Squash *(Cucurbita spp.)*

1. Offer Analysis

1.1 General Description: Production, end-use, and market

Squash (various species in the genus Cucurbita), including zucchini, pumpkins and other related varieties, is a widely cultivated crop valued for its versatility, nutritional benefits, and adaptability across cuisines. Thought to have originated in the Americas, squash has become a global staple, especially in regions such as North America, Europe, Asia, and the Pacific. The crop thrives in temperate to warm climates and is commonly grown both in open fields and protected environments like greenhouses or plastic tunnels.

Squash grows best in well-drained, fertile soils with consistent moisture and plenty of sunlight. In the Pacific, countries such as Fiji, Samoa, and Tonga produce squash on smallholder farms and larger commercial operations, often using traditional farming methods that leverage the region's warm climate. While global production is led by countries like China, India, the United States, and Mexico, Pacific producers benefit from sustainable farming practices and the ability to cater to niche export markets—particularly in seasons when other regions experience supply gaps.

In New Zealand, the squash market includes both domestic production and imports. Local growers supply a range of squash varieties, including butternut, kabocha, and zucchini. Certain regions—such as Gisborne and Hawke's Bay—are notable for their squash production due to favourable growing conditions. Some greenhouse facilities near Auckland also ensure a steady supply of zucchini and specialty squashes. Imports also play a role in meeting demand out of season or supplying specialty varieties not readily grown locally.

Harvesting methods vary depending on the squash variety and target market. Most squash is harvested by hand to minimise damage, though mechanized processes can be used for larger, sturdier varieties (e.g., pumpkins). In warm Pacific climates, squash can often be produced year-round or at least across extended seasons, offering consistent local supply for fresh consumption and processed product markets.

Varieties of squash differ in shape, size, colour, and flavour, suiting diverse culinary applications. Common categories include:

Zucchini (Courgette): Green, cylindrical summer squash with tender flesh, widely used in sautés, stir-fries, and baked dishes.

Butternut Squash: Pear-shaped winter squash with sweet, orange flesh; popular for roasting, soups, and purées.

Kabocha (Japanese Pumpkin): Sweet flavour and dense texture, used in stews, soups, or roasted.

Spaghetti Squash: Oval-shaped, yellow, and known for its stringy flesh that can be used as a pasta substitute.

Table 1: Squash nutritional content

SQUASH NUTRITIONAL CONTENT	
Nutrient	Amount (per 100g)
Water	87.3g
Energy	48kcal
Protein	1.15g
Total lipid (fat)	0.17g
Carbohydrate	10.5g
Dietary Fibre	2.0g
Nitrogen	0.18g
Calcium (Ca)	22mg
Iron (Fe)	0.21mg
Magnesium (Mg)	15mg
Phosphorus (P)	27mg
Potassium (K)	329mg
Sodium (Na)	<2.5mg
Zinc (Zn)	0.19mg
Copper (Cu)	0.073mg
Manganese (Mn)	0.075mg

(Source: U.S. Department of Agriculture. FoodData Central. Published 2019)

Pumpkins: Larger varieties are often used in soups, pies, and decorative carvings, as well as industrial processing.

Squash is appreciated for its health benefits, containing dietary fibre, vitamins (especially A and C), and essential minerals. Demand continues to grow, fueled by interest in plant-forward diets and consumer awareness of squash's nutritional profile.

1.2 Uses & Benefits

Squash's versatility spans culinary, health, and industrial applications, offering significant opportunities for Pacific exporters to cater to various consumer segments. Below is an overview of high-potential and trending squash-based products:

Convenient Foods

- *Squash-Based Dips & Spreads:* Smooth, roasted squash blends (e.g., butternut) used as healthy, plant-based alternatives to dairy or chickpea-based dips.
- *Squash Burger Patties:* Hearty, veggie-forward patties using zucchini or butternut, often blended with beans or grains for a satisfying plant-based option.
- *Squash Pasta & Noodles:* Spiralized zucchini or spaghetti squash offering a low-carb, gluten-free alternative to conventional pasta.

Value-Added

- *Squash Chips:* Thinly sliced zucchini or pumpkin, baked or dehydrated into a crunchy, low-calorie snack.
- *Frozen Grilled Squash:* Pre-grilled and flash-frozen pieces, saving prep time while preserving flavor and texture.
- *Marinated Squash:* Cubed or sliced squash infused with vinegar, oil, and spices, perfect for tapas, sides, or salad toppings.
- *Squash in Oil:* Roasted squash slices preserved in oil with herbs, often served as antipasto or a premium salad ingredient.
- *Squash-Based Plant Proteins:* Ground or puréed squash combined with legumes or grains to create vegan sausages, meatballs, or other meat alternatives.

Other Applications

- *Baked Goods & Desserts:* Squash purée (e.g., pumpkin) used in breads, muffins, pies, and other sweet or savory baked products.
- *Soups & Purées:* Ready-made or canned squash soups, as well as baby food purées capitalizing on squash's natural sweetness and nutrients.
- *Industrial & Nutraceutical:* Squash seeds (especially pumpkin) for oils, protein powders, and supplements, leveraging their healthy fats and minerals.

In summary, squash's flexibility and high nutritional value make it an attractive option for a broad spectrum of value-added products—from quick snacks to premium marinated specialties and plant-based proteins. The ongoing consumer shift toward healthier, more sustainable, and convenient food solutions positions squash at the forefront of emerging market trends, particularly for producers in the Pacific looking to diversify their offerings for domestic and export markets.

