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Growing cider apples

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Introduction

Growing cider apples is very similar to growing dessert apple varieties. They have similar cultural requirements of climate, soils, site selection, nutrition, irrigation and pest and disease control.

Making cider

Cider is made by pressing apples to produce juice, then fermenting that juice to make cider. Most commercial ciders available in Australia are a blend of dessert and cider apple varieties, although cider can be made exclusively from cider apple juice. The term 'cider' is used in Britain and Europe in much the same way as it is used in Australia, i.e. to refer to the fermented and therefore alcoholic product. Cider is also a popular drink in France where it is known as 'cidre', and in Spain where it is known as 'sidra'

In America, 'cider' refers to apple juice in general, and the expression 'hard cider' is used to distinguish the fermented product.

Techniques for the making of cider can be simple or complex, with numerous variations possible.

Cider can be distilled to a product with higher alcohol levels. This is commonly known as apple brandy or, in specific geographic regions of France, as Calvados.

Production issues

Some aspects of cider apple production will please growers who have been accustomed to the fresh dessert fruit market.

Shape and external appearance. The size, shape and external appearance of cider apples has no relevance in determining their quality and saleability. Therefore management action to prevent superficial defects such as russet and dimpling, can be reduced or eliminated. Likewise, hail damage to cider fruit does not present anywhere near as much of a problem as it does in dessert fruit.

Harvesting. The crop can be mechanically harvested (see warning notes under 'Rootstocks') since the apple-crushing procedure is usually carried out shortly after harvesting. The pulping and pressing processes quickly nullify any bruising of the fruit caused during the harvest. However, if the fruit is to be stored for a period before it is processed, then the overall quality of the finished juice product will be reduced if there are significant quantities of bruised and damaged fruit.

The equipment used in a mechanical harvesting operation can include tree shakers, blowers, sweepers and washers.

Biennial bearing

Biennial bearing, where heavy yields one year are followed by light or non-existent yields the next, can be a major problem with some cider varieties.

The problem of biennial bearing is usually tackled by reducing the fruit set or by thinning the fruit load in the 'heavy' year. This enables the tree to set more fruit in the following year, which would otherwise be the 'light' year. However, the thinning procedures which have been so well researched with the dessert apple varieties have not yet been tackled with cider varieties under Australian conditions.

Different treatments for different varieties may be necessary. It may be that cider apple thinning is not the answer to smoothing out the year-by-year variations — it may be better to manage some varieties by having half the trees bearing heavily one year and the other half bearing heavily the next. Such techniques are yet to be economically proven.

Some producers prefer biennial bearing, maintaining that the fruit has a lot of the important compounds in or near the skin. Therefore a heavy crop of small apples which have a higher surface-to-volume ratio, potentially gives a more interesting juice for the cider maker to work with. Tree structure, however, needs to be capable of carrying the 'heavy' crop.

Rootstocks

The choice of rootstock for cider apple trees is a matter for the individual grower. Preferences with rootstocks for dessert apples have been gradually changing so that average tree height is shorter and tree density is higher. This trend has at least two benefits:

- smaller (or 'dwarfed') trees come into bearing earlier and thereby provide a return on investment earlier;
- pickers can pick fruit more easily from smaller trees.

It should also be noted, however, that dwarf trees require an additional investment in either stakes or trellising.

If cider apples are a longer-term investment proposition, and if they are to be machine harvested, it may be better to return to the medium or larger sized trees (e.g. MM106). Dwarf rootstocks such as M9 do not take kindly to tree shaking, as the roots tend to be brittle.

For mechanical harvesting, therefore, MM106 is a more suitable rootstock to use, and staking or trellising would be unnecessary. For information on rootstocks, see Agfact H4.1.10 *Apple rootstock identification*.

Tree size

Once the decision has been made to develop a mechanically harvested cider operation, other possibilities arise. With hand picked fruit, tree size is limited to what amounts to the most 'picker-efficient' height or the safest working height.

With mechanical harvesting it is feasible to have trees taller than growers are presently accustomed to. Provided the grower has power equipment to undertake higher pruning operations it is feasible to let MM106 trees grow taller, or to work with more vigorous rootstocks. Other considerations come into play such as machinery access in the inter-row but in effect it is possible to have greater tree-row-volume and thus to increase the bearing capacity per hectare.

Organic production

Organic production of cider apples will probably be found to be feasible, largely because of the irrelevance of the appearance of the fruit. Codling moth and lightbrown apple moth will still present a challenge to organic production, but their effects will be less critical to the cider industry than to the fresh fruit industry.

Pheromone systems for controlling codling moth have developed significantly in recent years; however, for such systems to be effective, a minimum area needs to be planted, and not all new producers in their establishment years are able to achieve such plantings.

Cider varieties

Cider apple varieties are much less prone to change and 'fashion' than are dessert apples. By way of emphasising this, most of the varieties listed on this page were selected prior to 1900 and most are still in common use in the UK and/or France. Cider varieties are still being bred, but primarily with a view to production issues such as filling gaps in maturity dates.

The fifteen cider varieties with a reasonable history in Australia are:

- Break well's Seedling
- Bro wn Snout
- Bro wn's Apple
- Bulmer 's Norman
- Dabinett
- Improved Foxwhelp
- Kingston Black
- Michelin
- Reine des Hâtives
- Somerset Redstreak
- S toke Red
- Sw eet Alford
- Sw eet Coppin
- T remlett's Bitter
- Y arlington Mill.

