UNDERSTANDING PRICE ELASTICITY

in the Australian mushroom industry

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The Australian mushroom industry is a significant horticultural sector, with potential to expand in the future. Recent data from NielsenIQ, in partnership with Hort Innovation, reveals that almost 80% of households now purchase mushrooms. However, the role of price in changing demand, as well as potentially reaching new consumers, is not well understood.

Despite a decline in the production volume and value of mushrooms in 2020 and 2021 – possibly driven by the pandemic - mushroom consumption has remained fairly constant. This suggests that price increases over this period had little effect on consumer demand.

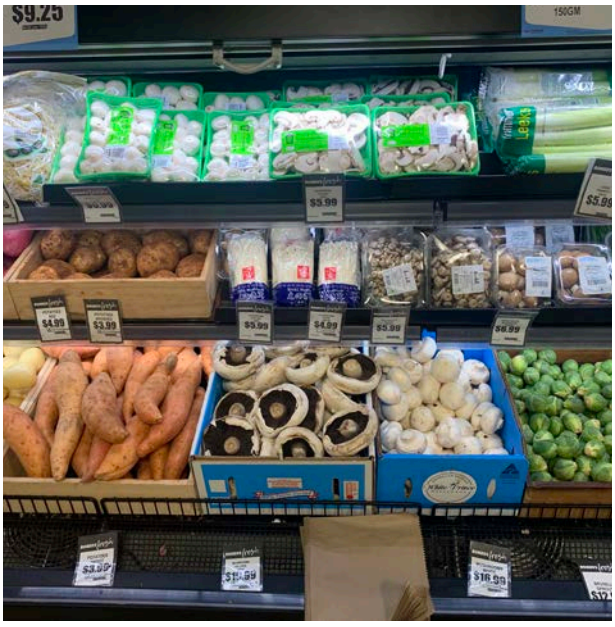
Understanding how changing prices impact consumer purchases can therefore benefit the industry as a whole as it will inform crop establishment and investment decisions.

Hort Innovation have engaged Natural Capital Economics to analyse the price elasticity of demand for mushrooms. Price elasticity is the effect of changing prices on the purchase quantity. While it is expected that people will purchase less when prices go up, this work examines exactly how sensitive mushroom customers are to changes in price.

An example of the effects of price on demand is shown in the table on page 36. To keep things simple, we

KEY POINTS

- Price elasticity is the effect changes in product prices have on total demand for that product
- As price is a key driver of demand, it is important to understand how changes in price affect consumer demand
- The project will also investigate how elasticities of demand might differ between mushroom varieties



	Price increase of 10%	Demand change (volume, %)	Revenue ($, %)
Unitary	$1.10 (↑10%)	90kg (↓10%)	$990 (↓1%)
Elastic	$1.10 (↑10%)	85kg (↓15%)	$935 (↓6.5%)
Inelastic	$1.10 (↑10%)	95kg (↓5%)	$1045 (↑4.5%)

assume a market quantity of 100kg mushrooms at a price of $10.00 per kg for a total revenue of $1,000[1]. There are three elasticity concepts to introduce:

- Unitary elasticity – a percentage change in price leads to an **equal percentage** change in sales volume
- Elastic elasticity – a percentage change in price leads to a **greater than proportionate** change in sales volume
- Inelastic elasticity – a percentage change in price leads to a **less than proportionate** change in sales volume

The table demonstrates that the effect of a change in prices on revenue depends on the elasticity of demand. Total revenue is only increased by increasing prices if demand is relatively inelastic.

To investigate this, NCEconomics will work together with a major data provider, quantitatively estimating the elasticity of demand for mushrooms using an economic model[2] . The project will also investigate how elasticities of demand differ between mushroom varieties (e.g., button, portobello, shiitake, oyster, and many more) that are sold as fresh supply in major supermarkets. This will allow estimation of the optimal price-volume mix to maximise industry revenues.

Mushroom producers and industry stakeholders will be engaged during the project to get feedback on research findings.

Understanding price elasticity can support well informed industry strategies for supply and demand. For example, understanding the optimal price-volume mix for mushrooms can better inform industry as a whole on the revenue impacts of increasing (or decreasing) production.

This project has recently started and will be completed around the end of November this year. Project findings will be reported in MushroomLink, as well as through the Hort Innovation website.

Hort Innovation Strategic levy investment | MUSHROOM FUND

This project has been funded by Hort Innovation using the mushroom research and development levy and funds from the Australian Government. For more information on the fund and strategic levy investment visit horticulture.com.au

This project is being led by Jim Binney, an economist of 25 years' experience across a broad range of resource and environmental management issues including sustainable agriculture, climate change, and water use efficiency.

Working alongside Jim is Boris Lam, an economist with experience applying statistical analysis to water resource and agricultural issues. NCE has also worked on a similar project investigating the price elasticity of demand for sweet potatoes.

NCEconomics

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References

1. Price x Quantity - Total Revenue

2. The model that NCEconomics will use is a version of the Almost Ideal Demand System (AIDS) model. It is commonly used to estimate the elasticity of demand for other commodities, not just mushrooms.