

JUNE 2019

# Don't waste coir from hydroponics





**Hort  
Innovation**  
Strategic levy investment

**RASPBERRY AND  
BLACKBERRY FUND**

This project has been funded by Hort Innovation using the raspberry and blackberry research and development levy and funds from the Australian Government. For more information on the fund and strategic levy investment visit [horticulture.com.au](http://horticulture.com.au)

**Hort  
Innovation**  
Strategic levy investment

**STRAWBERRY  
FUND**

This project has been funded by Hort Innovation using the strawberry research and development levy and funds from the Australian Government. For more information on the fund and strategic levy investment visit [horticulture.com.au](http://horticulture.com.au)



# Reuse coir from hydroponics

Over the past 25 years, the use of coir as a hydroponic substrate has increased internationally. In Australia, coir has been used for vegetable and flower crops for some time.

Since 2010, its use in the berry industry is increasing rapidly. Coir is becoming a preferred substrate because it produces good results and it is considered the most environmentally sustainable option.

**Still, the management of spent coir has become a challenge for many producers.**

We looked into opportunities for the beneficial reuse of spent coir. We provide recommendations for its reuse and briefly discusses plastic waste issues.

RMCG used consultation and desk top reviews to collect information on the opportunities and challenges of reusing spent coir. Our aim was to provide information to berry growers on how to reduce:

- on-farm coir related waste and associated costs
- coir waste related risks and costs associated with pest and disease management

# What did we find?

## WHO USES COIR?

We estimated that **the berry industry produces at least 2,500 to 3,500 tonnes of coir** waste nationally each year. Berry producers expect this to increase.

Estimates for the vegetable industry indicate around 30,000+ tonnes of coir are used for hydroponic vegetables nationally per year.

Data allowing a similar estimate for coir use in the nursery industry (e.g. for flowers or potting mix) could not be found.

## OPPORTUNITIES

The opportunities we identified are summarised in Table 1.

These uses have caveats. Many of the potential options for reuse require developing arrangements with local businesses. Reuse in composts, potting mix, mulch or soil amendments would require trials to be undertaken with a local producer.



Some of the reuse options require enough scale to be economically viable. There are opportunities for growers in each region to come together to develop

commercially viable reuse options, for example composting, supply to a composter or an activated carbon or biochar plant.

**Table 1 - Potential options for spent coir reuse**

Spent coir reuse option	local end user?	free of pathogens?	free of foreign matter?	shredded?
Composting on farm	✓			
Add to commercial compost	✓			
Potting mix additive		✓	✓	
Mulch or soil amendment	✓	✓		
Substrate for mushroom cultivation		✓	✓	✓
Material for animal husbandry	✓		✓	✓
Convert to activated carbon / biochar	✓			
Briquetted or pelleted fuel				
Biogas production	✓			

# Opportunities

## WORKING WITH THE NURSERY INDUSTRY

The nursery industry is complex and encompasses a broad range of businesses. Many crops are produced in substrates.

**Opportunities may exist to engage with the sector to combine waste streams or provide substrates made from or with spent coir.**

Growing media suppliers supply directly to businesses involved in:

- greenlife production
- primary industry
- all levels of government, and government bodies
- landscapers and commercial land developers
- retail sale to the public
- exports
- other businesses who value add and then on-sell to any of the above.

## STEWARDSHIP PROGRAMS

Product stewardship is a regulation and code of practice introduced under the Product Stewardship Act 2011.

The Act provides a framework to manage the environmental and community impact of a product over its life-cycle. Anyone who is involved with the production, sale, use or disposal of a product has a responsibility to manage and limit the impact the product has on the environment and human health.

**Coir recycling** would not 'qualify' for a regulated scheme but **would be well suited to a voluntary stewardship scheme** (like mobileMUSTER, drumMUSTER, Farm Waste Recovery [for plastic waste]).

The berry industry may want to explore a cross industry stewardship program for coir reuse involving:

- the coir supply chain,
- the vegetable and nursery industries,
- key organic recycling organisations and

# Opportunities

- potentially biochar and biogas producers.

A major requirement for developing and maintaining a stewardship scheme is the need for an organisation or person driving such a ‘closing the loop’ approach. This organisation or person would drive communication between suppliers, growers and organic recyclers as well as others interested in using the spent coir ‘products’. Peak industry bodies could play a major role in setting up a stewardship scheme and explore funding opportunities to get a scheme started.

Information on how to set and run a voluntary scheme can be obtained from the Australian Department of Environment and Energy.

