Liu X, Williams CE, Nemacheck JA, Wang H, Subramanyam S, Zheng C, and Chen MC. 2010. Reactive oxygen species are involved in plant defense against a gall midge. Plant Physiol 152:985-999.

Saltzmann KD, Giovanini MP, Ohm HW, and Williams CE. 2010. Transcript profiles of two wheat lipid transfer protein-encoding genes are altered during attack by Hessian fly larvae. Plant Physiol Biochem 48:54-61.

Xu SS, Chu CG, Harris MO, and Williams CE. 2011. Comparative analysis of genetic background in eight near-isogenic lines for Hessian fly-resistance genes in wheat. Genome 54:81-89.

Yu GT, Williams CE, Harris MO, Cai X, Mergoum M, and Xu SS. 2010. Development and validation of molecular markers closely linked to *H32* for resistance to Hessian fly in wheat. Crop Sci 50:1325-1332.

## KANSAS

**KANSAS STATE UNIVERSITY**
**Environmental Physics Group, Department of Agronomy, 2004 Throckmorton Plant Sciences Center, Manhattan, KS 66506-5501, USA.**

### *Edema.*

M.B. Kirkham.

Current research concerns edema, which is an abnormal accumulation of fluid in plant cells. The research is being carried out in association with Kimberly A. Williams and Sunghun Park in the Department of Horticulture, Forestry, and Recreational Resources, along with graduate student Qingyu Wu. Nicole Rud, another graduate student who also worked on the project, graduated in December, 2009. Edemata are a physiological disorder, not caused by any pathogen. They occur only under greenhouse conditions, and in the past, they have been thought be due to overwatering. Because wheat is usually grown in the field, edemata on wheat apparently have not been documented. We reported last year that lack of ultraviolet light was a cause for edemata (also called intumescences or enations) in tomato plants. The glass of greenhouses filters out ultraviolet light, which makes the plants susceptible to the intumescences. When we added back UV-B light to the tomato plants grown under greenhouse conditions, they did not develop the intumescences. Kirkham and Keeney (1974) associated the formation of enations on leaves of potato, which they observed under controlled environmental conditions, with the presence of abnormal amounts of ethylene, a gaseous hormone. We are carrying out research to determine the biochemical reason for the formation of the intumescences in tomato.

**Reference.**

Kirkham MB and Keeney DR. 1974. Air pollution injury of potato plants grown in a growth chamber. Plant Dis Rep 58:304-306.

### *News.*

Ms. Kalaiyarasi Pidaran is continuing work toward the master's degree. Under greenhouse conditions, she is studying the effect of water deficit on sorghum hybrids varying in maturity.

The book on carbon dioxide, cited last year, will be published by CRC Press in late March, 2011 (see Publications, below). Here is an excerpt from the epilogue:

> "Because elevated carbon dioxide stimulates growth, yield is usually increased under elevated carbon dioxide. In a classic paper, Kimball (1983) analyzed more than 430 observations of the yield of 37 species grown with $CO_2$ enrichment, which were published in more than 70 reports of experiments carried out in a 64 year period beginning in 1918. His analysis showed that, with a doubling of atmospheric $CO_2$ concentration, yield probably will increase by 33%. In this book I have not cited papers dealing with models, except in passing. My focus has been on data published in refereed journal articles. However, Ken Caldeira at the

Carnegie Institution for Science in Stanford, California has modeled plant growth under elevated $CO_2$. He and his colleagues (Govindasamy et al. 2002) have found that "doubling the amount of carbon dioxide while holding steady all other inputs—water, nutrients, and so forth—yields a 70 percent increase in plant growth, an obvious boon to agricultural productivity" (Levitt and Dubner 2009, p. 185). This is an even greater increase than that documented by Kimball (1983). The year to year increases in crop yields that have been observed during the last 50 years, since Charles Keeling first started to record the $CO_2$ concentration in the atmosphere in 1958, probably are related, in part, to the increased $CO_2$ concentration in the atmosphere. If other factors controlling plant growth are neglected, we can calculate that yields are 7% more in 2008 than in 1958 due to the increase in atmospheric $CO_2$. The elevated levels of $CO_2$ in the air probably are adding to our food security without our recognizing it.

