

Quarantine's non-compliance is a risk to Samoa's sustainable biodiversity

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Introduction

Samoa is gifted with a diversity of flora and fauna, some of which are endemic species. An example of an endemic species is the *Manilkara hoshinoi* or "Pau" species of hardwood which is scarce in the forest at the present time (personal communication with the Assistant Director of Forestry). These endemic species must be conserved using the various methods which have been reported (Pouono and Semisi, 2001).

In our sustained environment, new varieties of taro were released during 1996 (Anon, 1998), 2000 and 2001 (Unpublished information) by the Ministry of Agriculture, Forest, Fisheries and Meteorology (MAFFM). These varieties were selected because of their improved tolerance to the taro leaf blight disease, caused by *Phytophthora colocasiae* Racib., while a new breed of Australian cattle was introduced in the 90s to improve the genetic composition of the local industry. In addition, there has also been an increasing trend in the importation of a wide range of plant species and varieties within the cut flower industry. Another case has been the introduction of bio-agents such as *Telenomus* and *Ooencyrtus* species in 1987 for the fruit piercing moth research purposes (Anon, 1995).

Simultaneously, Samoa's biodiversity is constantly under threat. It is quite obvious that some coconut varieties such as Niu Afa and Niu Vai are no longer common in the rural population. The many types of birds which once graced our skies are no longer visible in numbers as they were 20 years ago. Some taro varieties such as talo manu'a, magasiva, and a host of other local varieties (Anon, 1994) have ceased to be cultivated by local farmers. Such significant changes can be attributed to the action of mankind, and they justify the need for a sustainable environment. This is important because of Samoa's unique environment and the distinctive animal and plant populations which are seen as critical success factors for food security and also as a major tourist attraction. In this regard, the Quarantine and Regulatory division of MAFFM has a major contribution to Samoa's biosecurity.

This paper's emphasis is on the non-conformance issue, particularly its application under biosecurity. It is used in Agriculture Quarantine, particularly, to represent the kind of risk that Samoa's biological diversity is prone to. The main objective is for import consignments to be in compliance with quarantine sanitary requirements, in a preventive approach to maintaining a sustainable biodiversity.

This paper's approach is to reflect on some biodiversity cases in the past, a brief analysis of current potential threats, followed by a discussion on pertinent issues before making the final conclusion.

Past experience

In the 90's, Samoa was devastated by two major catastrophies; the african snail and the taro leaf blight disease. Both pests were present in Tutuila before they were discovered in Samoa.

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This, coupled with the high population traffic between the two Samoas, provides evidence to support the premise that the introduction of these pests could be strongly linked to non-conformity with quarantine procedures between the two countries. Some container consignments from Tutuila were found harbouring the african snail in 1982 and then again in January 1993. The first introduction was successfully eradicated from the Vaitele Industrial Zone (Anon, 1993).

In relation to biodiversity, the damage by the taro leaf blight was devastating to the taro industry. Since the 1993 blight, all of the local taro varieties (Anon, 1994) have been in the state of extinction. This also posed a significant impact on Samoa's economy and the future security of taro as a staple food. It is obvious that these major changes in the totality of the biodiversity were triggered by foreign pests which invaded our environment. This is a priority area of international concern, and it must be prevented while still facilitating trade.

From experience, import and export consignments are high risk avenues, particularly regarding the non-compliance syndromes associated with quarantine preventive requirements. When this first line of defense fails, some other quarantine responses to non-compliance are needed. These would include consignment detention, sorting and reconfiguration, treatment, destruction, reshipment and withdrawal of the import permit.

Non-compliance level at ports of entry

The non-compliance level from January – June 2001 at the main international airport at Faleolo is shown in Table 1.

At Faleolo, passenger consignments without an import permit ranged from 45 percent in March to 62 percent in January. At Fagalii, it was 87 percent for June. The overall average for both Faleolo and Fagalii based on the available information was 60 percent.

Similarly, the consignments which were intercepted at Faleolo without a sanitary certificate ranged from 60 percent in March to 74 percent in January. Those intercepted at Fagalii airport stood at 86 percent, and the overall average non-compliance was 69 percent.

The average number of consignments received per month at Faleolo during January – June 2001 was about 4000, and the amount of these searched was approximately 9 percent. This is about equal to the number of passengers referred to quarantine clearance, which also averaged 9 percent. These figures indicate a high risk, in the light of the many pests which are potential threats to Samoa's biological diversity.

