lawn mower) ▪ Kole tokoni naunau sipoti (Seek assistance of sporting gears) ▪ Fokotu'u komiti sipoti (Establish community sport committee) ▪ Feinga pa'anga e to'utupu (Youth fund raised) 	<ul style="list-style-type: none"> ▪ Ma'u e me'angāue ke fakalelei'i'aki e mala'e (Equipment to repair sports field received) ▪ Lava e ngāue fakataha e kolo (Community collaborate) ▪ Ma'u tokoni naunau sipoti (Sports gear received) ▪ 'I ai e komiti sipoti (Sports committee established) ▪ Ma'u e pa'anga (Fund received) 	<ul style="list-style-type: none"> ▪ Toe fakalakalaka ange e taleniti sipoti fānau ▪ Lelelange e ma'u'anga pa'anga fāmili (Improved community income generates) ▪ Lahi faingamālie e fānau he mala'e sipoti (Increase opportunities in sports for youth) ▪ Lelei e langa fakalakalaka e kolo (Improved community development) ▪ Mo'ui lelei kakai (Improved community health) ▪ Tupulaki taleniti fānau (Improved youth sporting talents) ▪ Mo'ui lelei (Healthy community) 	<ul style="list-style-type: none"> ▪ Nounou fakapa'anga (Shortage of funds) ▪ Hala pa'anga (Shortage of funds) 	<ul style="list-style-type: none"> ▪ 'Ofisa kolo (Town Officer) ▪ Ngaahi mātu'a (Parents) ▪ To'utupu e kolo (Community youth) ▪ Pule fakavahe (District Officer) ▪ MOI (Ministry of Infrastructure) ▪ MORDI TT Trust (Mainstreaming of Rural Development Innovation Tonga Trust) ▪ Fakafongfa Falealea (Member of Parliament) ▪ Kainga 'Ofa (Family and friends)
6. Si'i e me'angāue ma'a e kakai fefine e.g. misini tuitui mo e fakamea'a (Lack of equipment for women embroidery and handicrafts work)	<ul style="list-style-type: none"> ▪ Si'i e pa'anga (Lack of funds) ▪ Mamafa e tute (Increase tariff tax) ▪ 'Ikai ke ma'u ha taukei fe'unga 'i hono ngāue'aki e me'angāue 'i 'api (Lack of technical skill in operating the income generating machine) 	<ul style="list-style-type: none"> ▪ Tuai e ngāue (Productivity work is very slow) ▪ 'Ikai ke lava fua lelei ngaahi fatongia (Families and community obligation not fulfilled) ▪ Lahi e ngaahi fakamole (Increase spending) 	<ul style="list-style-type: none"> ▪ Kole tokoni (Seeking assistance) ▪ Feinga pa'anga (Community fund raised) ▪ Holoki e tute (Drop in the tariff tax) 	<ul style="list-style-type: none"> ▪ Ma'u e pa'anga (Fund Received) ▪ Toe lahi ange koloa me'angāue 'oku 'omai mei muli he ma'ama'a e tute (Increase equipment to assist women income generation work when tariff tax reduces) 	<ul style="list-style-type: none"> ▪ Faingofua ange ai e ngāue 'a e kakai fefine (Improved women income earning work) ▪ Lelei ange ai e langa fakalakalaka (Improved handicraft work for women) ▪ Vave ange ai e pa'anga hū mai e fāmili (Improved community women income generation activities) 	<ul style="list-style-type: none"> ▪ 'Apsia (Community funeral) ▪ Fakatamaki fakaenātula (Natural Disasters) 	<ul style="list-style-type: none"> ▪ Kakai e kolo (Community)
7. 'Ikai ke malu e kolo ('Ikai ha polisi fakakolo) (Community not safe and	<ul style="list-style-type: none"> ▪ Lahi e konā to'utupu (Increase alcohol consumption of youths) 	<ul style="list-style-type: none"> ▪ Mole tau'ataina (Community feeling insecure) 	<ul style="list-style-type: none"> ▪ Kole tokoni ki he fāmili 'i muli ki naunau e.g. vesi, 	<ul style="list-style-type: none"> ▪ Ma'u e naunau (Equipment Received) 	<ul style="list-style-type: none"> ▪ Malu e kolo (Community secured) 	<ul style="list-style-type: none"> ▪ Loto kehekehe e kakai (Community disagreement) 	<ul style="list-style-type: none"> ▪ MORDI TT Trust (Mainstreaming of Rural

