

FIJI'S POLICIES AND FOCUS TOWARDS ENHANCING THE TROPICAL FRUITS INDUSTRY

Shalendra Prasad^{1*} & Steven J. R. Underhill¹

¹University of the Sunshine Coast, Australia

*Corresponding author: shalendra.prasad@research.usc.edu

ABSTRACT

Fruit production in Fiji represents less than 10% of the overall horticultural output, despite favorable climate and increasing market opportunities. In part, this situation can be attributed to a prevalence of low-intensity and semi-commercial fruit production systems, poor postharvest handling practices and limited value chain development. Improving domestic fruit production and consumption in Fiji is a critical contributor to improving the nutritional status of the general population. Fiji currently has one of the highest incidences of non-communicable diseases in the world. Fiji also imports FD\$17.8 million fresh fruit (USD 8.21 million) (includes; grapes, oranges, apples, pears and kiwi fruit) and an addition of FD\$3.8 million (USD 1.75 million) in processed products annually. Some of these imported fruits can be substituted with locally grown tropical fruits such as; guava, mango, avocado, oranges, mandarins and other indigenous fruits. The Fijian Government has sought to stimulate increased domestic fruit production and consumption with various levels of success. This paper will review the Fiji Government's past and present policies aimed at promoting the fruit industry and associated health outcomes, highlighting key learnings and current thinking.

Keywords: policy, fruits, industry, local, orchards

1. INTRODUCTION

The agriculture sector remains important to Fiji's prosperity providing valuable employment, income, and food security for the population. Approximately 65% of the population are directly involved in some form of agriculture where the current production is derived from approximately 65,099 small and medium sized farms (MPI, 2009). Much of Fiji's agricultural productivity is derived from subsistence-based production and small holder family-owned farms (Kumar and Kumar, 2015). These farms are found across a diverse land base that has over 300 small islands. The large population engaged in this sector, is indicative of the importance of agriculture which over-rides all other economic sectors. Until two decades ago, agriculture has remained the highest contributor to gross domestic product. The sugar industry, the mainstay of agriculture sector has substantially declined in the last decade, however provides opportunities for other agricultural subsectors. The comparatively low productivity of the sector as a whole reflects many factors including the dominance of subsistence over commercial farming (Reddy, 2003), inadequate and expensive inputs, poor or lack of low cost technologies, inadequate infrastructure (Tuqa *et al.*, 2018), marketing deficiencies, and high production costs due to the lack of scale economies and expensive farm inputs. It is estimated that at present, 80% of fruits and vegetables consumed by the tourism sector are imported (Young & Vinning, 2007).

The horticulture subsector continues to contribute towards improving the standard of living of farmers in Fiji. The Fijian climate is suitable to growing a number of tropical fruits and fruit

production is now being recognized as a sustainably profitable enterprise (Tiwari *et al.*, 2018). Some Pacific Island countries (PICs) have increasing occurrences of noncommunicable diseases (Snowdon *et al.*, 2011). The frequent consumption of fruits can lower the risk of cancer, heart disease, hypertension, and stroke (Lako *et al.*, 2007). The high rates of increasing urbanization coupled with expiry of land leases provide opportunities for domestic market of fruits. The increasing tourism market provides opportunity for fresh produce market. While the scope for increasing fruit production, exports, and processing exists, the Fijian fruit sector has challenges which remain unresolved and untapped opportunities. This paper reviews the Fijian government's past and present fruit development policies and some fruit development projects. This paper aims to identify opportunities to enhance the fruit industry in Fiji.

2. METHODOLOGY

The data for this research have been mostly extracted from secondary sources. The production, import and exports data were collected from the Ministry of Agriculture's (MOA) annual reports, bulletins and commodity reports. In addition, the national annual budget estimates from 1980 to 2010 were used to extract budget estimates. The National Development Plans have also been used to trace fruit orchard establishment policies of past governments. This study is more circumstantial than empirical on measuring performance where commodity outputs are traced over various time periods using available data.