Additional cider varieties

Additional cider varieties have recently been located in Australia and information is being compiled about them. See the website www.dpi.nsw.gov.au/agriculture/horticulture/pomes/additional-cider-varieties

Chilling requirements, pollination timing and maturity

Most cider varieties have high chill requirements to break winter dormancy, as they originated from the cooler climates of Northern Europe. Kingston Black and Stoke Red have very high chilling requirements, and both may have problems in breaking dormancy in all but the coldest apple growing districts in Australia, such as Orange and Batlow. The flowers of some varieties (English data) are self-fertile (SF) or self-sterile (SS), but those that are partially self-fertile (P) will give a better set when cross-pollinated. Table 1 lists the flowering period in Orange, flower fertility status and fruit maturity times for the fifteen cider varieties. In warmer districts the flowering and maturity are likely to be earlier than quoted here and extend over a longer period of 4–5 weeks or more. The later-flowering cider varieties would mostly be too late to be pollinated with mainstream dessert varieties (even Fuji), but the earlier varieties could be pollinated with dessert varieties.

Flowering time													Maturity																							
October				November									February			March							April													
wk	2wk		3 kw		4 kw		1 kw		2				wk	3 kw		4wk		1 kw		2 kw		3wk		4 kw		1 kw		2wk		3						
Bt	Bt									Tremlett's Bitter		SS	Bt																								
	Sp									Brown's Apple		NK											Sp													
			Bt		Bt					Bulmer's Norman		SS	Bt																								
			Bt		Bt					Yarlington Mill		P														Bt											
			Bt		Bt					Michelin		SF							Bt																	
			Bt		Bt					Somerset Redstreak		NK							Bt																		
			Bp		Bp					Breakwell's Seedling		SF	Bp																								
			Bp		Bp					Improved Foxwhelp		NK		Bp																							
			St		St					Reine des Hatives		SS	St																								
			St		St					Sweet Alford		NK														St											
					Bt		Bt			Dabinett		SF														Bt											
					Bp		Bp			Kingston Black		P														Bp											
					St		St			Sweet Coppin		SF							St																		
							Bp			Stoke Red		P											Bp														
							Bt			Brown Snout		SF																									

Bt	Bittersweet	SS	self sterile
Bp	Bittersharp	SF	self fertile
St	Sweet	P	partially self fertile
Sp	Sharp	NK	not known

Table 1. Flowering time, fertility and fruit maturity

Virus status

Not all the cider varieties in Australia have virus-free status – see Table 2 (2002 data).

Table 2. Virus status in Australia

Virus-free status	Not virus-tested
Breakwell's Seedling	Bulmer's Norman
Brown's Apple	Improved Foxwhelp
Brown Snout	Kingston Black
Dabinett	Reine des Hâtives
Michelin	Stoke Red
Somerset Redstreak	
Sweet Alford	
Sweet Coppin	
Tremlett's Bitter	
Yarlington Mill	

Marketing and processing considerations

Although cider fruit is grown for a form of 'processing' the prices received are not necessarily those ruling for juice apples. Because of the special character of the juice there will be a distinct market for cider apple juice. In 2008 there would be a premium paid if cider juice were available. It remains to be seen how this changes as more cider fruit becomes available and as there is more demand from the market for cider.

Prospective growers should be aware of the limited opportunities to either sell fresh cider fruit to processors or market their own cider. Australia does not have the same traditions of cider consumption or the appreciation of distinctive ciders based on regionally available varieties, as in the UK and France. But there are increasing opportunities to tap into the local regional food and tourism groups to produce a distinctive product which is different from commercial cider.

A vertically integrated business, i.e. growing the fruit and undertaking all the operations right through to marketing, can imitate the same general model as the small boutique wineries, but the business would have to meet similar local government and excise controls. The degree of self-sufficiency needed to make the cider will determine the capital investment in bottling plant, equipment and appropriate facilities. Various aspects could be contracted out, but the arrangements would have to be acceptable under licences issued by the Office of Liquor, Gaming and Racing (in NSW), or its equivalent in other states.

An independent operator can choose to:

- produce a single 'varietal' cider;
- grow a range of varieties that can be blended to produce ciders of particular types;
- grow the varieties which are most resistant to disease as a first step towards organic production.

If growers are to engage in direct selling of fruit, they will need to liaise with potential purchasers before deciding which varieties to plant. Often, not all classes of cider apples are wanted and within the classes certain varieties are preferred. Returns for cider apple sellers may well be subject to fluctuations in relation to dessert juice prices and overseas dessert juice concentrate and cider juice concentrate prices.

Apart from cider, it is also suggested that it is likely that non-fermented cider apple juice will find a place in the apple juice market, either blended with dessert varieties or as a 100% product. The acid and tannin levels of cider apple juice make possible a much more distinctive apple juice than can be produced from dessert varieties. In addition there are currently independent investigations under way as to whether there are health benefits to be derived from the tannins (polyphenols) in cider and cider apple juice since these are associated with similar compounds in wines.

Perry

Perry is a similar drink to cider but it is made from pears called Snow pears (Pyrus nivalis), which are a different species to European pears (P. communis) or nashi pears (P. pyrifolia and P. bretschneideri). Perry varieties have a high quantity of tannins in the juice.

Four perry varieties have been imported into Australia, but there is little information available on their performance:

- Gin
- Green Horse
- Moorcrof t
- Y ellow Huffcap.

All four varieties were planted in 1994 at Orange Agricultural Institute, but only Green Horse has borne fruit so far (beginning in 1999). D6 was used as the recommended rootstock, as it is likely that quince is incompatible. They are at least as slow to bear fruit as European pear, or slower. This ties in with the Hereford (England) saying: ‘Grow perry pears for your heirs’.

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