

## Updated Citrus Black Spot Spray Programmes 2017 – 2018

by

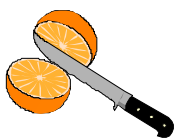
Charl Kotze, Providence Moyo and  
Paul Fourie (CRI)

Citrus Black Spot (CBS) chemical control programmes are influenced by various factors, such as regional and seasonal climate, CBS history, orchard age and condition, citrus type, and alternative control methods, such as inoculum management programmes. Hence, it is not justified to recommend a standard programme. However, given the necessity to accomplish high levels of control for export to CBS sensitive markets, the following guidelines were discussed during the CRI Pest & Disease Management Workshops held during August and September 2017 at five different venues in South Africa. The revised guidelines follow in the next section:

- A. Start of a chemical control programme: Fruit protection is recommended from before (if first spray is a contact fungicide only) or within a 3 - 28 day period after the first sufficient spring rains, depending on the curative action of the systemic fungicide used (See point E). Sufficient rainfall is rain that would have resulted in >12 hours fruit or leaf wetness after 80% petal fall. Likewise, the start of the spray programme with a curative action fungicide can also be postponed until the first monitored ascospore release, or a curative fungicide may be used when a follow-up spray is applied after the registered protection period of the previous spray round.
- B. Whilst infection cannot occur in dry periods (in absence of fruit wetness periods longer than 12 hours), uninterrupted protection is recommended until the end of the fruit susceptibility period (see point C), unless it can be demonstrated that no infection period (rainfall events or inoculum release) occurred during periods between the end of the recommended protection period of the previous spray and the application (or extent of curative action) of the follow-up spray. The use of ascospore release and infection forecasting services can assist in this regard. Growers are advised to use CRI-PhytRisk ([www.cri-phytrisk.co.za](http://www.cri-phytrisk.co.za)) as decision support tool, particularly when deciding when use of a product with curative action is required. Historical predictions in CRI-PhytRisk can also be

used to ascertain the risk posed by unprotected periods.

- C. Duration of fruit susceptibility and the recommended period of fruit protection are as follows:
- Navels: protection until end-January.
  - Valencias: protection until end-February; Limpopo until end-January.
  - Lemons: protection until end-January (Limpopo valley – Area of Low Pest Prevalence), end-February (northern regions), end-March (southern regions – Eastern Cape Province)
  - Soft citrus:
    - Early mandarins (Satsumas + Clementines): protection until mid-January
    - Novas: protection until end-January for CBS; longer protection needed for *Alternaria* brown spot.
    - Late mandarins: protection until end-February.
  - Grapefruit: protection until end-January.
- D. **All fungicides used must be registered for CBS control under Act 36 of 1947, and must be used within the recommendations specified on the label.**
- E. The only fungicides with curative control ability are:
- Benzimidazoles (benomyl or carbendazim, various companies) applied at the higher dose rate (50 g /100 L for benomyl and 55 mL / 100 L for carbendazim) and at full cover application; curative ability (time) not specified on label, but timing of registered use together with research and development trials indicate a curative action of 4 weeks.
  - Whilst research indicated a 14-day curative action for strobilurins, Cabrio™ (pyraclostrobin, BASF) is the only one with a curative ability of 3 days indicated on the label.
- F. CBS control in organic citrus: a spray programme with copper fungicides during the fruit susceptibility period, and the CBS control programme must include inoculum management; e.g. the removal of fallen leaves.
- G. As a basic principle, continue using the recommended spray programme with which you achieved successful results in previous seasons, and make improvements (stricter control measures,



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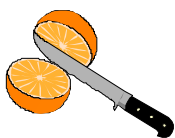
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- including inoculum management strategies, or removal of neglected trees/orchards) whenever possible or required.
- H. Fungicide classes that can be used in the CBS spray programmes, with some specific notes:
- a. Dithiocarbamates
    - i. Mancozeb – Note MRL restrictions for certain markets
      1. Spray intervals when applied on its own are **NOT** as the previously prescribed 28 days, but 25 days.
      2. When applied in a programme with strobilurins, if the first application was mancozeb, the first strobilurin tank mixture should be within 21-24 days.
    - ii. Maneb/zinc oxide – Note MRL restrictions for certain markets
  - b. Copper based products (copper oxychloride, cuprous oxide, or copper hydroxide)
    1. Copper sprays used twice within two successive months can result in fruit stippling. Fruit fly protein baits and copper can also give stippling.
    2. Stippling can be reduced by applying half-rates of copper in tank mixtures with Didecyl Dimethyl Ammonium Chloride (DDAC) (Note label recommendations and MRL restrictions for certain markets)
  - c. Benzimidazoles (benomyl, carbendazim)
    - i. Curative action at higher rates (50 g / 100 L for benomyl and 55 mL / 100 L for carbendazim) and at full cover sprays
    - ii. High-risk for resistance development; use in mixture with chemically unrelated fungicide. Try to avoid more than one application per season.
    - iii. Resistance should be monitored regularly.
    - iv. Note MRL restrictions for certain markets, particularly the USA for which it cannot be sprayed later than 90% petal fall.
    - v. For lemons, also note the MRL restrictions for processing fruit.
  - d. Strobilurins
    - i. Cabrio has a registered 3-day curative action, but research indicated a 14-day curative action for strobilurins.
    - ii. Recent research indicates that the risk for fungicide resistance development is low; however, use in a mixture with a chemically unrelated fungicide (benzimidazole, copper, mancozeb or dipotassium phosphate) as is registered.
  - e. Dipotassium phosphate
    - i. Can be used as an alternating spray programme with mancozeb or copper formulations.
    - ii. The registered spray interval is 28 days.
    - iii. Please note that the product's compatibility with other actives in tank mixtures has not been tested except for certain strobilurins.
- I. Protection periods: curative and protective actions of different chemical groups are summarised below. These protection periods are the optimal protection periods. Fungicidal action does not immediately stop outside these periods, but the curative and protective actions will decline with time.
- Dithiocarbamates (Mancozeb): 25 day protection. No curative action.  
(Maneb/Zinc-oxide): 28 day protection. No curative action  
Copper: 5 week protection. No curative action.  
Strobilurins: 6 week protection. Cabrio has a 3 day curative action  
Benzimidazoles: 6 week protection. Four week curative action, dependent on application dosage (higher dosage) and thoroughness of application (full cover sprays needed). When applied in a tank mixture with azoxystrobin and mineral oil only two applications are needed during the season, middle November and again 8 weeks later in middle January  
Dipotassium phosphate: 28 day spray interval. No curative action.
- J. The programmes given below are examples of what was discussed with the citrus producers who attended the CRI workshops in August and September 2017. There can be deviations from these programmes; e.g. if a grower who decided to use Option 1 runs into spraying problems because of rainfall, it will be possible for him to follow up with a

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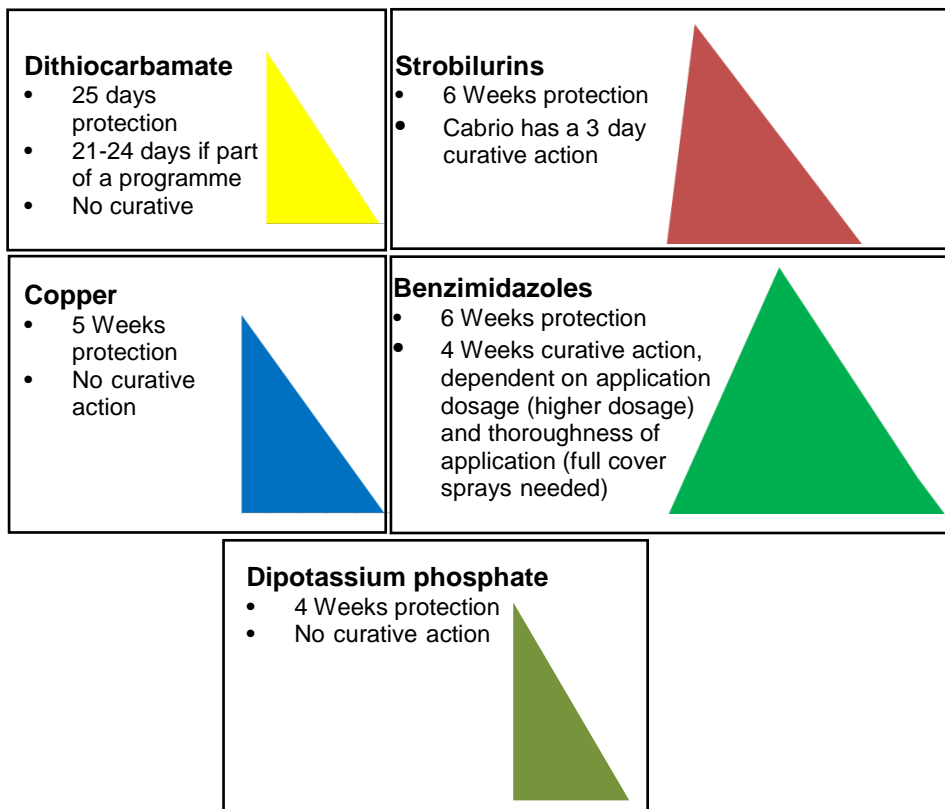
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fungicide with a curative action and still be following an acceptable spray programme, taking into account the protection and

curative action of the different products mentioned in point I.