Lisi 'o e Palopalema (List of Problems Prioritised)	Ngaahi me'a 'oku ne fakatupunga (Causes)	Ngaahi Uesia (Impacts)	Ngaahi Solova'anga (Possible Solutions)	Ngaahi me'a 'e hoko (Possible Output)	Ngaahi Ola (Possible Outcome)	Fakafe'atungia (Threat)	Kaunga Ngāue (Partners)
secured – no community police)	<ul style="list-style-type: none"> ▪ Maliuana (Consuming of drugs) ▪ Lahi e kaiha'a (Increase petty theft) ▪ 'Ikai ha polisi fakakolo (No community police) ▪ Lahi ta'ema'u ngāue (Increase unemployment) 	<ul style="list-style-type: none"> ▪ Mole fanga monumanu (Livestock stolen) ▪ Mole ngoue (Agricultural product stolen) 	<ul style="list-style-type: none"> ▪ kasa etc (Seek assistance of supplies from overseas) ▪ Me'alele ki he kau le'o ▪ Fengāue'aki mo e pule'anga (Community collaboration together) ▪ Ngāue fakataha (Community collaboration) ▪ Fokotu'u 'a e Polisi fakakolo (Establish of community police) 	<ul style="list-style-type: none"> ▪ Ma'u seniti (Fund Received) ▪ Fokotu'u Polisi fakakolo (Community Police established) 	<ul style="list-style-type: none"> ▪ Fakasi'isi'i e maumau lao (Reduce criminal act) ▪ Tau'atāina 'a e kakai (Community live in peace and harmony) 		<ul style="list-style-type: none"> ▪ Development Innovation Tonga Trust ▪ Falealea (Member of Parliament) ▪ 'Ofisa kolo (Town Officer) ▪ Kainga 'ofa (Family and friends)
8. 'Ikai ha kelekele mo ha fale fakakolo (No community piece of land and hall)	<ul style="list-style-type: none"> ▪ Hala pa'anga (Lack of funds) ▪ Hala kelekele (No land) 	<ul style="list-style-type: none"> ▪ Uesia e ngaahi siasi (Church activities affected from other function conducted in their halls) ▪ Uesia e fakataha fakapule'anga (Disruption to Government meeting) ▪ Uesia e kolo taimi to ai ha fakatamaki lahi (Community affected during natural disasters) 	<ul style="list-style-type: none"> ▪ Kole tokoni ki muli (Seek assistance of supplies from overseas) ▪ Feinga ha kelekele (Look for available land areas) 	<ul style="list-style-type: none"> ▪ Ma'u e pa'anga (Fund Received) ▪ Ma'u e kelekele (Available land given) 	<ul style="list-style-type: none"> ▪ Fiemālie e kolo (Community satisfied) ▪ Hūfanga'anga 'a e kakai (Community evacuation center during any disasters) 	<ul style="list-style-type: none"> ▪ Hala pa'anga (Shortage of funds) ▪ Hala ha kelekele (No available land) 	<ul style="list-style-type: none"> ▪ MORDI TT Trust (Mainstreaming of Rural Development Innovation Tonga Trust) ▪ Falealea (Member of Parliament) ▪ Kainga 'ofa (Family and friends) ▪ 'Ofisa kolo (Town Officer) ▪ Pule'anga (Government Ministries)
9. Kovi me'angaue fakangoue (palau & me'angāue) (Poor agricultural tools – tractor & implements)	<ul style="list-style-type: none"> ▪ Hala pa'anga (Lack of funds) ▪ Si'i e palau pule'anga (Lack of Government tractors) ▪ 'Ikai ha māketi (Lack of agricultural markets) ▪ Tānaki tukuhau (Increase taxes) ▪ 'Ikai ha palau fakakolo (No community tractor) 	<ul style="list-style-type: none"> ▪ Hōnge fonua (Famine of agricultural food) ▪ Tuai ngāue pea kovi fua e ngoue (Slowness of work and decline in agricultural yield) 	<ul style="list-style-type: none"> ▪ Kole tokoni naunau langa ki muli (Seek assistance of supplies from overseas) ▪ Fakatau ha konga kelekele ('Api tukuhau) (Purchase new bush allotment) ▪ Feinga pa'anga e kolo ke kumi ha palau (Community fund raised to buy tractor) ▪ Ngāue kakai e kolo (Community working together) 	<ul style="list-style-type: none"> ▪ Ma'u e tokoni naunau fakangoue (Agricultural supplies received) ▪ Ma'u e Palau (Tractor received) ▪ Ma'u e 'api tukuhau ke ngoue'i (Bush allotment bought) 	<ul style="list-style-type: none"> ▪ Tu'umālie fonua (kakai) (Improved community income generates) ▪ Fakalakalaka (Improve community standard of livings) ▪ Lahi ngoue 'oku to he tokotaha ngoue (Increase capacities of plantation crops) ▪ Mahu fonua he me'atokoni foha Community are agriculturally food secured) 	<ul style="list-style-type: none"> ▪ Si'i māketi (Lack of agricultural markets) ▪ Mamafa totongi palau (High cost for a tractor) 	<ul style="list-style-type: none"> ▪ MORDI TT Trust (Mainstreaming of Rural Development Innovation Tonga Trust) ▪ Falealea (Member of Parliament) ▪ Kainga 'ofa (Family and friends) ▪ Pule'anga (Government Ministries) ▪ 'Ofisa kolo (Town Officer)



