BEFORE USING THIS PRODUCT, READ THE LABEL CAREFULLY. KEEP OUT OF REACH OF CHILDREN AND ANIMALS.

Insecticide

REACT 100 EC

Reg. No. L 9155 Act No. 36 of 1947

3: 11/8/2022 – Mar2023

An emulsifiable concentrate stomach insecticide for the control of insects on crops as listed.

ACTIVE INGREDIENT

novaluron (benzoylurea) 100 g/ℓ

GROUP 15 INSECTICIDE

DANGER

Hazard Statements:

May be harmful if swallowed.
Causes severe skin burns and eye damage.
Causes serious eye irritation.
May cause respiratory irritation.
May damage unborn child.
Very toxic to aquatic life.
Very toxic to aquatic life with long lasting effects.

Precautionary Statements:

Avoid breathing dust, fumes, mists, gas, vapours or spray.
Avoid release into the environment.

ℓ

villa

UN Number: 1760

Registration holder: VILLA CROP PROTECTION (PTY) LTD.
Co. Reg. No. 1992/002474/07
PO Box 10413, Aston Manor, 1630
Tel. (011) 396 2233
Website: www.villacrop.co.za

24 HR EMERGENCY NUMBERS:
Griffon Poison Centre: +27 82 446 8946
24 HR Transport / Spill Emergency no: (Hazcall24) +27 86 044 4411
(Client: Villa Crop Protection)

REFER TO DETAILS AS PRINTED ON CONTAINER / BAG

DIRECTIONS FOR USE ENCLOSED
Batch Number:
Date of Manufacture:

REACT 100 EC
Reg. No. L 9155 Act No. 36 of 1947
IRAC INSECTICIDE GROUP CODE: 15

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novaluron (benzoylurea)……..... 100 g/ℓ

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WARNINGS

Withholding periods:

Minimum number of days between the last application and harvest:	
Apples and Pears	84 days
Potatoes	36 days

NOTE

ABOVE-MENTIONED WITHHOLDING PERIODS REFER TO COMPLIANCE WITH LOCAL MAXIMUM RESIDUE LIMITS (MRL'S). HOWEVER, IT IS IMPORTANT TO NOTE THAT IMPORT TOLERANCES OF OTHER COUNTRIES MIGHT POSSIBLY BE EXCEEDED. IF THE TREATED CROP WILL BE EXPORTED, FIRST CONSULT THE RELEVANT IMPORTER OR EXPORTING BODY REGARDING THE USE OF THIS PRODUCT, MRL'S AND RECOMMENDED WITHHOLDING PERIODS.

Hazard statements:

May be harmful if swallowed.
Causes severe skin burns and eye damage.
Causes serious eye irritation.
May cause respiratory irritation.
May damage unborn child.
Very toxic to aquatic life.
Very toxic to aquatic life with long lasting effects.

- Handle with care.
- **Harmful to Silkworms**.
- **The product is not toxic to adult Honeybees but can be harmful to the brood.**
- Store away in a cool dry place away from food and feeds.
- Keep out of reach of children, uninformed persons and animals.
- Re-entry: Do not enter treated area until spray deposit has dried unless wearing protective clothing.

Aerial application:
Notify all inhabitants in the immediate vicinity of the area to be sprayed and issue the necessary warnings. Do not spray over or allow the drift to contaminate water or adjacent areas.

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 to the remedy concerned, as well as by the method, time and accuracy of the application. The registration holder, furthermore, does not accept responsibility for damage to crops, vegetation, the environment or harm to man or animal or for the lack of performance of the remedy concerned, due to failure of the user 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 event of uncertainty.

PRECAUTIONS

Precautionary statements:

Obtain, read and follow all safety instructions before use.

Avoid breathing dust, fumes, mists, gas, vapours or spray.
Wash hands and face thoroughly after handling. Do not touch eyes.
Use only outdoors in a well-ventilated area.
Avoid release into the environment.
Wear impervious rubber gloves and boots, protective clothing and chemical safety goggles.
IF SWALLOWED: Get medical help.
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
IF ON SKIN: Take off immediately all contaminated clothing. Immediately rinse with water for several minutes.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
IF IN EYES: Immediately rinse with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Get emergency medical help immediately.
IF exposed or concerned, get medical advice.
Get medical help if you feel unwell.
If eye irritation persists: Get medical help.
Wash contaminated clothing before use.
Collect spillage.
Store in a well-ventilated place. Keep container tightly closed.
Store locked up.
Dispose of contents/container in accordance with local regulations.

