Aiming at making quality olive oil

Everything starts in the orchard

- Olive oil excellence is only attainable with good, healthy olives.
- A study of the University of Florence states that quality of olive oil depends in 50% of the quality of the raw olives! *“It’s possible to make bad olive oil with good olives, though it’s impossible to make good olive oil with bad olives”.*

Everything starts in the orchard II

Everything starts in the orchard III

Everything starts in the orchard IV

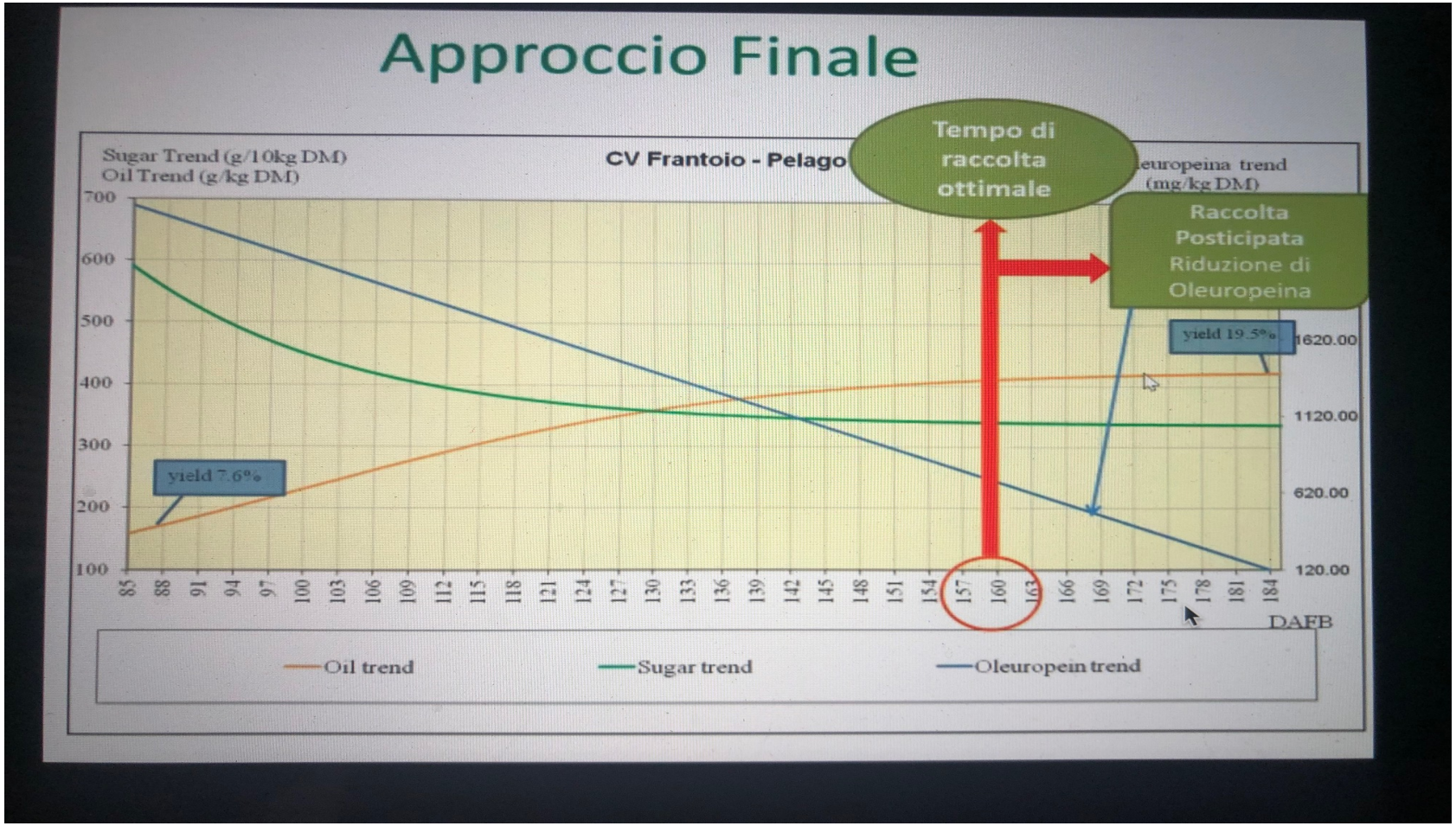
Everything starts in the orchard III (problems, too)

Beneficial presences (ladybugs, lacewings).

