PIEFA Food & Fibre
CARD GAME

INSTRUCTIONS

New Zealand Apples

YEAR 12-13

PIEFA Food and Fibre Card Game New Zealand Apples Supply Chain

This resource has been developed by:

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NEW ZEALAND AGRIBUSINESS CURRICULUM CONTENT

Demonstrate understanding of future proofing that affect business viability. (AS91865)

Analyse future proofing strategies to ensure long term viability of a business. (AS91869)

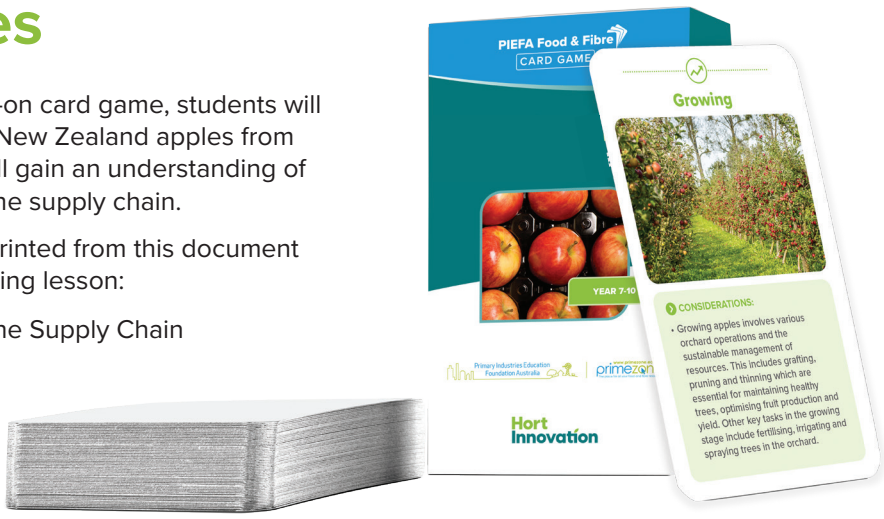
Analyse how a product meets market needs through innovation in the value chain. (AS91871)

Game Objectives

By participating in an engaging, hands-on card game, students will learn to sequence the supply chain of New Zealand apples from farm to consumer. Additionally, they will gain an understanding of technologies and careers involved in the supply chain.

The supply chain game cards can be printed from this document and can also be accessed in the following lesson:

› Year 12-13, Lesson 2 - Apples Along the Supply Chain



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Resources and Equipment

PACK CONTENTS

› 52 game cards

Arrow cards

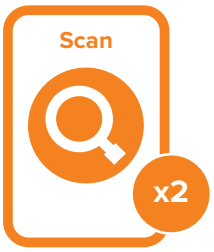
18 x Arrow game cards

Step cards

18 x Step game cards

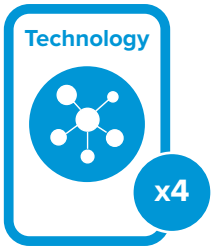
Career cards

10 x Career game cards



Scan cards

2 x QR Code game cards



Technology cards

4 x Technology game card

1 x Acknowledgment game card

GAME 1 - THE SUPPLY CHAIN FLOWCHART

1. Approximately 2 - 4 players
2. Paper and markers
3. PIEFA Food and Fibre Card Game | New Zealand Apples Supply Chain Game Cards
   (printed, cut into individual cards and preferably laminated)

NOTE: Lessons and video content are available to support students in completing the PIEFA Food and Fibre Card Game | New Zealand Apples Supply Chain Game.

Visit Lesson Two - Apples Along the Supply Chain (Year 12-13) for activities and content observing the steps throughout the supply chain.

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Objective

To create a flowchart of the supply chain of apples from farm to consumer in the correct order.

Game play

1. Players create a flowchart on paper, showing the journey of apples from farm to consumer.
2. Players include the name of the step or process in the supply chain and use arrows between each step to show the path of apples from farm to consumer.
3. Players place all the steps and arrow cards face up and sort them into two piles.
   - Step game cards ( ) and
   - Arrow game cards ( )

   Remove and reserve the career ( ) , technology ( ), and QR code ( ) game cards.
4. Players collaborate and organise the cards into a supply chain by placing the step cards into their sequential order and arranging the arrow cards between each step to create a supply chain flowchart.
5. Players check answers with their teacher.

