

## Introduction

Aria™ is a new insecticide registered for control of aphids and other sucking insects on herbaceous and woody ornamental plants, annuals and perennials. This product can be used both in greenhouses and interiorscapes. The active ingredient in Aria is flonicamid, a novel insecticide in the pyridinecarboxamide class of chemistry. The exact mode of action site of flonicamid is not yet known but it has been shown to be different from all other major classes of insecticides, including the neonicotinoids. This makes Aria a key component of insect resistance management (IRM) programs to be used in rotation with old and new chemistry insecticides.

Aria has shown little phytotoxicity on most ornamental plants. However, all varieties of plants have not been fully tested. It is recommended that a small phytotoxicity test be conducted before applications to a large number of plants of the same variety are made.

## Chemistry and Mode of Action

Flonicamid belongs to a new class of chemistry known as pyridinecarboxamide. Although the mode of action has not been determined, we do know that it is different from all major insecticide classes. There is no known cross resistance to the organophosphate, carbamate, pyrethroid or neonicotinoid chemical classes. Aria has both systemic and translaminar activity. A thorough "spray-to-wet" or "spray-to-glistening" application will result in excellent protection of exposed foliage. New foliage will not be protected so additional applications may be required.

## Insecticidal Activity

Aria is very highly active, needing only between 10 and 60 grams of active ingredient (per 100 gallons of finished spray) to impact pest populations. It acts quickly against aphids and other sucking insects, causing feeding to cease within one hour after exposure. Although the insect obtains a toxic dose within the first hour of exposure, actual mortality may not occur for 2-5 days. Insect death is due to dehydration and starvation and the amount of time necessary for mortality will depend on the plant and its surrounding environmental conditions. Insects can receive a toxic dose of Aria either by direct contact with the insecticide or by ingesting it. Both adults and immature stages can be affected.

## Spectrum of Activity and Efficacy

A significant amount of research has been conducted with Aria against a variety of insect pests of ornamentals. Because of its chemical properties, combined with its movement within the plant, flonicamid is efficacious against sucking insects only. There is no activity against chewing insects such as beetles and caterpillars. Currently aphids, thrips, whiteflies and mealybugs are listed on the Aria label.



**APHIDS:** Aria™ insecticide is a premiere product for aphid control. It has been tested against the following species:

- Cotton/Melon Aphid (*Aphis gossypii*)
- Floxglove Aphid (*Acyrtosiphon solani*)
- Green Apple Aphid (*Aphis pomi*)
- Green Peach Aphid (*Myzus persicae*)
- Tomato/Potato Aphid (*Macrosiphum euphorbiae*)
- Rose Aphid (*Macrosiphum rosae*)
- Rosy Apple Aphid (*Dysaphis plantaginea*)
- Spirea Aphid (*Aphis spireacola*)

Low use rates (20-30 grams ai/100 gallons) results in excellent efficacy and 21+ days residual. This makes Aria very economical to use against aphids. It is recommended to apply Aria every 10-14 days in situations with high re-infestation potential or with new plant growth /flowering.

**THRIPS:** Aria has documented efficacy against various thrips pests. Species tested include:

- Frankliniella* sp.
- Western Flower Thrips (*Frankliniella occidentalis*)
- Onion Thrips (*Thrips tabaci*)
- Echinothrips americanus*
- Thrips* sp.

Two or more applications of Aria (30-40 grams ai/100 gallons) timed 7 to 10 days apart are recommended for best thrips management. Treatments should be timed for when the insects first appear on the plants and before flowering begins. Once flowering has begun, population suppression is the best that will be achieved.

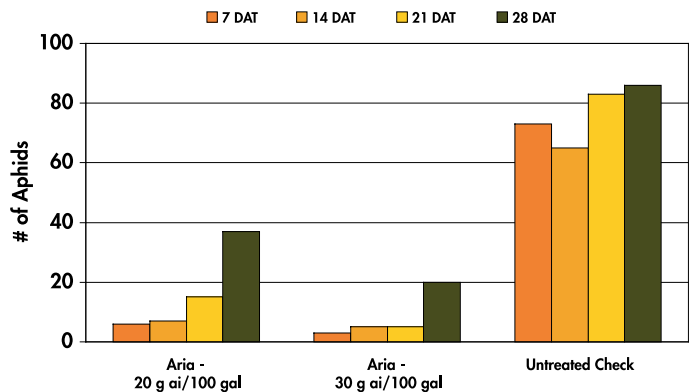
**WHITEFLYS:** Whitefly populations can be controlled or suppressed by Aria, depending on species and application method. The following whitefly species have been tested:

- Greenhouse whitefly (*Trialeurodes vaporariorum*)
- Sweet potato whitefly (*Bemesia tabaci*)
- Silverleaf whitefly (*Bemesia argentifolii*)

Two applications of Aria (40-60 grams ai/100 gal) spaced 7-10 days apart will result in significant greenhouse whitefly control as well as suppression of silverleaf whitefly populations. To lessen the chance for pest refuge, treat new foliage with care. Aria is slow-acting against whiteflies and it can take up to 14 days to see significant population mortality. Feeding does cease, however, within 1 hour of exposure, and the residual activity has been observed for 28 days and longer. Because of the novel mode of action of Aria, it is an excellent choice for inclusion in an insect resistance management program. No known cross-resistance to other major chemical classes has been documented at this date.