**Examples of typical spray programmes for different regions; deviations from these examples can provide adequate (or improved) control as long as it is compliant with the minimum recommendations stated above. Please note that the intervals are approximate and not exact; see points B, C and J above. Extension of spray protection beyond the indicated end of the fruit susceptibility is optional.**



**1. Letsitele, Hoedspruit, Burgersfort, Groblersdal, Nelspruit, Swaziland & KZN**

**a) Navels, Mid-seasons, Valencias, lemons, mandarins**

Guidelines for spray applications					
	Start of programme	25 days later	25 days later	25 days later	25 days later
1*	Mancozeb (MZ)	Mancozeb	Mancozeb	Mancozeb	Mancozeb**
	Start of programme	21-24 days later	6 weeks later	6 weeks later	6 weeks later
2	Mancozeb	Benz/Strob+MZ+ oil	Benz/Strob+MZ+oil	Mancozeb	
	Just after early rain	6 weeks later	6 weeks later	6 weeks later	6 weeks later
3	Benz+MZ+oil	Strob+MZ+oil	Strob+MZ+oil	Mancozeb	

\*Programme 1 can also be alternated with copper or dipotassium phosphate  
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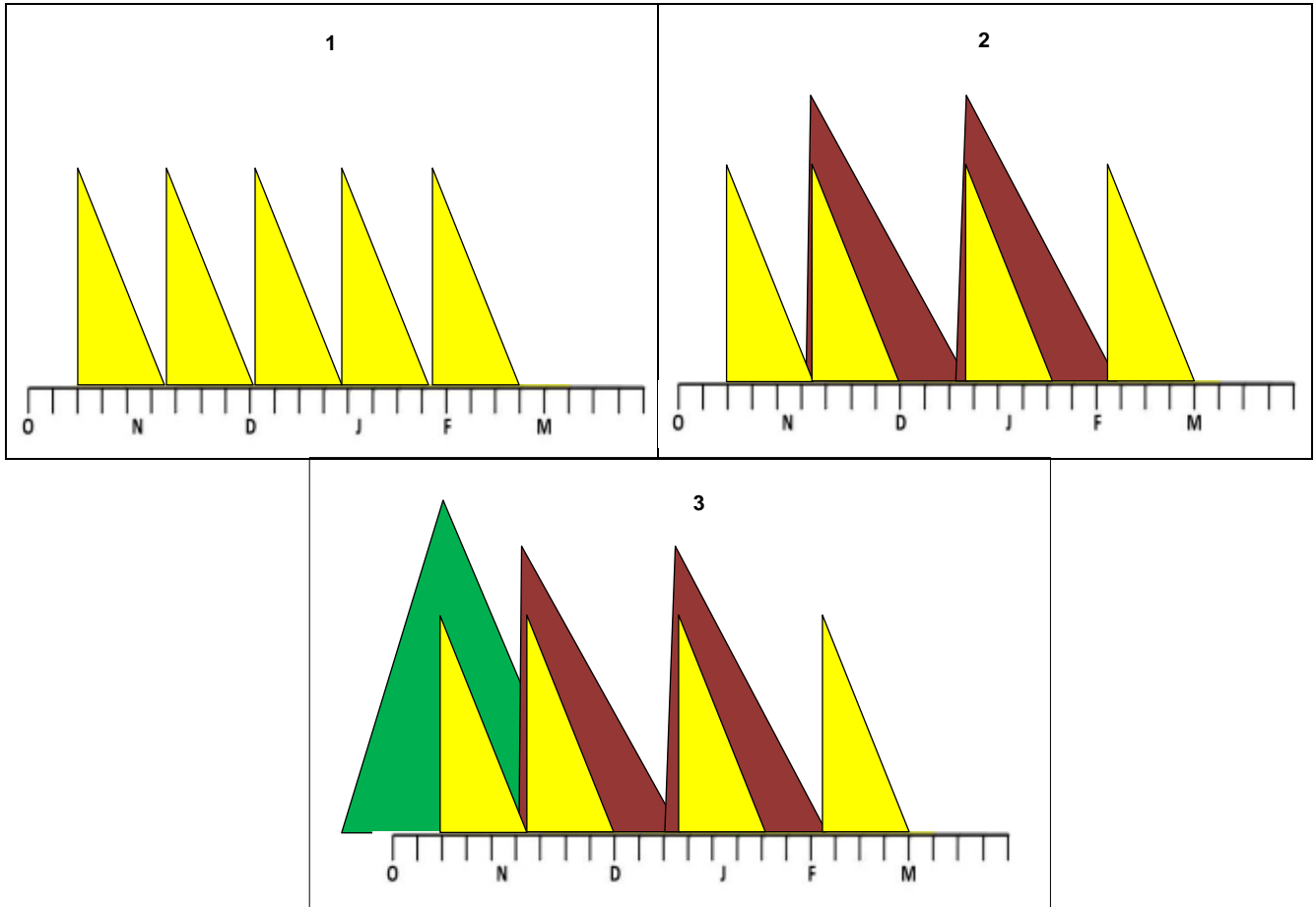
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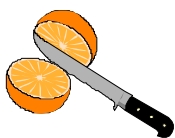
**\*\*Can also be applied in a tank mixture at half the dosage with DDAC, but no later than end December (160 day withholding period for DDAC; use less than 8L/ha DDAC)**



**b) Grapefruit specific examples for Letsitele, Hoedspruit, Onderberg, Swaziland & KZN**

	Start of spray programme	25 days later	25 days later	25 days later	25 days later
4*	Mancozeb	Mancozeb	Mancozeb	Mancozeb	Mancozeb
	Start of spray programme	21-24 days later	4 (-6) weeks later	4 (-6) weeks later	
5	Mancozeb	Strob + MZ + oil	Strob+MZ+oil	Mancozeb	

\*Programme 4 can also be alternated with copper or dipotassium phosphate

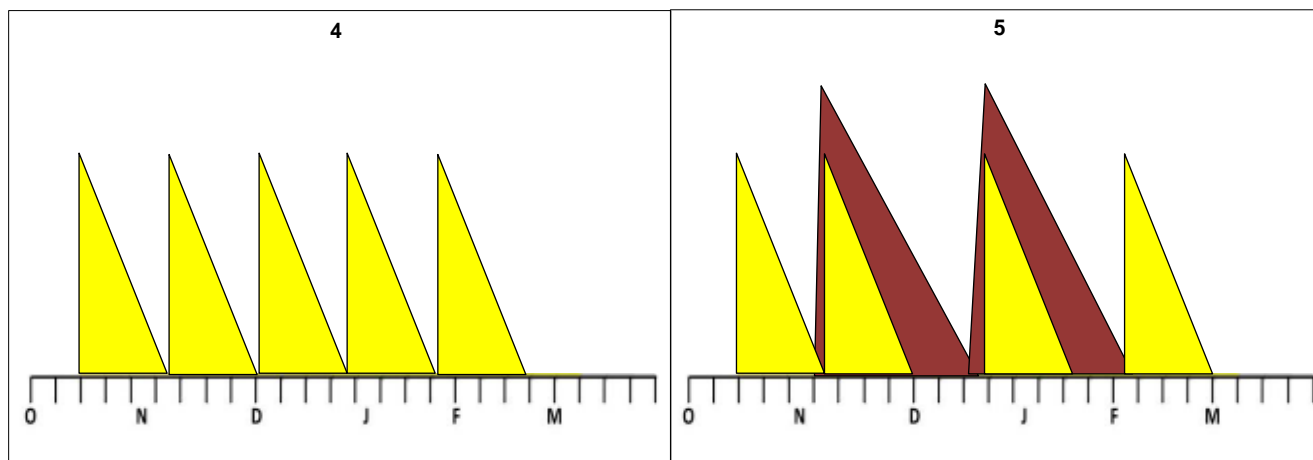


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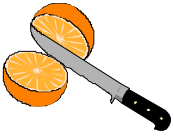


c) Canada & USA (Note: For Canada no mancozeb later than end December; for USA no mancozeb or benzimidazoles later than 90% petal fall)

	80 - 100% petal fall	4 weeks later	6 weeks later	6 weeks later
6	Copper	Strob+copper+oil	Strob+copper+oil	Copper
7	Mancozeb	Strob+copper+oil	Strob+copper+oil	Copper
8	Mancozeb	Benz+MZ+oil	Benz+copper+oil	Copper
9	Mancozeb	Benz+copper+oil	Benz+copper+oil	Copper
	Mid October	5 weeks later	5 weeks later	5 weeks later
10*	Copper	Copper	Copper	Copper**

\*Programme 10 can also be alternated with dipotassium phosphate

\*\*Can also be applied in a tank mixture at half the dosage with DDAC with no withholding period when exporting to the USA (use less than 8L/ha DDAC)

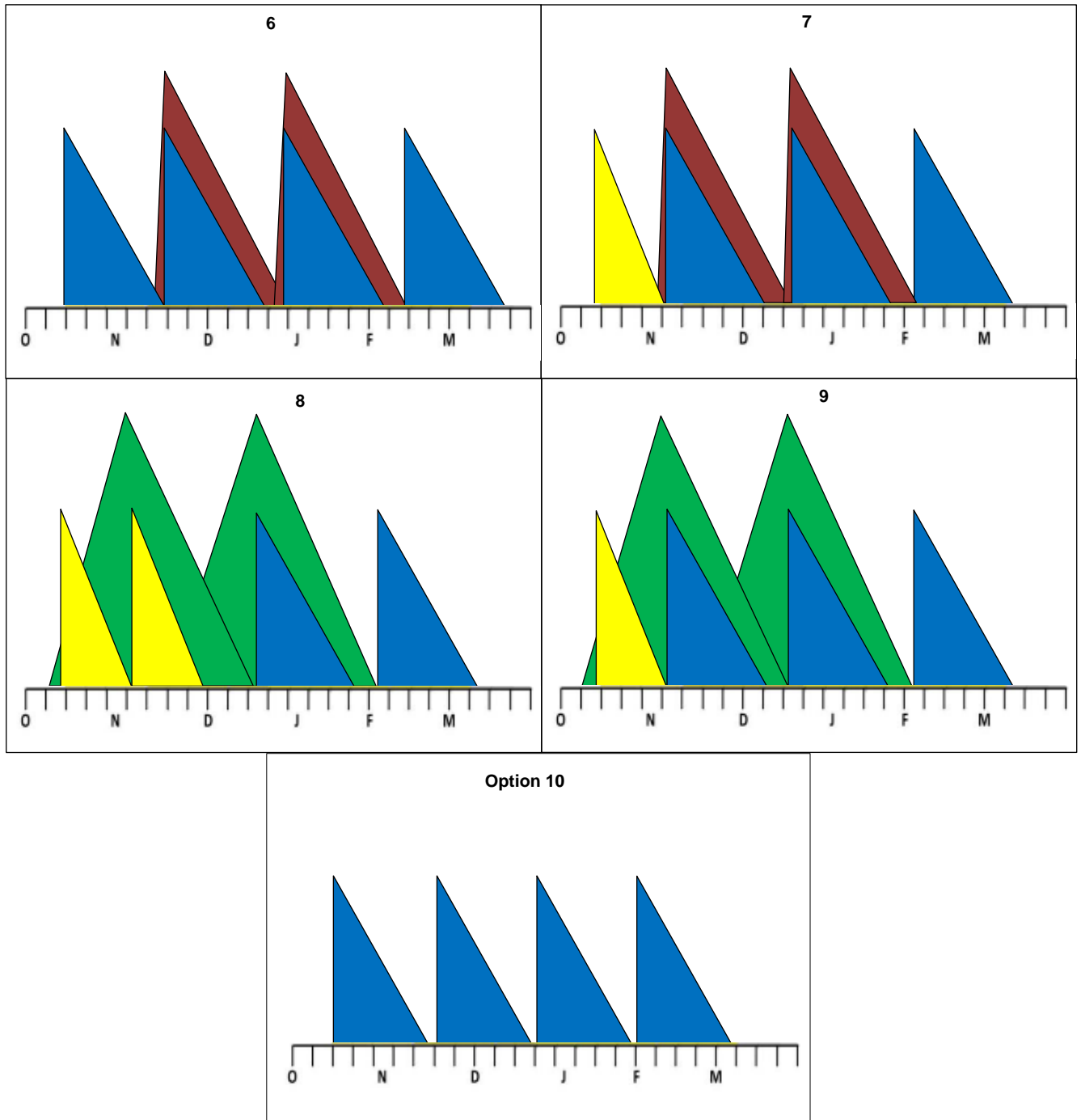


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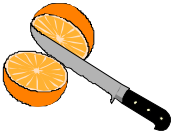


Certain copper formulations are registered to be sprayed in tank mixtures with strobilurins. It remains therefore important to consult the label of the product being sprayed in conjunction with a certain copper formulation.