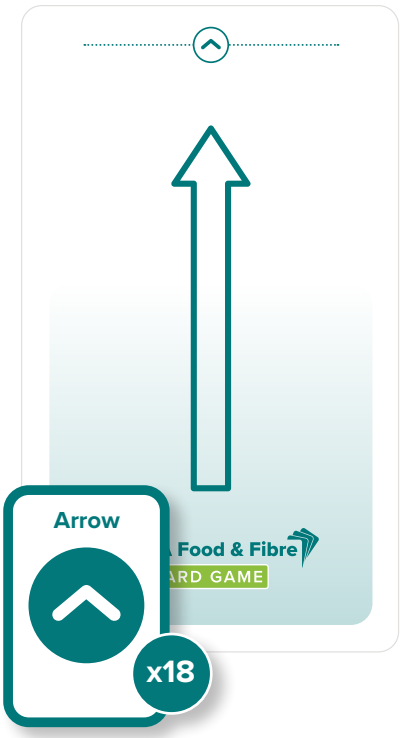
Extension 1 - Technology

1. Players take the technology cards ( ) from the reserved cards and place them adjacent (next to) the relevant steps in the supply chain.
2. Research a technology used in any part of the supply chain to improve productivity, speed up a job, produce a higher quality product, etc.
3. Design additional technology cards using the templates and cut them out using the supplied card as a model. Include a description of the technology, a picture, and an explanation of how the technology is advantageous on each card template.
4. Using the completed flowchart, place the newly designed technology game cards adjacent to the relevant step in the supply chain.

Extension 2 - Careers

1. Players take the career cards ( ) from the reserved cards. Using the completed flowchart, place the career cards adjacent to the relevant step in the supply chain.

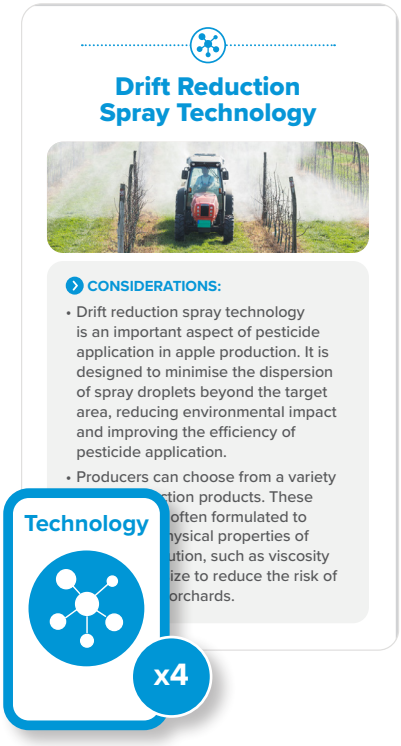
18 x Arrow game cards



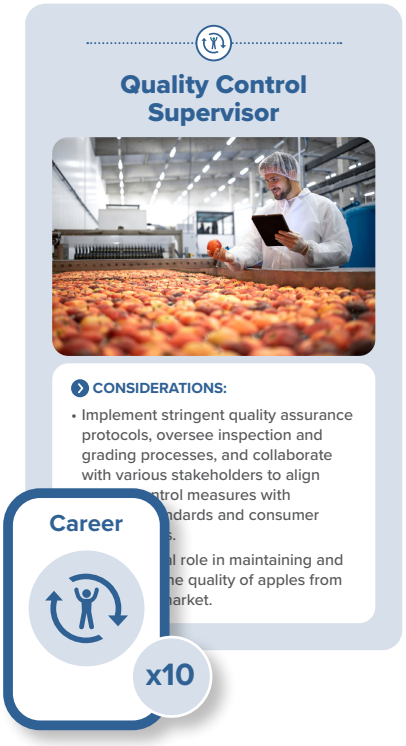
18 x Step game cards

2 x QR Code game cards

4 x Technology game cards



10 x Career game cards



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CUT

FOLD

New Zealand Apples Supply Chain

CARD GAME

By participating in an engaging, hands-on card game, students will learn the sequencing process of converting on-farm food and fibre products into a product suitable for sale.