2.1. Fiji fruit production, import and exports

Over the years, the government has introduced a number of fruit crops with the view of providing food and income security for farmers. As a result, a large number of tropical fruits have been cultivated in Fiji. Some are commercially cultivated while the rest grows in scattered areas. The initial problems of production, processing, and marketing still exist with many major fruit crops. In the 1930s, minor crops were largely cultivated for local consumption and with the decline in banana exports, the administration focused on exporting citrus and exporting canned pineapples (Department of Agriculture, 1931). With increased production of fresh fruits, some farmers faced problems of marketing and to solve this problem market structures were constructed in Nausori and Sigatoka (Parham, 1940). The construction of these structures not only eased the marketing of produce locally but also provided opportunities for export of fresh fruit and vegetables to the New Zealand military despite the floods of 1941 (Ackland, 1941). Despite lack of storage, poor transportation facilities and support services in place, the farmers were urged to produce fruits and vegetables to meet the demands of increasing export market. This eventually resulted in farmers being unable to maintain the quality of products after harvesting (post-harvest losses), which was complicated by poor transportation services (Jack, 1942).

Interestingly, guava was once declared a noxious weed in the colony of Fiji as it was spreading at an alarming rate infesting arable land (Mune & Parham, 1956) though it is regarded as a nutritious fruit. A continuous effort has been made by the national government to promote fruits as commercial ventures for farmers and enhancing their opportunities for exports and even local processing through 5-year Development Plans (DP). DP 6 highlighted fruit development, DP 7 focused on passion fruit, DP 8 on citrus, and DP 9 was on pineapple, mango, pawpaw, and citrus (Table 1). Thereafter, a 4-year Commodity Development Framework programme (1997 to 2000) policy direction was focused on pineapple, mango, papaya. The table is adopted and modified from (Kumar & Kumar, 2015).

Table 1. Development Plans highlights fruit development strategies.

Period	Objectives	Fruit Focus Areas/Strategies
DP6 1971 to 1975	Stimulation of agricultural sector by raising farmer's income and increasing rural employment. Creation of efficient marketing system by National Marketing Authority	Raise efficiency on existing farms by intensification, crop diversification and research, provision of subsidies, credit and financial incentives. The targeted commodities also include fruits.
DP7 1976 to 1980	Increase in agricultural output to raise the rural income and employment opportunities.	Production of fruits. The export crop included was passion fruit.
DP8 1981 to 1985	Increase agricultural output, expand, diversify & increase exports, and encourage local participation in agribusiness.	The strategy was import substitution and self-sufficiency. Focus on citrus and other fruits.
DP9 1985 to 1990	Improve self-sufficiency; concentrate resources in selected commodities for export and domestic market to make agriculture more efficient by employment & income generation and extend new technologies to farmers.	Promoting self-sufficiency and exports. Fruit crop included were pineapple, mango, pawpaw and citrus.

2.2.1. Fruit Production trend from 1960 to 2014

The dynamics of total fruit production (ha) trend from 1960 to 2014 is referred in Figure 1. It is noted that initially there were just a few fruit crops. Banana was the major fruit crop and over the years more fruit crops have been introduced. The total area under fruits in early 1960s was approximately 2200 ha. The production has been reduced due to national disasters. The sharp decline in production was during 1972 due to cyclone Bebe, which devastated the banana industry. Thereafter, in terms of area under fruits, it has taken over 40 years to match the production levels of 1960s. This is despite introducing a number of fruit crops as per DPs. The trend indicates that there exists challenges and opportunities for the Fijian fruit industry.