Harvesting at a precise degree of ripening

- We aim at a moment when phenols, oil content and enzymes are in optimal equilibrium (aiming at having a clear aromatic manifestation, good phenol count, and good yield). Olive oil quality is made of an excellent sensory profile, and of an excellent nutritional profile too.
- Harvesting too early will cause low yields and low perfumes. When olives are greener there are more phenols in them, though less enzymes. As the olives ripen, less phenols and more enzymes.
- Harvesting too late may help yield, though it'll imply a serious loss of phenols and positive organoleptic characteristics.
- Growers and producers need to know and understand the cultivars they work with, and how they ripe and behave during the season.

Understanding cultivars



When to harvest?

- Color is an indication, though it does not tell the whole story. Chromatic variation has to do with sun exposure, cultivar, agricultural practices.
- M.I. is a tool:
- **MI = (Ax0 + Bx1 + Cx2 + Dx3 + Ex4 + Fx5 + Gx6+ Hx7) / 100**
- As long as you study over the seasons which is the MI that produces good olive oil from your cultivars, it can be one good reference.
- NIR analysis of oil content, moisture content, phenol content. All that, if available, it's of great use.

Maturity index (M.I.)

Harvest and transportation

- Harvesting avoiding damaging the olives is critical. Doing it fast, too.
- Harvest in the cool moments of the day.
- Avoid stressing the olives while transporting them.
- Work with small containers. If working with large bins, don’t fill them up. Aeration is important. Explore the possibility of a refrigerated truck.
- The shorter the time between harvesting and milling, the better.
- We noticed difference between 4, 8, 16 and 24 hrs.. More than 24hrs, highly risky (risk of anaerobic fermentation), particularly in warmer areas.

Bacterial activity & time

Not a good idea…

Taking decisions for the milling process

- "*One year of work, but quality will be decided in one hour*"
- Be mindful of your equipment, or the mill you choose and the miller.
- It's wonderful to be a good mechanic. It's even more important to understand what we're doing, what are we trying to achieve, and to be able to check that process by tasting. The more the team can taste and discriminate, the better.
- Hygiene is critical. Behind every good olive oil there's a fastidious hygiene.

Hygiene. Temple of Asclepius.

Receiving

- We must strive to work with olives free from M.O.O.
- Leaves, branches, debris detract from quality. They can alter the quality of bitterness, giving a woody flavor or being too astringent.
- Old equipment always had a leaf-blower, but it tends to be insufficient.
- New, powerful decanters made to remove M.O.O. are to be encouraged.

Washing

Washing, drying

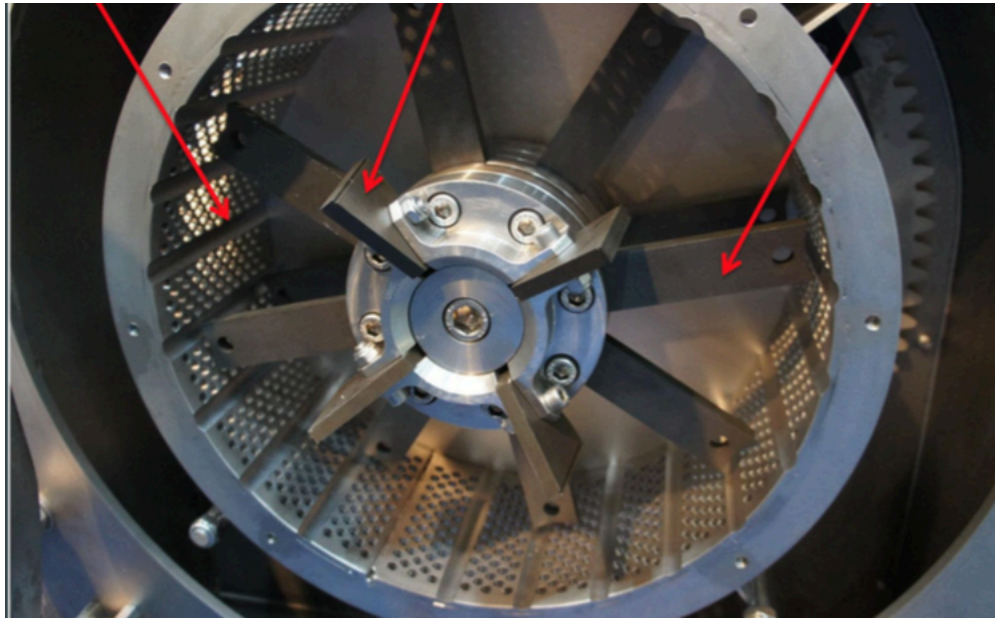
- It’s important to wash with clean water. Change water periodically (we don’t want to wash with dirty water).
- As important as washing is drying. This will prevent a spike of temperature, and it’ll increase phenol count.

