



RURAL INDUSTRIES RESEARCH
& DEVELOPMENT CORPORATION

Organic Agriculture in Australia - *Levies and Expenditure*

**A report for the Rural Industries Research
and Development Corporation**

by Dr Els Wynen

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Foreword

While organic farmers pay levies for research and development purposes, it is sometimes argued that they do not receive sufficient benefits from the research funded with the levies. This publication quantifies the levies paid by organic farmers in 2000-2001 and compares them with estimates of direct and indirect funding of research into the organic sector.

This project was funded from RIRDC Core Funds which are provided by the Federal Government.

This report, a new addition to RIRDC's diverse range of over 900 research publications, forms part of our Organic Produce R&D program, which aims to optimise the profitability of Australian organic production in domestic and overseas markets and promote the utilisation of organic farming systems as a means of enhancing the sustainability of Australian agricultural systems.

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Executive Summary

It is often claimed that the organic industry in Australia receives insufficient funding for research and development. Behind this claim lies the assumption that funding provided is less than the amount paid by organic farmers in obligatory research and development levies. But is this the case? How much do organic farmers contribute? And how much do they receive in return? The aim of this report is to quantify these issues.

The first issue - levies paid by organic farmers - was scrutinised and analysed with the help of the organic certification offices. These offices hold data pertaining to organic farms. The majority of farms, including those under organic management, pay levies for research and development (R&D), marketing, the National Residue Survey and animal health. This is either a certain percentage of the farm gate value of the product (for example, grains), or a set amount per unit of production (for example, per animal or per tonne of apples). Calculations of the total R&D levies paid for organic produce, sold both as organic and in the conventional market, amounted to \$392,100 in 2000-2001. Matching Commonwealth government funding effectively raised the organic R&D contribution to \$656,200. Organic farmers paid an additional \$240,000 in marketing levies, and \$104,300 for the National Residue Survey and animal health levy.

The second issue – how much of the research levies is returned into research beneficial to organic farmers – was examined in less detail. However, some estimates were obtained. Direct expenditure on R&D on organic agriculture was around \$450,000, the bulk of which came via contributions from the Rural Industries Research and Development Corporation (RIRDC), with a substantial contribution from the GRDC. Some funding was provided by Horticulture Australia Ltd (HAL). More indirect payments were generously calculated to amount to another \$50,000, from funding from HAL and the Dairy Research and Development Corporation (DRDC), with possibly more contributions in the grain, meat and wool industries.

The conclusion is therefore that the total amount spent on R&D into organic agriculture in Australia falls well short of the \$656,200, the amount collected from organic farmers and matched with Commonwealth contributions.

1. Introduction

It is often claimed that the organic industry in Australia does not receive sufficient funding for research and development. Behind this claim lies the assumption that funding provided is less than the amount paid by organic farmers in obligatory research and development levies, levies charged also to conventional farmers. In a report on the state of the Australian organic industry to the Organic Federation of Australia (OFA), for example, the Virtual Consulting Group (2001) estimated that organic farmers pay approximately \$1.4 million in research levies. Levies are used for funding research and development as allocated by bodies designated for this task.¹ Funding for organic agriculture in Australia, in the form of the program of the Rural Industries Research and Development Corporation (RIRDC), amounts to approximately \$270,000 per year - a far cry from the \$1.4 million presumed to be collected - although some research into organic agriculture is funded by other RDCs.

The issue of sufficient funding for research into organic agriculture is complex. The obvious question is: 'Sufficient in relation to what?' Similar to what other farmers receive in research and development (R&D) funding? Sufficient to develop the organic industry? Sufficient for the benefit/cost ratio to be at least as high in organic as in conventional farming? This brings up all kinds of other issues, such as the present and potential size of the industry, inclusion of off-farm costs and benefits, etc. The answer to the question of sufficient funding could only be anywhere near accurate after a proper cost/benefit analysis. In the absence of such analysis, arguments can be mounted to defend any of the mentioned possibilities - and others. Nonetheless, it seems reasonable to expect that the amount raised by the industry, and the matching by government funding, is the minimum to be spent on a growing industry.

One could see how other growing industries have been treated in Australia in the past, and whether there are reasons for such an example to be followed in organic agriculture. But in this case it is difficult to get guidance from other new industries, as organic farmers are part of all agricultural industries, with a difference in management practice, not in enterprise. This brings us to the issue of relevance of other, non organic-specific, research. It is often mentioned that a considerable part of the research carried out for conventional agriculture benefits organic farmers. There is no doubt that this is the case, but the reverse - research into organic agriculture being beneficial to all farmers - is not often mentioned, but equally true. These issues - though real - are not covered in this report.

The main emphasis here is on the first part of the equation: quantifying the levies paid by organic farmers for research and development. In addition, an attempt has been made to analyse the expenditure by RDCs on projects relevant to organic agriculture. Research in Australia is funded not only by RDCs, but also by other organisations such as state departments of agriculture and universities. Levies charged on agricultural sales are collected and matched by the Commonwealth of Australia, often dollar for dollar with an upper limit, for distribution by RDCs. Only these last organisations are considered in this report. It should be stressed that this report is not a cost-benefit analysis.

