

TRACER™ 480 SC

INSECTICIDE

REG. NO. L6557 ACT No. 36 of 1947 / WET Nr. 36 van 1947
W130090
N-AR 1040

READ THE LABEL BEFORE USE
KEEP OUT OF REACH OF CHILDREN AND ANIMALS

IRAC: INSECTICIDE GROUP CODE 5A IRAK: INSEKDODER GROEP KODE

A SUSPENSION CONCENTRATE CONTACT AND STOMACH INSECTICIDE FOR THE CONTROL OF INSECTS ON AGRICULTURAL CROPS AS LISTED. 'N SUSPENSIEKONSENTRAAT KONTAK- EN MAAGINSEKDODER VIR DIE BEHEER VAN INSEKPLAE IN LANDBOUGEWASSE SOOS AANGEDUI.



WARNING

HAZARD STATEMENTS:

Very toxic to aquatic life with long lasting effects.

PRECAUTIONARY STATEMENTS:

Collect spillage.

Dispose of contents/container in accordance with applicable regulations.

Active Ingredient/Aktiewe Bestanddeel

Spinosad 480 g/L Spinosad

Net volume L Netto volume

REGISTRATION HOLDER / REGISTRASIEHOUER
CORTEVA AGRISCIENCE RSA (PTY) LTD / (EDMS) BPK
REG NO 1991/003030/07
Lakefield Office Park, Block A, 2nd Floor
272 West Avenue, CENTURION, 0157 South Africa
™Trademark of/Handelsmerk van Corteva Agriscience LLC

Batch No.

Date of Manufacture

Expiry date



..... Lot Nr.

... Datum van Vervaardiging

..... Vervaldatum

UN NO: 3082

Poisons Helpline: +27(0)861-555-777
Local Emergency No: +27(0)82-895-0621 (SA only)
24 Hour Emergency Tel No: +32-3-575-5555
Information Hotline Tel No: +27(0)12 683-5700

TRACER™ 480 SC/2024-04-23

WARNINGS:

HAZARD STATEMENTS:

Very toxic to aquatic life with long lasting effects.

Withholding period - Minimum number of days between last application and harvest:

Apples	30 days
Blue berries	3 days
Black berries	3 days
Boysenberries	3 days
Cabbages	3 days
Citrus	14 days
Cherries	14 days
Chives	7 days
Cucurbits	7 days
Greenbeans	7 days
Gooseberries	3 days
Leeks	7 days
Lettuce	7 days
Nectarines	7 days
Peas	1 day
Pears	14 days
Peaches	21 days
Persimmon	21 days
Plums	21 days
Potatoes	7 days
Raspberries	3 days
Spinach	7 days
Strawberries	1 day
Table Grapes	28 days
Tomatoes	3 days
Onions	7 days

NOTE: Compliance with these withholding periods will ensure that residues do not exceed local Maximum Residue Limits. However, the import tolerances of other countries may differ and local residue limits and withholding periods may possibly not comply with those of other countries. If the crop to be treated is intended for export, consult the relevant importer or exporting body regarding the use of this product, Maximum Residue Limits and recommended withholding periods.

- Handle with care.
- May cause slight eye irritation.
- This product is moderately toxic to fish and toxic to aquatic invertebrates. Do not apply directly to open water.
- Beneficial Insects:
 - “Moderately Toxic to Bees”
 - ❖ This product is toxic to bees when exposed to direct spray, or sprayed flowering crops, before spray deposit is dry.
 - ❖ Do not apply directly to foraging bees, or bee colonies.
 - ❖ Apply only at night when crop is flowering or other foraging vegetation is within 500 m from the spraying area.
 - ❖ Allow at least 3 hours between application and foraging period of bees.

Co-ordinate in this regard with neighbours, beekeepers and local extension services when applying in the vicinity of crops in flower. There is minimal effect on bees after the spray has dried.

“Harmful to Parasitoids”

“Harmless to Predatory Mites”

“Slightly Harmful to Coccinellidae”

“Slightly Harmful to Neuroptera”

Citrus beneficial insects:

Chilochorus nigritus – Slightly harmful

Aphytis lingnanensis – Harmful

Coccidoxenoides peregrinus – Very harmful

Trichogrammatoidea cryptophlebiae – Slightly harmful

Euseius citri – Slightly harmful.

* It must be remembered that **TRACER™ 480 SC** does not have a long persistence in the field and therefore the effect on the beneficial insects should be of short duration.

- Store in a cool and dry place, away from food and feedstuffs.
- Keep out of reach of children, uninformed persons and animals.

Re-entry interval: Do not enter treated area until spray deposit has dried unless wearing protective clothing.

DISCLAIMER:

Although this remedy has been extensively tested under a large variety of conditions, the registration holder does not warrant that it will be efficacious under all conditions because the action and effect thereof may be affected by factors such as abnormal climatic and storage conditions; quality of dilution water; compatibility with other substances not indicated on the label and the occurrence of resistance of the pest against the remedy concerned as well as by the method, time and accuracy of application. The registration holder, furthermore, does not accept responsibility for damage to crops, vegetation, the environment, or harm to man or animal, or for lack of performance of the remedy concerned, due to failure of the use to follow the label instructions or to the occurrence of conditions which could not have been foreseen in terms of the registration. Consult the supplier in the event of any uncertainty.

PRECAUTIONS:

PRECAUTIONARY STATEMENTS:

Collect spillage.

