

Estimating the South African Citrus Export Crop

By the time you read this article the Citrus Growers' Association of Southern Africa roadshows to the different citrus growing regions will be complete, the first Citrus Marketing Forum (CMF) meeting will have been held and the first estimate of citrus exports for the 2018 season will have been completed.

At the roadshows, growers get to see how their levies are spent, critical issues for the upcoming season are discussed and the regional variety focus group representatives are elected. One of the important functions that these volunteers provide, is to do the initial estimate of exports of their particular commodity for their region.

The estimates are collated prior to the CMF meeting where the exporters can review and suggest adjustments to the growers' estimates before the first official estimate is released in mid-March. These estimates are particularly important for macro planners in southern Africa and overseas; planning port capacity, warehousing, transport requirements and the like. Apart from the volumes, overseas buyers also want to know about the likely sizing, quality and timing of the exports. This is no easy task for the variety focus group representatives as their reputations are on the line and their estimating accuracy revealed at the light-hearted "Closest to the Pin" awards at the season's final CMF meeting.

Early in the season and particularly leading up to and during the massive Berlin Fruit Logistica trade fair, there are numerous queries about the estimate for the forthcoming season. It is difficult to satisfy interested parties with an "it's too early to say" answer but apart from known incidents such as hail storms or other natural disasters, a lot can change in a short time before the first significant volumes are picked. A case in point was in 2016 where, following the drought in the north and massive hail damage in the Hoedspruit region, the grapefruit and valencia growers initially projected lower volumes with small-sized fruit. This news had an impact on marketing strategies as the industry geared clients to accept smaller fruit and prioritized shipping contracts into markets that take smaller fruit. However, late season rains changed the picture quickly and significantly as the remaining fruit on the trees following the drought had less competition and sized up significantly. Some exporters then over-shipped fruit to markets that take larger fruit without adequate warning, preventing them from being able to effectively plan for the volume (promotions etc.). As a result markets like Europe and Russia came under pressure. Markets that were prepared to take the small fruit (Middle East) pushed prices down on the expectation of the volumes arriving; but once this did not materialize prices shot up. Some clients were upset as they had committed to programmes which they could not deliver.

The initial CMF estimate provides only total expected final volume of each commodity per growing region, with some additional information in terms of fruit size profile and the packing window (timing) in the narrative. Subsequent to the initial CMF meeting and estimate, the variety focus groups hold regular teleconferences once their season starts to review the expected export volume and characteristics of the crop. The minutes of these teleconferences are published on the CGA website and updates on the projected volumes are distributed in the "From the Desk of the CEO" weekly newsletter.

Questions occasionally arise as to whether the current methodology used by Citrus Growers' Association in formulating the estimate is adequate or whether a more scientific approach should be used.

In Florida bearing trees are estimated at the beginning of each forecast season using the most updated tree inventory with an allowance for expected attrition. Revisions are made to the historic series where applicable. Fruit per tree is the weighted average obtained from the annual Limb Count survey conducted during a ten-week period. Survey averages for each tree age group within an area are weighted by the estimated number of bearing trees for each age group. Fruit size measurements and drop observations are obtained from monthly surveys. The average drop percentages are from the final month used in the forecast model. Average fruit sizes are obtained from the same survey period and converted in a table to estimated number of fruit needed to fill a box. These four factors are the primary components used in the initial forecast and in following months up to the "cut-off" for each fruit type.

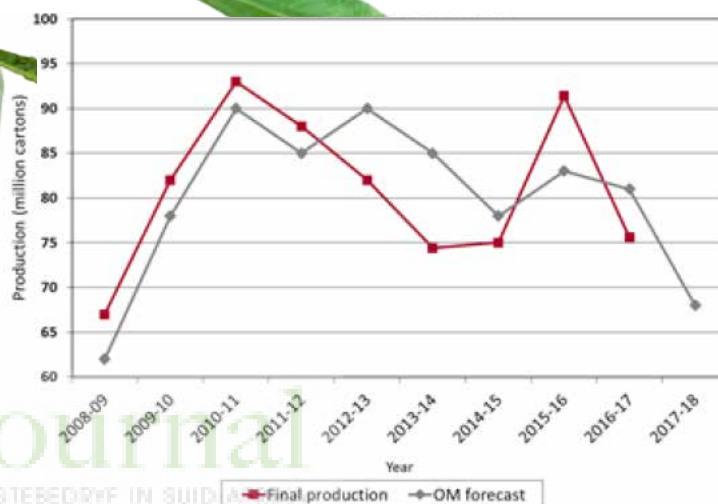
$$\text{Direct Expansion} = \frac{\text{Bearing Trees} \times \text{Fruit per Tree} \times \text{Percent Remaining at Harvest}}{\text{Pieces of Fruit per Box}}$$

For the 2017/18 California Navel Orange estimate a sample of 576 Navel orange groves was randomly selected proportional to county and variety bearing acreage, and 540 of the groves were used. Once a grove was randomly chosen, two trees were randomly selected. For each randomly selected tree, the trunk was measured along with all connected branches. A random number table was then used to select a branch, and then all connected branches from the randomly-selected branch were measured. This process was repeated until a branch was reached with no significant limbs



California Central Valley Navel Orange Production

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beyond this point. This randomly-selected branch, called the terminal branch, was then closely inspected to count all fruit connected to this branch, as well as all of the fruit along the path from the trunk to the terminal branch. A probability-based method was then applied to estimate a fruit count for the entire tree. In the last week of the survey period, fruit diameter measurements were made on the right quadrant of four trees surrounding the two trees of every third grove. These measurements were used to estimate an average fruit diameter per tree.

In terms of a scientific approach, the aim is usually to estimate the production volume of a given crop. In the case of the Southern African citrus industries' annual estimate, the focus is different in that the focus falls on what is likely to be packed for export. Thus apart from the usual factors such as climatic variables, age of trees, varieties and the like, extraneous factors such as phytosanitary rejections, quality factors and market conditions have also to be taken into account. The current method is considered by growers to be reliable and cost effective. The Southern African citrus estimate is built up by experienced players within the industry, considering a wide variety of contributing factors and avoids time-consuming and expensive research and analysis. The Variety Focus Groups' total estimate has been within 5% of the final actual volume exported seven times in the past nine years. The Grapefruit Focus Group and the Soft Citrus Focus Group were both within 1% of the final volume whilst Lemon and Valencia exports were 7% more than original estimate. The Navel Focus Group estimate was significantly out with 20% less exported than anticipated due to the impact of the hot, dry summer conditions which resulted in fruit splitting and dropping and further adverse conditions during the harvesting season.

South African Navel Orange Export

ESTIMATE VERSUS FINAL



A quick comparison of the Californian and South African navel orange estimates for the ten years 2007 to 2016 show similar results with the Californians averaging 93% accuracy and the South Africans averaging 93.7% accuracy.

See a comparison of Estimates above.

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