1.0 INSECTICIDE

1.1 Avaunt® 150SC

An insecticide for the control of lepidoptera insect pests - Diamond Back Moth (*Plutella xylostella)* on *Brassica spp*. and the African Bollworm (Helicoverpa armigera) on Snowpeas and tomato; *Spodoptera spp*. on Ornamentals / snow peas; Leaf miner (Leucoptera spp.) and Giant looper (Ascotis selenaria) on coffee.

Indoxacarb ……150g/Kg

Mode of action
Avaunt controls lepidopterous pests by ingestion and contact action. It is active against all larval stages and also shows ovicidal activity on some species.

BENEFITS

- **Rapid, effective control:** Cessation of insect occur within 0 – 4 hours with pest paralysis and death occurring in 4 – 48 hours
- **Dual mode of entry:** Ingestion (primary) and contact activity for increased control levels
- **Rain fastness:** It resists wash off once dried, typically 2 hours, under dry conditions. The longer the interval between application and Rain the more resistant to wash off.
- **IPM compatible:** Most beneficial insects that help to suppress aphid, Diamond Back Moth and Mite flare up are not harmed.
- **Resistance management:** There is no evidence of cross-resistance to existing insecticides
- **Favourable environmental and ecological profile:** It is not volatile. It is not persistent in solid. Highly unlikely to contaminate surface and ground water due to low water solubility and low soil mobility.
- **Worker safety:** Residual risk to workers and consumers because of favourable re-entry intervals (low toxicity) and pre harvest interval (not systematic). Minimal personal protective equipment needed.
- **Residual control:** On major worm pests to protect your vegetable crop with short re-entry and days to harvest.

It is active in high temperatures. Best results are obtained when **Avaunt** is applied before egg hatch to ensure better control of the young larvae.

Recommendations for Use

Crop	Pest	Rate of application	Remarks
Brassicae Spp	Diamond Back Moth (*Plutella xylostella*)	330 ml / Ha 6.6 ml/ 20L or 5.0ml / 15L	Applications should not exceed 3 times within a 10-day interval. Apply by tractor mounted field sprayers with ground directed booms. PHI ~ 3 days
Snow peas, Tomatoes & Ornamentals.	African Bollworm (*Helicoverpa armigera*) and *Spodoptera* spp	250 ml/ Ha 5.0ml / 20L or 4.0ml / 15L	Applications should not exceed 3 times within a 10-day interval. PHI ~ 1 day
Coffee	Leaf miner (Leucoptera spp), Giant looper (Ascotis selenaria)	150ml/ Ha 3.0ml/ 20L or 2.25ml/ 15L	Spray as soon as pests are seen and repeat if necessary. Applications should not exceed 3 times within a 10-day interval.
Cotton	Cotton African bollworm (Helicoverpa armigera)	200 ml/ Ha 4.0 ml/ 20L	Spray as soon as pests are seen and repeat if necessary. Applications should not exceed 3 times within a 10-day interval.

NB: Use 1000L of water per Ha.

Timing of application

Vegetables (*Brassica* spp), Snowpeas, ornamentals, Tomatoes and coffee:

Application of the product should normally be when the pest is present and visible to the farmer. Therefore, the larvicidal activity is more important than the ovicidal activity. The fast growth of vegetables normally necessitates re-application every 8 - 10 days; this being a reflection of crop growth rather than the biological persistence of the product.

Compatibility

Compatible with a number of commonly used insecticides, including Farm-X, Farsban, Danadim, Cypemethrin, endosulfan, imidacloprid, Lannate, as well as several fungicides.

Phytotoxicity

No phytotoxicity observed if used as recommended.

Rain fastness

As long as an application of **Avaunt** has dried on the plant there is no need to re-treat in the event of rain.

Top

1.2 Danadim® 40EC

It is a contact and systemic organophosphorus insecticide and acaricide for control of a wide range of pests such as Aphids, Thrips, Whiteflies, Fruitflies, Jassids, Rice Stem borers, Scales, Plant hoppers etc. On ornamentals, coffee, wheat, barley, rice, grapefruit, lemons, oranges, corn, pyrethrum, cotton, tobacco, melons, beans, sorghum, soy beans, tomatoes, cabbages and other vegetables.

