VIRGINIA

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY
Department of Crop and Soil Environmental Sciences, Blacksburg, VA 24061, USA.

C.A. Griffey, W.E. Thomason, J.E. Seago, M.D. Hall, S. Liu, W.S. Brooks, and P.G. Gundrum; R.M. Pitman, M.E. Vaughn, D. Dunaway, and T. Lewis (Eastern Virginia Agricultural Research & Extension Center, Warsaw, VA 22572, USA); and D.G. Schmale, III (Department of Plant Pathology and Weed Sciences, Virginia Tech, Blacksburg, VA 24061, USA).

2010 wheat production in the Commonwealth of Virginia.

W.E. Thomason, C.A. Griffey, and J.E. Seago.

Growing conditions. Mid-September produced a window with dry weather and favorable conditions for planting small grains and by 21 September, approximately 12% of the intended acres of barley were planted and 7% of wheat acres. Barley planting proceeded rapidly, and 50% of the crop was seeded by mid-October. Wheat growers had planted 20% of their intended acres by this time and dry weather forced some to delay until rainfall returned to the Commonwealth. By 10 November, wheat seeded was at 62% of acres, compared to 64% for the 5-year average. However, warm temperatures and favorable conditions resulted in emergence being rated at 43% compared to the 5-year average of 29%. Cold, wet weather in late November and December slowed growth dramatically and water-logging in parts of some fields resulted in dead spots. As of 15 December, the wheat crop was rated 36% fair and 47% good. Barley was estimated to be in better condition with 67% of the crop rated as good. Soggy, cold conditions persisted throughout the winter. Many producers had difficulty being timely with late winter nitrogen and herbicide applications due to snow and wet fields. However by late March, fieldwork was back in full swing. On 10 April 10, the wheat crop was rated 55% good and 36% fair. April was warmer and drier than normal (Figs. 1 and 2), allowing crop growth to progress favorably. But hot, dry, and windy conditions prevailed and by 10 May, approximately 70% of the wheat crop had headed, compared to a 5-year average of 38% by this date. Dry and unseasonably warm weather persisted during pollination and grain fill resulting in yields that were estimated to be 3 and 1 bu/acre lower than the 5-year average for wheat and barley, respectively. These weather conditions did lessen the impact of most foliar diseases and resulted in good test weight and overall good grain quality.

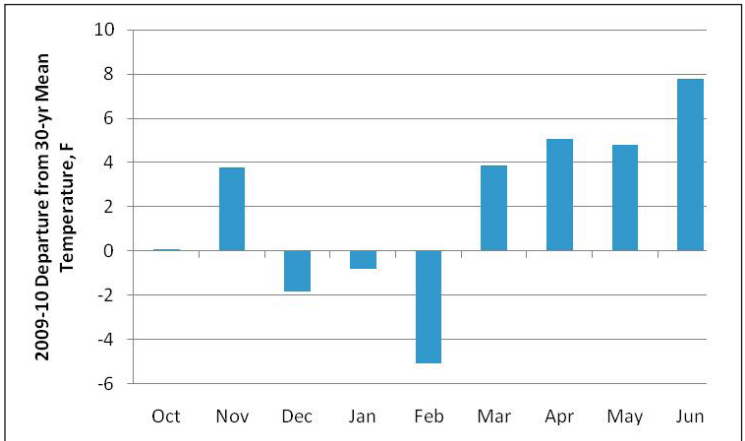

Fig. 1. Deviation of 2009–10 monthly average temperatures from 30-yr mean.

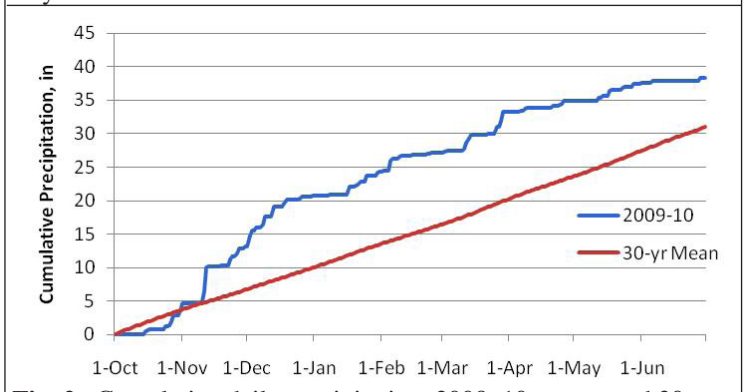

Fig. 2. Cumulative daily precipitation, 2009–10 season and 30-yr mean.