1.3 Overall Market Insights

Table 2: Imports of fresh or chilled squash in value to New Zealand

(The grand total includes all countries importing to New Zealand. *Some countries may not have an IHS, and small quantities may appear in this table. This represents sample size commodities recorded at the border.)

	2021		2022		2023		2024	
	Value (NZD)	% Total	Value (NZD)	% Total	Value (NZD)	% Total	Value (NZD)	% Total
Australia	$1,029,993	70.23%	$1,013,441	69.82%	$1,358,212	57.31%		0.00%
Tonga	**$339,905**	**23.17%**	**$326,147**	**22.47%**	**$826,383**	**34.87%**	**$140,232**	**75.10%**
New Caledonia	**$96,236**	**6.56%**	**$110,000**	**7.58%**	**$122,718**	**5.18%**	**$45,150**	**24.18%**
Turkey		0.00%		0.00%	$61,466	2.59%		0.00%
Fiji	**$569**	**0.04%**	**$1,873**	**0.13%**		**0.00%**		**0.00%**
Grand Total	**$1,466,703**	**100.00%**	**$1,451,482**	**100.00%**	**$2,370,069**	**100.00%**	**$186,715**	**100.00%**

Figure 1: Imports of fresh or chilled squash in value to New Zealand

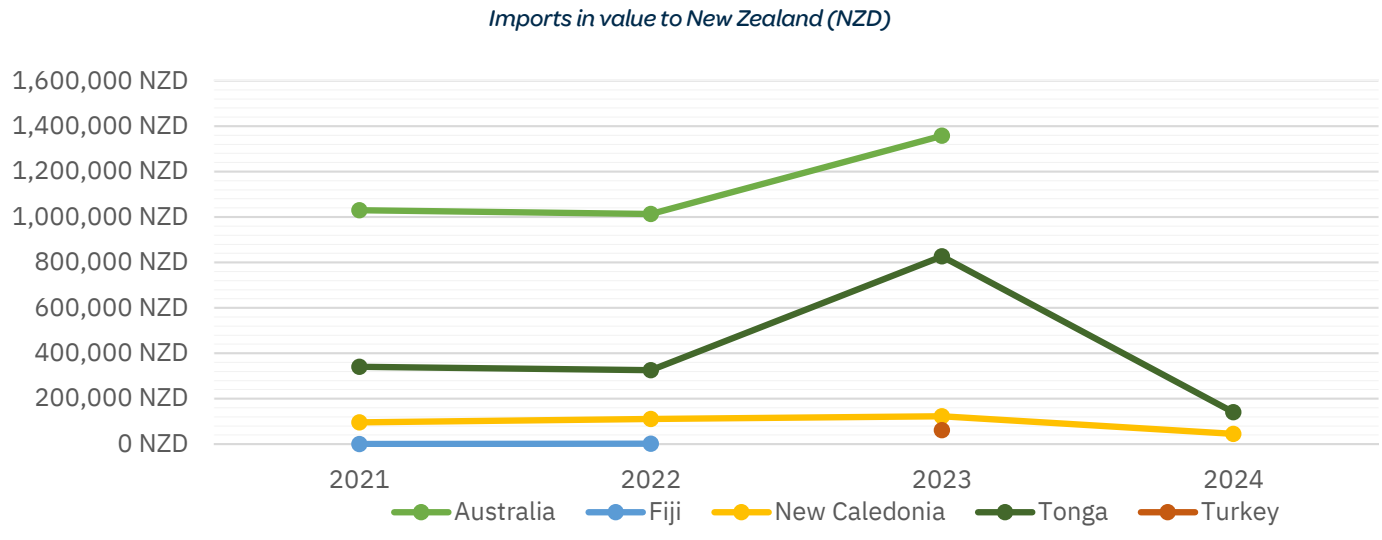


Table 3: Imports of fresh or chilled squash in volume to New Zealand
(The grand total includes all countries importing to New Zealand. *Some countries may not have an IHS, and small quantities may appear in this table. This represents sample size commodities recorded at the border.)

	2021		2022		2023		2024	
	Quantity (Kg)	% Total	Quantity (Kg)	% Total	Quantity (Kg)	% Total	Quantity (Kg)	% Total
Australia	293,936	54.7%	157,210	44.3%	437,404	48.6%		0.0%
Tonga	**170,769**	**31.8%**	**147,688**	**41.6%**	**376,251**	**41.8%**	**63,857**	**75.7%**
New Caledonia	72,000	13.4%	50,000	14.1%	60,840	6.8%	20,520	24.3%
Turkey		0.0%		0.0%	26,313	2.9%		0.0%
Fiji	**208**	**0.0%**	**240**	**0.1%**		**0.0%**		**0.0%**
Grand Total	**536,913**	**100.0%**	**355,138**	**100.0%**	**900,808**	**100.0%**	**84,377**	**100.0%**

