

**BOUNDARY
BEND
LIMITED**



'Australia's premier olive company'

Introduction to Olive Oil Production

Olive Oil Processing Course

California, USA - October 2009



**BOUNDARY
BEND
LIMITED**



- Public unlisted company.
- Established in 1997.
- 85 shareholders, 110 employees.
- Head Office Based in Lara, Vic.
- Australia's leading vertically integrated olive oil company.

OUR INTEGRATED BUSINESS





Modern Olives

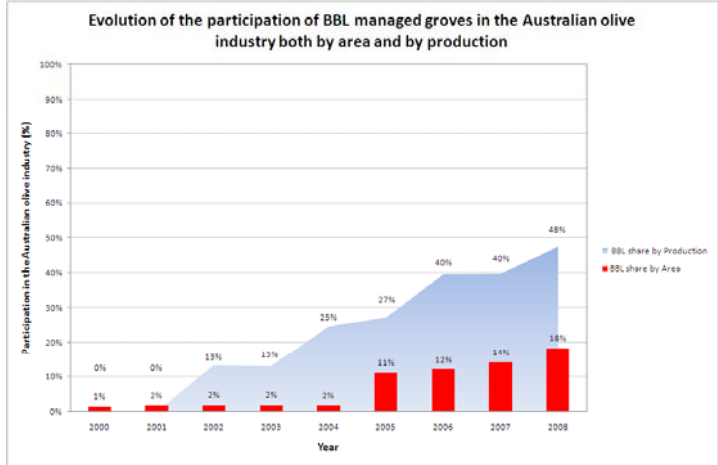
- Olive Nursery.
- Olive Specific Consulting.
- Olive Oil Laboratory.
- Olive Oil Bottling.



Groves



Production



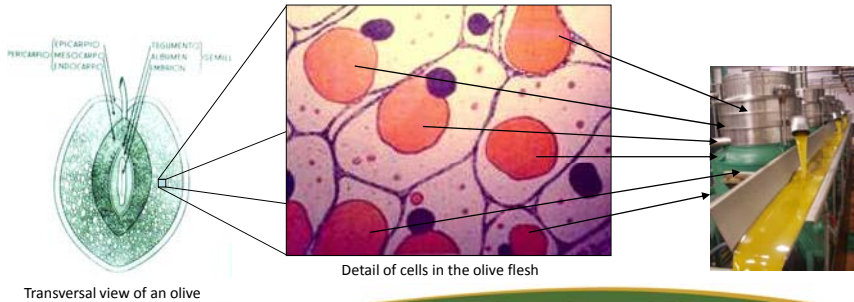
Processing & Marketing



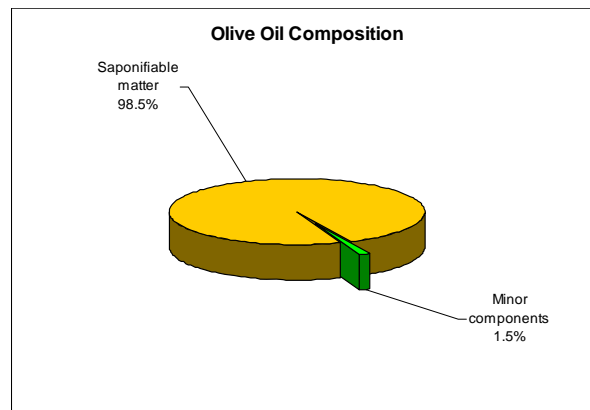


What is olive oil?

Olive oil is the oil obtained solely from the fruit of the olive tree (*Olea europaea* L.), to the exclusion of oils obtained using solvents or re-esterification processes and of any mixture with oils of other kinds.



What is olive oil?



How is olive oil made?