Disease and insect incidence and severity. Entries in Virginia's 2010 state wheat variety trials were rated (0 = no infection to 9 = severe infection) for disease severity at four locations. The prevalence and severity of powdery mildew (*Blumeria graminis*) were low (mean nursery score of 0.2) at Warsaw, VA, where only very susceptible lines had scores as high as 4. Mildew severity was highest at Blacks-

burg, VA, with lines having mean scores ranging from 0 to 9 with an overall nursery mean of 2.0. Leaf rust was prevalent and severe in many regions of the Commonwealth. Wheat entries received mean ratings from 0 to 9 at Blacksburg, Warsaw, and Painter with nursery means of 3.3, 2.3, and 1.7, respectively. Cultivars having only genes *Lr24* or *Lr26* were very susceptible to leaf rust. Race surveys conducted by the USDA–ARS Cereal Disease Lab on 39 isolates from five regions in Virginia indentified eight races of leaf rust. Five races having virulence for gene *Lr26* were identified and included MCRKG (in two regions), MCTSB (two regions), MFBJG (one region), TCRJG (one region), and TCRKG (four regions). Race MFBJG identified in Painter, VA, has virulence for genes *Lr24* and *Lr26*. Race MLDSD having virulence for gene *Lr9* and race TNRJJ having virulence for genes *Lr9* and *Lr24* were identified in Blacksburg, VA. Stripe rust was only found at three locations in 2010. Isolated infection foci were observed in wheat plots at Blacksburg and Painter, VA, and in a seed field at Mt. Holly, VA. Rust samples sent to Xianming Chen at Washington State University were identified as race PSTv46 having virulence for genes *Yr2*, *Yr6*, *Yr7*, *Yr8*, *Yr9*, *Yr17*, *Yr26*, *Yr27*, *Yr43*, *Yr44*, *YrTr1*, and *YrExp2*. Barley/cereal yellow dwarf virus infection was moderate at Blacksburg (0–5) and Painter (0–4), but severe at Suffolk, VA (0–9).

Production. According to the United States Department of Agriculture's National Agriculture Statistical Service (http://www.nass.usda.gov/Statistics_by_State/Virginia/index.asp), in autumn 2009 Virginia wheat producers planted 180,000 acres (72,900 ha), which was 70,000 acres (28,350 ha) less than in autumn 2008. The estimated area harvested in 2010 was 160,000 acres (64,800 ha) which was 50,000 acres (20,250 ha) less than that harvested in 2009. The 2010 statewide average wheat yield was 51 bu/acre (3,427 kg/ha), which was 20 bu/acre (1,344 kg/ha) lower than the record yield set in 2008. Lower grain yields in 2010 resulted from the abnormally hot and dry weather during much of the grain-fill period. Overall wheat production in 2010 was 8.16 x 10^6 bushels (222,079 metric tons) compared with 19.9 x 10^6 bushels (541,000 metric tons) in 2008.

State cultivar tests. In the 2009–10 tests, a total of 83 entries were planted in seven environments across Virginia (http://www.grains.cses.vt.edu/). The test included 45 commercial cultivars and 38 experimental lines. No-till tests were conducted at Warsaw, Holland, and Shenandoah Valley and planted after corn. Mean grain yields varied from 63 bu/acre (4,233 kg/ha) at Suffolk, VA, to 102 bu/acre (6,853 kg/ha) at Blacksburg, VA, with an over locations mean yield of 79 bu/acre (5,308 kg/ha). Released cultivars Shirley, Pioneer 26R20, USG 3665, Dyna-Gro 9012, USG 3251, USG 3592, VA258, Pioneer 26R22, USG 3120, SS 8700, and USG 3201 all produced significantly higher yields than the overall trial average. Average grain yields among the 83 entries ranged from 68 bu/acre (4,569 kg/ha) to 86 bu/acre (5,778 kg/ha). Average test weight ranged from 58.4 lb/bu (752 kg/m^3) to 63.2 lb/bu (813 kg/m^3) with an overall trial average of 60.9 lb/bu (784 kg/m^3).