Dispose of contents/container in accordance with applicable regulations.

Store in original labeled container only.

Avoid inhalation of spray mist.

Wash with soap and water after use or accidental skin contact.

Wear gloves and face shield when handling concentrate and faceshield when applying.

Avoid contamination of skin and eyes. In case of accidental contact with eyes, wash with running water for at least 15 minutes. Get medical attention if irritation persists.

Do not eat, drink or smoke whilst mixing or applying.

Wash hands and face before eating, drinking, smoking or using the toilet

Avoid spray drift onto adjacent crops, grazing, rivers, dams and areas not under treatment.

Clean applicators before using for other remedies and dispose of wash water where it will not contaminate crops, grazing, rivers, dams and water sources.

Triple rinse empty container in the following manner: Invert the empty container over spray or mixing tank and allow to drain for at least 30 seconds after the flow has slowed down to a drip. Thereafter rinse empty container three times with a volume of water equal to a minimum of 10 % of that of the container. Add the rinsings to the contents of the spray tank before destroying the container by perforation, flattening and burying and do not use for any other purpose.

Prevent contamination of food, feedstuffs, drinking water and eating utensils by handling, storage, or disposal.

RELEVANT SUBSTANCES:

COMPONENT	CAS No.	Concentration (% w/w)
Spinosyn A	131929-60-7	22,1
Spinosyn D	131929-63-0	22,1
Spinosyn B	131929-61-8	0,489
Naphthalenesulfonic acid, formalde-hyde ammonium salt copolymer	9069-80-1	>= 1 - < 3
1,2-benzisothiazol-3(2H)-one	2634-33-5	>= 0,025 - < 0,05

FIRST AID MEASURES:

Inhalation:

Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration, if by mouth-to-mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice.

Skin contact:

Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

Eye contact:

Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes. Call a poison control center or doctor for treatment advice.

Ingestion:

No emergency medical treatment necessary.

Insecticide Resistance Management (IRM)

The classification scheme of insecticides are based on "mode of action" TRACER™ 480 SC is classified as a spinosyn (subgroup 5) insecticide.

Any insect population may contain individuals naturally resistant to **TRACER™ 480 SC** and other spinosyns. The resistant individuals will eventually dominate the insect population if these insecticides are used repeatedly over long periods or to consecutive generations. **TRACER™ 480 SC** or other spinosyn insecticides may not control these resistant insects. Local experts should be consulted for resistance strategies and specific recommendations. It is recognised that resistance of insects and mites to insecticides and acaricides can also result from enhanced metabolism, reduced penetration or behavioural changes that are not linked to any site of action classification but are specific for individual chemicals or chemical groupings. Despite this, alternation of compounds from different chemical classes remains a viable anti-resistance management technique.

To delay insecticide resistance

- Avoid the exclusive repeated use of insecticides from the same chemical subgroup.
- Do not use less than recommended label rates of any insecticides.
- Target applications preferably against early instar larvae and eggs of the pest whenever possible.
- Include proven cultural and biological control practices within an Integrated Pest Management Programme.

Integrated Pest Management (IPM) Programme:

TRACER™ 480 SC can be recommended for IPM programmes in various crops. **TRACER™ 480 SC** should be applied when field scouting indicates target pest densities have reached the economic threshold. Other than reducing the target pest species as a food source, **TRACER™ 480 SC** used under GAP, does not have a significant impact on certain parasitic or predaceous insects and mites, including ladybirds, lacewings, assassin bugs, predatory mites, etc. Although **TRACER™ 480 SC** is classified as “harmful” to Parasitoids, field studies showed a rapid recovery of numbers after application. The feeding activities of these beneficial arthropods will aid in the extended natural control of other insects and reduce the likelihood of secondary pest outbreaks for which additional insecticide treatments may be needed. If **TRACER™ 480 SC** is tank mixed with any insecticide that reduces its selectivity in preserving beneficial predatory insects, then the full benefit of **TRACER™ 480 SC** to the IPM programme may be reduced.

DIRECTIONS FOR USE:

Use only as indicated

TRACER™ 480 SC is a suspension concentrate, which should be mixed with water and applied as a foliar spray with ground equipment equipped for conventional insecticide application.

MIXING INSTRUCTIONS:

Mixing TRACER™ 480 SC alone:

Fill the spray tank with water to about half of the total spray volume required. Start agitation and add the required amount of **TRACER™ 480 SC** to the spray tank. Continue mixing and agitation while filling the spray tank to the required spray volume. Maintain sufficient agitation during application to ensure uniformity of the spray mix. Do not allow water or spray mixture to back-siphon into the water source.

Compatibility, pH and tank mixing:

Do not apply TRACER™ 480 SC in muddy water. Although the pH of the spray mixture does not have an effect on the initial knockdown performance of TRACER™ 480 SC, a low pH value (< pH 6) of the spray mixture will decrease the residual performance. Buffer agents are generally not needed. Acidifiers or products that will acidify the spray mixture below pH 6 (e.g. phosphonates, high rates of foliar fertilizers, etc.) should be avoided or buffered back to pH 6 - 9. TRACER™ 480 SC will perform best at pH 6 – 9.

Before tank mixing TRACER™ 480 SC with other products, a pH and compatibility test (jar test) using relative proportions of tank mix products should be conducted prior to mixing in the spray tank. If foliar fertilizers are used, the compatibility test should be repeated with each batch of fertilizer utilising the mixing water source. Vigorous, continuous agitation during mixing, filling and throughout application is required for all tank mixes. Back flow sparger pipe agitators, at the bottom of the spray tank, generally provide the most effective agitation in spray tanks. To prevent foaming in the spray tank, avoid mixing air into the spray mixture.

When adding wetting agents to the spray mixture, a compatibility test needs to be carried out.

Mixing Sequence for Tank Mixes:

Fill the spray tank with water to approximately one quarter of the total spray volume required. Start agitation. Add different formulation types in the order indicated below, allowing time for complete mixing and dispersion after addition of each product. Allow extra mixing and dispersion time for water dispersible granule (dry flowable) (WG) products.

Add different formulation types in the following order:

1. Water dispersible granules. (After pre-mixing with water)
2. Wettable powders. (After pre-mixing with water)
3. **TRACER™ 480 SC** and other aqueous suspensions.
Maintain agitation and fill spray tank to three-quarters of total spray volume.
Then add:
4. Emulsifiable concentrates.
5. Spray Adjuvants. (Where **TRACER™ 480 SC** is needed to be applied in combination with a spray-oil, first pre-mix the required volume of **TRACER™ 480 SC** and spray-oil, before adding to the spray water)
6. Foliar Fertilizers.

Finish filling the spray tank while maintaining continuous agitation during mixing, final filling and throughout application. If spraying and agitation must be stopped before the spray tank is empty, settled materials must be resuspended before spraying is resumed. A back flow sparger agitator at the bottom of the tank is particularly useful for this purpose.

Premixing:

Dispersible granule (WG) and Wettable Powder (WP) formulations may be pre-mixed with water (slurried) and added to the spray tank through a 20 - 35 mesh screen. This procedure assures good initial dispersion of these formulation types.

APPLICATION

Proper applications techniques help ensure thorough spray coverage and the correct dosage necessary to obtain optimum control of insect pests. The following recommendations are provided for effective application of **TRACER™ 480 SC**. To ensure adequate spray coverage, attention should be given to ground speed and calibration, wind speed, and foliar canopy.

Application for row crops:

Use conventional ground spray equipment calibrated to provide thorough coverage of the target crop. Align the boom and nozzles to obtain uniform coverage of the target crop. Under certain conditions, nozzles on drop arms may be required to obtain uniform crop coverage. Use hollow cone nozzles suitable for insecticide spraying.

Follow manufacturer's recommendations for ideal nozzle spacing, pressure, and boom height.

Application for Fruit tree crops:

Use conventional orchard spray equipment correctly calibrated to provide thorough coverage of the target crop and correct rate per ha.

Deciduous fruit trees:

TRACER™ 480 SC should be sprayed as a high volume (HV) application to deciduous fruit trees. Rate per ha should preferably be calculated according to the formula for HVR, using "*Unrath's Formula*" for "*Tree Row Volume*" (TRV).

$$\text{TRV} = \frac{\text{Tree Height (TH)} \times \text{Tree Width (TW)} \times 937}{\text{Distance between Rows (RW)}} = \text{HVR in liters per ha}$$

*(Tree height and tree width should be measured during summer when trees are in full flush)

Directions for Application Volumes (AV) at different growth stages and the calculation of rate per ha, based on High Volume Requirements (HVR)

Growth Stage	Application Volume
Bud Break to Full Blossom	60 % x HVR
75 % Petal Fall to One Month Later (Mid Season)	80 % x HVR
Mid Season to Post Harvest, Before Leaf Drop	100 % x HVR

$$\text{Rate per ha} = \frac{\text{HVR in } \ell / \text{ha} \times \text{Rate per 100 } \ell}{100}$$

Application for Table Grapes:

TRACER™ 480 SC should be sprayed as a high-volume application to table grapes. The amount of **TRACER™ 480 SC** per ha must be calculated according to the high-volume requirements for a specified growth stage by using the following guidelines.

Growth Stage	Suggested volume of spray mixture per ha for high volume application
2,5 cm to 25 cm shoot length	500 – 750 ℓ
25 cm shoot length to just prior to flowering	750 – 1000 ℓ
Flowering to pea berry stage	1000 – 1200 ℓ
Pea berry stage to harvest	1200 – 1500 ℓ

WARNING: Where crops are produced under shade cloth, the breakdown of spinosad may take longer which will increase the withholding period/residues.

CROP/PEST	DOSAGE/100 ℓ WATER	REMARKS
APPLES American (African) Bollworm <i>(Helicoverpa armigera)</i> Thrips (Various species including Western Flower Thrip – WFT – <i>Frankliniella occidentalis</i>) Spotted wing fruit fly <i>(Drosophila suzukii)</i>	20 mℓ 15 mℓ 20 mℓ	Apply TRACER™ 480 SC as a high volume, cover application when scouting indicates infestation level at, or above threshold level. Note: As a single corrective spray against bollworm, TRACER™ 480 SC is more effective against early instar larvae. Early thrip damage normally occurs during the period of early blossom to shortly after blossom. Hot weather conditions favour thrips activity. Recommended monitoring methods should be adhered to, to establish the presence and extent of the pest, especially during the susceptible stage. Apply TRACER™ 480 SC during flowering as a high-volume cover application when scouting indicates infestation of pest at, or above threshold levels. Depending on the duration of the flowering period and the infestation level of thrips, a follow-up application within 7 – 10 days may be necessary to obtain adequate protection. Apply TRACER™ 480 SC during flowering at beginning of infestation or first visible damage on the crop. Application against larvae or immature adults of <i>D. suzukii</i>. Application can be repeated every 7 days. Resistance management: For resistance management, TRACER™ 480 SC should not be applied in total more than four times per season on apples.
BLUE BERRIES, BLACKBERRIES, GOOSEBERRIES AND BOYSENBERRIES American (African) Bollworm <i>(Helicoverpa armigera)</i>	20 mℓ	Apply TRACER™ 480 SC as a high volume, cover application when scouting indicates infestation level at, or above threshold level. Note: As a single corrective spray against bollworm, TRACER™ 480 SC is more effective against early instar larvae.

CROP/PEST	DOSAGE/100 ℓ WATER	REMARKS
BLUE BERRIES, BLACKBERRIES, GOOSEBERRIES AND BOYSENBERRIES (cont.) Thrips (Various species including Western Flower Thrip – WFT – <i>Frankliniella occidentalis</i>)	15 mℓ	Early thrip damage normally occurs during the period of early blossom to shortly after blossom and late damage after harvest on new vegetative growth. Hot weather conditions favours thrip activity. Recommended monitoring methods should be adhered to, to establish the presence and extent of the pest, especially during the susceptible stage. Apply TRACER™ 480 SC during flowering as well as post harvest when new (vegetative) growth is attacked as a high-volume cover application when scouting indicates infestation of pest at, or above threshold levels. Depending on the duration of the flowering period and the infestation level of thrips, a follow-up application within 7 – 10 days may be necessary to obtain adequate protection.
Spotted wing fruit fly (<i>Drosophila suzukii</i>)	20 mℓ	Apply TRACER™ 480 SC during flowering at beginning of infestation or first visible damage on the crop. Application against larvae or immature adults of <i>D. suzukii</i>. Application can be repeated every 7 days. Resistance management: For resistance management, TRACER™ 480 SC should not be applied in total more than three times per season on blue berries.

CROP/PEST	DOSAGE/100 ℓ WATER	REMARKS
CABBAGE Diamond-Back Moth larvae (<i>Plutella xylostella</i>) Tomato leaf miner moth (<i>Tuta absoluta</i>)	30 mℓ (150 - 300 mℓ/ha) + 150 – 250 mℓ light or medium narrow range mineral spray oil OR A registered wetter at the registered dosage rate for use on cabbages.	Apply in a spray programme as a full cover spray at a minimum of 500 ℓ/ha spray mixture every 7 - 10 days. Start application when the pest is first noticed or apply as a follow-up application in a spray programme after insecticides from a different class as required in anti-resistant programmes. Apply a minimum of two consecutive TRACER™ 480 SC sprays to ensure effective control of pest. Use the shorter spray interval of 7 days when heavy infestations occur or when climatic conditions favour the pest e.g. during summer months. For the purpose of a resistance strategy, do not apply TRACER™ 480 SC in more than four (4) consecutive applications in any 28-day period. Rotate TRACER™ 480 SC in a spray programme with a different chemical class of insecticide for the duration of at least one generation of the pest. Do not apply TRACER™ 480 SC in more than a total of six (6) applications per cultivation.

CROP/PEST	DOSAGE/100 ℓ WATER	REMARKS
CHERRIES <i>African Bollworm</i> <i>(Helicoverpa armigera)</i> Thrips (Various species including Western Flower Thrip <i>(Frankliniella occidentalis)</i> Spotted wing fruit fly <i>(Drosophila suzukii)</i>	20 mℓ 15 mℓ 20 mℓ	Apply TRACER 480™ SC as a full cover application. Note: As a single corrective spray against bollworm, TRACER™ 480 SC is more effective against early instar larvae. Commence spraying at the first signs of Thrip presence. Repeat application when necessary. Apply as a light cover spray. Thorough coverage of the target area is essential. Apply TRACER™ 480 SC during flowering at beginning of infestation or first visible damage on the crop. Application against larvae or immature adults of <i>D. suzukii</i>. Application can be repeated every 7 days. Resistance notes: Do not apply TRACER™ 480 SC more than 3 (three) times per season to any block of Cherries. Alternate the use of TRACER™ 480 SC with registered insecticides with a different mode of action.
CHIVES Thrips (<i>Thrips tabaci</i>)	15 mℓ (75 – 150 mℓ/ha) + 150 – 250 mℓ light or medium narrow range mineral spray oil OR A registered wetter at the registered dosage rate for use on chives.	Apply in a spray programme as a full cover spray at 500 – 1000 ℓ/ha. Ensure thorough wetting of plants. Spray mixture every 7 – 10 days. Start application when the pest is first noticed or apply as a follow-up application in a spray programme after insecticides from a different class as required in ant-resistant programmes. Apply a minimum of two consecutive TRACER™ 480 SC sprays to ensure effective control of pest. Use the shorter spray interval of 7 days when heavy infestations occur or when climatic conditions favour the pest e.g. during summer months. Notwithstanding control measures some thrip damage may occur.

CROP/PEST	DOSAGE/100 ℓ WATER	REMARKS
CHIVES Thrips (<i>Thrips tabaci</i>) (cont.)		For the purpose of a resistance strategy, do not apply TRACER™ 480 SC in more than four (4) consecutive applications in any 28-day period. Rotate TRACER™ 480 SC in a spray programme with a different chemical class of insecticide for the duration of at least one generation of the pest. Do not apply TRACER™ 480 SC in more than a total of six (6) applications per cultivation.
CITRUS Citrus thrips (<i>Scirtothrips aurantii</i>) American (African) Bollworm (<i>Helicoverpa armigera</i>)	15 mℓ + 300 mℓ of a registered Light or medium narrow range mineral spray oil 20 mℓ	Commence spraying after 90 % petal fall at the first signs of thrip presence. Repeat application when necessary. Apply as a light cover spray to the point of run-off. Do not exceed four applications of TRACER™ 480 SC per season. Rotate to a different class of insecticide for resistance management. Apply TRACER™ 480 SC as a high volume, cover application when scouting indicates infestation level at, or above threshold level. Note: As a single corrective spray against bollworm, TRACER™ 480 SC is more effective against early instar larvae.
CUCURBITS <i>Thripidae</i> Spp.	15 mℓ (75 – 150 mℓ/ha) + 150 – 250 mℓ light or medium narrow range mineral spray oil OR A registered wetter at the registered dosage rate for use on cucurbits.	Apply in a spray programme as a full cover spray at a minimum of 500 ℓ/ha up to 1000 ℓ/ha spray mixture every 7 - 10 days. Start application when the pest is first noticed or apply as a follow-up application in a spray programme after insecticides from a different class as required in anti-resistant programmes. Apply a minimum of two consecutive TRACER™ 480 SC sprays to ensure effective control of pest. Use the shorter spray interval of 7 days when heavy infestations occur or when climatic conditions favour the pest e.g. during summer months.

CROP/PEST	DOSAGE/100 ℓ WATER	REMARKS
CUCURBITS (cont.) American (African) Bollworm <i>(Helicoverpa armigera)</i> American Leafminer spp. <i>(Liriomyza trifolii)</i> Tomato leaf miner moth <i>(Tuta absoluta)</i>	20 mℓ (100 – 200 mℓ/ha) + 150 – 250 mℓ light or medium narrow range mineral spray oil OR A registered wetter at the registered dosage rate for use on cucurbits. 30 mℓ (150 – 300 mℓ/ha) + 150 – 250 mℓ light or medium narrow range mineral spray oil OR A registered wetter at the registered dosage rate for use on cucurbits.	For the purpose of a resistance strategy , do not apply TRACER™ 480 SC in more than four (4) consecutive applications in any 28-day period. Rotate TRACER™ 480 SC in a spray programme with a different chemical class of insecticide for the duration of at least one generation of the pest. Do not apply TRACER™ 480 SC in more than a total of six (6) applications per cultivation.
LAWNS Lawn caterpillar	2 mℓ/10 ℓ water (10 ℓ spray mixture/20 m²)	Apply 10 ℓ spray mixture evenly over 20 m² lawn area with a fine rose watering can as a drench as soon as the lawn caterpillars appear. Repeat the application as soon as a new generation of lawn caterpillars appear.

CROP/PEST	DOSAGE/100 ℓ WATER	REMARKS
LEEEKS Thrips (<i>Thrips tabaci</i>)	15 mℓ (75 – 150 mℓ/ha) + 150 – 250 mℓ light or medium narrow range mineral spray oil OR A registered wetter at the registered dosage rate for use on leeks.	Apply in a spray programme as a full cover spray at 500 – 1000 ℓ/ha. Ensure thorough wetting of plants. Spray mixture every 7 – 10 days. Start application when the pest is first noticed or apply as a follow-up application in a spray programme after insecticides from a different class as required in anti-resistant programmes. Apply a minimum of two consecutive TRACER™ 480 SC sprays to ensure effective control of pest. Use the shorter spray interval of 7 days when heavy infestations occur or when climatic conditions favour the pest e.g. during summer months. Notwithstanding control measures some thrip damage may occur. For the purpose of a resistance strategy, do not apply TRACER™ 480 SC in more than four (4) consecutive applications in any 28-day period. Rotate TRACER™ 480 SC in a spray programme with a different chemical class of insecticide for the duration of at least one generation of the pest. Do not apply TRACER™ 480 SC in more than a total of six (6) applications per cultivation.

CROP/PEST	DOSAGE/100 ℓ WATER	REMARKS
LETTUCE American (African) Bollworm (<i>Helicoverpa armigera</i>)	20 mℓ (100 – 200 mℓ/ha) + 150 – 250 mℓ light or medium narrow range mineral spray oil OR A registered wetter at the registered dosage rate for use on lettuce.	Apply in a spray programme as a full cover spray at a minimum of 500 ℓ/ha up to 1000 ℓ/ha spray mixture every 7 – 10 days. Start application when the pest is first noticed or apply as a follow-up application in a spray programme after insecticides from a different class as required in anti-resistant programmes. Apply a minimum of two consecutive TRACER™ 480 SC sprays to ensure effective control of pest. Use the shorter spray interval of 7 days when heavy infestations occur or when climatic conditions favour the pest e.g. during summer months.
Tomato leaf miner moth (<i>Tuta absoluta</i>)	30 mℓ (150 – 300 mℓ/ha) + 150 – 250 mℓ light or medium narrow range mineral spray oil OR a registered wetter at the registered dosage rate for use on lettuce	For the purpose of a resistance strategy, do not apply TRACER™ 480 SC in more than four (4) consecutive applications in any 28-day period. Rotate TRACER™ 480 SC in a spray programme with a different chemical class of insecticide for the duration of at least one generation of the pest. Do not apply TRACER™ 480 SC in more than a total of six (6) applications per cultivation.

CROP/PEST	DOSAGE/100 ℓ WATER	REMARKS
ONIONS Thrips (<i>Thrips tabaci</i>)	15 mℓ (75 - 150 mℓ/ha) + 150 – 250 mℓ light or medium narrow range mineral spray oil OR A registered wetter at the registered dosage rate for use on onions.	Apply in a spray programme as a full cover spray at 500 – 1000 ℓ/ha. Ensure thorough wetting of plants. Spray mixture every 7 – 10 days. Start application when the pest is first noticed or apply as a follow-up application in a spray programme after insecticides from a different class as required in anti-resistant programmes. Apply a minimum of two consecutive TRACER™ 480 SC sprays to ensure effective control of pest. Use the shorter spray interval of 7 days when heavy infestations occur or when climatic conditions favour the pest e.g. during summer months. Notwithstanding control measures some thrip damage may occur. For the purpose of a resistance strategy, do not apply TRACER™ 480 SC in more than four (4) consecutive applications in any 28-day period. Rotate TRACER™ 480 SC in a spray programme with a different chemical class of insecticide for the duration of at least one generation of the pest. Do not apply TRACER™ 480 SC in more than a total of six (6) applications per cultivation.

CROP/PEST	DOSAGE/100 ℓ WATER	REMARKS
ORNAMENTALS AND ROSES Western Flower Thrip <i>(Frankliniella occidentalis)</i>	5 mℓ/10 ℓ water	<u>Corrective Spray:</u> Remove all open flowers before treatment when thrips are present on Roses. Not essential on any other plants but can improve efficacy. Apply as a full cover spray on foliage, open flowers and buds. <u>Preventative spray:</u> Apply as a full cover spray before buds open and apply at weekly intervals. A minimum of three applications 7 days apart should give sufficient control.
PEACHES including NECTARINES American (African) Bollworm <i>(Helicoverpa armigera)</i>	20 mℓ	Apply TRACER™ 480 SC as a high volume, cover application when scouting indicates infestation level at, or above threshold level. Note: As a single corrective spray against bollworm, TRACER™ 480 SC is more effective against early instar larvae.
Spotted wing fruit fly <i>(Drosophila suzukii)</i>	20 mℓ	Apply TRACER™ 480 SC during flowering at beginning of infestation or first visible damage on the crop. Application against larvae or immature adults of <i>D. suzukii</i>. Application can be repeated every 7 days.
NECTARINES only Thrips (Various species including Western Flower Thrip – WFT – <i>Frankliniella occidentalis</i>)		Early thrip damage normally occurs during the period of early blossom to shortly after blossom. Damage caused by WFT may also occur as late as shortly before harvest. (See “Prevention of Silvering”). Hot weather conditions favour thrips activity. Recommended monitoring methods should be adhered to, to establish the presence and extent of the pest, especially during the susceptible stage.

CROP/PEST	DOSAGE/100 ℓ WATER	REMARKS
NECTARINES only Early damage Prevention of silvering	15 mℓ 15 mℓ	Apply TRACER™ 480 SC during flowering as a high volume, cover application when scouting indicates infestation of pest at, or above threshold levels. Depending on the duration of the flowering period and the infestation level of thrips, a follow-up application within 7 – 10 days may be necessary to obtain adequate protection. Apply TRACER™ 480 SC as a high-volume cover application when first thrip activity, responsible for silvering, is noticed. Do not apply within 7 days of harvest. Resistance management: For resistance management, TRACER™ 480 SC should not be applied in total, more than four times per season on Nectarines.
PEARS American (African) Bollworm (<i>Helicoverpa armigera</i>)	20 mℓ	Apply TRACER™ 480 SC as a high-volume cover application when scouting indicates infestation level at, or above threshold level. Note: As a single, corrective spray against bollworm, TRACER™ 480 SC is more effective against early instar larvae. Resistance management: For resistance management, TRACER™ 480 SC should not be applied in total, more than four times per season on Pears.

CROP/PEST	DOSAGE/100 ℓ WATER	REMARKS
PEAS and GREENBEANS Only peas that will be shelled Potato leafminer <i>(Liriomyza huidobrensis)</i>	30 mℓ (150 - 300 mℓ/ha) + 150 – 250 mℓ light or medium narrow range mineral spray oil OR A registered wetter at the registered dosage rate for use on peas.	Apply in a spray programme as a full cover spray at 500 – 1000 ℓ/ha spray mixture every 7 – 10 days. Start application when the pest is first noticed or apply as a follow-up application in a spray programme after insecticides from a different class as required in anti-resistant programmes. Apply a minimum of two consecutive TRACER™ 480 SC sprays to ensure effective control of pest. The volume of spray mixture to be applied per ha depends on the plant size and plant density. Start with a minimum of 500 ℓ spray mixture/ha on young plants and increase volume up to 1000 ℓ/ha as plant size increases. Use the shorter spray interval of 7 days when heavy infestations occur or when climatic conditions favour the pest e.g. during summer months or when beneficial insects are absent. For the purpose of a resistance strategy, do not apply TRACER™ 480 SC in more than four (4) consecutive applications in any 28-day period. Rotate TRACER™ 480 SC in a spray programme with a different chemical class of insecticide for the duration of at least one generation of the pest. Do not apply TRACER™ 480 SC in more than a total of six (6) applications per cultivation. Note: Do not use plant material for fodder or grazing after harvest.

CROP/PEST	DOSAGE/100 ℓ WATER	REMARKS
PLUMS American (African) Bollworm <i>(Helicoverpa armigera)</i>	20 mℓ	Apply TRACER™ 480 SC as a high volume cover application when scouting indicates infestation level at, or above threshold level. Note: As a single corrective spray against bollworm, TRACER™ 480 SC is more effective against early instar larvae.
Thrips (Various species including Western Flower Thrip – WFT – <i>Frankliniella occidentalis</i>)	15 mℓ	Early thrip damage normally occurs during the period of early blossom to shortly after blossom. Hot weather conditions favour thrip activity. Recommended monitoring methods should be adhered to, to establish the presence and extent of the pest, especially during the susceptible stage. Apply TRACER™ 480 SC during flowering as a high volume, cover application when scouting indicates infestation of pest at, or above threshold levels. Depending on the duration of the flowering period and the infestation level of thrips, a follow-up application within 7 – 10 days may be necessary to obtain adequate protection.
Spotted wing fruit fly <i>(Drosophila suzukii)</i>	20 mℓ	Apply TRACER™ 480 SC during flowering at beginning of infestation or first visible damage on the crop. Application against larvae or immature adults of <i>D. suzukii</i> . Application can be repeated every 7 days. Resistance management: For resistance management, TRACER™ 480 SC should not be applied in total, more than four times per season on Plums.

CROP/PEST	DOSAGE/100 ℓ WATER	REMARKS
POTATOES Potato tuber moth larvae (<i>Phthorimaea operculella</i>) American (African) Bollworm (<i>Helicoverpa armigera</i>) Potato leaf miner (<i>Liriomyza huidobrensis</i>) Tomato leaf miner moth (<i>Tuta absoluta</i>)	30 mℓ (150 - 300 mℓ/ha) + 150 – 250 mℓ light or medium narrow range mineral spray oil OR A registered wetter at the registered dosage rate for use on potatoes.	Apply in a spray programme as a full cover spray at 500 - 1000 ℓ/ha spray mixture every 7 - 10 days. Start application when the pests are first noticed or apply as a follow-up application in a spray programme after insecticides from a different class as required in anti-resistant programmes. Apply a minimum of two consecutive TRACER™ 480 SC sprays to ensure effective control of pests. The volume of spray mixture to be applied per ha depends on the plant size and plant density. Start with a minimum of 500 ℓ spray mixture/ha on young plants and increase volume up to 1000 ℓ/ha as plant size increases. Use the shorter spray interval of 7 days when heavy infestations occur or when climatic conditions favour the pest e.g. during summer months or when beneficial insects are absent. For the purpose of a resistance strategy, do not apply TRACER™ 480 SC in more than four (4) consecutive applications in any 28-day period. Rotate TRACER™ 480 SC in a spray programme with a different chemical class of insecticide for the duration of at least one generation of the pest. Do not apply TRACER™ 480 SC in more than a total of six (6) applications per cultivation. <u>Potato leaf miner (<i>Liriomyza huidobrensis</i>):</u> Use SANAMECTIN 18 EC (Reg. No. L5928) to rotate with TRACER™ 480 SC in an anti-resistance spray programme. Ridge at least twice during growing season (tuber moth).

CROP/PEST	DOSAGE/100 ℓ WATER	REMARKS
RASPBERRIES American (African) Bollworm (<i>Helicoverpa armigera</i>)	20 mℓ	Apply TRACER™ 480 SC as a high volume, cover application when scouting indicates infestation level at, or above threshold level. Note: As a single corrective spray against bollworm, TRACER™ 480 SC is more effective against early instar larvae.
Thrips (Various species including Western Flower Thrip – WFT – <i>Frankliniella</i> <i>occidentalis</i>)	15 mℓ	Early thrip damage normally occurs during the period of early blossom to shortly after blossom, and late damage after harvest on new vegetative growth. Hot weather conditions favours thrip activity. Recommended monitoring methods should be adhered to, to establish the presence and extent of the pest, especially during the susceptible stage. Apply TRACER™ 480 SC during flowering as well as post-harvest when new vegetative growth is attacked, as a high volume cover application when scouting indicates infestation of pest at, or above threshold levels. Depending on the duration of the flowering period and the infestation level of thrips, a follow-up application within 7 – 10 days may be necessary to obtain adequate protection.
Spotted wing fruit fly (<i>Drosophila suzukii</i>)	20 mℓ	Apply TRACER™ 480 SC during flowering at beginning of infestation or first visible damage on the crop. Application against larvae or immature adults of <i>D. suzukii</i> . Application can be repeated every 7 days. Resistance management: For resistance management, TRACER™ 480 SC should not be applied in total more than three times per season on raspberries.

CROP/PEST	DOSAGE/100 ℓ WATER	REMARKS
SPINACH <i>Thripidae</i> spp.	15 mℓ (75 – 150 mℓ/ha) + 150 – 250 mℓ light or medium narrow range mineral spray oil OR A registered wetter at the registered dosage rate for use on spinach.	Apply in a spray programme as a full cover spray at a minimum of 500 ℓ/ha up to 1000 ℓ/ha spray mixture every 7 - 10 days. Start application when the pest is first noticed or apply as a follow-up application in a spray programme after insecticides from a different class as required in anti-resistant programmes. Apply a minimum of two consecutive TRACER™ 480 SC sprays to ensure effective control of pest.
American (African) Bollworm (<i>Helicoverpa armigera</i>)	20 mℓ (100 – 200 mℓ/ha) + 150 – 250 mℓ light or medium narrow range mineral spray oil OR A registered wetter at the registered dosage rate for use on spinach.	Use the shorter spray interval of 7 days when heavy infestations occur or when climatic conditions favour the pest e.g. during summer months.
American Leafminer (<i>Liriomyza trifolii</i>)	30 mℓ (150 – 300 mℓ/ha) + 150 – 250 mℓ light or medium narrow range mineral spray oil OR A registered wetter at the registered dosage rate for use on spinach.	For the purpose of a resistance strategy , do not apply TRACER™ 480 SC in more than four (4) consecutive applications in any 28-day period. Rotate TRACER™ 480 SC in a spray programme with a different chemical class of insecticide for the duration of at least one generation of the pest. Do not apply TRACER™ 480 SC in more than a total of six (6) applications per cultivation.
Tomato leaf miner moth (<i>Tuta absoluta</i>)	150 – 250 mℓ light or medium narrow range mineral spray oil OR A registered wetter at the registered dosage rate for use on spinach.	

CROP/PEST	DOSAGE/100 ℓ WATER	REMARKS
STRAWBERRIES African Bollworm (<i>Helicoverpa armigera</i>)	20 mℓ	Apply TRACER™ 480 SC as a full cover application. Note: As a single corrective spray against Bollworm, TRACER™ 480 SC is more effective against early instar larvae.
Thrips (Various species including Western Flower Thrip – (<i>Frankliniella occidentalis</i>)	15 mℓ	Commence spraying at the first signs of Thrips presence. Repeat application if necessary. Apply as a light cover spray. Thorough coverage of the target area is essential.
Spotted wing fruit fly (<i>Drosophila suzukii</i>)	20 mℓ	Apply TRACER™ 480 SC during flowering at beginning of infestation or first visible damage on the crop. Application against larvae or immature adults of <i>D. suzukii</i> . Application can be repeated every 7 days. Resistance Note: do not apply TRACER™ 480 SC more than 3 (three) times per season to any field of Strawberries. Alternate the use of TRACER™ 480 SC with registered insecticides with a different mode of action.
TABLE GRAPES American (African) Bollworm (<i>Helicoverpa armigera</i>)	20 mℓ	Apply TRACER™ 480 SC as a high volume, cover application when scouting indicates infestation level at, or above threshold level. Note: As a single corrective spray against bollworm, TRACER™ 480 SC is more effective against early instar larvae.
Thrips (Various species including Western Flower Thrip – <i>Frankliniella occidentalis</i>)	15 mℓ	The presence of thrips and their coupled damage on grapes occurs mainly during the period of early flowering to shortly after flowering. In some areas and under certain conditions (hot and dry weather) thrips may occur at a later stage during the season. The presence of thrips should be monitored on a regular basis and control measures should be considered when scouting indicates infestation at, or above threshold levels. Apply TRACER™ 480 SC as a high-volume cover application. Depending on the duration of the flowering period or presence of Thrips, a follow-up application within 5 – 7 days may be necessary to obtain adequate protection.
Spotted wing fruit fly (<i>Drosophila suzukii</i>)	20 mℓ	Apply TRACER™ 480 SC during flowering at beginning of infestation or first visible damage on the crop. Application against larvae or

		immature adults of <i>D. suzukii</i>. Application can be repeated every 7 days. Do not apply TRACER™ 480 SC in more than two consecutive applications per season. (Adhere to withholding periods).
CROP/PEST	DOSAGE/100 ℓ WATER	REMARKS
TOMATOES American leafminer (<i>Liriomyza trifolii</i>) American (African) bollworm (<i>Helicoverpa armigera</i>) Tomato Semi-looper (<i>Chrysodeixis acuta</i>) Tomato leaf miner moth (<i>Tuta absoluta</i>)	30 mℓ (150 - 300 mℓ/ha) + 150 – 250 mℓ light or medium narrow range mineral spray oil OR A registered wetter at the registered dosage rate for use on tomatoes.	Apply in a spray programme as a full cover spray at 500 – 1000 ℓ/ha spray mixture every 7 - 10 days. Start application when the pests are first noticed or apply as follow-up applications after insecticides from a different chemical class as required in anti-resistant programmes. Apply a minimum of two consecutive TRACER™ 480 SC sprays to ensure effective control of pests. The volume of spray mixture to be applied per ha depends on the plant size and canopy density. Start with a minimum of 500 ℓ spray mixture/ha on young plants and increase volume up to 1000 ℓ/ha as plant size increases. Use the shorter spray intervals when the infestations are heavy or the climatic conditions favour the pest e.g., during summer months or in absence of natural enemies. For the purpose of a resistance strategy, do not apply TRACER™ 480 SC in more than four (4) consecutive applications in any 28-day period. Rotate to a different chemical class of insecticide for at least one generation. Do not apply more than a total of six (6) treatments per cultivation.

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