**References.**

Govindasamy B, Thompson S, Duffy PB, Caldeira K, and Delire C. 2002. Impact of geoengineering schemes on the terrestrial biosphere. Geophys Res Letters 29(22):2061, doi:10.1029/2002GL015911.

Kimball BA. 1983. Carbon dioxide and agricultural yield: an assemblage and analysis of 430 prior observations. Agron J 75:779-788.

Levitt SD and Dubner SJ. 2009. Superfreakonomics. William Morrow, an imprint of HarperCollins Publishers, New York, NY. 270 pp.

## Publications.

Douglas-Mankin KR, Precht K, Kirkham MB, and Hutchinson SL. 2010. Reclamation of abandoned swine lagoon soils using hybrid poplar in a greenhouse soil-column study. Internat J Agric Biol Eng 3:44-51.

Kirkham MB. 2011. Water dynamics in soils. *In:* Soil Management: Building a Stable Base for Agriculture (Hatfield JL and Sauer TJ, Eds). Soil Science Society of America, Madison, Wisconsin (In press).

Kirkham MB. 2011. Review of book: Facts about Global Warming: Rational or Emotional Issue? by M Kutílek and DR Nielsen (Catena Verlag, Reiskirchen, Germany, 2010, 227 pp). CEP Newsletter, Center for Economic Policy, Prague, Czech Republic (In press).

Kirkham MB. 2011. Elevated Carbon Dioxide: Impacts on Soil and Plant Water Relations. CRC Press, Taylor and Francis Group (In press).

Kirkham MB and Liang GH. 2011. Review of book: From Dawn to Dawn: China's Journey to Agricultural Self-Sufficiency by TC Tso (Booklocker, Bangor, Maine, 2010, 260 pp). J Envir Quality (In press).

Knewtson SJB, Carey EE, and Kirkham MB. 2010. Management practices of growers using high tunnels in the Central Great Plains of the United States of America. HortTechnol 20:639-645.

Knewtson SJB, Kirkham MB, Janke R, Williams KA, and Carey EE. 2010. Trends in soil quality under high tunnels. HortSci 45:1534-1538.

Rud NA, Williams KA, and Kirkham MB. 2011. UV light control of intumescences on tomato (*Solanum lycopersicum*). HortSci (in internal review).

Thevar PA, Kirkham MB, Aiken RM, Kofoid KD, and Xin Z. 2010. Optimizing water use with high-transpiration-efficiency plants. *In:* Proc 19th Internat Cong Soil Sci (Gilkes RJ and Prakongkep N, Eds). Symposium 2.1.1, Optimizing water use with soil physics, 1-6 August, 2010, Brisbane, Australia. International Union of Soil Science, Paper No. 0-0316 (Published on DVD).

Unger PW, Kirkham MB, and Nielsen DC. 2010. Water conservation for agriculture. *In:* Soil and Water Conservation Advances in the United States (Zobeck TM and Schillinger WF, Eds). SSSA Special Publication 60, Soil Science Society of America, Madison, Wisconsin. Pp. 1-45.

**KANSAS STATE UNIVERSITY**
**Wheat Genetic and Genomic Resources Center, Department of Plant Pathology, Department of Agronomy, and the USDA–ARS Hard Red Winter Wheat Genetic Research Unit, Throckmorton Plant Sciences Center, Manhattan, KS 66506-5501, USA.**

## *Notice of release of KS12WGGRC55 (TA5092) hard red winter wheat germ plasm homozygous for the ph1b gene.*

B. Friebe, L.L. Qi (USDA–ARS, Northern Crop Science Laboratory, Fargo, ND 58102-2765, USA), C. Liu (School of Life Science and Technology, University of Electronic Science and Technology of China, Chengdu, Sichuan 610054, PR China), W. Liu (Laboratory of Cell and Chromosome Engineering, College of Life Sciences, Henan Agricultural University, Zhengzhou, Henan 450002, PR China), D.L. Wilson, W.J. Raupp, and B. S. Gill.

