

Australian Government Department of Agriculture

REGULATION FOR MUSHROOM LEVY INCREASE

REGULATION IMPACT STATEMENT

OFFICE OF BEST PRACTICE REGULATION ID NO. 14183

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Section 1: Background

The Australian Mushroom Growers Association (AMGA), the peak industry body for *Agaricus* mushrooms, has made a submission to the Australian Government to increase the current rates for levy collected on mushroom spawn produced or purchased for use in the production of *Agaricus* mushrooms as follows:

- increase the marketing and promotion rate from \$1.62 per kilogram of mushroom spawn to \$3.24/kg; and
- increase the research and development (R&D) rate from \$0.54/kg to \$1.08/kg.

If implemented the total levy would be \$4.32/kg of mushroom spawn, an increase of 100 percent on the existing levy.

Both industry marketing and R&D is undertaken through Horticulture Australia Limited (HAL). HAL is an industry-owned company that provides marketing and R&D services for the benefit of the horticulture industry and has been declared the industry services body under the *Horticulture Marketing and Research and Development Services Act 2000*.

HAL receives funds raised by statutory levies and voluntary contributions from 41 horticultural industries. The company also receives matching government payments for eligible R&D expenditure up to 0.5 percent of horticulture industry's gross value of production [GVP] (wine grapes excluded). Currently, HAL administers funds from statutory levies for 28 horticultural industries (funds from the remaining 13 industries are provided as voluntary contributions).

HAL's revenue in 2011-2012 was \$101.7 million, with its expenditure on R&D programs \$76.7 million (including Australian Government matching payments) and expenditure on its marketing programs \$17.0 million (source: HAL Annual Report). Australian Government matching payments to HAL for R&D in 2011-12 totalled \$42.0 million.

Statutory levy collections for horticulture for 2011-12 totalled \$37.0 million (marketing \$15.2m and R&D \$21.8m). Department of Agriculture collection costs and HAL's administrative fee are deducted from levy collections (both statutory and voluntary contributions).

1.1 Industry background

The AMGA is a non-profit, member-based organisation and has represented the interests of the mushroom industry for over 50 years. The AMGA funds its operation and activities via membership fees and a separate voluntary levy paid by its mushroom grower members. Sixty seven of the industry's 68 commercial mushroom growers contribute to the voluntary levy. The largest grower, Mushroom Exchange, which accounts for approximately 30 percent of Australia's *Agaricus* mushroom production, is not a member of the AMGA. The majority of the 67,000 tonnes of *Agaricus* mushrooms produced in 2011 came from the top one third (by production) of AMGA member growers (AMGA, personal communication).

1.2 Levy history

Since 1 January 2002 *Agaricus* mushroom growers have paid a statutory marketing and R&D levy of \$2.16 per kilogram of mushroom spawn produced or purchased for use in the production of *Agaricus* mushrooms, of which 75 percent is for marketing and 25 percent for R&D. There is an upper threshold of 370,000 kilograms of spawn upon which levy is paid by any one grower in a financial year (only the largest grower reaches this threshold level). There is no proposal to change the upper threshold.

In 2010-11 levy collections were \$2.402 million, \$1.801 million for marketing and \$0.601 million for R&D. In that year the government provided \$0.635 million matching payments for eligible R&D levy expenditure.

1.3 Mushroom production and trade

In terms of value of production, mushrooms are Australia’s third largest vegetable crop after potatoes and tomatoes.

In 2010-11 the GVP for mushrooms was \$293 million, with the value in New South Wales being \$100 million, in Victoria \$96 million, in Queensland \$41 million and in South Australia \$19 million. The remaining \$37 million can be attributed to Western Australia and Tasmania but the breakdown for these two states is not shown on confidentiality grounds (ABS 2012)¹. Mushroom production facilities are predominantly located on the urban fringe of major metropolitan cities.

Australia only exports small quantities of mushrooms. In 2011-12 Australia’s exports of fresh, dried and prepared mushrooms were valued at \$1.360 million.

However, imports of fresh, dried and prepared mushrooms are more substantial (\$17.8 million). In 2011-12 Australia imported \$3.6 million worth of fresh mushrooms, \$5.5 million worth of dried mushrooms and \$8.7 million worth of prepared mushrooms. South Korea was the dominant supplier of fresh mushrooms and China the dominant supplier of dried and prepared mushrooms.

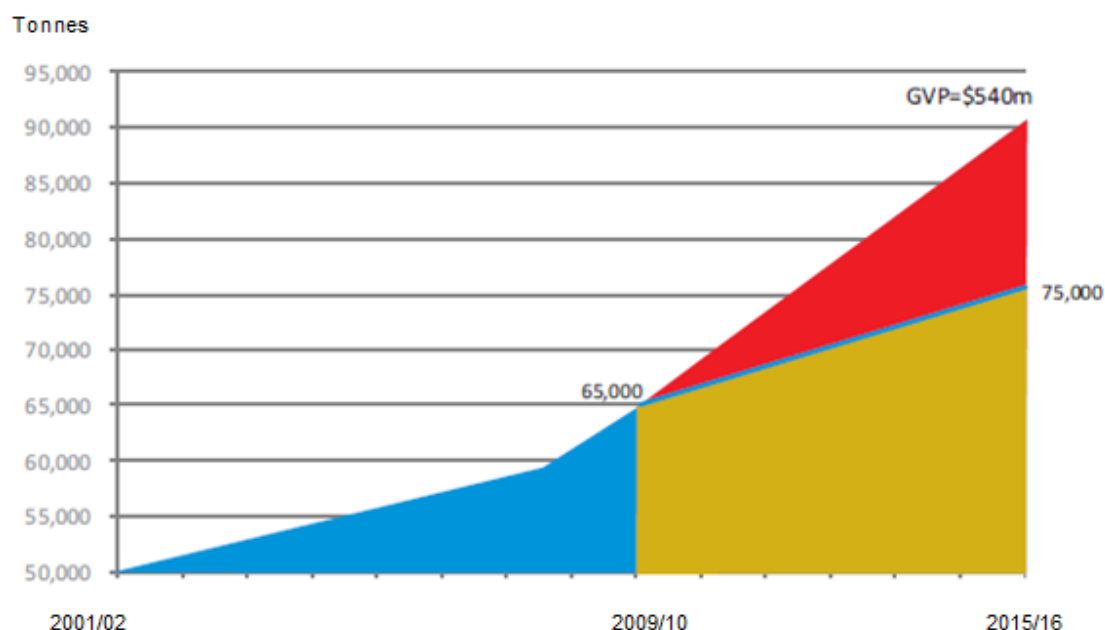


Figure 1: Forecast production and potential demand shortfall – 2001-02 to 2015-16 (AMGA 2011)

The Australian mushroom industry has experienced considerable pressure in the domestic market. With little product exported, rapid growth in local production over the last few years has led to oversupply, price discounting and trading difficulties for all growers. However, the AMGA indicates that the impact is more pronounced for smaller growers. The industry estimates production will reach 90,000 tonnes by 2015-16, which

¹ AMGA’s calculations of the industry GVP are different (see Table 2).

represents a significant 38 percent increase on the 2009-10 estimated production of 65,000 tonnes.

This situation is not dissimilar to the industry’s 1995-98 experience (refer to figure 2) when production was growing strongly at the same time as marketing (and promotion) activity was reduced sharply due to a lack of levy funds. Without a stimulation of consumer demand the industry found itself in oversupply. Retail prices were heavily discounted and wholesale prices suffered accordingly in spite of rapidly rising production costs. As a result, the viability of many growers was seriously challenged and some were forced out of the industry.