The approach in this report is as follows. Before arriving at the results, the methodology of the research (Section 2) and the data (Section 3) are explained. The results are then presented, first on the contributions by organic farmers to research funds broken down by industry (Section 4), followed by funding allocations by RDCs (Section 5). The summary brings the issues together, and draws out implications of this research.

2. Methodology

¹ Some of these are public bodies, others are privatised. They are all called Research and Development Corporations (RDCs) for the purpose of this study.

Not all research levies are determined in the same way. Some are calculated as a percentage of farm gate price (for example, grains), others on quantity produced (for example, beef, dairy and apples). For this reason, levies need to be estimated differently for the different industries. In order to understand the methodology used to estimate levies, it is useful to review the sales activities of an organic farmer.

By definition, organic farmers aim to grow organic products. Some have been doing so for a while, others are just starting, and are classified as being 'in conversion'. Products from this last group are not allowed to be sold with the organic label, although they can sometimes attract a premium. These products are often sold in the conventional market. As both groups of farmers adhere to the organic standards, both are included in the calculations of levies paid by organic farmers. Those farmers who were in the pre-conversion period, also growing towards organic standards, are not included in this study.

Organic farmers generally try to sell their organically grown products in the organic market to obtain any available premium. If they can't sell it there, the conventional market may be accessed. For the purposes of this report, all products grown organically, even when sold in the conventional market, is taken as contributing to the R&D levies paid for organic production.

Some farmers may have parallel production. This implies that there are designated parcels of land or parts of the flock or herd that are under organic management, while others are under conventional management. These operations are carefully separated, and the conventionally-grown produce is, of course, marketed in the conventional market. This part of the production is not included in the results of this report.

A further option, for organic and conventional production alike, is to store the product instead of selling it in the year of production. In this report, all products sold in 2000-2001 are included. This means that those grown and stored in 2000-2001 are excluded, and those grown in a previous year but sold in the study year are included. This assumes that a similar amount was stored in 2000-2001 as sold from the previous production years. There is no reason to think that this assumption distorts figures.

3. Data

3.1 Producers

The data analysed for this report pertain to the year 2000-2001. Contributions from organic farmers to research funds (levies) are estimated from information held by the certification offices, combined with knowledge of the industry.

Data for this project was provided by:

- Biological Farmers of Australia (BFA), in the form of electronic data;
- National Association for Sustainable Agriculture, Australia (NASAA) from their annual reports;
- the Organic Vignerons Association of Australia (OVAA; amalgamated with the BFA since late 2001), which had data for the 2000-2001 year;
- Tasmanian Organic-Dynamic Producers (TOP);
- Organic Food Chain (OFC).

The Bio-dynamic Research Institute (BDRI) was approached, but declined to participate (Alex Podolinski, January 2002, personal communication). The Organic Herb Growers of Australia (OHGA), also accredited by the Australian Quarantine Inspection Service (AQIS), was not approached as no R&D levies are charged on herbs.

As part of the certification process, each farmer provides annual data to the certification body. The NASAA data indicated area cropped, the production of crop and animals, and sales of all products for each of the categories of organic and conventional production, which includes products stored in previous year(s). Most products sold – 95 per cent of the products mentioned – came from established organic farms, with less than 4 per cent of products from farms in conversion. Just over 8 per cent of entries were from farms on which parallel management occurred².

The data are not perfect, and in some instances assumptions had to be made. Where production, but no sale quantities were indicated, it was assumed that the product was stored, if it was non-perishable. Where a quantity was shown to be sold but no income was indicated, the average price for that product was assumed to have been received.

The BFA data indicated the total sales of products in the organic market in 2000-2001. Once again it is assumed that what is not produced in 2000-2001 but sold in that year is similar to that produced and stored in 2000-2001. That is, stocks are unchanged. Where necessary, quantities of product sold are calculated by applying the average price of the product as shown in the NASAA data. In addition, the BFA data are adjusted for organic produce sold on the conventional market with percentages gleaned from the NASAA data.

The OVAA holds data on the quantity of grapes of all licensees, with the exception of produce sold on the conventional market even if organically grown. However, this last group seems to be a minimal amount, and is estimated at less than 5 per cent (John Keep, Secretary OVAA 2000-2001, personal communication, January 2002).

Data on the total number of organic farmers are not available. For this reason, two other organisations that certify organic farmers, TOP and the OFC, provided data on the number of farmers licensed by

² Note that these figures don't necessarily indicate the percentages of farms under the different management regimes, as each farm can have multiple entries. However, these figures should give some idea of the overwhelming dominance of fully organic farms in the survey, as can be expected.

them. Estimates of levies paid by these farmers are based on the percentage of farmers as compared with the total of the NASAA and the BFA. As TOP certifies in Tasmania, and the OFC mainly in Queensland, the assumption of similar production per farm as for the BFA and NASAA can't be strictly right. However, it should be recognised that, where some crops would not be grown by TOP or OFC certified farmers, and no levies would be paid for those crops (as, for example, tropical fruits and certain nuts are not grown in Tasmania), more levies would have been paid on other crops (such as on vegetables and grains).

Some caution is needed about the accuracy of the producer data. The first is that organic farmers may not record all produce sold as organic to their certification scheme. They have an incentive not to do so. There is no way to verify whether this is a significant source of error. However, if farmers were to engage in this kind of behaviour, this would lead to an under-estimate of total R&D levies paid by organic farmers as estimated in this report.