Kansas Agricultural Experiment Station announces the release of KS12WGGRC55 (TA5092) hard red winter wheat germ plasm homozygous for the *ph1b* gene for breeding and experimental purposes. KS12WGGRC55 is derived from the cross 'Overley/TA3809 $F_2$//Overley $F_2$/3/Amadina $F_2$', where TA3809 is a Chinese Spring stock homozygous for the *ph1b* mutant allele, which is a 70-Mbp deletion at the pairing homoeologous (*Ph1*) locus. In homozygous *ph1b* plants, homoeologous wheat chromosomes and, in 'wheat x alien' species hybrids, homoeologous wheat and alien chromosomes from related species can pair and recombine, allowing the production of wheat-alien recombinants. KS12WGGRC55 is homozygous for *ph1b*, which results in homoeologous chromosome pairing in about 46% of the pollen mother cells. The transfer of *ph1b* to adapted hard red winter wheats will accelerate the production and evaluation of wheat-alien recombinants under field conditions and their use in wheat improvement.

Small quantities (3 grams) of seed of KS12WGGRC55 are available upon written request. We request that the appropriate source be given when this germ plasm contributes to research or development of new cultivars. Seed stocks are maintained by the Wheat Genetic and Genomic Resources Center, Throckmorton Plant Sciences Center, Kansas State University, Manhattan, KS 66506.

## *Notice of release of KS12WGGRC56 (TA5619, TA5620, TA5621) stem rust-resistant wheat germ plasm.*

B. Friebe, W. Liu (Laboratory of Cell and Chromosome Engineering, College of Life Sciences, Henan Agricultural University, Zhengzhou, Henan 450002, PR China), D.L. Wilson, W.J. Raupp, M.O. Pumphrey (Department of Crop and Soil Sciences, Washington State University, Pullman, WA 99164-6420, USA), J. Poland and R.L. Bowden (USDA–ARS Hard Winter Wheat Genetic Research Unit), A.K. Fritz (Department of Agronomy), and B.S. Gill.

The Agricultural Research Service, U.S. Department of Agriculture and the Kansas Agricultural Experiment Station announce the release of KS12WGGRC56 wheat germ plasm with resistance to stem rust *Sr51* for breeding and experimental purposes. KS12WGGRC56 has the short arm $3S^sS$ derived from *Ae. searsii* translocated to the long arms of wheat chromosomes 3A, 3B, and 3D in the form of the Robertsonian translocations T3AL·$3S^sS$ (KS12WGGRC56-3AL, TA5619), T3BL·$3S^sS$ (KS12WGGRC56-3BL, TA5620), and T3DL·$3S^sS$ (KS12WGGRC56-3DL, TA5621), respectively. KS12WGGRC56-3AL is derived from the cross 'TA3809/TA6555 $F_4$', where TA3809 is the Chinese Spring stock homozygous for the homoeologous pairing mutant allele *ph1b* and TA6555 is a Chinese Spring–*Ae. searsii* disomic substitution line where the *Ae. searsii* chromosome $3S^s$ is substituting for the loss of wheat chromosome 3A (DS$3S^s$(3A). KS12WGGRC56-3BL is derived from the cross 'TA3809/TA6556 $F_4$', where TA6556 is a Chinese Spring–*Ae. searsii* disomic substitution line where the *Ae. searsii* chromosome $3S^s$ is substituting for the loss of wheat chromosome 3B (DS$3S^s$(3B); and KS12WGGRC56-3DL is derived from the cross 'TA3809/TA6557 $F_4$', where TA6557 is a Chinese Spring–*Ae. searsii* disomic substitution line where the *Ae. searsii* chromosome $3S^s$ is substituting for the loss of wheat chromosome 3D (DS$3S^s$(3D). The $3S^sS$ arm has a gene conferring resistance to stem rust (*Puccinia graminis* f. sp. *tritici* Eriks. & E. Henn.) races RKQQC and TTKSK designated as *Sr51* . The T3AL·$3S^sS$, T3BL·$3S^sS$, and T3DL·$3S^sS$ stocks are new sources of resistance to Ug99, are cytogenetically stable, and may be useful in wheat improvement.

