

## Assessing Quality Parameters in Citrus cultivation: Demystifying the Loss of 'Ugly Fruit' in the Horticultural Selection Process

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CACV - Cooperativas Agroalimentarias de la Comunidad Valenciana

In the standardisation and packaging phase of the fruit and vegetable sector, the selection operation represents a significant critical point **in the loss of foodstuffs**. In its factories, the selection process begins at the packaging stage.

This involves the removal from the main flow line of units that present superficial defects (known as '**ugly fruit**') despite meeting the minimum requirements of the [marketing standard](#).

The Standard sets out the external quality conditions and their tolerances and includes factors that determine the minimum requirements to be met in order to guarantee the correct state of maturity and, therefore, organoleptic quality.

In the case of **citrus fruits**, three parameters are specified:

- minimum juice content;
- minimum sugar/acid ratio;
- colouring: typical colour of the variety.

The standard stipulates minimum values to be met by the fruit in order for it to be considered marketable, with these values varying depending on the type of citrus fruit in question.

**The following table** (the output of the cooperative of Pobla de Vallbona (COPOBLA, Valencia, Spain) and the CACV), illustrates the outcomes of the regulatory quantitative analyses conducted on diverse citrus fruits, including oranges, clementines, and other mandarin varieties. **The graph** depicts the internal quality parameters that were subjected to special scrutiny.



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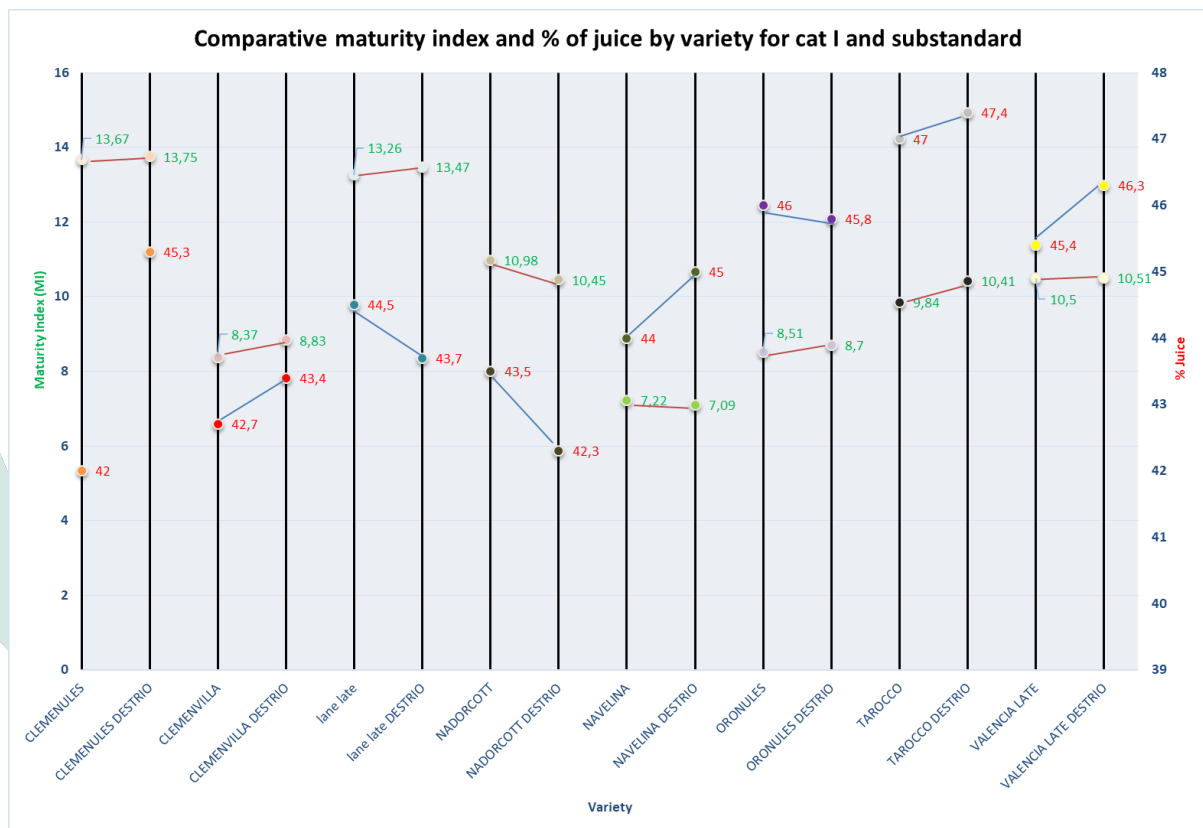
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Date	Variety	°Brix	Acidity	MI	% Juice
24/10/2023	NAVELINA	12	1,66	7,22	44,00
24/10/2023	NAVELINA DESTRIO	12,2	1,72	7,09	45,00
26/10/2023	ORONULES	12	1,41	8,51	46,00
26/10/2023	ORONULES DESTRIO	12	1,38	8,70	45,80
10/01/2024	CLEMENULES	13,4	0,98	13,67	42,00
12/01/2024	CLEMENULES DESTRIO	13,2	0,96	13,75	45,30
15/01/2024	CLEMENVILLA	14,4	1,72	8,37	42,70
29/01/2024	CLEMENVILLA DESTRIO	14,4	1,63	8,83	43,40
06/02/2024	NADORCOTT	13,4	1,22	10,98	43,50
08/02/2024	NADORCOTT DESTRIO	13,8	1,32	10,45	42,30
12/02/2024	TAROCCO	12,6	1,28	9,84	47,00
14/03/2024	TAROCCO DESTRIO	12,8	1,23	10,41	47,40
08/05/2024	LANE LATE	13	1,02	13,26	44,50
08/05/2024	LANE LATE DESTRIO	13,2	0,98	13,47	43,70
11/04/2024	VALENCIA LATE	12,6	1,2	10,50	45,40
11/04/2024	VALENCIA LATE DESTRIO	12,2	1,16	10,51	46,30

The three parameters were analysed for **Class I fruits** and compared with those obtained for fruits that have been withdrawn from the production line on the account of being deemed '**ugly fruit**'. It can be concluded that **there is no justification**, in terms of the quality parameters analysed, for the inclusion of 'ugly fruit' in the overall food loss of the fruit and vegetable plant.



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