## 2. Limpopo River valley, Tshipise/ Weipe

All cultivars (Note: For Canada no mancozeb later than end December; for USA no mancozeb or benzimidazoles later than 90% petal fall)

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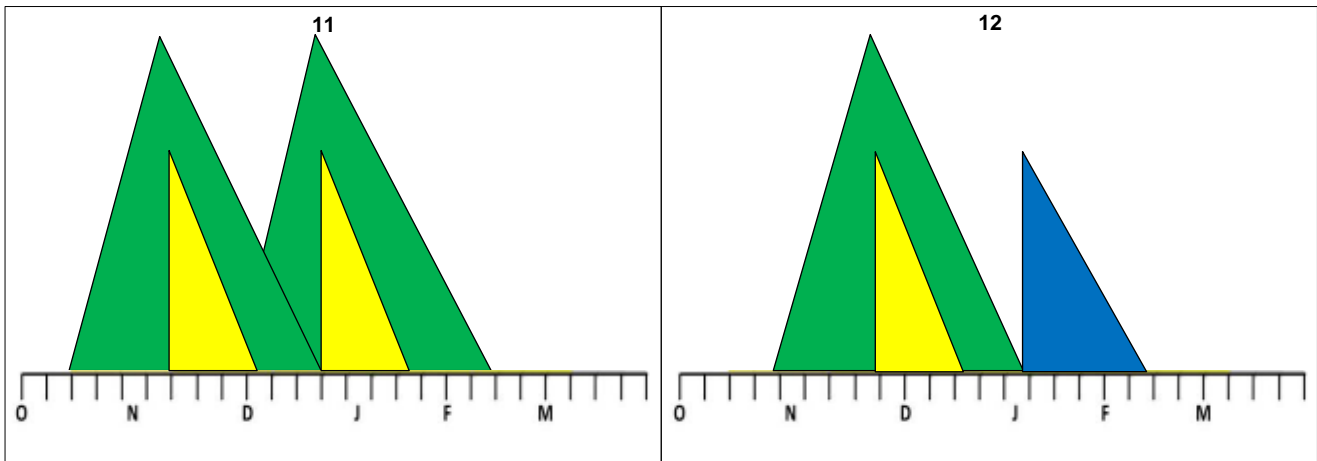
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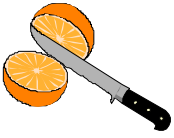
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	80 – 100% petal fall	After first summer rainfall which is usually in November	6 weeks later
11		Benz+MZ+oil	Benz+MZ+oil
12		Benz+MZ+oil	Copper
13		Strob +Copper+Oil	Copper
14	Mancozeb	Strob+Copper+Oil	Copper
15	Copper	Strob+Copper+Oil	Copper
		<b>Mid Dec</b>	
16		Benz+MZ+oil	



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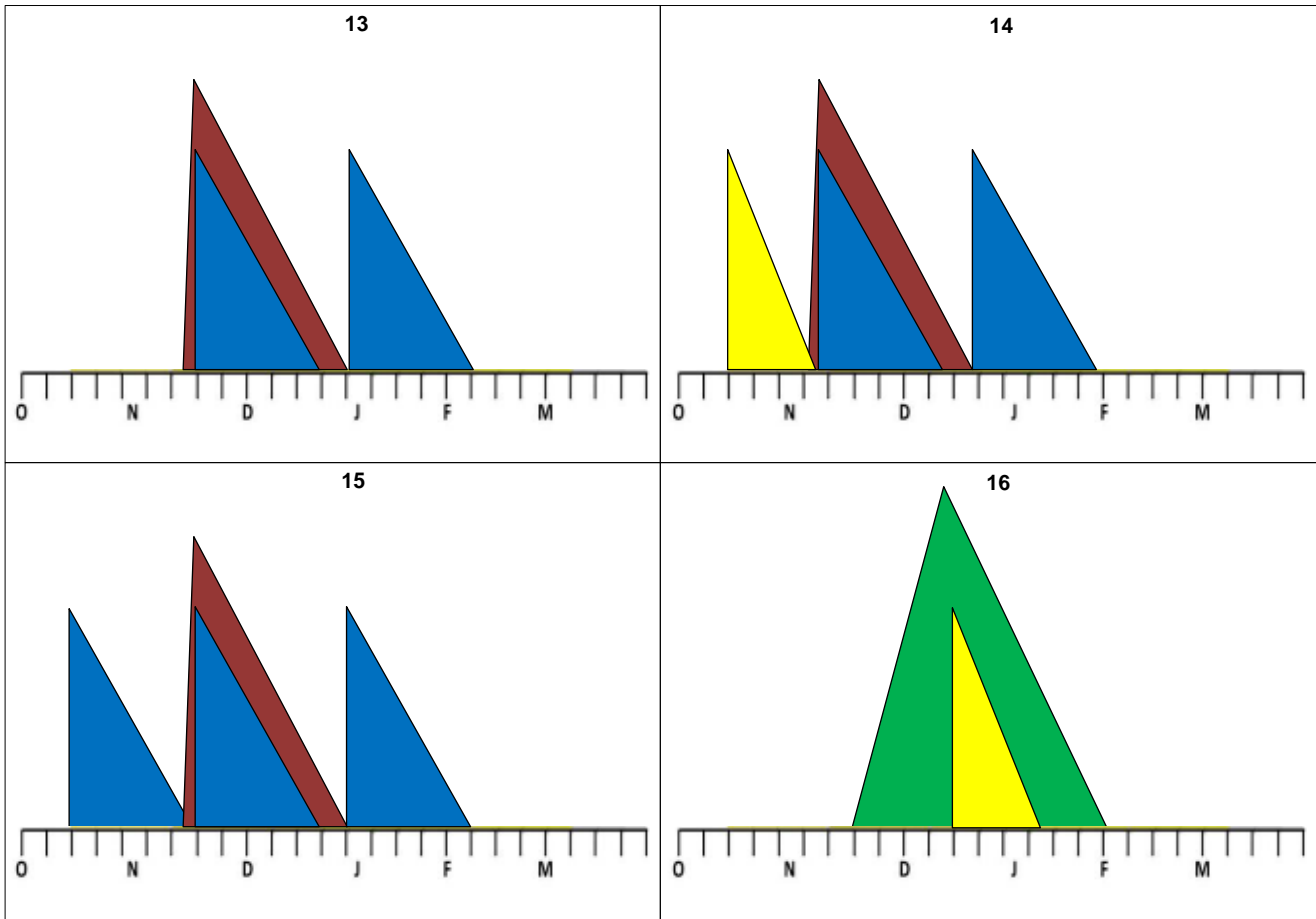


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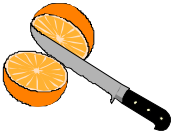
### 3. Eastern Cape Province

#### a) Clementines, Satsumas and Novas

		Early Nov	Early December	Early January
<b>Satsumas + Clementines</b>				
17		Mancozeb	Benz+MZ+oil	
<b>Novas</b>				
18	Mancozeb	Strob+MZ+oil	Strob*+MZ+oil	Mancozeb

**\*Make sure that the PHI for strobilurin is within MRL limits at harvest. Satsumas & Clementines are poor hosts of CBS.**



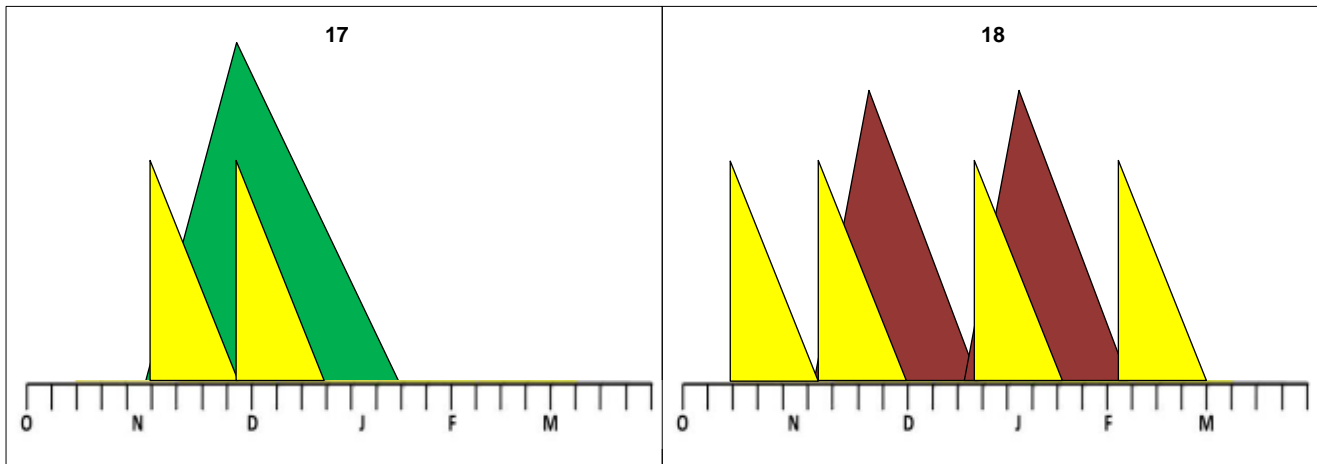


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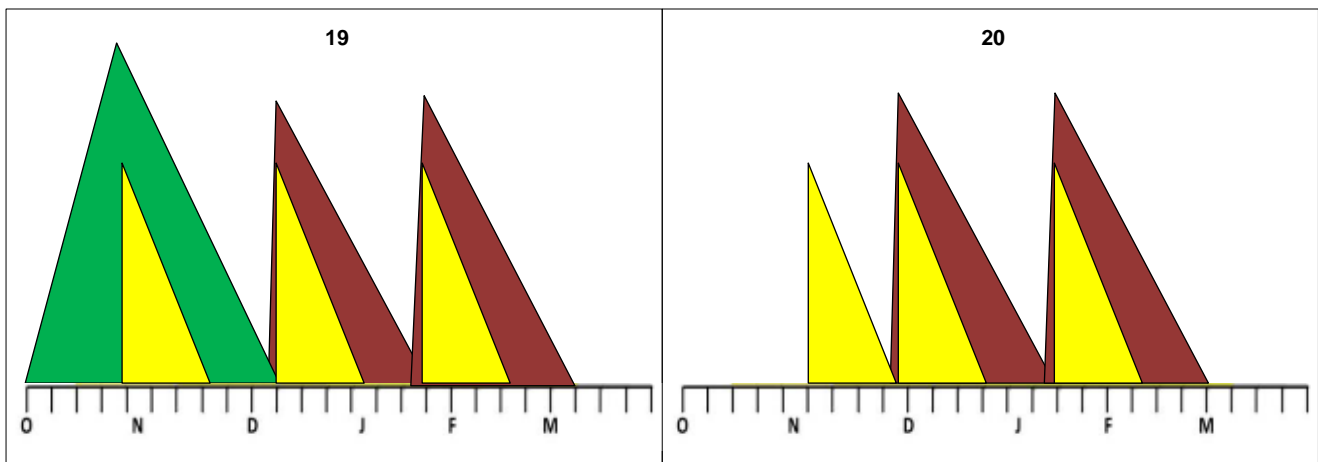


