

Current contribution of four biotechnologies to New Zealand's primary sector

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Aims

- Estimate the economic contribution of biotechnology to the primary sector in New Zealand.
- Inform policy on biotechnology, by determining the value it has generated, the areas where it has and has not had impacts, and the types of products and technologies creating value.

Survey of sector

A survey of 59 key informants in biotechnology, agriculture, forestry, and seafood was conducted in 2005. Informants represented primary producers and their organisations, biotechnology firms and groups, government agencies, universities, and Crown Research Institutes.

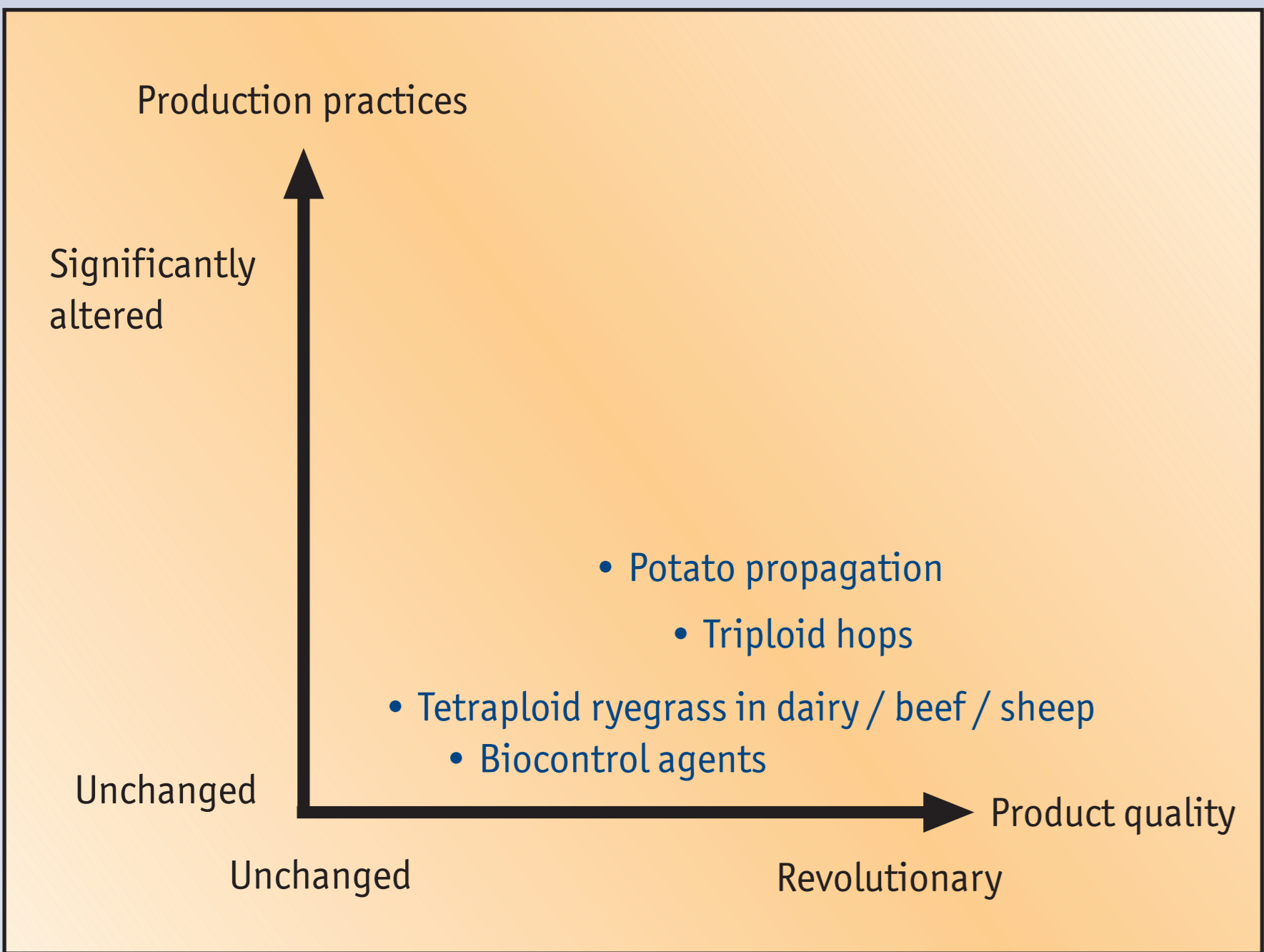
They provided information about adoption patterns, characteristics of markets, upstream and downstream impacts, and the potential impacts of not having biotechnology.

Cost-benefit analysis

Information on production impacts was used to calculate costs and benefits of the technologies. A key issue was the counterfactual, production without biotechnology. This information was combined with production budgets to estimate net impacts of innovations.

The research focused on the market impacts, but also considered non-market costs and benefits.

Types of innovations



Annual value of direct impacts of four biotechnologies (\$000's)

Subsector	Clonal propagation/cell manipulation	Biocontrol agents	Enzyme manipulation	Marker assisted selection	Total
Dairy	74,914	19,893	3,791	nil	98,598
Beef and veal	20,890	772	nil	nil	21,662
Sheep	35,287	41,353	nil	770	77,410
Forestry	16,976	nil	nil	nil	16,976
Horticulture	32,995	small value	9,960	nil	42,955
Arable crops	8,220	nil	nil	nil	8,220
Seafood	nil	nil	nil	nil	0
Total	189,282	62,018	13,751	770	265,821

Findings

- Total annual impacts: \$266 million.
- Older technologies are having larger impacts than newer technologies.
- Some parts of the primary sector are essentially unaffected by these biotechnologies.
- Non-market impacts could not be valued; necessary ecological and economic information was unavailable.
- Individual innovations are the products of long-term, fundamental research.
- Profiting from commercialisation required business expertise in addition to technological proficiency.