A second caution is about the entries. Due to procedures followed, a maximum of 4.5 per cent of producer's answers may not have been recorded. This – if relevant – will lower the final outcome.

A third caution is that, as mentioned, for those organisations that did not have sales data, assumptions of similar sales as for the other organisations were made. Although this can't possibly be strictly correct, it is the best estimate there is at this point in time. It is not clear in which direction this might bias the result, if it does.

And lastly, the BFA has a cap on total levies to be paid of \$6,000 per year. This means that, if gross returns from products on one farm were higher than \$600,000, this would not be recorded in their data. As there are some farmers who fall in this category, the data underestimate the total levies paid.

3.2 Levies

The Levies and Revenue Service (LRS) of the Commonwealth Department of Agriculture, Food and Fisheries, Australia (AFFA) deals with levies on agricultural and horticultural products. Rates can be taken from their website (<http://www.affa.gov.au/content/levies.cfm>). Some rates are on the value of crops (such as vegetables, cereals, oilseed and grain legumes), and some on weight (fruit) or per head (livestock). Rates are determined under a number of Commonwealth Acts of Parliament.

3.3 Research and Development bodies

Funding for projects on organic agriculture by RDCs were estimated by analysing data provided by the research programs of the various organisations. Those included were the main organisations, such as those for rural industries in general (RIRDC), grains, which includes oilseeds and legumes (GRDC), and dairy (DRDC). Others are now privatised and go under different names, including Meat and Livestock Australia, Horticulture Australia Ltd and Australian Wool Innovation.

4. Results

4.1 A growing industry

Data analysed from the two major certifiers – NASAA and the BFA – and the OVAA indicate that the industry is, indeed, growing. Producers certified by these three organisations, for which solid data are available, produce to a (farm gate) value of over \$71 million dollars. Inclusion of estimates for other organisations, such as TOP and the OFC (for which numbers of farmers are known), and the BDRI (for which an estimate of 140 farmers is included³), results in an estimate of production of \$89 million at farm gate prices (Table 1, column 1, and Figure 1). This figure excludes the possibly non-recorded entries discussed above, and the herb growers certified by the OHGA.

There are three main sectors. Meat (especially beef) makes up over one third of the total farm gate value. Grain and horticulture are rather similar, together accounting for just over half of the total value. Note that this includes income from all organically-grown produce reported, including both that sold on the organic and on the conventional market.

Hassall and Associates (1995) estimated the organic produce retail market in 1995 to be \$80 million. For this study, using industry estimates of the difference between farm gate and retail prices for the different groups of products (Table 1, column 4), the retail value of production under organic management in 2000-2001, was estimated at \$164.8 million (Table 1, column 3). Comparisons between the two years cannot be easily made as the first figure indicates consumption of organic products in Australia (measured from the consumers side), and the second is the estimated retail value based on the farm gate value of the total production.

Table 1: Value of organic produce at farm-gate and retail prices (2000-2001)

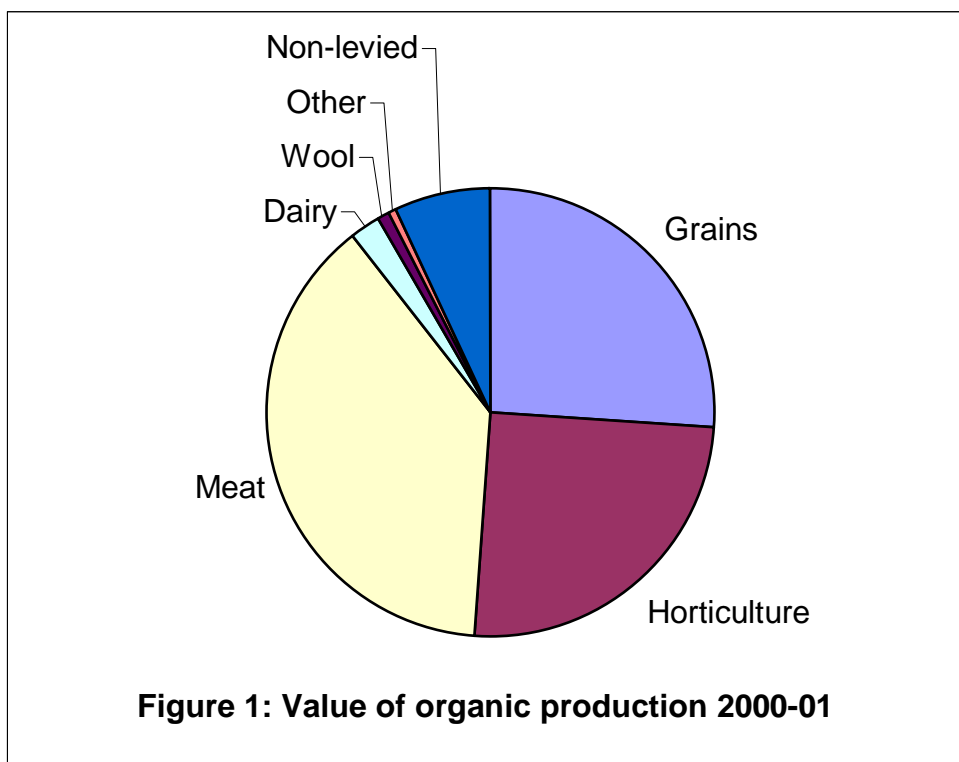
	Farm gate prices		Retail prices	
	\$'000	%	\$'000	Margin*
Grains	23,314	26	46,382	2.0
Cereal	19,115	21	38,637	2.0
Oilseeds	3,774	4	6,962	1.8
Legumes	425	0	784	1.8
Horticulture	22,136	25	48,073	2.2
Vegetables	11,509	13	25,148	2.2
Fruit				
- general	4,070	5	8,889	2.2
- citrus	2,249	3	4,915	2.2
- grapes	3,416	4	7,464	2.2
- dried fruit	348	0	659	1.9
Nuts	544	1	999	1.8
Meat	34,014	38	49,321	1.5
Beef	32,204	36	46,696	1.5
Sheep	1,431	2	2,074	1.5
Other livestock	380	0	550	1.5
Dairy	1,964	2	4,478	2.3
Wool	894	1	3,577	4.0
Other	555	1	1,540	2.8
Non-levied produce	6,068	7	11,475	1.9
TOTAL	88,947	100	164,846	1.9