A bird-eye view of Fatai Demonstration-Plot.



ENGLISH: PACIFIC KAURI
SCIENTIFIC: *Agathis macrophylla*
TONGAN: KAULI

Scientific classification

Kingdom: Plantae
Clade: Tracheophytes
Division: Pinophyta
Class: Pinopsida
Order: Pinales
Family: Araucariaceae
Genus: *Agathis*
Species: ***A. macrophylla***
Binomial name: ***Agathis macrophylla***
 (Lindl.) Mast.



Agathis macrophylla (also *Agathis silbae*) known as Pacific kauri, is a coniferous tree native to the islands of the southwestern Pacific Ocean in tropical humid lowlands and lower montane regions, notably in Fiji, Vanuatu, the Santa Cruz Islands, and the Solomon Islands.

The Pacific kauri is one of the largest and fastest growing species in its genus, and is important in forestry.

It is a large evergreen tree, reaching 40 m in height and 3 m in diameter. It possesses the mottled, shedding bark that is characteristic of other kauri species. Young trees are narrow and conic in shape, but begin to grow a wider, deeper canopy after attaining a trunk diameter of 30–50 cm. In mature specimens, the trunk is generally straight or slightly tapered and clear for 15–20 m before branching into a spreading canopy up to 35 m in diameter. The root system is deep and strong, and the trees are highly wind resistant.

The leaves are green and glossy, elliptical to lanceolate, 7–15 cm long and 2–4 cm wide. They are borne on short petioles and held in a decussate pair, but twisted so they lie in one plane. Leaves in the shade, of juvenile trees, and of individuals growing in wetter regions, tend to be larger.





ENGLISH: GINGER
SCIENTIFIC: *Zingiber officinale*
TONGAN: SINISA

Scientific classification

Kingdom: Plantae
Clade: Tracheophytes
Clade: Angiosperms
Order: Monocots
Family: Commelinids
Genus: Zingiberales
Species: Zingiberaceae
Binomial name: *Zingiber*
Local name: **Z. officinale**



Ginger (*Zingiber officinale*) is a flowering plant whose rhizome, **ginger root** or ginger, is widely used as a spice and a folk medicine. It is a herbaceous perennial which grows annual pseudostems (false stems made of the rolled bases of leaves) about one meter tall bearing narrow leaf blades. The inflorescences bear flowers having pale yellow petals with purple edges, and arise directly from the rhizome on separate shoots.