Crushing

- This is a defining step for the whole process. Not only it defines the perfumes in a big part, it sets the tone for the following steps.
- Make sure the crusher is cleaned thoroughly daily, it has sharp pieces (hammers or blades).
- With hammer-mills, the grids can play a role in achieving what we want.
- Smaller grids 4,5 when olives are greener (not when too green, otherwise the oils will be too aggressive), with smaller olives, with dual-purpose cultivars in order to increase phenol content. For riper, weaker, and larger olives, bigger holes, as number 6 or 7. Also when it’s very warm outside, in order to avoid a too high spike of temp.

New generation crusher

- It does not use hammers. They’re sort of blades.
- The grid is not so determining.
- It does not heat up or emulsify as much as the hammers.
- It comes with an inverter to change the speed. This affects the outcome and helps phenol extraction.
- The latest model allows for controlling temperature.
- All the above allows for active intervention, and for a specific milling for each cultivar.



Enzymatic activity

Positive Enzymes

Pectins Cells Hemicells

Help with the release of oil

Found in the olives pulp

The presence increases as fruit ripens

If harvested too early, there may not be enough of these enzymes.

Glucosides

Found in pulp of olive.

Act upon oleuropein & on ligstroside family (oleocanthal family)

LOX Process

Present during crushing & malaxing

Act upon fatty acids creating aromatic compounds:

Aldehydes (60-75 F)
Esters (60-75 F)
Alcohols (76-82F)

Why is so important to control temperature?

LOX Process

Low enzymatic activities	<60F	
Aldehydes	60 - 75F	green fruit aromas
Esters	60 - 75F	fresh floral aromas
Alcohols	76-82F	ripe fruit aromas
Loss of volatiles	>82F	

Malaxing

- This is where the oil is release, where it gets enriched with some compounds, and where the perfumes get completed.
- It can be quite detrimental if it’s done for too long, and with high temperatures, for the sake of yield.
- The quality of the equipment is decisive. Old equipment has malaxers that are quite oxidative. Cleaning malaxers thoroughly is essential. Otherwise the remaining paste will contaminate the incoming oil. Cleaning pipes/tubes that transport the paste, too.
- Ideal temperature is 24C-26C.
- The shorter, the better, though some is needed.
- Rushing can be a mistake too.

Malaxing II

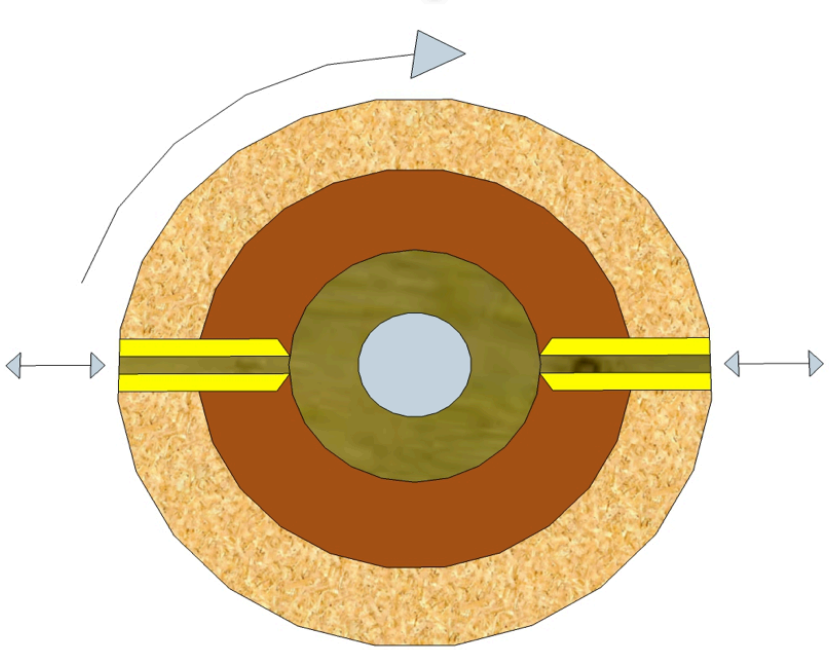
New vertical malaxers, under vaccum, able to cool or heat.

Decanter

- It’s important to work with a continuous flow.
- Sending the paste from the malaxer to the decanter can’t be too fast (the decanter won’t be able to separate), nor to slow (that oxidizes the oil).
- The time the oil is inside the decanter is also a factor. The sooner it leaves, less chances to get oxidize.
- Cleaning the decanter as much as possible is important, otherwise the new oil gets in touch with decaying oil & paste from previous batches.
- Minimum use of water will favor phenols and taste.