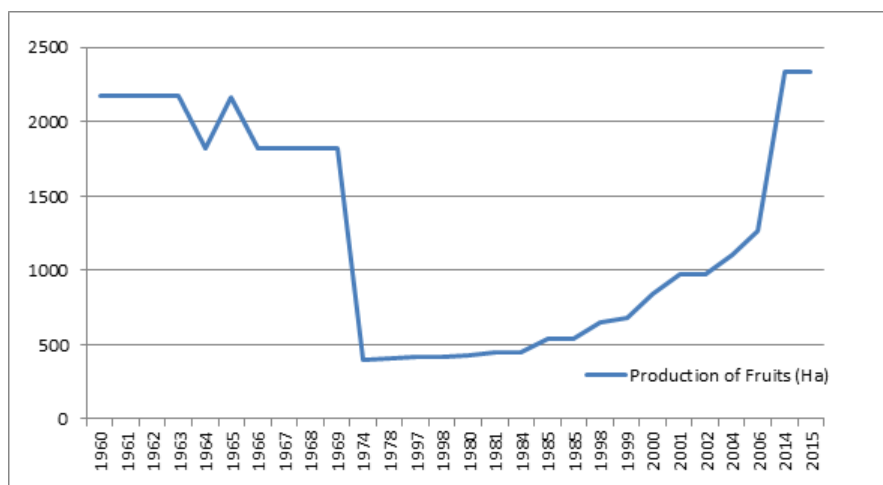


Figure 1. Fruit production (ha) trend 1960-2014

2.2.2. Import and Export Trend of Fruits from 1959 to 2015

The import and export trends of fruits (tonnes) from 1960 to 2014 is referred in Figure 2. Until around late 1970s, Fiji was self-sufficient in fruits indicating zero imports. The imports of fruits commenced in early 1980s and have significantly increased to unprecedented levels. The banana exports had ceased completely by the early 1980s, passionfruit juice and pulp exports markedly declined and production and marketing performance continued to deteriorate (Fleming & Blowes, 2003). This could be contributed to decrease in production after cyclone Bebe and increase in tourism industry. Small volumes of fresh pineapples were exported to New Zealand

during the 1980s, with the highest value reached of USD 54,000 in 1983 (Fleming & Blowes, 2003).

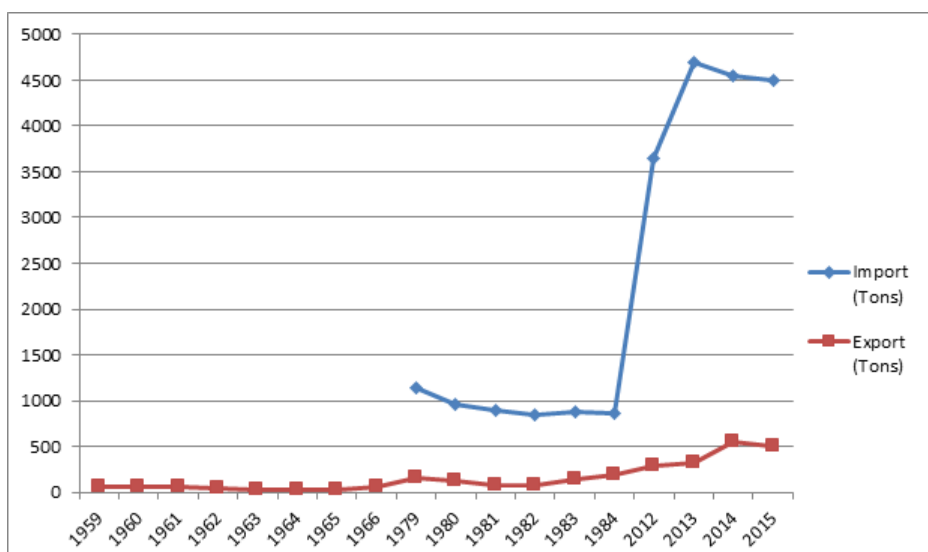


Figure 2. Import and Export Trend of Fruits from 1959 to 2015

3. PERFORMANCE OF SOME SELECTED FRUIT CROPS IN FIJI

3.1. Banana

Bananas (family *Musaceae*) existed from an early stage in Fiji. It has been exported in 1800. Banana is the first fruit that was successfully grown commercially in Fiji and exported to countries as far as Canada. Banana Licensing Board was established by MoA to promote banana production and export. Chinese farmers grew bananas along the banks of the Sigatoka River in the early 1900s exported to Australia until tariffs were increased in 1911 (Duncan & Sing, 2009). By 1931 banana was planted on the islands Tavueni, Gau, Moala, and Kadavu and large areas opened in Rewa (DOA, 1931). Despite this, banana production continued to increase and exported to New Zealand. In order to increase production there was a need for demonstration plots to be established near farms and Fijians had to be instructed use of implements (DOA, 1931). The government's incentive to value adding of banana resulted in successfully producing banana figs, chips, and flour which could be stored for longer period of time (Jack, 1942).

