



Fruit thinning strategies for 2021 season

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During the spring of 2020 close to ideal fruit set conditions prevailed in the Limpopo and Mpumalanga citrus production regions. This was due to good early rainfall in these drought-stricken areas, as well as mild temperatures during the fruit set period. The result was generally a very high fruit set in all cultivars, including seedless Valencia's.

The producers, however, need to be cognisant of the potential negative impact of too high fruit set, of which a reduction in fruit size is the most problematic. Besides, a negative influence can be expected on rind condition, resulting in higher physiological disorders such as creasing and inadequate colour development. The basis of these negative responses to a too high fruit set lies in the division of finite resources (nutrients and carbohydrates) to all the fruit. A very high crop load could also result in "on/off" alternating cycles for the next season which become difficult to control. To reduce the risk of an orchard to enter an alternative bearing pattern, it is highly recommended to reduce crop load in the "on" year, i.e., the current year with a very high fruit set.

It is recommended that producers take note of the fruit set in the orchards and to address it timeously via various orchard management options.

Pruning can be used as a thinning technique in this expected heavy crop season. In addition to reducing crop load, pruning is necessary for very dense trees and especially older trees, as light levels can drop to below 30% inside the tree canopy and adversely affect fruit size and rind condition and poor spray deposition for inside fruit.

Fruit load management via thinning: Thinning changes the leaf to fruit ratio, resulting in more leaves and positively contributes to fruit growth, improving its size and quality. Crop reduction, especially in the current high set year will reduce fruit-to-fruit competition, therefore improving fruit size. This can be accomplished by chemical thinning with synthetic auxins or by hand thinning

as a follow up action. Fruit size improvement due to "over-thinning" can sometimes result in a greater financial benefit than crop reduction.

There are various chemical fruit thinning options to reduce fruit load such as 2,4-DP (Corasil P®), which is an earlier option for some cultivars, and 3,5,6-TPA (Maxim®) a late option for some cultivars. Thinning agents normally reduce fruit load by stimulating the abscission of the fruitlets smaller than the average fruitlet diameter at the time of application. It is therefore vital to determine the average fruit size at time of treatment, but also the fruit size distribution representative of the orchard, to anticipate the amount of thinning that will result from the treatment.

To determine the optimal timing of application

1. Select two to three representative trees per uniform block and measure the diameter of at least 50 fruit per tree.
2. Select a part of the tree with the highest density of fruit.
3. Measure all the fruit from small to large, but not the yellow fruit.
4. Spray immediately when the fruitlets reach the desired fruitlet diameter.

Application of 2,4-DP or 3,5,6-TPA at an early stage (smallest diameter indicated on the product label) can result in 20 - 30% thinning of fruit and improve fruit size. Early application results in higher thinning efficacy and better response. Later application (larger diameter on the product label) can improve fruit size without thinning, or only 5 - 10% thinning. The timing of application (small or large diameter) is determined by the fruit set achieved, e.g., where gibberellins were applied to improve fruit set or when mild climatic conditions followed an intense flowering.

BE CAUTIOUS when applying these products during periods of heat-waves and/or water stress as they could cause an excessive drop of small fruit, and **do not** apply chemical thinning agents with potassium (K), or when leaf K concentration is high. This might result in granulation on certain cultivars, especially soft citrus and navels.



Corasil-P and Maxim are **not registered** as a thinning agent for **lemons**, and if thinning is deemed necessary, hand thinning is suggested after the normal fruit drop period.

For more details on the two chemical thinning agents, find the link to their labels:

- Corasil P®:
<https://www.philagro.co.za/corasil-p/>
- Maxim®:
<https://www.upl-ltd.com/za/product-details/maxim>

Fertilization: Leaf N to K ratio is essential for fruit size and should be between 1.6 and 2.2. One or two foliar applications of KNO₃ at 4% in November and/or December can improve fruit size if K-levels in leaves are below 0.9% and **only if N-levels are below 2.3%**. KNO₃ foliar application should not be applied in conjunction with Corasil P®/Maxim®.