## PLASTIC WASTE & RECYCLING

Many growers mentioned that plastic waste is becoming a major issue for them. Table 2 lists potential resources.

For general information on the recycling sector, subscribe to the Waste Management Review newsletter (via [wastemanagementreview.com.au](http://wastemanagementreview.com.au)).

A waste self-assessment pack developed for the nursery industry is available on the Nursery and Garden Industry Australia (NGIA) website ([ngia.com.au](http://ngia.com.au)): “Assessing waste streams in Australian production nurseries”.

The report from VG 13109 “Innovative ways to address waste management on vegetable farms” is also useful.

**Table 2 - Potential resources for plastic waste**

Plastic waste management	Bioplastic producers
Farm Waste Recovery	Australian Bioplastics Organisation
Planet Ark	Cardia Bioplastics
Sustaining Endeavour	

# Challenges

The following challenges have been identified:

- **Time** required to deal with a solution and associated costs
- The **need to separate coir from plastic** for many reuse options, and the technology and cost of doing this
- The **need to sterilise the spent coir for many reuses** and the technology and cost of doing this
- The **costs of handling and transport** of used coir if the berry producer has to pay for it all
- **No reliable data on the 'make up' of spent coir** from different production systems (i.e. typical chemical and biological properties) and therefore it's value
- **Regulations are not uniform in each state**; regulations from different organisations may apply (e.g. in charge of Environment, Biosecurity, Food safety)
- **Lack of applied research** e.g. 'profiling' spent coir, value of coir for different reuses such as recycled organic products (i.e. soil amendments, composts, mulches, potting mix), bioenergy, biochar
- Apparent lack of **communication** between those who want to dispose of the 'waste' and those who can put it to good use
- Lack of **communication and cooperation with other industries** with similar waste challenges.
- Even if relevant research has been conducted and reported, e.g. by the vegetable industry on plastic waste or the nursery industry on general waste, implementation of recommendations does not seem to happen. **A person or organisation(s) needs to drive implementation.**



# Recommendations

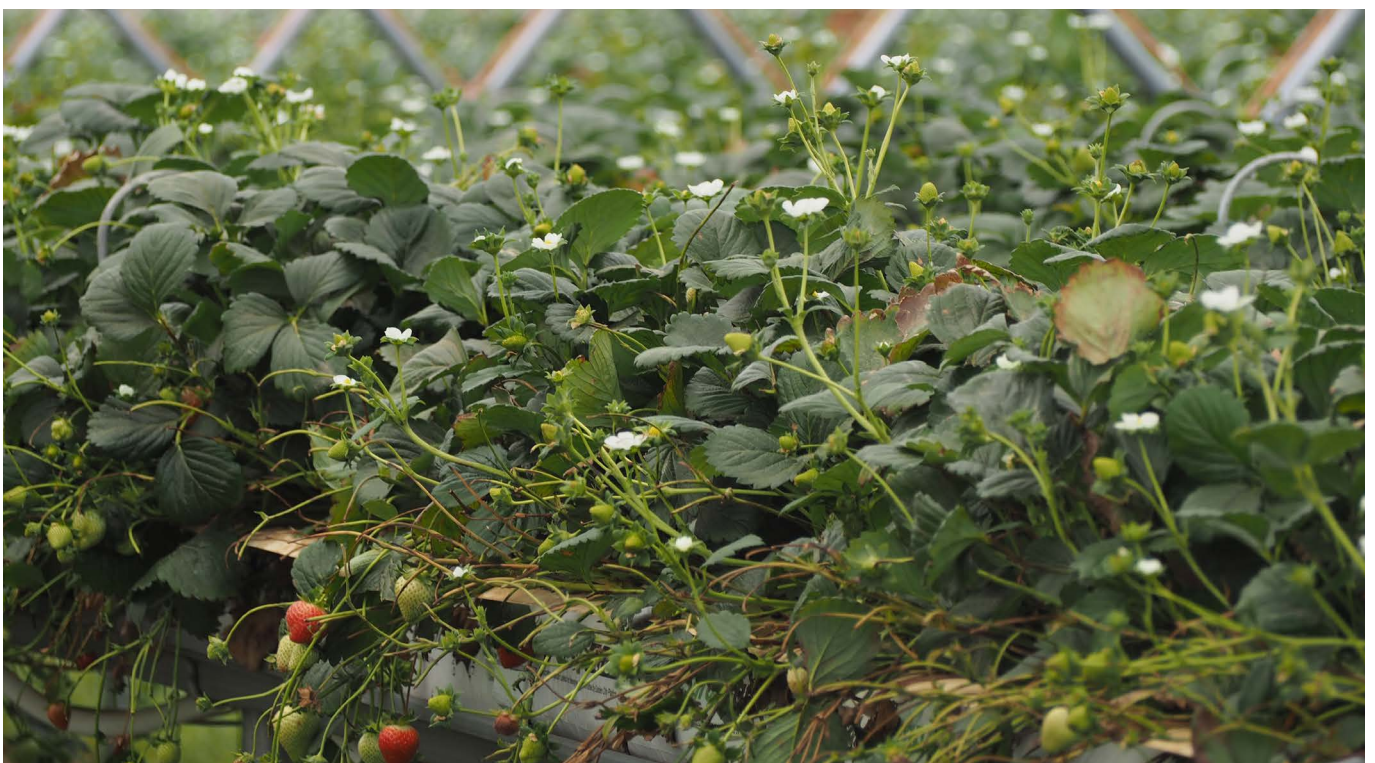
## RECOMMENDATION 1 - FORM LINKS WITH LOCAL BUSINESSES THAT CAN USE RECYCLED ORGANICS

