

Section 6: Wheat Scab Research

One of the primary research objectives of the Virginia Tech wheat breeding program is to identify and develop cultivars possessing resistance to *Fusarium* Head Blight (FHB) or scab. Each year all wheat entries in Virginia's Official State Variety Trials are evaluated for FHB resistance in an inoculated, irrigated nursery at the Blacksburg test site. Data from this test for the current crop year and two- and three-year averages for FHB incidence, FHB severity and FHB Index (incidence x severity / 100) are included in this bulletin (Tables 39 – 41) to aid producers in selection of cultivars on the basis of FHB resistance. Cultivars possessing complete resistance or immunity to FHB have not been identified and resistance levels in currently available cultivars vary from moderately resistant to highly susceptible.

A major goal of the breeding program is to identify and incorporate unique and complementary types of FHB resistance into cultivars to enhance the overall level of resistance. Genes controlling FHB resistance have been identified on more than six chromosomes in wheat and some of these genes are complementary in nature and effect different disease resistance components such as FHB incidence, severity, and DON toxin content. Incorporating such multiple resistance genes having additive effects on FHB resistance into cultivars will enhance the overall level of resistance. Because the individual resistance genes are located on different wheat chromosomes and each gene confers only partial resistance to FHB, identifying wheat lines having multiple resistance genes is difficult using traditional breeding techniques. To overcome this limitation, our program is currently identifying and using DNA markers located close to these resistance genes on the same chromosome as “tags” for selecting wheat lines possessing different combinations of these complementary resistance genes.

Entries were inoculated two times by spreading scabby corn seeds in plots at the booting stage and a week later, and by spraying a *Fusarium graminearum* spore suspension directly onto spikes at the 50% flowering stage. A high FHB incidence and severity were obtained in 2014. Among 116 lines and varieties tested in 2014, the FHB index varied from 0.2 to 63.2 with FHB incidence ranging from 2.6% to 87.5% and FHB severity ranging from 3.5% to 76.8% (Table 39). Thirty-three lines and 41 varieties had FHB index values lower than the mean (<14.7) and expressed moderate resistant to FHB in 2014. Based on two year mean data for 2013 and 2014 (Table 40), four lines and 11 varieties had FHB index values lower than the test mean (<12.1) and DON content lower than 2.0 ppm. Two lines and seven varieties tested across three years (2012-2014) had average FHB index values lower than the test mean of 8.9 and DON content lower than 2.0 ppm (Table 41). The lines and varieties expressing resistance to FHB based on three-year mean data are: Progeny 125, Jamestown, VA10W-123, Progeny 117, Massey, Pioneer Brand 25R32, Progeny 185, VA10W-119, and USG 3120.

Table 41. Summary of reaction of entries in the Virginia Tech State Wheat Test to Fusarium head blight (scab) and glume blotch resistance, 2014 harvest.

