



Control Fungal & Bacterial Diseases on Leafy Greens

Broad Spectrum Disease Control

Regalia® offers growers an effective new tool to protect crops against Downy Mildew (*Bremia lactucae*, *Peronospora* spp.) and other diseases including Powdery Mildew (*Erysiphe cichoracearum*), Lettuce Drop (*Sclerotinia minor*, *Sclerotinia sclerotiorum*), and Bacterial Leaf Spot (*Xanthomonas* spp.). With Regalia, growers get a broad spectrum of fungal and bacterial control in just one product.

Use Regalia on the Following Diseases:

- Downy Mildew
- Bacterial Leaf Spot
- Powdery Mildew
- Lettuce Drop

Tolerance Exempt

The active ingredient in Regalia is exempt from tolerance requirements on all food commodities by the U.S. EPA, and this exemption is published in the Code of Federal Regulations (40CFR180.1259). Many packers and handlers are requesting that growers do not use certain pesticides on leafy greens due to residue tolerances. Regalia is a viable alternative for growers looking for an effective replacement for these products.

Aerial Application

During parts of the season, wet soil or crop conditions can make it difficult for growers to get spray equipment into fields. Regalia can be applied through aerial application, so growers can protect crops when field conditions do not favor the use of ground sprayers.

Four Hour REI and Zero Day PHI

Regalia carries a re-entry interval (REI) of only four hours, so workers can get back in the field quickly. With a zero day pre-harvest interval (PHI), growers can now protect crops until harvest.

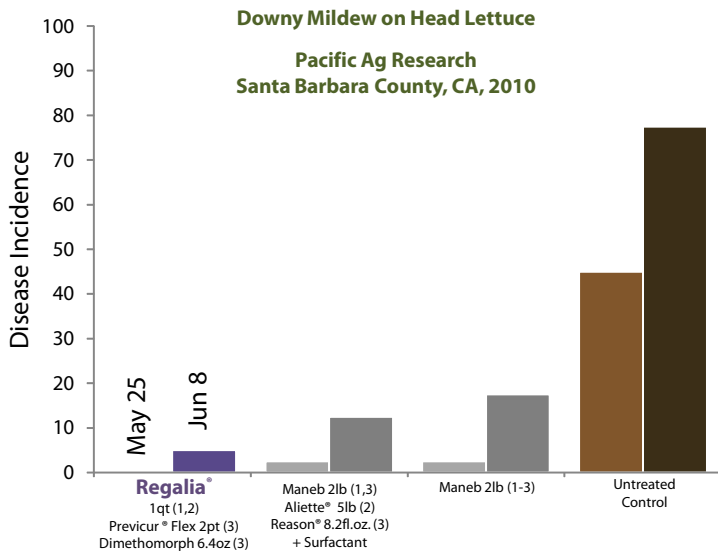


How Regalia Works

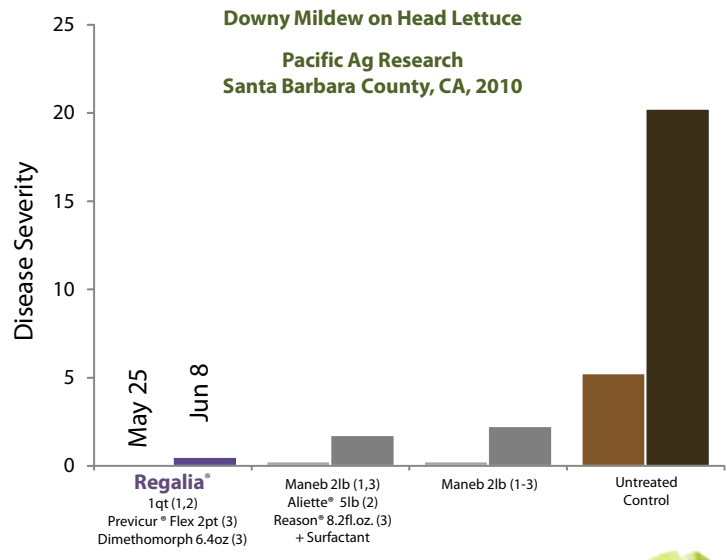
When treated with Regalia, the defense systems of leafy green crops are 'switched on' to protect against attacking diseases. Research proves that plants treated with Regalia produce and accumulate elevated levels of specialized proteins and other compounds known to inhibit fungal and bacterial diseases. Regalia induces a plant to produce phytoalexins, cell strengtheners, antioxidants, phenolics, and PR proteins, which are all known inhibitors of plant pathogens.