Washing equipment

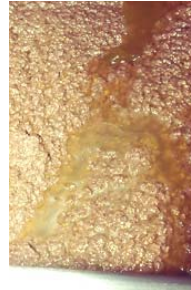


Double grid hammer crusher



Olive paste in first malaxer

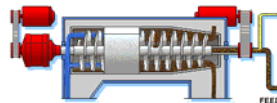
Free oil at the end of the malaxing process



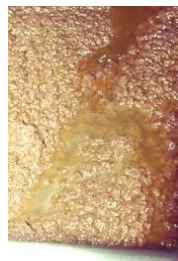
How is olive oil made?



Decanter separating olive oil from paste



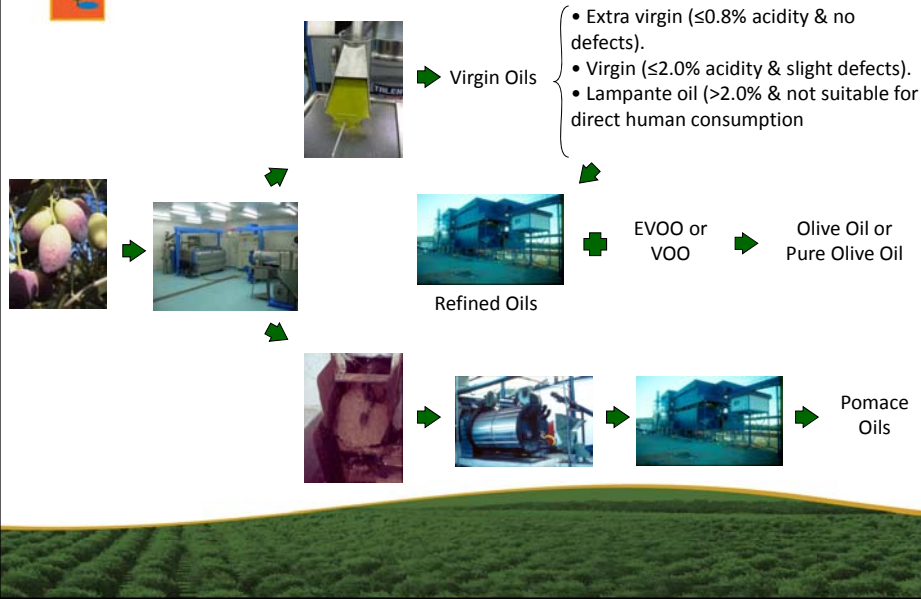
Olive oil storage



Vertical separators clarifying the oil



Are all olive oils the same?



Mill Design

Where?

- As close to production as possible.
- High enough to avoid floods and improve drainage.
- Not too close to a town.
- Far from industrial areas or areas with frequent smoke/air pollutants.
- Three-phase power availability.
- Potable water availability.



Mill Design

The building

- Fenced.
- Minimise dust in the surrounding areas.
- HACCP, ISO 9000 and ISO 14000 compliance.
- Construction materials should not transmit odours or residues to the oil.
- Waterproof materials, not absorbent, washable, resistant and easy to clean and disinfect.
- Metallic structures must be protected (Stainless steel).
- Roof and ceilings higher than 4 metres.



Mill Design

The building

- Protected lights.
- Glass policy.
- Inside to outside doors and windows.
- Clean/dirty areas recommended.
- Proper aeration to avoid excessive heat and vapours.
- Pipe identification through colour codes.
- Roof and ceilings higher than 4 metres.



Mill Design

Circulation perimeter
Receival area
Processing area
Storage area
(Laboratory)
Office
Waste management area
(Bottling room)



Mill Design

Receival area:

- Fruit receival.
- Fruit sampling.
- (Weighing).
- De-leafing.
- Washing.
- (Fruit storage).
- (Crushing).



Mill Design

Processing area:

- (Crushing).
- Malaxing.
- Solid – liquid separation.
- Liquid – liquid separation.
- (Settling).



