



AWRI

Equipment evolution: Destemming

Simon Nordestgaard

The Australian Wine Research Institute, PO Box 197, Glen Osmond (Adelaide) SA 5064, Australia

Corresponding author's email: simon.nordestgaard@awri.com.au

**“One question has long divided farmers:
To destem or not to destem?”**



Trident

Bunches are stirred, the stems are detached and rise to the surface.



Jean-Antoine Chaptal et al. (1801)

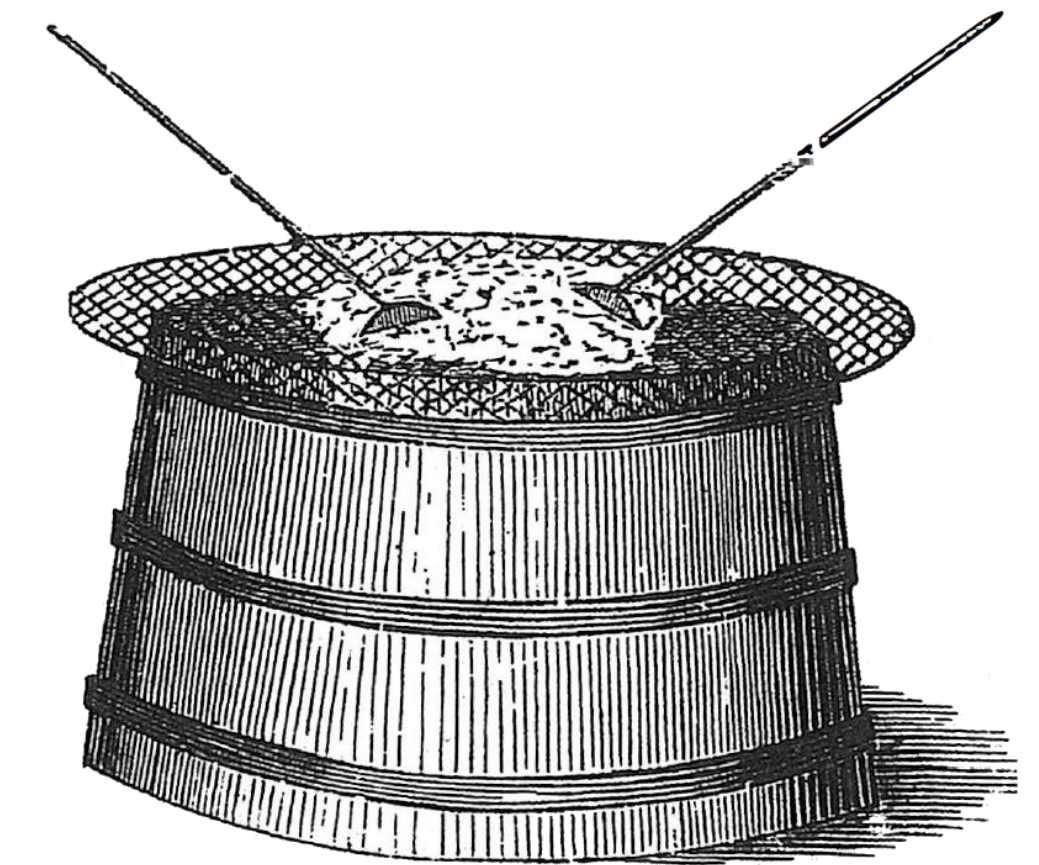


Table screen