Figure 2: Imports of fresh or chilled squash in volume to New Zealand

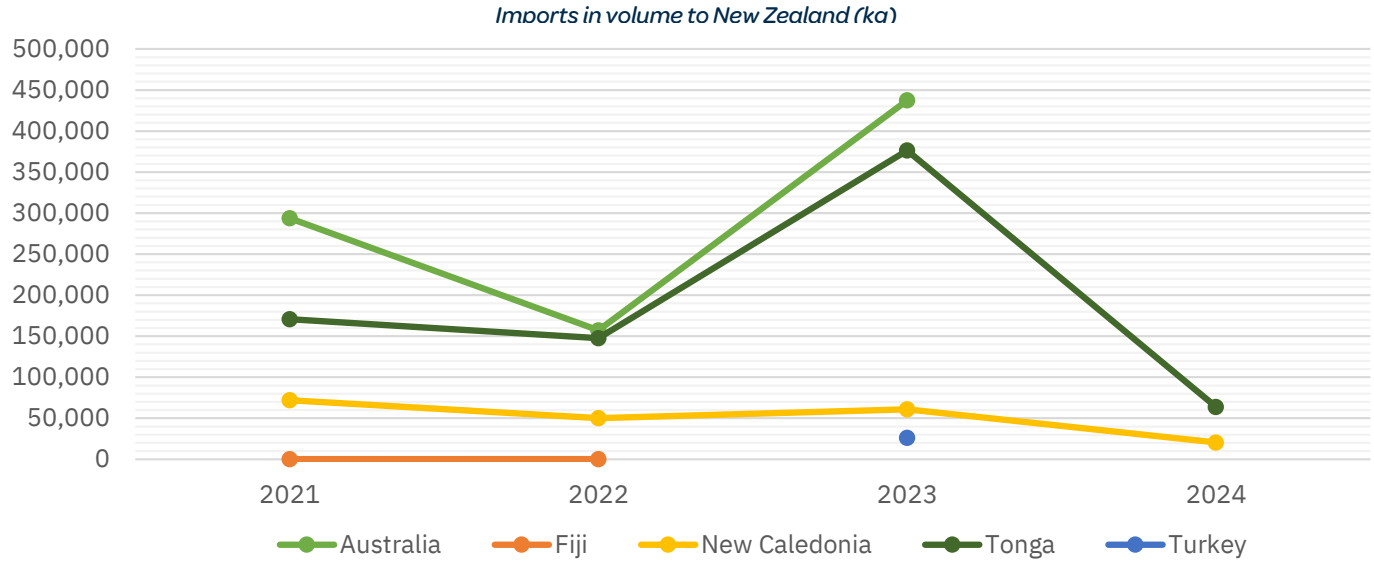


Table 4: Average price per kg of fresh or chilled squash as declared at New Zealand's border
(Only the Top 5 countries are displayed.)

	2021	2022	2023	2024
Australia	3.50 NZD	6.45 NZD	3.11 NZD	
Fiji	2.74 NZD	7.80 NZD		
New Caledonia	1.34 NZD	2.20 NZD	2.02 NZD	2.20 NZD
Tonga	1.99 NZD	2.21 NZD	2.20 NZD	2.20 NZD
Turkey			2.34 NZD	

Figure 3: Average price per kg of fresh or chilled squash as declared at New Zealand's border
(Only the Top 5 countries are displayed.)

