A smart green future and climate resilience underpinning breeding programmes

Mrs. Emma Brown, General Manager Plant Varieties
Dr. Zac Hanley, General Manager Science
Agenda

• Introduction to Plant & Food Research
• Challenge: it’s a time of crisis (global warming), change and uncertainty
• Our response: climate resilience underpinning breeding programmes
  – Breeding strategies
  – Plant Variety Intellectual Property
• UPOV’s opportunity
Our mission
To create the world’s most sustainable food production systems
New plant cultivars

Our cultivars are grown in more than 30 countries worldwide

- Zespri™ Red Kiwifruit
- Wake® raspberries
- Envy™ apples
- ‘Moonlight’ potatoes
- ‘Conquest’ wheat
A smart green future. Together.
Global challenges

- **Greenhouse gas impacts**: 11Gt excess from ag by 2050
- **Increase productivity**: Meet food and environmental goals
- **Food gap**: 52% crop increase by 2050
- **New breeding technologies**: Inconsistent regulation and variable consumer acceptance
- **Plant Variety Intellectual Property**: Inconsistent application of UPOV conventions
- **New growing environments**: Land and climate changes, all-year contained production
Applied research is revealing the molecular basis of commercial traits and creating tools for breeders to deliver better cultivars faster

- Gene identification, sequencing and mapping
- Gene function and pathway analysis
- Nutrition, consumer appeal, pest and stress tolerances
- Marker-assisted and whole-genome selection
- Gene editing
Potential for new breeding techniques & technologies

- Increased production in tough environments
- Improved nutrition
- Medicinal foods and personal health
- Removing undesirable compounds
- Novel consumer appeal e.g. colour
- Accelerated domestication of new crops
- Altered macronutrient content
- Growth habit and flowering time
- Flavour / Scent changes
- Aseasonality
- Improved nutrition
- Long storage with retained quality
- Low-input cultivation
Plant Variety Intellectual Property Strategy

• Where will the variety be:
  – propagated
  – cultivated
  – harvested material sold
  – at risk without PVR

• Legislative protection:
  – PVR
    • UPOV91
    • UPOV78
    • Sui generis
  – Trade mark
Plant Variety Intellectual Property Strategy - evolution

• New countries for new crops at the new pace
  – Plant material logistics
  – Allowing sufficient time for trials & evaluations in new regions and countries
  – Novelty triggering events balanced with the need to evaluate
  – Interspecific hybrids
  – Planning ahead – rapid climate change, new production regions

• New growing methods
  – morphological / phenotypic traits that may express differently in different production models
Together, we need greater investment in more radical innovation in breeding strategies. Together, Plant & Food Research – with our customers & partners – is embracing this opportunity. Together, we are all on the same journey. UPOV’s opportunity ensure Intellectual Property legislation keeps pace at the Convention and at national implementation levels.
Thank you

Emma.Brown@plantandfood.co.nz
Zac.Hanley@plantandfood.co.nz