

New Options for Battling Plant Diseases

Check out these new plant health products recently introduced to the market.

BY A.R. CHASE AND AARON J. PALMATEER

The introduction of new fungicides is always welcome and when the products are in a new FRAC group or have other new features this is especially celebrated — at least by plant pathologists. Two of the newest products are Mural (Syngenta) which was introduced early in 2016 and Orkestra (BASF) which will debut in mid-2016. Each product represents a combination of a FRAC 11 strobilurin with a FRAC 7 SDHI. Mural is azoxystrobin plus the newly available benzovindiflupyr, and Orkestra is pyraclostrobin and another new SDHI — fluxapyroxad.

Aaron is very active doing trials on ornamental crops along with other researchers throughout the United States. Since I closed our greenhouse/laboratory facility in 2012, I have not been involved in doing any testing myself. But that does not stop me from being interested in more things than ever and ferreting out information published by these other researchers.

ORKESTRA

We were able to locate trials shown in Table 1 to understand the efficacy of Orkestra on ornamental diseases. I also did a review of published trials on agronomic crops that showed the following additional results for those diseases that occur on ornamentals as well: *Cladosporium* (very good to excellent), *Corynespora* (good), *Phomopsis* (very good to excellent), *Gymnosporangium* (cedar apple rust, very good to excellent), *Sclerotinia* (good to very good) and *Septoria* (good to excellent). Orkestra is clearly very broad spectrum in what it can control at a very high level of efficacy.

Orkestra has a 12-hour REI and bears the signal word: "Warning." The product combines

Table 1. Summary of some Orkestra trials for control of ornamental diseases.

Pathogen	Disease	Plant	Labeled rate/100 gal	Results
<i>Alternaria</i>	Alternaria leaf spot	Coneflower, impatiens	4-6 oz	excellent
<i>Botrytis cinerea</i>	Gray mold	Rose, peony, geranium	8 oz	some-excellent
<i>Botrytis elliptica</i>	Fire	Lilium	8 oz	excellent
<i>Botrytis tulipae</i>	Fire	Tulip	8 oz	excellent
<i>Cercospora</i>	Cercospora leaf spot	Ligustrum, mollucella	8-10 oz	excellent
<i>Coleosporium</i>	Rust	Frangipani	4-11 oz	excellent
<i>Colletotrichum</i>	Anthraxnose	Sansevieria	8-10 oz	excellent
<i>Cylindrocladium</i>	Root and crown rot	Spathiphyllum	8-10 oz	very good
<i>Golovinomyces</i>	Powdery mildew	Zinnia	6-8 oz	excellent
<i>Microsphaera</i>	Powdery mildew	Lilac	6-8 oz	excellent
<i>Helminthosporium</i>	Helminthosporium leaf spot	Calathea	8-10 oz	some
<i>Myrothecium</i>	Myrothecium leaf spot	Dieffenbachia	8-10 oz	very good
<i>Peronospora</i>	Downy mildew	Coleus	8-10 oz	excellent
<i>Plasmopara</i>	Downy mildew	Impatiens	10 oz	excellent
<i>Uredo</i>	Rust	Flax lily	6-8 oz	excellent
<i>Sclerotium</i>	Southern blight	Hosta	8-10 oz	good

fluxapyroxad and pyraclostrobin in a 1:1 ratio for a 43 percent active product. Fluxapyroxad is adsorbed to the waxy cuticle and moves translaminarily thus protecting both the upper

and under leaf surfaces. It also moves in the xylem and has some curative action depending on the pathogen and host crop. Orkestra is labeled for greenhouse, lathhouse and shade

DISEASE MANAGEMENT

house use as a foliar spray or drench and can be applied through chemigation. It is also labeled for outdoor container and field-grown crops, including forest and conifer nurseries and can be applied aerially in these instances. Finally, the product is registered for use in retail nurseries and in residential and commercial landscapes.

The best reason to alternate or rotate is to prevent rapid development of fungicide resistance.

Foliar spray interval is usually seven to 14 days with drench intervals of seven to 28 days. Some crops are listed as tolerant, but you should always test new products on your crops under your growing conditions before broad scale use. Crops listed as sensitive were: impatiens, petunia, dianthus and viola. Drenches have occasionally shown stunting on impatiens and petunia. Foliar sprays have occasionally caused discoloration in petunia and impatiens flowers. Do not apply to *Physocarpus* (ninebark) or wintercreeper (*Euonymus fortunei*) as these crops are well documented to be sensitive to pyraclostrobin. The product is also labeled in a limited way for juvenile fruit and nut trees, vine, brambles and bushberries produced in ornamental nurseries.