2010 Virginia Wheat Yield Contest Results. The 2010 contest was conducted statewide and the results are presented (Table 1). Top yields were 32.7 to 45.5 bu/acre (2,197–3,057 kg/ha) higher than the 2010 state average yield. Congratulations to our winners.

Table 1. 2010 Virginia wheat yield challenge winners.

Place	Grower	Farm	Yield bu/acre	Test weight	Planting date	Cultivar	Rate	Row width	Previous crop	Soil type	Tillage	Total N lb/acre	Seed treatment	Herbicides	Fungicides	Insecticides
1	Ronnie Russell	Corbin Hall Farm	96.5	60.0	12/21/09	Pioneer 26R15	24 seed/ft	7.0"	Corn	Eunola loam	No-till	125; 3 applications	n/a	Glyphosate (2 pt/acre); Harmony Extra (0.75 pt/acre); Osprey (4.75 oz/acre)		
2	James Townsend	Queenfield Farm	87.8	58.4	11/19/09	USG 3555	30 seed/ft	7.5"	Corn	Pamunkey	No-till	145; 3 applicatoin	Dividend Extreme	Finesse (0.4 oz/acre)	Headline (4 oz/acre)	Karate (1.25 oz/acre)
3	Richard Sanford	Sanford Farm	83.7	63.1	10/18/09	SS 560	196 lb/acre	7.5"	Corn	Suffolk	No-till	135; 3 applications	Raxil-Reldan-Thiram	Tilt (4 oz/acre)	Tile (4 oz/acre)	Warrior (1 oz/acre)

Release of hard red winter wheat cultivar Vision 30.

Vision 30 (PI 661153) hard red winter (HRW) wheat, was developed and tested as VA06HRW-49 and released by the Virginia Agricultural Experiment Station in March 2010. Vision 30 was derived from the cross '92PAN1#33/VA97W-414'. Vision 30 is a high-yielding, awned, semi-dwarf (*Rht2*) having mid-season spike emergence and resistance to powdery mildew. In Virginia, average (2007–09) grain yield of Vision 30 (5,301 kg/ha) has been similar to that of the soft red winter wheat check cultivar Renwood 3260 (5,536 kg/ha). Vision 30 was evaluated in the 2008 and 2009 USDA–ARS Uniform Bread Wheat Nursery and produced mean yields (4,992 and 4,690 kg/ha) that were similar ($P < 0.05$) to the highest yielding HRW wheat entry. In comparison to the hard wheat cultivar Lakin, Vision 30 has acceptable end-use quality on the basis of flour yield (69.9 versus 70.3/100 g), flour protein (10.7 versus 9.5 g/100 g), flour water absorption (59.8 versus 59.1 g/100g), dough mixing tolerance (3.3 versus 2.3), pup loaf volume (812 versus 803 cm^3), and crumb grain scores (3.3 versus 3.7). Marketing and distribution of Vision 30 will be handled by Virginia Identity Preserved Grains, LLC, West Point, VA. A seed sample has been deposited in the USDA–ARS National Center for Genetic Resources Preservation, and will become available for distribution after expiration of its U.S. Plant Variety Protection. Small quantities of seed for research purposes may be obtained from the corresponding author for at least five years from the date of this publication.

Release of hard red winter wheat cultivar Vision 40.