Potential threats to Samoa's biodiversity

A small sample of the pests which are currently at high level status to be prevented from Samoa are presented in Table 2.

The foot and mouth virus, which affects cattle, is a world wide concern due to the loss of millions of cattle in Europe. The taro beetle and other viruses, which affect taro, have the potential to be even worse than the taro leaf blight disease. The mealy bug can cause severe defoliation, and it can easily be introduced via the importation of plant materials. The fruit fly is the sole reason why Samoa has not been able to export fruits and vegetables to New Zealand.

Non-compliance description	Month	Number of passenger consignments	Percent non-compliance	Port of entry
Consignments without the Import Permit	January	367	62	Faleolo
Consignments without the Import Permit	February	272	49	Faleolo
Consignments without the Import Permit	March	349	45	Faleolo
Consignments without the Import Permit	April	374	58	Faleolo
Consignments without the Import Permit	May	341	60	Faleolo
Consignments without the Import Permit	June	367	61	Faleolo
Consignments without the Import Permit	June	121	87	Fagalii
Average Percent Non-compliance description			60%	
Consignments without the Sanitary Certificate	January	367	74	Faleolo
Consignments without the Sanitary Certificate	February	272	66	Faleolo
Consignments without the Sanitary Certificate	March	349	60	Faleolo
Consignments without the Sanitary Certificate	April	374	64	Faleolo
Consignments without the Sanitary Certificate	May	341	67	Faleolo
Consignments without the Sanitary Certificate	June	367	69	Faleolo
Consignments without the Sanitary Certificate	June	121	86	Fagalii
Average Percent Non-compliance			69%	

Table 1. Non compliance level on passenger at Faleolo & Fagalii international airports during January - June 2001

Threat	Location	Risk Analysis
Viruses Foot and Mouth Disease	Europe	Potential threat to the cattle industry.
Taro viruses	Papua New Guinea, Solomon Islands	Potential threat to the taro industry
Mites Varroa mites	New Zealand	Potential threat to the Bee Keeping industry.
Mealy bugs Long-tailed Mealybug	New Zealand	Potential threat to the cutflower industry and many other plant species.
Fruit Flies Mango fly	Papua New Guinea, Solomon Islands Marshall Islands, Gilbert Islands of Kiribati Australia (northern Queensland)	Potential threat to the fruit tree industry.
Banana fly	Australia (east coast) Papua New Guinea Solomon Islands, Vanuatu	Potential threat to the banana industry.
Melon fly	Papua New Guinea, Solomon Islands Hawaii	Potential threat to plants in the family Cucurbitaceae (eg water melon and pumpkin).
Breadfruit fly	Papua New Guinea, Solomon Islands Vanuatu, New Caledonia	Potential threat to breadfruits.
Beetles Taro beetle	Fiji	Potential threat to the taro industry
Frog	American Samoa	Potential threat to drinking water.

Table 2. Some pest and diseases with a potential threat to Samoa's biodiversity

Discussion

Samoa's biological diversity has been invaded by a number of pests and diseases. Such invasions have resulted in the extinction of varieties, and the scope of vegetables is from fruit flies. The avenue for the introduction of these pests into Samoa is a matter of concern. One of the reasons for concern is the proximity of these pests to our shores, in light of the accelerated

world trade and the public global mobility which is emerging at a very fast rate. According to Allwood (2001), some travelers consciously transport fruit that is not certified free of fruit fly eggs or larvae.

The main issue which needs to be highlighted is the level of non-compliance at ports of entry, particularly in regard to the import requirements. The current level of passenger consignments without an import permit and/or the sanitary requirement is extremely high. In a personal conversation with a New Zealand authority, it was stated that passenger consignments are high risk pathways, and high risk pests have been intercepted in this way. Therefore, the current non-compliance level on the importing requirement is unacceptable for such a first line of preventive and/or defensive measure.

The challenge for all Samoans is to bring this non-compliance level down to zero. Unfortunately, the other lines of defense can be very difficult, and the risk to Samoa's biosecurity would be high. There are other related matters that should be considered, but they are beyond the scope of this paper.

Conclusion

Samoa's biodiversity has been sustained through improvements in Agriculture. At the same time, a part of this biological diversity is constantly under threat from foreign pests. The risk of invasion is on high alert, because of the high level of non-compliance at the ports of entry. A strategic approach is to prevent pest incursion through public compliance with importing requirements.

References

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