

## **NZPPI Science Summit – 4 & 5 May 2017**

### **Report Back**

Workshop groups were asked to address the question:

“What are key issues for plant production that can be addressed by science and technology?”

Six key drivers were identified and six groups were formed to address the driver and related issues. They were asked to report back on their top three issues that could be solved by science and technology. For the most part they didn't identify their top three but reported on everything. The Plant Quality and the Sustainability group were the exception.

### **The six key drivers identified are:**

1. Labour – which includes availability and also health and safety issues etc;  
Includes drivers to replace people it would seem; but also perhaps science to improve training
2. Plant quality – and this is about nutrition, standards, health etc
3. Biosecurity and germplasm imports – issues around getting new germplasm into NZ
4. Sustainability – soil, containers, water,
5. Regulations
6. Knowledge access/communications

### **Group 1: Labour**

- Opportunities for automation and robotics
- An early and potentially relatively easy opportunity could be robotics for weed control. This could involve modifying a robotic lawnmower (for example).
- Included in this are smarter ways to apply chemicals for pest and disease control.
- Another opportunity is to improve forecasting to improve chemical application (thus reducing labour). There are many weather stations that could be tapped into and used to feed predictive models to model risk and help make spraying decisions and lead to
- UAVs could be used for visual inspection/visualisation to improve monitoring
- Developments in ergonomics, for harnesses etc, would be useful

### **Group 2: Plant Quality**

- There are many issues are soil/media/plant health that can be addressed by science.
- Opportunities for improved diagnostic services
- Opportunities for a science organisation (CRI) to develop science-based plant standards. Scion did this for radiata pine for nursery stock specs.
- Potential to develop website-based tools
- Questions on how to assess plant health status?
- Traceability – virus, germplasm – proving to clients that plants are clean. Need new methods and systems.
- Soil biology – more research on the benefits of soil microbes; and also, to verify the integrity of commercial products.

- Research to develop methods to determine if every truckload of planting media is the same; also for compost.
- Research on plant nutrition.
- Irrigation tools – but there is overseas technology available.
- Top 3 for this group:
  1. Diagnostics
  2. Plant health quality
  3. Surveillance protocol

### **Group 3: Biosecurity/import germplasm**

- Regulations are an important issue
- Internal biosecurity needs to be sensible
- Need tools to identify pests and research on how to manage the pests
- Also need to use science and technology to improve the supply chain in order to make it easier to bring in new germplasm – to increase genetic diversity and increase future opportunities and markets
- A role for PPI to bring people together to work on this issue
- Which providers can develop the technology? Need a better understanding as to who can do it.
- There is new tissue culture technology and next generation sequencing that can be used to improve germplasm import opportunities.
- Need more conversations with the regulator around Import Health Standards.
- Bottlenecks with importation (PEQ3) – need for more resource and better communication between regulators and scientists and industry.

### **Group 4: Sustainability**

- This group took an environmental focus but did discuss social, economic, and cultural aspects
- Key issues were:
  1. Planting media – need to develop NZ-sourced media to be truly sustainable; research should consider optimising the microbiome
  2. Soil health also a key issue; research into copper impacts; endophytes and mycorrhizae
  3. Water quality – leachate; recycling; availability issues that need science
- Pots and containers – replace plastic
- Benchmarking sustainability seen as an issue and an opportunity. Perhaps science can help.
- Nutrition – alternatives to synthetic fertilisers; which green crops to grow?
- Genetics – plant diversity as an issue
- Biodynamics – need a whole of system approach
- Climate change – low importance
- On the social/cultural aspects: licence to operate a key issue; benchmarking – what is sustainability? There are off-the-shelf systems that can be used.

### **Group 5: Regulations**

- Need a strong science basis to all regulatory decisions
- PPI needs science to influence regulators and regulations
- Science can help streamlining regulation development; standard systems to be ready in advance
- Communication is very important to regulators – need to be able to communicate science to the regulators
- Need a science strategy to make this happen
- Speed and accuracy in biosecurity decisions is important
- NZPPI has an R&D role to fill
- Fungicides and other chemicals need good science to support regulations

#### **Group 6: Knowledge access and communications**

- Need to be able to access old information – perhaps in an NZPPI members only section
- Something like Kiwi Wikipedia
- Fact sheets not science papers
- Forum for discussion
- Members only section could cover more than science
- PPI should catalogue research that has been done and is being done and bring it all together
- PPI needs to facilitate discussion between providers
- Need for tech transfer days/workshops – like this week
- Private organisations should be involved too.
- Regional focus groups could play a role.

#### **Comments from Science Leaders**

Ed Morgan, PFR

- Confidence to contribute to discussion grew rapidly from initial nervousness
- Need for greater collaboration between providers
- Definite need for a science strategy
- PPI can fund things that individual companies can't
- Science has a lot to offer

Lindsay Bulman, Scion

- This workshop has begun to identify the basis of a strategy
- Need a research strategy group within NZPPI
- Identify aspirational outcomes for key areas
- Use the funding mechanisms available; take advantage of government money
- PPI represents a very powerful lobby group as the nursery sector underpins plant growing sectors

Heidi Dungey, Scion

- Innovation occurs when you cross silos and get people together