Receival area





Processing area



Storage area



Waste management area



Laboratory



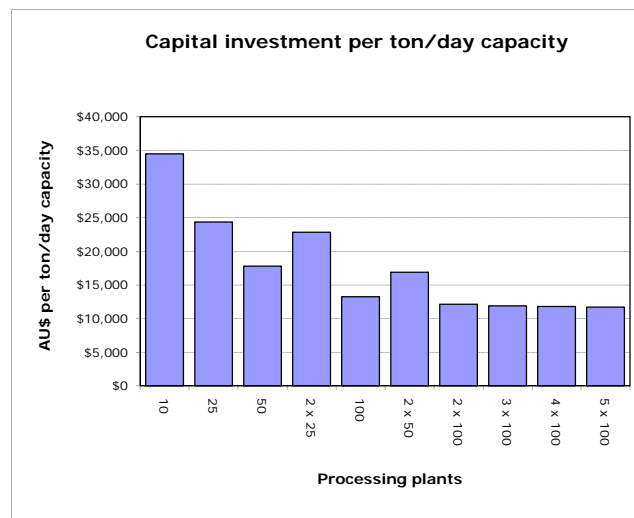
Mill Design

Capacity

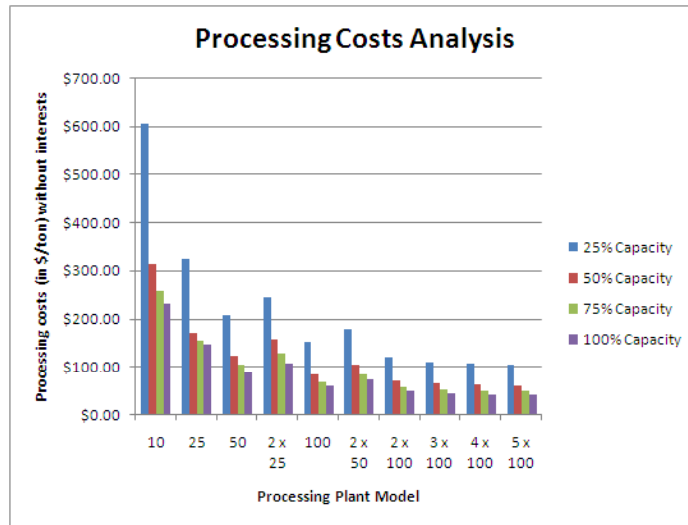
- Determined by the peak daily requirement of the grove/s.
- Usually limited by the decanter capacity.
- Difference between nominal capacity and real capacity of the decanter.
- Sizing of washing machines.
- Selection of malaxing capacity.
- Vertical separators.
- Storage capacity.



