



syngenta®

Potato Disease Control

LATE BLIGHT AND EARLY BLIGHT – NO MATCH FOR REVUS TOP FUNGICIDE.

When the same disease control options aren't enough for late and early blight, potato growers rely on the superior performance of Revus Top® fungicide. The unique LOK + FLO™ action in Revus Top creates excellent contact activity by killing ungerminated spores on the plant surface and setting up a barrier to further infection. Locking tightly to the waxy layer of the plant surface and flowing steadily into the leaf tissue helps Revus Top deliver consistent, reliable results. Revus Top gives growers flexible application options and peace of mind knowing their potatoes are protected from disease. With less disease Revus Top delivers healthier potatoes, which improves crop marketability and ultimately growers' bottom line.

Containing two highly active ingredients, mandipropamid and difenoconazole, Revus Top is conveniently premixed for easy, economical disease control. Revus Top is also an excellent resistance management rotational partner with fungicides from other chemical classes, including Quadris®, Quadris Opti®, Omega® and Ridomil Gold® Bravo® SC.

Disease Descriptions

LATE BLIGHT can destroy a potato crop very quickly. The first symptoms of late blight in the field are small, light to dark green, circular to irregular-shaped water-soaked spots. These lesions usually appear first on the lower leaves. The fungus thrives most in cool, damp weather. Under moist conditions, a white 'downy mildew' can be seen on the leaf. Late blight infection of tubers is characterized by irregularly shaped, slightly depressed areas of brown to purplish color of variable size on the skin. The disease cycle can be halted in a dry spell, but will continue where it left off when damp weather returns. If left untreated, late blight can eliminate an entire field of potatoes.

EARLY BLIGHT first appears as small, dark brown to black spots on older leaflets on lower portions of plants. The spots expand

forming the disease's characteristic concentric rings. The lesions produce asexual spores. Under wet, humid conditions, these spores are readily spread by rain and wind. Under severe pressure and/or extremely favorable conditions for disease, these lesions can coalesce and form chlorotic tissue that becomes brittle and dry. Early blight occurs mainly on plant leaves. The fungus can survive on infected crop debris in the soil, on volunteers, or on alternate solanaceous hosts such as eggplant. Wind-blown spores germinate, infect foliage and form lesions within two to five days. The early blight fungus can often be recovered from healthy-looking leaf tissue prior to the onset of tubers but causes no visible symptoms until potatoes approach maturity. Alternating wet and dry conditions favor the disease so it may be worse in areas with overhead irrigation and frequent dews.



Symptoms of late blight on potatoes



Older lesions of early blight on potatoes

Technical Overview

SPECTRUM OF ACTIVITY

- Late blight (*Phytophthora infestans*)
- Early blight (*Alternaria solani*)
- Black dot (*Colletotrichum coccodes*)
- Brown spot (*Alternaria alternata*)
- Powdery mildew (*Erysiphe cichoracearum*)



REVUS TOP TECHNICAL PROFILE

Revus Top	
Chemistry	Mandipropamid [carboxylic acid amide (CAA) class (FRAC Group 40)] and difenoconazole [demethylation inhibitor (DMI) class (FRAC Group 3)]
Formulation	1:1 mixture of 2.08 lbs a.i. mandipropamid and 2.08 lbs a.i. difenoconazole
Precautions/Safety	Caution, Standard Personal Protective Equipment (PPE), 12 hour Re-entry Interval (REI)
Tankmix Guidelines	Revus Top is compatible with many tankmix partners; however, always consult the product label for complete use directions and precautions.

REVUS TOP LABEL AT A GLANCE*

Potatoes	
Rate	5.5 – 7 fl oz/A
Maximum Amount per Growing Season	28 fl oz/A/season (0.52 lb a.i./A/season of mandipropamid and 0.46 lb a.i./A/season of difenoconazole)
Minimum Gallons per Acre (GPA)	Ground: 10 Aerial: 5
Preharvest Interval (PHI)	14 days
Adjuvants	A non-ionic surfactant, crop oil concentrate or blend is recommended.
REI	12 hours
Rotation Crop Restrictions	0 days to crops on label, fruiting vegetables, and tuberous and corm crops; 30 days to cereals, cotton, canola, sugarbeets and sweet corn; 8 months to all other crops

* Always consult the product label for complete use directions and application information. Timing and products will vary depending on local diseases/timing.

Resistance Management

LATE BLIGHT – Extensive monitoring in Europe where late blight is a persistent problem has indicated no sensitivity shift in performance to the Class 40 (mandipropamid/dimethomorph) chemistry. However, to ensure strong performance for years to come, alternating Revus Top with fungicides that have a different mode of action is recommended.

EARLY BLIGHT – The pathogen for early blight, *Alternaria solani*, is best controlled when Revus Top is used in a program with alternate modes of action.

Application Timing

For late blight control, Revus Top should be applied before infection as the mandipropamid component prevents the late blight spores from germinating. The difenoconazole component enters the leaf and stops the early blight fungus from progressing.

BEST USE GUIDELINES:

- Apply Revus Top at a rate of 5.5 - 7 fl oz/A prior to disease development and throughout the season
- Apply on a 7- to 10-day interval schedule
- Use the higher rate and/or shorter intervals under conditions of high disease pressure
- Make no more than two sequential applications before alternating to a fungicide with a different mode of action
- The addition of an adjuvant is recommended
- Integrate other disease management tools:

























FOR EARLY BLIGHT

- Reduce plant stress with proper fertility, timely irrigation

FOR LATE BLIGHT

- Plant disease free seed pieces
- Use resistant/tolerant cultivars if available
- Use proper forecasting tools for timely fungicide applications

SUGGESTED PROGRAM FOR POTATO DISEASE CONTROL*

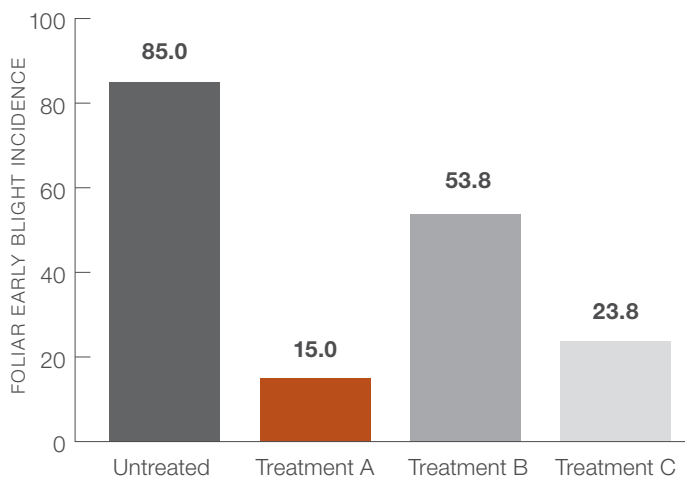
							
Rhizoctonia							
Pythium/Pink Rot							
Late Blight							
							
Early Blight/ Brown Spot							
							
White Mold							
							
Black Dot							

* Always consult the product label for complete use directions and application information. Timing and products will vary depending on local diseases/timing.

** Suggested timing for Syngenta brands. Incorporate alternate products for a complete disease control program.

Performance Results

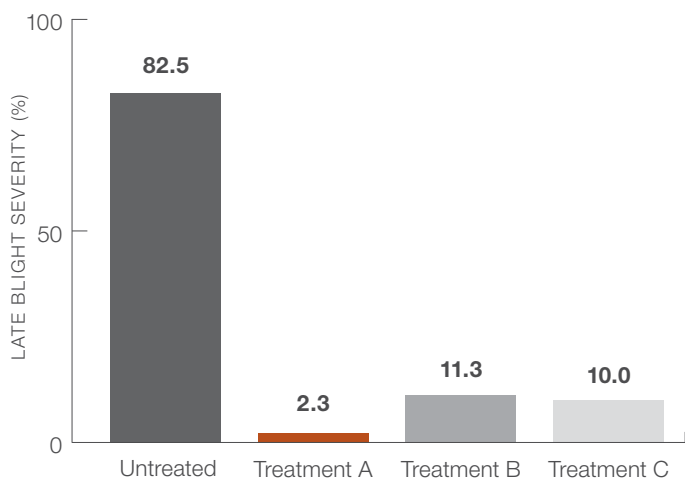
YIELD BENEFITS FROM SELECT FUNGICIDE UNDER EARLY BLIGHT PRESSURE ON POTATOES



Notes: Treatment A = Revus Top 7 oz & Induce, Bravo Weather Stik 1.5 pt;
Treatment B = Kocide® 1.75 lbs; Treatment C = Tanos® 2.75 oz

Source: Plant Disease Management Reports 4: V089 W.W. Kirk, R. Shafer and P. Tumbalam. Michigan State University 2009.

EFFICACY OF SELECT FUNGICIDE AGAINST POTATO LATE BLIGHT



Notes: Treatment A = Revus Top 7 oz & Induce, Bravo Weather Stik 1.5 pt;
Treatment B = Penncozeb 1 lb, Penncozeb 2 lbs, Penncozeb 2 lbs & Super Tin 3.25 oz;
Treatment C = Penncozeb 2 lbs

Source: Plant Disease Management Reports 4:V081 W.W. Kirk, R.L. Schafer and P. Tumbalam. Michigan State University 2008.



SUPERIOR LATE BLIGHT CONTROL – EVEN UNDER HEAVY PRESSURE



Source: USVB0F005/2003/VBRC/FL

Note: Trial included the application of Revus 8.0 oz. + Bravo® 1.5 pt.

COMPARISON OF UNTREATED VERSUS REVUS TREATED POTATOES



Source: VF016-2004 Vero Beach

Note: During the development of Revus Top, some trials had only the component that is effective on that disease (i.e. Revus or difenoconazole). The amount in the mixture is equivalent to the product solo.



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