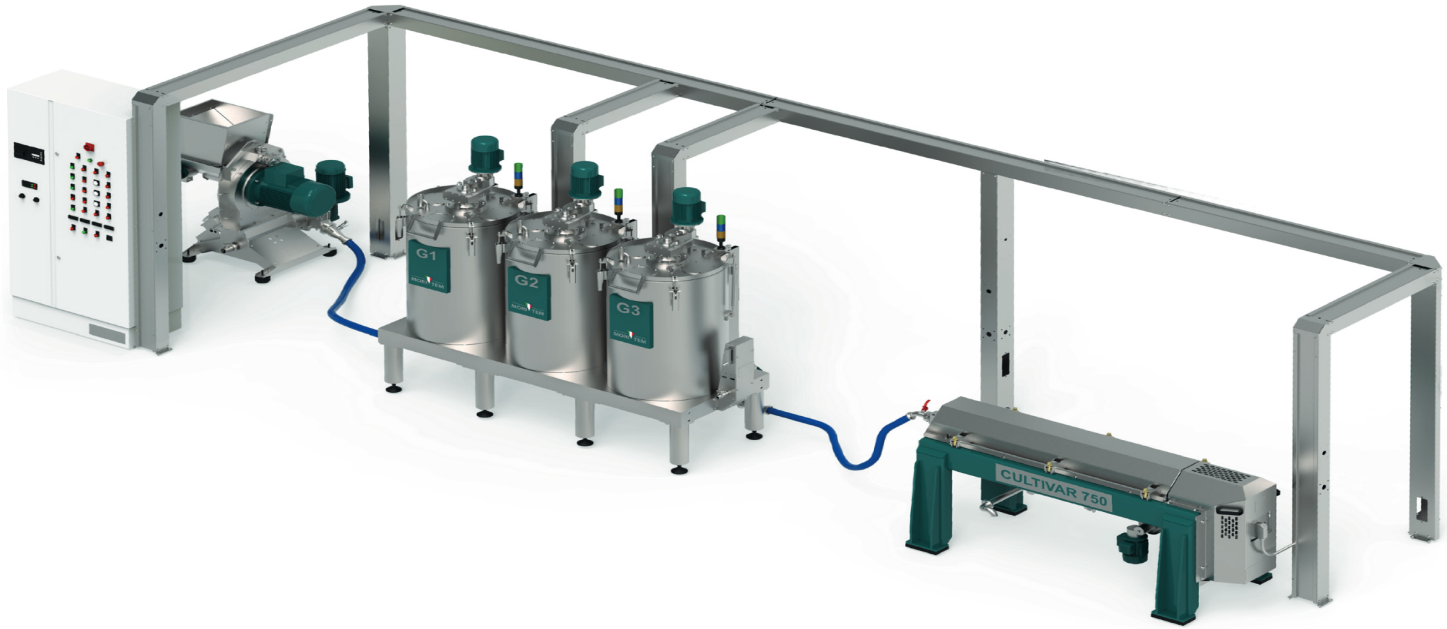
Decanter II

- The vast majority of olive oil of excellence is made with 2 phase.
- 2 phase consents to work the decanter with minumu water (<5%)
- 3 phase needs much more water (>20%).



New generation decanters

- They minimize the passage of the oil
- Don’t heat up the oil
- Allow for by-passing the final separator though need immediate filtration (and consume more paper).



Final separator (vertical centrifuge)

- They clean the olive oil from sediments and waste water, but they represent a big stress for olive oil.
- Due to contact with water there’s a significant loss of phenols.
- We also lose a big deal of perfumes due to aeration.
- Use water at the same temperature, avoiding hot water. Minimize the amount of water.
- It’s very important to clean the discs, where sediment accumulates (if not clean, they contaminate the incoming oils).

Filtration

- Today, non-filtered quality olive oils are a rarity.
- Everyone agrees that we need to filter.
- It’s quintessential hygiene.
- It has to be done within 24hrs, otherwise enzymes, in the presence of water, can get activated.
- Filter pads are not to be abused, otherwise we defeat the whole purpose of filtration.

Sense of tradition, stewardship of the land, motivation beyond the economics, culture.

- The whole chain of production can honor and enhanced a sense of place.
- A well taken care land, a contribution to the local economy, the creation of aromas and flavors that add to the local cuisine and the cherished traditions.
- The best education is a good product.
- More good olive oil will make people proud of their place and will make it easier for consumers to recognize good olive oil from bad olive oil.

A beautiful, long tradition to be honored