Source: own calculations.

Note: subgroups not totalling to the sum is due to rounding error.

Estimated ratio of retail value to farmgate value.

³ The BDRI certifies only those who have products for the export market. Others, though not certified, would still be farming according to bio-dynamic principles. The figure included is an average of estimates provided by several people in the industry.



This second estimate of retail value is rough. It includes produce sold on the organic and conventional market. It does not include processing (which would add to the retail value), or any imports (which would be added to the Australian consumption). Nor are exports subtracted. Taking into account that only 64 per cent of the total production is estimated to have been sold as organic (for details, see below), the retail value of the Australian organic market should therefore have been less than \$106.5 million in 2000-2001. With exports likely to be greater than imports, and assuming limited amounts of processing, this estimate for the Australian retail value of organically-grown produce is likely to be an overestimate.

4.2 R&D levies

In Table 2 and Figure 2 are displayed the levies for research and development paid by organic farmers in 2000-2001. It can be seen that the total levies paid by the organic industry is \$392,100, not counting the possible 4.5 per cent of missing entries (mentioned above), which would bring the figure to over \$400 million. By far most of the levies are paid on grains, including oil seeds and legumes. This category is followed by horticultural products, and then by meat, wool and dairy.

Of the grains, cereals are by far the highest levy-yielding commodity (59 per cent of the total), with those paid on oilseeds reaching just over 16 per cent of the total paid for grains (or 10 of the 59 percentage points). Legumes contribute very little (just under 2 per cent) of the total levy in that group. This implies that organic farmers derive almost their total nitrogen needs from non-seed nitrogen-fixing crops, such as clover and lucerne.

Of the total of the horticultural group – which contributes 20 per cent of the total of R&D levies paid by organic farmers - vegetables are the main contributor to the mandatory levies. This is partly due to the fact that few vegetables are exempt from levies, while there are quite a number of fruits that are, at least at present.

The highest percentage of levies charged on meat (a total of 13 per cent) originates from beef. One of the reasons is that there are some very large enterprises that dominate that sector.

The wool industry contributed \$17,900 (5 per cent) to the R&D levy, and the dairy sector approximately \$8,000 (2 per cent) in 2000-2001.

Comparing Tables 1 and 2, the difference between the contribution in levies and total returns in farm-gate sales for the different products stands out. For example, beef constitutes over one third of total value of organic production, but contributes only 10 per cent to the levies. Conversely, grains make up just over a quarter of the total value of the organic products, yet contribute 59 per cent of the total levies. The reason for this discrepancy is the difference in levy charges for the different products. For grain, 1 per cent is charged for the R&D levy, while for beef \$0.72 was charged per animal in 2000-2001, which is nowhere near 1 per cent. Most of the compulsory levies for beef, however, are charged for marketing purposes (see below), although the total doesn't necessarily amount to 1 per cent.

In general, farmers find it harder to sell livestock than crops in the organic market (see Table 3). Within the meat sector, the proportion of revenue from beef (including only farms with sales of 100 animals or less)⁴ and lamb sales is two thirds of the total income, lower than any of the percentages of organic sales in crops. About half of milk was sold in the organic market. For sheep meat and wool the situation is considerably worse regarding an organic market (10 per cent each).