Berry producers should link up with organic recyclers in their region to determine the most suitable, cost efficient way of collection and recycling (refer to "Finding a local recycling company" in this brochure).

Berry producers should explore opportunities in the vicinity of their berry operation e.g. with landscape companies, chicken producers, orchardists. Prior to deciding to reuse on farm or engaging with local businesses, profiling of the used coir would be required.

Composting on farm is an option for those who can use or sell the compost. Co-composting materials with high nitrogen content e.g. manure may be required. Reuse on farms as a soil amendment without composting is suitable. Composting eliminates the need to sterilise used coir.

**Linking in with the recycled organics sector has been identified as the currently best option to deal with used coir in the most cost-effective way.** Small scale trials should be used to confirm the best method for direct reuse in a production system.



# Recommendations

## RECOMMENDATION 2 - LINKAGE WITH OTHER INDUSTRIES

Our review highlighted that **the protected fruit, vegetable and flower industries have a similar waste management problem** to the berry industry. Solutions should be addressed holistically and cooperatively.

A voluntary stewardship program should be explored, involving the entire supply chain. A useful starting point could involve the following players:

- the three major coir importers
- Berries Australia
- Protected Cropping Australia (PCA)
- Nursery and Garden Industry Australia (NGIA)
- Australian Organic Recycling Association (AORA)

The peak industry bodies could explore how to deal with other common waste issues in their respective industries.





# Recommendations

## RECOMMENDATION 3 - UTILISE EXISTING NGIA RESOURCES

**The berry industry should utilise resources produced by Nursery and Garden Industry Australia (NGIA) and published on the NGIA website:**

- An investigation into waste management in Australian production nurseries (provides an overview of wastes streams and potential solutions)
- An economic analysis of changing waste management practices in an Australian production nursery (includes information on sterilisation of substrates, pots and equipment as well as compacting and baling plastic wastes.)
- Fact Sheet - Waste disposal in production nurseries
- Fact Sheet - Steps to reduce waste management and disposal costs.
- Nursery waste self-assessment survey form
- Waste management cost estimate worksheet
- Waste management cost calculator

The report VG13109 "[Innovative ways to address waste management on vegetable farms](#)" includes a set of recommendations on addressing plastic waste issues in the protected cropping sector; they should be revisited and implemented as appropriate (report available on the AUSVEG and Hort Innovation websites - search for VG13109).



