**Level 3: Future Proofing Strategy**

**Technological Strategy Worksheet.**

**The Digital Age is Here.**

Digital technologies are positioned as essential future-proofing tools, requiring farmers to embrace innovation, invest wisely, and develop skills to maintain New Zealand’s agriculture productivity and sustainability.

**Activity 1:** Read the article **“The Digital Age is Here”** and summarize the key points on digital technologies as future proofing strategies in primary production agribusinesses.

**Activity 2:** Future proofing a farm or orchard with digital technology

**Objective:**  
Students will explore how modern digital technologies help farms / orchards become more efficient, sustainable, and profitable over time.

1. **Introduction**

* Briefly explain what "future proofing" means.

*Making sure a business or farm can survive and succeed in the long term despite challenges like climate change, market changes, or resource limits.*

* As a class, brainstorm some smart farming technologies, they are aware of being used in primary production systems.

Some examples include:

* + Soil moisture sensors linked to irrigation systems
  + Drones that check crop health
  + Electronic tags that monitor animal health
  + AI and robotics automating tasks like harvesting or milking

1. **Group brainstorm**

Each group imagines they are running a farm, orchard or other primary production business and must decide which technologies to use to keep their farm, orchard or other primary production business profitable and sustainable in the future.

* Each group selects a primary production agribusiness.

Then describes the

* + type of primary production agribusiness (dairy, crop, sheep, mixed, arable, orchard, market garden)
  + the biggest challenges (e.g., drought, pests, labour shortage, environmental regulations, budget)
* Then discuss and choose **3 technologies** they would invest in and explain why.

1. **Presentation**

* Each group shares their choices and reasoning with the class.
* Discuss:
  + How each technology helps solve challenges.
  + What barriers might stop farmers from using these technologies
  + Why it’s important to keep learning about new technologies.

**Summary of the key points on digital technologies as future proofing strategies**

* Smart farming and real-time monitoring: Adoption of connected digital technologies enables real-time data collection and analysis on farm performance. Examples include soil moisture sensors linked to irrigation, water/fuel tank monitors sending alerts, drones using infrared to detect crop diseases, and electronic ear tags tracking animal health.
* Data-driven decision making: Using data analytics and predictive tools allows farmers to move beyond historical records to forecasts, improving activity planning and optimizing farming practices.
* Automation with AI, robotics, and IoT: Integration of AI, robotics, and Internet of Things technologies automates labour-intensive tasks such as fruit picking, crop planting/harvesting, milking, and animal health monitoring. This increases efficiency and productivity.
* Transforming farm operating models: Future productivity gains depend on farmers embracing a complete overhaul of traditional practices, moving from simply buying new machinery to adopting digital transformation.
* Challenges to adoption: Key barriers include high upfront costs, uncertainty about return on investment, reliance on manual systems, poor rural internet connectivity, data privacy concerns, and the need for new skills and knowledge to operate technologies effectively.
* Role of education and ecosystems: Building farmer understanding through education and innovation ecosystems (involving researchers, consultants, universities) is crucial to unlocking the full benefits of digital tech.
* Genomics and climate resilience: Advances in genomics and genome editing are also part of future proofing, helping crops and livestock become more resilient, especially against climate change.
* Importance of relationships and behaviour change: Technology adoption is an ongoing process requiring strong relationships between farmers and suppliers, focusing on solving specific farm constraints rather than just technology sales.
* Growing Agri-Tech sector: New Zealand’s agri-tech industry is expanding rapidly with 700-900 firms generating $2-3 billion annually, especially in data analytics, crop/animal health, and post-harvest management.
* Optimism about AI’s potential: AI is seen as a transformative force that, if guided well, can revolutionize farming productivity and sustainability.