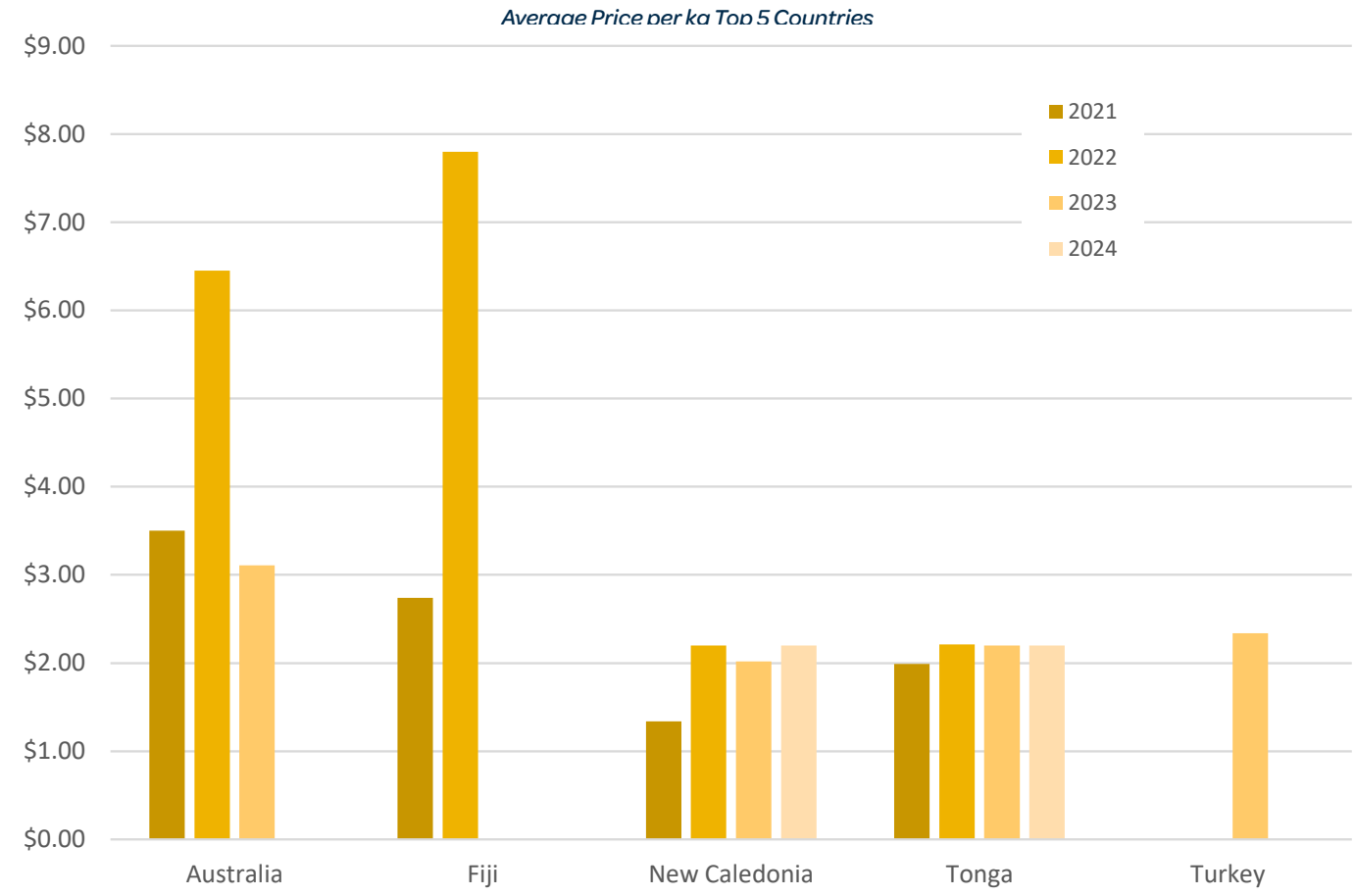


Table 5: Imports of fresh or chilled pumpkin in value to New Zealand
(The grand total includes all countries importing to New Zealand. *Some countries may not have an IHS, and small quantities may appear in this table. This represents sample size commodities recorded at the border.)

	2021		2022		2023		2024	
	Value (NZD)	% Total	Value (NZD)	% Total	Value (NZD)	% Total	Value (NZD)	% Total
Australia	$175,215	75.71%	$16,315	8.68%	$293,020	47.58%	$1,448,675	95.77%
Tonga	$48,639	21.02%	$163,913	87.25%	$318,450	51.71%	$58,776	3.89%
India		0.00%		0.00%		0.00%	$2,712	0.18%
Fiji	$1,629	0.70%	$150	0.08%	$4,407	0.72%	$2,533	0.17%
China	$5,933	2.56%	$7,495	3.99%		0.00%		0.00%
Grand Total	**$231,416**	**100.00%**	**$187,873**	**100.00%**	**$615,877**	**100.00%**	**$1,512,696**	**100.00%**

Figure 4: Imports of fresh or chilled pumpkin in value to New Zealand

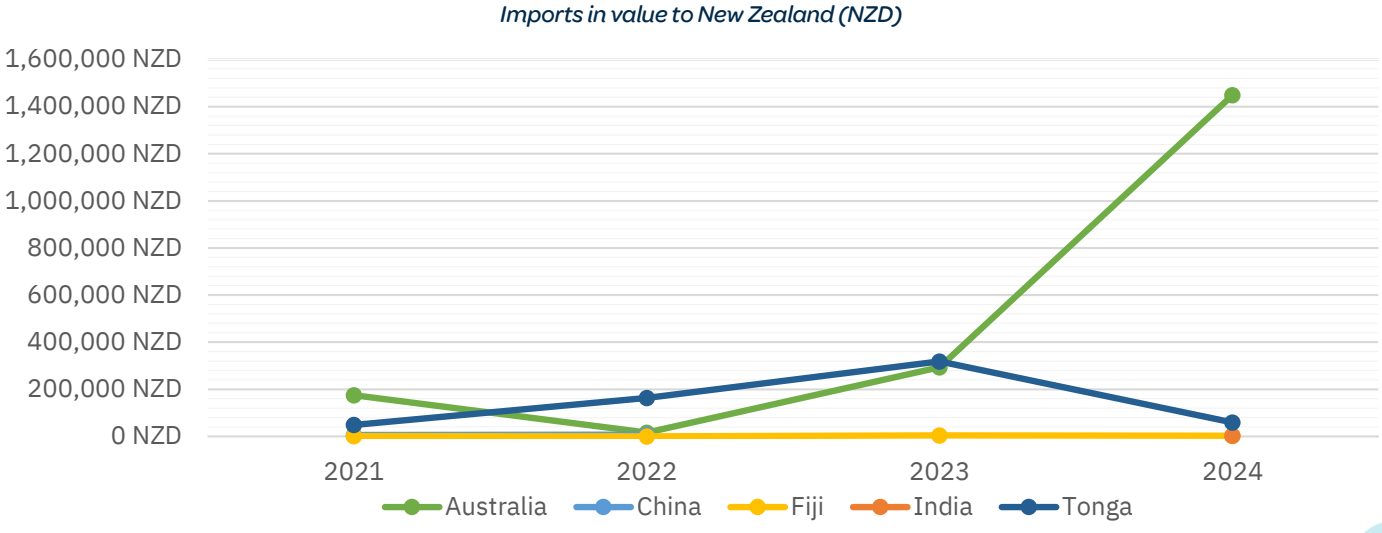


Table 6: Imports of fresh or chilled pumpkin in volume to New Zealand
(The grand total includes all countries importing to New Zealand. *Some countries may not have an IHS, and small quantities may appear in this table. This represents sample size commodities recorded at the border.)