## b) Navels

	End October	Beginning December	Early to Mid-January
19	Benz+MZ+oil	Strob+MZ+oil	Strob*+MZ**+oil
20	Mancozeb	Strob+MZ+oil	Strob+MZ+oil

\*Make sure that the PHI for strobilurin is within MRL limits at harvest

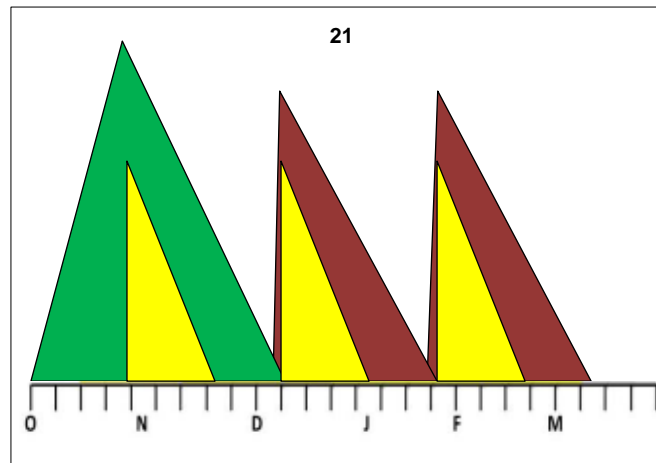
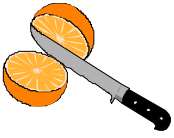
\*\*Note: For Canada replace mancozeb with copper or dipotassium phosphate after December. For the USA replace mancozeb with copper or dipotassium phosphate and benzimidazoles with strobilurins after 90% petal fall



## c) Late Mandarins (for CBS) and Valencias

	End October	6 weeks later	6 weeks later
21	Benz+MZ+oil	Strob+MZ+oil	Strob+MZ+oil

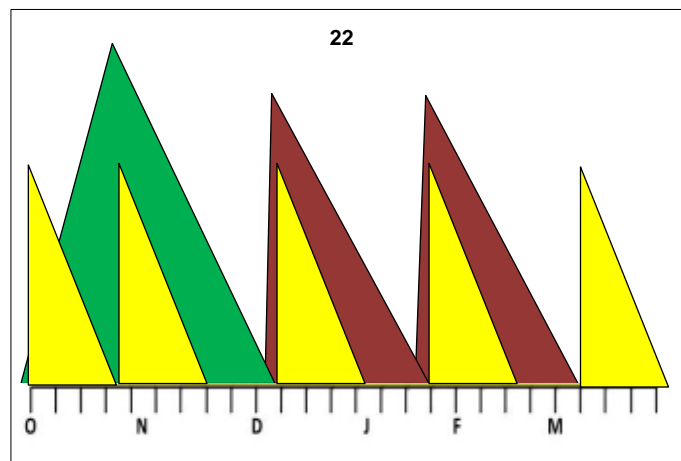
Note: For Canada replace mancozeb with copper or dipotassium phosphate after December. For the USA replace mancozeb with copper after 90% petal fall



**d) Lemons**

	Start of spray programme Beginning October	21-24 days later	6 weeks later	6 weeks later	6 weeks later
22	Mancozeb	Benz+MZ+ oil	Strob+MZ+oil	Strob+MZ+oil	Mancozeb*

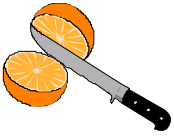
\*Note: For Canada replace mancozeb with copper or dipotassium phosphate after December. For the USA replace mancozeb with copper or dipotassium phosphate and benzimidazoles with strobilurins after 90% petal fall



**e) Lemons (Fruit processing)\***

	Start of spray programme Beginning October	5 weeks	6 weeks later	6 weeks later	6 weeks later
23	Copper	Strob+copper+oil	Strob+copper+oil	Copper	Copper*
		5 weeks	5 weeks	5 weeks	5 weeks
24**	Copper	Copper	Copper	Copper	Copper

\*Note: When processing fruit for juice, only strobilurins and copper or dipotassium phosphate products allowed. Processing fruit for citrus rind oil, only copper products allowed.



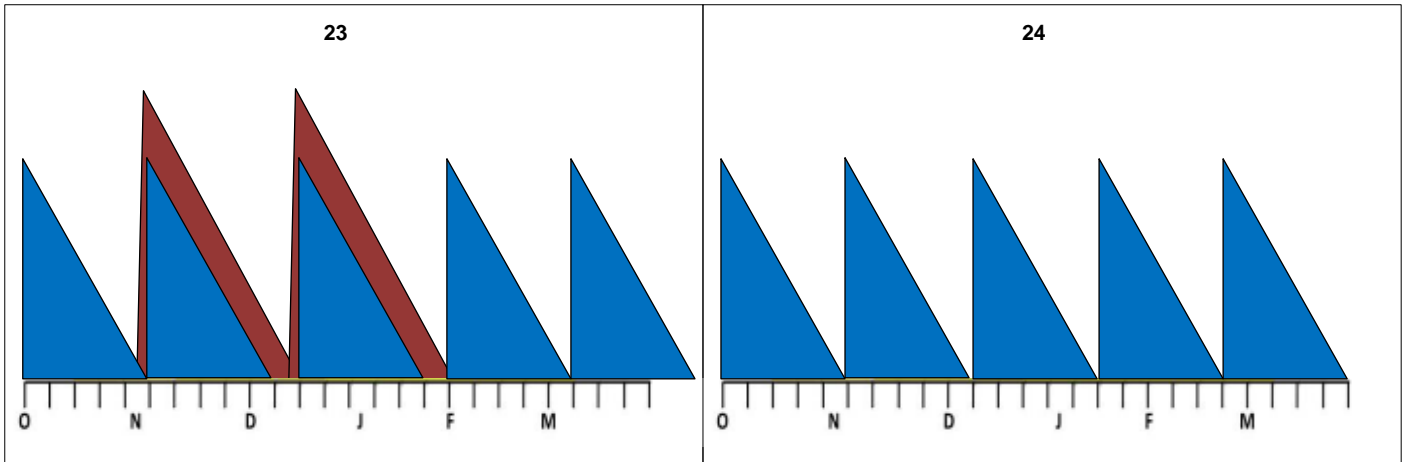
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**\*\*Programme 24 can also be alternated with dipotassium phosphate**

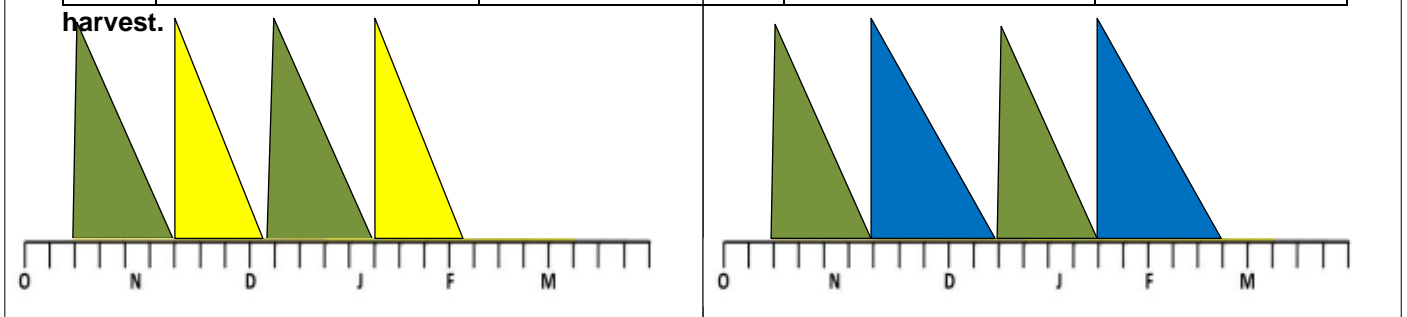


f) Examples of how to incorporate dipotassium phosphate into a standard CBS spray programme

**\*Make sure that the PHI for dipotassium phosphate is within MRL limits for the selected market at**

	80 - 100% petal fall	4 weeks later	25 days later	4 weeks later
25	Dipotassium phosphate*	Mancozeb	Dipotassium phosphate	Mancozeb
26	Dipotassium phosphate	Copper	Dipotassium phosphate	Copper

harvest.





