

# Neemix 4.5 insect growth regulator.

## Neemix® 4.5: From Seed to Formulation

Certis USA is a premier manufacturer of neem-based pesticides worldwide. It pioneered the seed extraction, purification processes and formulation technologies used to transform azadirachtin from a crude seed extract into a stable formulation suitable for commercial use as an insect growth regulator under the Neemix 4.5 brand. The increasing demand of biopesticides that offer residue-exempt and low-residue solutions has inspired Certis USA to create a vertically integrated azadirachtin production stream from its jointly owned neem extraction plant in India to its recently added state-of-the-art formulation and packaging facility in Wasco, California. This recent addition consolidates Certis USA's biopesticide production, including liquid fermentation, processing and formulation, at its Wasco manufacturing site. Each of the liquid packaging lines, including azadirachtin formulations such as Neemix 4.5, are exclusive and dedicated to one active ingredient to ensure the highest quality contaminant-free formulations where every step is monitored from seed collection to the final formulation.

These quality assurance steps have been taken to ensure that growers are receiving high quality products that allow them to satisfy and maintain their various certifications, including organic, and achieve the sustainability goals buyers and consumers demand. To this end, Neemix 4.5 has been OMRI® listed since 1998.

## Proven Performance Creates Demand

Since it was introduced 25 years ago, the use of Neemix 4.5 insect growth regulator has expanded in step with the growth of biopesticides in general. Neemix 4.5 has many of the product features that growers are seeking, including a 4-hour REI, 0-day PHI and exemption from residue tolerance and maximum residue limits (MRLs).



Neemix 4.5 employs a unique mode of action that is effective on a wide range of pests, including aphids, leafminers, whiteflies, thrips, psyllids, mites and nematodes. Neemix 4.5 is a proven insect growth regulator that controls the immature stages or nymphs before they become reproducing adults. It controls insects by mimicking their natural molting hormone (ecdysone), disrupting the ability to molt and advance to the next stage of their life cycle. It also reduces damage by repelling and deterring feeding of all stages of insects, including adults.

## Better Leaf Penetration

Whiteflies and other insects that feed on the undersides of leaves can be difficult to control with sprays directed only over the top of the plant. Neemix 4.5 penetrates the plant by translaminar movement to provide control of these hard-to-reach pests. Repeated applications of Neemix 4.5 maintain an active concentration of azadirachtin within the plant to prevent establishment of large pest populations.

## Broad Crop Label & Application Flexibility

Neemix 4.5 has a broad crop label and versatile application methods that make it flexible and easy-to-use for growers. Neemix 4.5 may be used



## Application Guidelines

- Apply Neemix 4.5 early when pests first appear and are in their early larval or nymph stages
- Use 4 to 10 oz. per acre in 100 gallons of carrier
- Add a spreader sticker, such as a pinolene-based surfactant or Trilogy®, and spray to coverage
- Repeated applications will break the life cycle of the pest
- Always read and carefully follow label directions

For product label and more information, visit [www.certisusa.com](http://www.certisusa.com)

to control a broad spectrum of pests on leafy and fruiting vegetables, cole crops, cucurbits, melons, fruit trees, nuts and berries. Neemix 4.5 is most commonly used as a foliar treatment, and growers have successfully used overhead sprinklers, micro-jets and drip irrigation to more accurately apply it for optimal control.