By early 1960's, the banana export industry became noticeable high and many smallholder farmers were involved in hope of achieving economic success (McPaul, 1960). The Banana Export and Marketing Act was implemented in 1960 and Banana Marketing Board was established to secure abundant and efficient supply of banana, develop bylaws to licence suppliers, act as middlemen to purchase bananas from producers, and arrange the export and marketing of Fijian banana brand. Around mid-1960s, under the Intensive Banana Scheme, banana farms were established in Lomaivuna. Under this scheme, banana farmers were settled on 3.64 ha farms with a house and 1.61 ha of established banana orchards (Duncan & Sing, 2009). This scheme was later extended to Waidina locality. Banana ranked as the third most valuable agricultural export after sugar and coconut products in 1970 (Fleming & Blowes, 2003). However, the banana industry was severely affected by cyclone Bebe in 1972. The industry faced further demise due to the heavy infestation of pests and diseases resulting in high rejection rates of export quality bananas. Compounded by these problems, the banana industry never recovered.

3.2. Mango

Mango, botanical name *Mangifera indica* is native to India and is one of the most popular seasonal fruit in Fiji. The mango fruits are in season from August to March, which includes both the hybrids and local varieties. Mango was first introduced in late 1800s and grows vigorously and produces well though it is not indigenous to Fiji (Iqbal, 1982). It is found almost all over Fiji and particularly grows well in extensive areas of Western Viti-Levu and Northern Vanua Levu. This widespread distribution of naturally occurring mango trees is an indication of its adaptability in Fiji. After introduction, mango was grown as scattered trees for domestic consumption. The interest for developing the mango industry was revisited in the 1980s after being prioritized in the DP9 period with prospects for exports and processing. Within this period, opportunity for export of improved varieties of mangoes to Japan was also identified as a highly remunerative investment. However, export production levels were not achieved due to devastation of the mango orchards during the cyclone. The national government acknowledged the progress and commenced the development of mango industry by establishing the mango research at Legalega and Sigatoka Research Stations. The recorded first commercial mango planting was in 1981 in Yaqara, Tavua and the second was done at the Native Land Development Commission Legalega orchard in 1983 (Abbas *et al.*, 2019). Smallholder mango planting was encouraged by the Ministry of Primary Industries in collaboration with the National Marketing Authority using improved varieties produced at the Sigatoka Research Station. By the end of 1984, 37 farmers in North Western Viti Levu were involved in this programme (Iqbal, 1982). The potential to supply the domestic tourist market was recognized in the mid-1990s due to increasing tourism sector (ADB, 1996), which provided an incentive for farmers with supplementary marketing opportunities. The niche market export demand for pickled and dried local mango varieties resulted in recommendations included in the Fiji policy framework for agricultural marketing.

Mango value chain provides alternative livelihoods to a number of people. It provides food security and income. The majority of market vendors are women and trading of mangoes provides supplementary income. The increasing number of former Fijian residents living abroad (New Zealand, Australia Canada, and United States) provides market for export of dried and processed mango. The mango fruit is an important source of Vitamin A, B, and C (Nath, 1995), which contributes to nutritional health benefits. Mangoes for export are picked half ripe (color break). The yields vary depending on the varieties, age of the tree, and environmental conditions. It is suggested that harvesting be carried out in the early part of the day so as to avoid build-up of field heat (Prasad, 2008). The mangoes are largely sourced from scattered trees that have limited or no cultivation practices. This equates to no pest and diseases management with resultant poor quality fruits. These trees gradually become tall, hindering harvesting process. If not harvested and handled properly, mangoes falling from higher trees are prone to damage and brushing. Poor harvesting and postharvest handling practices with absence of cold chain increases the likelihood of mangoes to increased postharvest losses. Fijian government's intentions for processing and value addition of mango (dried and jam) considering the existing adaptability of these varieties in Fiji conditions were documented in the Fiji 2020 Agriculture Sector Policy Agenda (Bacolod, 2014).