Increasing mushroom production is again impacting prices and, as a result, industry profitability. Price data collected by Ausmarket Pty Ltd indicates that average mushroom prices fell by over \$1 per kilogram in Sydney, Brisbane and Adelaide over six months from July 2011 to January 2012 (refer to table 1 for average mushroom prices over the last decade).

The industry’s current level of marketing is expected to increase demand for mushrooms to only around 75,000 tonnes by 2015-16, leaving a projected shortfall of approximately 15,000 tonnes.

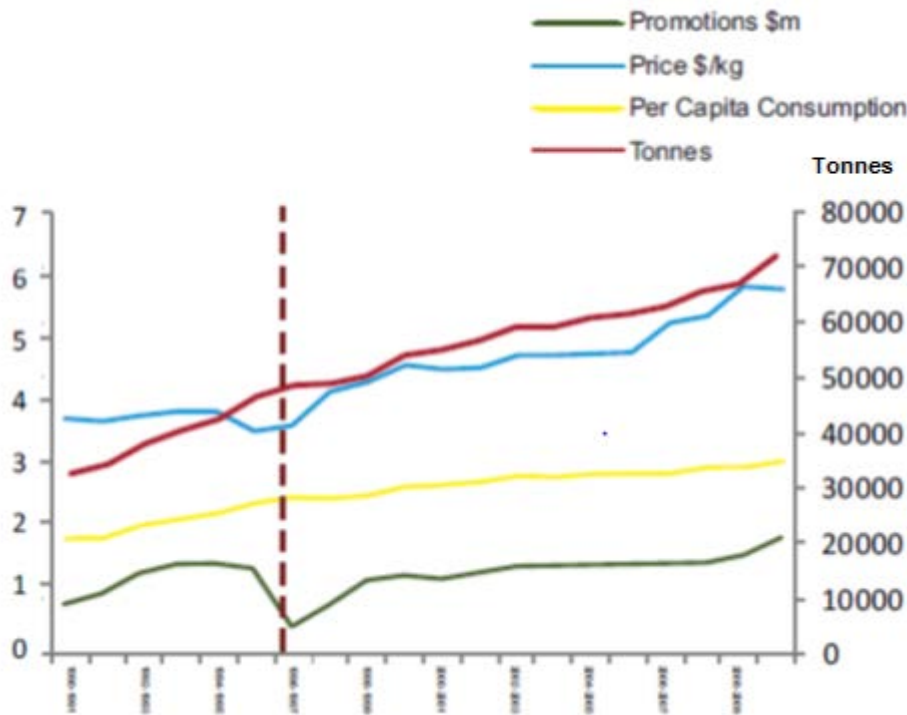


Figure 2: The marked impact of a reduction in marketing activity – 1990-91 to 2008-09 (AMGA 2011)²

Section 2: Assessing the Problem

The structure of the mushroom industry means that the benefits obtained from investments in R&D and marketing/promotion in the mushroom industry are largely non-excludable. If a group of individuals voluntarily fund R&D and marketing/promotion activities then the benefits obtained from these activities create

² Mushrooms are grown indoors under controlled environmental conditions and, therefore, less exposed to poor weather or adverse seasonal conditions (e.g. drought). Consequently production is subject to less year-to-year variability than other (field-grown) crops.

positive spill-overs for other producers – the individuals funding the activities are not able to exclude others from the benefits obtained by the increased R&D and marketing.

This 'free-rider' effect creates disincentive for investment in R&D and marketing and results in sub-optimal investment.

The introduction of a statutory levy, in 2002, was an attempt to address the free-rider problem and ensure the adequate investment in R&D and marketing.

However, the AMGA believes that the current levy provides insufficient funds to implement its 2011-2016 Strategic Plan, including boosting marketing activities to drive demand and increase industry profitability.

Table 1. Mushroom wholesale prices

Year	Inflation rate (%)	Nominal (\$/kg)	Real (\$/kg)³
2002-03	2.8	4.75	6.08
2003-04	2.8	4.76	5.95
2004-05	2.9	4.78	5.82
2005-06	2.7	4.80	5.64
2006-07	2.8	5.32	6.11
2007-08	2.4	5.45	6.00
2008-09	2.7	5.82	6.30
2009-10	2.5	5.90	6.20
2010-11	1.8	6.05	6.16
2011-12		5.92	5.92

Source: AMGA 2011 & AMGA 2013 pers advice (2010-11 & 2011-12)

In addition the AMGA submission notes that the capacity of the current rate of the marketing and R&D levy to fund priority industry projects has been significantly eroded over the last decade. Over a ten year period the industry's GVP has continually increased (see Table 2 below and/or Appendix C) but this has been a result of growth in production and sales, and relatively constant real prices (refer to Table 1 and/or Appendix B).

³ Real wholesale prices are expressed in 2012 dollars using the RBA inflation calculator at <http://www.rba.gov.au/calculator/annualDecimal.html>.

Table 2. Mushroom GVPs and levy collections⁴

Year	GVP (\$m)	Levy/GVP (%)	Levy (\$m)
2002-03	224	0.89	1.992
2003-04	240	0.74	1.785
2004-05	249	0.82	2.054
2005-06	266	0.79	2.1
2006-07	301	0.75	2.265
2007-08	316	0.67	2.109
2008-09	355	0.64	2.259
2009-10	383	0.64	2.448
2010-11	366	0.66	2.402
2011-12	376	0.69	2.588

Source: (GVP) AMGA 2013 pers advice, (levy) HAL various &, AMGA 2009

The AMGA also recognises there are significant opportunities for demand stimulation. Market research and a comprehensive six-month test-market program in Tasmania have shown that strong health-benefit messages can drive a change in consumer behaviour and lead to increased consumption. But this will only be possible on a larger scale with increased investment in marketing. The current rate of the marketing levy is insufficient to expand the test market program on a larger scale.

The report on the test-market experiment in Tasmania (Alston & Parks 2011) commissioned by AMGA found:

“The test-market experiment in Tasmania resulted in a significant increase in consumer demand for mushrooms, reflected in both an increase in the number of units sold and an increase in the average unit value. These changes were substantial and statistically significant.

Qualitative and quantitative market research suggests that this change in consumer behaviour was in response to a change in consumer perceptions of the health consequences of eating mushrooms, which was the message communicated in the program. The results from this work also indicate areas in which the program may be fine-tuned to make it even more effective when applied at scale to mainland Australia.

The implied benefits for producers, consumers, and the State as a whole are substantial and several times greater than the cost of the test-market experiment. We estimated a conservative benefit-cost ratio for Tasmanian producers of 7.6:1 if they were to bear the entire cost and 11.4:1 if the program were financed by a levy on production (or spawn). The aggregate benefit-cost ratio, including benefits to consumers was also 11.4:1. This benefit-cost ratio charges all of the expenditure in Tasmania against the measured benefits. A less conservative estimate would charge only the additional expenditure associated with the experiment against the measured benefits, implying benefit-cost ratios to producers of 15:1 if they

⁴ Figures for 2001-02 have not been included as mushroom levies were not collected over a full year.

bear the entire cost and 22:1 if they bear costs in proportion to their share of benefits.

These estimated benefit-cost ratios are within the typical range for generic commodity promotion programs, as reviewed by Alston et al. (2007) and in more detail by Kaiser et al. (2005). Most previous studies did not have the advantage of a controlled experiment, as in the present study, which adds to the relative credibility of the present findings. Our estimates do not count any benefits from implied savings in public health-care costs."

