

**Cider apple variety
assessment - study
tour to France,
October 2007**

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Pickering

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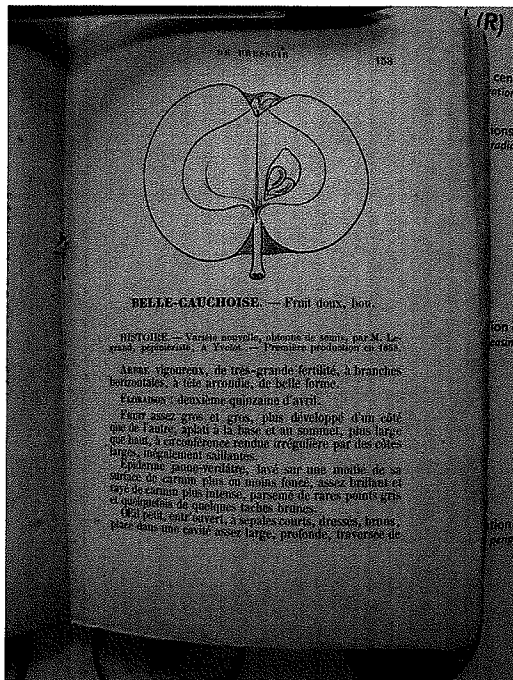


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AP06067 - Cider apple variety assessment – study tour to France,
August 2007.

14–30 October 2007

David Pickering



cv “Belle Cauchoise” from DE BOUTEVILLE et HAUCHECORN (1878)
(Tas DPI Grove: “Belle Cacheuse”)



cv “Court Royal” at Brogdale (Tas DPI Grove: “Pound”)

AP06067

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The purpose of the cider study tour was to obtain information regarding the cider apple varieties, primarily of French origin, which had been identified as being in Australian apple collections.

The study tour was funded 60% by DI & W Pickering (see address above) and 40% by Horticulture Australia Limited

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SUMMARY

With the prior agreement of HAL:

1. The trip was deferred from August to October to better co-incide with apple maturity dates in Europe
2. The trip was also expanded to include England, both to examine some English cider varieties and to examine some French varieties held in English collections.

Prior to the author's departure, forty three apple varieties had been identified in Australian pomme fruit collections as cider types. Contact had been made with holders of pomme fruit collections in England and France and visits arranged.

As a result of the study tour forty four / forty three cider varieties are now known to be in Australia and information has been obtained about thirty nine of these. Those varieties which were not successfully tracked were English and appear to be either 'regionally named' or the names have possibly been corrupted during, or since, importation into Australia. This does not mean that these five varieties have no merit, only that their history and characteristics cannot at this time be confirmed.

Forty two of the varieties have scion material available in Australia, the other two are in a private collection and will need to have a budwood supply created outside that collection. The virus status of scion material of all of the varieties is unknown.

The majority of the twelve or fifteen cider varieties relatively commonly known in Australia are English. The French varieties now identified expand the range of cider styles that it will be possible for Australian cider producers to make without resort to additives. The unknown factor is how the newly identified varieties will behave under Australian conditions. The trees in the primary Australian collection have not been trained in an orcharding sense, rather they have been managed to produce a maximum amount of scion material. Tree and fruit characteristics will need to be investigated under Australian conditions so that Australian growers can make informed choices about what is available to them.

All forty four varieties are now grafted and planted on the author's property. Of the more recently identified cider varieties, six were grafted in winter 2005 and twenty in winter 2006. Two trees were planted of each variety and whilst these trees will in time generate some information, the size of the planting, the layout and the mixed ages are not conducive to statistical analysis.

During the next four months, articles will be produced for the "Australian Fruitgrower" and the NSW Department of Primary Industries cider webpage will be updated. It is likely that the ABC TV's "Landline" will carry a mention of the tour in a segment that they are planning based around a cider competition that was held late November in Adelaide. I was interviewed at Uraidla by Prue Adams in relation to the trip just prior to the cider competition. The program will screen in 2008 although the date is not known.