	2021		2022		2023		2024	
	Quantity (Kg)	% Total	Quantity (Kg)	% Total	Quantity (Kg)	% Total	Quantity (Kg)	% Total
Australia	32,091	45.4%	4,200	4.5%	100,628	41.0%	434,466	94.4%
Tonga	34,708	49.0%	84,097	90.2%	143,646	58.5%	24,929	5.4%
Fiji	462	0.7%	14	0.0%	1,166	0.5%	740	0.2%
Samoa		0.0%	1,458	1.6%		0.0%		0.0%
China	3,500	4.9%	3,500	3.8%		0.0%		0.0%
Grand Total	**70,761**	**100.0%**	**93,269**	**100.0%**	**245,440**	**100.0%**	**460,135**	**100.0%**

Figure 5: Imports of fresh or chilled pumpkin in volume to New Zealand

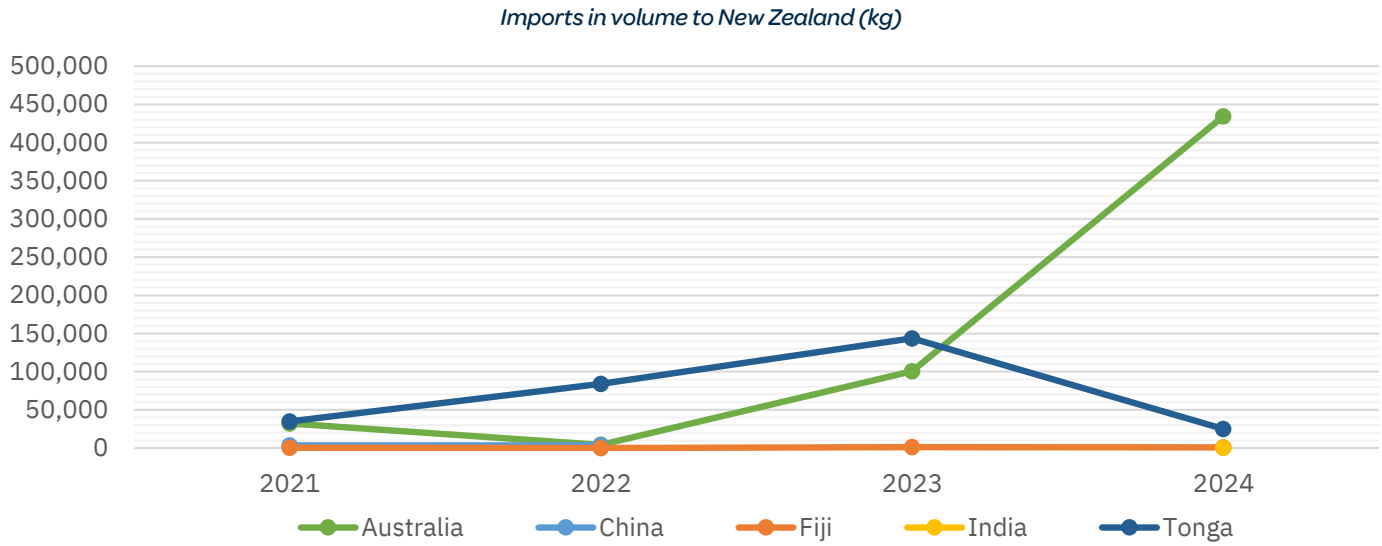
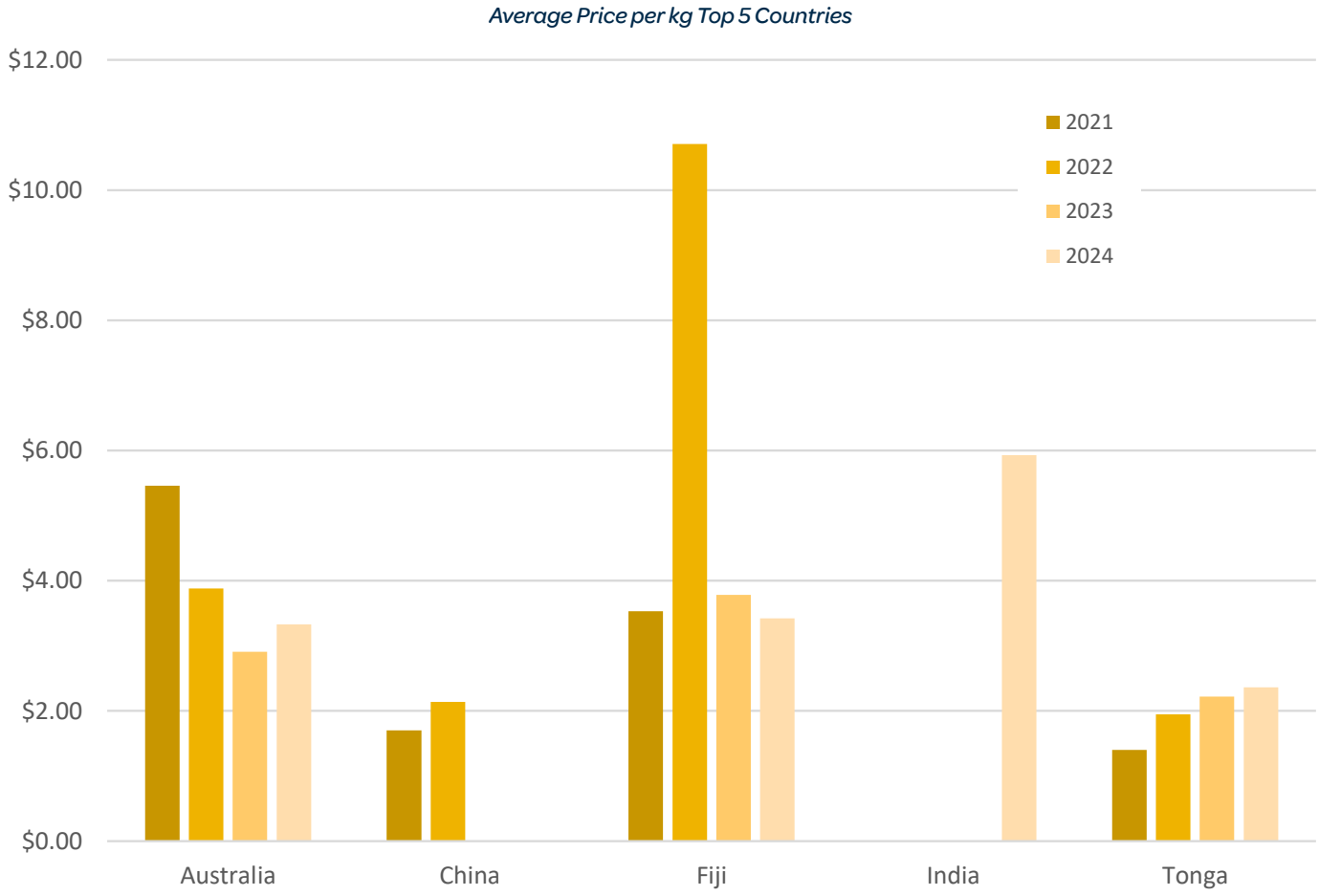