| LINE | pm | | FHB Incidence ¹ (%) | | FHB Severity ² (%) | | FHB Index ³ (0-100) | | Rank FHB Index |
|----------------------------|-----|---|-----------------------------------|---|----------------------------------|--|-----------------------------------|--|----------------------|
| | | | | | | | | | |
| Dyna-Gro 9343 | 0.5 | | 2.6 | - | 3.5 | | 0.2 | | 1 |
| MAS #4 | 3.5 | + | 12.5 | - | 8.8 | | 1.1 | | 2 |
| VA11W-313 | 1.5 | | 25.7 | | 9.1 | | 2.3 | | 3 |
| USG 3201 | 2.0 | | 25.0 | | 12.0 | | 3.0 | | 4 |
| USG 3833 | 3.5 | + | 17.5 | | 12.8 | | 3.0 | | 5 |
| Progeny 125 | 3.0 | + | 25.0 | | 14.8 | | 3.6 | | 6 |
| Dyna-Gro 9171 | 1.0 | | 32.5 | | 11.3 | | 3.7 | | 7 |
| AgriMAXX Exp 1450 | 0.5 | | 30.0 | | 13.5 | | 4.1 | | 8 |
| MD04W249-11-12 | 0.0 | | 25.0 | | 13.9 | | 4.2 | | 9 |
| Steyer Kidwell | 2.5 | | 40.0 | | 10.8 | | 4.3 | | 10 |
| Jamestown | 0.0 | | 40.0 | | 12.0 | | 4.4 | | 11 |
| MBX14-S-210 | 0.0 | | 30.0 | | 19.2 | | 4.4 | | 12 |
| VA12W-102 | 1.0 | | 37.5 | | 12.0 | | 4.4 | | 13 |
| USG 3612 | 1.0 | | 35.0 | | 12.9 | | 4.6 | | 14 |
| SS 8870 | 0.0 | | 25.0 | | 18.3 | | 4.6 | | 15 |
| AgriMAXX Exp 1465 | 3.0 | + | 37.5 | | 11.9 | | 4.7 | | 16 |
| USG 3438 | 2.0 | | 35.0 | | 13.9 | | 4.9 | | 18 |
| VA11W-FHB60 | 0.0 | | 37.5 | | 13.0 | | 4.9 | | 17 |
| Progeny 870 | 1.5 | | 38.4 | | 12.9 | | 5.0 | | 19 |
| USG 3993 | 1.0 | | 25.0 | | 18.4 | | 5.1 | | 20 |
| SS 8360 | 1.5 | | 27.5 | | 16.5 | | 5.1 | | 21 |
| VA10W-123 | 0.5 | | 27.5 | | 20.5 | | 5.5 | | 22 |
| VA11W-108 | 0.0 | | 37.5 | | 15.2 | | 5.6 | | 23 |
| MAS #33 | 2.5 | | 40.0 | | 13.6 | | 5.7 | | 24 |
| MAS #31 | 0.5 | | 25.0 | | 22.7 | | 5.7 | | 25 |
| SY 007 | 0.0 | | 30.0 | | 19.3 | | 5.7 | | 26 |
| Massey | 0.5 | | 35.0 | | 16.6 | | 5.8 | | 27 |
| AgriMAXX 434 | 2.0 | | 30.0 | | 19.8 | | 5.9 | | 28 |
| MAS #34 | 1.0 | | 52.5 | | 11.4 | | 6.0 | | 29 |
| USG 3555 | 0.5 | | 30.0 | | 20.8 | | 6.2 | | 30 |
| Pioneer Brand 26R53 | 2.5 | | 22.5 | | 26.7 | | 6.3 | | 31 |
| Pioneer Brand 26R41 | 1.5 | | 45.0 | | 14.1 | | 6.3 | | 32 |
| USG 3120 | 0.0 | | 42.5 | | 16.2 | | 6.5 | | 33 |
| AgriMAXX 415 | 4.0 | + | 32.5 | | 17.4 | | 6.5 | | 34 |
| VA10W-96 | 0.0 | | 37.5 | | 17.1 | | 6.6 | | 35 |
| MBX12-W-296 | 1.5 | | 22.5 | | 23.8 | | 6.6 | | 37 |

Table 41. Summary of reaction of entries in the Virginia Tech State Wheat Test to Fusarium head blight (scab) and glume blotch resistance, 2014 harvest, cont'd.

| LINE | pm | | FHB Incidence ¹ (%) | FHB Severity ² (%) | FHB Index ³ (0-100) | Rank FHB Index |
|----------------------------|-----|---|-----------------------------------|----------------------------------|-----------------------------------|----------------------|
| MAS #32 | 2.0 | | 52.5 | 11.7 | 6.6 | 36 |
| AgriMAXX 413 | 1.5 | | 27.5 | 38.0 | 6.9 | 38 |
| Yorktown | 1.0 | | 30.0 | 25.1 | 7.0 | 39 |
| SY 474 | 0.5 | | 27.5 | 24.2 | 7.2 | 40 |
| USG 3523 | 1.0 | | 42.5 | 15.1 | 7.9 | 41 |
| MAS #35 | 3.0 | + | 42.5 | 18.4 | 7.9 | 42 |
| Progeny 117 | 1.0 | | 40.0 | 20.1 | 8.1 | 43 |
| VA11W-230 | 0.0 | | 42.5 | 19.2 | 8.2 | 44 |
| VA11W-106 | 2.0 | | 37.5 | 19.7 | 8.3 | 45 |
| VA12W-72 | 0.5 | | 30.0 | 35.0 | 8.3 | 46 |
| MD04W249-11-7 | 0.5 | | 35.0 | 23.1 | 8.4 | 47 |
| SS 8340 | 2.5 | | 27.5 | 36.7 | 8.6 | 48 |
| Pioneer Brand 26R12 | 3.0 | + | 32.5 | 28.0 | 8.7 | 49 |
| MAS #37 | 2.5 | | 37.5 | 19.7 | 9.0 | 50 |
| USG 3315 | 0.0 | | 37.5 | 24.9 | 9.2 | 51 |
| VA12W-54 | 0.5 | | 47.5 | 18.3 | 9.3 | 52 |
| Steyer Heilman | 2.0 | | 32.5 | 24.3 | 9.6 | 53 |
| AgriMAXX 427 | 1.0 | | 42.5 | 23.0 | 9.7 | 54 |
| MAS #6 | 2.0 | | 40.0 | 24.6 | 9.8 | 55 |
| AgriMAXX 447 | 3.0 | + | 27.5 | 40.2 | 9.9 | 56 |
| Progeny PGX 13-2 | 2.0 | | 47.5 | 21.4 | 10.4 | 57 |
| Dyna-Gro 9042 | 1.0 | | 27.5 | 44.8 | 10.4 | 58 |
| VA12FHB-34 | 1.0 | | 35.0 | 29.6 | 10.8 | 59 |
| VA10W-119 | 1.0 | | 45.0 | 20.6 | 10.8 | 60 |
| VA11W-95 | 0.5 | | 20.0 | 48.7 | 11.1 | 61 |
| MBX14-K-297 | 2.5 | | 52.5 | 20.7 | 11.5 | 62 |
| Progeny 185 | 2.0 | | 47.5 | 21.7 | 11.6 | 63 |
| L-Brand 221 | 0.0 | | 37.5 | 29.0 | 11.8 | 64 |
| VA11W-31 | 0.0 | | 50.0 | 25.1 | 12.0 | 65 |
| Pioneer Brand 25R32 | 0.0 | | 57.5 | 21.0 | 12.0 | 66 |
| MAS #2 | 1.5 | | 30.0 | 39.6 | 12.8 | 67 |
| VA12FHB-53 | 0.0 | | 45.0 | 27.9 | 13.1 | 68 |
| VA12W-26 | 0.5 | | 45.0 | 25.1 | 13.2 | 69 |
| MBX12-W-270 | 2.0 | | 42.5 | 35.0 | 13.3 | 70 |
| VA11W-111 | 0.0 | | 52.5 | 25.7 | 13.7 | 71 |
| AgriMAXX Exp 1444 | 2.5 | | 30.0 | 46.8 | 13.8 | 72 |
| Dyna-Gro 9223 | 2.5 | | 45.0 | 29.6 | 13.8 | 73 |

Table 41. Summary of reaction of entries in the Virginia Tech State Wheat Test to Fusarium head blight (scab) and glume blotch resistance, 2014 harvest, cont'd.

| LINE | pm | | FHB Incidence ¹ (%) | | FHB Severity ² (%) | | FHB Index ³ (0-100) | | Rank FHB Index |
|----------------------------|-----|---|-----------------------------------|---|----------------------------------|---|-----------------------------------|---|----------------------|
| | | | | | | | | | |
| MAS #36 | 2.0 | | 42.5 | | 32.7 | | 14.1 | | 74 |
| Pioneer Brand 26R10 | 2.0 | | 45.0 | | 32.3 | | 14.9 | | 75 |
| VA11W-279 | 0.5 | | 47.5 | | 33.6 | | 15.0 | | 76 |
| VA11W-278 | 0.5 | | 55.0 | | 31.1 | | 15.2 | | 77 |
| VA12W-150 | 0.5 | | 42.5 | | 36.9 | | 15.2 | | 78 |
| MAS #7 | 1.0 | | 27.5 | | 56.0 | | 15.6 | | 79 |
| Featherstone 73 | 1.5 | | 45.0 | | 35.4 | | 15.9 | | 80 |
| VA11W-182 | 0.0 | | 70.0 | | 23.2 | | 16.1 | | 81 |
| MAS #23 | 1.5 | | 57.5 | | 26.6 | | 16.1 | | 82 |
| VA10W-140 | 1.0 | | 45.0 | | 29.6 | | 16.2 | | 83 |
| NC-Cape Fear | 0.0 | | 67.5 | | 23.0 | | 16.6 | | 84 |
| Pioneer Brand 25R40 | 0.5 | | 52.5 | | 32.7 | | 17.2 | | 85 |
| USG 3404 | 1.0 | | 52.5 | | 33.4 | | 17.3 | | 86 |
| USG 3013 | 2.5 | | 40.0 | | 44.5 | | 17.7 | | 87 |
| MAS #10 | 4.0 | + | 30.0 | | 65.4 | + | 19.4 | | 88 |
| USG 3251 | 2.0 | | 47.5 | | 41.9 | | 19.7 | | 89 |
| SS 5205 | 0.0 | | 50.0 | | 36.0 | | 20.0 | | 91 |
| VA12FHB-37 | 0.0 | | 67.5 | | 29.6 | | 20.0 | | 90 |
| NC09-22402 | 0.5 | | 45.0 | | 43.9 | | 20.1 | | 92 |
| VA10W-42 | 0.5 | | 55.0 | | 27.8 | | 20.2 | | 93 |
| Progeny PGX 13-1 | 4.0 | + | 37.5 | | 56.0 | | 20.7 | | 94 |
| VA12FHB-85 | 1.0 | | 55.0 | | 39.5 | | 22.3 | | 95 |
| Steyer Hunker | 2.5 | | 40.0 | | 56.3 | | 22.5 | | 96 |
| MBX12-V-251 | 0.0 | | 67.5 | | 34.3 | | 23.2 | | 97 |
| VA08MAS-369 | 0.5 | | 65.0 | | 35.4 | | 23.4 | | 98 |
| VA10W-21 | 0.0 | | 65.0 | | 30.9 | | 23.6 | | 99 |
| SY 483 | 1.0 | | 42.5 | | 61.8 | + | 26.3 | | 100 |
| SS 520 | 0.5 | | 62.5 | | 33.0 | | 26.4 | | 101 |
| VA11W-301 | 0.0 | | 77.5 | + | 41.4 | | 29.6 | | 102 |
| Progeny 357 | 2.5 | | 77.5 | + | 39.7 | | 30.9 | | 103 |
| Merl | 1.0 | | 60.0 | | 51.5 | | 30.9 | | 104 |
| MBX11-V-258 | 0.5 | | 77.5 | + | 45.1 | | 34.8 | + | 105 |
| GA-041293-11LE37 | 0.5 | | 60.0 | | 59.8 | + | 35.9 | + | 106 |
| SS 8412 | 1.0 | | 57.5 | | 63.7 | + | 36.1 | + | 107 |
| Pioneer Brand 26R20 | 1.0 | | 60.0 | | 60.5 | + | 36.3 | + | 108 |
| GA-041293-11E54 | 0.0 | | 62.5 | | 66.4 | + | 42.4 | + | 109 |
| GA-04434-11E44 | 0.0 | | 60.0 | | 73.0 | + | 43.9 | + | 110 |

Table 41. Summary of reaction of entries in the Virginia Tech State Wheat Test to Fusarium head blight (scab) and glume blotch resistance, 2014 harvest, cont'd.

| LINE | pm | Incidence ¹ | Severity ² | FHB Index ³ | FHB |
|---------------------------|-----|------------------------|-----------------------|------------------------|-----|
| SS 8415 | 0.0 | 57.5 | 76.8 | 44.1 | 111 |
| USG 3024 | 0.5 | 67.5 | 67.7 | 45.5 | 112 |
| Featherstone VA258 | 0.0 | 80.0 | 56.9 | 48.5 | 113 |
| VA11MAS-7520-2-3-255 | 0.0 | 72.5 | 70.0 | 49.7 | 114 |
| Shirley | 0.0 | 87.5 | 58.1 | 53.5 | 115 |
| NC08-21273 | 1.0 | 85.0 | 74.3 | 63.2 | 116 |

| | | | | | |
|------------|------|------|------|------|--|
| Average | 1.2 | 43.3 | 30.3 | 14.7 | |
| LSD (O.05) | 1.6 | 27.2 | 27.6 | 18.2 | |
| C.V. | 68.3 | 31.8 | 45.9 | 62.5 | |

Released cultivars are shown in bold print. Varieties are ordered by ascending index averages.

A plus or minus sign indicates a performance significantly above or below the average.

Entries were planted in 2-row plots, 4 ft in length at Blacksburg, VA and were inoculated at 50% and 100% heading stages with *Fusarium graminearum* spore suspension (50,000 spores/ml).

¹Scab Incidence (%): Percentage of infected spikes among 10 randomly selected spikes.

²Scab Severity (%): Percentage of infected spikelets among 10 infected spikes.

³Scab Index = Incidence X Severity/100; it is an overall indicator of scab resistance/susceptibility level.

Table 42. Two year average summary of reaction of entries in the Virginia Tech State Wheat Tests to Fusarium head blight (scab) and glume blotch resistance, 2013 and 2014 harvests.

| LINE | ID | FHB Incidence ¹ | | FHB Severity ² | | FHB Index ³ | | Rank FHB Index | DON ⁴ (ppm) | |
|----------------------------|------|----------------------------|---|---------------------------|---|------------------------|--|----------------|------------------------|---|
| | | (%) | | (%) | | (0-100) | | | | |
| Dyna-Gro 9343 | 1226 | 13.8 | - | 3.0 | - | 0.4 | | 1 | 4.6 | + |
| USG 3201 | 1130 | 27.5 | - | 7.6 | | 2.0 | | 2 | 2.5 | |
| Progeny 125 | 1163 | 25.0 | - | 9.1 | | 2.2 | | 3 | 2.7 | |
| USG 3993 | 1249 | 22.5 | - | 10.1 | | 2.7 | | 4 | 5.4 | + |
| Jamestown | 809 | 40.0 | | 8.3 | | 3.1 | | 5 | 1.8 | |
| AgriMAXX 434 | 1240 | 30.0 | - | 13.8 | | 4.1 | | 6 | 3.2 | |
| MBX12-W-296 | 1232 | 26.3 | - | 15.2 | | 4.3 | | 7 | 4.6 | + |
| Yorktown | 1117 | 33.8 | | 14.5 | | 4.3 | | 8 | 3.0 | |
| VA11W-108 | 1218 | 43.8 | | 10.5 | | 4.3 | | 9 | 2.8 | |
| VA10W-96 | 1210 | 37.5 | | 11.0 | | 4.3 | | 10 | 2.9 | |
| Progeny 870 | 1165 | 44.2 | | 10.2 | | 4.5 | | 11 | 2.6 | |
| Pioneer Brand 26R53 | 1181 | 32.5 | | 16.7 | | 4.5 | | 12 | 2.7 | |
| USG 3612 | 1185 | 35.0 | | 12.9 | | 4.6 | | 13 | 7.2 | + |
| MD04W249-11-7 | 1236 | 28.8 | - | 13.1 | | 4.6 | | 14 | 3.0 | |
| VA10W-123 | 1173 | 41.3 | | 13.7 | | 4.6 | | 15 | 1.4 | |
| AgriMAXX 415 | 1191 | 40.0 | | 11.8 | | 5.0 | | 16 | 1.9 | |
| USG 3438 | 1160 | 41.3 | | 12.4 | | 5.1 | | 17 | 1.8 | |
| Steyer Heilman | 1255 | 28.8 | - | 13.9 | | 5.3 | | 18 | 6.9 | + |
| Progeny 117 | 1066 | 37.5 | | 12.7 | | 5.3 | | 19 | 2.2 | |
| Massey | 17 | 47.5 | | 13.2 | | 6.0 | | 20 | 2.8 | |
| Pioneer Brand 25R32 | 1099 | 38.8 | | 11.5 | | 6.2 | | 21 | 1.4 | |
| SY 474 | 1247 | 33.8 | | 17.7 | | 6.2 | | 22 | 1.3 | |
| SS 8340 | 1167 | 35.0 | | 22.7 | | 6.3 | | 23 | 2.6 | |
| AgriMAXX 427 | 1192 | 46.3 | | 14.5 | | 6.3 | | 24 | 3.6 | + |
| AgriMAXX 413 | 1190 | 43.8 | | 24.1 | | 6.5 | | 25 | 1.8 | |
| Dyna-Gro 9171 | 1162 | 53.8 | | 12.2 | | 6.8 | | 26 | 2.4 | |
| MBX12-W-270 | 1230 | 37.5 | | 19.2 | | 7.2 | | 27 | 6.9 | + |
| VA11W-106 | 1217 | 56.3 | | 13.8 | | 7.3 | | 28 | 1.8 | |
| Dyna-Gro 9042 | 1193 | 35.0 | | 27.1 | | 7.6 | | 29 | 2.2 | |
| Dyna-Gro 9223 | 1194 | 43.8 | | 16.8 | | 7.8 | | 30 | 2.6 | |
| USG 3523 | 1251 | 50.0 | | 13.6 | | 7.8 | | 31 | 0.3 | |
| Progeny 185 | 1065 | 43.8 | | 15.6 | | 8.0 | | 32 | 2.6 | |
| VA10W-119 | 1156 | 51.3 | | 15.3 | | 8.3 | | 33 | 2.6 | |
| VA11W-31 | 1216 | 56.3 | | 16.9 | | 8.9 | | 34 | 2.0 | |
| Pioneer Brand 26R10 | 1159 | 48.8 | | 19.0 | | 9.0 | | 35 | 1.9 | |

Table 42. Two year average summary of reaction of entries in the Virginia Tech State Wheat Tests to Fusarium head blight (scab) and glume blotch resistance, 2013 and 2014 harvests, cont'd.

| LINE | ID | FHB Incidence ¹ | | FHB Severity ² | | FHB Index ³ | | Rank FHB Index | DON ⁴ (ppm) |
|----------------------------|------|----------------------------|---|---------------------------|---|------------------------|---|----------------|------------------------|
| | | (%) | | (%) | | (0-100) | | | |
| Pioneer Brand 26R41 | 1179 | 60.0 | | 14.9 | | 9.0 | | 36 | 2.9 |
| USG 3555 | 814 | 75.0 | + | 11.9 | | 9.1 | | 37 | 6.2 |
| VA11W-230 | 1222 | 55.0 | | 16.7 | | 9.1 | | 38 | 1.7 |
| Pioneer Brand 26R12 | 316 | 52.5 | | 21.1 | | 9.5 | | 39 | 4.0 |
| VA10W-140 | 1175 | 45.0 | | 17.7 | | 9.5 | | 40 | 2.6 |
| USG 3013 | 1250 | 46.3 | | 24.6 | | 10.1 | | 41 | 2.0 |
| USG 3404 | 1252 | 48.8 | | 21.2 | | 11.3 | | 42 | 0.9 |
| VA11W-278 | 1223 | 63.8 | | 20.6 | | 11.4 | | 43 | 2.6 |
| USG 3120 | 1093 | 55.0 | | 20.3 | | 11.7 | | 44 | 1.3 |
| Steyer Hunker | 1254 | 38.8 | | 29.8 | | 11.9 | | 45 | 2.2 |
| Pioneer Brand 25R40 | 1237 | 63.8 | | 21.5 | | 12.8 | | 46 | 6.2 |
| SS 5205 | 272 | 57.5 | | 22.6 | | 13.0 | | 47 | 5.4 |
| VA10W-21 | 1171 | 58.8 | | 18.2 | | 13.3 | | 48 | 3.8 |
| NC09-22402 | 1235 | 58.8 | | 27.9 | | 14.3 | | 49 | 3.0 |
| SY 483 | 1246 | 38.8 | | 34.4 | | 14.4 | | 50 | 0.1 |
| USG 3251 | 1131 | 58.8 | | 27.3 | | 14.4 | | 51 | 2.8 |
| Featherstone 73 | 1144 | 55.0 | | 26.6 | | 14.7 | | 52 | 3.8 |
| MBX12-V-251 | 1013 | 65.0 | | 23.5 | | 15.6 | | 53 | 2.6 |
| VA08MAS-369 | 1138 | 66.3 | | 23.5 | | 15.6 | | 54 | 3.3 |
| VA10W-42 | 1209 | 66.3 | | 21.6 | | 16.1 | | 55 | 3.5 |
| NC-Cape Fear | 1096 | 73.8 | + | 21.6 | | 16.4 | | 56 | 5.1 |
| SS 520 | 725 | 58.8 | | 24.5 | | 18.2 | | 57 | 6.8 |
| Merl | 829 | 61.3 | | 32.2 | | 19.7 | | 58 | 3.4 |
| SS 8412 | 1074 | 52.5 | | 35.8 | | 20.4 | | 59 | 3.4 |
| Progeny 357 | 1166 | 73.8 | + | 27.0 | | 20.5 | | 60 | 3.2 |
| VA11W-301 | 1224 | 73.8 | + | 30.5 | | 21.8 | | 61 | 3.4 |
| MBX11-V-258 | 1231 | 78.8 | + | 41.9 | + | 33.4 | + | 62 | 9.1 |
| Pioneer Brand 26R20 | 1098 | 80.0 | + | 46.6 | + | 34.5 | + | 63 | 3.0 |
| SS 8415 | 1080 | 63.8 | | 57.4 | + | 35.6 | + | 64 | 7.8 |
| Featherstone VA258 | 1016 | 80.0 | + | 48.1 | + | 40.0 | + | 65 | 2.8 |

Table 42. Two year average summary of reaction of entries in the Virginia Tech State Wheat Tests to Fusarium head blight (scab) and glume blotch resistance, 2013 and 2014 harvests, cont'd.