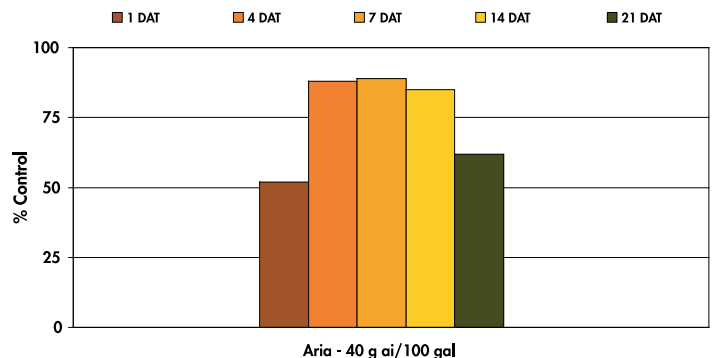
### Green Peach Aphid Control in Ohio

Trial Conducted by Dr. Dave Nielson, Ohio State University, 2003  
ONE APPLICATION: 28 JANUARY 2003



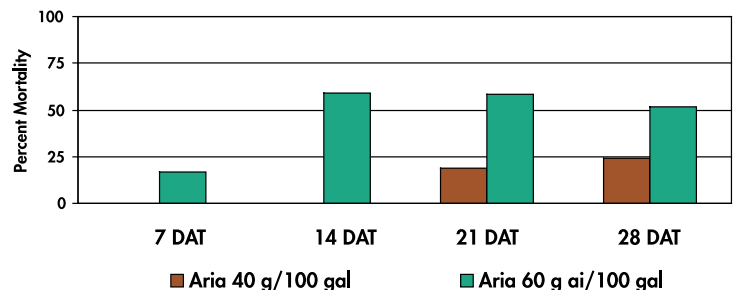
### Echinothrips (all stages) Control on Salvia

Trial Conducted by Dr. Lance Osborne, University of Florida, 2002  
ONE APPLICATION



### Suppression of Silverleaf Whitefly Nymphs with Aria

Trial Conducted by Dr. Ron Oetting, University of Georgia, 2004  
APPLICATIONS: 17 MARCH AND 31 MARCH 2004



**MEALYBUGS:** Although difficult to control, excellent efficacy has been seen with Aria™ against various mealybugs. The following species have been tested:

Citrus mealybug – *Planococcus citri*

Madeira mealybug – *Phenacoccus madeirensis*

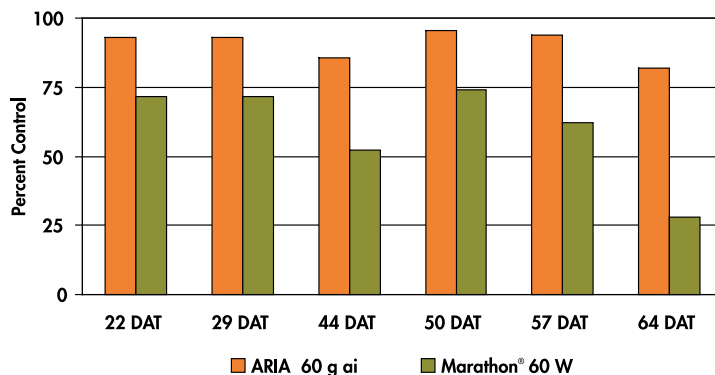
Long-tailed mealybug – *Pseudococcus longispinus*

Two applications (60 grams ai/100 gallons) applied 7-10 days apart will give the best results against various mealybug species. It can, however, take 2-3 weeks to bring the population down. Control has been noted for 30+ days and for more than 60 days, depending on environmental conditions. Beneficial organisms, such as Crysps, are not affected by the Aria treatments. New plant growth will need to be treated to be protected from pest infestation.

## Control of Mealybugs on New Guinea Impatiens

Trial Conducted by Dr. Dave Nielson, Ohio State University, 2003

APPLICATION: 6 FEBRUARY 2003



### Phytotoxicity

Aria has demonstrated excellent safety on most plants; however all cultivars and varieties have not been fully tested. Certain pansies cultivars have exhibited sensitivity to flonicamid. Prior to use on pansy or any other single variety or large planting, apply Aria to a small number of representative plants and wait 5-7 days to visually assess impact.

### Ecological Impact

Aria has an excellent environmental profile. Because of its low use rate, the pesticide load in the environment can be reduced when Aria is used instead of other highly active insecticides. Flonicamid also degrades very rapidly in soil, resulting in a low risk of groundwater contamination. Aria has excellent efficacy on pests while having little impact on the ecosystem.

### Aria - An Ideal Insecticide

Aria, an excellent aphicide, also performs well on other sucking insects. Having no known cross-resistance with other insecticides, including the neonicotinoids, Aria has a long-lasting residual activity while being "friendly" toward beneficial organisms. This makes Aria an important component of insect management programs for greenhouses and interiorscapes.

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Always read and follow label directions.

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