The AMGA also notes that rising costs have reduced the "purchasing power" of the levy. The AMGA believes the "purchasing power" of the current levy rate is approximately half of what it was upon commencement in 2002.

The levy rate has not changed since its introduction in January 2002. The costs for advertising, promotion and R&D have increased markedly over the last ten years. While not directly comparable, similar cost increases on farmers are shown at the Appendix. Between 2001-02 and 2011-12, the electricity index increased by 76 percent, fertiliser by 59 percent and fuel by 78 percent. Over the same period, the labour index was up 37 percent and overheads index (insurance, interest rates, rates and taxes etc) was 33 percent.

Although the amount of levy collected has increased (as the market has grown) it has not been sufficient to keep pace with increased costs. At inception of the levy, the amount of money raised represented approximately 0.9 percent of industry Gross Value of Production (GVP) [refer to Table 2]. By 2011-12 the levy collection expressed as a proportion of industry GVP fell to around 0.7 percent. The AMGA expects it to fall to around 0.5 percent of GVP by the end of 2012.

The AMGA believes that the amount of levy collected at the current levy rate is insufficient to generate the required revenue to fund the required marketing and R&D activities as outlined in the industry's Strategic Plan. The AMGA believes that to leave levy rates at the existing level will impact the financial viability of the industry and the livelihoods of those it employs.

Previous research has demonstrated considerable human health benefits from consumption of *Agaricus* mushrooms. The industry wishes to expand R&D to discover and validate the health and nutritional benefits of mushroom consumption. This information is to be communicated to the public through an expanded marketing program.

Section 3: Objective of Government action

The objective is to help maintain and strengthen the viability of the Australian mushroom industry.

3.1 - Options that may achieve the objective

3.1.1 - Option 1 - Status Quo

Under this option mushroom growers would continue to pay levy at the existing rates.

3.1.2 - Option 2 - Implement a Voluntary Contribution System for the proposed levy increase

Under this option mushroom growers would be asked to pay a voluntary contribution on top of the existing statutory levy sufficient to double the funding.

3.1.3 – Option 3 - Implement the proposed increase to the Statutory Levy

Under this option the rates of statutory levy for marketing and R&D would be doubled from \$2.16 to \$4.32, retaining the current exemption rate (threshold) which is capped at 370,000 kilograms of mushroom spawn produced or purchased, with:

- the marketing rate increasing from \$1.62 per kilogram of mushroom spawn to \$3.24/kg; and
- the R&D rate increasing from \$0.54/kg to \$1.08/kg.

3.1.4 – Option 4 - Implement ad valorem statutory levies

Under this option levies could be enacted based on a set percentage of the price of mushrooms at the point of sale rather than on levies based on the weight of the leviable input to the product with:

- the marketing rate set at 0.75 percent of the price of mushrooms at the first point of sale; and
- the R&D rate set at 0.25 percent of the price of mushrooms at the first point of sale.

3.1.5 – Option 5 - Implement the proposed increase to the Statutory Levy in two stages

Under this option the rates of statutory levy for marketing and R&D would be doubled from \$2.16 to \$4.32 in two stages, retaining the current exemption rate (threshold) which is capped at 370,000 kilograms of mushroom spawn produced or purchased, with:

- the marketing rate increasing from \$1.62 per kilogram of mushroom spawn to \$2.43/kg in the first year, and from \$2.43/kg to \$3.24/kg in the second year; and
- the R&D rate increasing from \$0.54/kg to \$0.81/kg in the first year, and from \$0.81/kg to \$1.08/kg in the second year.

3.1.6 – Option 6 – Implement indexing of the levy

Under this option the rates of statutory levy for marketing and R&D would be indexed against a relevant measure of inflation (i.e. Consumer Price Index (CPI) Source: ABS 2013). This could buffer the funds raised over time against loss of purchasing power, with:

- the marketing rate increasing from \$1.62 per kilogram of mushroom spawn to \$1.95/kg in the first year, changing the rate from \$1.95/kg by the annual measure percentage change in the CPI as reported by ABS (2013) in each of the next five years; and
- the R&D rate increasing from \$0.54/kg to \$0.65/kg in the first year, and from \$0.65/kg by the annual measure percentage change in the CPI as reported by ABS (2013) in each of the next five years.

Section 4 – Impact Analysis – Cost, Benefit and Risk

4.1.1 – Option 1 – Status Quo

Benefits

The existing statutory levy arrangements, collection system and operative rates are in place and are operating effectively. The statutory levies help overcome the ‘free-rider’ problem in the industry associated with securing funds for marketing and R&D that is otherwise non-rivalrous and non-excludable.

Maintaining the status quo provides a reliable source of funds available for industry marketing and R&D which helps undertake baseline priority project work and will see similar amounts of funding raised in the future for industry marketing.

Past R&D has produced evidence of the health benefits of mushroom consumption. Marketing is believed to increase mushroom consumption and also prices. This can result in health benefits to consumers and increase the profitability of the mushroom industry.

Health care professionals recognise the proven health and nutritional benefits of mushrooms. Research already funded by the existing levy and matching payments has played an important role in identifying the therapeutic benefits of mushroom consumption (e.g. as a dietary component, mushrooms can help offset preventable health conditions and diseases). The industry's enhanced R&D, to be funded by the levy rate increase and government matching payments, should enable new discoveries and continue to validate the known health and nutritional benefits.

HAL carried-out an economic study under the "human health and nutrition" R&D program for mushrooms (levy-funded). The study found that:

"The present value (PV) of investment in Human Health and Nutrition cluster was estimated at \$5.27 million which generated revenue with PV of \$52.99 million with a net present value (NPV) of \$47.73 million and a benefit cost ratio of 10.1 to 1 at 5% discount rate. The major benefits of this investment will be in terms of increased health of mushroom consumers, increased consumer demand for mushrooms and increased efficiencies in R&D and marketing investments".

Building on the R&D findings, the marketing program would promote the health benefits of mushrooms with the aim of increasing demand. This would assist the industry to market the forecast production increase, support prices and work to maintain the profitability and sustainability of the industry.

Based on figures provided by AMGA, it is estimated that over the following three years from 1 July 2013 the unadjusted levy rate would result in \$8.646 million in levy revenue. Further detail is provided in Table 8.

Costs

The current levy rates are not sufficient for the industry to implement its strategic plan. The capacity of the levy to support marketing and R&D into industry priorities has been significantly eroded by increased costs. For example, between 2001-02 and 2011-12, on-farm costs increased significantly (the electricity index increased by 76 percent, fertiliser by 59 percent, fuel by 78 percent, labour by 37 percent and overheads by 33 percent). The AMGA submission estimates this shortfall of what is needed in 2012-13 will be more than \$3 million. It is unlikely that an individual or group of growers would invest adequately to make up this shortfall.

Any research conducted privately is unlikely to provide industry wide benefits in the short to medium term with the financier attempting to capture the benefits privately. In addition, private researchers would also be less likely to pursue research of an industry-wide or public-good nature as it would deny them a competitive advantage.

Without more investment in marketing industry will be unable to extend the test market program work despite this program having demonstrated the potential benefits of increased marketing (and promotion) activity. The free-rider effect means that growers will be disinclined to meet the shortfall voluntarily. Any private investment would focus on brand, rather than collective or generic marketing of mushrooms.