# Finding a local recycling company

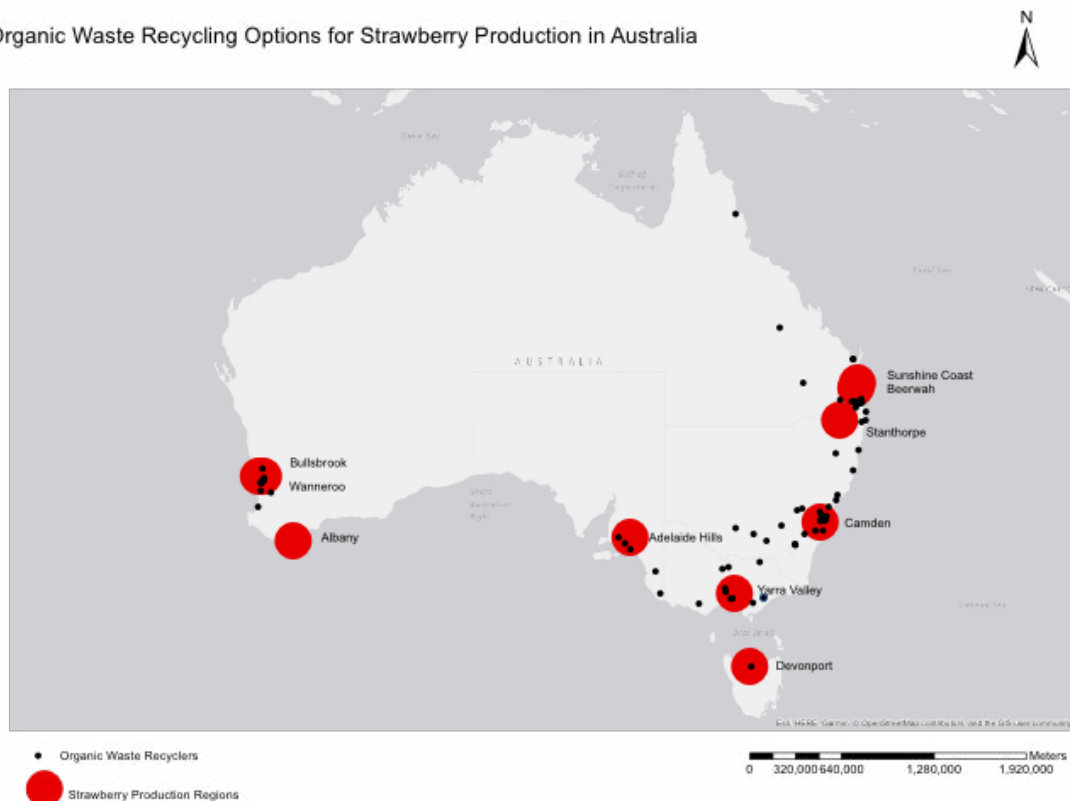
Organic material recycling operations in berry producing areas can be found via this interactive map ([tinyurl.com/berry-waste-recycling-map](https://tinyurl.com/berry-waste-recycling-map)). Clicking on the black dots on the interactive map will bring up the contact details for the recycling company. The three maps illustrated here give an indication of berry-growing regions and potential recycling options.

An overview over organic recycling companies by state is also available through the AORA website ([aora.org.au/find-a-composter](https://aora.org.au/find-a-composter)).

The main national potting mix producers are:

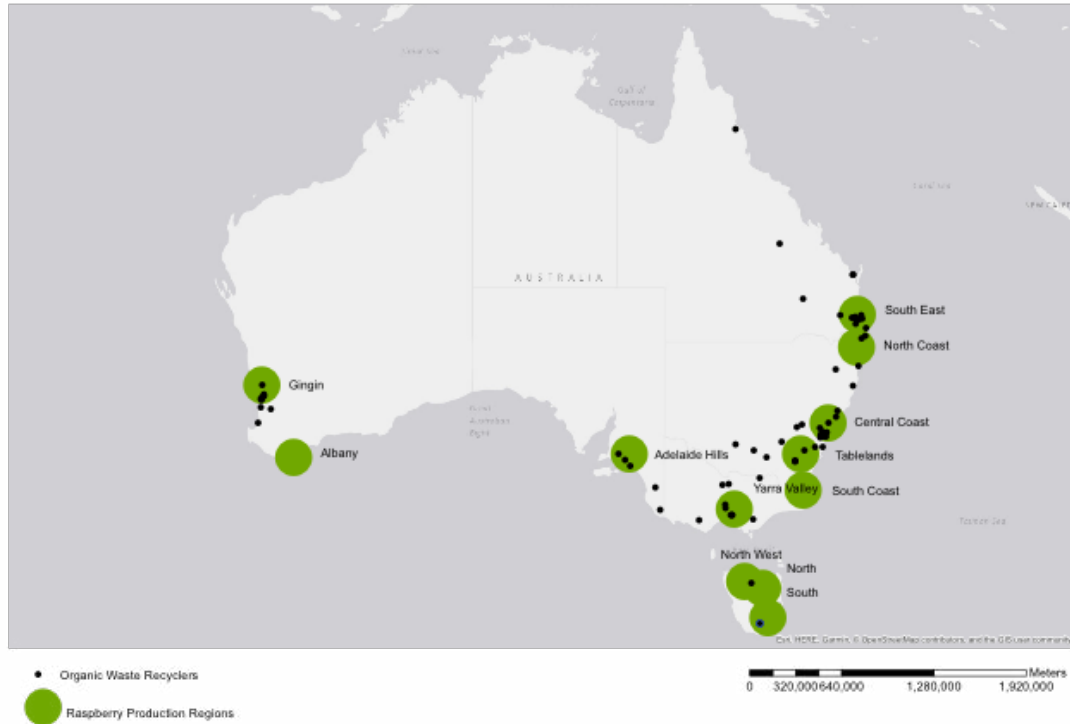
- Biogrow ([biogro.com.au](https://biogro.com.au)) and
- Australian Growing Solutions (AGS) ([agsolutions.net.au](https://agsolutions.net.au))