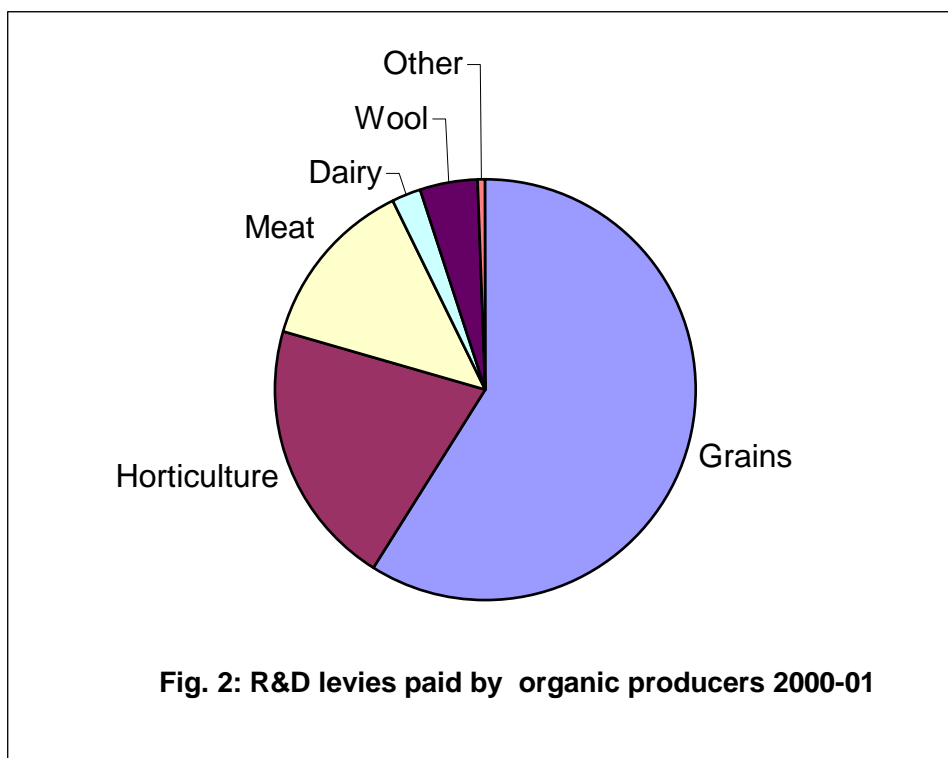
Table 2: R&D levies charged on organic production (2000-2001)

	\$	%
Grains	231,291	59
Cereal	189,299	48
Oilseeds	37,743	10
Legumes	4,250	1
Horticulture	79,925	20
Vegetables	52,364	13
Fruit		0
- general	13,226	3
- citrus	8,082	2
- grapes	4,376	1
- dried fruit	1,001	0
Nuts	875	0
Meat	52,808	13
Beef	39,676	10
Sheep	11,821	3
Other livestock	1,310	0
Dairy	8,020	2
Wool	17,884	5
Other	2,178	1
TOTAL	392,105	100

Source: own calculations.

Note: subgroups not totalling to the sum is due to rounding errors.

⁴ Farms with sales of more than 100 animals were excluded from this measure for reasons of confidentiality and to provide a truer picture of the market faced by the majority of beef farmers.



For many crops the percentage of produce sold in the organic market is close to 100, especially for fruit and vegetables. The percentage of revenue from crop sold on the organic market is lowest for cereals, with only 72 per cent. This means that still a sizable proportion of the organically produced cereals are marketed on the conventional market, such as through the Australian Wheat Board or Barley Board.

Table 3: Percentage of products sold as organic (2000-2001)

	%
Grains	74
Cereal	72
Oilseeds	82
Legumes	100
Horticulture	93
Vegetables	95
Fruit	
- general	95
- citrus	92
- grapes	94
- dried fruit	94
Nuts	27
Meat	67
Beef	63
Sheep	10
Lamb	68
Dairy	48
Wool	10
Other	22
TOTAL	65

Note: subgroups not totalling to the sum is due to rounding errors.

4.3 Commonwealth R&D contributions

The Commonwealth matches farmers' investments in R&D up to 0.5 per cent of the gross value of the product, or up to the amount of R&D levy collected, whichever is the lowest. For the total of all contributions from organic farmers the government-matched figures amount to \$264,000.

4.4 Marketing levies

There are other levies paid by farmers, the most important being the one for marketing activities (see Table 4). Other levies involve payments for the National Residue Survey and animal health, to be discussed in the next section. The Government does not match these levies.

As Table 4 shows, marketing levies can be considerable, estimated here as reaching over half of the R&D levies. In total, marketing levies for this group of farmers (with this particular mix of products) amounted to \$240,000. The relative importance of the marketing levies varies considerably between the different sectors. Whereas 80 per cent of the R&D levies originated from crops, over half of the marketing levies were generated by the livestock sectors, mainly by beef, followed at a large distance by dairy and sheep. For beef, the marketing levy is three times as high as the R&D levy, and for dairy it is more than double.