The AMGA believes the demand for *Agaricus* mushrooms would not keep pace with forecast production, leading to falling prices which would directly affect the financial viability of the industry and the livelihoods of small to medium growers. This, in turn, would affect suppliers and employees, particularly if growers cease operating.

Employees of mushroom growers would be impacted if rising production leads to a fall in prices and some businesses become unviable. A change to, or no change to, the levy rate may also indirectly affect other businesses dependent on the mushroom industry (for example, machinery and materials suppliers and transport providers).

A downside of industry levies is the cost is typically passed on in-part or in full to consumers. Increased prices as a result of marketing can lead to many consumers paying an increased price for a good they were already purchasing regularly. In essence a wealth transfer from consumers to growers.

Assessment

The test market experiment by the mushroom industry showed significant scope to increase demand for mushrooms through an expanded national industry marketing effort. Without more funding the industry can not increase its marketing effort to take advantage of those opportunities.

On balance, “doing nothing” (maintaining a status quo) option represents a foregone opportunity for the industry.

4.1.2 – Option 2 – Implement a Voluntary Contribution System for the proposed levy increase

Benefits

A voluntary contribution system to supplement the existing statutory levy could provide sufficient funds to conduct priority industry marketing and R&D projects.

Voluntary contributions would attract Australian Government matching payments for eligible R&D expenditure.⁵

Based on figures provided by AMGA and past behaviour in the industry with voluntary funding, it is estimated that over the three years from 1 July 2013 a voluntary contribution system to supplement the existing marketing and R&D levy rates could result in a figure between \$8.646 million (0% voluntary contributions) and \$12.104 million (40% voluntary contributions) in levy revenue. Further detail is provided in Table 8.

A further benefit of this option is that voluntary nature of the payments will mean that growers will not experience undue financial hardship as a result of levy payments.

Costs

The *Agaricus* mushroom industry does not have a good track record for attracting widespread voluntary contributions from across the industry. Prior to the *Agaricus* mushroom statutory levy being introduced on 1 January 2002, the mushroom industry funded all marketing and R&D activities through a voluntary scheme. This voluntary mechanism proved inefficient as it allowed for a number of growers to opt-out and ‘free-ride’ on the contribution of other industry participants. The statutory levy was implemented to address this ‘free-rider’ problem.

A voluntary system for the proposed levy rate increase is likely to result in a considerable shortfall in (and uncertainty of) the level of funds collected.

⁵ Australian Government matching payments are made on eligible R&D expenditure that uses statutory R&D levy funds and voluntary contributions up to 0.5 percent of GVP. However the statutory levy matching payments have priority with the result that all payments for statutory levies will be made before funds are matched on voluntary contributions. No further government matching payments will occur once eligible R&D expenditure reaches the 0.5 percent GVP limit for the horticultural sector.

The AMGA marketing program is generic as *Agaricus* mushrooms are, essentially, a commodity. Therefore, non-contributors to a voluntary scheme would be able to obtain benefits from any marketing activities without contributing to meet the cost. A voluntary system would also provide a commercial advantage in terms of lower costs for those growers that decide not to contribute. A statutory levy rate increase does not preclude any grower from undertaking promotion of its own branded mushroom product.

The free-rider problem and the generic and collective advertising approach agreed on by the mushroom industry have prompted the AMGA to reject the option of a voluntary contribution system for the proposed levy rate increase. It considers the objectives of the industry’s Strategic Plan would not be achieved under this system.

Based upon estimates voluntary levy payments by small mushroom growing businesses on average per business would increase in the first year by \$0-\$5,200 per annum; levy payments by medium mushroom growing businesses would increase by \$0-\$16,000 per annum; and the largest grower’s levy payments would increase around 0-\$365,000. The median annual increase on average per business would increase by around 0-\$36,000.⁶

Table 3. Estimated voluntary levy payments by mushroom growing businesses

	Increase (per annum)
average	
small growers	\$0-\$5,200
medium growers	\$0-\$16,000
largest grower	\$0-\$365,000
median	\$0-\$36,000

Under this option collection arrangements would be more complex and consequently more costly to administer.

Assessment

A key risk posed by this option is that, while there is a considerable degree of uncertainty surrounding the level of voluntary contributions likely to be attracted, industry would opt out, resulting in no voluntary contributions. This would make it very difficult for the industry to achieve its strategic aims.

On balance, it is unlikely that this option will raise the funding required to address the problem. It will also incur more administration costs than options 1 and 3. The industry has not been consulted on this option.

4.1.3 – Option 3 – Implement the AMGA’s proposed increase

Benefits

The industry already has the statutory levy in place. As such the recurrent annual costs of the levy are already being met. The cost associated with increased operative rates would be expected to be less than establishing a new levy, reflecting efficiencies in the cost of collection.

Benefits of statutory levies identified under option 1 above also apply for this option.

⁶ It is anticipated that the largest grower would opt out and this would result in the small and medium grower’s contributions being towards the higher end of the estimate.

The statutory levy would overcome the free-rider problem associated with a voluntary levy.

Using AMGA figures, it is estimated that over the three years from 1 July 2013 the proposed increased levy rate would result in \$17.292 million in levy revenue. Further detail is provided in Table 8.

Under this option funding would be provided for priority marketing and R&D activities to sustain the viability of the industry. Australian Government matching payments for eligible R&D would further assist the industry to achieve its potential.

A statutory levy increase would ensure that all mushroom growers are able to benefit from marketing and R&D.

The industry's Strategic Plan predicts that if the increased levy is introduced, an average increase of 20 cents per kilogram at the first point of sale can be achieved for all *Agaricus* mushrooms produced.

Costs

Establishing an adequate amount of funding with which to undertake essential marketing and R&D would principally affect mushroom growers, who would pay the increased levy rates.

AMGA claims that levy payers would only need an additional four cents per kilogram of mushrooms produced to cover the levy rate increase. Taking this and the wholesale price of \$5-6 per kilogram into account, the proposed increase represents less than one percent of the price growers receive.

The majority of mushroom growers support the imposition of a doubling of the levy rates and see it as an investment in their own and their industry's future.

However, it is likely that some or all of the levy increase will be passed onto the consumer by growers and/or wholesalers through increased prices for their product. As noted above, the additional cost of the doubling of the levy is expected to be around four cents per kilogram of mushrooms – which is relatively insignificant relative to the retail price per kilogram. In addition, as mentioned in option 1 a marketing related price increase can result in a wealth transfer from some consumers to growers.

Industry should fund mushroom marketing and R&D as mushroom growers are the major beneficiaries of the outcomes achieved. The AMGA believes increased marketing and R&D is necessary to maintain the viability of growers and protect the jobs of their employees.

A downside of this option is that over time the real value of the levy will decline. This may result in future further increases in the levy being required.

Small mushroom growing businesses would not be disproportionately affected by the levy change compared with larger businesses, except that any growers whose contributions are limited by the cap on the levy will be effectively contributing less to the levy per kilogram of spawn than other businesses. Only one business has its contribution limited by the cap, but it would still however contribute a great deal more in total levy payments than each of these small businesses (both individually and collectively).

Levy payments by small mushroom growing businesses on average per business would increase by \$12,000 per annum; levy payments by medium mushroom growing businesses would increase by \$38,000 per annum; and the single largest grower's levy payments would increase around \$800,000. The median annual increase on average per business would increase by around \$81,000.