- Do not eat, drink or smoke whilst mixing or applying the product, or before washing hands and face and change of clothing.
- Prevent drift of spray mist onto other crops, grazing, rivers, dams or areas not under treatment or to nearby water sources.
- Thoroughly clean the spraying equipment directly after use and dispose of wash water where it will not contaminate food, grazing, boreholes, rivers or dams.
- **TRIPLE RINSE THE EMPTY CONTAINER AS FOLLOWS**: Invert the empty container over the spray or mixing tank and drain for at least 30 seconds after the flow has slowed down to dripping. Thereafter rinse the empty container three times in succession with one quarter of the container volume fresh water and decant the rinsate into the spray or mixing tank. Puncture the triple rinsed container and dispose of via an approved collector or recycler www.croplife.co.za. Do not bury, burn, or donate the container to any other parties that may use it as a container for food or beverages.
- **Never** re-use the empty container for any other purpose.
- Prevent contamination of food, feeds, drinking water and eating utensils.

Relevant hazardous components	
Novaluron	10 %
Polyoxyethelenealkyl (C 10-12) ether phosphate	< 25 %
N-Methyl-2-pyrrolidone	< 20 %

FIRST AID MEASURES

Remove the victim from the area of exposure. Wash off remaining material with plenty of water. In the event of any complaints or symptoms, avoid further exposure. Immediately consult a doctor.

Inhalation: Remove person from contaminated area to fresh air and assist breathing as needed. **Seek medical attention if irritation occurs.**

Skin: Remove contaminated clothing and shoes. Gently wipe off excess chemical. Wash skin gently and thoroughly with water and non-abrasive soap. **Obtain medical attention if irritation persists.**

Eyes: Flush eyes with clean water for at least 15 to 20 minutes. Lift eyelids to facilitate irrigation. If present, remove contact lenses after 5 minutes and continue rinsing. **Seek medical attention.**

Ingestion: Seek medical attention or call a poison control centre for treatment advice. Do not induce vomiting unless instructed to do so by a poison control centre or doctor. Do not give anything by mouth to an unconscious person. If the person is alert, rinse mouth thoroughly with water.

RESISTANCE WARNING

REACT 100 EC is a group code 15 insecticide (Inhibitors of chitin biosynthesis, type O). Any insect population may contain individuals naturally resistant to **REACT 100 EC** and other group code 15 insecticides. The resistant individuals can eventually dominate the insect population if these insecticides are

used repeatedly and exclusively in programs. These resistant insects may not be controlled by **REACT 100 EC** or any other group code 15 insecticides.
To delay insecticide resistance:

- avoid exclusive repeated use of insecticides from the same insecticide group code. Alternate or tank mix with products from different insecticide group codes,
- integrate other control methods (chemical, cultural, biological) into insect control programs.

Because **REACT 100 EC** is an Insect Growth Regulator (IGR), its mode of action differs from the confentional pyrethroids, carbamates and organophosphates. It can therefore be successfully used where resistance problems are experienced with those compounds.

MODE OF ACTION

REACT 100 EC is absorbed mainly by ingestion but shows some contact activity. Causes abnormal endocuticular deposition and abortive moulting through the inhibition of chitin synthesis.

USE RESTRICTIONS

- Do not use on Comice pears.
- Do not use in vines. Prevent drift of spray cloud onto vines.

DIRECTIONS FOR USE: Use only as directed.

Product information:

- Product properties:
  - **REACT 100 EC** is an effective alternative insecticide for the control of foliage feeding Lepidopterous pests (larvae of moths and butterflies) that became resistant to insecticides from other mode of action groups (e.g., pyrethroids or organophosphates).
  - The active ingredient of **REACT 100 EC** inhibits the biosynthesis of chitin, causing interference with the development of the larva's cuticle. Normal growth and development of the larvae are hampered.
  - It has no effect on the adult insect but acts as a sterilant on the adult females.
  - It prevents the first larval molt in the egg to take place; it therefore prevents egg hatching.
  - **REACT 100 EC** should therefore be present on the target surface at or just after egg-laying or when the first larval instar is present.
  - **REACT 100 EC** shows good stomach activity. It's residual activity on leaves and translaminar action is excellent.

- Crop and environmental properties:
  - No unacceptable residue levels will be found in or on the crop at time of harvesting if **REACT 100 EC** is used as directed.
  - If applied at the dosage rates indicated below, **REACT 100 EC** will be safe to adult stages of natural enemies. However, immature stages of certain predatory insects can adversely be affected.

Crop recommendations:

1. **Potatoes**
   - Potatoes remaining in the soil for a longer period before lifting will receive protection against Potato tuber moth larvae only when **REACT 100 EC** is applied as directed.
   - **REACT 100 EC** applications must follow on a preceding maintenance programme using insecticides, with non-related mode of action, during the early stages of crop development.
   - Ridge at least two times during the season.
   - Acceptable control will only be achieved by applying multiple successive applications of **REACT 100 EC**. The number of applications depends on the intensity of re-infestations.