3.3. Passionfruit

The passionfruit (*Passiflora edulus*) was introduced in Fiji from Hawaii in 1958 to broaden the export base to complement sugar which was the principal agricultural crop (Prasad & Chandra,

1980). The national government availed necessary resources to develop this industry. Around 1961 experimental plots were set up at Sigatoka Research Station and later introduced to farmers. By 1968 it was grown on commercial scale to supply to two processing factories in Sigatoka under a contract between Land Development Authority (LDA) for producing and Can-pac Limited for processing (Hampton & Thompson, 1974). Can-pac Limited was taken over by South Pacific Foods an Australian based company. The LDA was taken over by Valley Industrial Cooperative Association (VICA), a local grower's organization for organizing contracts between farmers and processors by arranging and financing passion fruit plantings. In 1967 The VICA joined with Davis Consolidated Industries and took over Cottees limited. By 1972 -73 the fruit purchase and payment system broke down and the two processors made their own contract arrangements with farmers (Hampton & Thompson, 1974).

During this period, passion fruit industry was flourishing and was supported by government through agronomic research, University of the South Pacific through social, economic, and institutional research, and commercial companies through processing and marketing research (Prasad & Chandra, 1980). During 1960s and early to mid-1970s, there was a significant value of passionfruit exports having over 400 producers and two processing firms operating in Sigatoka Valley on the main island of Viti Levu (Fleming, 1996). In terms of production practices, government initiative research included diseases and pest management, fertilizer application, vine spacing, pollination and flowering, and development of crop calendar in relation to climatic conditions. Unfortunately, passionfruit industry failed to live up to its potential and stagnated for the remainder of the 1970s. While passionfruit is found in the local markets during season, this is often through the initiatives of individual farmers.

3.4. Pineapple

Pineapple production in Fiji received various levels of support to develop into a commercial crop. The colonial administration in the 1800's was concerned of the economy driven by a single commodity (sugarcane) and was seeking other cash crops that would support the economy. Two such crops identified to provide leverage to the Fijian economy were banana and pineapples (SurrIDGE, 1931).

Pineapples had already started as a crop in Fiji in 1870's and was planted in Levuka and sold to Europeans and the visiting steamers berthing on the island. They were also sold to passengers in the steamers leaving Levuka port for either Australia or New Zealand. Fruits were exported to Australia and New Zealand in 1880's. Export to New Zealand in 1889 according to the newspaper comprised of 380 boxes of tea, 120 cases molasses, 460 cases of pineapples, and about 4,000 bunches of banana.

Fijian pineapples in 1800's were gaining popularity amongst the local and international markets. The quality of the pineapples grown in the country was hailed as one of the best. The soil and the climatic conditions of Fiji were considered as very ideal for pineapple cultivations. While fresh pineapples were already exported, it was however dependant on the arrivals of the steamers on regular basis. The discussions on the prospects of canning pineapples had already started in 1886. The first ever policy implemented in Fiji for development of fruits was passed by the Legislative Council in 1923, providing export duty concession for 10 years on any pineapple grown and canned in Fiji.

The prospects of canning pineapples in the islands were increasing and the colonial government was very supportive of the idea since it had keen interest to diversify agriculture due to

dependence on sugar which was subject to wide fluctuations on price in the world market. However, it was not until 1923 that the Legislative Council decided that no export duty will be charged for a period of 10 years on any pineapples grown and canned in Fiji. The legislation proved to be attractive to investors and a year later, Dominion Cannery Limited from Canada expressed interest in establishing pineapple growing and cannery industry in Fiji. The Colonial Sugar Refinery Company in 1936 diversified its operations from operating sugar mills to producing canned pineapples (Lal, 2015). However they had to close the cannery in 1955 after operating for 20 years (Lal, 2015; Moynagh, 1978).

Area cultivation under pineapple production drastically reduced after the closing of the cannery since there was no processing and very limited export market. Most of the pineapples produced were mainly for the local markets. Pineapples continued to be an important crop in the post-independence period. In 1974, a total of 11.5 ha of crop was established in the Western Division and 46.5 ha in Central Division with increasing number of farmers reportedly using fruiting hormone and chemical weed control (MOA, 1974).

Pineapples continue to play an important role in Fiji's agricultural productivity. The agricultural census conducted in 2009 identified 914 pineapple farmers farming a total land area of 445 hectares producing 2,800 tonnes of pineapples annually (DOA, 2009). The main markets are the local municipal markets, road side stalls, and the hotel industry. Even though exports in the last decade have been as low as at an average of 6 tonnes per annum, considerable amounts have been marketed in the tourism sector.