Managing creasing in high fruit set conditions

Thinning will reduce the expected risk of creasing development. However, for sensitive cultivars it is suggested that ProGibb (gibberellic acid or GA₃) is applied. ProGibb is a plant growth regulator/hormone that facilitates cell division and expansion. A ProGibb foliar spray should be applied long before any creasing is evident, 70 to 100 days after petal drop when the fruit (oranges) are 35 – 55 mm in diameter (golf ball size). It is important to apply as a full cover spray to cover the full surface of the fruit (inside fruit **and** inside surface of each fruit). Allow for a minimum of two weeks after an oil spray, before applying ProGibb, as oil covers the surface of the fruit and reduces uptake of ProGibb. An oil spray can be applied 5 days after a ProGibb application. (<https://www.philagro.co.za/progibb-40/>)

The recommended concentrations

- Navels / Rough lemon rootstock: 10 ppm (2.5 g ProGibb 40% per 100 L water) + non-ionic surfactant.
- Navels / Troyer/Carrizo: 20 ppm (5.0 g ProGibb 40% per 100 L water) + non-ionic surfactant.

- Valencia / all rootstocks: 20 ppm (5.0 g ProGibb 40% per 100 L water) + non-ionic surfactant.

A ProGibb foliar spray later than the recommended timing **may cause a delay in rind colour development.**

Adequate Potassium (K) >0.9 % should be maintained by application of KCl or K₂SO₄ to the soil, or with KNO₃ foliar sprays. Both soil and foliar K are applied in the spring to early summer period.

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Vruguitdunning strategie vir die 2021 seisoen

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In die Limpopo- en Mpumalanga-sitrusproduksiestreke was daar feitlik ideale toestande vir vrugset gedurende die lente van 2020. Dit was as gevolg van goeie vroeë reënval in hierdie droogtegeteisterde gebiede, sowel as gematigde temperature gedurende die vrugsetperiode. Die resultaat was oor die algemeen baie hoë vrugset in die meeste kultivars, soos die saadlose Valencia's.

Die produsente moet egter kennis neem van die potensiële negatiewe impak van 'n te hoë vrugset op vruggrootheid. 'n Verder negatiewe impak kan ook op skilkwiteit verwag word, wat kan lei tot hoër voorkoms van fisiologiese skildefekte, soos kraaskil en onvoldoende kleurontwikkeling. Onderliggend tot hierdie negatiewe reaksies van 'n te hoë vrugset lê die verdeling van 'n beperkte hoeveelheid hulpbronne (voedingstowwe en koolhidrate) tussen vrugte. 'n Baie hoë vruglading kan ook tot 'n "aan / af" alternerende drag patroon aanleiding gee vir die daaropvolgende seisoene, wat moeilik reggestel word. Om die risiko van alternerende drag in die boord te verlaag, word dus sterk aanbeveel om die vruglading in die 'aan' jaar te verminder, dit wil sê die huidige jaar waar daar tans 'n baie hoë vrugset voorkom.

Dit word dus sterk aanbeveel dat produsente kennis neem van die vrugset in al die boorde en dit betyds aanspreek deur een of meer van die bestuursopsies.

Snoei kan in hierdie hoë-set seisoen as 'n uitdunningstegniek gebruik word. Benewens die vermindering van die vruglading, is snoeiwerk ook nodig vir baie digte en veral ouer bome, aangesien die ligvlakke in die binnekant van die boom tot onder 30% kan daal. Dit sal die vruggrootheid en skiltoestand nadelig beïnvloed, asook die effektiewe spuitaanwending van produkte binne-in die boom belemmer.

Uitdunning: Deur die vrugte uit te dun verander die verhouding tussen blare en vrugte, wat daartoe

lei dat meer blare beskikbaar is om 'n bydra te maak tot die groei van 'n vrug, wat die grootte en kwaliteit dus verbeter. Uitdunning, veral in die huidige hoë vrugset jaar, sal die vrug-tot-vrug kompetisie verminder en dus die vruggrootheid verbeter. Uitdunning kan bewerkstellig word deur gebruik te maak van sintetiese oksiene en/of met hand-uitdunning as opvolgaksie. Die verbetering van die vruggrootheid as gevolg van "ooruitdunning" kan soms 'n groter finansiële voordeel inhou as die verlies aan uitgedunde vrugte.

In terme van chemiese vruguitdunning, bied 2,4-DP (Corasil P®) 'n vroeë opsie vir sommige kultivars en 3,5,6-TPA (Maxim®) in die later tydgleuf, om vruglading effektief te verminder. Toediening van chemiese uitdunningsmiddels verminder vruglading deur die afsnoering van vruggies wat kleiner is as die gemiddelde vrugdeursnee tydens toediening te stimuleer. Die vasstelling van die gemiddelde vruggrootheid asook die tellingverspreiding in die boord op die tyd van behandeling is krities, om die verwagte hoeveelheid uitdunning te bepaal.

