



CARLOS MACHADO / AGRICOLAB

Focus on Olive Oil Quality

Evaluation Methods for Olive Oil Quality



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GOAL: **Quality is key. How do we assure it?**

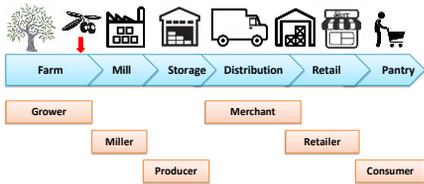


- EVOO's quality is prized by consumers willing to pay extra for it
- EVOO is delicate: quality must be assured over time along the supply chain
- How do we meet the EVOO grade?
- How can we assure quality over time?



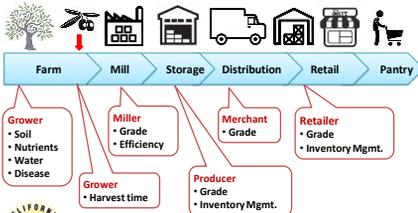
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Journey from farm to table



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Assuring quality along the journey

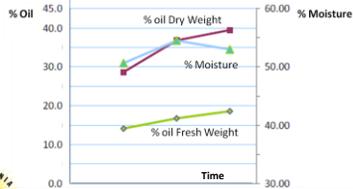


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GROWER: Harvest time

Evolution of oil content in fruit, biweekly testing



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PRODUCER: Grade & Quality

GRADE

- Extra Virgin

QUALITY

- Aroma and flavor
- Freshness
- Health benefits
- Shelf life



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TOPIC: Determining the Oil's Grade

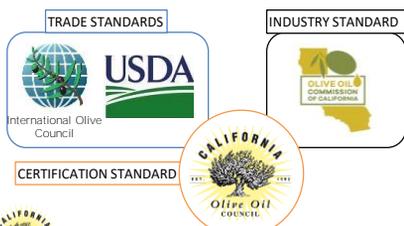


- What tests are available?
- Where do they come from?
- What do they mean?
- How can I use the results?



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Olive Oil Standards



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USDA Quality Criteria for EVOO

| | |
|--|-----------------|
| + Organoleptic Characteristics | |
| Odor and flavor | Excellent |
| Median fruity attribute | > 0 |
| Median of defects | = 0 |
| Color | Yellow to green |
| + Free Acidity | ≤ 0.8 |
| + Peroxide Value | ≤ 20 |
| + Absorbency in UV | |
| 232 nm | ≤ 2.50 |
| 270 nm | ≤ 0.22 |
| Delta K | ≤ 0.01 |
| + OPTIONAL | |
| Moisture & Volatiles | ≤ 0.2 |
| Insoluble Impurities | ≤ 0.1 |
| Trace Metals, Pesticide Residue, Heavy Metals, etc.... | |



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Specifying the EVOO Grade

| Sensory | Fruitiness No defects | Fruitiness No defects | Fruitiness No defects | Fruitiness No defects |
|----------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Free Acidity | ≤ 0.8 | ≤ 0.8 | ≤ 0.5 | ≤ 0.5 |
| Peroxide Value | ≤ 20 | ≤ 20 | ≤ 15 | ≤ 15 |
| UV – K232 | ≤ 2.5 | ≤ 2.5 | ≤ 2.5 | ≤ 2.4 |
| UV – K270 | ≤ 0.22 | ≤ 0.22 | ≤ 0.22 | ≤ 0.22 |
| UV – Delta K | ≤ 0.01 | ≤ 0.01 | ≤ 0.01 | ≤ 0.01 |
| Moisture | ≤ 0.2 | ≤ 0.2 | ≤ 0.2 | ≤ 0.2 |
| Impurities | ≤ 0.1 | ≤ 0.1 | ≤ 0.1 | ≤ 0.1 |
| DAGs | | | | ≥ 35% |
| PPPs | | | | ≤ 17% |



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What do these tests assess?

| This test ... | Assesses this ... |
|------------------------|--------------------------------|
| Free Acidity | Fruit quality |
| Peroxide Value | Primary oxidation |
| UV Absorbency: K270 | Secondary oxidation / refining |
| UV Absorbency: K232 | Rancidity, oxidation |
| UV Absorbency: Delta K | Presence of refined oil |
| Moisture & Volatiles | Water that degrades oil |
| Insoluble Impurities | Fruit residue that decomposes |



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How to use this data?

| To improve this... | Do this ... |
|-------------------------|---|
| Free Acidity | Fruit quality, Malaxation time & temp |
| Peroxide Value | Control fruit fly, Milling conditions |
| UV Absorbency: K270 | Avoid high temp, air exposure Rack or filter your oil |
| UV Absorbency: K232 | |
| Moisture & Volatiles | |
| Insoluble Impurities | Rack or filter your oil |
| Dyacylglycerols (DAGs) | Low free acidity, low temp |
| Pyropheophytin a (PPPs) | Avoid light & temperature |



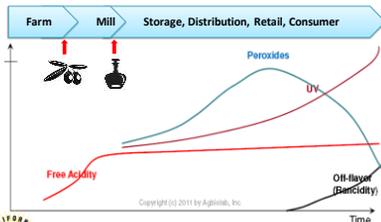
TOPIC: Assuring quality over time



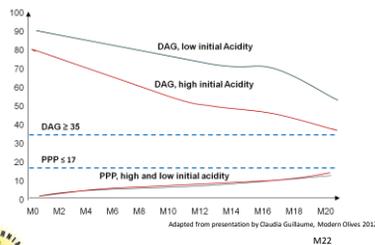
- How do quality parameters evolve over time?
- What methods measure quality changes?
- How to assure quality over time?



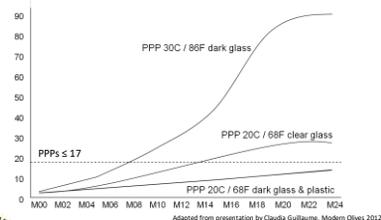
Evolution of Standard Quality Parameters



Evolution of DAGs and PPPs



Evolution of PPPs under storage conditions



RECAP: Testing helps assure quality



- EVOO quality is measurable and manageable
- Evaluation methods help make informed quality decisions
- Quality must be managed over time