Small quantities (3 grams) of seed of KS12WGGRC56 are available upon written request. We request that the appropriate source be given when this germ plasm contributes to research or development of new cultivars. Seed stocks are maintained by the Wheat Genetic and Genomic Resources Center, Throckmorton Plant Sciences Center, Kansas State University, Manhattan, KS 66506.

### *Noatice of release of KS12WGGRC57 (TA5617) stem rust-resistant wheat germ plasm.*

B. Friebe, L.L. Qi (USDA–ARS, Northern Crop Science Laboratory, Fargo, ND 58102-2765, USA), C. Qian (National Key Laboratory of Crop Genetics and Germplasm Enhancement, Nanjing Agricultural University, Nanjing, Jiangsu, PR China), P. Zhang (Plant Breeding Institute, University of Sydney, Camden, NSW 2570, Australia), D.L. Wilson, W.J. Raupp, M.O. Pumphrey (Department of Crop and Soil Sciences, Washington State University, Pullman, WA 99164-6420, USA), J. Poland and R.L. Bowden (USDA-ARS Hard Winter Wheat Genetic Research Unit), A.K. Fritz (Department of Agronomy), and B.S. Gill.

The Agricultural Research Service, U.S. Department of Agriculture and the Kansas Agricultural Experiment Station announce the release of KS12WGGRC57 hard red winter wheat germ plasm with the stem rust resistance gene *Sr52* for breeding and experimental purposes. KS12WGGRC57 is derived from the cross 'TA3060/TA7682 $F_3$', where TA3060 is a Chinese Spring wheat stock monosomic for chromosome 6D (CSM6D) and TA7682 is a Chinese Spring–*Dasypyrum villosum* disomic chromosome addition line for the *D. villosum* chromosome 6V#3 (DA6V#3). KS12WGGRC57 has the long arm 6V3#L derived from *D. villosum* translocated to the short arm of wheat chromosome 6AS in the form of a Robertsonian T6AS·6V#3L translocation. The 6V3#L arm in T6AS·6V#3L has a gene conferring resistance to stem rust (*Puccinia graminis* f. sp. *tritici* Eriks. & E. Henn.) (races RKQQC and TTKSK) designated as *Sr52*. *Sr52* is temperature-sensitive and is most effective at 16°C, partially effective at 24°C, and ineffective at 28°C. The T6AS·6V#3L stock is a new source of resistance to Ug99, is cytogenetically stable, and may be useful in wheat improvement.

Small quantities (3 grams) of seed of KS12WGGRC57 are available upon written request. We request that the appropriate source be given when this germ plasm contributes to research or development of new cultivars. Seed stocks are maintained by the Wheat Genetic and Genomic Resources Center, Throckmorton Plant Sciences Center, Kansas State University, Manhattan, KS 66506.

### *Notice of release of KS12WGGRC58 (TA5630, TA5625, TA5643) stem rust-resistant wheat germ plasm.*

B. Friebe, W. Liu (Laboratory of Cell and Chromosome Engineering, College of Life Sciences, Henan Agricultural University, Zhengzhou, Henan 450002, PR China), D.L. Wilson, W.J. Raupp, M.O. Pumphrey (Department of Crop and Soil Sciences, Washington State University, Pullman, WA 99164-6420, USA), J. Poland and R.L. Bowden (USDA–ARS Hard Winter Wheat Genetic Research Unit), A.K. Fritz (Department of Agronomy), and B.S. Gill.