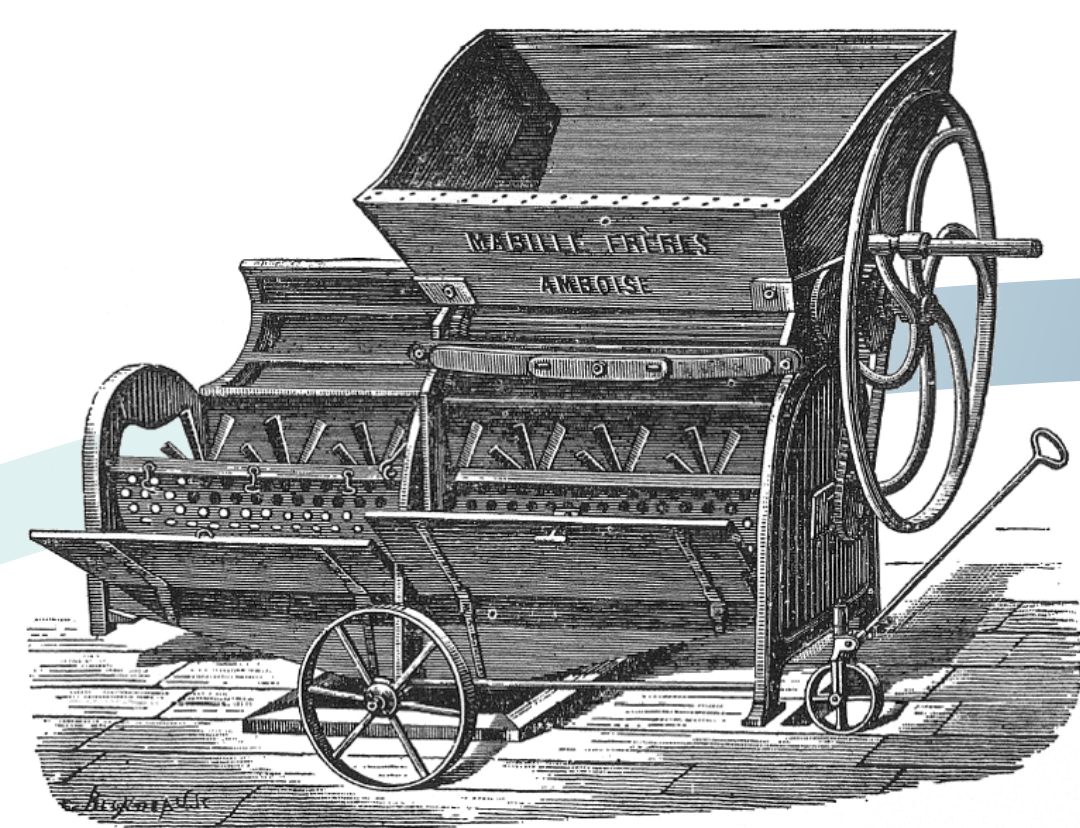
Bunches are raked across the screen and the grapes fall through.

✗ Destemming

- Ferments are easier with stems
- Stems make pressing easier

✓ Destemming

- Stems occupy press/fermenter space
- Stems can add astringency/greenness



Rotary

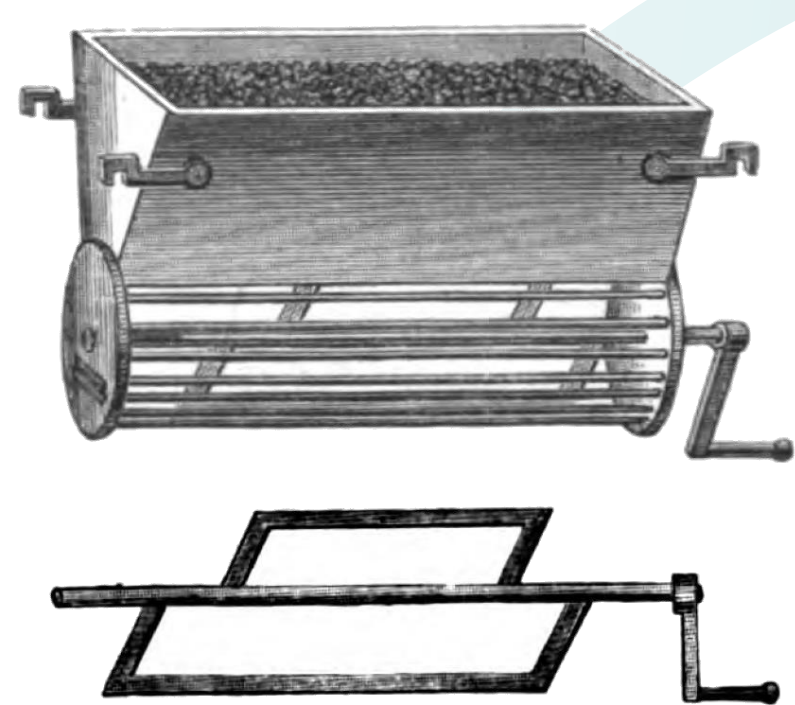
Continuous

Beater elements modified to continuously convey stems from the drum. Destemmer is typically integrated underneath a roller crusher. Late 1800s.