Table 4. Estimated levy payments by mushroom growing businesses

	Increase (per annum)
average	
small growers	\$12,000
medium growers	\$38,000
largest grower	\$800,000
median	\$81,000

In 2010-11 levy collections were \$2.402 million, \$1.801 million for marketing and \$0.601 million for R&D. Additional levy monies were raised in 2011-12 as a result of an increase in the upper threshold from 1 July 2011. If the current levy rates are doubled, the AMGA forecasts levy receipts in 2012-13 will be \$5.444 million rising to \$6.404 million in 2015-16.

If looked at in isolation there would be an extra annual cost to the Australian Government of \$900,000 in 2015-16 through providing matching payments for the proposed doubling of eligible R&D expenditure. However, no new government matching payments will be required, as HAL already receives matching government payments for eligible R&D expenditure up to the full 0.5 percent gross value of production limit for the horticultural sector.

There would be no administrative costs for the government in collecting or remitting the levy as the Department of Agriculture operates under full cost recovery. There would be a small one-off cost to spawn producers as they adjust their records to allow for an increased levy payment.

Assessment

This option is expected to produce sufficient funding to address the problem, though the erosion in the real value of the levy will continue. The ongoing administration costs are expected to be the same as option 1.

4.1.4 – Option 4 – Implement ad valorem statutory levies

Benefits

Ad valorem levies could apply to all mushroom growers for marketing and R&D and, if at a rate comparable with the AMGA's levy proposal, could ensure adequate investment in marketing and R&D and meet the priorities outlined in the industry's Strategic Plan into the future.

Changing levies to ad valorem measures could work to counter erosion of the levies purchasing power. Converting the rate to a percentage of the price of mushrooms at the point of sale would be easy (e.g.. one percent of the price of mushrooms at the first point of sale).

Benefits of statutory levies identified under option 1 above also apply for this option.

Based on figures provided by AMGA, it is estimated that over the following three years from 1 July 2013 the ad valorem levy rates would result in \$17.292 million in levy revenue. Further detail is provided in Table 8.

Costs

The costs of statutory levies identified under option 1, apart from insufficient funding and cost erosion, also apply for this option.

Changing an industry levy rate's measures involves more administrative effort and resources than changing the operative levy rate. Accordingly, it involves a higher setup and collection cost, which would have to be recovered from industry by the Government, resulting in less funds for projects.

The nature of the levy (which is collected on spawn, an input rather than a final product) presents difficulties in applying ad valorem, rather than production-based, levies. Using the collection points of spawn producers – there are only two-three spawn producers – is more economically efficient than collecting the levy from mushroom growers (there are 68 of these). Administering the much larger number of collection points for an ad valorem levy would lead to prohibitive levy collection costs.

Levy payments by small mushroom-growing businesses would increase on average in the first year by \$12,154 per annum; levy payments by medium mushroom-growing businesses would increase by \$37,875 per annum; and the largest grower's levy payments would increase around \$853,944. The median annual increase would increase by around \$84,034 on average.

Table 5. Estimated levy payments by mushroom growing businesses

	Increase (per annum)
average	
small growers	\$12,154
medium growers	\$37,875
largest grower	\$853,944
median	\$84,034

Assessment

While this option is expected to produce sufficient funding to address the problem and stop further erosion of the real value of levy funds, the costs of administering this option are significantly more than the other options (aside from option 6). Industry has not been consulted on this option.

4.1.5 – Option 5 – Implement the proposed increase to the Statutory Levy in two stages

Benefits

Under this option the operative rates of the marketing and R&D levy could be increased over time. Rather than mushroom growers facing a large increase to the R&D and marketing levy rates, a two step process would offer a more gradual implementation of the proposed levy increase. Not having to pay as much upfront on levies would allow growers the opportunity to utilise this money on-farm to derive flexibilities and leeway which would benefit their businesses (e.g. better cashflow and planning).

Benefits of statutory levies identified under option 1 above also apply for this option.

Based on figures provided by AMGA, over the three years from 1 July 2013, a staged increase in the levy rate would result in \$15.224 million in levy revenue. Further detail is provided in Table 8.

Costs

The costs of statutory levies identified under option 1, apart from insufficient funding, also apply for this option.

Changing an industry operative levy rate twice involves more administrative effort and resources than doing a change just once. Accordingly, it involves a higher cost, which would be cost recovered from industry and reduce the levy funds available for industry projects.

Not receiving the full proposed increase of levy funds from day one will delay some priority marketing and R&D projects at a time the industry is signalling a clear urgency for such projects.

Levy payments by small mushroom-growing businesses would increase on average in the first year by \$6,077 per annum; levy payments by medium mushroom-growing businesses would increase by \$19,000 per annum; and the largest grower's levy payments would increase around \$427,000. The median annual increase would increase by around \$42,017 on average.

Table 6. Estimated levy payments by mushroom growing businesses

	Increase (per annum)⁷
average	
small growers	\$6,077
medium growers	\$19,000
largest grower	\$427,000
median	\$42,017

Assessment

A risk posed by this option is that the delaying of increased funds generated by the levies will stymie the start and progress of priority marketing and research work.

Individual growers will be able to expend the money retained by the delay in payment of higher levy rates on activities which improve their business (e.g. planning, on-farm assets or infrastructure).

On balance, the benefits outweigh the costs of implementing a two stage phasing of the proposed levy rates, but the benefits are less and the cost more than other options considered in this document.

4.1.6 – Option 6 – Implement indexing of the levy

Benefits

Based upon figures provided by AMGA, it is estimated that in the first year a 20 percent increase in the levy rates (to bring the levy purchasing power back into line with the 2002-03 level - near to one percent of GVP) would result in \$3.276 million in levy revenue.

Benefits of statutory levies identified under option 1 above also apply for this option.

⁷ The estimated increase in levy payments in the second year would be the same as those listed here.

With indexation linked to the CPI (assuming the CPI stays at its March 2012-March 2013 rate of 2.5 percent) over the three years from 1 July 2013 the rate could result in \$10.366 million in levy revenue. Further detail is provided in Table 8.

Costs

The costs of statutory levies identified under option 1, apart from insufficient funding and cost erosion, also apply for this option.

The Australian Government requires industry to demonstrate support for the proposed levy rate. Indexation of the levy would mean levy payers would not know the quantum of annual changes to the levy rate.

Linking the indexation to the general CPI may not reflect inflationary changes specific to the mushroom industry. The government would incur administrative costs for implementing each change. Ensuring levy agents comply with annual changes would increase the Department of Agriculture's compliance activities. The additional cost of these administration and compliance activities would be recovered from industry in line with the Department of Agriculture's levy cost recovery arrangements.

Levy agents are likely to incur additional costs associated with making system and procedural changes to manage an annual rate increase.

There are considerable practical difficulties associated with implementing such an option (e.g. delays in the availability of each annual CPI figure – the July-June CPI figure is available around July/August the following year). As annual changes to the levy rate would need to be set out in a legislative instrument (e.g. regulations or a declaration) to provide transparency to levy payers, this may not occur for 15 months after the start of a levy year.

Levy payments by small mushroom-growing businesses would increase on average in the first year by \$2,928 per annum; levy payments by medium mushroom-growing businesses would increase by \$9,124 per annum; and the largest grower's levy payments would increase around \$205,712. The median annual increase would increase by around \$20,243 on average.

Table 7. Estimated levy payments by mushroom growing businesses

	Increase (per annum)
average	
small growers	\$2,928
medium growers	\$9,124
largest grower	\$205,712
median	\$20,243

Assessment

A key risk posed by this option is the uncertainty surrounding the inflation rate until official annual figures are released (generally thirteen months after the start of the year) and associated practical difficulties in implementing the option.