One recommendation that will be made and followed up by the author is in relation to the Australian apple collection held at Grove by the Tasmanian DPI. The work prior to - and the study tour itself - indicated various naming issues, particularly with the

French cider varieties in that collection. The issue has been raised with the Tasmanian DPI with a suggestion to have variety spellings corrected to the original French before any demand for cider scion material is generated by the study tour publicity. Corrections made now will hopefully minimise confusion over names in years to come. It will also be suggested that the Tasmanian DPI alter their website listing (which currently shows thirteen cider varieties) by transferring the appropriate varieties from their "heritage" list to the "cider" list. The Tasmanian DPI are currently planning the re-planting of their entire apple collection and are amenable to co-operating with cider variety confirmation and revision of the names.

I am proposing to HAL by means of this report that no further information regarding the "discovered" cider varieties is made public in the short term. This seems the appropriate action to take until there has been the opportunity to confirm with a reasonable degree of certainty that the named variety in Australia conforms to that named variety overseas. This work will be commenced in late summer / autumn 2008 and progressively as fruit is becomes available in succeeding seasons. This course of action is recommended so that cider growers do not take up material solely on the basis of name, only to find in years hence that it might not be the named variety and may not even be a cider variety.

If HAL because of its funding guidelines wishes to obtain and hold copies of the assorted varietal information then this can be made available.

INTRODUCTION

In the two years prior to applying for the study tour funding, the author researched all accessible material in hard copy and on the internet where apple variety names were quoted around the world as being used for cider. Sources were graded as being authoritative industry type publications and/or scientific papers all the way through to popular press articles. If a variety name acquired sufficient references of sufficient standing then it was classed as a cider apple. This is a subjective system but there is nothing to stop somebody making cider from Delicious or Granny Smith juice and there is no way these varieties are classed as cider apples.

The listing of cider apples thus derived was compared to the combined listing of apple varieties held in Australian pomme fruit collections. Any variety that appeared in both lists became a “variety of interest” ie it was a cider apple and was already in Australia. Again there was a measure of subjectivity in this process of comparisons. The front cover illustrates two examples: an apparent corruption of spelling of the variety in Australia and a variety known under a range of names.

This done, there appeared to be 43 cider varieties in Australia and internet and email searching commenced to try to locate these varieties overseas so that information about them could be obtained. As this process proceeded the decision was made to seek funding for an overseas trip

The main visits on the study tour were as follows:

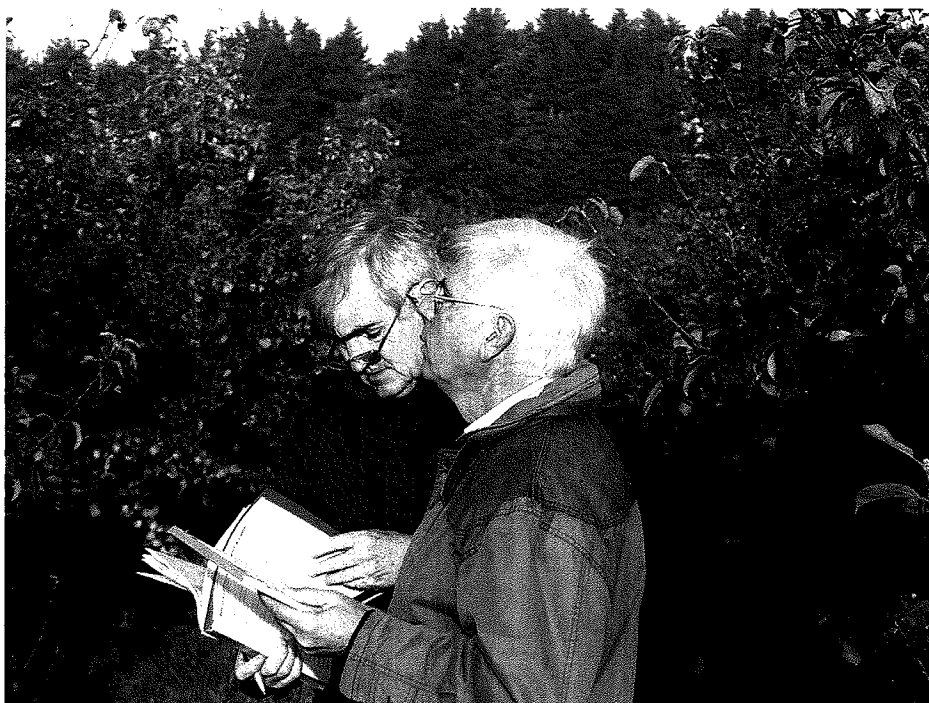
English / British National Fruit Collection – Brogdale, England

CTPC (Centre Technique des Productions Cidricoles) – Sees, France

Nathalie Dupont and Jo Primault

INRA (French Dept Agriculture) – Angers, France

Yves Lespinasse and Jean-Michel Bore – pictured below



Other visits were made to:

Hereford Cider Museum

Andrew Lea – Wittenham Hill

Broome Farm – Mike Johnson

Bulmers – Tim Epps and Chris Fairs

Sheppy's Cider – David Sheppy

Burrow Hill / Somerset Cider Brandy – Julian Temperley

Liz Copas - Crewkerne

La Galotiere – Jean-Luc Olivier

Pierre Huet - Cambremer

L'Aunay – John McWilliam

These visits were undertaken in an attempt

- to trace cider apple varieties known to be in Australia
- to obtain information about these varieties
- to discuss with authorities and/or producers the likely benefits and problems associated with these varieties

BACKGROUND INFORMATION ON CIDER ORCHARDING AND THE STUDY TOUR

Timing of the study tour was a difficulty since the cider apple varieties in question have a substantial spread of harvest dates. It was desirable to see, and taste, fruit at maturity and this was a difficult undertaking in a trip of only two weeks. Additionally the trip dates had to be settled three months ahead and with seasonal variation this was something of an educated guess.

In the event the timing was reasonable, with some varieties of interest having been harvested, some being harvested and some not yet mature. With the main visits that were undertaken, arrangements had been made with the staff to cool store those varieties of interest that would mature prior to my visit and this procedure worked well.

Digital images were taken at all available opportunities and some of the publications obtained had printed colour images. These images and printed data will play a major part in confirming whether the cider varieties supposedly held in Australia are true-to-type ie whether they are what they are supposed to be.

Some varieties were not fruiting in the European harvest season, largely as a result of biennial bearing. This tendency to biennial bearing is not restricted to cider apples and occurs with dessert fruit, however dessert fruit management routinely incorporates chemically thinning in the orchard program. Some cider varieties are more prone to biennialism than others and little work has been undertaken with the assorted variety-chemical-phenology interactions to develop techniques and timing recommendations. Whether this work needs to be undertaken in Australia will be joint questions of the behaviour of the varieties in Australia and the management of orchards/cider producers.

Apart from the need for thinning to obviate the biennial bearing issue there is apparently an acceptance of the situation in cider apple growing in Europe and Britain. Two factors have historically led to this:

1. Cider has been made by mixing the apple varieties prior to crushing and fermenting. Accordingly it is usually easy to substitute an alternate variety of similar characteristics to replace a variety having an "off" year.
2. Perceived wisdom is that a large proportion of the flavour compounds of an apple are in - or close under - the skin. Accordingly a year when the trees of a particular variety have a heavy crop of small apples is seen as an opportunity for the cider maker.

On the other hand more recent market movements may well cause changes:

3. The increasing trend in cider production is to market varietal ciders and this will create pressure for more consistency in annual yields.

Until such time as a properly structured trial can be undertaken, any information on yields - including the influence of biennial bearing - will only be conjecture.

Another issue that cannot be settled is making a single recommendation on what rootstock to use with cider apples.

In effect the grower or prospective grower has to make a choice when planning the cider orchard:

- Plant a high density orchard (as is becoming common with dessert fruit) on a dwarfing rootstock such as M9. This option will produce early yields and consequently earlier returns. This option will also require a greater initial investment and will commit the orchardist to hand picking (the M9 rootstock has a degree of brittleness and therefore does not lend itself to tree shaking).
- Plant a medium density orchard eg 3m * 5m on a rootstock such as MM106 and have a reduced investment in trees and infrastructure while being aware that the return on the investment will not be as quick. However with this setup it is possible to mechanically harvest.
- A third option that has gone out of fashion in Australia is to plant a cider orchard on a vigorous rootstock such as MM111 and have the trees widely spaced eg 6m * 6m. This system would need a current day economic analysis before adoption.

Capital investment is less

Mechanical harvesting is possible (probably the only harvesting option)

Return on investment is theoretically slower, but

The system fits with “agroforestry” or “agri-horticulture” since it will be possible to graze livestock under the trees and the system would probably qualify under carbon trading guidelines.

Aside from the above considerations of harvesting, another aspect needs to be considered in orchard design for cider. The current trend towards more environmentally friendly spraying operations favours the dwarf tree option since more control over coverage and drift is possible with smaller trees. However it should be borne in mind that there is typically less spraying of cider orchards than dessert apple orchards as there is more tolerance of pests and diseases where the fruit will never be seen by the consumer. Cider makers generally seem to cope with diseases such as black spot (*Venturia inaequalis*) but severe infections will still affect fruit yields and tree growth/vigour.

EVALUATION and IMPLICATIONS OF THE STUDY TOUR

Of the forty three cider varieties that were the focus of the study tour information has been obtained about thirty nine. To this extent the study tour can be said to have been a success, but, as is often the case, the information obtained reveals the gaps in knowledge about the varieties.

Those varieties which were not successfully tracked as fruit/plants nor in literature held overseas were English and appear to be either 'regionally named' or the names have possibly been corrupted during, or since, importation into Australia. This does not mean that these five varieties have no merit, nor that they are "wrong" in any sense, only that their history and characteristics cannot at this time be confirmed. It may be that they can never be absolutely confirmed if specimens do not surface in the UK or France as not even DNA techniques can confirm something without two samples to compare. Notwithstanding this lack of certainty, material of some of the apple varieties held in the Tasmanian DPI pomme fruit collection at Grove has been exported to nurserymen in England as the varieties are assumed to have been lost in their country of origin.

It remains now to compare the information obtained during the study tour with the fruit that is produced on trees in Australia. This is in part on the young trees planted in the author's orchard and, again with Tasmanian DPI's co-operation, with any fruit which sets on the "budwood" trees at Grove. Preliminary agreement has been obtained to undertake the latter and likewise there is preliminary agreement with Tasmanian DPI to review the naming of the French varieties in the Grove collection and probably to return them to their French names / spellings.

Australia's cider variety "collection" has other work to be done on it. Since the author's return to Australia the information obtained during the tour has been collated and further information has been sought from the contacts made. This is taking three forms:

1. Obtaining further information on the primary chemicals of interest (tannin and acid levels) in the cider fruit.
2. Seeking other reference works on cider to update the original literature search undertaken prior to the study tour. This may or may not reveal other cider varieties.
3. Investigating analysis techniques and the variables that can influence results for fruit chemicals, particularly tannin.

Based on published information that has been collected, it has been possible to develop a single chart to compare the important cider characteristics of most of the varieties. This is a fundamental tool in the understanding of the relationships between the varieties. This aspect of the project was undertaken because the English have a four category system and the French a six category system. At the present stage of development the chart incorporates thirty of the varieties believed to be in Australia. It displays their tannin and acid levels and places a further eight into general classes without individual analyses. The result has been a clear indication that some of the previously unrecognised cider varieties from France can be expected to make a major contribution to cider production in Australia.

Frequin Rouge, Jaunet and Martin Fessard exhibit tannin levels well above those previously available. Blanchet, General and Groseille provide intermediate steps into the available acidity levels while Verite has a higher acidity level than was previously available. Bedan and Antoinette in the bitter-sweet, aka douce-amere, class are both popular varieties in France and could well complement the English examples of this class.

Of the classification systems mentioned above, Australia has varieties within all four of the English cider apple classes and, if identities are confirmed, would have varieties within five of the six French classes.

Although this work derived from the study tour is of direct benefit to the Australian cider industry the fruit characteristics are not the only factor in determining a variety's usefulness to the industry. In a horticultural (orcharding) situation it is important to know the tree, fruiting, disease susceptibilities, productivity etc before deciding on a variety to plant. For this reason the author, together with horticultural researchers from NSW DPI have proposed a small scale field trial to HAL in the latest (November 07) round of project submissions.

The study tour and consequently this report, concentrates on those cider varieties identified as being in Australia already. It is perhaps appropriate to mention however that the French have in recent years bred and released new cider apple varieties that are denoted by the letter "J": Juliana, Jurella etc and these are predominantly in the high acidity area with low or medium tannin. Likewise Bulmers in England recently undertook a breeding program to fill a perceived gap in early season bitter-sweet production. The Bulmer varieties are in the early years of release to their contracted growers and may come onto the availability list. Both the English and the French could presumably be imported into Australia and released, probably under PVR. It is of course premature to consider importing any of these until we understand what we already have.