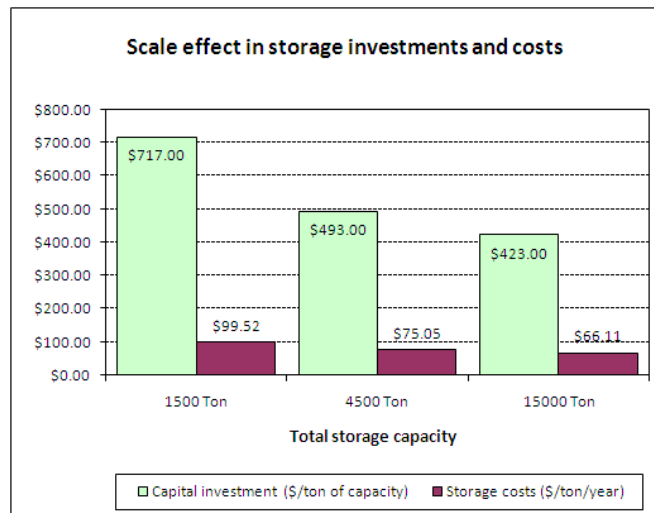
Economic analysis

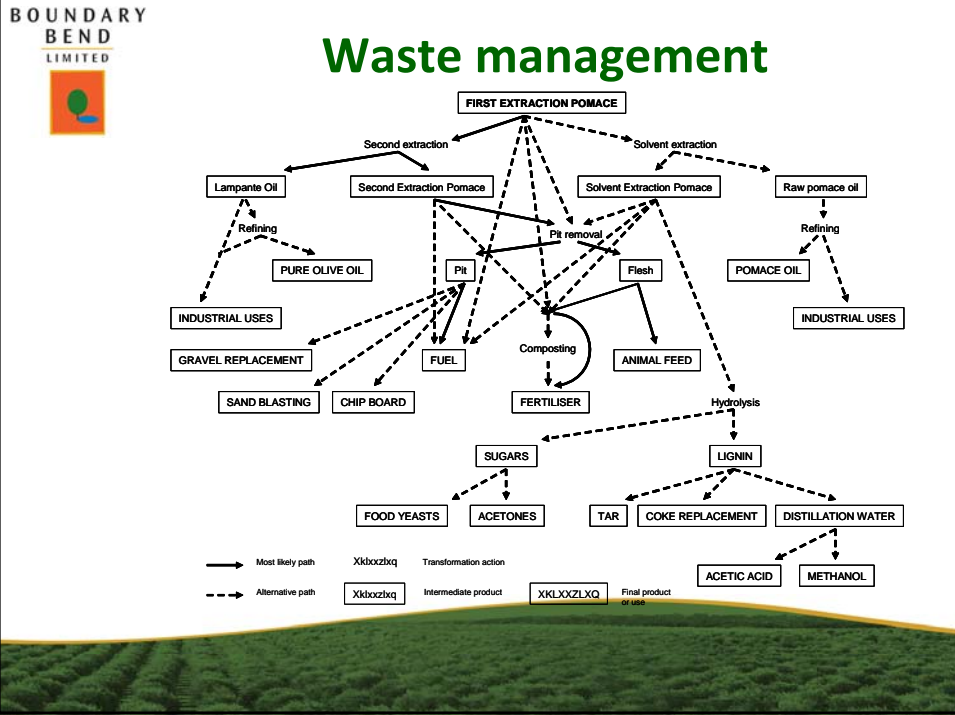


Economic analysis



Economic analysis





BOUNDARY BEND LIMITED

Waste management

Water Requirements

Measurements	Extraction system		
	Press	Centrifugation	
		3 phases	2 phases
Olive washing (l/kg)	0.04	0.09	0.05
Decanter (l/kg)	0.40	0.90	0.00
Centrifuge (l/kg)	0.20	0.20	0.15
General cleaning (l/kg)	0.02	0.05	0.05
Total (l/kg)	0.66	1.24	0.25

Waste management

Water Characteristics

Measurements	Processing system					
	3 phases			2 phases		
	Solids	Oil %	Oxygen Demand	Solids	Oil %	Oxygen Demand
Olive washing	0.51 %	0.14 %	7.9 g/kg	0.54 %	0.10 %	8.7 g/kg
Water centrifuge	6.24 %	0.96 %	73.8 g/kg	0.00 %	0.00 %	0.0 g/kg
Oil centrifuge	0.00 %	0.00 %	0.0 g/kg	1.43 %	0.57 %	11.7 g/kg
Final stream	5.67 %	0.88 %	67.2 g/kg	1.08 %	0.38 %	10.5 g/kg



Waste management

Water Recycling



Waste management

Pit Separation



Waste management

Second Extraction





Waste management

Nutritional Value

	Lucerne hay	Pasture hay	Wheat	Wet pomace flesh
Dry matter	90%	88%	90%	18.75%
Crude Protein	17%	6%	13%	2.6%
Energy (Mj/kg)	8.50	8.30	12.00	4.20
Moisture penalty	11.11	11.36	11.11	53.33
Prot. based cost	0.65	1.89	0.85	20.51
Energy based cost	1.31	1.37	0.93	12.70
Overall cost	0.98	1.63	0.89	16.61
Cost index vs wet pomace flesh	16.94	10.18	18.65	1.00



Waste management

- Fertiliser.
- Compost.
- Co-generation of electricity.