## Opedateerde sitrus swartvlek spuitprogramme 2017 – 2018

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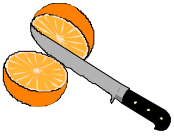
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Die chemiese beheer-programme van Sitrus swartvlek (SSV) word beïnvloed deur 'n verskeidenheid faktore soos streeks- en seisoenale klimaat, SSV geskiedenis, boordouderdrom en -kondisie, sitrustipe en alternatiewe beheermetodes soos inokulum-bestuursprogramme, en regverdig dus nie die aanbeveling van 'n standaard program nie. Gegewe die noodsaaklikheid om hoë vlakke van beheer vir SSV na sensitiewe markte te handhaaf, word die volgende riglyne vir effektiewe SSV beheer voorgedra. Hierdie is tydens CRI se Pes- en Siektebestuur werksinkels, gedurende Augustus en September 2017 by vyf verskillende vergaderings bespreek. Twee werksinkels is in Limpopo en een elk in Mpumalanga, Oos-Kaap en Wes-Kaap aangebied. Die riglyne is as volg:

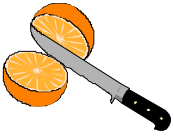
- A. Begin van 'n chemiese beheerprogram: Vrugsbeskerming word aanbeveel vanaf voor (as die eerste bespuiting 'n kontakswamdoder is) of binne 'n 3- tot 28-dag periode na die eerste lentreëns, afhangende van die kuratiewe aksie van die sistemiese fungisied wat gebruik word (sien punt E). Voldoende reënval word gereken as reën wat gelei het tot >12 ure vrug- of blaarnatheid na 80% blomblaarval. Verder, wanneer 'n spuitprogram met 'n swamdoder begin wat 'n kuratiewe werking het, kan die eerste toediening daarvan uitgestel word tot en met die eerste askospoor vrystellings. Swamdoders met 'n kuratiewe werking kan ook toegedien word as 'n opvolg bespuiting nadat die beskermingsperiode van die vorige ronde bespuitings verval het.
- B. Alhoewel infeksie nie kan plaasvind gedurende droë periodes nie (wanneer vrugnatheids periodes korter as 12 ure is) word ononderbroke beskerming van die vrugte aanbeveel tot aan die einde van die vrugvatbaarheids-periode (sien punt C), tensy dit gedemonstreer kan word dat geen infeksieperiode (reënval of vrystelling van inokulum) voorgekom het gedurende die periodes tussen die einde van die voorgestelde beskermingsperiode van die vorige bespuiting en die toediening (of terugwerking van kuratiewe aksie) van

die daaropvolgende bespuiting nie. Hier kan 'n askospoorvrystelling en infeksie voorspellingsdiens van baat wees. CRI-PhytRisk ([www.cri-phytrisk.co.za](http://www.cri-phytrisk.co.za)) is so 'n diens en produsente word aangeraai om van hierdie voorspellings hulpmiddel gebruik te maak wanneer op 'n swamdoder besluit moet word met 'n spesifieke kuratiewe werking.

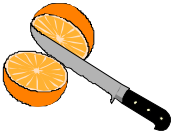
- C. Duur van vrugvatbaarheid en die aanbevole periode van vrugsbeskerming is as volg:
- Nawels: beskerming tot einde Januarie
  - Valencias: beskerming tot einde Februarie; Limpopovallei tot einde Januarie
  - Suurlemoene: beskerming tot einde Januarie (Limpopovallei), einde Februarie (noordelike streke), einde Maart (suidelike streke)
  - Sagte sitrus (mandaryne):
    - Vroeë mandaryne (Satsumas + Clementines): beskerming tot middel Januarie
    - Novas: beskerming tot einde Januarie vir SSV; langer beskerming word benodig vir *Alternaria*
    - Laat mandaryne: beskerming tot einde Februarie.
  - Pomelos: beskerming tot einde Januarie.
- D. **Alle fungisiedes wat gebruik word moet geregistreer wees vir SSV beheer onder Wet 36 en moet gebruik word binne die aanbevelings soos dit op die etiket beskryf word**
- E. Die enigste fungisiedes met kuratiewe beheeraksie is:
- Bensimidazole (benomyl of karbendasim, verskeie maatskappye) toegedien teen die hoër dosis (50 g/100 L vir benomyl en 55 mL / 100 L vir carbendazim) teen voldekbepuiting; kuratiewe eienskappe (tyd) is nie gespesifiseer op die etiket nie, maar die tyd van toediening soos per registrasie tesame met navorsing en ontwikkelingsproewe dui op 'n kuratiewe aksie van 4 weke.
  - Alhoewel navorsing toon dat strobiluriene 'n kuratiewe werking van ten minste 14 dae het, is dit slegs Cabrio™ (pyraclostrobin, BASF) se etiket wat daarop dui (3 dae).
- F. SSV beheer in organiese sitrus: volg 'n spuitprogram met koperswamdoders



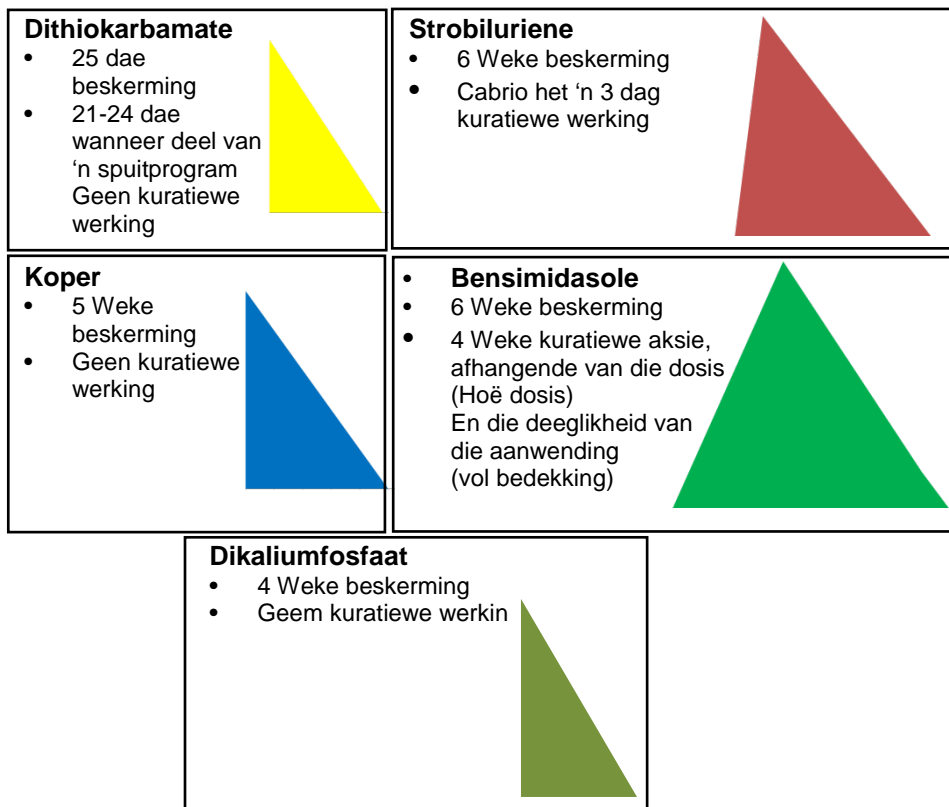
- tydens die vrugvatbaarheidsperiode. Die SSV beheerprogramme moet ook inokulumbestuur soos byvoorbeeld die verwydering van blare op die boordvloer insluit.
- G. As 'n basiese beginsel, gaan voort om die aanbevole spuitprogramme te volg wat gedurende die vorige seisoene goeie resultate opgelewer het en maak verbeteringe (strenger beheermaatreë, insluitende inokulumbestuurstrategieë, waar moontlik of soos vereis word, soos die verwydering van verwaarloosde bome of boorde).
- H. Fungisiedklasse wat gebruik kan word in SSV spuitprogramme met spesifieke notas:
- a. Dithiokarbamate
    - i. Mankoseb – Let op MRL beperkinge vir sekere markte
      1. Spuit intervale is **NIE** soos die voorheen voorgeskrewe 28 dae nie, maar 25 dae.
      2. Wanneer dit deel uitmaak van 'n spuitprogram waarvan strobiluriene ook deel is, as mankoseb die eerste toediening was, moet die eerste strobilurien tenkmengsel 21-24 dae daarna aangewend word.
    - ii. Maneb/Sinkoksied – Let op MRL beperkinge vir sekere markte
  - b. Koper gebaseerde produkte (koper-oksichloried, koper-oksied of koper-hidroksied)
    1. Koperbespuitings wat twee keer binne twee opeenvolgende maande gebruik word, kan tot koperstippel-vorming aanleiding gee. Vrugtevlug proteïenlokaas en koper kan ook tot koperstippel-vorming aanleiding gee.
    2. Koper stippeling kan verminder word deur koper konsentrasies te halveer in tenkmengsels met Didecyl Dimethiel Ammonium Chloried (DDAC) (Let op MRL beperkinge vir sekere markte)
  - c. Bensimidazole (benomyl, karbendasim)
    - i. Kuratiewe aksie teen hoër dosisse (50 g / 100 L vir benomyl en 55 mL / 100 L vir karbendasim) en teen voldek-bespuitings
      - ii. Hoë risiko vir weerstands-ontwikkeling; gebruik in kombinasie met 'n chemies nie-verwante fungisied. Probeer om meer as een bespuiting per seisoen te vermy.
      - iii. Weerstand moet gereeld gemonitor word.
  - d. Strobiluriene
    - i. Cabrio het 'n 3-dag kuratiewe aksie volgens die ektiket. Navorsing dui egter op 'n 14 dae kuratiewe werking
    - ii. Onlangse navorsing toon dat die risiko vir fungisied weerstands-ontwikkeling laag is; gebruik nogtans in mengsels met 'n chemies nie-verwante fungisied (bensimidazole, koper, mancozeb of Dikaliumfosfaat) soos geregistreer.
  - e. Dikaliumfosfaat
    - i. Kan in 'n spuitprogram gebruik word deur met 'n kontakswamdoder soos mankoseb te alterneer.
    - ii. Die produk se geregistreerde spuitinterval is 28 dae
    - iii. Die produk se mengbaarheid is nog slegs in tenkmengsels met sekere strobiluriene getoets.
- I. Beskermingsperiodes: kuratiewe en beskermende aksies van verskillende chemiese groepe is hier onder opgesom. Hierdie beskermingsperiodes is die optimale beskermingsperiodes. Fungisidiese aksie stop nie onmiddellik na hierdie periodes nie, maar sal afneem met tyd.
- Dithiokarbamate (Mankoseb): 25 dae beskerming. Geen kuratiewe aksie.  
(Maneb/Sinkoksied) 28 dae beskerming. Geen kuratiewe werking.
- Koper: 5 weke beskerming. Geen kuratiewe aksie.
- Strobiluriene: 6 weke beskerming. Cabrio het 'n 3 dag kuratiewe aksie.
- Bensimidazole: 6 weke beskerming. Vier weke kuratiewe werking; dit hang egter af van die toedieningsdosis (hoër dosis) gebruik en die deeglikheid van die toediening (voldek bespuiting word hier benodig). Wanneer in 'n tenkmengsel met azoxystrobien en 'n minerale olie gemeng word, een slegs twee bespuitings gedurende die seisoen verlang, een teen middel November en die tweede 8 weke later in middel Januraie.
- Dikaliumfosfaat: 28 dae beskerming. Geen kuratiewe aksie.



- J. Die onderstaande programme is voorbeelde van wat bespreek is met sitrusprodusente wat CRI werkwinkels in Augustus en September 2017 bygewoon het. Daar kan afwykings wees van hierdie programme, bv. as 'n produsent wat op Opsie 1 besluit het, moeilikheid met bespuitings weens reën ondervind, sal dit vir hom moontlik wees om dit op te volg met 'n swamdoder wat 'n kuratiewe aksie het en nogsteeds 'n aanvaarbare spuitprogram volg, inaggenome die beskermende en kuratiewe aksies van die verskillende produkte soos genoem onder punt J.