Additionally there are considerable practical difficulties associated with implementing such an option.

Section 5 - Competition Policy

The *Agaricus* mushroom levy increase would be applied equitably to all Australian *Agaricus* mushroom growers. The additional monies raised would be utilised solely for marketing and R&D activities focussed on assisting the industry as a whole. Therefore, the additional marketing and R&D should be competition-neutral by not favouring or disadvantaging one individual producer in the industry over another. Over time, continued funding for marketing and R&D activities are expected to enhance the viability and profitability of the industry.

The upper threshold of 370,000 kilograms of spawn upon which levy is paid by any one grower in a levy year provides a measure of protection to the largest grower (the only one that reaches this threshold level).

Section 6 – Consultation

Once the industry's Strategic Plan was launched at the 2011 Annual Mushroom Industry Conference, the AMGA prepared a detailed Discussion Paper outlining the levy proposal and rationale. The AMGA conducted a thorough consultation campaign with all known levy payers, in-line with the Australian Government *Levy principles and guidelines* (LPGs). A series of grower forums were run to detail the levy proposal. Efforts were made to personally speak to every levy payer, encouraging them to read the Discussion Paper and participate in the ballot – 90 percent of all levy payers were contacted by the AMGA.

A postal ballot of registered mushroom growers was undertaken on the proposed levy increase by the Australian Electoral Commission (AEC) over a four week period from 18 November 2011 to 9 December 2011. On 12 December 2011 the AEC declared the results for the ballot. Of 68 potential levy payers, 46 returned a ballot paper for scrutiny (67.6 percent participation). Two ballot papers were rejected, leaving 44 ballot papers to be counted. Thirty three voted in favour of the AMGA proposal (75 percent support) and 11 against.

The LPGs state that it is a requirement for industry to achieve a majority of those that vote for a levy increase. Thus with 75 percent of valid votes in favour (allocated on a one vote per producer basis) the AMGA considers it has achieved a strong mandate. The AMGA cites written declarations of support from 12 of the 13 largest mushroom growing businesses in favour of the levy increase – the exception being the single largest grower.

After a formal submission of a levy increase proposal, the LPGs provide for a 6 week period in which dissenting objections can be lodged. The Department of Agriculture activated a 6 week objection period which ended on 22 May 2012. Five dissenting submissions were received including a detailed submission from Mushroom Exchange.

The principal objections were: doubts that the increase in the marketing levy would result in any identifiable benefit to the wider mushroom industry, insufficient evidence provided by the AMGA to support its claims of increased production and future market oversupply, the affordability of the levy increase for small to medium growers, the difficulties faced by growers in passing on the cost of the levy increase to consumers, and claims that growers opposing the levy increase represent more than half of all mushroom production.

It is not possible to verify the claim that growers opposing the levy increase represent more than half of all mushroom production. As a secret ballot was undertaken this claim is speculative. Examining commercially confidential data from the AMGA it would appear that at least 55 percent of the industry's levy collections are received from growers who have declared their support for the AMGA's levy proposal.

The LPGs only require a positive vote from those growers that choose to participate in the ballot. The proposed levy changes were declared by the AEC to have garnered 75 percent of the votes.

Two objectors suggest the increase should be phased in over a number of years. A staged introduction could be done but would delay some funds for priority projects. Additionally, the overwhelming majority of growers do not support this, this is not the proposal that was voted on in the ballot and a new ballot would be required if this was to be considered further.

The issue of whether growers can pass on the cost of the proposed levy is not relevant in considering the levy proposal against the LPGs. This issue is discussed further on page 10 (4.1.3 under "costs").

The Department of Agriculture is satisfied the ballot was conducted fairly and that the positive vote in favour of the proposed levy increase is reliable.

If the AMGA's proposal is approved, the largest grower's levy payments would double to \$1.591 million. This grower does not wish to be compelled to contribute to statutory levy-funded collective generic marketing and promotion activities. At the heart of its objection is that it already has the capacity as a large and influential mushroom producer to invest in marketing its mushrooms to buyers to obtain a reasonable return.

The selection and allocation of mushroom levy funding is currently determined by the HAL Board on advice from the Mushroom Industry Advisory Committee (MIAC). Membership of the MIAC is recommended to HAL by the AMGA. Two members of the MIAC are from the AMGA, three are employees of Mushroom Exchange and three are neither directors nor staff from AMGA or Mushroom Exchange.

The AMGA estimates that the mushroom industry will achieve an annual production level of 90,000 tonnes by 2015-16, which is well above the Australian Bureau of Statistics (ABS) figure of 49,700 tonnes in 2010-11. While the AMGA's figure is an estimate, the AMGA has provided the Department of Agriculture with reasonable evidence in support of its claim as well as evidence of the expected adverse impact on wholesale and retail prices.

The Department of Agriculture considers the AMGA's proposal is consistent with the LPGs. The submission provides evidence of wide industry consultation and provides a detailed assessment of points raised in opposition to its proposal and the consequences of not increasing the levy. The Department of Agriculture has not been provided with information to counteract AMGA's claims that the present levy receipts are insufficient to grow consumer demand for mushrooms in line with the industry strategic plan and that a voluntary levy would not deliver an equitable contribution from all growers.

While some growers are in opposition to the proposal, the positive vote in the ballot provides evidence of a comfortable margin of the industry being in favour of the proposed levy increase.

The AMGA provided a formal response to the issues raised by the largest grower's objection submission dated 18 May 2012.

The AMGA states that since its formal submission to the government on 10 April 2012, production increases forecast in the Strategic Plan have started to have an impact, leading to oversupply, retail discounting and reduced returns to producers.

Section 7 – Conclusion and recommended option

There are some relative merits for each of the six options considered. However, option 3 is superior to all the other options, and therefore best meets the stated objective of Government action.

Option 3 is practical to implement, will override growers free-riding or opting out, provides the funds needed to invest in priority marketing and research and development projects in a timely manner, reinstates the eroded purchasing power of the mushroom levy, and has the overwhelming support of the industry (both by grower numbers and level of production). The additional cost of the doubling of the levy is expected to be around four cents per kilogram of mushrooms – which is relatively insignificant relative to the retail price per kilogram.

From a perspective of maximising estimated levy collections on mushrooms options 3 and 4 are the preferred ones. Both provide the greatest amount both upfront in 2013-14 and over the three years commencing 1 July 2013. However, option 4 would have significant costs associated with collection costs, with a move from 3-4 collection points to more than 68. Option 5 would be the next preferred in terms of raising revenue (Table 8 summarises the expected levy revenue to be generated from each of the options considered).

There are practical difficulties associated with implementing option 6, and to a lesser degree option 4. There are significant doubts that option 2 will generate much additional revenue for mushroom marketing and research and development.

Table 8. Estimated mushroom levy collections (\$m)

Option	2013-14	2014-15	2015-16	2013-14/2015-16
1. Status quo	2.722	2.882	3.042	8.646
2. Levy + Voluntary contribution	2.722 - 3.811	2.882 - 4.035	3.042 - 4.259	8.646 - 12.104
3. AMGA's proposed levy increase	5.444	5.764	6.084	17.292
4. Ad valorem levies	5.444	5.764	6.084	17.292
5. Two stage increase	4.016	5.444	5.764	15.224
6. Indexed levies	3.276	3.405	3.684	10.366

The recommended option is to implement the *Agaricus* mushroom levy increase under the *Primary Industries (Excise) Levies Act 1999*. The proposed levy rate increase is regarded as the only effective means of raising the funds required to undertake the industry's marketing and R&D priorities set out in the Strategic Plan.