Features of Regalia:

- Activity Against Both Fungal and Bacterial Diseases
- New Tool for Resistance Management
- Tolerance Exempt
- Re-Entry Interval (REI) = 4 hours
- Pre-Harvest Interval (PHI) = 0 days
- Rainfast in 1 hour
- Labeled for Greenhouse Use



- Treatments applied on 1=May 5, 2=May 20, 3=Jun 3.
- Disease evaluated on May 25 and Jun 8.



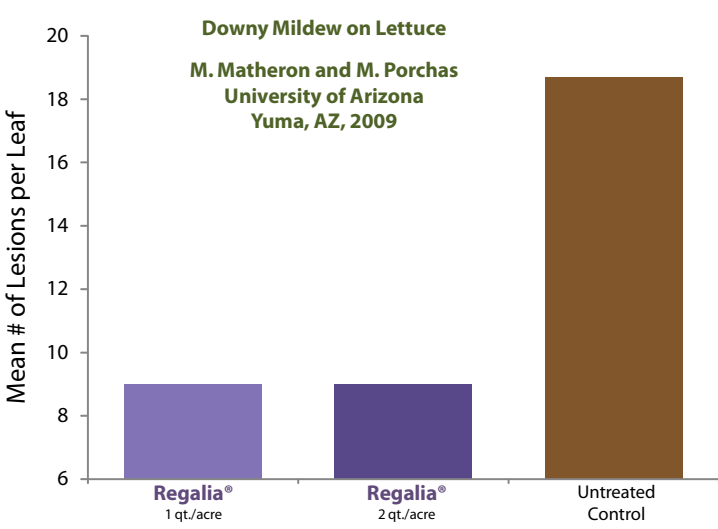
- Treatments applied on 1=May 5, 2=May 20, 3=Jun 3.
- Disease evaluated on May 25 and Jun 8.

Downy Mildew

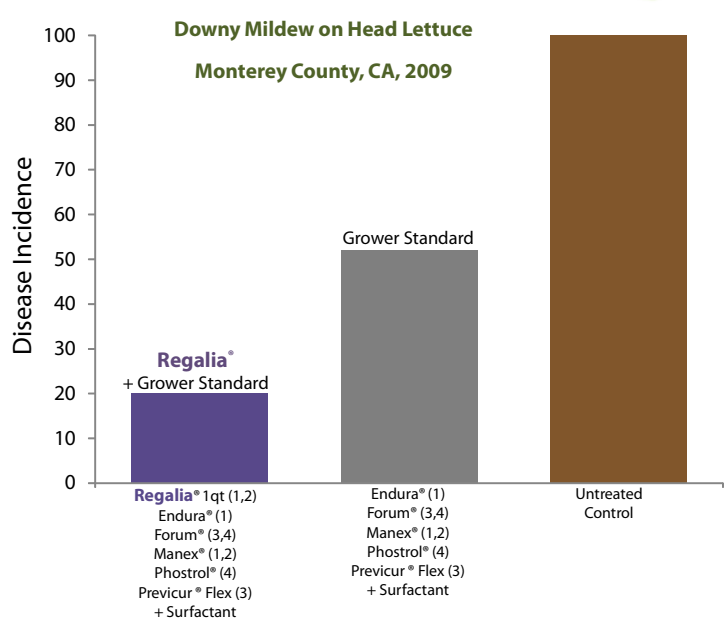
Research performed on Downy Mildew in Monterey County, California shows that adding Regalia substantially improves standard control programs. Independent field trials in Santa Barbara County, California show excellent control of Downy Mildew when Regalia is applied during the first two sprays, followed by propamocarb hydrochloride (i.e. Previcur® Flex) and dimethomorph. Additional trials in Yuma, Arizona show that Regalia is active on Downy Mildew, even when used at rates as low as 1 quart per acre.

Bacterial Diseases

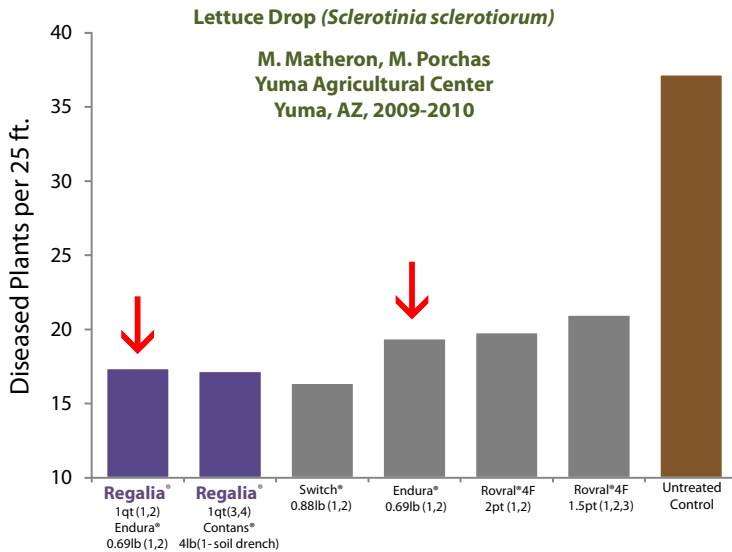
In cool, wet conditions in coastal production areas, Bacterial Leaf Spot (*Xanthomonas campestris*) can be a problem on leaf and head lettuce. Copper fungicides are available, but provide limited control when used alone. Regalia can be combined with other fungicides, including copper, for superior control in *Xanthomonas* spray programs.



