



## Foliar Disease ID and Management in Corn

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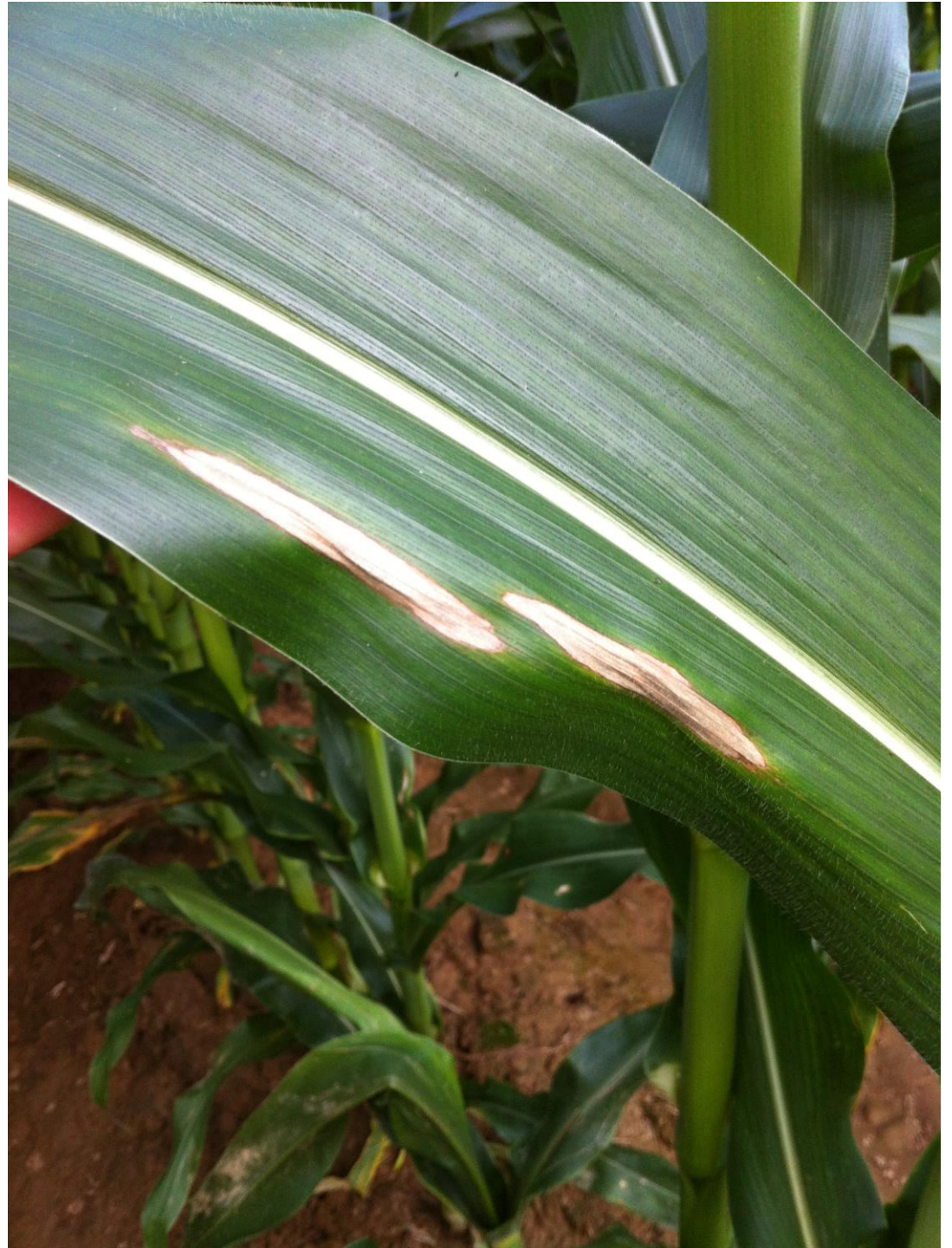
318-235-9805

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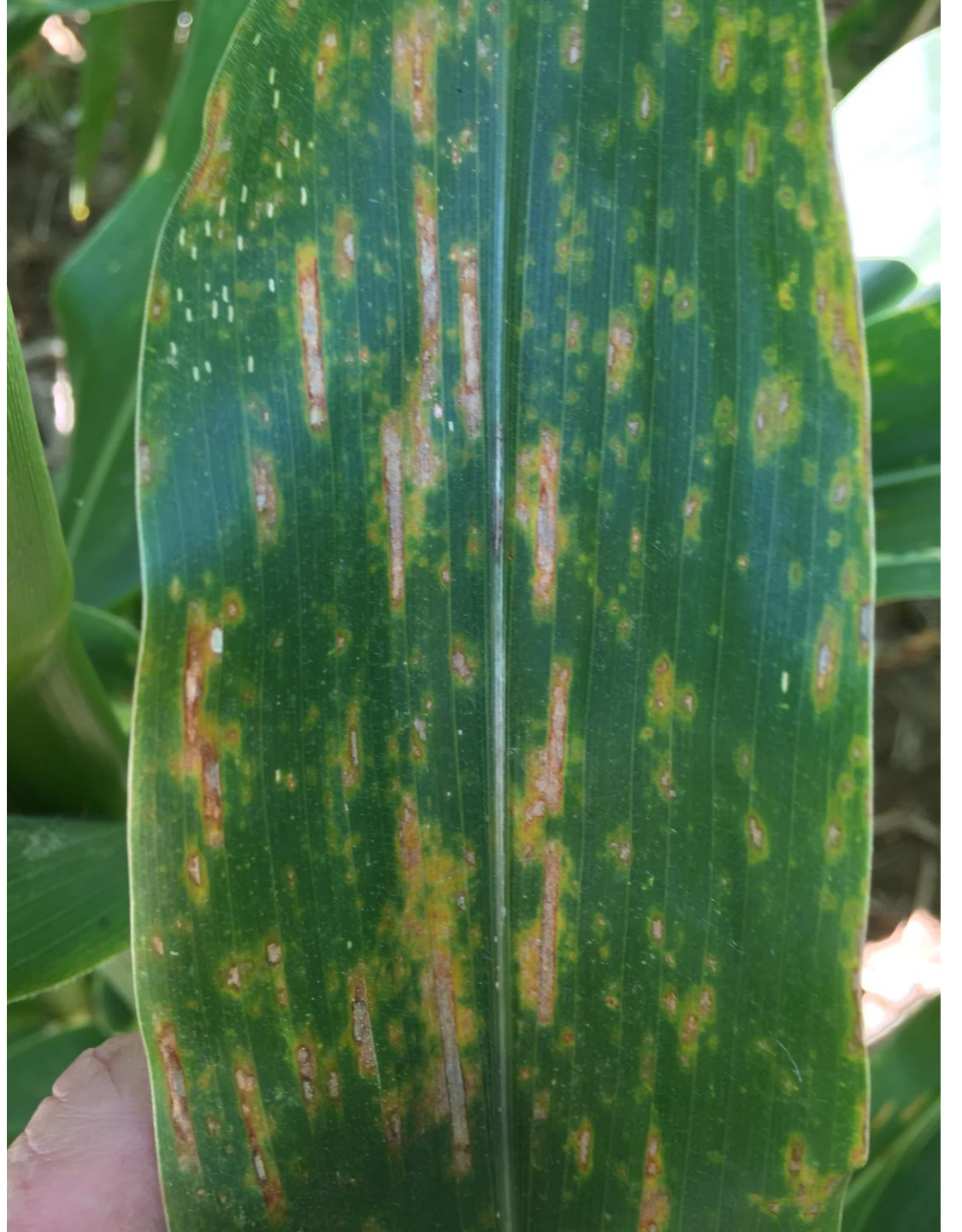






















# Hybrid Evaluations

- OHTs at 6 locations
- Naturally occurring disease
- Data available at

[www.lsuagcenter.com](http://www.lsuagcenter.com)



| Brand    | Hybrid      | YLD   | GM   | TW   | PP    | PH   | EH   | HC  | NCLB | NCLB | SR  |
|----------|-------------|-------|------|------|-------|------|------|-----|------|------|-----|
| Pioneer  | P1828YHR    | 163.1 | 17.2 | 59.5 | 28082 | 88.5 | 36.5 | 2   | 4.3  | 6.5  | 0.3 |
| Pioneer  | P1870YHR    | 178.1 | 17.3 | 60.5 | 31348 | 87.3 | 36.8 | 2   | 3.1  | 5.3  | 0.3 |
| Pioneer  | P1464VYHR   | 182   | 15.4 | 59.3 | 30368 | 83.3 | 34   | 2   | 2.8  | 5    | 1.3 |
| Mission  | AV7516 Q    | 195.1 | 16.6 | 61.4 | 29552 | 85.8 | 37.5 | 2.5 | 1.1  | 4.3  | 0.8 |
| Pioneer  | P1903YHR    | 205.7 | 17.5 | 59.2 | 29388 | 74.8 | 37.5 | 1.5 | 1.5  | 4.1  | 1.4 |
| Pioneer  | P1077YHR    | 185.2 | 14.9 | 59.8 | 31348 | 84.5 | 36.5 | 2   | 1.1  | 3.4  | 1.8 |
| Dyna-Gro | D54VC14     | 196.7 | 14.8 | 60.2 | 30694 | 83.8 | 33.8 | 1.8 | 1.4  | 3.3  | 1   |
| Dyna-Gro | D58VC65     | 173.3 | 16.3 | 60.2 | 27592 | 84.5 | 34.8 | 2   | 1.3  | 3    | 0.8 |
| Progeny  | PGY9114VT2P | 174.5 | 15.7 | 60.7 | 29715 | 86   | 35.5 | 2   | 1.1  | 2.9  | 0.5 |
| LG       | LG 68C59    | 198.3 | 18.5 | 58.5 | 32491 | 89   | 36.5 | 2   | 1.5  | 2.8  | 0.8 |

| Company     | Hybrid        | PP (No./A) <sup>1</sup> | PH (in) | EH (in) | HC (1-3) | LOD (0-9) | CURV (0-9) | GLS (0-9)        | GM (%) | TW (lb/bu) | YLD (bu/A) |
|-------------|---------------|-------------------------|---------|---------|----------|-----------|------------|------------------|--------|------------|------------|
| BH Genetics | BH 8721VT2P   | 33,030                  | 98.4    | 42.4    | 1.0      | 0         | 1.8        | 2.5 <sup>2</sup> | 17.8   | 56.5       | 230.8      |
| Pioneer     | P1511YHR      | 31,885                  | 97.3    | 43.1    | 1.0      | 0         | 1          | 1.8              | 17.9   | 57.3       | 227.7      |
| Progeny     | PGY 9117VT2P  | 34,338                  | 100.9   | 42.0    | 1.0      | 0         | 1.8        | 2.8              | 17.7   | 58.3       | 226.7      |
| BH Genetics | X23001TRE     | 33,684                  | 99.4    | 44.6    | 1.1      | 0         | 2.3        | 1.3              | 18.0   | 56.4       | 225.0      |
| WinField    | CP 5893 TRE   | 32,376                  | 98.5    | 41.1    | 1.0      | 0         | 1          | 1.8              | 17.9   | 59.0       | 222.5      |
| Dyna-Gro    | D57VC53       | 32,212                  | 97.0    | 41.9    | 1.0      | 0         | 1.3        | 1.5              | 18.0   | 58.2       | 221.8      |
| WinField    | CP 5208 VT2P  | 33,357                  | 100.4   | 41.4    | 1.0      | 0         | 1.8        | 2                | 17.1   | 57.5       | 220.1      |
| Pioneer     | P17677YHR     | 33,684                  | 96.4    | 42.0    | 1.0      | 0         | 2          | 1                | 17.5   | 57.3       | 219.9      |
| Progeny     | PGY 2118VT2P  | 32,212                  | 96.4    | 40.4    | 1.0      | 0         | 2          | 2                | 17.2   | 59.1       | 219.1      |
| Bayer       | DKC65-93      | 33,357                  | 97.4    | 40.5    | 1.1      | 0         | 1.5        | 1                | 17.4   | 58.3       | 219.1      |
| BH Genetics | BH 8566VT2P   | 32,866                  | 100.8   | 45.0    | 1.0      | 0         | 2.3        | 1.3              | 16.6   | 59.1       | 218.0      |
| Progeny     | PGY 9114VT2P  | 32,703                  | 96.0    | 41.1    | 1.0      | 0         | 3.8        | 1.3              | 16.7   | 58.6       | 217.8      |
| Pioneer     | P17052YHR     | 34,829                  | 95.3    | 41.4    | 1.0      | 0         | 3          | 2.8              | 18.3   | 58.8       | 217.2      |
| Progeny     | PGY 2314TRE   | 34,992                  | 93.1    | 36.8    | 1.0      | 0         | 3.5        | 1.5              | 16.9   | 57.9       | 216.4      |
| Bayer       | DKC70-45 VT2P | 35,810                  | 95.6    | 40.8    | 1.0      | 0         | 1          | 1.3              | 17.1   | 57.7       | 216.3      |
| Great Heart | HT-7500TRE    | 32,376                  | 99.1    | 40.0    | 1.0      | 0         | 2          | 1                | 17.2   | 57.8       | 215.5      |
| Pioneer     | P1289YHR      | 34,174                  | 96.4    | 42.4    | 1.0      | 0         | 1.5        | 1.8              | 16.9   | 58.5       | 215.0      |
| Great Heart | HT-7360VT2P   | 33,193                  | 97.9    | 41.5    | 1.0      | 0         | 1          | 1.3              | 17.4   | 58.9       | 214.2      |
| Progeny     | PGY 2215TRE   | 33,684                  | 95.3    | 39.9    | 1.0      | 0         | 1.3        | 1.5              | 17.4   | 58.7       | 213.1      |
| Bayer       | DKC65-99 TRE  | 34,338                  | 96.0    | 39.6    | 1.0      | 0         | 2.8        | 2                | 17.0   | 58.8       | 212.1      |
| Great Heart | HT-7499TRE    | 33,520                  | 93.8    | 36.4    | 1.0      | 0         | 2          | 1.8              | 16.3   | 58.1       | 211.2      |
| Dyna-Gro    | D56TC44       | 32,703                  | 94.1    | 37.9    | 1.0      | 0         | 6          | 1.3              | 18.1   | 58.4       | 210.9      |
| Bayer       | DKC68-35 VT2P | 34,011                  | 97.8    | 41.3    | 1.0      | 0         | 1.8        | 1.3              | 17.7   | 58.7       | 210.3      |
| Dyna-Gro    | D55VC80       | 33,521                  | 97.4    | 41.8    | 1.0      | 0         | 1.3        | 1.5              | 17.1   | 57.5       | 208.7      |
| Dyna-Gro    | D58VC74       | 36,300                  | 97.1    | 40.5    | 1.0      | 0         | 1.8        | 2                | 17.7   | 56.1       | 207.4      |
| Bayer       | DKC62-70 VT2P | 32,049                  | 93.5    | 39.1    | 1.0      | 0         | 3.5        | 1                | 17.5   | 57.8       | 207.4      |
| Dyna-Gro    | D54VC14       | 31,722                  | 93.0    | 38.8    | 1.0      | 0         | 4          | 1.3              | 17.3   | 58.3       | 207.3      |
| Bayer       | DKC66-06 TRE  | 33,193                  | 95.0    | 39.4    | 1.0      | 0         | 2          | 1.8              | 16.6   | 58.8       | 207.1      |
| Pioneer     | P1222YHR      | 34,992                  | 97.1    | 39.4    | 1.0      | 0         | 2          | 1.8              | 17.0   | 59.0       | 206.4      |
| Pioneer     | P1608YHR      | 32,539                  | 96.6    | 40.6    | 1.0      | 0         | 2          | 1                | 17.2   | 59.1       | 205.1      |
| Dyna-Gro    | D57RR51       | 33,847                  | 95.4    | 40.8    | 1.0      | 0         | 2          | 1.5              | 16.3   | 58.7       | 204.5      |
| Pioneer     | P1759YHR      | 34,011                  | 97.3    | 40.8    | 1.0      | 0         | 2.3        | 1.8              | 16.9   | 58.9       | 204.4      |
| Pioneer     | P1870R        | 33,521                  | 97.0    | 39.6    | 1.0      | 0         | 1.3        | 2.3              | 17.0   | 58.9       | 204.2      |

Price et al  
2016



0

4%

8%

12%

16%

20%

24%

28%

32%

36%

# % Corn Grain Yield Loss Due to Defoliation

| Stage<br>of Growth | Percent Leaf Area Destroyed |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |  |
|--------------------|-----------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|--|
|                    | 10                          | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 | 100 |  |
| 7 Leaf             | 0                           | 0  | 0  | 0  | 0  | 0  | 1  | 1  | 2  | 3  | 4  | 4  | 5  | 5  | 6  | 7  | 8  | 9  | 9   |  |
| 8 Leaf             | 0                           | 0  | 0  | 0  | 0  | 1  | 1  | 2  | 3  | 4  | 5  | 5  | 6  | 6  | 7  | 8  | 9  | 10 | 11  |  |
| 9 Leaf             | 0                           | 0  | 0  | 1  | 1  | 2  | 2  | 3  | 4  | 5  | 6  | 6  | 7  | 7  | 9  | 10 | 11 | 12 | 13  |  |
| 10 Leaf            | 0                           | 0  | 0  | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 8  | 9  | 9  | 11 | 13 | 14 | 15 | 16  |  |
| 11 Leaf            | 0                           | 0  | 1  | 1  | 2  | 3  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 14 | 16 | 18 | 20 | 22  |  |
| 12 Leaf            | 0                           | 0  | 1  | 2  | 3  | 4  | 5  | 7  | 9  | 10 | 11 | 13 | 15 | 16 | 18 | 20 | 23 | 26 | 28  |  |
| 13 Leaf            | 0                           | 1  | 1  | 2  | 3  | 4  | 6  | 8  | 10 | 11 | 13 | 15 | 17 | 19 | 22 | 25 | 28 | 31 | 34  |  |
| 14 Leaf            | 0                           | 1  | 2  | 3  | 4  | 6  | 8  | 10 | 13 | 15 | 17 | 20 | 22 | 25 | 28 | 32 | 36 | 40 | 44  |  |
| 15 Leaf            | 1                           | 1  | 2  | 3  | 5  | 7  | 9  | 12 | 15 | 17 | 20 | 23 | 26 | 30 | 34 | 38 | 42 | 46 | 51  |  |
| 16 Leaf            | 1                           | 2  | 3  | 4  | 6  | 8  | 11 | 14 | 18 | 20 | 23 | 27 | 31 | 36 | 40 | 44 | 49 | 55 | 61  |  |
| 17 Leaf            | 2                           | 3  | 4  | 5  | 7  | 9  | 13 | 17 | 21 | 24 | 28 | 32 | 37 | 43 | 48 | 53 | 59 | 65 | 72  |  |
| 18 Leaf            | 2                           | 3  | 5  | 7  | 9  | 11 | 15 | 19 | 24 | 28 | 33 | 38 | 44 | 50 | 56 | 62 | 69 | 76 | 84  |  |
| 19-21 Leaf         | 3                           | 4  | 6  | 8  | 11 | 14 | 18 | 22 | 27 | 32 | 38 | 43 | 51 | 57 | 64 | 71 | 79 | 87 | 96  |  |
| Tassel             | 3                           | 5  | 7  | 9  | 13 | 17 | 21 | 26 | 31 | 36 | 42 | 48 | 55 | 62 | 68 | 75 | 83 | 91 | 100 |  |
| Silked             | 3                           | 5  | 7  | 9  | 12 | 16 | 20 | 24 | 29 | 34 | 39 | 45 | 51 | 58 | 65 | 72 | 80 | 88 | 97  |  |
| Silks Brown        | 2                           | 4  | 6  | 8  | 11 | 15 | 18 | 22 | 27 | 31 | 36 | 41 | 47 | 54 | 60 | 66 | 74 | 81 | 90  |  |
| Pre-Blister        | 2                           | 3  | 5  | 7  | 10 | 13 | 16 | 20 | 24 | 28 | 32 | 37 | 43 | 49 | 54 | 60 | 66 | 73 | 81  |  |
| Blister            | 2                           | 3  | 5  | 7  | 10 | 13 | 16 | 19 | 22 | 26 | 30 | 34 | 39 | 45 | 50 | 55 | 60 | 66 | 73  |  |
| Early Milk         | 2                           | 3  | 4  | 6  | 8  | 11 | 14 | 17 | 20 | 24 | 28 | 32 | 36 | 41 | 45 | 50 | 55 | 60 | 66  |  |
| Milk               | 1                           | 2  | 3  | 5  | 7  | 9  | 12 | 15 | 18 | 21 | 24 | 28 | 32 | 37 | 41 | 45 | 49 | 54 | 59  |  |
| Late Milk          | 1                           | 2  | 3  | 4  | 6  | 8  | 10 | 12 | 15 | 18 | 21 | 24 | 28 | 32 | 35 | 38 | 42 | 46 | 50  |  |
| Soft Dough         | 1                           | 1  | 2  | 2  | 4  | 6  | 8  | 10 | 12 | 14 | 17 | 20 | 23 | 26 | 29 | 32 | 35 | 38 | 41  |  |
| Early Dent         | 0                           | 0  | 1  | 1  | 2  | 3  | 5  | 7  | 9  | 11 | 13 | 15 | 18 | 21 | 23 | 25 | 27 | 29 | 32  |  |
| Dent               | 0                           | 0  | 0  | 1  | 2  | 3  | 4  | 6  | 7  | 8  | 10 | 12 | 14 | 15 | 17 | 19 | 20 | 21 | 23  |  |
| Late Dent          | 0                           | 0  | 0  | 0  | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15  |  |
| Nearly Mature      | 0                           | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 2  | 3  | 4  | 5  | 5  | 6  | 6  | 7  | 7  | 8   |  |
| Mature             | 0                           | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0   |  |

\* Source National Crop Insurance Service's "Corn Loss Instructions" (Rev 1984)

# % Corn Grain Yield Loss Due to Defoliation

|               | % DEFOLIATION |    |    |    |    |    |    |    |    |     |
|---------------|---------------|----|----|----|----|----|----|----|----|-----|
| Growth Stage  | 10            | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
| Tassel        | 3             | 7  | 13 | 21 | 31 | 42 | 55 | 68 | 83 | 100 |
| Silked        | 3             | 7  | 12 | 20 | 29 | 39 | 51 | 65 | 80 | 97  |
| Silks Brown   | 2             | 6  | 11 | 18 | 27 | 36 | 47 | 60 | 74 | 90  |
| Pre-Blister   | 2             | 5  | 10 | 16 | 24 | 32 | 43 | 54 | 66 | 81  |
| Blister       | 2             | 5  | 10 | 16 | 22 | 30 | 39 | 50 | 60 | 73  |
| Early Milk    | 2             | 4  | 8  | 14 | 20 | 28 | 36 | 45 | 55 | 66  |
| Milk          | 1             | 3  | 7  | 12 | 18 | 24 | 32 | 41 | 49 | 59  |
| Late Milk     | 1             | 3  | 6  | 10 | 15 | 21 | 28 | 35 | 42 | 50  |
| Soft Dough    | 1             | 2  | 4  | 8  | 12 | 17 | 23 | 29 | 35 | 41  |
| Early Dent    | 0             | 1  | 2  | 5  | 9  | 13 | 18 | 23 | 27 | 32  |
| Dent          | 0             | 0  | 2  | 4  | 7  | 10 | 14 | 17 | 20 | 23  |
| Late Dent     | 0             | 0  | 1  | 3  | 5  | 7  | 9  | 11 | 13 | 15  |
| Nearly Mature | 0             | 0  | 0  | 0  | 1  | 3  | 5  | 6  | 7  | 8   |





Fungicide mode of action groups:  
 Group 11 QoI Strobilurins  
 Group 3 DMI Triazoles  
 Group 7 SDHI

## Fungicide Efficacy for Control of Corn Diseases Table (04/2022)

[www.cropprotectionnetwork.org](http://www.cropprotectionnetwork.org)

| Product/Trade name                   | Rate/A (fl oz) | Anthraxnose leaf blight | Common rust | Eyespot | Gray leaf spot | Northern corn leaf blight | Southern rust | Tar spot <sup>1</sup> | Harvest restriction <sup>2</sup> |
|--------------------------------------|----------------|-------------------------|-------------|---------|----------------|---------------------------|---------------|-----------------------|----------------------------------|
| Quadris 2.08 SC, multiple generics   | 6.0 - 15.5     | VG                      | E           | VG      | E              | G                         | VG            | NL                    | 7 days                           |
| Headline 2.09 EC/SC                  | 6.0 - 12.0     | VG                      | E           | E       | E              | VG                        | VG            | NL                    | 7 days                           |
| Approach 2.08 SC                     | 3.0 - 12.0     | VG                      | VG-E        | VG      | F-VG           | VG                        | G             | G <sup>3</sup>        | 7 days                           |
| Xyway LFR 1.92 SC                    | LFR: 7.6-15.2  | NL                      | U           | NL      | G              | VG                        | NL            | NL                    | N/A                              |
| Xyway 3D 2.5 SC                      | 3D: 5.8-11.8   |                         |             |         |                |                           |               |                       |                                  |
| Tilt 3.6 EC, multiple generics       | 2.0 - 4.0      | NL                      | VG          | E       | G              | G                         | F             | NL                    | 30 days                          |
| Proline 480 SC                       | 5.7            | U                       | VG          | E       | U              | VG                        | G             | NL                    | 14 days                          |
| Folicur 3.6 F, multiple generics     | 4.0 - 6.0      | NL                      | U           | NL      | U              | VG                        | F             | NL                    | 36 days                          |
| Domark 230 ME                        | 4.0 - 6.0      | U                       | U           | U       | E              | VG                        | G             | G <sup>3</sup>        | R3 (milk)                        |
| Quilt Xcel 2.2 SE, multiple generics | 10.5 - 14.0    | VG                      | VG-E        | VG-E    | E              | VG                        | VG            | NL                    | 30 days                          |
| Trivapro 2.21 SE                     | 13.7           | U                       | U           | U       | E              | VG                        | E             | G-VG                  | 30 days                          |
| Approach Prima 2.34 SC               | 3.4 - 6.8      | U                       | U           | U       | E              | VG                        | G             | G-VG <sup>3</sup>     | 30 days                          |
| Fortix 3.22 SC                       | 4.0 - 6.0      | U                       | U           | U       | E              | VG                        | VG            | G-VG <sup>3</sup>     | R4 (dough)                       |
| Preemptor 3.22 SC                    |                |                         |             |         |                |                           |               |                       |                                  |
| Lucento                              | 3.0-5.5        | U                       | U           | U       | VG-E           | VG                        | VG            | G <sup>3</sup>        | R4                               |
| TopGuard EQ                          | 5.0-7.0        | U                       | F           | U       | VG             | G-VG                      | G-VG          | G-VG <sup>3</sup>     | 7 days                           |

|                         |             |    |      |    |      |      |      |                |         |
|-------------------------|-------------|----|------|----|------|------|------|----------------|---------|
| Veltyrna                | 7.0-10.0    | U  | U    | U  | VG-E | VG-E | VG   | VG             | 21 days |
| Revytek                 | 8.0-15.0    | U  | U    | U  | VG-E | VG-E | VG   | VG             | 21 days |
| Delaro325 SC            | 8.0-12.0    | VG | E    | VG | E    | VG   | G-VG | G-VG           | 14 days |
| Delaro Complete 3.83 SC | 8.0-12.0    | U  | U    | U  | E    | VG   | G-VG | VG             | 35 days |
| Miravis Neo 2.5 SE      | 13.7        | U  | U    | U  | E    | VG-E | VG   | G-VG           | 30 days |
| Priaxor 4.17 SC         | 4.0 - 8.0   | U  | VG   | U  | VG   | VG-E | VG   | G-VG           | 21 days |
| Headline AMP 1.68 SC    | 10.0 - 14.4 | U  | E    | E  | E    | VG   | G    | G-VG           | 20 days |
| Stratego YLD 4.18 SC    | 4.0 - 5.0   | VG | E    | VG | E    | VG   | G    | NL             | 14 days |
| Affiance 1.5 SC         | 10.0-14.0   | U  | G-VG | U  | G-VG | G-VG | G    | G <sup>3</sup> | 7 days  |



3, 7, 11  
SR



3, 3, 7\*  
NCLB, SR



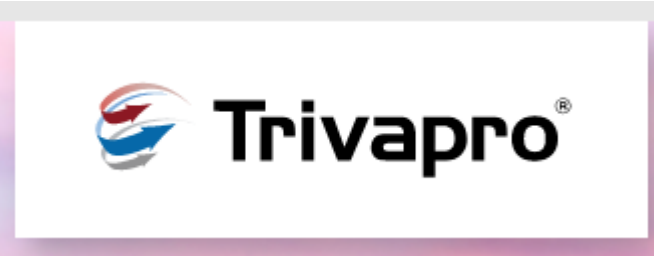
3, 7, 11  
GLS, NCLB, SR



3, 7, 11  
GLS, NCLB, SR



3, 7  
GLS, NCLB, SR



3, 7, 11  
GLS, NCLB, SR



3, 7, 11  
GLS, NCLB, SR



3, 11  
GLS, NCLB, SR



3\* at planting  
GLS, NCLB

“Newer” Corn Fungicides

# Off-Patent Active Ingredients for Use in Corn

- Azoxystrobin (Quadris)
  - Propiconazole (Tilt)
  - Tebuconazole (Folicur)
  - Tetraconazole (Domark)
  - Prothioconazole (Proline)
- Many different commercial products
  - Lots of companies
  - Many different pre-mixes
  - Refer to AIs on the efficacy table to get an idea of what fungicides would be useful on...



# Fungicide Resistance: Will It Happen In Corn Diseases?

DR. PAUL VINCELLI AND DR. DON HERSHMAN

---

LEXINGTON, KY.

PRINCETON, KY.

**T**he simple answer: Almost certainly, it will happen. No one knows where or when it

ent in a field, so a fungicide appl selection pressure towards r though the disease is present at cause yield loss.

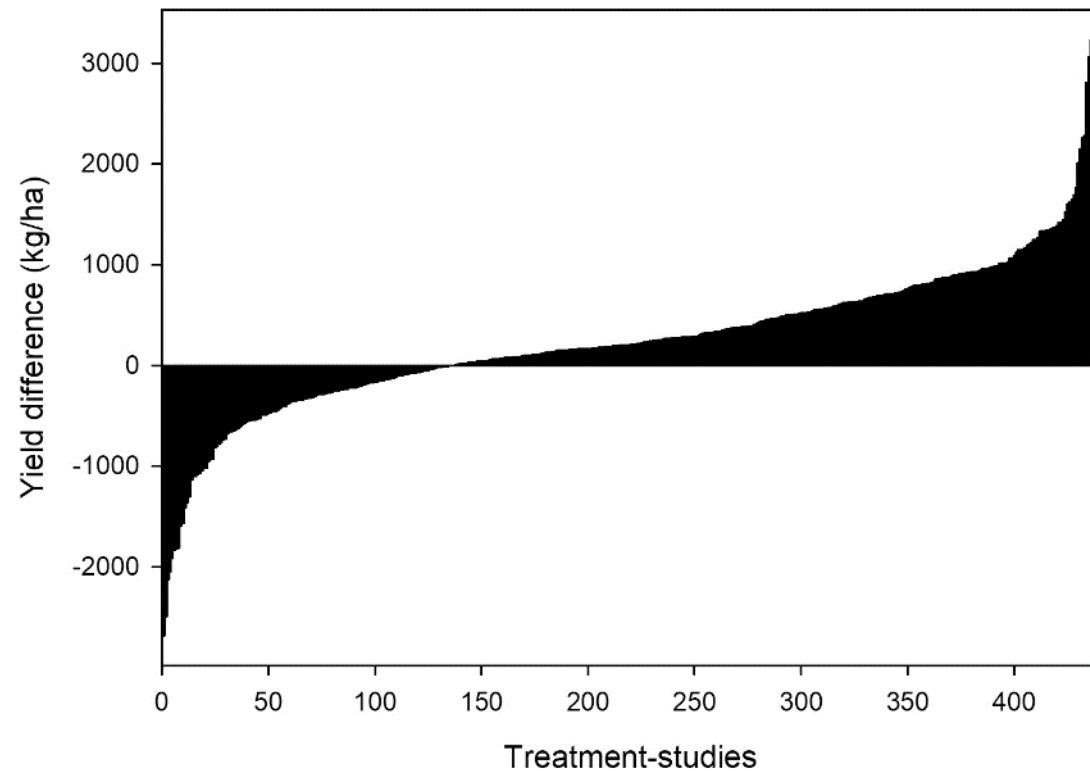
- Gray Leaf Spot?
- Northern Corn Leaf Blight?
- Anthracnose?

“Plant Health” Applications will apply Selection Pressure at low levels of disease.

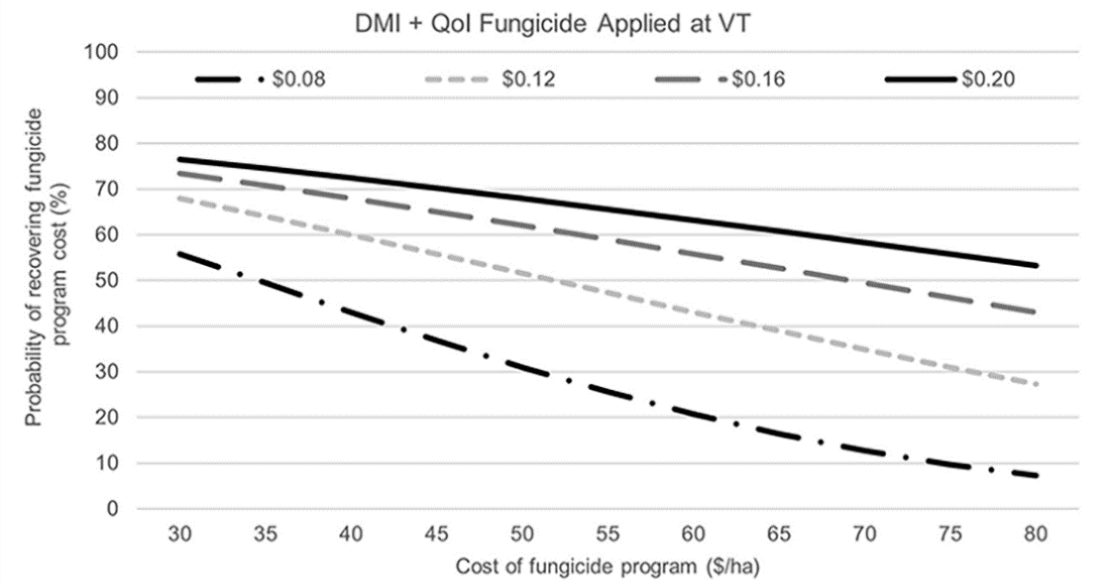
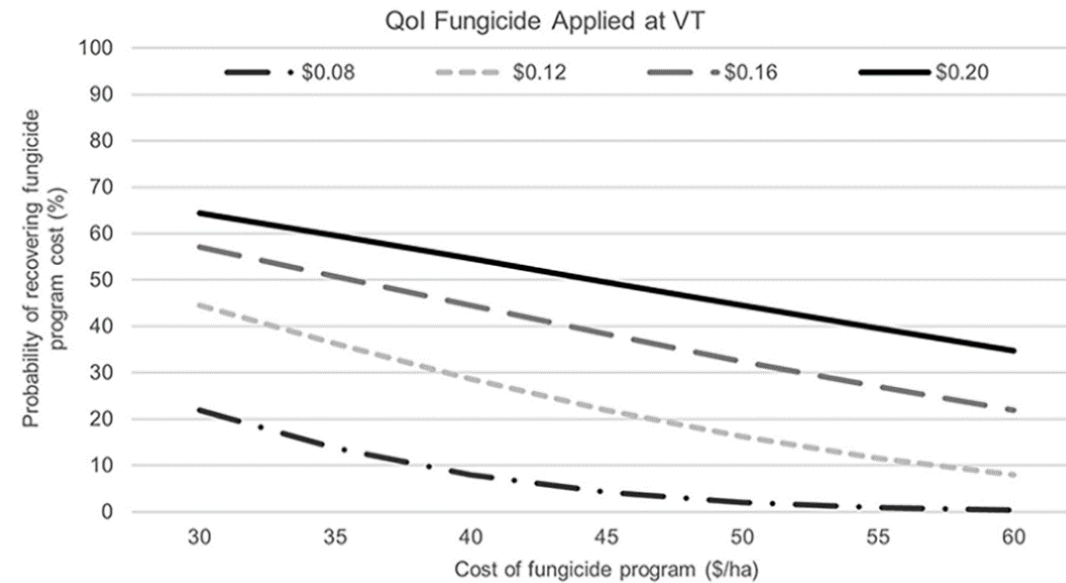
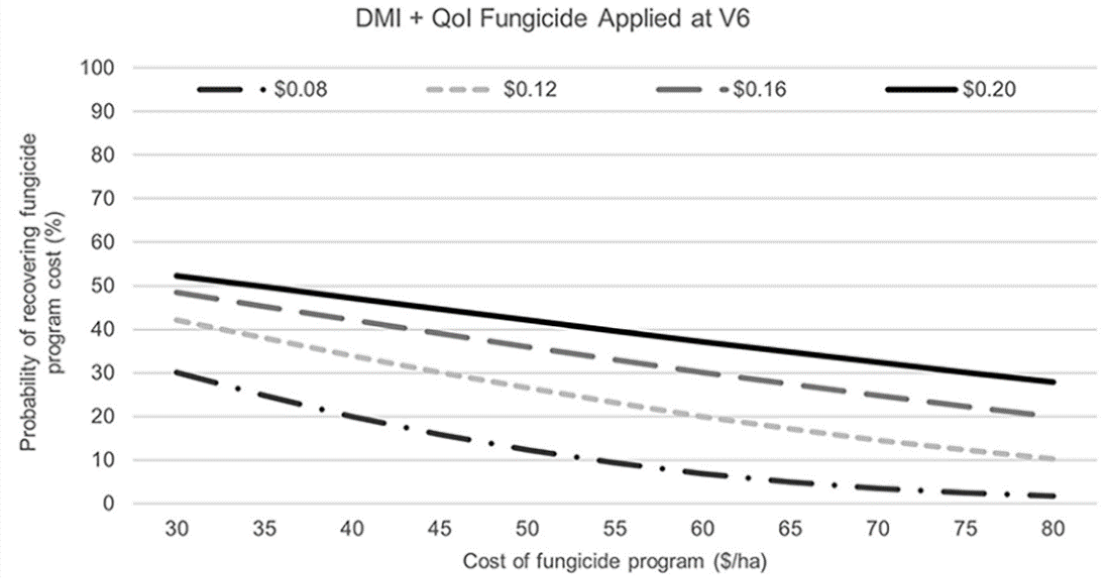
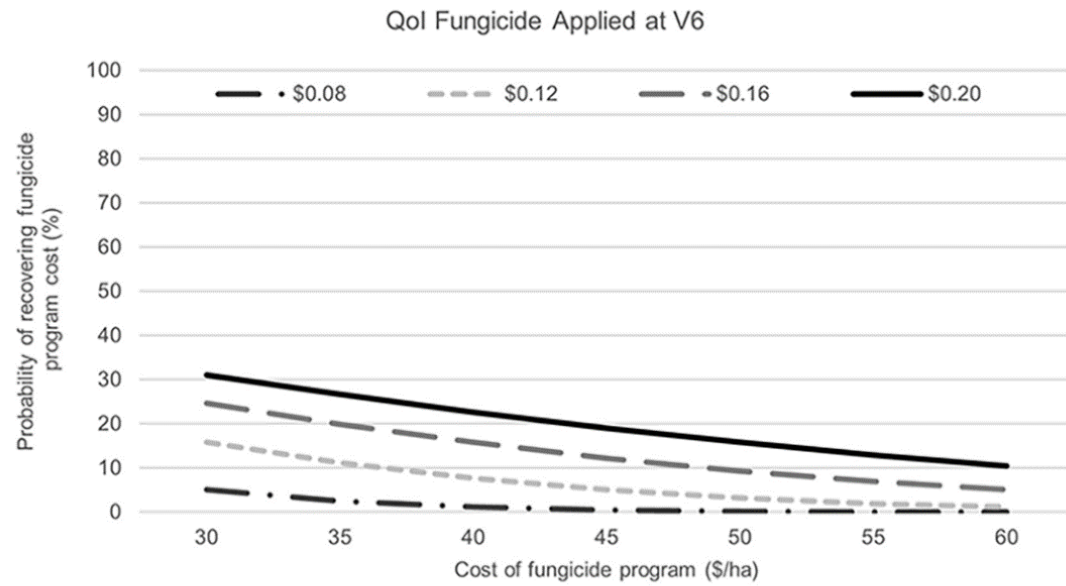
Not a matter of “if”, a matter of WHEN

# Meta-analysis

- <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0217510>
- ~68% of the time, fungicide results in positive yield response in the presence of disease & susceptible hybrid
- Probability of a return on investment increases with commodity price, mixed MOA, and VT application timing



# Meta-analysis





Lagniappe











94%   
jpeg 



5 of 5







# Physoderma brown spot

- corn/corn
- low tillage
- lives on debris
- likes rain and hot
- infects early in the season
- \*not a major concern, but ID is important!



# THANK YOU FOR YOUR SUPPORT

- Farmers
- Crews
- Collaborators
- Grad Students
- Consultants
- Agents
- Industry Partners