The Agricultural Research Service, U.S. Department of Agriculture and the Kansas Agricultural Experiment Station announce the release of KS12WGGRC58 wheat germ plasm with resistance to stem rust *Sr53* for breeding and experimental purposes. KS12WGGRC58 has a segment of the long arm $5M^gL$ derived from *Ae. geniculata* in the form of an interstitial translocation Ti5DS·5DL-$5M^gL$-5DL (KS12WGGRC58-Ti, TA5630) and terminal translocations T5DL-5MgL·$5M^gS$ (KS12WGGRC58-T1, TA5625) and T5DL-5MgL·$5M^gS$ (KS12WGGRC58-T2, TA5643). KS12WGGRC58-Ti is derived from the cross 'TA5599/Lakin $F_3$', where TA5599 is a wheat–*Ae. geniculata* terminal translocation stock consisting of part of the long arm of wheat chromosome 5D, part of the long arm of the *Ae. geniculata* chromosome arm $5M^gL$, and the complete short arm $5M^gS$, and Lakin is a Kansas hard red winter wheat cultivar. KS12WGGRC58-T1 and KS12WGGRC58-T2 are derived from the cross 'TA5599/TA3808 $F_3$' where TA3809 is the Chinese Spring stock homozygous for the homoeologous pairing mutant allele *ph1b*, with $5M^gL$ shortened by 10% and 20%, respectively, compared to that of TA5599. The $5M^gL$ arm has a gene conferring resistance to stem rust (*Puccinia graminis* f. sp. *tritici* Eriks. & E. Henn.) races RKQQC and TTKSK designated as *Sr53*. The Ti5DS·5DL-$5M^gL$-5DL and T5DL-5MgL·$5M^gS$ stocks are new sources of resistance to Ug99, are cytogenetically stable, and may be useful in wheat improvement.

Small quantities (3 grams) of seed of KS12WGGRC58 are available upon written request. We request that the appropriate source be given when this germ plasm contributes to research or development of new cultivars. Seed stocks are maintained by the Wheat Genetic and Genomic Resources Center, Throckmorton Plant Sciences Center, Kansas State University, Manhattan, KS 66506.

***Notice of release of KS12WGGRC59 wheat streak mosaic virus- and Triticum mosaic virus-resistant wheat germ plasm.***

B. Friebe, W. Liu (Laboratory of Cell and Chromosome Engineering, College of Life Sciences, Henan Agricultural University, Zhengzhou, Henan 450002, PR China), L.L. Qi (USDA–ARS, Northern Crop Science Laboratory, Fargo, ND 58102-2765, USA), D.L. Wilson, W.J. Raupp, J. Poland and R.L. Bowden (USDA–ARS Hard Winter Wheat Genetic Research Unit); A.K. Fritz (Department of Agronomy), D.L. Seifers (Kansas State University, Agricultural Research Center, Hays, KS), and B.S. Gill.

The Agricultural Research Service, U.S. Department of Agriculture and the Kansas Agricultural Experiment Station announce the release of KS12WGGRC59 hard red winter wheat germ plasm with resistance to wheat streak mosaic virus and *Triticum* mosaic virus for breeding and experimental purposes. KS12WGGRC59 is derived from the cross 'TA3061/TA7700//TA3809 $F_4$', where TA3061 is a Chinese Spring wheat stock monosomic for chromosome 7D (CSM7D), TA7700 is a ditelosomic wheat–*Thinopyrum intermedium* addition line having the long *Th. intermedium* chromosome arm 7S#3L added to the wheat genome, and TA3809 is a Chinese Spring stock homozygous for the *ph1b* mutant allele. KS08WGGRC59 has the 7S#3L translocated to the short arm of wheat chromosome 7B in form of the Robertsonian translocation T7BS·7S#3L. The 7S#3L arm has a gene conferring resistance to Wheat streak mosaic virus (WSMV) and *Triticum* mosaic virus (TriMV) designated as *Wsm3*. *Wsm3* confers resistance to WSMV at 18°C and 24° and also confers resistance to TriMV at 18°C but is not effective against this virus above 24°C. The T7BS·7S#3L stock is a new source of resistance to WSMV and TriMV, is cytogenetically stable, and may be useful in wheat improvement.