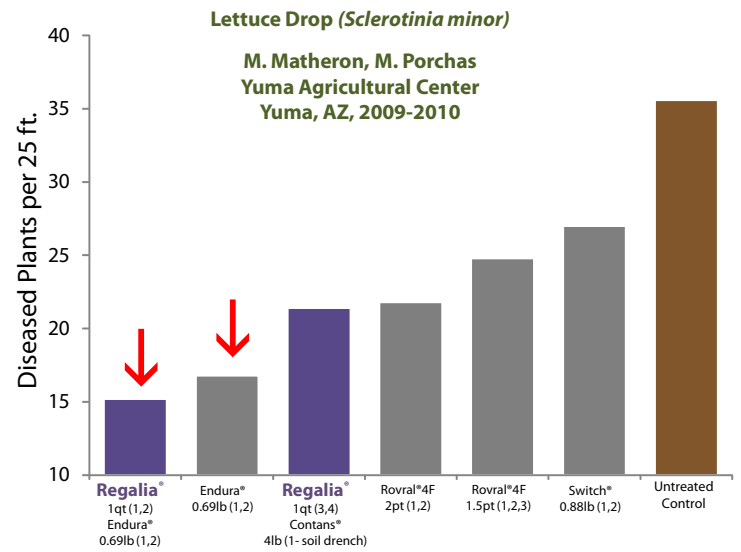
- Treatments applied on Jan 22, Feb 2, Feb 10, and Feb 16.
- Disease evaluated on Mar 2-3.



- Treatments applied on 1=Aug 12, 2= Aug 31, 3= Sep 11, 4= Sep 15.
- Disease evaluated on Sep 22.



- Treatments were applied 1= Dec 15 (after thinning), 2= Dec 23, 3= Jan 4, 4= Jan 25.
- Treatments were applied as a plant and soil spray (unless noted).
- Disease evaluated on Mar 9 and Mar 10.



- Treatments were applied 1= Dec 15 (after thinning), 2= Dec 23, 3= Jan 4, 4= Jan 25.
- Treatments were applied as a plant and soil spray (unless noted).
- Disease evaluated on Mar 9 and Mar 10.

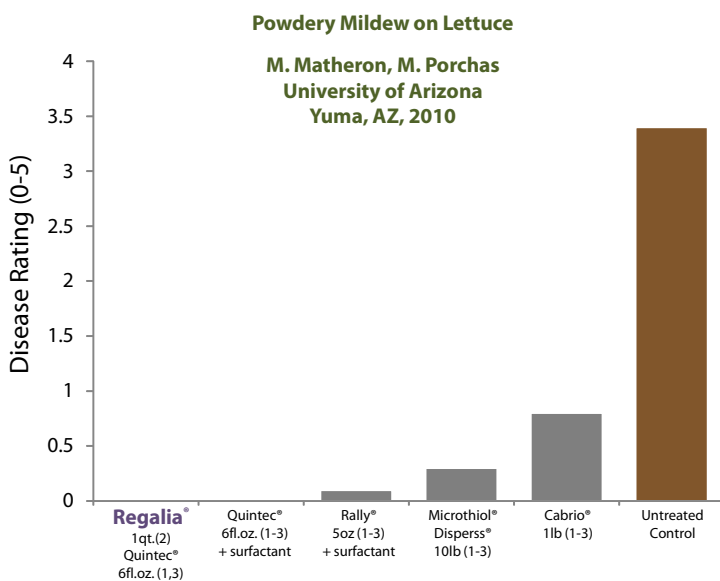


Lettuce Drop (*Sclerotinia*)