**Voorbeelde** van tipiese spuitprogramme vir verskillende streke; afwykings van hierdie voorbeelde kan voldoende (of verbeterde) beheer tot gevolg hê solank dit in ooreenstemming is met die minimum aanbevelings soos bo uiteengesit is. Let daarop dat die intervalle benaderd is en nie presies is nie; sien punte B, C en J. Verlenging van die beskermingsperiodes tot na die einde van vrugvatbaarheid is opsioneel.



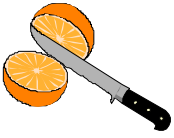
**1. Letsitele, Hoedspruit, Burgersfort, Groblersdal, Nelspruit, Swaziland & KZN**

**a) Nawels, Midseisoene, Valencias, suurlemoene en Mandaryne**

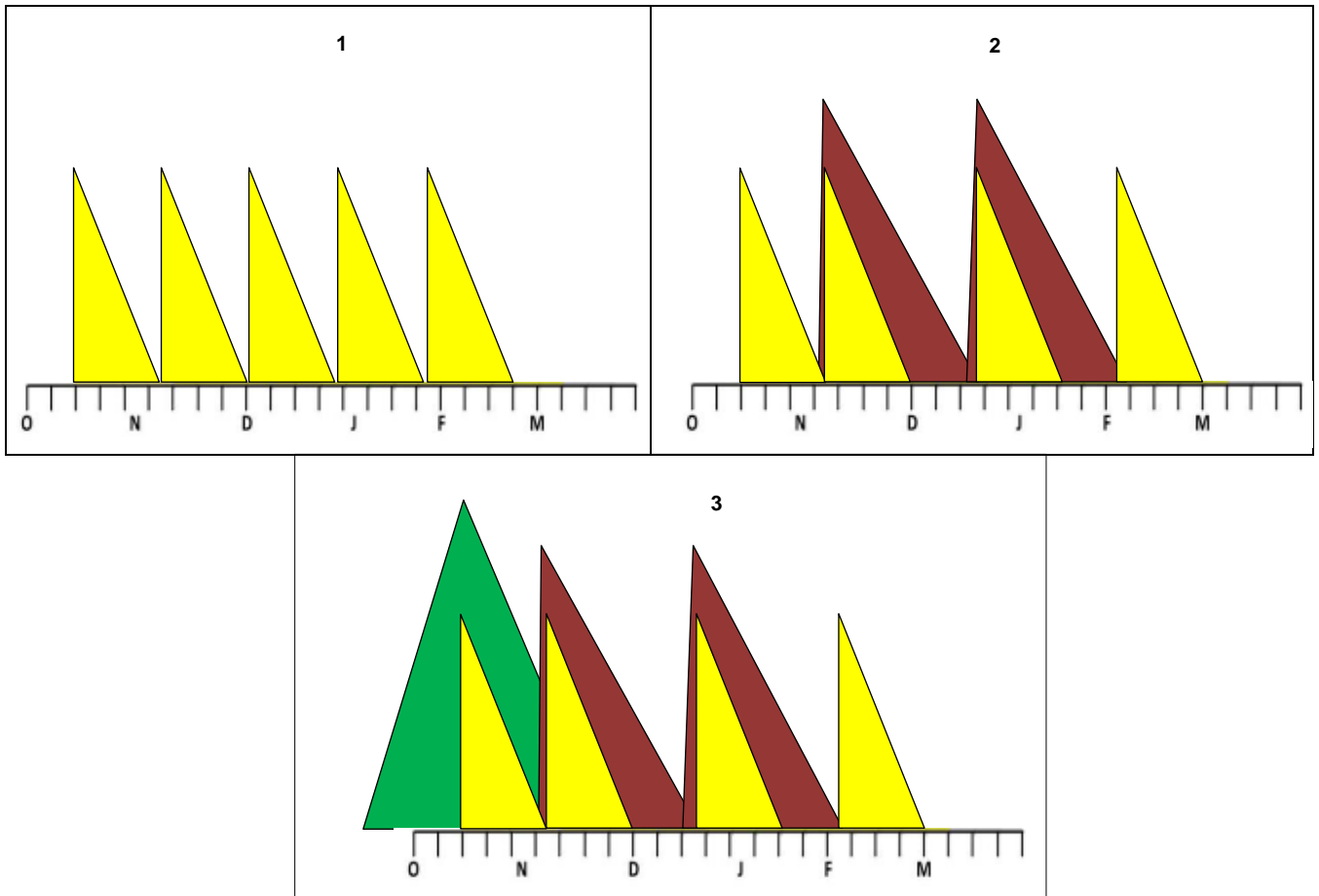
Riglyne vir spuittoedienings					
	Begin van program	25 dae later	25 dae later	25 dae later	25 dae later
1*	Mankoseb (MZ)	Mankoseb	Mankoseb	Mankoseb	Mankoseb **
	Begin van program	21-24 dae later	6 weke later	6 weke later	6 weke later
2	Mankoseb	Benz/Strob+MZ+ olie	Benz/Strob+MZ+olie	Mankoseb	
	Net na eerste reën	6 weke later	6 weke later	6 weke later	
3	Benz+MZ+olie	Strob+MZ+olie	Strob+MZ+olie	Mankoseb	

\*Program 1 kan met Koper of Dikaliumfosfaat alterneer word

**JOU HEFFING WERK VIR JOU – PRODUSENTE SE HEFFINGS WORD AANGEWEND OM DIE AKTIWITEITE VAN DIE CRI TE BEFONDS**



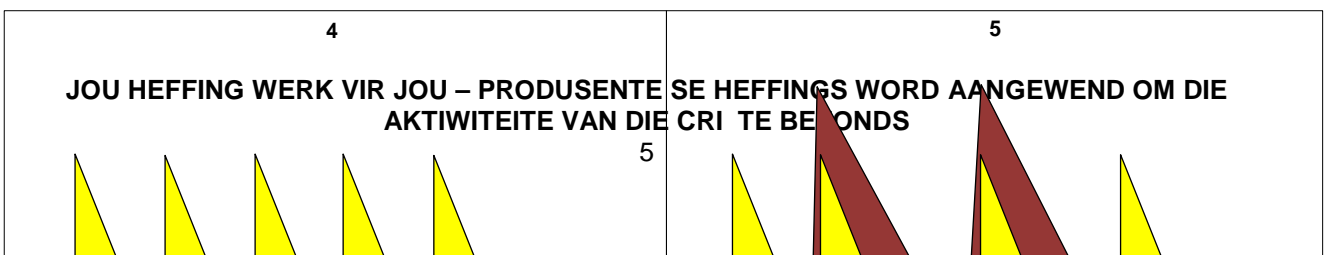
**\*\*Kan in 'n tenkmeysel teen 'n halwe dosis met DDAC toegedien word, maar nie later as einde Desember nie. (DDAC het 'n 160 dae weerhoudingsperiode; moet teen minder as 8L/ha gebruik word)**



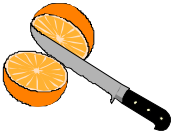
**b) Pomelo spesifieke voorbeelde vir Letsitele, Hoedspruit, Onderberg, Swaziland & KZN**

	Begin van program	25 dae later	25 dae later	25 dae later	25 dae later
4*	Mankoseb	Mankoseb	Mankoseb	Mankoseb	Mankoseb
	Begin van program	21-24 dae later	4 (-6) weke later	4 (-6) weke later	
5	Mankoseb	Strob + MZ + olie	Strob+MZ+olie	Mankoseb	

**\*Program 4 kan met Koper of Dikaliumpfosfaat alterneer word**





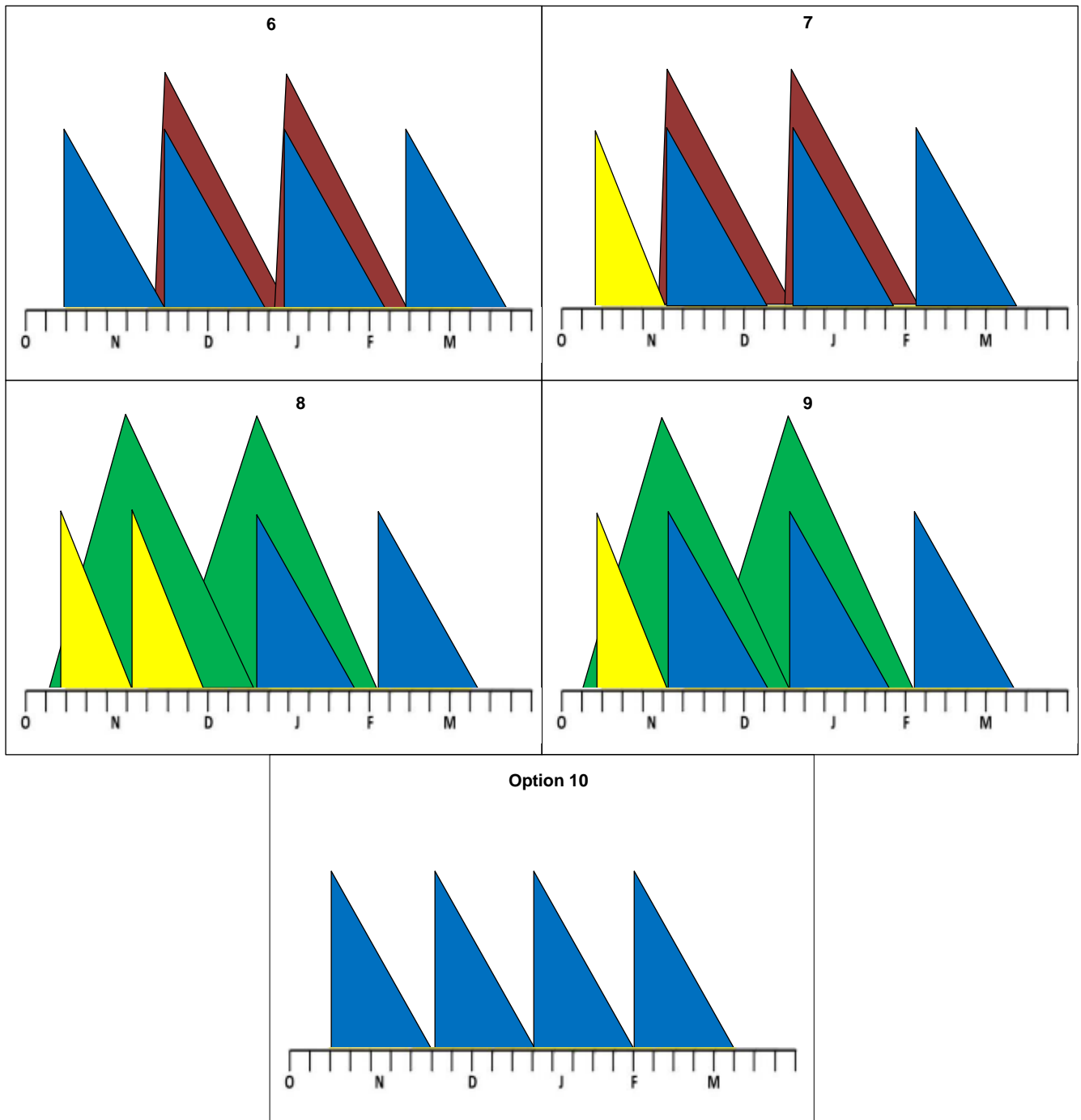
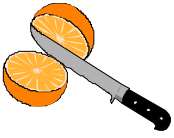