Ginger is in the family Zingiberaceae, which also includes turmeric (*Curcuma longa*), cardamom (*Elettaria cardamomum*), and galangal. Ginger originated in Maritime Southeast Asia and was likely domesticated first by the Austronesian peoples. It was transported with them throughout the Indo-Pacific during the Austronesian expansion (c. 5,000 BP), reaching as far as Hawaii. Ginger is one of the first spices to have been exported from Asia, arriving in Europe with the spice trade, and was used by ancient Greeks and Romans.^[5] The distantly related dicots in the genus *Asarum* are commonly called wild ginger because of their similar taste. In 2018, world production of ginger was 2.8 million tonnes, led by India with 32% of the world total.





ENGLISH: **TUMERIC**
SCIENTIFIC: ***Curcuma longa***
TONGAN: **Angoango Enga**

Scientific classification

Kingdom: Plantae
Clade: Tracheophytes
Clade: Angiosperms
Clade: Monocots
Clade: Commelinids
Order: Zingiberales
Family: Zingiberaceae
Genus: Curcuma
Species: ***C. longa***
Binomial name: ***Curcuma longa***
L.



Turmeric (pronounced is a flowering plant, Zingiberaceae, the roots of which are used in cooking. The plant is a perennial, rhizomatous, herbaceous plant native to the Indian subcontinent and Southeast Asia, that requires temperatures between 20 and 30 °C and a considerable amount of annual rainfall to thrive.

The rhizomes are used fresh or boiled in water and dried, after which they are ground into a deep orange-yellow powder commonly used as a coloring and flavoring agent in many Asian cuisines, especially for curries, as well as for dyeing, characteristics imparted by the principal turmeric constituent, curcumin.

Turmeric powder has a warm, bitter, black pepper-like flavor and earthy, mustard-like aroma.

Curcumin, a bright yellow chemical produced by the turmeric plant, is approved as a food additive by the WHO.

Although long used in Ayurvedic medicine, where it is also known as *haridra*, there is no high-quality clinical evidence for using turmeric or curcumin to treat any disease.





ENGLISH: SWEET POTATO
SCIENTIFIC: *Colocasia esculenta*
ONGAN: KUMALA

Scientific classification

Kingdom: Plantae
Clade: Tracheophytes
Clade: Angiosperms
Clade: Eudicots
Clade: Asterids
Order: Solanales
Family: Convolvulaceae
Genus: *Ipomoea*
Species: *I. batatas*
Binomial name: *Ipomoea batatas*
 (L.) Lam.



The **sweet potato** or **sweet potato** (*Ipomoea batatas*) is a dicotyledonous plant that belongs to the bindweed or morning glory family, *Convolvulaceae*. Its large, starchy, sweet-tasting, tuberous roots are used as a root vegetable. The young shoots and leaves are sometimes eaten as greens. The sweet potato is distantly related to the common potato (*Solanum tuberosum*), both being in the order Solanales. The sweet potato, especially the orange variety, is often called a "yam" in parts of North America but is unrelated to true yams. Cultivars of the sweet potato have been bred to bear tubers with flesh and skin of various colors.



Ipomoea batatas is native to the tropical regions of the Americas. Of the approximately 50 genera and more than 1,000 species of *Convolvulaceae*, *I. batatas* is the only crop plant of major importance—some others are used locally (e.g., *I. aquatica* "kangkong"), but many are poisonous. The genus *Ipomoea* that contains the sweet potato also includes several garden flowers called morning glories, though that term is not usually extended to *Ipomoea batatas*. Some cultivars of *Ipomoea batatas* are grown as ornamental plants under the name *tuberous morning glory*, used in a horticultural context.