The AMGA proposal to double the *Agaricus* mushroom levy (option 3):

- conforms to the LPGs;
- would be applied universally across the levy paying population;
- has clear potential to benefit the industry; and
- is not expected to impose significant costs on consumers.

Section 8 – Implementation and review

The AMGA wishes the *Agaricus* mushroom levy increase be implemented as soon as practicable, depending on the legislative process.

Amendments to the Primary Industries (Excise) Levies Regulations 1999 made under the *Primary Industries (Excise) Levies Act 1999* will be required.

The implementation of the Mushroom industry Strategic Plan, which guides levy expenditure, will be reviewed by HAL and MIAC on a yearly basis. The AMGA and HAL, through the MIAC, propose to conduct a thorough review of the Strategic Plan and the levy arrangements in 2016.

Also, levy issues can be raised and reviewed at the HAL's Annual Levy Payers Meeting and at AMGA meetings held throughout the year.

The government does not intend to review the operation of the levy.

8.1 - Compliance costs

The average annual change in compliance costs of the recommended option compared to business as usual is estimated to be zero. Currently the levy is collected via a standard online or hard copy return form (either quarterly or annual). The levy payer populates the quantity of mushroom spawn. The online form automatically calculates the levy/charge payable. On the hard copy form the levy payer populates the levy/charge rate and calculates the levy/charge payable. Under the recommended option the form would remain the same and the levy payer would insert \$4.32 rather than \$2.16 for the levy/charge rate. There would be no increase in regulatory burden.

Table 9. Regulatory Burden and Cost Offset

Average Annual Change in Compliance Costs (from Business As Usual)				
Sector/Cost Categories	Business	Not-for-profit	Individuals	Total by cost category
Administrative Costs	\$0	\$0	\$0	\$0
Substantive Compliance Costs	\$0	\$0	\$0	\$0
Delay Costs	\$0	\$0	\$0	\$0
Total by Sector	\$0	\$0	\$0	\$0
Annual Cost Offset				
	Agency	Within portfolio	Outside portfolio	Total
Business	\$0	\$0	\$0	\$0
Not-for-profit	\$0	\$0	\$0	\$0
Individuals	\$0	\$0	\$0	\$0
Total	\$0	\$0	\$0	\$0
Proposal is cost neutral? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no Proposal is deregulatory? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no Balance of cost offsets \$0.00				

Horticulture Policy Section
Agricultural Productivity Division
Australian Government Department of Agriculture

References

ABS (Australian Bureau of Statistics) 2003: *Value of Agricultural Commodities Produced 2001-02*, Cat no. 7503.0, released 5 September 2003.

ABS 2005: *Value of Agricultural Commodities Produced 2003-04*, Cat no. 7503.0, Table 6, released 12 September 2005.

ABS 2006 : *Value of Agricultural Commodities Produced 2004-05*, Cat no. 7503.0, Table 6, released 12 September 2006.

ABS 2008: *Value of Agricultural Commodities Produced 2005-06*, Cat no. 7503.0, Table 3, released 8 May 2008.

ABS 2009: *Value of Agricultural Commodities Produced 2007-08*, Cat no. 7503.0, Table 2, released 29 July 2009.

ABS 2010: *Value of Agricultural Commodities Produced 2008-09*, Cat no. 7503.0, Table 2, released 18 June 2010.

ABS 2012, *Value of Agricultural Commodities Produced in 2010-11*, Cat no. 7503.0, released 29 June 2012.

ABS 2013, *CPI Australia March 2013*, Cat. No. 6401.0, released 24 April 2013.

Julian M. Alston and Joanna C. Parks 2011, *The Returns to Promotion of Healthy Choices—Implications from a Market Experiment in Tasmania: Are You in the Dark about the Power of Mushrooms?*, 11 May 2011.

AMGA (Australian Mushroom Growers' Association) 2009: *Levy cap increase submission 2009*.

AMGA 2011, *National Agaricus mushroom levy discussion paper*, Sydney, 30 September 2011.

DAFF (Department of Agriculture, Fisheries and Forestry) 2007, *Levy principles and guidelines*, Canberra, April 2007.

HAL (Horticulture Australia Limited) 2007: *Mushroom Industry Annual Report 2006-07*, Sydney.

HAL 2008: *Mushroom Industry Annual Report 2007-08*, Sydney.

HAL 2009: *Mushroom Industry Annual Report 2008-09*, Sydney.

HAL 2010: *Mushroom Industry Annual Report 2009-10*, Sydney.

HAL 2011: *Mushroom Industry Annual Report 2010-11*, Sydney.

HAL 2012, *HAL Annual Report 2011-12*, Sydney.

Appendix A

Indexes of prices paid by farmers, and terms of trade ^a Australia

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13 ^f	2013-14 ^f
Farmers' terms of trade ^a	98.5	108.1	101.1	95.3	92.4	91.8	95.9	91.7	88.5	88.6	96.4	94.2	94.7	92.3
Materials and services														
Seed, fodder and livestock														
fodder and feedstuffs	93.6	105.5	167.5	148.3	140.4	126.4	151.7	195.3	168.0	145.8	121.0	117.9	129.7	121.5
seed, seedlings and plants	105.2	112.9	118.3	104.9	95.3	93.8	109.9	135.0	120.7	109.4	120.0	119.3	131.3	126.2
store and breeding stock	126.0	145.3	123.8	144.0	159.7	165.9	157.9	155.3	161.9	168.3	194.0	198.2	179.0	175.4
total	103.1	116.5	150.3	142.0	140.3	130.8	147.2	178.0	161.0	147.0	137.8	136.7	141.2	134.4
Chemicals	103.3	105.6	108.0	110.0	111.9	114.6	124.7	149.7	136.7	116.2	110.4	112.6	112.6	116.2
Electricity	99.9	100.4	100.5	100.0	101.3	104.6	107.6	111.3	121.5	142.1	158.9	176.8	181.1	185.6
Fertiliser	106.4	104.3	106.9	102.8	108.8	111.6	121.4	220.4	239.6	156.0	157.3	165.5	170.5	176.0
Fuel and lubricants	144.1	128.3	127.0	144.3	167.2	210.6	208.3	243.7	211.0	191.7	211.3	228.2	212.1	213.6
Total	109.3	113.1	126.0	125.3	128.7	130.9	140.3	170.8	164.0	146.4	146.1	149.8	152.0	151.9
Labour	110.1	113.3	117.9	121.6	125.7	129.7	133.5	138.0	142.6	147.3	151.9	155.5	159.3	163.3
Marketing	109.3	112.4	115.9	118.7	121.5	125.4	129.1	143.2	137.2	134.0	144.8	154.1	152.2	156.5
Overheads														
Insurance	109.8	118.6	124.5	128.8	131.9	135.1	139.4	143.5	155.6	167.0	173.7	185.8	190.4	195.1
Interest paid	111.2	104.2	110.7	118.1	120.9	123.8	127.8	142.6	116.8	111.2	122.3	114.9	103.8	102.0
Rates and taxes	112.4	115.5	119.1	121.9	124.8	128.9	132.7	137.3	141.6	144.9	149.4	153.0	156.7	160.6
Other overheads	108.7	111.9	115.4	118.1	121.0	124.8	128.5	132.8	137.2	140.6	144.9	148.4	152.0	155.8
Total	111.3	109.9	115.2	120.6	123.5	126.8	130.8	141.8	126.6	124.3	133.7	129.9	123.0	122.8
Capital items	111.9	115.2	118.3	121.3	124.4	128.4	132.3	136.8	141.2	144.8	149.3	153.2	157.3	161.5
Total prices paid	110.1	112.9	121.5	123.0	126.3	129.4	135.9	155.1	148.9	140.8	144.8	147.5	147.5	148.6
Excluding capital items	109.7	112.4	121.8	123.1	126.5	129.4	136.2	157.3	149.9	140.4	144.4	146.9	146.5	147.3
Excluding capital and overheads	109.4	113.0	123.3	123.7	127.2	129.9	137.6	161.7	156.7	144.9	147.1	151.7	153.5	154.6
Excluding seed, fodder and store and breeding stock	111.4	112.1	115.6	119.2	123.6	129.2	133.6	150.3	146.4	139.4	146.2	149.7	148.8	151.6