Modern

The most common destemmer design now in use. Not dissimilar to rotary destemmers from the late 1800s, but now all in stainless steel, with a rotating cage (in the same direction as the beater at a slower speed), and with roller crusher integrated below instead of above destemmer (i.e. now destemming before crushing).



Batch

Grapes are detached from stems by a beater. Stems need to be periodically removed from the drum. Mid 1800s.



Vibrating

Destemming partially by vibration of beater shaft. This allows slower beater rotation speed and less berry/stem breakage. Armbruster c. 2006.



Must pumps instead of gravity wineries

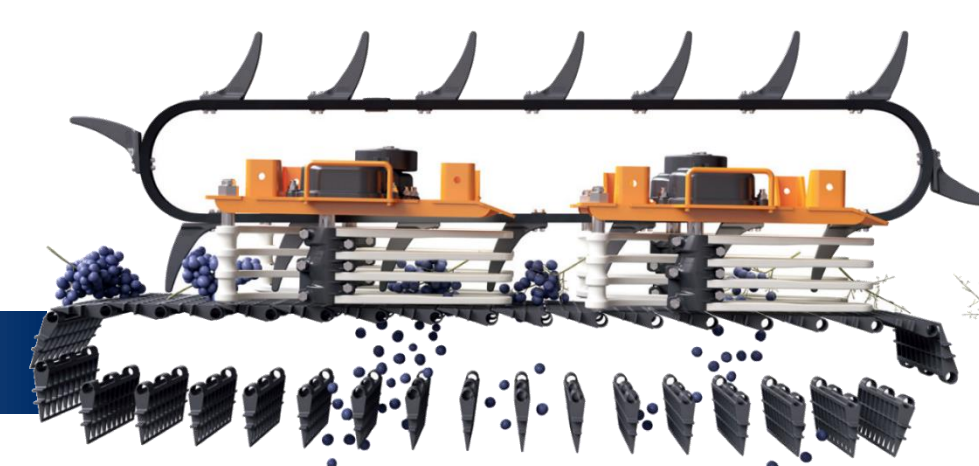
The introduction of the must pump in the early 1900s meant wineries no longer needed expensive buildings across multiple levels. However, if grapes were not destemmed some pump designs could block.

This practical consideration was likely a major driver in the wider uptake of destemming



