



## *Creating valuable bioplastics and biocomposites from low-value & waste protein*

*The Novatein technology is a process to produce compostable bioplastic resin using standard plastic industry plant and equipment. In contrast, manufacturing other bioplastics encompass highly complex and capital intensive processes.*

*This means our technology has no/low barriers to adoption for manufacturers compared to other bioplastics. The present Novatein resin has mechanical properties that are comparable to commodity plastics and bio-plastics.*

*Our underlying technology is based on leading edge research conducted at the Waikato Advanced Materials Group.*

### **Applications**

Our bioplastic resin:

- Can be thermo formed using Injection & Compression molding.
- Requires no specialized equipment.
- Is cheap to manufacture.
- Easily composted.

### **Market**

The majority of plastics are derived from the finite resource petroleum. Environmental and economic concerns in society are driving the use of sustainable and renewable resources, such as bio-fuels and bio-plastics.

This has pushed regulatory bodies and large commercial companies to invest in new environmentally friendly technologies. The global plastics industry was worth US\$1,052 billion in 2009. Bio-plastics currently have a 5-10% share of the total plastics industry, with a projected growth of at least 19% per annum in the US market.

### **Sustainable Business Opportunity**

The Novatein process produces bioplastic resin using a renewable, low-cost, readily available non-food feedstock. This reduces the increasing reliance on crops, otherwise used for food purposes, being diverted to produce bioplastics.

Initial cost estimates place Novatein resin at US\$2.40 per kg. This estimate is competitive with other bio-resins commonly available in the market, which range between US\$2.20 and US\$5.50 per kg.





## **Value Proposition**

Novatein's processes and products under development offer compelling value propositions:

### The Plastics Industry:

- The resin has mechanical properties comparable to commodity plastic low density polyethylene (LDPE).
- Cost-competitiveness with other bioplastics and petrochemical-derived plastics.
- Sustainable feedstock for plastic production compared with traditional petrochemical sources.
- Underpins a brand - Novatein's technologies are green, sustainable and eco-friendly.
- Competitive advantage.

### The Consumer

- Compostable plastic products from a sustainable feedstock.
- Ease of disposal. Overcomes consumer resistance at using and disposing of plastic products.
- Cost-competitiveness with other bioplastics and petrochemical-derived plastics.

### The Environment

- A sustainable feedstock source, compared with traditional petrochemical-derived products.
- Utilization of an existing waste stream; no longer requiring diverted primary production (e.g. corn) and/or diverted primary product from other valuable applications (e.g. food), when compared with other crop based bio plastic feedstock's.
- Biodegradable thermo-set and thermoplastic options.

## **IP Position**

Patent applications have been filed.

## **Partnering or Investment**

Novatein is seeking to raise investment to:

- Take the next step of producing kilogram volumes of resin. This will demonstrate the scalability and value of the Novatein process and allow larger scale product trials to begin.
- Secure partnerships with resin manufacturers and rendering plants, for both supply of raw material and the manufacture of resin on a commercial scale.
- Create awareness and a need for products manufactured using Novatein resin to support the commissioning of a large scale plant as the next phase of development.