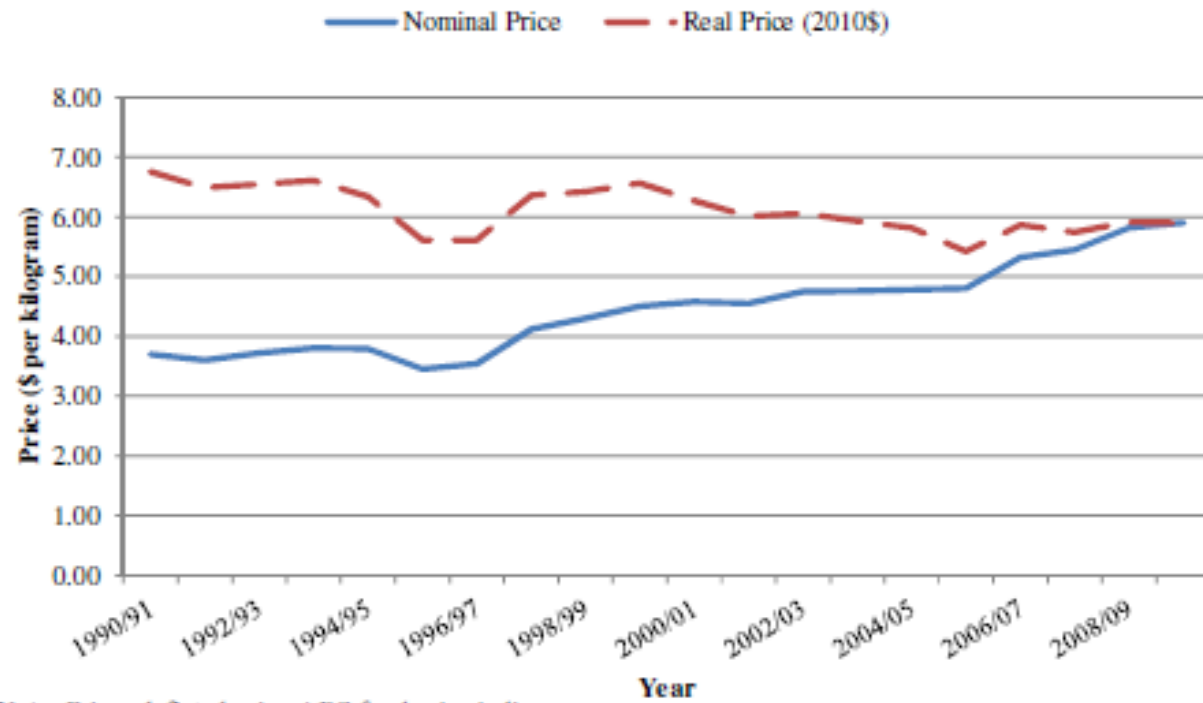
^a Ratio of index of prices received by farmers and index of prices paid by farmers. ^f ABARES forecast.

Notes: ABARES revised the method for calculating these indexes in October 1999. The indexes for commodity groups are calculated on a chained weight basis using Fisher's ideal index with a reference year of 1997-98 = 100. Prices used in these calculations exclude GST.

Sources: ABARES (compiled from various market sources); Australian Bureau of Statistics

Appendix B

Figure 4. *Australian Wholesale Mushroom Prices, 1990-2010*

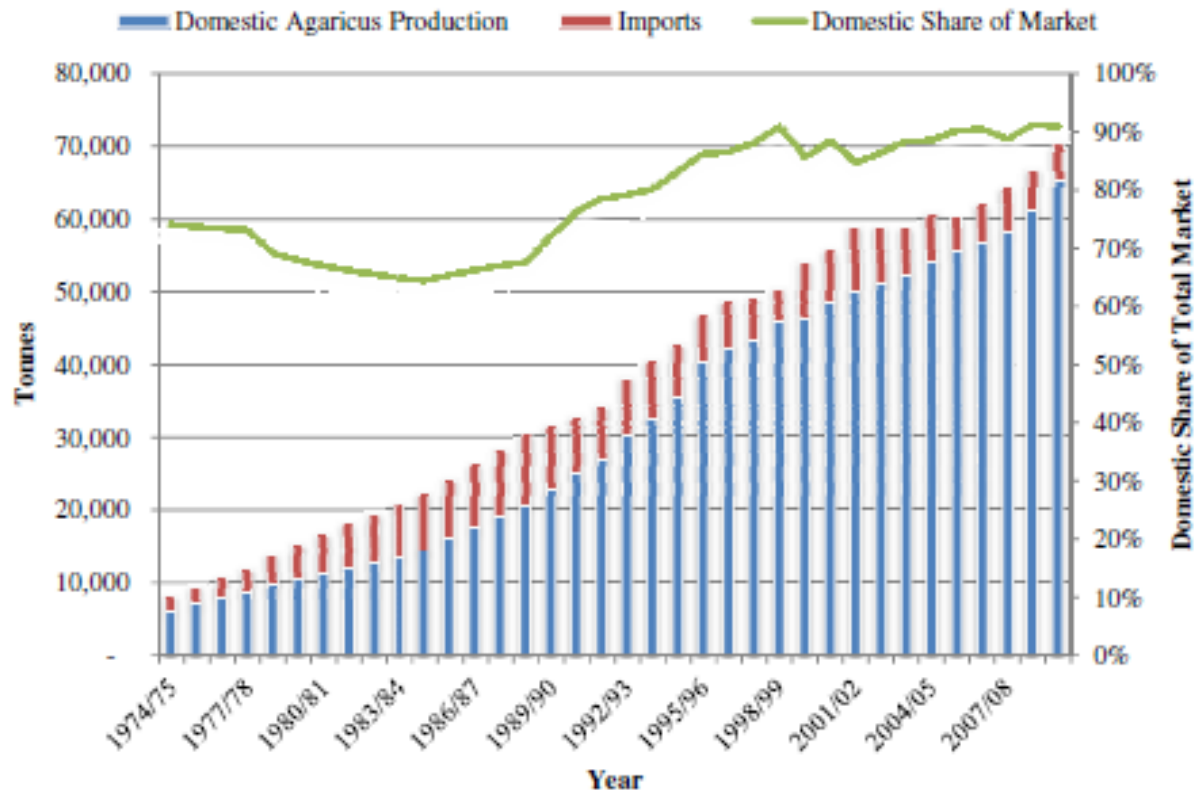


Note: Prices deflated using ABS food price indices.

Alston & Parks (2011)

Appendix C

Figure 2. Australian Mushroom Industry Trends, 1974-2010



Alston & Parks (2011)