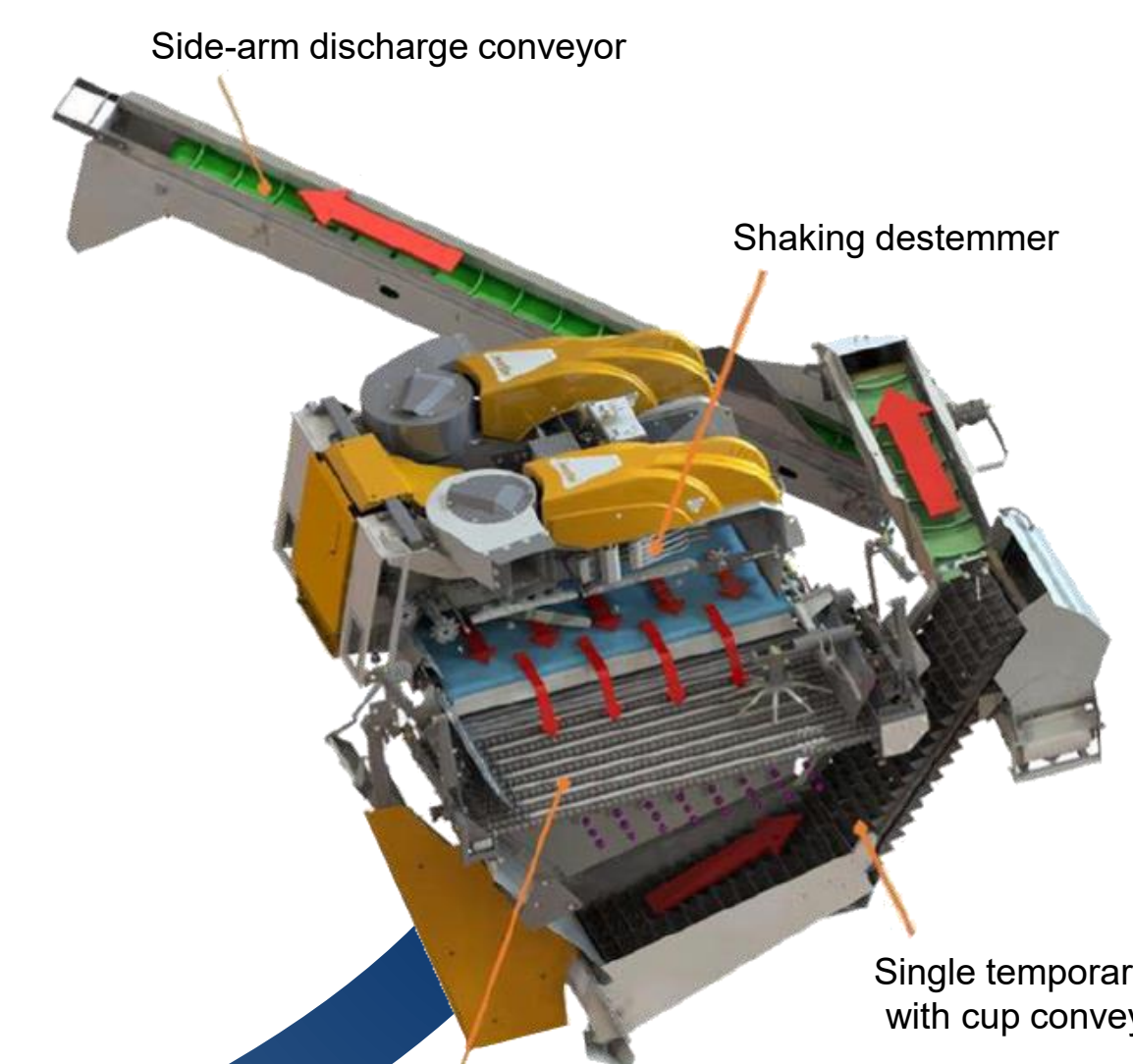
Finger wheel

Finger wheels spinning in the same direction as a grid conveyor detach grapes from stems. The action is more gentle than a typical rotary destemmer. Socma c. 1999.



