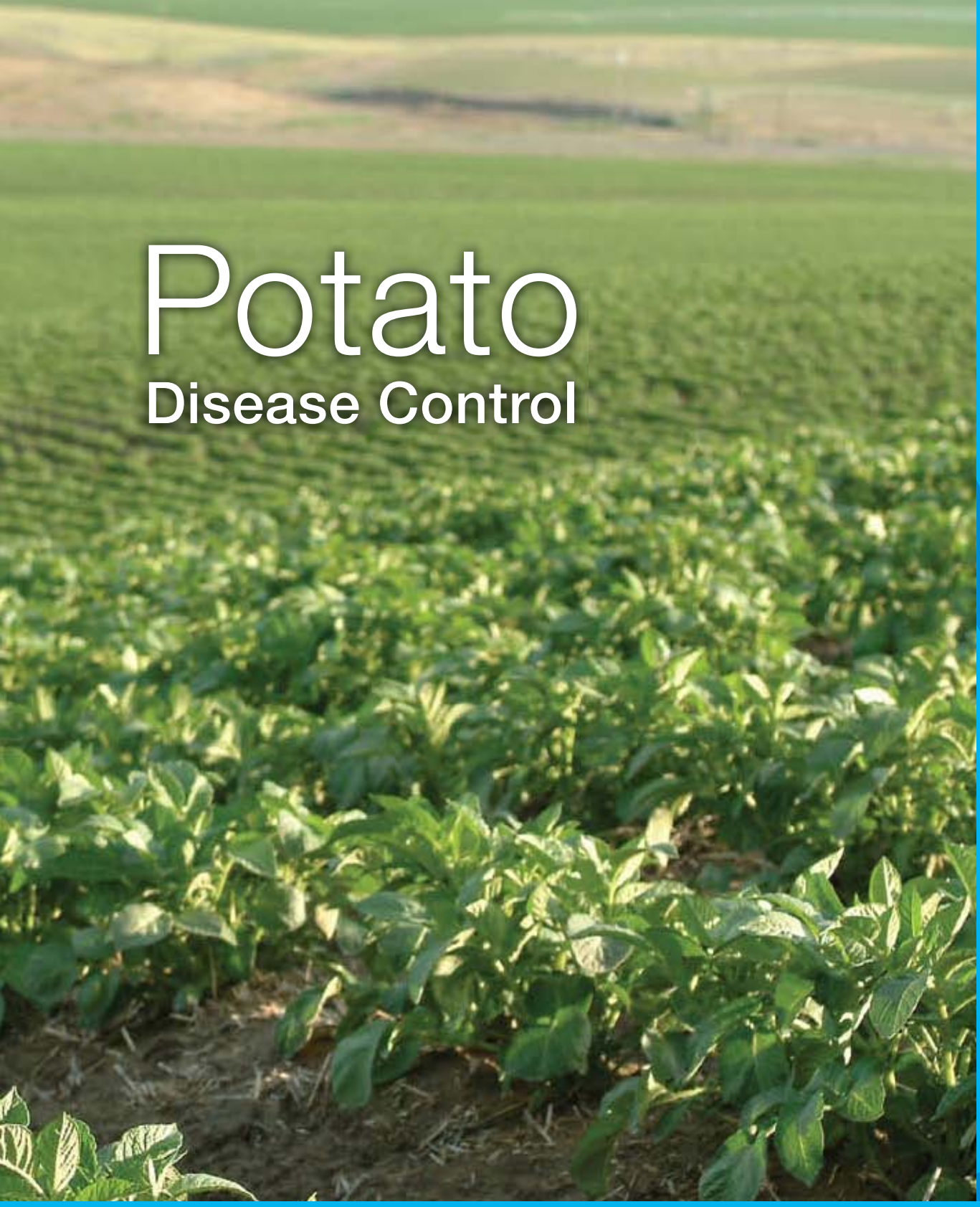
Potato
Disease Control



Quadris® Top

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Quadris Top Fungicide for Potato Disease Control

Quadris® Top fungicide, from Syngenta Crop Protection, offers potato growers reliability for sustainable and robust disease control specifically for black dot, brown spot and early blight. It is a combination of the strobilurin fungicide (Group 11), azoxystrobin, and the triazole fungicide (Group 3), difenoconazole. This mixture represents an evolution of the Quadris® fungicide brand currently registered as a foliar fungicide in potatoes. In addition, Quadris Top demonstrates rapid uptake with translaminar movement of difenoconazole and xylem-systemic movement of azoxystrobin.

Quadris Top is a broad-spectrum product and will provide utility as a resistance management tool. Syngenta recommends that this mixture be used according to the Fungicide Resistance Action Committee (FRAC) guidelines for solo strobilurin fungicide products. Quadris Top has preventive, systemic and curative properties and is recommended for the control of many important plant diseases. Quadris Top is applied as a foliar spray and can be used in block, alternating spray or tank-mix programs with other crop protection products.

Quadris Top is proven safe on a wide range of crops when used according to the best management guidelines outlined in the bulletin. Not to mention, it can be used as a part of many Integrated Pest Management (IPM) programs due to its low-use rates, application flexibility and low risk to beneficials.

Quadris Top Control on Quick-Spreading Diseases

Black dot on potatoes
Source: G. Secor and V. Rivera, North Dakota State University

Black dot first appears as grayish-brown lesions. The fungus can survive for long periods in the form of sclerotia on and within the tubers, and also in plant debris in the field. When conditions are favorable, the fungus infects underground stem tissue and moves upward in the plant. Airborne spores also infect the foliage, especially when tissue is injured by windblown sand, and the disease progresses downward into the stem and roots. Acervuli develop once the plant is infected. Black dot symptoms are first visible in the field in mid- to late-summer as yellowing and wilting of foliage in the tops of plants.

Brown spot is a fungal disease similar to early blight in appearance and behavior both causing lesions on leaves. However, brown spot lesions are typically smaller and darker in color. The lesions, resembling a bull's-eye target, can be spotted in the middle of leaves of the potato plant. Favorable conditions for disease development are high humidity and temperatures of 65 F. These conditions favor spore formation and germination. In addition, inconsistent weather conditions, wet and dry, sometimes caused by sprinkler irrigation can also provide a favorable atmosphere for the disease. Brown spot cannot infect tubers unless the tubers are already wounded.

Early blight on potato leaf
Source: K. Brownell, Syngenta Crop Protection

Early blight first appears as small, dark brown to black spots on older leaflets on lower portions of plants. These expand to form the characteristic concentric rings of the disease. The lesions produce asexual spores under wet, humid conditions and readily spread by rain and wind. Under severe pressure, 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 volunteer plants or on alternate solanaceous hosts such as eggplant. Wind-blown spores germinate and infect foliage, forming lesions within two to five days.

Technical Overview

Quadris® Top

Quadris Top Spectrum of Activity

- Black dot (*Colletotrichum coccodes*)
- Brown spot (*Alternaria alternata*)
- Early blight (*Alternaria solani*)
- Powdery mildew (*Erysiphe cichoracearum*)
- Septoria leafspot (*S. lycopersici*)

Quadris Top Technical Profile

Chemistry	Azoxystrobin [QoI inhibitor (FRAC Group 11)] and difenoconazole [demethylation inhibitor (DMI) class (FRAC Group 3)]
Formulation	1.67 lbs of azoxystrobin and 1.05 lbs of difenoconazole per gallon
Precautions/Safety	Caution, Standard PPE, 12 hour Re-entry Interval (REI)
Tank Mix	Quadris Top is compatible with many tank mix partners; however, always consult the product label for complete use directions and precautions.

Quadris Top Label at a Glance* – Potatoes

Rate	8.0 – 14.0 fl oz/A
Maximum Amount Per Growing Season	55.3 fl oz/A of Quadris Top (2.0 lb a.i./A/season of azoxystrobin-containing products and 0.46 lb a.i./A/season of difenoconazole-containing products)
Minimum Gallons Per Acre (GPA)	Aerial applications: 5 GPA; Ground applications: 10 GPA
Preharvest Interval (PHI)	14 days
Adjuvants	When an adjuvant is to be used with this product, Syngenta recommends the use of a Chemical Producers and Distributors Association certified adjuvant.
REI	12 hours
Rotation Crop Restrictions	Please address the product label for specific rotational crop restrictions.

*Always consult the product label for complete use directions and application information. For a complete list of registered crops, consult the product label.

Directions for Use

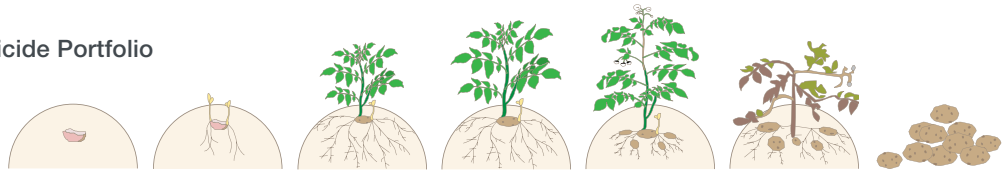
Quadris Top may be applied with all types of spray equipment commonly used for making ground and aerial applications. Quadris Top can also be applied through chemigation. Proper adjustments and calibration of spraying equipment to give good canopy penetration and coverage is essential for good disease control.

Best Use Guidelines

- Apply 8.0 to 14.0 fluid ounces per acre prior to disease development and continue throughout season.
- Apply on a 7- to 14-day interval.
- Make no more than two consecutive applications before switching to another fungicide with a different mode of action.
- Use the shorter interval and/or higher rates under pressure or when conditions are conducive to disease.
- The addition of a spreading/penetrating type adjuvant may enhance efficacy.
- Thorough coverage is necessary to provide good disease control.
- Always consult the product label for complete use directions and application information.

Suggested Program for Disease Control on Potatoes*

Potato Fungicide Portfolio

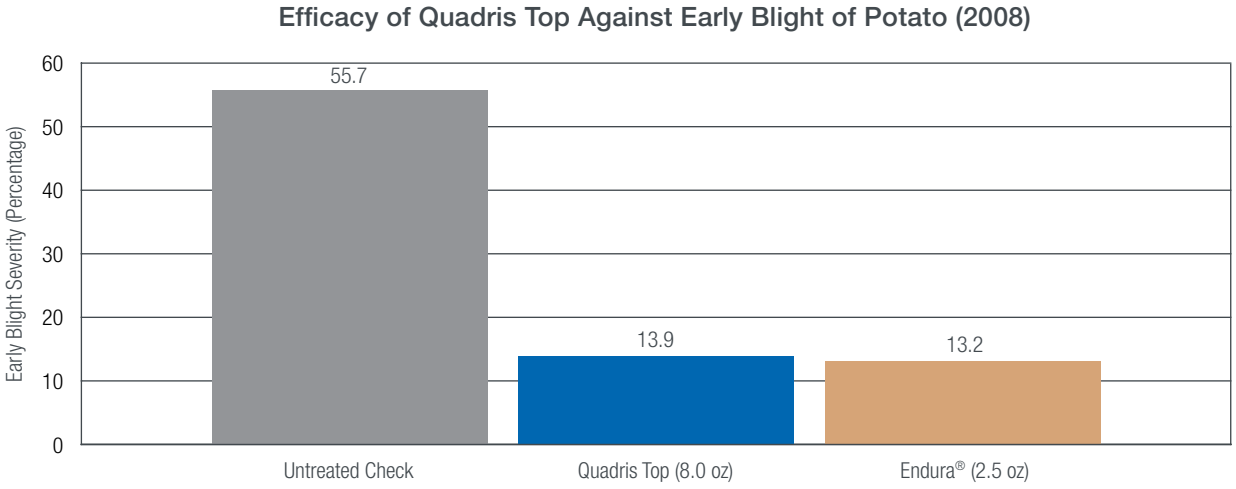


Rhizoctonia	Quadris®
Pythium/ Pink Rot	Syngenta Quadris RidomilGold® ; Syngenta RidomilGold® Bravo® SC
Late Blight	Syngenta Bravo® WeatherStik® ; RevusTop® ; Syngenta Bravo® WeatherStik® ; RevusTop®
Early Blight/ Brown Spot	Quadris® Top ; Syngenta Bravo® WeatherStik® ; RevusTop®
White Mold	Syngenta Omega®
Black Dot	Quadris® Top ; Syngenta Bravo® WeatherStik® ; Quadris® Top

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

Performance Results

Quadris® Top



*All treatments were alternated with Bravo Weather Stik® at 1.5 pts/A.

**Trial data in above graph shows average of four data trials conducted by: Dr. Neil Gudmestad – North Dakota State University (USNNOF0072008), Dr. Michael Hubbard – Idaho (USWFOF1162008), Dr. Jeff Miller – Miller Research Center - Acequia, Idaho (USWGOF4142008), Dr. William Kirk – Michigan State University (USNLOF1092008).

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For more information, visit www.potatoes.FarmAssist.com, www.syngentacropprotection.com or call the Syngenta Customer Center at 1-866-SYNGENT(A) (796-4368).

Quadris® Top

Important: Always read and follow label instructions before buying or using Syngenta products. The instructions contain important conditions of sale, including limitations of warranty and remedy. Quadris Top and Revus Top are not currently registered for sale or use in all states. Please check with your state or local extension service before buying or using these products.

G&S 400.60225 (02/10)

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