ENGLISH: **TONGAN TARO**
SCIENTIFIC: ***Colocasia esculenta***
TONGAN: **TALO TONGA**

Scientific classification

Kingdom: Plantae
Clade: Angiosperms
Clade: Monocots
Order: Alismatales
Family: Araceae
Genus: *Colocasia*
Species: ***C. esculenta***
Binomial name: ***Colocasia esculenta***
 (L.) Schott
Local name: ***Talo Tonga***





ENGLISH: **COFFEE**
SCIENTIFIC: *Coffea arabica*
TONGAN: **KOFI**

Scientific classification

Kingdom: Plantae
Clade: Tracheophytes
Clade: Angiosperms
Clade: Eudicots
Clade: Asterids
Order: Gentianales
Family: Rubiaceae
Genus: Coffea
Species: *C. arabica*
Binomial name *Coffea arabica* L.



Coffea arabica, also known as the **Arabian coffee**, "coffee shrub of Arabia", "mountain coffee" or "arabica coffee", is a species of *Coffea*. It is believed to be the first species of coffee to be cultivated, and is the dominant cultivar, representing about 60% of global production. Coffee produced from the (less acidic, more bitter, and more highly caffeinated) robusta bean (*C. canephora*) makes up most of the remaining coffee production. Arabica coffee originates from Ethiopia and was first cultivated in Yemen, and documented by the 12th century.

Wild plants grow between 9 and 12 m (30 and 39 ft) tall, and have an open branching system; the leaves are opposite, simple elliptic-ovate to oblong, 6–12 cm (2.5–4.5 in) long and 4–8 cm (1.5–3 in) broad, glossy dark green. The flowers are white, 10–15 mm in diameter and grow in axillary clusters. The seeds are contained in a drupe (commonly called a "cherry") 10–15 mm in diameter, maturing bright red to purple and typically contains two seeds, often called coffee beans.





ENGLISH: **TANNIA (COCOYAM)**
SCIENTIFIC: ***Xanthosoma sagittifolium***
TONGAN: **TALO FUTUNA**

Scientific classification

Kingdom: Plantae
Clade: Tracheophytes
Clade: Angiosperms
Clade: Monocots
Order: Alismatales
Family: Araceae
Genus: *Xanthosoma*
Species: ***X. sagittifolium***
Binomial name: ***Xanthosoma sagittifolium***
 (L.) Schott



Xanthosoma sagittifolium, the **arrowleaf elephant ear**, **arrowleaf elephant's ear**, **malanga** or **American taro**, is a species of tropical flowering plant in the genus *Xanthosoma*, which produces an edible, starchy corm. Cultivars with purple stems or leaves are also variously called **blue taro**, **purple taro**, **purplestem tannia**, and **purple elephant's ear** among others. Taro is a different species that belongs to the genus *Colocasia*.

In Bolivia, it is called *walusa*, in Colombia *bore*, in Costa Rica *tiquisque* or *macal*, in Cuba *malanga*, in Mexico *mafafa*, in Nicaragua *quequisque*, in Panama *otoe* and *ocumo* in Venezuela. In Brazil, the leaves are sold as *taioaba*. The tuber (called *nampi* or *malanga*) is also used in the cuisine of these countries. The plant is often interplanted within reforestation areas to control weeds and provide shade during the early stages of growth.





ENGLISH: **PASSION FRUITS**
SCIENTIFIC: ***Passiflora edulis***
TONGAN: **VAINE**

Scientific classification

Kingdom: Plantae
Clade: Tracheophytes
Clade: Angiosperms
Clade: Eudicots
Clade: Rosids
Order: Malpighiales
Family: Passifloraceae
Genus: *Passiflora*
Species: ***P. edulis***
Binomial name ***Passiflora edulis***



Passiflora edulis, commonly known as **passion fruit**, is a vine species of passion flower native to southern Brazil through Paraguay and northern Argentina. It is cultivated commercially in tropical and subtropical areas for its sweet, seedy fruit. The fruit is a pepo, a type of berry, round to oval, either yellow or dark purple at maturity, with a soft to firm, juicy interior filled with numerous seeds. The fruit is both eaten and juiced, the juice often added to other fruit juices to enhance aroma.