Scan for full instructions

https://www.primezone.edu.au/resource/piefa-food-fibre-card-game/

Technology

Scan

Career

Step

Arrow

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YEAR 12-13

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YEAR 12-13 New Zealand Apples Supply Chain CARD GAME

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YEAR 12-13

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Instructions for the

New Zealand Apples & Pears

Apples All Year Round
Scan the QR code or visit the link below to learn more about the New Zealand apple industry.
https://www.applesandpears.nz/

Instructions for the

New Zealand Apples Supply Chain

PIEFA Food & Fibre Card Game

Scan the QR code or visit the link to access the card game instructions.
https://primezone.edu.au/resource/piefa-food-fibre-card-game/

Electric Secateurs

CONSIDERATIONS:

- Electric secateurs are tools designed to make the process of pruning and cutting branches more efficient, precise, and easier. These tools feature a cutting mechanism that is activated by pressing a button or a trigger.
- When using electric secateurs in apple orchard management it's important to follow safety guidelines and wear appropriate protective attire to avoid accidents.

Drift Reduction Spray Technology

CONSIDERATIONS:

- Drift reduction spray technology is an important aspect of pesticide application in apple production. It is designed to minimise the dispersion of spray droplets beyond the target area, reducing environmental impact and improving the efficiency of pesticide application.
- Producers can choose from a variety of drift reduction products. These products are often formulated to modify the physical properties of the spray solution, such as viscosity and droplet size

Harvesting Machinery

CONSIDERATIONS:

- Modern harvesting machinery in the apple industry has revolutionised the efficiency and scale of fruit harvesting operations.
- Automated picking and sorting capabilities streamline the harvesting process, increasing overall productivity in apple orchards.

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YEAR 12-13

Arrow

x18

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Arrow

x18

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Arrow

x18

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Step x18

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Growing

CONSIDERATIONS:

- Growing apples involves various orchard operations and the sustainable management of resources. This includes grafting, pruning and thinning which are essential for maintaining healthy trees, optimising fruit production and yield. Other key tasks in the growing stage include fertilising, irrigating and spraying trees in the orchard.

Picking

CONSIDERATIONS:

- The timing of picking is decided by maturity indicators such as colour change, firmness, and sugar content.
- Picking can be done manually for smaller orchards or through mechanical harvesters in larger commercial settings.

Initial Inspection

CONSIDERATIONS:

- Inspection is a crucial step in the post-harvest process that ensures the quality and marketability of the fruit by visually assessing colour, size, shape, firmness, and the absence of defects.

Cleaning

CONSIDERATIONS:

- Cleaning is a post-harvest handling process carried out to enhance the apples visual appeal, remove any surface contaminants, and ensure consumer safety by meeting hygiene standards for consumption and commercial distribution.

Grading

CONSIDERATIONS:

- Apples are graded according to criteria such as size, colour, shape, and the absence of defects.
- Automated grading machines or skilled workers carefully sort apples, segregating them into different grades.

Sorting

CONSIDERATIONS:

- Automated sorting machines or manual labour is employed to categorise apples according to size, colour, and the presence of defects.
- Size sorting ensures uniformity within each batch, facilitating consistent packaging and pricing.

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YEAR 12-13

Step x18

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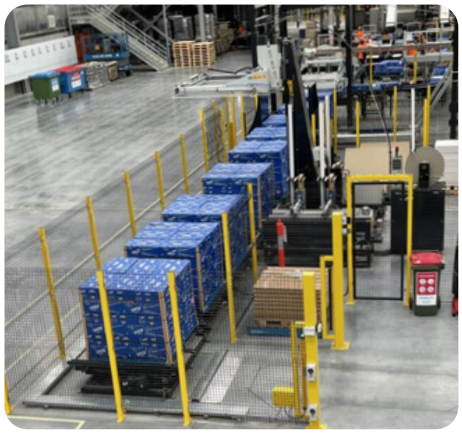
Packing



CONSIDERATIONS:

- After apples undergo sorting, they are systematically placed into packaging containers, e.g. sturdy cardboard boxes.
- The process requires attention to detail to prevent bruising or damage during handling and transit.

Labelling

CONSIDERATIONS:

- Labels or branding information are added to individual apples as well as packaging to convey important details about the apple variety, origin, and quality.

Value-added Product Production

CONSIDERATIONS:

- Involves transforming apples into a variety of processed goods, expanding their use beyond fresh consumption.
- These value-added products cater to various consumer preferences.

Cold Storage

CONSIDERATIONS:

- Maintaining low temperatures, (0 to 4°C) slows down the natural ripening and ageing processes of the fruit.
- Cold storage helps apples preserve their crisp texture, flavour, and nutritional content, extending their shelf life.

Packaging

CONSIDERATIONS:

- Once sorted, apples are carefully placed into packaging containers such as boxes, crates, or bags.
- Packaging is designed to protect the apples during transportation and storage, maintaining their freshness and preventing damage.