MURAL

Mural is a broad-spectrum fungicide for use in greenhouses, shade-houses, lath houses, outdoor nurseries, retail nurseries and commercial landscapes. It is also registered for use in vegetable transplants that are grown for resale to consumers. It has a 12-hour REI and the signal word: "Caution." The product combines azoxystrobin and benzovindiflupr in a 2:1 ratio for a 45 percent active product. Mural has application directions for chemigation as well as most other ground application methods. It can also be applied through aerial means.

Results with Mural on ornamental diseases have generally been very good to excellent. For most foliar uses, the application interval is seven to 21 days. Plant safety with Mural is good but there are a few plants you should not apply it to. These include apple (*Malus*), and crabapple (some varieties), leatherleaf fern and Ligustrum. As with previous products containing azoxystrobin,

Table 2. Summary of some Mural trials for control of ornamental diseases. Apply no more than two sequential applications of Mural unless otherwise stated in the crop section. This is designed to prevent resistance development.

Pathogen	Disease	Plant	Labeled rate/100 gal	Results
<i>Botrytis cinerea</i>	Gray mold	Zinnia, geranium, peony	4-7 oz	good to very good
<i>Botrytis elliptica</i>	Fire	Lilium	4-7 oz	excellent
<i>Colletotrichum</i>	Anthrachnose	Impatiens, dieffenbachia, sansevieria	4-7 oz	some to excellent
<i>Cylindrocladium</i>	Boxblight	Buxus, spathiphyllum	5-7 oz	very good
<i>Corynespora</i>	Target spot	Hydrangea	4-7 oz	excellent
<i>Oidium</i>	Powdery mildew	Verbena	4-7 oz	excellent
<i>Podosphaera</i>	Powdery mildew	Petunia	4-7 oz	excellent
<i>Microsphaera</i>	Powdery mildew	Lilac	4-7 oz	excellent
<i>Helminthosporium (Drechslera)</i>	Helminthosporium leaf spot	Calathea	4-7 oz	excellent
<i>Myrothecium</i>	Myrothecium leaf spot	Spathiphyllum	4-7 oz	excellent
<i>Peronospora</i>	Downy mildew	Rose	4-7 oz	very good
<i>Coleosporium</i>	Rust	Plumeria, annual vinca, goldenrod	4-7 oz	excellent
<i>Puccinia</i>	Rust	Switchgrass	4-7 oz	very good to excellent
<i>Sclerotinia</i>	White mold	Zinnia	5-7 oz	some



Botrytis blight on geranium cuttings.

this is the part of Mural that can be phytotoxic to these crops.

ONE FINAL NOTE

Alternating these two new products might seem like a great idea. But the best reason to alternate or rotate is to prevent rapid development of fungicide resistance. Since each product is a combination of a FRAC 11 and a FRAC 7 fungicide, this strategy won't work. You need to alternate to another FRAC group fungicide to achieve the resistance management results you require. [gpn](#)

A.R. Chase is plant pathologist at Chase Agricultural Consulting LLC and can be reached at archase@chaseresearch.net. Aaron J. Palmateer is associate professor and Extension specialist in ornamental plant pathology at University of Florida and can be reached at ajp@ufl.edu.



Powdery mildew on gerber daisy.



LEADS THE WAY

The America in Bloom national awards program brings out the best in hometowns and empowers communities to excel. Lead the way and experience the benefits by registering today.



COMMUNITY INVOLVEMENT



ENVIRONMENTAL ACTION



HERITAGE PRESERVATION



THE POWER OF PLANTS

www.AmericaInBloom.org

BioWorks

“Works Great and Safe to Use”

— **Randy Martell**
Grower / Owner
The Garden Factory

Randy has been using BioWorks® products for years and says,
 “For the last 7 years I have made our greenhouses as chemical free as possible and with help from BioWorks and the use of CEASE® and RootShield® PLUS+ I have made that happen. They are the only fungicides I use on my crops. They not only work great but are safe to use.”

CEASE

- ◆ Safe for beneficial insects and bees
- ◆ No phytotoxicity or residues
- ◆ 4-hour REI / 0-day PHI

Microbial Fungicide and Bactericide
 Protects against foliar diseases, including *Botrytis* and powdery mildew.

Questions? For more information, please contact your local Technical Sales Manager or call BioWorks at **1-800-877-9443** or visit bioworksinc.com

©2016 BioWorks, Inc