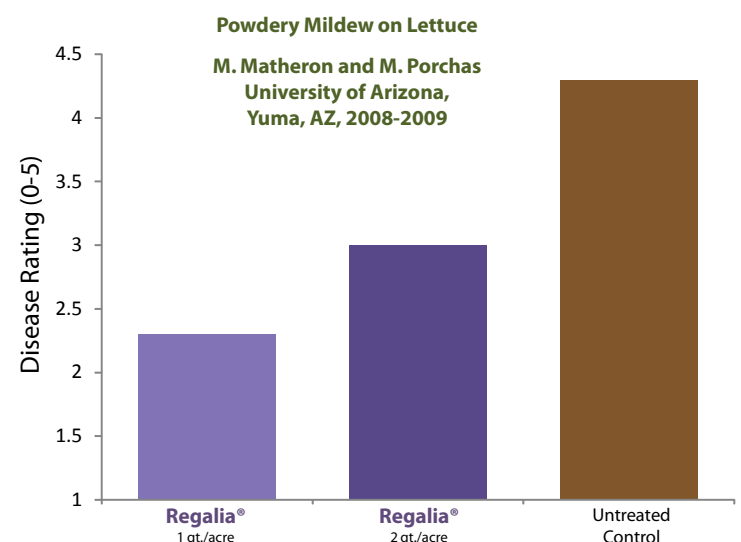
Regalia improves Lettuce Drop control programs for both *Sclerotinia minor* and *Sclerotinia sclerotiorum*. In field trials, Regalia plus boscalid (i.e. Endura®) is more effective than boscalid alone on *S. minor* and *S. sclerotiorum*. The field trials also show that the combination of Regalia plus boscalid is more effective on lettuce drop than the combination of cyprodinil and fludioxonil (i.e. Switch®), or iprodione (i.e. Rovral®).

Powdery Mildew

Alternating Regalia with other fungicides results in superior control of Powdery Mildew, and also reduces the development of resistance. In 2010, university field trials in Yuma, Arizona prove that alternating Regalia with quinoxyfen (i.e. Quintec®) is more effective than triazole fungicides like myclobutanil, or strobilurin fungicides like pyraclostrobin. Other trials performed in Arizona also show that low rates of Regalia, as little as 1 quart per acre, are effective against Powdery Mildew.



- Treatments applied on 1= Feb 4, 2= Feb 12, 3= Feb 19.
- Disease evaluated on Mar 10.




- Treatments applied on 1= Jan 22, 2= Feb 2, 3= Feb 10, 4= Feb 16.
- Disease evaluated on Mar 3-4.



Compatibility

Regalia is active against Downy Mildew, Powdery Mildew, Lettuce Drop, and Bacterial Leaf Spot, and is compatible with many commonly used pesticides such as Previcur® Flex, Forum®, Revus®, and Reason®. While the pre-harvest interval (PHI) of other fungicides can be as high 7-14 days, Regalia

has a PHI of 0-days, so growers can control disease until harvest. Some types of fungicides are known to have a very high resistance risk, but this risk is extremely low with Regalia (see chart below). If compatibility with another product is unknown, a jar test should be conducted.

Product Name	Active Ingredient	Downy Mildew	Powdery Mildew	Sclerotinia	Bacterial Leaf Spot	PHI	Resistance Risk
Regalia®	Extract of <i>Reynoutria sachalinensis</i>	✓	✓	✓	✓	0	Low 
Actigard®/Blockade®	Acibenzolar-S-methyl	✓				7	Low
Rovral®	Iprodione			✓		14	Med to High
Endura®	Boscalid		✓	✓		14	Medium
Switch®	Cyprodinil + Fludioxonil		✓	✓		0	Medium
Reason®	Fenamidone	✓				2	High
Previcur®Flex	Propamocarb hydrochloride	✓				2	Low to Med
Forum®	Dimethomorph	✓				0	Low to Med
Revus®	Mandipropamid	✓				1	Low to Med
Copper	Copper hydroxide	✓				0	Low

Regalia Best Use Recommendations

For best results, use Regalia as a preventative treatment in rotation or tank mix programs with other fungicides registered for the targeted disease(s). Begin applications prior to or at the first sign of disease pressure and re-apply at 7-14 day intervals to protect new growth. The timing of additional applications should depend upon disease pressure.

Regalia can be applied by air or concentrated ground application at the rate of 1-3 pints in 10-25 gallons per acre. For conventional ground application, Regalia can be applied at 1-2 quarts per 50 gallons of water.

www.MarroneBio.com/Regalia

Can Be Used in Conventional and Organic Production

For organic production, Regalia should be used in rotation with or in a tank mix program with other NOP compliant fungicides registered for the targeted diseases(s) according to the application methods described in the previous paragraph.



CAN BE USED IN ORGANIC PRODUCTION

To control disease with powerful Regalia contact your local retailer, or call:

Jesse Rosales, Western Territory Manager, 530-304-2030
 Mark Allen, Western Regional Sales, 530-304-9091
 Ryan Hesse, Western Regional Sales, 559-799-1659
 Jay Osborne, Eastern Territory Manager, 239-207-7168
 Patrick Clark, NE and Midwest Sales, 215-490-3981
 David Warman, Director of Sales, 336-202-3433



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