3.5. Citrus

Citrus of various varieties have been grown in Fiji for domestic use for a very long time. However not until the late 70's the government embarked on a commercial development program to enhance citrus production for major export oriented industry. Considerable research work was undertaken in various Government Research Stations to identify suitable varieties, and develop proper package of practices.

The major development project for citrus started in 1977 in Batiri, Vanua Levu with the objective of producing processed citrus juice for domestic consumption and for export. The processing factory was established in 1979. A total of 148 ha of land using 'Late Valencia' variety were planted with first commercial harvesting starting in 1981 (Chandra, 1983). The project ran into major financial difficulties in 1988 and was subsequently taken over by the National Marketing Authority (Jansen *et al*, 1990). Small holder farmers around Vanua Levu in 1984 were supplying 10 tonnes of fruits while 109 tonnes were supplied from Rotuma. Fruit piercing moth was the major problem in the citrus orchard resulting in 25% loss of mature fruits (DOA, 1985). Fiji currently produces 990 tonnes of citrus (MOA, 2018).

4. CHALLENGES AND OPPORTUNITIES OF FIJIAN FRUIT INDUSTRY

Tropical fruits can play a pivotal role in enhancing Fiji's agricultural contribution to the national economy. Opportunities exist into developing fresh and processed fruit industry for both domestic and export markets. Fiji currently imports USD 21 million worth of assorted fruits mainly consisting of apples, oranges, and grapes. A bulk of this can be easily replaced with increased local production of a range of tropical fruits such as guava, dragon fruit, mangoes, rambutan, and mangosteen.

Fruits and vegetables provide a diversified, flavored, colorful, low calorie, and high micro nutrient rich diet, having the ability to reduce non-communicable diseases. Globally, people are consuming less than the daily recommended requirement of fruits.

There exist enormous opportunities for developing the Fijian tropical fruit industry. In order to enhance production and consumption of fruits in Fiji, the following strategies are recommended:

- Nationwide awareness needs to be created to increase consumption of fruits.
- Increasing production through the establishment of fruit orchards.
- Making available elite fruit cultivars.
- Product development and processing fruits in season.
- Provision of cold storage facilities.
- Analysis of value chain to improve supply.
- Awareness on good postharvest practices.
- Aggressive promotion of local fruits into formal markets.

5. CONCLUSION

Fiji's tropical climatic conditions provide favorable environment for production of good quality fruits. However, the lack of policy interventions specifically targeting fruits over the years has created a gap in the development of this industry. Recently, the government has realized the importance of local fruit industry, therefore some policies are targeted to enhance local fruit production. Suitable policy measures promoting value addition and processing of fruits are encouraged to prolong shelf life of many seasonal tropical fruits.

REFERENCES

- Abbas, R., Ayyaz, S., Baker, I., Beyer, R., Brown, E., Duthie, R., Johnson, P., Kristedi, T., Kumar, S., Macintosh, H. (2019). *Analysis of mango markets, trade and strategic research issues in the Asia-Pacific*. Australian Centre for International Agricultural Research. https://www.aciar.gov.au/sites/default/files/project-page-docs/final_report_agb-2015-015.pdf
- Ackland, A. B. (1941). Fresh Fruit and vegetable supplies to the New Zealand Forces. *Fiji Agricultural Journal*, 12(65).
- Asian Development Bank (ADB). (1996). *Fiji Agricultural Sector Review: A strategy for growth and diversification*. <https://www.adb.org/publications/fiji-agriculture-sector-review-strategy-growth-and-diversification>
- Bacolod, E.D. (2014). *Fiji 2020: Agriculture Sector Policy Agenda*. Ministry of Agriculture, Fiji. <https://policy.asiapacificenergy.org/sites/default/files/fiji-2020-agriculture-sector-policy-agenda.pdf>
- Chandra, S. (1983). *Agricultural Development in Fiji*. Australian Universities International Development Program.
- Department of Agriculture (DOA). (1931). Agriculture convention. *Fiji Agricultural Journal*, 1(129).
- Duncan, R. & Sing, Y.W. (2009). The failure of agricultural policymaking in Fiji. *Pacific Economic Bulletin*, 24(2), 168-84. https://www.researchgate.net/publication/256846010_The_Failure_of_Agricultural_Policy_Making_in_Fiji
- Fleming, E.M. (1996). *Research Options for High-Value Agricultural Exports in South Pacific Island Nations*. International Service for National Agricultural Research.
- Fleming, E.M. & Blowes, A. (2003). An Assessment of Commodity Export Performance in South Pacific Countries, 1960 to 1999, (Working Papers 12949), [University of New England, School of Economics]. IDEAS. <https://ideas.repec.org/p/ags/uneewp/12949.html>