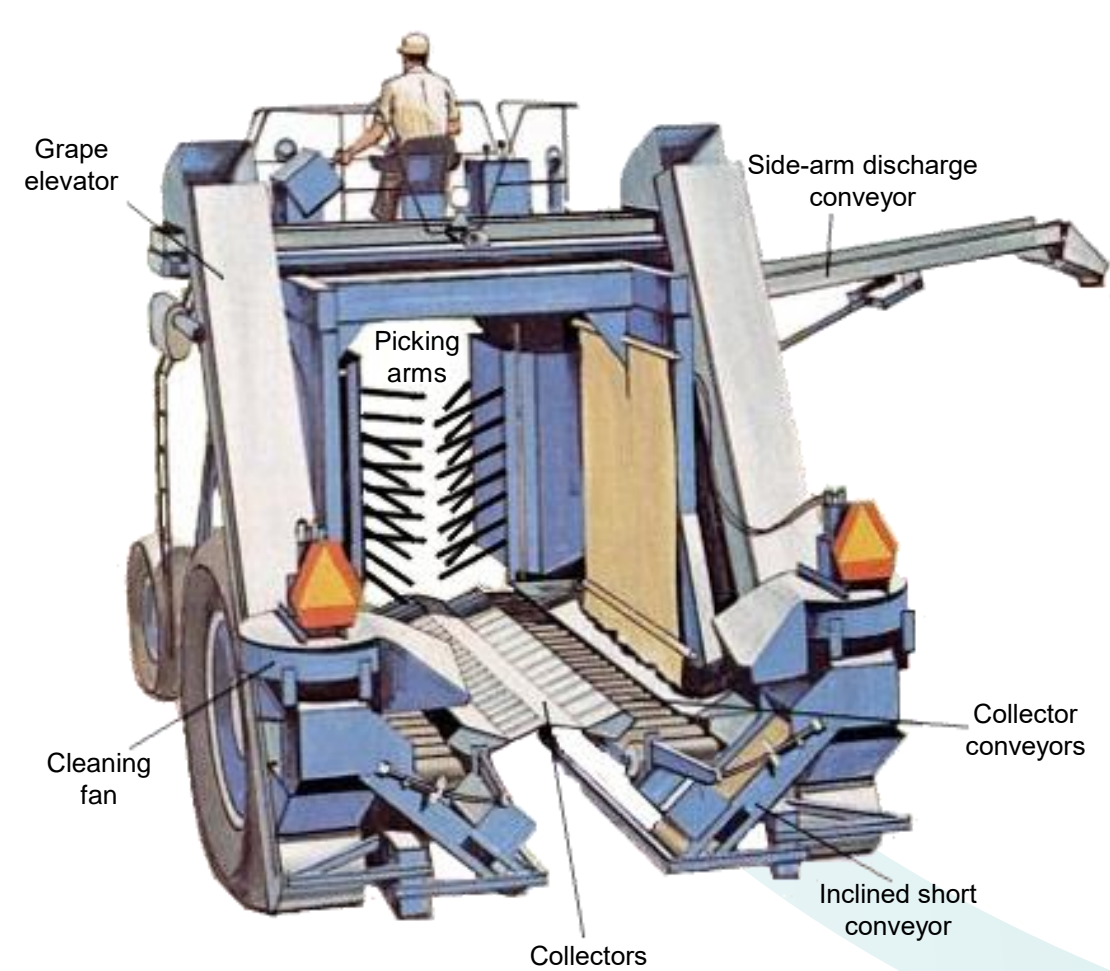
Shaking

Grapes are detached gently from stems by shaking. This is typically followed by roller sorting. First introduced by Pellenc c. 2008.



Side-arm compatibility

Most harvester-mounted destemmers were originally only compatible with on-board bins. On-board bins are inefficient in long row vineyards because half-way along a row the bin might be full, and the operator then needs to go to the end of the row to empty it. More models compatible with side-arm discharge conveyors are now being released.



Harvester as a partial destemmer

Mechanical harvesters leave many stems on the vine. The vegetal matter content is reduced from around 7% with hand-picking to around 1-2%. Commercially adopted from the early 1970s.

Machine



Harvester-mounted destemmer

Full destemmers were added to machine harvesters. Initially rotary destemmers, then linear destemmers that fit neatly above dual on-board bins such as the Socma finger wheel. Braud c. 2002.

Harvester



- Winery shaking destemmers with in-built roller sorting will likely be increasingly adopted for hand-picked red grapes.
- Harvester-mounted destemmers (& sorters) will increasingly be used for red but not white grapes (because of potential skin maceration).
- As harvester-mounted destemmers (& sorters) improve they may start to also be applicable to higher yielding vineyards.
- Total destemming will continue to be the most common practice but there will always be some debate on the topic.

Reference: Chaptal J.A. et al. 1801. *Traité théorique et pratique sur la culture de la vigne, avec l'art de faire le vin, les eaux-de-vie, esprit-de-vin, vinaigres simples et composés*. Paris: Delalain fils.

Other sources include: Darmailhacq (1855), Müller (1930), Payne et al. (1843), Peynaud (1981, 1988), Roos (1900), Thudichum and Dupré (1872) and many equipment suppliers.

Disclaimer: Simplified summary only. There are variations with country, region, scale, wine style and between equipment brands. Equipment often co-exists and independent data on relative performance is often limited. Information should not be considered as an endorsement or dis-endorsement of any product or brand by the AWRI.

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