

Bioresource Processing Alliance



**Industry and Research Alliances - there is a need -
make them work!**

Bioresource Processing Alliance

- How we are funded
- Who is involved
- Main aims and how to achieve these
- Expertise, equipment, connections
- Why such alliances are necessary

Sectors and by-product/waste streams

- Horticulture (Fruit, Vegetable, Plant)
- Agriculture (Meat, Dairy, Wool, Skins)
- Marine (Fish, Aquaculture, Seaweed)
- Forestry (Bark, slash, sawdust, pulp & paper, timber waste)
- Microbiological (brewing waste, waste treatment)

Four key areas of focus

- Extraction
- High Value Processing
- Deconstruction
- Reconstruction

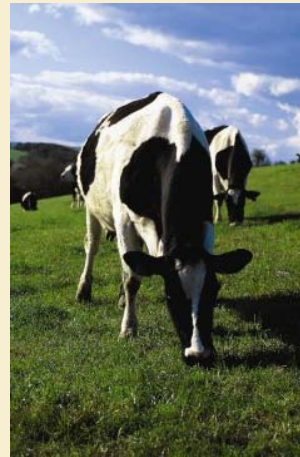
Types of projects

- Industry led new product/process projects
- BPA-led infrastructure projects
- University led science projects
- BPA led science projects

BPA – AgR Capability



- Post-farm gate
- On-farm
- Fibres



BPA – SCION Capability



- Forest industry
- Biopolymers and composites
- Waste conversion
- Fermentation technology
- Techno-economic modelling



BPA - Plant & Food Research Capability

- Nutrient analysis and bioactivity testing
- Sensory perceptions and consumer purchasing decisions
- Extraction and characterisation of bioactive compounds
- Process scale-up and technology transfer
- Development and market testing

BPA – Callaghan Innovation Capability

- Product and Process Development
- Extraction and purification
- Bioprocessing
- Chemical engineering
- Scale up and technology transfer
- Automation

Frequently asked questions

- Is the BPA a funding organisation for private companies?
- How much funding do companies put in?
- Who owns the IP?
- How does the funding process work?

Projects to Date

- 183 applications for funding
- 119 R&D projects:
 - 94 'commercial' projects
 - 26 student projects
- 6 infrastructure projects

Student Projects - Internships

- Anaerobic fermentation of municipal waste
- PHA production using TERAX liquor
- Brewery waste DNA as a fire retardant
- Rheological characteristics of food waste
- Fungal biotechnology
- Shark by-catch opportunities
- Eggshell powder for wool protection

Student Projects - Masters

- Polyphenol rich extracts from horticulture
- Anti-bacterial properties of beeswax
- Bionanomaterials from waste blood
- Methane feed source for microbial fuel cells
- Food ingredients from sheep whey

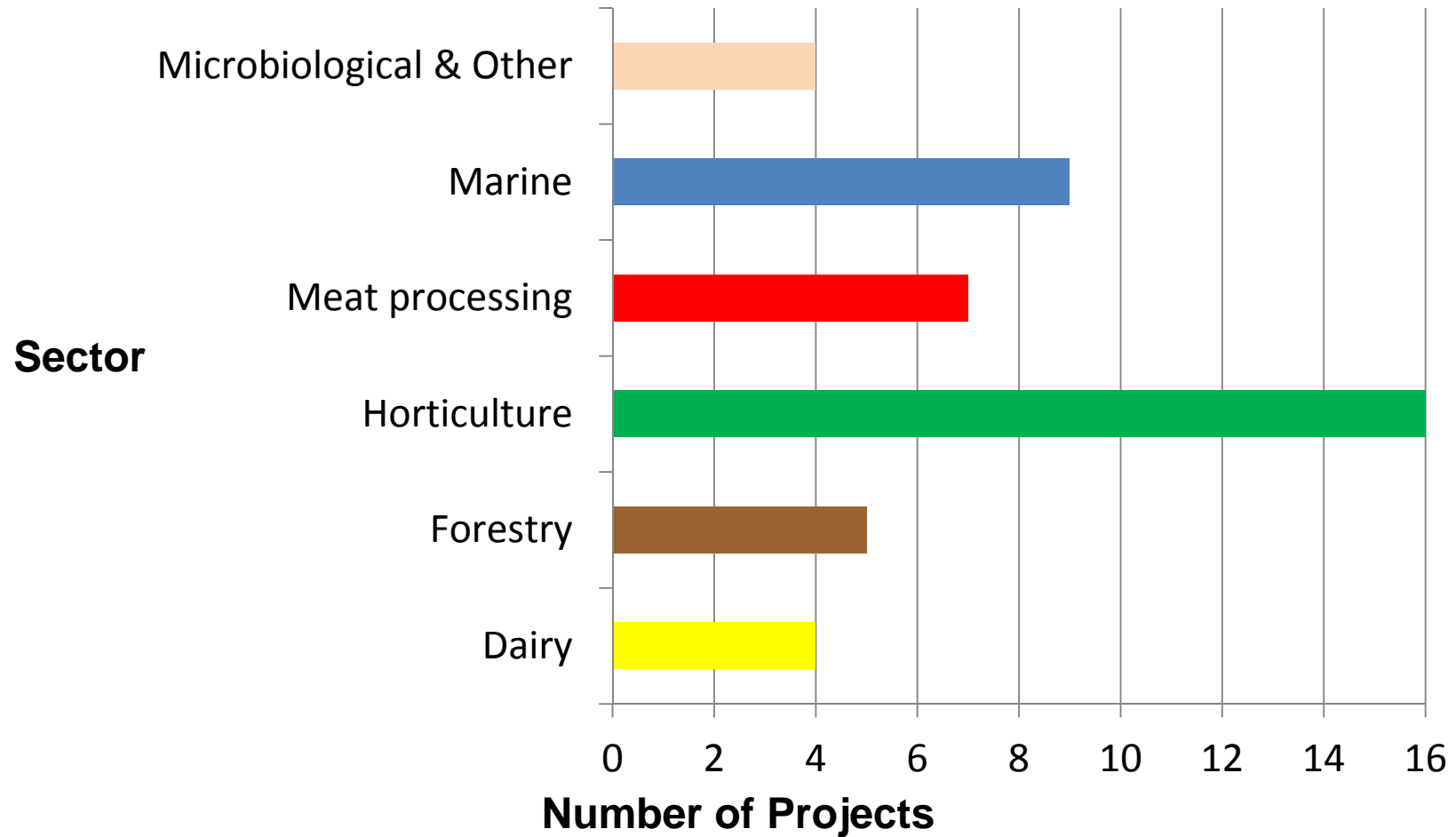
Student Projects - PhDs

- Wet oxidation processes
- Fruit as low cost substrates for new foods
- Bioactive compounds from grape pomace
- Added value biomaterials from dairy waste
- Effect of indolicidin on intestine integrity
- High value compounds from bread waste
- Photochemical cross-linking of collagen
- Fermentation derived aroma compounds

Commercial Projects - Products

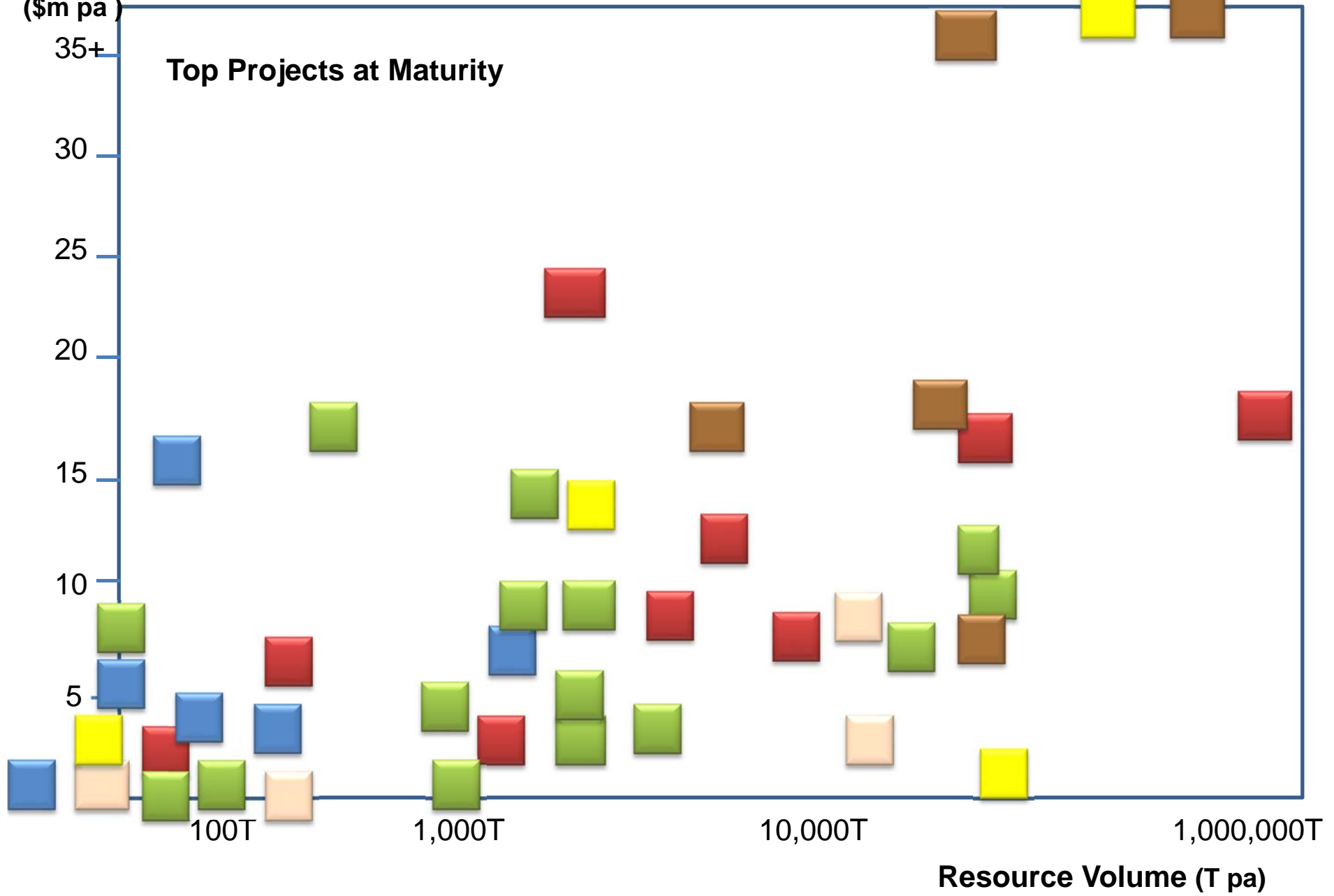
- Animal feed (a key area)
- Energy
- Pharmaceuticals and nutraceuticals
- Food ingredients/functional foods
- Fertilisers, weed suppression