Table 7: Average price per kg of fresh or chilled pumpkin as declared at New Zealand's border
(Only the Top 5 countries are displayed.)

	2021	2022	2023	2024
Australia	5.46 NZD	3.88 NZD	2.91 NZD	3.33 NZD
China	1.70 NZD	2.14 NZD		
Fiji	3.53 NZD	10.71 NZD	3.78 NZD	3.42 NZD
India				5.93 NZD
Tonga	1.40 NZD	1.95 NZD	2.22 NZD	2.36 NZD

Figure 6: Average price per kg of fresh or chilled pumpkin as declared at New Zealand's border
(Only the Top 5 countries are displayed.)



2. Market Access

2.1 Biosecurity Requirements and Advice

Fresh squash imported into New Zealand from any country must follow the Import Health Standard (IHS). The IHS outlines the specific conditions that must be satisfied before a product can be brought into the country. The complete list of fresh fruits, herbs, and vegetables authorised by countries for import into New Zealand is available via this link: Importation and Clearance of Fresh Fruit and Vegetables 152 02 (mpi.govt.nz)

When squash is authorised for import into New Zealand from Pacific Island countries, exporters must adhere to particular quarantine requirements, including:

- **Commercial Production:** Squash must be grown according to commercial production standards recognized by the New Zealand Ministry for Primary Industries (MPI).
- **Pest Control:** Control measures must target pests of economic importance that are regulated in New Zealand.
- **Inspection:** Squash must be inspected following official procedures to ensure it is free of visually detectable quarantine pests, as specified by MPI.
- **Phytosanitary Certificate:** A valid phytosanitary certificate, issued by the exporting country's National Plant Protection Organisation (NPPO), must accompany each consignment.
- **Packing Standards:** Squash must be packed in clean, pest-free packaging materials and be free of soil or other contaminants.
- **Exclusion of Plant Parts:** All plant parts other than the squash fruit—such as leaves, stems, and flowers—must be excluded.

Failure to comply with these requirements can result in the consignment being rejected at the New Zealand border, incurring additional treatment costs, or leading to financial penalties for the exporter. Continued non-compliance may also reduce the willingness of New Zealand importers to source from Pacific countries.

2.2 Biosecurity Clearance in New Zealand for imported Squash

Countries approved to export fresh Squashs to New Zealand can be found via the PIER Search tool.

Step 1: Provision of Documents

- ✓ Importers must submit detailed information to MPI before goods arrive.
- ✓ Electronically issued phytosanitary certificates are sent to MPI.
- ✓ MPI reviews all accompanying documents for compliance with Import Health Standards (IHS).

Step 2: Non-compliant Documentation

- ✓ Clearance is refused for consignments without valid phytosanitary certificates and those detected with regulated pests.
- ✓ Correct documentation must be provided within 48 hours if missing.
- ✓ Consignments detected with regulated pests are treated before they are released.
- ✓ A consignment may fail clearance if:
  - the number of goods exceeds those stated on the phytosanitary certificate (within reason)
  - the consignment contains unmanifested goods

Step 3: Transit Requirements

- ✓ Consignments that are shipped in phases (short-shipped) must comply with the IHS.
- ✓ Transit consignments must meet requirements for importing or transit countries.

Step 4: Transport to the Approved Inspection Facility

- ✓ Consignments are transported to an approved transitional facility under an MPI inspector's direction, using pest-proof containers for inspection.

Step 5: Phytosanitary Security Before and After Inspection

- ✓ Consignments not inspected within 4-6 hours are securely stored.
- ✓ Non-compliant consignments are securely stored until biosecurity requirements have been satisfied.