P. edulis is a perennial vine; tendrils are borne in leaf axils, and have a red or purple hue when young. There are two main varieties: a purple-fruited type, *P. edulis* f. *edulis*, and the yellow-fruited *P. edulis* f. *flavicarpa*.

Usually, the vine produces a single flower 5–7.5 cm wide at each node. The flower has 5 oblong, green sepals and 5 white petals. The sepals and petals are 4–6mm in length and form a fringe. The base of the flower is a rich purple with 5 stamens, an ovary, and a branched style. The styles bend backward and the anthers, which are located on top of the styles, have a very distinct head.





ENGLISH: VANILLA
SCIENTIFIC: *Vanilla planifolia*
TONGAN: VANILA

Scientific classification

Kingdom: Plantae
Clade: Tracheophytes
Clade: Angiosperms
Clade: Monocots
Order: Asparagales
Family: Orchidaceae
Sub-family: Vanilloideae
Tribe: Vanilleae
Genus: *Vanilla*
 Plumier ex Mill., 1754



Vanilla planifolia is a species of vanilla orchid. It is native to Mexico and Belize. It is one of the primary sources for vanilla flavouring, due to its high vanillin content. Common names include **flat-leaved vanilla**, and **West Indian vanilla** (also used for the Pompona vanilla, *V. pompona*). Often, it is simply referred to as "the **vanilla**". It was first scientifically named in 1808. Like all members of the genus *Vanilla*, *V. planifolia* is a vine. It uses its fleshy roots to support itself as it grows. Flowers are greenish-yellow, with a diameter of 5 cm (2 in). They last only a day, and must be pollinated manually, during the morning, if fruit is desired. The plants are self-fertile, and pollination simply requires a transfer of the pollen from the anther to the stigma. If pollination does not occur, the flower is dropped the next day. In the wild, there is less than 1% chance that the flowers will be pollinated, so in order to receive a steady flow of fruit, the flowers must be hand-pollinated when grown on farms.





ENGLISH: MANIOC (CASSAVA)
SCIENTIFIC: *Manihot esculenta*
TONGAN: MANIOKE

Scientific classification

Kingdom: Plantae
Clade: Tracheophytes
Clade: Angiosperms
Clade: Eudicots
Clade: Rosids
Order: Malpighiales
Family: Euphorbiaceae
Genus: *Manihot*
Species: ***M. esculenta***
Binomial name: ***Manihot esculenta***
 Crantz



Manihot esculenta, commonly called **cassava**, **manioc**, is a woody shrub native to South America of the spurge family, Euphorbiaceae. Although a perennial plant, cassava is extensively cultivated as an annual crop in tropical and subtropical regions for its edible starchy tuberous root, a major source of carbohydrates. Though it is often called yuca in parts of Spanish America and in the United States, it is not related to yucca, a shrub in the family Asparagaceae. Cassava is predominantly consumed in boiled form, but substantial quantities are used to extract cassava starch, called tapioca, which is used for food, animal feed, and industrial purposes. The Brazilian farinha, and the related garri of West Africa, is an edible coarse flour obtained by grating cassava roots, pressing moisture off the obtained grated pulp, and finally drying it (and roasting in the case of farinha).



Cassava is the third-largest source of food carbohydrates in the tropics, after rice and maize. Cassava is a major staple food in the developing world, providing a basic diet for over half a billion people. It is one of the most drought-tolerant crops, capable of growing on marginal soils. Nigeria is the world's largest producer of cassava, while Thailand is the largest exporter of cassava starch.