Small quantities (3 grams) of seed of KS12WGGRC59 are available upon written request. We request that the appropriate source be given when this germ plasm contributes to research or development of new cultivars. Seed stocks are maintained by the Wheat Genetic and Genomic Resources Center, Throckmorton Plant Sciences Center, Kansas State University, Manhattan, KS 66506.

## Publications.

Akhunov E, Sehgal S, Akhunova A, Liang G, Catana V, Kaur G, Luo MC, Simkova H, Dolezel J, and Gill BS. 2011. Sequencing and analysis of the wheat chromosome 3A gene space. PAG XVIII Abstract W352.

Bi C, Chen F, Jackson L, Gill BS and Li WL. 2011. Expression of lignin biosynthetic genes in wheat during development and upon infection by fungal pathogens. Plant Mol Biol Rep 29:149-161.

Choulet F, Wincker P, Quesneville H, Brunel D, Gill BS, Appels R, Keller B, and Feuillet C. 2011. Sequencing and analyses of the hexaploid wheat chromosome 3B. PAG XVIII Abstract W220.

Friebe B, Qi LL, Liu C, and Gill BS. 2011. Genetic compensation abilities of Aegilops speltoides chromosomes for homoeologous B-genome chromosomes of polyploid wheat in disomic S(B) chromosome substitution lines. Cytogenet Genome Res 134:144-150.

Gill BS, Friebe BR, and White F. 2011. Alien introgressions represent a rich source of genes for crop improvement. Proc Natl Acad Sci USA 108(19):7657-7658.

Gore MA, Coyle G, Friebe B, Coffelt TA, and Slavucci ME. 2011. Complex ploidy level variation in guayule breeding programs. Crop Sci 51:210-216.

Liu WX, Jin Y, Rouse M, Friebe B, Gill BS, and Pumphrey MO. 2011. Development and characterization of wheat-*Ae. searsii* Robertsonian translocations and a recombinant chromosome conferring resistance to stem rust. Theor Appl Genet 122:1537-1545.

Olson E, Poland J, Bowden R, Rouse M, Jin Y, Friebe B, Gill BS, and Pumphrey M. 2011. Characterization of a stem rust resistance gene from *Aegilops tauschii* effective against stem rust race Ug99. PAG XVIII Abstract P310.

Qi LL, Pumphrey MO, Friebe B, Zhang P, Qian C, Bowden RL, Rouse MN, Jin Y, and Gill BS. 2011. A novel Robertsonian translocation event leads to transfer of a stem rust resistance gene (*Sr52*) effective against race Ug99 from *Dasypyrum villosum* into bread wheat. Theor Appl Genet 123:159-167.

Rawat N, Sehgal SK, Joshi A, Rothe N, Li W, and Gill BS. 2011. Dissecting the ligno-cellulose pathway in *Triticum monococcum* using TILLING. PAG XVIII Abstract P726.

Sehgal SK, Gupta S, Kaur S, Sharma A, and Bains NS. 2011. A direct hybridization approach for gene transfer from *Aegilops tauschii* Coss. to *Triticum aestivum* L. Plant Breed 130(1):98-100.

Sehgal SK, Aknunov E, Li W, Kaur G, Catana V, Pillamari J, Faris J, Reddy L, Devos KM, Rabinowicz PD, Chan A, Maiti R, Dolezel J, Simkova H, Safar J, Luo MC, Ma Y, You FM, and Gill BS. 2011. Towards a physical and genetic framework map of chromosome 3A of bread wheat (*Triticum aestivum* L.). PAG XVIII Abstract P019. Zhang W, Friebe B, Gill BS, and Jiang J. 2011. Centromere inactivation and epigenetic modifications of a plant cromosome with three functional centromeres. Chromosoma 119:553-563.