Top Projects by Sector

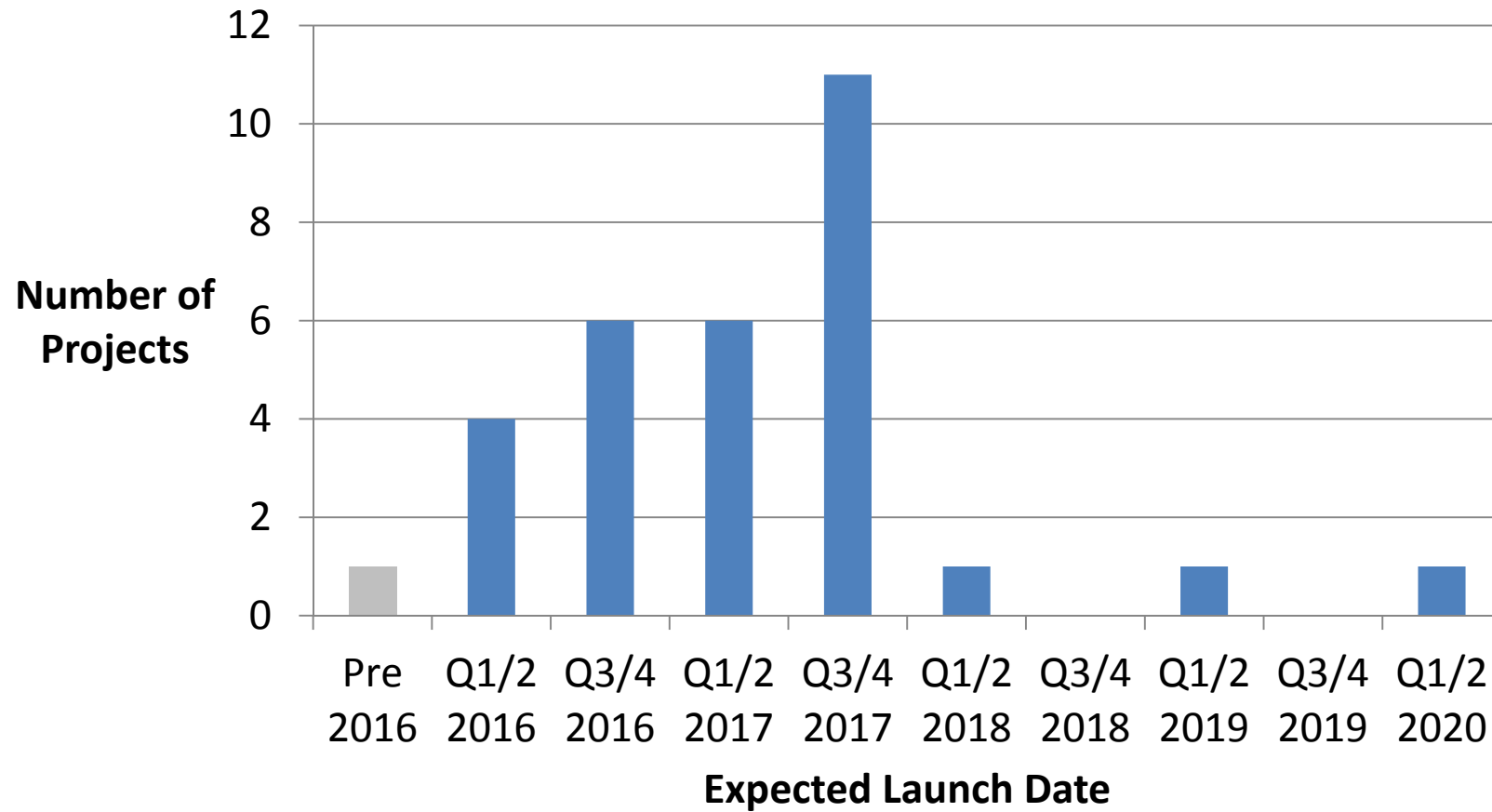


Value
(\$m pa)

Top Projects at Maturity



Expected Product Launch Dates – Top Projects



Commercial Projects – Client Feedback

‘Two of four projects had no commercial outcomes, which was great as it told us quickly and painlessly that those opportunities weren't worth pursuing’

‘Forced us to look outside business as usual’

‘Project management resource invaluable – clear who is doing what and by when’

‘Due to the technical challenge and high level of uncertainty, not a project we could undertake or fund alone’

‘Painless’



Commercial Projects – Client Feedback

‘We’ve spent about \$150,000 on branding and marketing the products so it was a real help to have the R&D – the part we couldn’t do in-house - funded in part by the BPA’

‘Nice low touch’

‘Really helpful having the scientist know our organisation so well’

‘Works really well having contact with scientists’

‘No paperwork for us, which was great!’

‘Neat team to work with’



Alliance Statistics

- 60% of alliances fail
- Likely that only 3 out of 10 survive first two years
- Productive and effective relationships foremost
- Poor communication can derail alliances and create an atmosphere of mistrust and suspicion
- Culture clash kills 21% of alliances
- Limit role confusion

Source: Kelly, Schaan & Joncas (2002)

BPA Successes

- All sectors covered, Maori engagement
- Genuine collaboration! (half with no financial sub-contracts!)
- Surpassed co-funding expectations (\$800k pa)
- High quality science outcomes
- Product in market Y2, increasing Y4 onwards
- Spin-out companies from unexpected avenues
- Patents
- Projects/engagement with 18/30 relevant companies from 2015 Deloitte Top 200

BPA Team Lessons

- Independent GM
- Understand and address cultural differences up front
- Balance the team's skills and personalities
- Initially focus on projects that provide fast feedback and build trust
- Reinforce and report on successes
- Don't be afraid to be creative



BPA Client Lessons

- Independent GM
- Client-initiated projects are ideal
- Follow up and communicate
- Feedback the good *and* the bad
- Be flexible, move fast and be professional
- Build trust
- Go the extra mile

BPA Policy Implications

- Commitment, chemistry and trustworthiness are important
- Managers should set the tone
- Be flexible as things change
- Allow autonomy
- Listen to what works and consider finding ways to build on this
- Good things take time!