| LINE | ID | FHB Incidence ¹ | | FHB Severity ² | | FHB Index ³ | | Rank FHB Index | DON ⁴ | |
|-----------------|------|----------------------------|---|---------------------------|---|------------------------|---|----------------|------------------|---|
| | | (%) | | (%) | | (0-100) | | | (ppm) | |
| Shirley | 828 | 90.0 | + | 44.2 | + | 40.8 | + | 66 | 4.3 | + |
| NC08-21273 | 1234 | 86.3 | + | 47.6 | + | 40.9 | + | 67 | 5.0 | + |
| USG 3024 | 1228 | 80.0 | + | 58.3 | + | 45.4 | + | 68 | 6.6 | + |

| | | | | | | | | | | |
|------------|--|------|--|------|--|------|--|--|-----|--|
| Average | | 50.5 | | 21.4 | | 12.1 | | | 3.3 | |
| LSD (0.05) | | 19.8 | | 16.3 | | 12.1 | | | | |
| C.V. | | 27.7 | | 53.2 | | 69.9 | | | | |

Released cultivars are shown in bold print. Varieties are ordered by ascending index averages.

A plus or minus sign indicates a performance significantly above or below the average.

Entries were planted in 2-row plots, 4 ft in length at Blacksburg, VA and were inoculated at 50% and 100% heading stages with *Fusarium graminearum* spore suspension (50,000 spores/ml).

¹Scab Incidence (%): Percentage of infected spikes among 10 randomly selected spikes.

²Scab Severity (%): Percentage of infected spikelets among 10 infected spikes.

³Scab Index = Incidence X Severity/100; it is an overall indicator of scab resistance/susceptibility level.

⁴ Don Values were measured (pooled over replications) from the 2013 harvest year.

Table 43. Three year average summary of reaction of entries in the Virginia Tech State Wheat Tests to Fusarium head blight (scab) and glume blotch resistance, 2012 - 2014 harvests.

| LINE | Heading date (Julian) | | FHB Incidence ¹ (%) | | FHB Severity ² (%) | | FHB Index ³ (0-100) | | Rank FHB Index | DON ⁴ (ppm) | |
|---------------------|-----------------------|---|--------------------------------|---|-------------------------------|--|--------------------------------|--|----------------|------------------------|---|
| | | | | | | | | | | | |
| USG 3201 | 119.0 | + | 23.3 | - | 5.5 | | 1.4 | | 1 | 2.3 | |
| Progeny 125 | 109.5 | - | 25.8 | - | 6.7 | | 1.7 | | 2 | 1.8 | |
| Jamestown | 109.5 | - | 29.2 | - | 5.7 | | 2.1 | | 3 | 1.3 | |
| Yorktown | 113.0 | | 30.0 | - | 10.4 | | 3.0 | | 4 | 2.2 | |
| VA10W-123 | 112.5 | - | 35.8 | | 9.8 | | 3.3 | | 5 | 1.1 | |
| AgriMAXX 415 | 118.5 | + | 33.3 | | 8.7 | | 3.5 | | 6 | 2.1 | |
| Progeny 117 | 108.5 | - | 32.5 | | 9.1 | | 3.7 | | 7 | 1.4 | |
| Pioneer Brand 26R53 | 118.0 | + | 35.8 | | 12.7 | | 3.7 | | 8 | 2.6 | |
| Massey | 111.0 | - | 35.8 | | 9.1 | | 4.0 | | 9 | 1.9 | |
| Progeny 870 | 116.0 | | 48.6 | | 8.8 | | 4.3 | | 10 | 3.7 | + |
| SS 8340 | 118.0 | + | 30.0 | - | 15.7 | | 4.4 | | 11 | 2.2 | |
| AgriMAXX 427 | 115.5 | | 39.2 | | 10.3 | | 4.4 | | 12 | 2.3 | |
| Pioneer Brand 25R32 | 120.5 | + | 38.3 | | 8.8 | | 4.6 | | 13 | 1.5 | |
| USG 3438 | 116.0 | | 45.8 | | 10.4 | | 4.9 | | 14 | 3.8 | + |
| AgriMAXX 413 | 117.0 | | 44.2 | | 17.5 | | 5.0 | | 15 | 3.8 | + |
| Progeny 185 | 113.5 | | 39.2 | | 11.3 | | 5.6 | | 16 | 2.0 | |
| VA10W-119 | 110.5 | - | 40.8 | | 11.0 | | 5.7 | | 17 | 1.6 | |
| Dyna-Gro 9171 | 116.5 | | 56.7 | | 10.6 | | 6.1 | | 18 | 3.4 | + |
| Dyna-Gro 9042 | 118.5 | + | 40.0 | | 20.4 | | 6.3 | | 19 | 3.2 | + |
| Dyna-Gro 9223 | 119.5 | + | 47.5 | | 13.6 | | 6.5 | | 20 | 2.5 | |
| VA10W-140 | 116.5 | | 40.0 | | 12.8 | | 6.6 | | 21 | 2.4 | |
| Pioneer Brand 26R12 | 116.0 | | 45.8 | | 15.1 | | 6.7 | | 22 | 3.0 | + |
| Pioneer Brand 26R10 | 119.0 | + | 51.7 | | 15.1 | | 7.5 | | 23 | 3.2 | + |
| USG 3120 | 109.0 | - | 49.2 | | 14.5 | | 8.2 | | 24 | 1.2 | |
| Pioneer Brand 26R41 | 118.0 | + | 65.0 | + | 13.2 | | 8.5 | | 25 | 4.0 | + |
| SS 5205 | 112.5 | - | 48.3 | | 15.8 | | 8.9 | | 26 | 3.4 | + |
| VA10W-21 | 115.5 | | 43.3 | | 12.4 | | 8.9 | | 27 | 2.4 | |
| Featherstone 73 | 117.5 | | 42.5 | | 18.3 | | 9.9 | | 28 | 2.9 | + |
| VA08MAS-369 | 114.0 | | 56.7 | | 16.6 | | 10.8 | | 29 | 3.8 | + |
| USG 3251 | 121.0 | + | 59.2 | | 20.4 | | 10.9 | | 30 | 2.6 | |
| MBX12-V-251 | 112.0 | - | 53.3 | | 17.2 | | 10.9 | | 31 | 2.1 | |
| NC-Cape Fear | 109.5 | - | 60.8 | | 15.9 | | 11.7 | | 32 | 2.8 | + |
| SS 520 | 111.0 | - | 45.8 | | 17.3 | | 12.4 | | 33 | 3.8 | + |
| SS 8412 | 116.0 | | 37.5 | | 24.1 | | 13.6 | | 34 | 3.5 | + |
| Merl | 116.0 | | 57.5 | | 23.9 | | 14.5 | | 35 | 3.9 | + |
| Progeny 357 | 120.0 | + | 70.8 | + | 21.5 | | 16.1 | | 36 | 2.5 | |

Table 43. Three year average summary of reaction of entries in the Virginia Tech State Wheat Tests to Fusarium head blight (scab) and glume blotch resistance, 2012 - 2014 harvests, cont'd.

| LINE | Heading date (Julian) | | FHB Incidence ¹ (%) | | FHB Severity ² (%) | | FHB Index ³ (0-100) | | Rank FHB Index | DON ⁴ (ppm) | |
|----------------------------|-----------------------|---|--------------------------------|---|-------------------------------|---|--------------------------------|---|----------------|------------------------|---|
| | | | | | | | | | | | |
| Pioneer Brand 26R20 | 120.5 | + | 74.2 | + | 33.8 | + | 24.7 | + | 37 | 4.5 | + |
| SS 8415 | 115.5 | | 57.5 | | 41.0 | + | 25.0 | + | 38 | 4.8 | + |
| Featherstone VA258 | 114.0 | | 72.5 | + | 34.8 | + | 28.6 | + | 39 | 2.5 | |
| Shirley | 117.5 | | 76.7 | + | 32.0 | + | 28.8 | + | 40 | 3.4 | + |
| Average | 115.3 | | 46.5 | | 15.8 | | 8.9 | | | 2.7 | |
| LSD (O.05) | 2.3 | | 16.2 | | 11.7 | | 8.9 | | | 3.4 | |
| C.V. | 1.0 | | 30.5 | | 64.6 | | 87.3 | | | 61.2 | |

Released cultivars are shown in bold print. Varieties are ordered by ascending index averages.

A plus or minus sign indicates a performance significantly above or below the average.

Entries were planted in 2-row plots, 4 ft in length at Blacksburg, VA and were inoculated at 50% and 100% heading stages with *Fusarium graminearum* spore suspension (50,000 spores/ml).

¹Scab Incidence (%): Percentage of infected spikes among 10 randomly selected spikes.

²Scab Severity (%): Percentage of infected spikelets among 10 infected spikes.

³Scab Index = Incidence X Severity/100; it is an overall indicator of scab resistance/susceptibility level.

⁴DON values were measured from the 2012 and 2013 harvest year.