Compatibility:

- The compatibility of **REACT 100 EC** may be influenced by several factors. As factors influencing compatibility may vary, a physical compatibility test must always be performed before such a tank mixture is sprayed. In the case of uncertainty, contact the supplier or the registration holder.
- When **REACT 100 EC** is used in conjunction with any other agricultural remedy, all **WARNINGS, PRECAUTIONS** and **DIRECTIONS FOR USE** mentioned on these labels, must be adhered to.

Mixing instructions:

- Fill the spray tank to at least half of the required volume with clean water. Ensure sufficient agitation and then add the required measured volume of **REACT 100 EC** to the water.
- Maintain agitation during the mixing process.
- Apply the prepared spray mixture as soon as possible (recommended within four (4) hours). Ensure agitation during application.
- Prepared spray mixture must not be left in the spray tank for any length of time, e.g., overnight.

Application instructions:

General:

- Do not apply during the heat of the day or if rain is pending.
- All applications must be performed with correctly calibrated spray equipment that is in good working order, and which will give the desired coverage of the target area.
- Ensure that thorough penetration and droplet coverage is obtained.

Ground application:

- **REACT 100 EC** can be applied by means of ground spraying equipment such as tractor mounted boom and nozzle sprayers or mist blowers.

Aerial application:

Aerial application of **REACT 100 EC** may only be done by a registered aerial application operator using a correctly calibrated, registered aircraft according to the instructions of SANS Code 10118 (Aerial Application of Agricultural Pesticides). Ensure that the spray mixture is distributed evenly over the target area and that the loss of spray material during application is restricted to a minimum. It is therefore essential that the following criteria be met:

- Volume: A spray mixture volume of 30 to 40 litres per hectare is recommended. As this product has not been evaluated at a reduced volume rate, the registration holder cannot guarantee efficacy, or be held responsible for any adverse effects if this product is applied aerially at a lower volume rate than recommended above.
- Droplet coverage: 30 to 40 droplets per cm² must be recovered at the target area.
- Droplet size: A droplet spectrum with a VMD of 250 to 280 micron is recommended. Limit the production of fine droplets less than 150 micron (high drift and evaporation potential) to a minimum.
- Flying height: Maintain the height of the spray boom at 3 to 4 metres above the target. Do not spray when aircraft dives, is in a climb or when banking.
- Use suitable atomising equipment that will produce the desired droplet size and coverage, but which will ensure the minimum loss of product. The spraying system must produce a droplet spectrum with the lowest possible Relative Span.
- Position all the atomisers within the inner 60 to 75 % of the wingspan to prevent droplets from entering the wingtip vortices.
- The difference in temperature between the wet and dry bulb thermometers, of a whirling hygrometer, should not exceed 8 °C.
- Stop spraying if the wind speed exceeds 15 km per hour.
- Stop spraying under turbulent, unstable and dry conditions during the heat of the day.
- Spraying under temperature inversion conditions (spraying in or above the inversion layer) and/or high humidity conditions (relative humidity 80 % and above) may lead to the following:
  a) reduced efficacy due to suspension and evaporation of small droplets in the air (inadequate coverage),
  b) damage to other sensitive crops and/or non-target areas through drifting of the suspended spray cloud away from the target field.
- Ensure that the aerial spray operator knows exactly which fields to spray.

Obtain an assurance from the aerial spray operator that the above requirements will be met, and that relevant data will be compiled in a logbook and kept for future reference.

APPLICATION RATES

Crop / Pest	*Dosage rate*	*Remarks*
Apples and Pears Codling moth *(Cydia pomonella*)	35 mℓ / 100 ℓ water (350 mℓ / ha)	Apply as a full cover application* before 75 % petal fall. Thorough coverage of all parts of the plants is essential. Apply at least 350 mℓ **REACT 100 EC** per hectare. African bollworm (*Helicoverpa armigera)* and Oriental fruit moth (*Grapholitha molesta*) will also be controlled if present at time of application. * - Calculate the volume to be applied per hectare according to the Tree-Row-Volume method of Unrath.
Potatoes Larvae of the potato tuber moth (*Phthorimaea operculella*)	350 mℓ / ha	Use the product in an application window of 1 to 3 successive applications. Start with application at first signs of infestation, or when a mean number of 20 moths are caught in a pheromone trap per night, or 130 to 140 moths per week. Apply a follow-up treatment not later than 2 weeks after the first application. If necessary, apply a third application two (2) weeks after the second application. **However, do not exceed four (4) applications per season on the same field.** Apply in at least 500 litres water per hectare. Also use other registered products (with different modes of action) for the control of Potato tuber moth during the growing season. Treatments with **REACT 100 EC** can be stopped when the plants' leaves are yellowing due to the senescing of plants, or when the Tuber moth larvae start moving to the tubers. In such situations, apply **Azinphos Methyl 350 WP** by ground application and leach into the ground using a light irrigation (± 6 mm water). African bollworm will also be controlled by **REACT 100 EC** in this programme. **Aerial application**: Use at least 30 litres but preferably 40 litres water per hectare in a similar programme as for ground application.