Step 6: Inspection

- ✓ MPI conducts risk profiling activities before or upon arrival.
- ✓ Visual inspections verify the absence of pests or contaminants and compliance to the IHS.
- ✓ Sampling plans determine inspection quantity based on lot size.
- ✓ Biosecurity clearance is granted when all IHS requirements are met.

Step 7: Reconciliation

- ✓ Compliance checks validate phytosanitary certificates, frequency varies based on importer history.

2.3 Food Safety Requirements

In New Zealand, food safety regulations are primarily governed by the Food Act 2014 (Available here), the Food Regulations 2015, and the Australia New Zealand Food Standards Code. These regulations apply to all foods sold in New Zealand, including imported foods like Squash.

General Requirements

- **Traceability**: Businesses must be able to trace where their food products came from and where they are going to ensure that any products that are found to be unsafe can be quickly removed from sale.
- **Hygiene**: All aspects of food handling, from production to harvesting, processing, storage, and sale, must adhere to strict hygiene standards.
- **Labelling**: Food items must be correctly labelled, including ingredients and allergens, and may need to have nutritional information displayed.

Please note this information may be subject to change; it is crucial to consult New Zealand's Ministry for Primary Industries | NZ Government (mpi.govt.nz) or similar authorities for the most current guidelines. They are country-specific and product-specific. ** Failure to adhere to these regulations can result in rejection at the New Zealand border, additional treatment costs, fines, or other penalties.*

2.4 Overview of the export process from the Pacific Islands to New Zealand

3. Market Specification
3.1 Quality

Quality needs may vary between importers, so exporters and growers of squash (fresh and processed) should be aware of any importer specifications regarding size, colour, and general quality of the commodity. It is important to contact the relevant biosecurity and food safety authorities for further information on market-specific requirements. (See Foodstuff North Island full requirements)

In order to maintain a desirable standard for Squash, it is necessary to ensure that every unit meets clear appearance and maturity guidelines. Each piece should display fresh, firm skin and moist flesh, with no off odours or tastes. The external colour and flesh colour vary according to variety but must always appear characteristic of that specific type. Crown or Butterkin Squash, for instance, should retain a rounded shape with semi-uniform ribs, whereas Butternut varieties often show a pear-like contour. Consistency in size and shape is important, particularly for packaging purposes and meeting buyer specifications, and any produce that deviates substantially from established parameters may be subject to rejection.

Unsaleable defects (0% Tolerance)
Beyond appearance, cleanliness is another essential consideration. Squash supplied to the market should be free of substantial dirt, foreign debris, or insect residue. Zero tolerance applies to certain defects that render the produce unsaleable. These include evidence of live insects, shards of plastic or metal, or other similarly hazardous substances. Any presence of fungal or bacterial rots, such as Fusarium or bacterial soft rot, is categorised as a major defect, as is physical damage in the form of splits, holes, or severe bruising that significantly affects the skin or flesh.

Other defects
In terms of additional major defects, discoloration or blotchy areas caused by pathogens or viruses can render Squash unacceptable. Factors such as stem loss, large water-soaked lesions, and chilling injuries that create pitted or softened flesh also fall under the major defect classification. Minor defects, although permitted within a limited tolerance, encompass superficial scuffing or rubs on the surface, light ground marks, and non-severe bruising or scarring that does not compromise the overall edibility or shelf life of the product.

Size and Weight
Adherence to correct size and weight ranges helps ensure consistency for wholesale and retail buyers. Squash that is grown to a specific grade should be packaged in accordance with the agreed count or total weight. In most cases, only a small proportion of the overall consignment is permitted to lie outside the declared size bracket. (e.g., 2.5 kg average for Crown or 1.3 kg for smaller varieties). Tolerance for size deviations outside the specified range is typically less than 5%.

Finally, vendors must supply Squash that retains a viable shelf life on arrival, typically expected to be about ten days for most varieties. This ensures that the product reaches the consumer in an appealing, fresh condition, minimising waste and boosting customer satisfaction.

Photo 1: Pumpkin Cut and Whole, photo defects from Foodstuffs North Island specifications and requirements document.

Photos of defects

Rot spots

Soft rots

Excessive scarring

Trimmed faces are drying

Browning seeds

3.2 Certifications

Growers and suppliers must ensure compliance with certifications such as NZGAP or GLOBALG.A.P, while organic squash requires a valid BioGro or equivalent certification to meet importer and consumer expectations.

a) **HACCP** ***(Hazard Analysis and Critical Control Points)*** is a systematic approach to food safety that identifies, evaluates, and controls potential hazards in food production. It's a preventive system that identifies critical points in the food production process where hazards can be controlled or eliminated. It aims to ensure the safety of food products by identifying and managing potential risks at critical stages of production.

b) **New Zealand GAP** ***(Good Agricultural Practices)*** is a set of voluntary standards that focus on agricultural and aquaculture practices to ensure the safety and sustainability of food production. These requirements cover various aspects, such as environmental conservation, worker welfare, and food safety. Essentially, Global GAP aims to establish and maintain standardised farming and food production practices to meet quality and safety standards for global markets.

3.3 Volume

New Zealand buyers prefer consistency in supply. Orders can range from a few kilograms for smaller businesses to several metric tons for larger retailers or manufacturers. It's essential to maintain the volume of Squash you supply.

