Product Overview

- **CORMORAN®** is a unique insecticide combination for the targeted control of the key pests of Pome fruit and Stone fruit and will be a key partner in rotation with alternative chemistry for resistance management to ensure sustainable production.
- **CORMORAN®** provides rapid knockdown and residual control of key chewing insects including Codling Moth and Lightbrown Apple Moth whilst also preventing damage by sucking pests such as Plague Thrips, Longtailed Mealybug and Apple Dimpling Bug.
- In Stone Fruit **CORMORAN®** provides rapid knockdown and residual control.
- **CORMORAN®** will control Codling Moth (*Cydia pomonella*) and Lightbrown Apple Moth (*Epiphyas postvittana*) and should be used in conjunction with a season long management program including insecticides with alternative modes of action.

Mode of Action

**Novaluron** is an Insect Growth Regulator (Group 15) that inhibits chitin biosynthesis and results in abnormal cuticle formation and abortive moulting. Its effects are slow to appear but irreversible. Novaluron acts primarily through ingestion by the target insect with some contact and ovicidal activity which allows for extended residual control.

**Acetamiprid** is a member of the Neonicotinoid (Group 4A) insecticide family and interferes with neurotransmission in target insects causing feeding to cease within hours or even minutes and achieves mortality within 24-48 hours. Acetamiprid acts through both ingestion and direct contact with insects and some translaminar movement within plant tissue.

Both active ingredients have a low impact on most beneficial insects and predatory mites including *Typhlodromus occidentalis*.

Cormoran® Application

- In Apples **CORMORAN®** can be applied once per season up to 70 days prior to harvest for Codling Moth or Light Brown Apple Moth (LBAM). Cormoran should be applied to target the first generation only in apples.
- In Pears **CORMORAN®** can be applied twice per season up to 35 days prior to harvest, and targeted against multiple generations of Codling Moth and/or Light Brown Apple Moth.
- In Stone Fruit **CORMORAN®** can be applied twice per season up to 7 days prior to harvest, and targeted against multiple generations of Light Brown Apple Moth and Oriental Fruit Moth.

**Codling Moth**: 70 mL/100 L of water or 1.4 L/ha

- **CORMORAN®** can be used to control the first generation of Codling moth in Apples and multiple generations in Pears.
- Forecasting of Codling Moth phenology based on pheromone trap catches and physiological time models should be used to ensure applications are timed correctly.
- When targeting the first generation, the first spray should be applied just prior to the generation egg hatch and within 110 Degree Days of Codling moths being detected in traps.

*a Using **CORMORAN®** closer than 70 days prior to harvest in Apples is currently a trade risk. Adama are working to align the use guidelines in Apples with that in Pears and expect this may occur in time for 2018/19 summer.*
**Features**

**Benefits**

<table>
<thead>
<tr>
<th>Features</th>
<th>Benefits</th>
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<tbody>
<tr>
<td>Proven efficacy against the primary pests of Pome fruit</td>
<td>Confidence that your crop is protected</td>
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<td>Fast acting for rapid removal of pest populations</td>
<td>Prevention of damage to fruit maximising quality and yield potential</td>
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<td>Low toxicity to predatory insects and mites</td>
<td>Minimal disruption to beneficial insect populations</td>
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<td>Unique mode of action for use in rotation with Altacor* and alternatives</td>
<td>Key Resistance Management tool that will assist in sustainable production</td>
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<tr>
<td>Proven crop safety in Pome fruit and Stone fruit.</td>
<td>Confidence that fruit quality will not be compromised.</td>
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**Lightbrown Apple Moth:** 70 mL/100 L of water or 1.4 L/ha
- Monitor for Lightbrown apple moth activity from late flowering using pheromone trapping
- CORMORAN® application for Codling Moth after petal fall or 140 Degree Days after Lightbrown Apple Moths are detected in traps will also control Lightbrown Apple Moth larvae that are also present

CORMORAN® will control significant sucking pests including Longtailed Mealybug (*Pseudococcus longispinus*) and Apple Dimpling Bug (*Campylomma leibknechti*).

**Apple Dimpling Bug and Plague Thrips:** 70 mL/100 L of water or 1.4 L/ha
- Apply an alternative mode of action product such as Mavrik® during flowering
- Apply CORMORAN® after flowering to protect developing fruitlets from damage caused by Apple Dimpling Bug and Plague Thrips
- Monitor insect numbers and apply an alternative mode of action insecticide 5-7 days later if populations approach threshold numbers.

**Longtailed Mealybug and Tuber Mealybug:** 70 mL/100 L of water or 1.4 L/ha
- Apply CORMORAN® as part of a season long spray program targeted at preventing mealybugs from migrating into the calyx of the fruit where they are difficult to control
- Monitor the crop and apply the first application of CORMORAN® as soon as crawlers are seen after petal fall
- Some mealybugs sheltering in the canopy may not be adequately controlled and these survivors can multiply and infest developing fruit. Application of insecticides from other mode of action groups is recommended to ensure control of any surviving mealybugs.

**Resistance Management**

CORMORAN® should be used in a strategic spray program in conjunction with insecticides from alternative mode of action groups. The unique mode of action of CORMORAN® will play an important role in reducing the reliance on other insecticides. Group 28 insecticides such as Altacor® have proven very effective in recent years, however, resistance development may occur if subjected to overuse.