- c) Kanada en VSA (Let op: Geen mankoseb kan na Desember toegedien word indien daar na Kanada uitgevoer word nie; en geen Mankoseb of bensimidazole na 90% blomblaarval indien na VSA uitgevoer word)

	80 - 100% blomblaar val	5 weke later	6 weke later	6 weke later
6	Koper	Strob+Koper+olie	Strob+Koper+olie	Koper
	80 - 100% blomblaar val	21-24 dae later	6 weke later	6 weke later
7	Mankoseb	Strob+Koper+olie	Strob+Koper+olie	Koper
8	Mankoseb	Benz+MZ+Olie	Benz+Koper+Olie	Koper
9	Mankoseb	Benz+Koper+Olie	Benz+Koper+Olie	Koper
	Middel Oktober	5 weke later	5 weke later	5 weke later
10*	Koper	Koper	Koper	Koper**

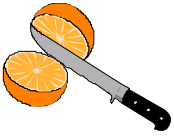
\*Program 10 kan met Koper of Dikaliumpfosfaat alterneer word

\*\*Kan in 'n tenkmengsel teen 'n halwe dosis met DDAC toegedien word sonder 'n weerhoudings periode indien daar na die VSA uit gevoer word (moet minder as 8L/ha gebruik)



Streng gesproke is slegs Mankoseb geregistreer om voor en na strobilurin bespuitings toegedien te word. Dit sou egter beteken dat geen **strobiluriene** gebruik mag word vir uitvoere na Kanada en die VSA. Dit is ten spyte daarvan dat sekere etikette aandui dat koper verenigbaar is met sommige van die **strobiluriene**.

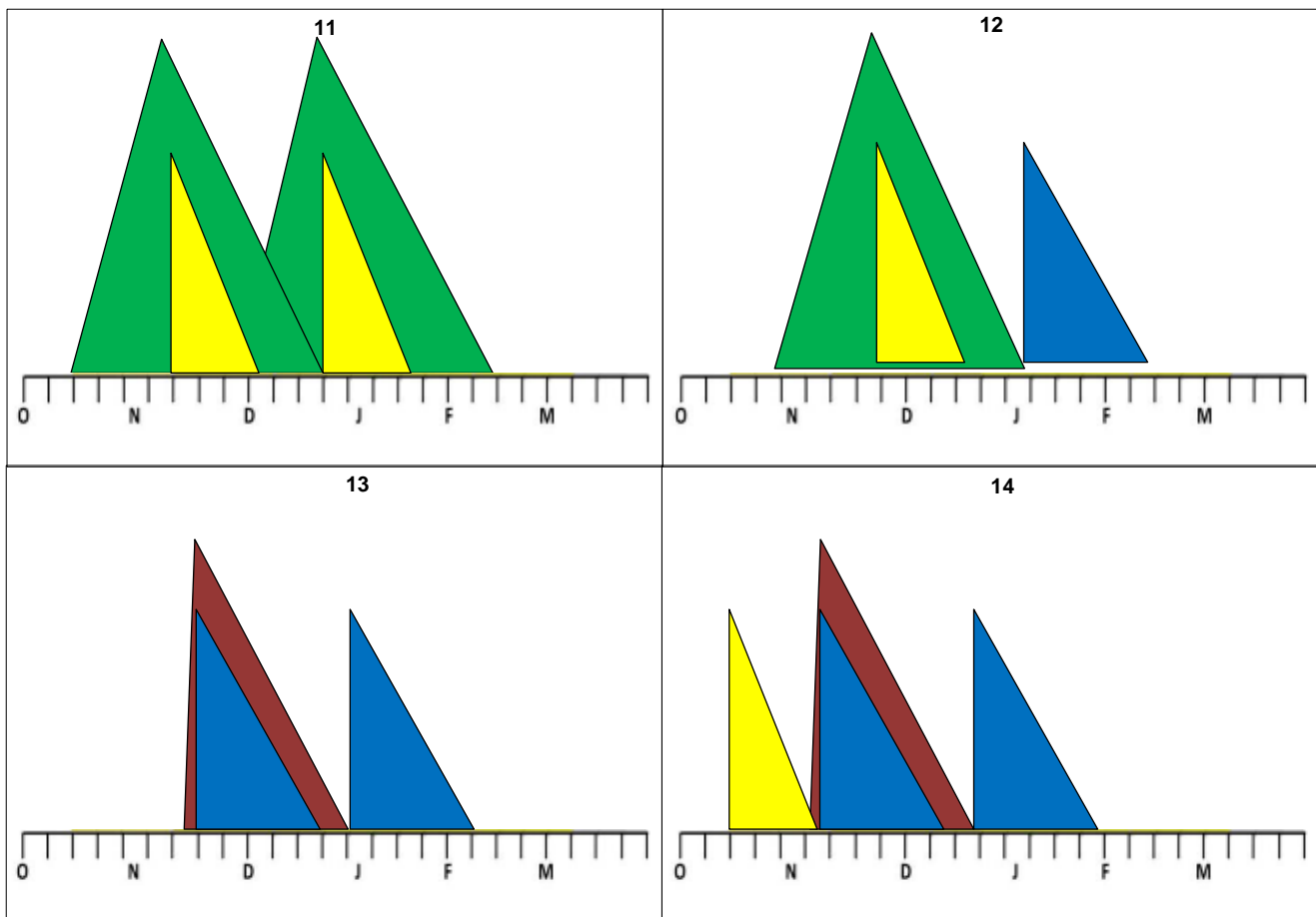
**JOU HEFFING WERK VIR JOU – PRODUSENTE SE HEFFINGS WORD AANGEWEND OM DIE AKTIWITEITE VAN DIE CRI TE BEFONDS**

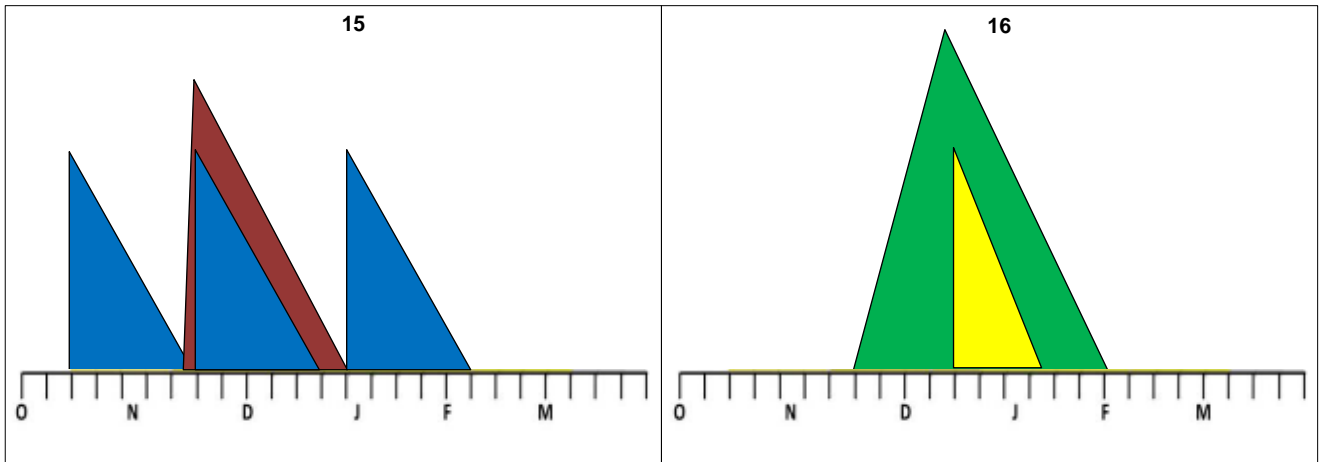


## 2. Limpopo rivier vallei, Tshipise/ Weipe

Alle kultivars (Nota: Vir Kanada, geen mankoseb later as einde Desember nie; VSA geen mankoseb en bensimidazole later as 90% blomblaarval nie)

	80 – 100% blomblaar val	Na eerste somerreënval wat meestal in November is	6 weke later
11		Benz+MZ+olie	Benz+MZ+olie
12		Benz+MZ+olie	Koper
13		Strob +Koper+Olie	Koper
14	Mankoseb	Strob +Koper+Olie	Koper
15	Koper	Strob +Koper+Olie	Koper
		<b>Mid Des</b>	
16		Benz+MZ+olie	



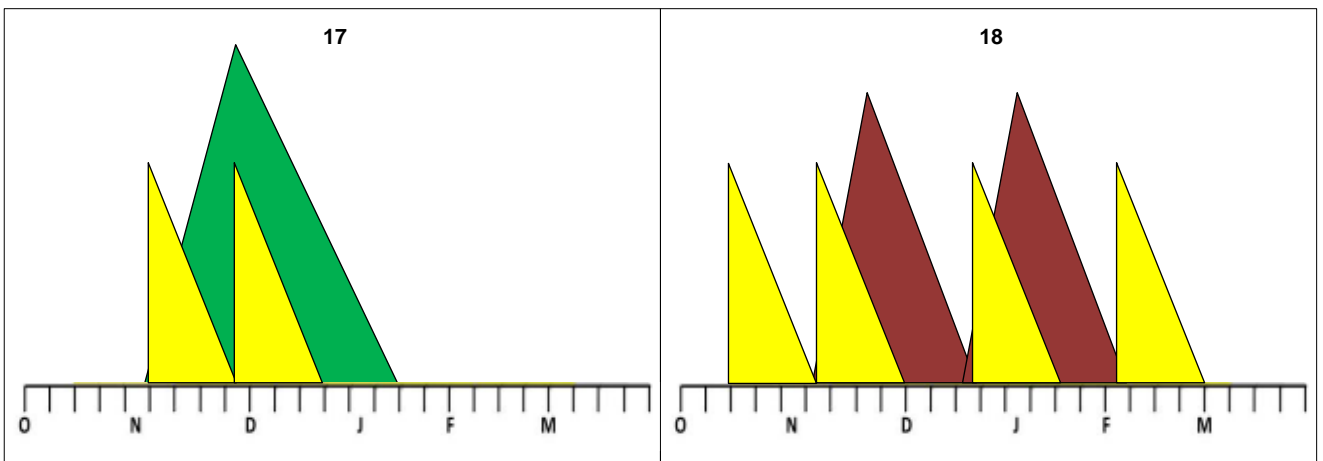


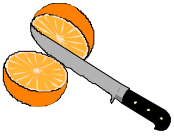
### 3. Oos-Kaap provinsie

#### a) Clementines, Satsumas en Novas

		Vroeg November	Vroeg Desember	Vroeg Januarie
<b>Satsumas + Clementines</b>				
17		Mankoseb	Benz+MZ+olie	
<b>Novas</b>				
18	Mankoseb	Strob+MZ+olie	Strob*+MZ+olie	Mankoseb

\*Maak seker dat die NOI vir die gebruik van strobiluriene binne die geskikte limiete van die MRL bly tydens oes . Satsumas en Clementines is swak gashere van SSV.



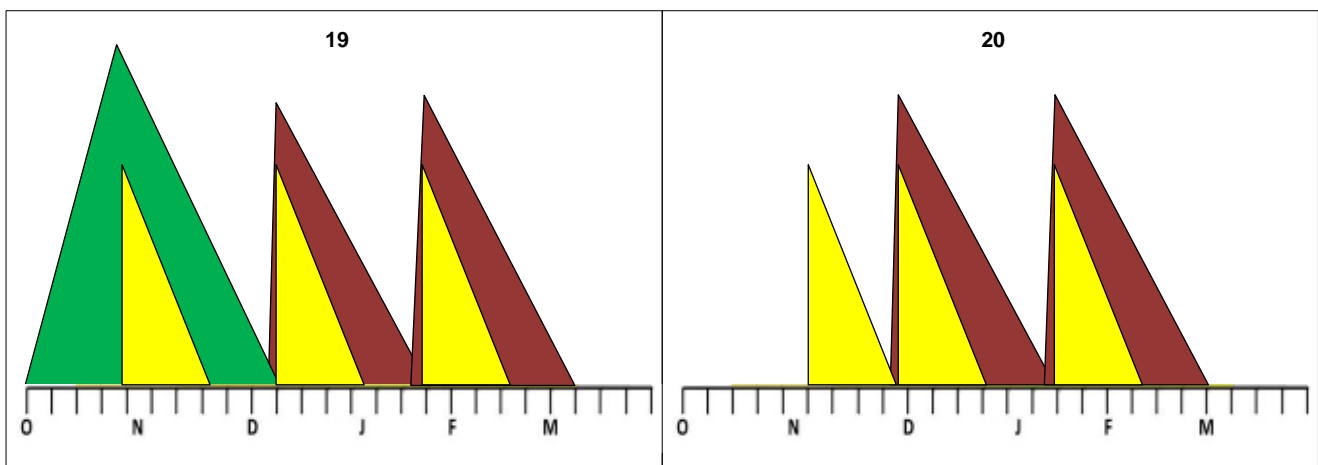


## b) Nawels

	Einde Oktober	Begin Desember	Vroeë tot middel Januarie
19	Benz+MZ+olie	Strob+MZ+olie	Strob*+MZ**+olie
20	Mankoseb	Strob+MZ+olie	Strob+MZ+olie

Verseker net dat NOI vir die gebruik van strobilurienes binne die geskikte limiete van die MRL bly tydens oes .

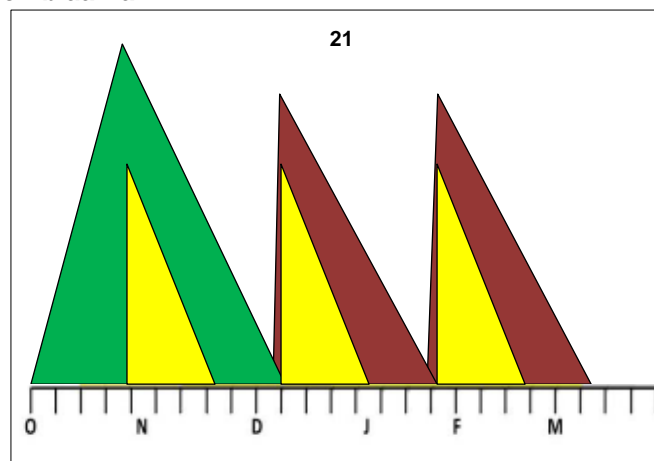
\*\*Vir Kanada moet mancozeb met koper of dikaliumfosfaat vervang word na Desember. Vir die VSA moet mancozeb met koper of dikaliumfosfaat vervang word en bensimidazole met strobilurienië na 90% blomblaarval vervang word.

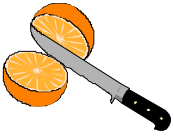


## c) Laat Mandaryne (vir SSV) en Valencias

	Einde Oktober	6 weke later	6 weke later
21	Benz+MZ+olie	Strob+MZ+olie	Strob+MZ+olie

\*Vir Kanada moet mancozeb met koper of dikaliumfosfaat vervang word na Desember. Vir die VSA moet mancozeb met koper of dikaliumfosfaat vervang word en bensimidazole moet met strobilurienië vervang word na 90% blomblaarval.

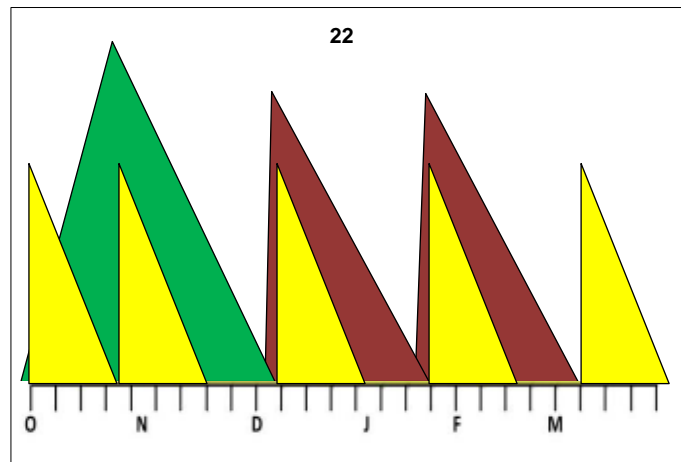




**d) Suurlemoene**

	Begin van spuitprogram (Begin Oktober)	4 weke later	6 weke later	6 weke later	6 weke later
22	Mankoseb	Benz+MZ+olie	Strob+MZ+olie	Strob+MZ+olie	Mancozeb*

\*Vir Kanada moet mankoseb met koper of dikaliumfosfaat vervang word na Desember. Vir die VSA moet mankoseb met koper of dikaliumfosfaat vervang word en bensimidazole met strobilurine na 90% blomblaarval.



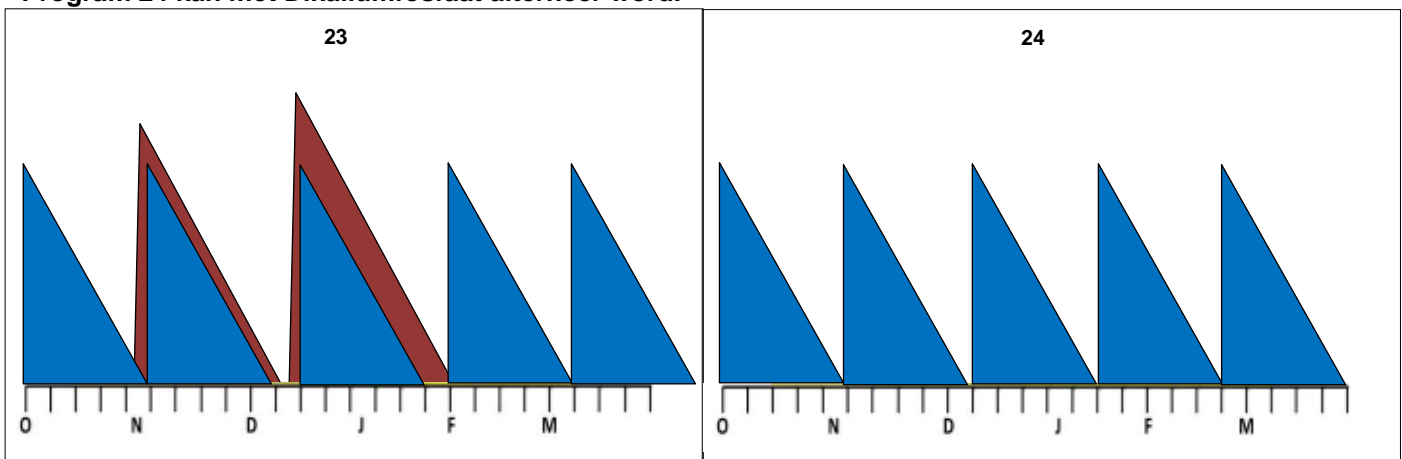
**e) Suurlemoene (Vrugte vir prosessering)**

	Begin van spuitprogram (Begin Oktober)	5 weke later	6 weke later	6 weke later	6 weke later
23	Koper	Strob+Koper+olie	Strob+Koper+Olie	Koper	Koper*
		5 weke	5 weke later	5 weke later	5 weke later
24**	Koper	Koper	Koper	Koper	Koper

\* Vrugte wat vir sap geprosesseer word; slegs koper, strobilurine of dikaliumfosfaat toegelaat.

Vrugte wat vir sitrus skil olie geprosesseer word; slegs koper produkte toegelaat.

\*\*Program 24 kan met Dikaliumfosfaat alterneer word.



**JOU HEFFING WERK VIR JOU – PRODUSENTE SE HEFFINGS WORD AANGEWEND OM DIE AKTIWITEITE VAN DIE CRI TE BEFONDS**

f) Voorbeelde van hoe om Dikaliumpfosfaat in sitrus swartvelk spuitprogramme te inkorporeer

	80 - 100% blomblaarval	4 weke later	25 dae later	4 weke later
25	Dikaliumpfosfaat	Mankoseb	Dikaliumpfosfaat	Mankoseb
	80 - 100% blomblaarval	4 weke later	35 dae later	4 weke later
26	Dikaliumpfosfaat	Koper	Dikaliumpfosfaat	Koper

\*Verseker net dat NOI vir die gebruik van dikaliumpfosfaat binne die geskikte limiete van die MRL van die gekose mark bly tydens oes .