From interviews conducted with New Zealand importers, it was identified that:

- They import approximately 50 tonnes of squash in October/November.
- They have the capacity to import up to 100 tonnes, provided supply is available.
- Current supply constraints mean demand cannot be fully met.

This shortfall represents an opportunity for exporters in Pacific Island countries who can meet New Zealand's strict biosecurity requirements. By ensuring consistent compliance, exporters may position themselves to fill any gaps in demand and potentially increase their market share.

3.4 Packaging and Labelling

Market acceptance relies not only on product quality but also on appropriate packaging and labelling that conform to New Zealand's food safety regulations. Squash should be packed in new, food-grade materials, or alternatively, in sanitised returnable crates. This practice helps prevent cross-contamination and supports product integrity during storage and distribution. Wherever possible, the packaging must be secure and stable, without compromising ventilation, so as to maintain freshness and discourage moisture-related deterioration. Use strong, high-quality, moisture-resistant food-grade crates or cartons to withstand stacking and transport, ensuring produce arrives store-ready without repacking. Maintain cleanliness and sanitation to preserve quality and shelf life.

Proper labelling contributes to traceability and assures buyers of a product's authenticity. Labels or crate cards should display the basic product description (e.g., "Whole Crown Squash" or "Butternut Squash Cut"), any relevant SKU number, the supplier's name, the name or logo of the grower or packer, and a clear indication of count or total weight. A delivery date and, if applicable, best-before or use-by date are also expected. When selling pre-packaged Squash, regulations often require more precise information, including the date on which the product was packed, along with additional coding such as batch numbers if these are used for traceability. In the event that the product is certified organic, a valid certificate (such as BioGro or an equivalent) should be readily available and referenced on the packaging.

Legislative requirements around packaging are frequently updated, so it is prudent for exporters and suppliers to remain abreast of any changes that might affect their shipping practices. Failure to meet the prescribed standards may lead to rejections at the point of import, incurring penalties or reputational harm.
By following traceability and packaging standards, squash can be safely transported while maintaining quality, ensuring they reach the New Zealand market in optimal condition with minimal defects and maximum food safety.

3.5 Transport recommended and precautions

A further critical aspect of delivering high-quality Squash to New Zealand institutions involves careful temperature and handling protocols during transport. Ideally, produce should be maintained at an appropriate temperature that prevents both chilling injury and undesired heat damage. The ideal transport temperature is generally 12–25°C for most squash (12–20°C for Spaghetti Squash). Below the recommended range, flesh may soften or develop pitted spots, while higher temperatures can hasten ripening and lead to pale or patchy skin tones.

Because transport often entails physical movement and potential vibration, good stacking and palletisation practices are necessary to avoid bruising or splitting. Stabilised pallets arranged according to Ti–Hi specifications, combined with refrigerated vehicles featuring airbag suspension, enable delicate produce like Squash to survive transit intact. In addition, crate labels must remain clearly visible and must accurately reflect the product inside, as carriers and receiving warehouses will check these for conformity to consignment documentation.

All deliveries are subject to local receiving and carrier guidelines, which emphasise not only the correct packaging but also the manner in which pallets are constructed, stacked, and protected. Transport providers are advised to keep produce in a temperature-controlled environment and ensure there are no lengthy delays between departure, in-transit stops, and final delivery. Should disruptions occur, a contingency plan for temporary cold storage or alternative shipping routes can limit damage and preserve product quality.

Collectively, these requirements uphold the integrity of Squash upon arrival, reducing the likelihood of spoilage and minimising the risk of non-compliance with New Zealand's strict food safety and receiving standards.

3.6 Mixed Loaded Consignments

Mixed-loaded consignments must be issued with the correct documentation and loaded and transported appropriately to minimise any risk of contamination and/or damage risk.

4. Types Buyers/Distributors

Fresh Wholesaler: Turners & Growers (T&G), MG Marketing (Market Gardeners Limited) and Moshims are amongst the most recognisable wholesalers of fresh pumpkins and squash in New Zealand. They supply national supermarket chains, food service providers and independent retailers. Alongside these established players, smaller regional wholesalers also operate in key growing and distribution hubs, often serving local markets or niche segments.

Processed Food Industry: Pumpkins and squash feature prominently in soups, purees and ready-to-cook meal components produced by a variety of New Zealand manufacturers. Recognisable brands in canned or chilled soups—such as Wattie's (owned by Heinz), and pasta filled with cooked pumpkin often showcase pumpkin or squash variants in their product lines. There are also smaller specialty producers using squash combined with other ingredients (e.g., garlic, ginger, spices) for spreads or ready-to-eat meals. These products appeal to both retail shoppers seeking convenient, healthy options and the food service sector looking for versatile menu components.

Specialty Shops and Independent Retailers: In addition to mainstream outlets, many premium grocery stores and independent retailers cater to health-conscious or gourmet shoppers looking for artisanal products. Wellington-based Moore Wilson's, Auckland's Farro Fresh, and Huckleberry, among others, often carry locally produced or organic pumpkin and squash offerings, including dips, spreads, or pre-marinated roasting pieces.

5. Key Success Factors

- Consistency in supply
- High quality and food safety standards
- Differentiation through storytelling
- Value-added product opportunities
- Strong buyer-grower relationships

Acknowledgments

We would like to extend our sincere appreciation to the representatives of T&G, MG Marketing Ltd and Moshim Ltd for generously sharing their valuable insights on the New Zealand market. Their contributions were instrumental in the preparation of this report.

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