Vision 40 (PI 661154) hard red winter (HRW) wheat was developed and tested as VA06HRW-66 and released by the Virginia Agricultural Experiment Station in March 2010. Vision 40 was derived from the cross '92PIN#109/92PAN1#33'. Vision 40 is a high-yielding, winter hardy, awned, semi-dwarf (*Rht2*) having mid to late season spike emergence and moderate resistance to diseases prevalent in the mid-Atlantic area with the exception of Fusarium head blight. Vision 40 was the fourth highest yielding HRW wheat entry averaged over two years of the Uniform Bread Wheat Nursery grown at 11 test sites in ten states in 2008 and 12 test sites in nine states in 2009. In comparison to the hard wheat cultivar Lakin, Vision 40 has acceptable end use quality on the basis of flour yield (70.2 versus 70.3 g/100 g), flour protein (9.5 versus 9.5 g/100 g), flour water absorption (58.5 versus 59.1 g/100 g), dough mixing tolerance (1.7 versus 2.3), pup loaf volume (823 versus 803 cm^3), and crumb grain scores (3.6 versus 3.7). Marketing and distribution of Vision 40 will be handled by Virginia Identity Preserved Grains, LLC, West Point, VA. A seed sample has been deposited in the USDA–ARS National Center for Genetic Resources Preservation, and will become available for distribution after expiration of its U.S. Plant Variety Protection. Small quantities of seed for research purposes may be obtained from the corresponding author for at least five years from the date of this publication.

Publications.

Childress MB, Griffey CA, Hall MD, and Thomason WE. 2010. Seeding rate effects on yield and yield components of bread wheat cultivars in the mid-Atlantic USA. Crop Manage doi: 10.1094/CM-2010-1227-02-RS.

Griffey CA, Thomason WE, Pitman RM, Beahm BR, Gundrum PG, Liu SY, Chen J, Paling JJ, Dunaway DW, Brooks WS, Vaughn ME, Seago JE, Will BC, Hokanson EG, Behl HD, Corbin RA, Lewis TR, Hall MD, Custis JT, Starner DE, Gulick SA, Ashburn SR, Whitt DL, Bockelman HE, Murphy JP, Navarro RA, Souza EJ, Brown-Guedira GL, Kolmer JA, Long DL, Jin Y, Chen X, and Cambron SE. 2011. Registration of 'SW049029104' wheat. J Plant Registr 5:91-97.

Griffey CA, Thomason WE, Pitman RM, Beahm BR, Gundrum PG, Liu SY, Chen J, Paling JJ, Dunaway DW, Brooks WS, Vaughn ME, Seago JE, Will BC, Hokanson EG, Behl HD, Corbin RA, Lewis TR, Hall MD, Custis JT, Starner DE, Gulick SA, Ashburn SR, Whitt DL, Bockelman HE, Souza EJ, Brown-Guedira GL, Kolmer JA, Long DL, Jin Y, Chen X, and Cambron SE. 2011. Registration of 'Merl' wheat. J Plant Registr 5:68-74.

Hall MD, Rohrer-Perkins W, Griffey CA, Liu SY, Thomason WE, Abaye AO, Bullard-Schilling A, Gundrum PG, Fanelli JK, Chen J, Brooks WS, Seago JE, Will BC, Hokanson EG, Behl HD, Pitman RM, Kenner JC, Vaughn ME, Corbin RA, Dunaway DW, Lewis TR, Starner DE, Gulick SA, Beahm BR, Whitt DL, Lafferty JB, and Hareland GA. 2011. Registration of 'Snowglenn' wheat. J Plant Registr 5:81-86.

Hughes KR, Griffey CA, Parrish DJ, Barbeau WE, Souza E, and Thomason WE. 2010. Preharvest sprouting tolerance in current soft red winter wheat cultivars. Crop Sci 50:1449-1457

Keller MD, Griffey CA, Lin CJ, Scruggs B, Stromberg EL, Thomason WE, and Schmale DG. 2010. Managing Fusarium head blight in Virginia small grains. Virginia Cooperative Extension publication 3102-1535, http://pubs.ext.vt.edu/3102/3102-1535/3102-1535.html http://pubs.ext.vt.edu/3102/3102-1535/3102-1535_pdf.pdf.