Stappe om die optimale tyd van bespuitings te bepaal

1. Kies twee tot drie verteenwoordigende bome per blok en meet die deursnee van minstens 50 vrugte per boom.
2. Gebruik 'n deel van die boom met die hoogste digtheid van vrugte en meet al die vrugte van klein tot groot, maar nie die geel vrugte nie (sal self val).
3. Dien dadelik die bespuiting toe sodra die vruggies die gewenste vrugdeursnee bereik soos op die etiket.

Toediening van 2,4-DP of 3,5,6-TPA op 'n vroeë stadium (kleinste deursnee op produkietiket) kan tot 20-30% vruguitdunning lei en vruggrootheid verbeter. Later toediening teen groter deursnee as op produkietiket, kan vruggrootheid egter verbeter sonder uitdunning, of slegs 5-10% uitdunning tot gevolg hê. Die tydsberekening van toediening (op die klein of groot deursnit) word bepaal deur die vrugset wat bereik is, bv. waar gibberelliensuur toegedien was om vrugset te verbeter, of wanneer



intense blom opgevolg is deur matige klimaatstoestande.

Tydens bespuitings moet daar omsigtigheid aan die dag gelê word tydens periodes van hittegolwe en/of waterstres, aangesien dit kan lei tot oormatige uitdunning van klein vrugte. Hierdie uitdunmiddels moet ook nie gesamentlik met kalium (K) gebruik word nie of as die K vlakke in die blaar baie hoog is nie. Dit mag granulasie in sekere kultivars van sagtesitrus en nawels tot gevolg hê.

Corasil-P en Maxim is nie geregistreer as 'n uitdunmiddel vir suurlemoene nie, en as dit nodig is om suurlemoene uit te dun, word handuitdunning voorgestel na die vrugval periode.

Vir meer inligting oor die twee chemiese uitdunmiddels, volg die skakel na hul etikette:

- Corasil P®:
<https://www.philagro.co.za/corasil-p/>
- Maxim®:
<https://www.upl-ltd.com/za/product-details/maxim>

Bemesting: korrekte blaar N:K-verhouding is noodsaaklik vir vruggrootte en moet tussen 1,6 en 2,2 wees. Een of twee blaarbespuitings van KNO₃ teen 4% in November en / of Desember kan die vruggrootte verbeter as die K-vlakke in blare onder 0,9% is en slegs as die N-vlakke onder 2,3% is. KNO₃ blaarbespuiting moet nie saam met Corasil P® / Maxim® toegedien word nie.

Die bestuur van kraakskil tydens hoë vrugset toestande

Uitdunning verminder die kans om kraakskil te ontwikkel en vir sensitiewe kultivars word egter ook voorgestel dat ProGibb® (gibberelliensuur of GA₃), 'n plantgroeireguleerder/hormoon wat selverdeling en selvergrooting bevorder, toegedien word. Die ProGibb-blaarbespuiting moet toegedien word lank voordat enige kraakskil sigbaar raak, 70 tot 100 dae na blomblaarval as die vrugte (lemoene) 35 – 55 mm in deursnee is (gholfbalgrootte). Dit is van belang dat 'n voldek bespuiting gedoen word om die totale vrugoppervlakte te bedek van binne en

buite vrugte, asook om seker te maak die skadukant van elke vrug word benat. Laat 'n minimum van twee weke toe na 'n oliebespuiting voor ProGibb toediening, omrede die olie die oppervlak bedek en opname benadeel. 'n Olie bespuiting kan egter 5 dae na ProGibb gedoen word. <https://www.philagro.co.za/progibb-40/>.

Let daarop dat 'n ProGibb blaarbespuiting later as die aanbevole tydsberekening 'n vertraging in die ontwikkeling van skilkleur kan veroorsaak. Voldoende kalium (K) > 0,9% moet gehandhaaf word deur KCl of K₂SO₄ op die grond of met KNO₃ blaarbespuitings toe te dien. Grond en blaar K word in die lente tot die vroeë somerperiode toegedien.

Die aanbevole konsentrasies

- Nawel x growweskijsuurlemoen onderstam: 10 dpm (2,5 g ProGibb 40% per 100 L water) + nie-ioniese benatter.
- Nawel x Troyer / Carrizo: 20 dpm (5,0 g ProGibb 40% per 100 L water) + nie-ioniese benatter.
- Valencia x alle onderstamme: 20 dpm (5,0 g ProGibb 40% per 100 L water) + nie-ioniese benatter.

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