## NEBRASKA

## UNIVERSITY OF NEBRASKA AND THE USDA–ARS GRAIN, FORAGES AND BIOENERGY UNIT.
## Lincoln, NE, USA.

In 2010, 1,600,000 acres of wheat were planted in Nebraska and 1,490,000 were harvested with an average yield of 43 bu/acre for a total production of 64,070,000 bu. This crop would be considered a small crop. Autumn rains in 2009 prevented much of eastern Nebraska from harvesting corn and soybeans in time to plant wheat after the summer crop. In 2009, 1,700,000 acres of wheat were planted in Nebraska and 1,600,000 were harvested with an average yield of 48 bu/acre for a total production of 76,800,000 bu. In 2008, 1,750,000 acres of wheat were planted in Nebraska and 1,670,000 were harvested with an average yield of 44 bu/acre for a total production of 73,500,000 bu.

### *New cultivars.*

In 2010, two new wheat cultivars were formally released. **NE01481**, to be marketed as **Husker Genetics Brand McGill**, in honor of a legendary professor of genetics at the University of Nebraska, was selected from the cross 'NE92458/Ike'. The pedigree of NE92458 is 'OK83201/Redland' and the pedigree of OK83201, an experimental line developed by Oklahoma State University is 'Vona//Chisholm/Plainsman V'. McGill was recommended for release primarily due to its superior adaptation to rainfed wheat production systems in eastern and west central Nebraska and its excellent resistance to wheat soil borne mosaic virus (WSBMV). McGill is moderately resistant to moderately susceptible to stem rust (caused by *Puccinia graminis Pers.: Pers. f. sp. tritici* Eriks & E. Henn.) in field nursery tests inoculated with a composite of stem rust races (RCRS, QFCS, QTHJ, RKQQ, and TPMK). In greenhouse tests, it is resistant to races TPMK, QFCS, and RCRS, but susceptible to race TTTT and RKQQ. It is moderately resistant to moderately susceptible to leaf rust (caused by *P. triticina* Eriks), and moderately susceptible to susceptible to stripe rust (caused by *P. striiformis* Westendorp f. sp. t*ritici*). McGill is susceptible to Hessian fly (*Mayetiola destructor* Say) and to wheat streak mosaic virus (field observations in NE). McGill has acceptable milling and baking end-use quality.

The second line is **NI04421**, which will be marketed as **Husker Genetics Brand Robidoux** in honor of a pioneer French trapper who had a trading post between Nebraska and Wyoming. Robidoux was selected from the cross 'NE96644/Wahoo (sib)' where the pedigree of NE96644 is 'Odesskaya P/Cody//Pavon 76/3*Scout 66'. Robidoux was released primarily for its superior performance under irrigation and rainfed conditions in western Nebraska (west of North Platte, where drought is common) and irrigated production sites in western Nebraska and eastern Wyoming. This cultivar seems to have good drought tolerance and does best in irrigated environments in the drier areas (eastern WY). Robidoux is moderately resistant to stripe rust (caused by *P. striiformis* Westendorp f. sp. t*ritici*), moderately resistant to moderately susceptible to stem rust (caused by *P. graminis Pers.: Pers. f. sp. tritici* Eriks & E. Henn.) in field nursery tests inoculated with a composite of stem rust races**,** moderately susceptible to leaf rust (caused by *P. triticina* Eriks). Robidoux is susceptible to Hessian fly (*M. destructor* Say) and to wheat streak mosaic virus. Robidoux is susceptible to common bunt (syn. stinking smut, caused by *Tilletia spp.*) and seed treatments are recommended. Where common bunt was present, Robidoux was the only line with the tell-tale odor and diseased kernels. The overall end-use quality characteristics for