Dimethoate……40% v/v

Mode of action: Systemic insecticide with contact and stomach action
Biochemistry: Cholinesterase inhibitor

Benefits

- No pests have been reported to develop resistance to this product.
- It is a broad-spectrum insecticide.
- Well established efficacy
- Fast acting

Recommendations for use

Use **Danadim** at a rate of 1.2Lt in 750 – 1000 litres of water per hectare unless otherwise stipulated. For general garden application mix 30 ml of product in 20 litres of water. Use the provided measuring cup.

Rates of application and crops

Beans, Tomato, Potato, Cabbage, Citrus & Tobacco 1.5 – 2.0L/ Ha in 750 – 1000L of water (30 – 40ml/ 20L)
Cotton & Coffee - 0.7 – 1.0 Lt/ha in 750 - 1000L of water (15 - 20ml/ 20L)
Pyrethrum Thrips 0.7L/ Ha in 1000L of water (15ml/ 20L water)
NB: 14 days spray intervals.

Compatibility

Danadim is compatible with most fungicides and insecticides commonly used except those with an alkaline reaction. However unless specifically recommended, tank mixtures will be at the user's risk. We can only recommend to the user to make a preliminary test – at his responsibility and expense – with the planned mixtures, to observe the physical aspects of the spray and the reaction it produces on the crop to be treated during the days following the test.

Timing of application

Treatments must be adapted to the growing conditions of the crop and to the biological cycle of the pests. Apply when first signs appear and repeat at one or two week's intervals.
Top

1.3 Delfin® 6.4WG

Delfin is a biological insecticide based on the SA-11 strain of *Bacillus thuringiensis* (Bt) subspecies *kurstaki.* (Bt). Is a spore-forming bacterium which produces, in addition to spores, crystals of a protein endotoxin. This endotoxin is specifically toxic to lepidopteran larvae and hard-to-kill pests like armyworms and *Heliothis* / *Helicoverpa* in agriculture, horticulture, forestry, and amenity areas.

Bacillus thuringiensis subspecies *Kurstaki*…….… 32,000 IU/mg T.ni and 52,000 IU/mg *Spodoptera* units (equivalent to 6.4% active ingredient)

Mode of action

Once ingested, specific gut enzymes dissolve the crystal proteins into active sub-fractions. These then attach themselves to receptor sites in the gut wall, resulting in pore formation. As a consequence, gut paralysis occurs leading to a cessation of feeding, and therefore no further feeding damage to the plant.

Rate of application

0.25 – 0.5 Kg/ Ha (5 – 10g/ 20L Knapsack)

Crop	**Pest**
Cabbages, French beans & Vegetable in general	Cabbage looper (*Trichoplusia ni*), Diamond back moth (*Plutella xylostella*), Cabbage whites (*Pieris brassicae, Pieris rapae*), cabbage moth (*Mamestra brassicae*),
Citrus	Fruit leaf rollers, Orange dog
Coffee	Giant Looper (*Ascotis selenaria reciprocaria*)
Cotton	*Heliothis* / *Helicoverpa spp*., *Spodoptera spp*., looper (*Trichoplusia ni*), and others.
Maize	European corn borer (*Ostrinia nubilalis*), corn ear worm (*Heliothis spp*.)
Pome fruits	Codling moth (*C. pomonella*), ermine moth (*Yponomeuta malinellus*), tortricids (*Adoxophyes orana, Archips podana, Pandemis heparana*), tent caterpillar (*Malacosoma spp*.), brown-tail moth (*Euproctis chrysorrhoea*), citrus flower moth (*Prays citri*)
Stone fruits/ Mango	Peach twig borer (*Anarsia lineatella*), Oriental fruit moth (*Cydia molesta*), etc,
Tobacco	Tobacco budworm (*Heliothis virescens*), tobacco hornworm (*Manduca sexta*), *Spodoptera spp*., and others.
Tomato	Tomato fruitworm (*Helicoverpa armigera*), tomato worm (*Spodoptera littoralis*), tomato looper (*Chrysodeixis spp.*), tomato moth (*Lacanobia spp*).
Vines	Grape berry moths (*Lobesia botrana, Clysia ambiguella*), grape leaffolder (*Desmia funeralis*), omnivorous leafroller (*Platynota stultana*) and other defoliators (*Sparganothis pilleriana*, *Argyrotaenia pulcellana*).

Timing of application

Apply as soon as early instar larvae are observed in the crop. Multiple applications may be needed to maintain protection in cases where crops exhibit quick growth.

Preparation of the spray

Dilute the product in the total quantity of water, mixing to obtain a complete mixture. Use the spray on the same day of its preparation - do not leave in a spray tank overnight.