Organic Waste Recycling Options for Strawberry Production in Australia

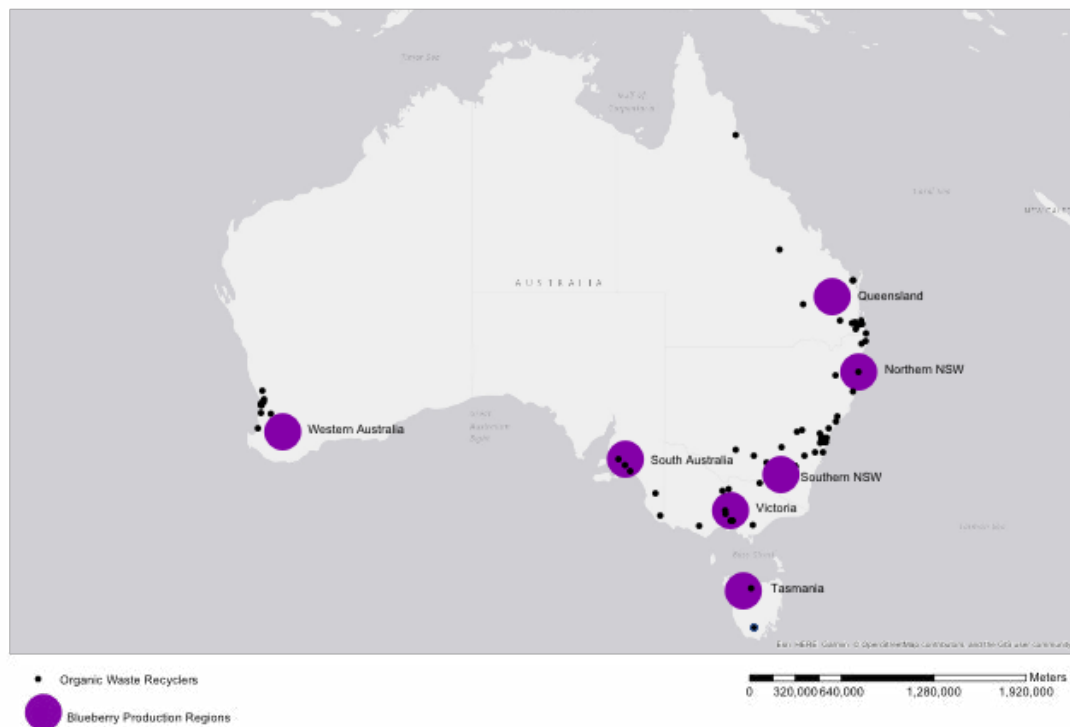




## Organic Waste Recycling Options for Raspberry Production in Australia



## Organic Waste Recycling Options for Blueberry Production in Australia



# RD&E opportunities

## RESEARCH, DEVELOPMENT AND EXTENSION (RD&E)

We identified the following RD&E needs:

- **Profiling** of typical spent waste material from different berry crops to provide to potential re-users
- Type and longevity of **pests, diseases and weeds** in coir from different crops and effectiveness/costs of sterilisation options apart from composting
- Development of **mobile equipment** that can be used near greenhouses or tunnels **to remove plant debris, foreign matter and plastics** with coir/root residue collected in suitable containers for shredding or being shredded in the process
- Investigating the **economic feasibility of producing biogas and biochar** from spent coir
- Investigating the **feasibility of using spent coir for mushroom production**
- Investigating the **economic feasibility of producing pellets or briquettes** to be used by households instead of firewood; [pellet.com.au](http://pellet.com.au) provides an example of producing pellets from timber waste.

Research results need to extend effectively. Extension is not communication of results and recommendations to a passive audience. Extension is about active engagement and facilitation of adoption including supporting the adaptation of R&D outputs if required.







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# What did we find?

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