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## STARKLE 200 SG IS A NOVEL INSECTICIDE FOR CONTROL OF MIRIDS IN MUNG BEANS

**STARKLE is a new insecticide registered for green mirid control in mung beans. STARKLE has fast knockdown and good residual activity on mirids in mung beans.**

### MODE OF ACTION

STARKLE is a Group 4A insecticide. The active ingredient in STARKLE, dinotefuran, is a member of the nitroguanidine group of insecticides which is related to the neonicotinoid insecticides. Dinotefuran differs from most neonicotinoids in basic chemical structure and has unique properties not shared with other neonicotinoids.

STARKLE is highly water soluble and therefore is quickly absorbed and translocated by plants. For optimum systemic activity, the plant must be actively transpiring and not stressed. STARKLE kills target insects through both contact and ingestion. Following ingestion, there is rapid cessation of feeding, however insect death may take several days.

### APPLICATION RATE

The application rate for mirids is 90 g/ha. STARKLE will control both nymphs and adults to reduce populations below threshold.

### APPLICATION

STARKLE moves acropetally (towards the growing points) in the plant from the point of deposition; adequate product deposition (i.e. >30 droplets/cm<sup>2</sup>) must be achieved where the pest is located on the plant. This means thorough coverage of the crop is essential. **The minimum water application volumes on the label must be increased to achieve optimal coverage** depending on crop stage, canopy density, target pest location in the crop, and weather conditions. User experience shows efficacy under certain conditions (high temperatures and Delta T of 8-10 or greater) and/or denser crop structure, benefits from higher application volumes. However, spray application should occur when application parameters are optimal, taking into account temperature, relative humidity, delta T and wind speed at the application site.

**Aerial application:** Apply in a minimum spray volume of 30 L/ha. Increase to 40 to 50 L/ha under suboptimal conditions. The product should be applied with medium (not coarse) spray droplets. Wind speed is important to distribute the spray throughout the crop; user experience suggests between 10 and 20 km/h optimises efficacy.

**Ground application:** Apply in a minimum spray volume of 80 L/ha.



Apply as a blanket spray or banded spray ensuring thorough coverage is achieved.

A strategy to minimise spray drift should be employed at all times when applying near sensitive areas.

### MIRID POPULATION ASSESSMENT AND CONTROL GUIDELINES

It is critical to correctly measure mirid density in the field to establish application timing and monitor product performance.

Mirids are a major pest of flowering and podding mung beans. The most effective way to monitor for mirids is to use a beatsheet. Mirids may be present at any stage from seedlings to late podfill but crops are at greatest risk from budding through to mid-podding. Nymphs will be visible within 2 weeks of adults entering the crop. When spraying STARKLE, ensure thorough spray coverage of the target. Knowledge of the mirid population composition (nymphal instar size, adults etc.) in the pre- and post-treatment population assessments is important in understanding the effectiveness of mirid sprays. This information is paramount to determine if there is insect survival, recruitment from eggs that were not affected by an insecticide treatment, or an influx of adults from outside sources. **STARKLE controls nymphs and adults; eggs are not controlled.** Follow mirid control guidelines as detailed in the GRDC document "Mirids in Mung beans, Tips and Tactics".

### STARKLE AND IMPACT ON BENEFICIAL SPECIES

STARKLE has been tested over a four-year period under Australian field conditions and is considered to have a moderate effect on beneficials. STARKLE does not flare heliothis when applied at the mirid rate.

### BEE SAFETY

Spray residues remain toxic to bees for 2-3 days after application.

To protect long term viability of beehives, remove or cover beehives during application and for 5 days after treatment. Follow CropLife guidelines under their BeeConnected program.

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## RESISTANCE MANAGEMENT

DO NOT apply more than 2 applications per crop.  
DO NOT reapply within 14 days of a previous DINOTEFURAN (STARKLE) application.  
Use in accordance with current CropLife Insecticide Resistance Management Strategies.

## WITHHOLDING PERIOD

**Harvest:** DO NOT harvest for 14 days after application.  
**Grazing:** DO NOT graze or cut for stock food for 14 days after application.

## EXPORT TRADE ADVICE - TREATED CROPS

Treated crop commodities destined for export may require extra time between application and harvest to be accepted in some export markets. Before you use this product, you are advised to contact AgNova Technologies and/or your industry body about any potential trade issues and their management.

## MIXING, SURFACTANTS AND DROPLET SIZE

Partially fill the spray tank with clean water and add the required quantity of product to the water surface. Allow the product to submerge before agitating. Top up the tank with clean water to the required volume. Surfactants are not required for use with STARKLE but may be used if required with a tank-mix partner. Use only medium spray droplets according to specifications of the nozzle manufacturer that refer to the ASAE S572 Standard or BCPC guideline.

## COMPATIBILITY

A range of tank-mix partners has been tested for compatibility (physical and bio-efficacy) with STARKLE. These include:  
Abamectin, Altacor\* (+BS1000), Affirm\* (+BS1000), Dimethoate, Steward\*, Pix\* and Round-up Ready\* Glyphosate.  
As formulations differ between brands, growers should conduct their own small scale compatibility test prior to mixing commercial quantities.  
Tank-mixes should be prepared and sprayed out as soon as possible. Do not leave tank-mixed chemicals overnight.

## BENEFITS OF STARKLE

- Cost effective
- Fast knockdown and lasting control of mirid nymphs and adults
- No resurgence of heliothis
- Moderate impact on beneficials
- Unique properties not shared with other neonicotinoids
- Low mammalian toxicity & low occupational exposure risk
- Safe to mung beans

The following is an extract of the product label and does not constitute the complete directions for use. The product label should be read thoroughly before opening the packaging.

CROP	PEST	RATE	CRITICAL COMMENTS
Mung beans	Green mirid ( <i>Creontiades dilutus</i> )	90 g/ha	Monitor crops and commence applications once local thresholds are reached. Ensure thorough spray coverage of the target. Inadequate spray coverage may result in reduced pest control, especially in the lower crop canopy and against established populations. Performance can be reduced in stressed crops. Continue to monitor crops and make a subsequent application as necessary.

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