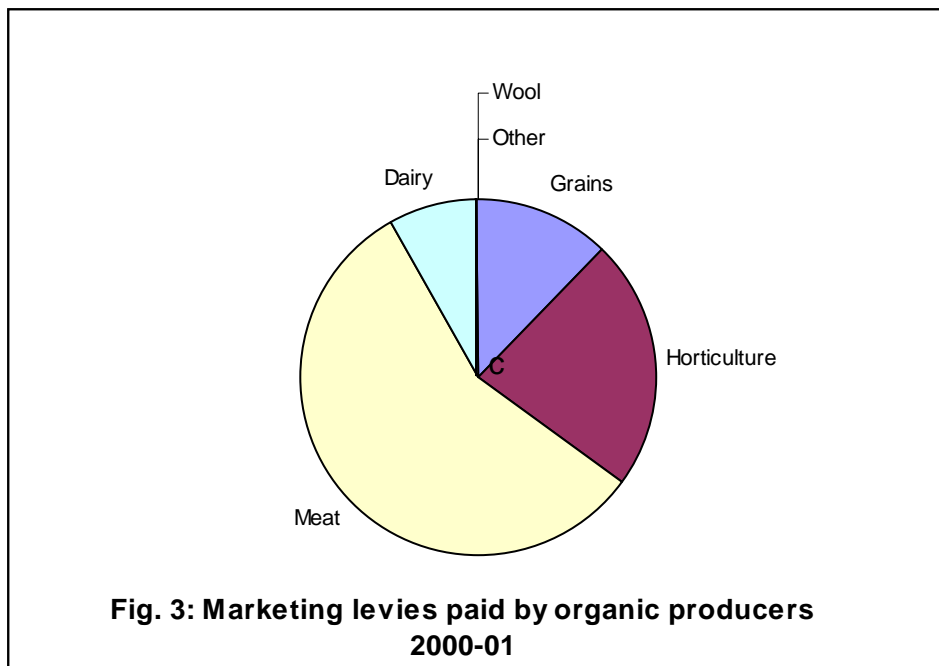
Although this is not the topic of this report, it would be interesting to delve deeper into the benefits of marketing in the conventional market for organic farmers. Many organic farmers insist that they have to find their own markets, if they are to sell their produce as organic.

Table 4: Marketing levies charged on organic production (2000-2001)

	\$	%
Grains	29,948	12
Cereals	28,244	12
Oil seeds	1,703	1
Legumes	0	0
Horticulture	54,114	23
Vegetables	0	0
Fruit		
- general	29,165	12
- citrus	3,031	1
- grapes	19,692	8
- dried fruit	615	0
Nuts	1,612	1
Meat	136,397	57
Beef	119,029	50
Sheep	14,696	6
Other livestock	2,672	1
Dairy	19,405	8
Wool	0	0
Other	0	0
Total	239,864	100

Source: own calculations

Note: subgroups not totalling to the sum is due to rounding errors.



4.5 Other levies

The other levies, for the NRS and animal health, are also mainly paid by the livestock sectors. The total in 2000-2001 amounted to \$104,300, to which the livestock sectors contributed \$103,300.

4.6 Reconciliation

The Virtual Consulting Group (VCG) gave a rough estimate of the R&D contributions by organic farmers, and arrived at a figure of \$1.4 million. This is over three times as large as the findings in this report and therefore needs some attention.

VCG assumed that total R&D levies were \$136 million - approximately 0.5 per cent of the total gross value of agricultural production (GVAP). This would amount to a GVAP for all farmers of \$27.2 billion (no year or reference supplied). Since organic farmers make up around 1 per cent of the total farm population, it was assumed that they also paid 1 per cent of the R&D levies collected, that is, \$1.4 million.

However, the total gross value of agricultural production in Australia in 2000-2001 was only \$18 billion (ABARE 2001). Although organic farmers make up approximately 1 per cent of the total number of farmers (just under 1200 were included in this study, excluding herb growers certified with OHGA), at \$89 million their total gross value of production only constitutes just under half a percent of the total farm gate value in Australia.

The total levies and charges (including those for R&D, marketing, NRS and animal health) paid by all farmers is \$292 million (see Table 5). This is 1.6 per cent of the total farm gate value of \$18 billion. Total levies on produce sold by organic farmer's amounts to \$736,300 and is only one quarter of a per cent of the total levies and charges on all farmers, instead of half a percentage point as may be expected from looking at the relative farm gate values (\$89 million and \$18 billion for organic and total agriculture, respectively). This warrants some more detailed examination.

If only the three main industries (grain, horticulture and livestock) are compared, the percentage levies paid by organic farmers is 0.49 per cent of that paid by conventional farmers (see Table 5). In other words, the organic dairy, wool and 'other' sectors heavily influence the total percentage of 0.25.

The conventional dairy and wool industries are large relative to the grain and horticultural sectors, and both contribute more than 0.5 percentage point of their value to the levies. That is, their contributions increase the conventional average. The organic dairy and wool industries, however, constitute only a small part of the total market for these products and therefore contribute little to the total in levies paid by organic farmers. Inclusion of these industries in both these categories then means a lower percentage of organic levies compared with the conventional levies.

For the dairy industry, it was estimated that 6 million litres were produced organically. This represents approximately 0.05 of one per cent of the total milk produced in Australia, and levies reflect this. Note that this low percentage of organic dairy farmers is totally different from the situation in many European countries (for example in Denmark; see Wynen 1998) where a large proportion of organic producers is in the dairy industry. One wonders whether this is a result of the large distances between farmers and processors, and lack of demand from the consumer in Australia.

For the wool industry the situation is similar. The value of wool produced on organic farms constituted only 0.03 per cent of the total wool exports in 1999-2000, while their levy was 2 per cent. As organic premiums are hard to obtain by most wool producers, one reason for the low production records may be that farmers may not record all production sold in the conventional market. If this were the case, the total returns to organic farming and the R&D levies reported here for wool would also be underestimates.

Table 5 : Total levies and charges paid by organic and all farmers (2000-2001)

	Organic Industry	Australia	Org./Austr.
	\$'000	\$'000	%
Grains	261	40,339	0.65
Cereal	218	28,814	0.75
Oilseeds	39	6,416	0.61
Legumes	4	5,109	0.08
Horticulture	135	25,297	0.53
Vegetables	52	5,369	0.98
Fruit			
- general	43	7,422	0.58
- citrus	11	1,905	0.58
- grapes	24	7,757	0.31
- dried fruit	2	471	0.34
Nuts	3	2,373	0.11
Meat	292	76,205	0.38
Dairy	27	61,956	0.04
Wool	18	81,490	0.02
Other	2	6,534	0.03
Total	736	291,821	0.25

Source: AFFA (2002) and own calculations

Note: subgroups not totalling to the sum is due to rounding errors.

4.7 Summary

With a total estimate of \$165 million in organic production at retail level - although only \$107 million is sold in the organic market - the production levies paid by organic farmers are estimated at \$392,100. Almost 60 per cent of this is contributed by the grains sector, mainly cereals.

R&D levies collected from organic farmers, together with the matched funding by the Commonwealth, amounts to close to \$656,000. This is a conservative estimate for three reasons. First, it is likely that not all farmers were included in the calculations. A recalculation with the maximum omissions of 4.5 per cent for one of the organisations puts this figure up to \$675,000. Second, some of the returns are counted only up to the cap for which organic certification levies were due, and it is these big enterprises that can make a real difference in R&D levies collected. Third, it is possible that some returns from produce are not notified to the certification offices, thereby causing the estimates of actual levies paid to be an underestimate.

Other levies paid by farmers include those for marketing, the National Residue Survey, and animal health. The marketing levy in particular is very high, with levies amounting to more than half of those for R&D (\$240,000). The NRS and animal health levies amount to around a quarter at \$104,300.

5. Research & Development Organisations

5.1 Introduction

The different RDCs were asked to provide estimates of their funding of projects in organic agriculture in 2000-2001. In general, the Corporations assumed that if a project had 'organic' in the title, it concerned and benefited organic agriculture. The information provided has been scrutinised by the author, who applied stricter criteria. Unless it is clear that the project is directed to organic agriculture it is not included here. For example, a project on 'organic waste' is excluded, as organic waste can be used anywhere, not only on organic farms.

A second point is the relevance of integrated pest management (IPM) for organic farmers. Research funding bodies were eager to point out their integrated management projects. It should be realised, however, that problems under organic management may well differ from those under conventional management. A good example in the Australian broadacre cropping industry is the red legged earth mite (*Halotydeus destructor*) (RLEM), a mite which is reported to cause great damage in pastures on conventional farms (estimated by Sloane, Cook and King (1988) at \$228 million annually for all industries). Organic farmers generally report that, though the RLEM is present, it is not a problem. A considerable amount of funding in Australia in the past has been allocated to RLEM research by the then Australian Wool Research Organisation, estimated at \$120,000 in 1992-93 alone.

A special case of irrelevance of certain pests and diseases is secondary pests. A secondary pest has become a pest due to use of pesticides to control a primary pest, affecting the natural enemies of the secondary pest, which then becomes a major pest. An example is the two-spotted mite (*Tetranychus urticae*), which now is a major pest in horticultural crops in Australia (James 1990). In addition to the two-spotted mite, Penrose (1996) mentions three other major secondary pests in apples in New South Wales, the European red mite (*Panonychus ulmi*), San Jose scale (*Comstockapsis perniciosus*) and the woolly aphid (*Eriosoma lanigerum*).

For these reasons, although much research into integrated pest management will benefit organic farmers, the benefit may not be as great as the total funding suggests: organic farmers may well have chosen other research priorities if they had been given the choice.

5.2 Funding

The main contributor to research in organic agriculture, of course, is the RIRDC, as it has a special program on organic agriculture. This program dispenses approximately \$270,000 per year over 5 programmes (RIRDC 2001):

- organic production systems
 - systems design and environmental sustainability
 - pests and diseases
 - nutrition
 - soils
- conversion processes
- regulation, validation and market access
- supply chain management and intelligence
- communication and facilitation.

The second highest contributor in 2000-2001 was the GRDC, which funded two projects in organic agriculture in that year (Martin Blumenthal, Program Manager Sustainable Farming Systems GRDC, personal communication, December 2002), though one concerned soils under both conventional and

organic management. Allocating half of the funding of that particular project to organic research, the two projects totalled \$75,000, which more than doubled in the next year (just over \$155,000 in 2001-2002).

The list of organic projects of Horticulture Australia in 2000-2001 amounted to \$374,000 over the lives of the projects. However, almost a quarter of this was paid for by voluntary contributions, money that comes from sources other than levies as calculated in the previous Section. Such contributions originate, for example, from an industry body that doesn't have a levy in place or from a non-primary producer section of the production chain (for example a packer or exporter).

The organic component of the total funding budgeted for 2000-2001 amounted to \$88,600. Some of the projects included could, however, be considered of little interest to organic farmers. For example, one project, with almost half of the funding for the year, pertained to turf maintenance. Three other projects, amounting to \$40,400, included research on 'organic' inputs - one of them on 'organic wastes' - that is, not necessarily about organic farming. There was no indication that the project was carried out under organic management practices. Less than 10 percent of the total funding for that year, \$8,200, could be classified as being genuinely on organic agriculture. If the same percentage of this amount is presumed not to originate from levies as discussed in this report as there is of the total amount - that is, one quarter - then the relevant amount for Horticulture Australia to be included here is approximately \$6,000.

Horticulture Australia also provided a list of projects that have 'Integrated Pest Management' in their titles. This list amounts to \$7 million worth of projects, of which \$1 million, that is 14 per cent, is paid for by voluntary contributions. The budget for 2000-2001 was \$2.2 million. The relevance of the earlier comments - on research results differing according to the management practice under which the research is carried out and relevance of pests, are pertinent here. However, if all projects are included, and it is assumed that 1 per cent of farmers are organic and that organic farmers benefit similarly from the funding as conventional farmers, the amount which could be attributed as benefiting organic farming would be \$23,000.

Similarly with the DRDC. No funding was provided for projects on organic or bio-dynamic agriculture in 2000-2001. However, a list was provided with projects that were assumed to benefit organic farmers. The amount allocated to it corresponds to the total amount budgeted for 2000-2001 multiplied by the assumed percentage of benefits to organic farmers. For example, the largest project, of which \$264,000 was allocated to organic farming, was entitled 'Improving the supply of pasture through increased density and persistence of sown species'. Although the concept may well be of interest to organic farmers, if the project was carried out for organic farming specifically, different pasture species and plant densities may have been relevant. Another project, for which the DRDC allocated over \$200,000 of relevance to organic agriculture, was for the National Dairy Land and Water Audit. In other words, the projects included were definitely not about organic agriculture. If we include all the funding earmarked by the DRDC for projects of relevance to organic agriculture and allocated 1 per cent of this to organic farmers, the amount would be \$27,000.

The wool and meat industry did not conduct any research into organic agriculture in 2000-2001 (Paul Swan, Australian Wool Innovation Pty Ltd; and Len Stephens, Livestock Production and Innovation; personal communications December 2001). However, scrutiny of their projects - not carried out in this case - may well reveal relevance of some for organic agriculture.

It was noted earlier that projects of relevance to organic agriculture would also benefit conventional farmers. For example, one of the larger projects carried out in the earlier years of the Organic Produce Program of the RIRDC (of over \$100,000) was allocated to a project measuring the 'impact of tillage practices on soil micro-biota associated with organic matter decomposition and root health'. Such a project could well have been funded by any of the R&D organisations for the benefit of conventional farmers. A GRDC project, examining break crops that can unlock fixed phosphorus in the soil includes both conventional and organic practices.

Other projects seem more directly related to organic agriculture. Many of the projects are involved with gathering information on organic farming and dissemination of the information to farmers. However, although this is directly related to organic farming, it is of greater relevance to potential rather than existing organic farmers. It could be argued that it is the conventional farmers who are interested in this change in production system, and some of the research money could therefore reasonably be paid by conventional agriculture. This line of thinking has been followed in other countries, such as in the UK (see Wynen 1997, pp.28-29).

5.3 Summary

As can be expected, RIRDC's contribution to research in organic agriculture is by far the largest of all the RDCs. Of the other funding bodies included in this study, only the GRDC and HAL have contributed directly to funding for organic production in 2000-2001.

Other expenditure is presumed to be also of relevance to organic farming. If taken as equally relevant to organic and conventional farming (HAL) or as apportioned by the DRDC, and assuming organic farmers make up 1 per cent of the total farming population, this would amount to another \$50,000 (no figures are available for the GRDC). In total, this would add up to \$401,000 for projects of relevance to organic farmers. On that basis, however, some deductions need to be made to calculate allocations of R&D for organic agriculture, as a number of the projects carried out in RIRDC's and other RDCs' organic programs benefit conventional farmers. It is outside the scope of this project to provide more details. However, the total amount spent on R&D into organic agriculture seems to fall well short of the \$656,200, the amount collected from organic farmers and matched with Commonwealth contributions in 2000-2001.

6. Summary and concluding comments

In 2001-2002, the research and development levies paid by organic farmers are estimated to be \$392,100. Together with matching Commonwealth funding, this amounts to about \$656,200. On the other side of the coin, research funding of organisations that benefit organic farmers directly adds up to approximately \$351,000. An additional amount of around \$50,000 for research (proportioned out from rather generous amounts assumed to benefit organic farmers) is estimated for horticulture and dairy. Presumably, some projects of relevance to organic farming undertaken in the grain, meat and wool industry are not included here. Nor are the estimated benefits of the organic projects to conventional farming included. The exact amounts to which this is the case – either way - is often a matter of subjective judgement. It is, however, clear that existing organic farmers are not necessarily the beneficiaries of the \$656,200, consisting of levies collected from them and matched with Commonwealth funds in 2000-2001.

Most farmers pay marketing levies. Although most of the levies originate from livestock, horticulture also contributes a substantial amount, \$54,100. Almost all organically produced horticultural products are sold on the organic market, yet it appears that only a small proportion of the marketing levies collected in this sector is used to aid the marketing of organic horticultural products. Likewise, it seems organic producers receive few benefits from their contribution to the levies on the National Residue Survey and animal health.

For the future, it may well be worthwhile for some of the certification organisations to consider collecting more detailed data than at present. There is little accurate information about the size, structure and composition of the organic industry and information on prices and values of sales is sketchy at best. Collecting more detailed information would make it possible to obtain a more accurate estimate of levies due to the certification organisation. In addition, more and better data would provide a basis for assessing the industry's present situation to aid future developments.

7. References

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