Transport

CONSIDERATIONS:

- Temperature-controlled transport helps preserve the freshness and quality of the apples.
- Efficient logistics and careful handling contribute to delivering quality apples to markets.

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YEAR 12-13

Step x18

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Exporting Companies

CONSIDERATIONS:

- Exporting companies are key hubs for the distribution and sale of apples, where growers, distributors, and retailers converge to buy and sell fresh produce.
- The centralisation of these markets streamlines the distribution process.

Domestic Retail and Food Service

CONSIDERATIONS:

- Apples play a prominent role as a versatile and popular fruit.
- Retail settings, supermarkets, grocery stores, and farmers' markets provide consumers with a wide variety of options to purchase apples within New Zealand.

Domestic Consumer

CONSIDERATIONS:

- Domestic consumers can choose from a diverse range of apple varieties.
- The year-round availability of apples in retail stores makes them a convenient and healthy option for New Zealand households.

Export

CONSIDERATIONS:

- New Zealand apples are exported to various international markets with key destinations including Southeast Asia, the Middle East, and North Asia.
- Trade partnerships and agreements may influence the distribution of New Zealand apples in different regions.

Export Retail and Food Services

CONSIDERATIONS:

- The apple industry is expanding its global reach through increased export activities, targeting both retail and food services markets.
- Apple producers aim to meet the rising demand for fresh and high-quality apples worldwide.

Export Consumer

CONSIDERATIONS:

- The apple industry is strategically positioned in the global market to meet the growing demand from international consumers.
- Apple producers aim to provide consumers worldwide with high-quality, fresh apple varieties and value-added products.

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YEAR 12-13

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Orchardist

CONSIDERATIONS:

- Engage in the cultivation and management of apple orchards.
- They work to optimise yield, quality, and sustainable practices to contribute to the success of apple production and meet market demands.

Orchard Manager

CONSIDERATIONS:

- Plan and coordinate planting schedules, manage irrigation systems, implement pest and disease control, supervise pruning and harvesting activities.
- Play a crucial role in budgeting, resource allocation, and implementing sustainable practices to optimise yields and meet market demands.

Agronomist

CONSIDERATIONS:

- Advise on soil and crop management, implement integrated pest management strategies, and assist with varietal selection and orchard planning.
- Educate orchard staff, foster environmental stewardship, and ensure the crops' overall health and quality from planting to post-harvest management.

Quality Control Supervisor

CONSIDERATIONS:

- Implement stringent quality assurance protocols, oversee inspection and grading processes, and collaborate with various stakeholders to align quality control measures with industry standards and consumer expectations.
- Play a pivotal role in maintaining and enhancing the quality of apples from orchard to market.

Contractor

CONSIDERATIONS:

- Responsible for executing various tasks related to orchard management and coordinating with orchard owners or managers to ensure that projects are completed efficiently and within specified timelines
- Contribute to the overall health and productivity of the orchard.

Fruit Picker

CONSIDERATIONS:

- Harvest ripe apples while adhering to quality standards and safety protocols.
- Efficiently select, pick, and sort apples from trees, contributing to the overall success of the orchard's production goals.

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Career x10

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Packhouse Supervisor

CONSIDERATIONS:

- Oversee the packing and sorting operations of harvested apples to ensure compliance with quality standards and customer specifications.
- Coordinate and manage packhouse staff and oversee the packing process.

Packhouse Worker

CONSIDERATIONS:

- Responsible for sorting, grading, and packaging harvested apples in accordance with quality standards.
- Operate machinery to facilitate the efficient packing process.
- Maintain a clean and organised work environment.

Central Market Wholesaler

CONSIDERATIONS:

- Distribute and sell apples within a central market.
- Facilitate the efficient flow to retailers, manage pricing strategies, and foster strong relationships with suppliers and buyers to optimise market operations.

Grafter

CONSIDERATIONS:

- Grafting is a horticultural technique where parts of one plant (the scion) are joined to another plant (the rootstock), creating a new plant with desirable characteristics.
- Grafters perform the grafting process to reproduce apple trees with important characteristics, such as specific fruit quality, taste, or resistance to diseases. This is especially important for maintaining consistent and high-quality apple varieties.

Sorting, Grading, and Packing Machinery

CONSIDERATIONS:

- This technology streamlines post-harvest processes by categorising apples based on size, colour, and quality.
- Enhances efficiency and precision, ensuring apples meet market standards and are ready for distribution to domestic and export markets.

CONSIDERATIONS: