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Fungicide Applications Corn - Factors to Consider

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The used of fungicides to protect corn from disease pathogens has gained wide acceptance in the last several years. This is due to a combination of factors like improved fungicide options, heavy disease pressure and a fairly reliable response of today's hybrids to the treatments. The one "wild card" in all of this however is the price of corn at the elevator.

While fungicide applications do in most cases improve health they may not always produce an economic return on yield. With corn hovering around \$4.00 a bushel the return on investment for fungicide applications gets to be more critical. For this discussion I have narrowed it down to three topics, economics, expected hybrid response and disease pressure.

Here are some scenarios showing the economics of fungicide applications. For simplicity this chart only refers to single applications generally made at VT-R1.

Breakeven Scenarios for Corn						
Corn Price (\$/Bu)	Application Cost (\$/A for product and application)					
	\$16	\$20	\$24	\$28	\$32	\$36
\$ 3.00	5.3	6.7	8.0	9.3	10.7	12.0
\$ 3.50	4.6	5.7	6.9	8.0	9.1	10.3
\$ 4.00	4.0	5.0	6.0	* 7.0	8.0	9.0
\$ 4.50	3.6	4.4	5.3	6.2	7.1	8.0
\$ 5.00	3.2	4.0	4.8	5.6	6.4	7.2
\$ 5.50	2.9	3.6	4.4	5.1	5.8	6.5

*Example: At \$4.00 corn and a cost of \$28.00 it would take 7 bushels to offset the cost of the treatment. Bushels above that would be ROI

Chart: D.Mitchell, LG Seeds 6-7-18

The disease tolerance of your hybrids and response to fungicides can be found in LG Product Guide or by contacting your local representative. LG Seeds evaluates our hybrids for the likelihood of a positive response in yield to fungicide applications. A key factor in assigning a response score is a combination of yield potential of the base genetics and the overall "disease package" of that hybrid. Put simply, a hybrid with very high yield potential that may have an average disease package will generally be scored as "High Response" and will have a numeric score of 8 or 9. On the other hand a hybrid with good yield potential but has a very good disease package will probably be moderate response and carry a numeric score of 7 or less.

Base Genetics	Mat	Fungicide Response	Numerical Rating	Base Genetics	Mat	Fungicide Response	Numerical Rating
LG5370	84	Moderate	7	LG5565	108	Moderate	7
LG5420	94	Moderate	7	LG5590	110	Moderate	7
LG5465	97	High	8	LG5606	111	High	8
LG5494	99	High	8	LG5618	112	Moderate	7
LG5505	100	Moderate	7	LG5643	114	Moderate	7
LG5499	102	Moderate	7	LG5663	115	Moderate	7
LG5507	103	Moderate	8	LG5650	115	High	8
LG5525	105	High	8	LG5700	116	Moderate	7
LG5530	106	High	8	LG5701	116	High	8

Disease pressure will vary widely from region to region and year to year. Growers in the upper Midwest tend to be more concerned about Northern Corn Leaf Blight, Anthracnose Leaf Blight and Gray Leaf Spot while growers in the Mid South are probably looking at Southern and Common Rust along with Gray Leaf Spot as their two biggest concerns. Most university experts agree that timely scouting and applying “as necessary” is still the best economic approach. Preemptive sprays at VT-R1 however have become quite common in the mid-south due to the high likelihood of Southern Rust moving up from the gulf states in July and August. Many of these growers saw losses of 20 to 40 bushels per acre in 2015 and 2016 and have thus adopted planned applications of fungicides.

Whichever approach you take, the idea is to keep the upper portions of the corn plants as free from disease as possible. The need for leaf health above the ear is crucial to finishing out the ears to their maximum potential.

Table 1. Comparison of Southern and Common Rust

Pustule Characteristics:	Common Rust	Southern Rust
Location	upper and lower leaf surfaces	primarily upper leaf surface
Color	brownish, red	orange to light brown
Shape	elongated	round
Distribution	scattered	densely packed
Other differences:		
Optimal Temperature	61-77 °F	77-82 °F
Probability of Effecting Yield	low	moderate



Image 3. Southern rust on upper side of corn leaf



Image 4. Common rust on corn

Source:
<http://news.utcropp.com/2017/06/foliar-diseases-fungicide-applications-corn/>

In conclusion, keeping a close watch on your crop and paying attention to nearby university reports are two good ways to be prepared to make spraying decisions. The final piece of the puzzle comes down to which product do you apply and when. Consult your local ag chem retailer for the best product(s) for your area. The chart below shows most of the options available for use in 2018.

Fungicide Efficacy for Control of Corn Diseases¹

BP-160-W

Fungicide(s)				Anthracnose Leaf Blight	Common Rust	Eyespot	Gray Leaf Spot	Northern Leaf Blight	Southern Rust	Harvest Restriction ²
Class	Active Ingredient (%)	Trade Name	Rate/A (fl oz)							
QoI Strobilurins Group 11	azoxystrobin 22.9%	Quadris 2.08SC* multiple generics	6.0-15.5	VG	E	VG	E	G	G	7 days
	picoxystrobin 22.5%	Approach 2.08SC*	3.0-12.0	VG	VG-E	VG	F-VG	VG	G	7 days
	pyraclostrobin 23.6%	Headline 2.09EC/SC*	6.0-12.0	VG	E	E	E	VG	VG	7 days
DMI Triazoles Group 3	propiconazole 41.8%	Tilt 3.6EC* multiple generics	2.0-4.0	NL	VG	E	G	G	F-G	30 days
	prothioconazole 41.0%	Proline 480SC*	5.7	U	VG	E	U	VG	G	14 days
	tebuconazole 38.7%	Folicur 3.6F* multiple generics	4.0-6.0	NL	U	NL	U	VG	F-G	36 days
	tetraconazole 20.5%	Domark 230ME ³	4.0-6.0	U	U	U	E	U	G	R3 (milk)
Mixed Modes of Action	azoxystrobin 13.5%	Quilt Xcel 2.25E* multiple generics	10.5-14.0	VG	VG-E	VG-E	E	VG	VG	30 days
	propiconazole 11.7%									
	benzovindiflupyr 10.27%	Trivapro A 0.83 + Trivapro B 2.25E*	A = 4.0 B = 10.5	U	U	U	E	VG	E	A = 7 days B = 30 days
	azoxystrobin 13.5%									
	propiconazole 11.7%									
	cyproconazole 7.17%	Approach Prima 2.345C*	3.4-6.8	U	U	U	E	VG	G-VG	30 days
	picoxystrobin 17.94%									
	flutriafol 19.3%	Fortix 3.225C*	4.0-6.0	U	U	U	E	VG-E	VG	R4 (dough)
	fluoxastrobin 14.84%	Preemptor 3.225C*								
	pyraclostrobin 28.58%	Priaxor 4.175C*	4.0-8.0	U	VG	U	VG	U	G	21 days
fluxapyroxad 14.33%										
pyraclostrobin 13.6%	Headline AMP 1.685C*	10.0-14.4	U	E	E	E	VG	G-VG	20 days	
metconazole 5.1%										
tetraconazole 7.48%	Affiance 1.55C*	10.0-14.0	U	U	U	U	U	G	7 days	
azoxystrobin 9.35%										
trifloxystrobin 32.3%	Stratego YLD 4.185C*	4.0-5.0	VG	E	VG	E	VG	G-VG	14 days	
prothioconazole 10.8%										

¹ Efficacy ratings: F=fair, G=good, VG=very good, E=excellent, NL=not labeled for use against this disease, U=unknown, efficacy or insufficient data to rank product.

² Harvest restrictions are for field corn harvested for grain. Restrictions may vary for other types of corn (such as sweet, seed, popcorn), and corn for other uses (such as forage or fodder).

<http://news.utrcrops.com/2017/06/foiar-diseases-fungicide-applications-corn/>

Resources and Additional Information

1. Fungicide Efficacy for Control of Corn Diseases. Dr. Kiersten Wise Purdue Botany & Plant Pathology Jan2017 <https://www.extension.purdue.edu/extmedia/BP/BP-160-W.pdf>
2. News.UTcrops .com - Foliar Diseases and Fungicide Applications in corn.2017/06 <http://news.utrcrops.com/2017/06/foiar-diseases-fungicide-applications-corn/>

Note: The information in this issue is based upon field observations and third-party information. Since variations in local conditions may affect the information and suggestions contained in this issue, LG Seeds disclaims legal responsibility therefore. Always read and follow label instructions. LG Seeds and design are trademarks of SCA Limagrain.