ENGLISH: SWEET CORN
SCIENTIFIC: *Zea mays*
TONGAN: KOANE

Scientific classification

Kingdom: Plantae
Clade: Tracheophytes
Clade: Angiosperms
Clade: Monocots
Clade: Commelinids
Order: Poales
Family: Poaceae
Sub-family: Panicoideae
Genus: *Zea*
Species: *Z. mays*
Binomial name: *Zea mays*
 L



Sweet corn (*Zea mays* convar. *Saccharate* var. *rugosa*; also called **sweetcorn**, **sugar corn** and **pole corn**) is a variety of maize with a high sugar content. Sweet corn is the result of a naturally occurring recessive mutation in the genes which control conversion of sugar to starch inside the endosperm of the corn kernel. Unlike field corn varieties, which are harvested when the kernels are dry and mature (dent stage), sweet corn is picked when immature (milk stage) and prepared and eaten as a vegetable, rather than a grain. Since the process of maturation involves converting sugar to starch, sweet corn stores poorly and must be eaten fresh, canned, or frozen, before the kernels become tough and starchy.

It is one of the six major types of corn, the others being dent corn, flint corn, pod corn, popcorn, and flour corn.





ENGLISH: BREADFRUIT
SCIENTIFIC: *Artocarpus altilis*
TONGAN: MEI

Scientific classification

Kingdom: Plantae
Clade: Tracheophytes
Clade: Angiosperms
Clade: Eudicots
Clade: Rosids
Order: Rosales
Family: Moraceae
Genus: Artocarpus
Species: *A. altilis*
Binomial name *Artocarpus altilis*
(Parkinson) Fosberg



PUOU



LOUTOKO



MAFALA



MAOPO



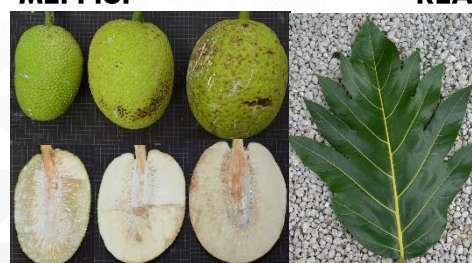
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KEA TALA



AVELOLOA



KEA



ENGLISH: **DRAGON FRUIT (PITAYA)**
SCIENTIFIC: ***Selenicereus undatus***
TONGAN: **TALAKONI**

Scientific classification

Kingdom: Plantae
Clade: Tracheophytes
Clade: Angiosperms
Clade: Eudicots
Order: Caryophyllales
Family: Cactaceae
Sub-family: Cactoideae
Genus: *Selenicereus*
Species: *S.undatus*
Binomial name: ***Selenicereus undatus***
(Haworth) D.R.Hunt



Selenicereus undatus, the **white-fleshed pitahaya**, is a species of Cactaceae and is the most cultivated species in the genus. It is used both as an ornamental vine and as a fruit crop - the **pitahaya** or **dragon fruit**. The native origin of the species has never been resolved.

