

Case study part 1

Coochin Hills organic strawberries

This report aims to identify the farm management practices undertaken at Coochin Hills Organics and assess the economic viability of the enterprise. Recommendations based on findings from both investigations into the farm management practices and extensive research are detailed.

By JADE KING

Coochin Hills Organics, owned and run by David Beattie and Julia Gee, is a 5.5-hectare fruit and vegetable organic enterprise at Beerwah, on the Sunshine Coast in south-east Queensland. Organic strawberries are the primary product produced, and are predominantly grown throughout winter and harvested early spring.

History

David and Julia began practising organic methods in December 2002. Currently, Coochin Hills Organics has 'in conversion' level certification with Australian Certified Organic (ACO) and is in its third growing season of organic strawberries.

Reasons for being organic

The producers, upon buying the land in July 2002, continued with the established small-scale conventional strawberry farm for one season. The producers rated personal and family health and their aversion to chemicals as the greatest influences for conversion to organics. The conventional operation was also considered to be running at a cost and future viability was very uncertain.

ORGANIC STRAWBERRY PRODUCTION

Strawberry varieties

Coochin Hills Organics produces three varieties of strawberries – *Ruby Gem* (figure 1), *Gaviota* and *Camarosa* for the purpose of attaining optimum flavor. They have found that these varieties suited organic farming methods due to their tolerance to pests and disease.

Fertility

Strawberries need adequate nutrition before and throughout bud setting. Soil fertility maintenance on Coochin Hills includes rotations, compost, worm castings, crusher dust, registered organic products, reduced soil tillage and green manure crops.

The annual rotation system used for organic strawberries at Coochin Hills Organics is similar to conventionally grown strawberries. After the final strawberry harvest in November, the plastic and irrigation lines are removed and the strawberry plants are hoed into the soil. Cowpea (*Vigna Unguiculata*) and Japanese millet (*Echinochola Utilis*) are planted as a green manure crop and allowed to grow until January, and then are ploughed into the soil and left for six weeks to decompose. A soil test is taken to determine the fertility status.

The annual rotation system used requires that the strawberry plants be harvested for only one season prior to removal. The producers have experimented with a second season with one block of *Ruby Gem* strawberries and have encountered success to date, however, more seasons will not be attempted due to yield and quality concerns. Blocks that undergo the annual rotation will be used for three consecutive years in this manner before the block is left for a resting period.

WEEDS

Strawberry plantations are particularly prone to weed problems and adequate pre-plant preparations must be undertaken to minimise this.

Coochin Hills Organics identified nut grass (*Cyperus rotundus*) as the primary problem weed encountered on their farm. However, it was indicated that weeds were not considered to be a major issue on a whole, and further, recognised that some weeds actually had beneficial aspects with regard to potassium mining from depth.

Plasticulture

Plasticulture is used as a highly effective method of weed control.

Coochin Hills Organics uses silver plastic rather than black or clear plastics for warmer soil conditions optimal for plant growth and to prevent weed invasion.



Organically grown Ruby Gem strawberries at Coochin Hills Organics. Picture: Jade King



Nut grass (*Cyperus rotundus*). Picture: CSIRO



Raised bed plasticulture planting system used at Coochin Hills Organics. Picture: Jade King

Coochin Hills Organics have found it necessary to resort to natural-based, BFA-approved herbicides only twice.

The producers find that using silver plastic with a single drip line is the only viable planting system for their enterprise. They believe, however, that the use of plasticulture is not environmentally sustainable and does not allow good soil management. They are concerned about the intense tilling required, which degrades the soil structure, subsequently affecting the soil's fertility. A raised bed matted row system with sugar cane mulch was trialled, however yield dropped markedly and the strawberries came into season late, both of which were attributed to the reduced soil warmth.

An alternative to plastic is woven synthetic fabric mulches. However, this was found to be not economically feasible and, despite claims of being able to be re-used, would be too labour-intensive to re-apply for a second season.

Cover crops

Coochin Hills Organics uses cover crops as a weed suppressant, in particular for nut grass. Cowpea and Japanese millet are planted as a cover crop and green manure crop after the strawberry season is finished. It is proposed that the cover crop will become thick enough to shade out the weeds and interfere with their life cycle, preventing them from becoming a problem.

POST-PLANT METHODS FOR DEALING WITH WEEDS

Hand and mechanical weeding

Even in plasticulture systems hand weeding in organic strawberry production is imperative. It has been identified as the primary weed removal method used at this enterprise. Equipment employed for mechanical methods of weed removal in organic strawberries may include a flexi-tine harrow, brush hoe and rototiller.

Biological controls

Coochin Hills Organics do not use biological controls as such for weed suppression; however it does try to accommodate beneficial organisms to the system by providing necessary habitats.

Organic mulches

Organic mulches are used as weed suppressants and have other benefits such as harbouring beneficial organisms.

Coochin Hills Organics predominantly uses sugar cane mulch as it has found this to be economically affordable, easy to obtain, and it performs well as a weed suppressant.

The producers have found that much of the locally grown sugar cane is grown without chemicals and that once sample analyses confirms this, ACO approves of its use.

Living mulches

Intercropping strawberry fields with cover crops can prove to be a viable weed suppressant when combined with straw mulch.

The producers at Coochin Hills Organics have attempted to use buck wheat (*Fagopyrum esculentum*) as a living mulch within their strawberry fields, however found that it grows too high and harbors many non-beneficial pests.

Natural based herbicides

Coochin Hills Organics have found it necessary to resort to natural-based, BFA-approved herbicides only twice.

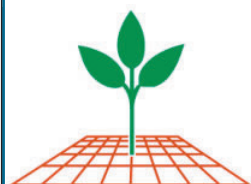
They were used as a last resort and are generally avoided by the producers.

This case study has been extracted from a research paper prepared by Jade King. Part 2 will be published in a future issue of AOJ and will detail management of pests, disease and economics and provide conclusions and recommendations.

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