- Hampton, R. & Thompson, P. (1974). Passionfruit production in Fiji. *Fiji Agricultural Journal*, 36, 23-7.
- Iqbal, M. (1982). A review of mango research and production in Fiji. *Fiji Agricultural Journal*, 44, 21-26.
- Jack, H.W. (1942). Annual report for the year 1941. *Fiji Agricultural Journal*, 13, 100.
- Kumar, S. & Kumar, S. (2015). The Successes and Failures of Policy in Fijian Agriculture Development, 1965-2012. *Pacific studies*, 35(3). <https://www.researchgate.net/publication/319532848>
The Successes and Failures of Policy in Fijian Agriculture Development 1965-2012
- Lako, J., Trenerry, V.C., Wahlqvist, M., Wattanapenpaiboon, N., Sotheeswaran, S., & Premier, R. (2007). Phytochemical flavonols, carotenoids and the antioxidant properties of a wide selection of Fijian fruit, vegetables and other readily available foods. *Food Chemistry*, 101(4), 1727-1741. <https://doi.org/10.1016/j.foodchem.2006.01.031>
- Lal, B. V. (2015). *Historical Dictionary of Fiji*. Rowman & Littlefield Publishers.
- McPaul, J.W. (1960). Aspects of Banana cultivation in Fiji. *Fiji Agricultural Journal*, 30, 5.
- Ministry of Primary Industries (MPI). (2009). *National Agricultural Census 2009 Report*. <https://catalog.ihsn.org/index.php/catalog/4370/download/56791>
- Moynagh, M. (1978). Land Tenure in Fiji's Sugarcane Districts since the 1920's. *The Journal of Pacific History*, 13(1), 53-73.
- Mune, T.L. & Parham, J.W. (1956). Guava and its control in Fiji. *Fiji Agricultural Journal*, 27, 103.
- Nath, R. (1995). *Mango in Fiji: present and future status of Mango*. [Unpublished]. Ministry of Primary Industries.
- Parham, W.L. (1940). Fijian farmers Co-operative Market at Nausori. *Fiji Agricultural Journal*. 11, 7.
- Prasad, A.A. (2008). Mango Cultivation in Fiji. *MPI Technical Bulletin*. Ministry of Primary Industries.
- Prasad, P. & Chandra, R. (1980). Review of passionfruit research In Fiji. *Fiji Agricultural Journal*, 42, 19-22.
- Reddy, M. (2003). Farm productivity, efficiency and profitability in Fiji's sugar industry. *Fijian Studies: A Journal of Contemporary Fiji*, 1, 225.
- Snowdon, W., Moodie, M., Schultz, J. & Swinburn, B. (2011). Modelling of potential food policy interventions in Fiji and Tonga and their impacts on noncommunicable disease mortality. *Food Policy*, 36, 597-605.
- Tiwari, A., Mishra, D., Kumar, S. & Gunathilake, D.C. (2018). Exploitation of Climate Resilient Minor Tropical Fruit Crops for Nutritional and Livelihood Security in Fiji Islands. *Int. J. Curr. Microbiol. App. Sci*, 7, 2135-2142.
- Tuqa, A., Lobendahn, K. & Bainivalu, S. (2018). Farm-to-table via collection centres in Fiji. *Experience Capitalization Series 7*. Wageningen. <https://cgspace.cgiar.org/handle/10568/98980>
- Young, J. & Vinning, G. (2007). *Fiji: Commodity Chain Study : Outcomes from the Investigations Implemented to Assess Import Substitution Potentials of Selected Horticultural Products*. Food and Agriculture Organization of the United Nations.