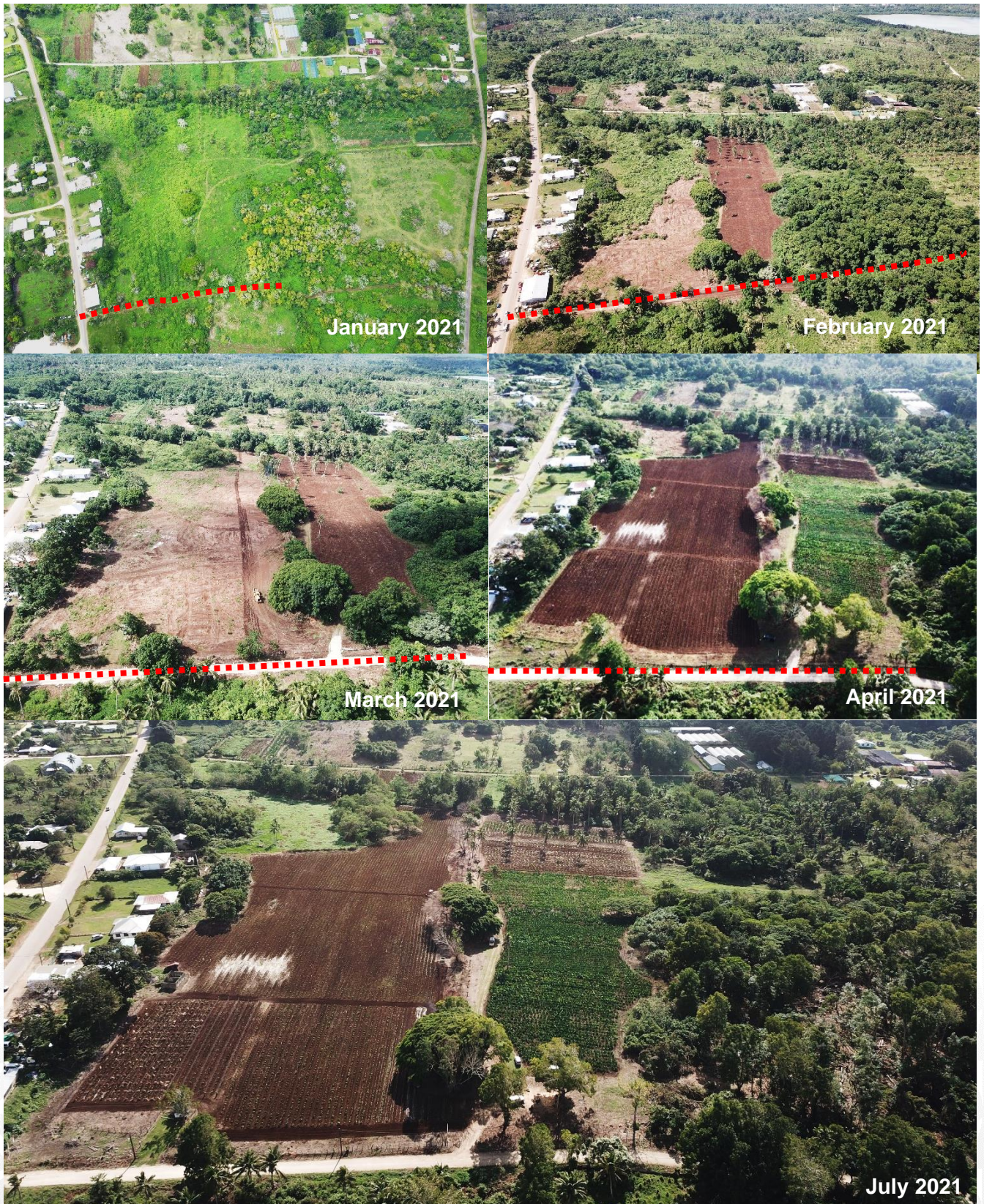
Dragon fruit stems are scandent (climbing habit), creeping, sprawling or clambering, and branch profusely. There can be 4–7 of them, between 5 and 10 m or longer, with joints from 30–120 cm or longer, and 10–12 cm thick; with generally three ribs; margins are corneous (horn-like) with age, and undulate.

Areoles, that is, the small area bearing spines or hairs on a cactus, are 2 mm across with internodes 1–4 cm. Spines on the adult branches are 1–4 mm long, being acicular (needle-like) to almost conical, and grayish brown to black in colour and spreading, with a deep green epidermis.

The fruit is oblong to oval, 6–12 cm long, 4–9 cm thick, red with large bracteoles, with white pulp and edible black seeds.



Fatai Transformation



The works

January 2021

Approval for Land Use

Palace Office granted approval for Feletoa, Mataika and MORDI TT to utilise the land.

February 2021

Land preparation

Starting land clearance and preparation

March 2021

Planting of Taro

Taro planting materials from Matatua was sent to Fatai for planting

*Visited by His Majesty to Fatai to mark the beginning of the Project

April 2021

Land preparation

Continue on land clearance and preparation

May 2021

Land preparation

Continue on land clearance and preparation

June 2021

Setting up demonstration

Planting of ginger, turmeric, kumara, manioc, coffee, vanilla

July 2021

Kava

Training of Farmers on Kava / Planting Kava by variety

*Royal Tour by His Majesty to Fatai to follow-up on the Project



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