IMPROVING WHEAT VARIETIES FOR NEBRASKA

2005 STATE BREEDING AND QUALITY EVALUATION REPORT

Report to the

NEBRASKA WHEAT DEVELOPMENT, UTILIZATION
AND MARKETING BOARD

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February 2005

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I. INTRODUCTION

Wheat variety development research in Nebraska is a cooperative effort between the Agricultural Research Division, IANR of the University of Nebraska-Lincoln, and the Agricultural Research Service/USDA, Northern Plains Area. Winter wheat breeding, which includes variety, line, and germplasm development, is a major component of the state wheat improvement research. This report will deal only with the state portion of the total wheat breeding effort (located in the Department of Agronomy and Horticulture at the University of Nebraska-Lincoln). Very important contributions come from state, and federal researchers in the department and at the Nebraska research and extension centers, from state and private researchers in South Dakota, Wyoming, Kansas, Oklahoma, Texas, and Colorado, from researchers in the Department of Plant Pathology (both state and federal), from plant pathologists located at the USDA Cereal Disease Laboratory, St. Paul, Minnesota, and USDA entomologists at Manhattan, Kansas and Stillwater, Oklahoma. All of these programs invest time and funds in this program. Grants from the Nebraska Wheat Development, Utilization and Marketing Board provide key financial support for this research. Without the Wheat Board's support, much of the state breeding efforts would be curtailed and many of the wheat quality analyses to evaluate our breeding material would not be available.

II. THE 2004-2005 NEBRASKA WHEAT CROP

1. Growing Conditions

The 2004-2005 crop was planted into generally good conditions with adequate moisture throughout the state. The planting was completed in a timely manner. The fall was generally milder than normal which lead to various diseases across the state. In the west, "yellow" seedling wheat was reported and was believed to be due to either fall stripe rust infection or wheat steak mosaic virus. Of the two, stripe rust would cause the lesser damage because the disease would die with the leaves during the hard freezes that occur in the winter. Winter survival may be affected, however, because the crown would not be as healthy as if it were disease free. Wheat streak mosaic virus would similarly reduce winter survival, but the virus survives in the plant and is quite devastating in the spring regrowth period. In the east, the warm fall led to increased wheat soilborne mosaic virus. The spring growing season was generally very good with adequate to above normal moisture for both wheat and its diseases, however western Nebraska was affected by a late frost followed by very high temperatures leading to some fields being "freeze burned". Stripe rust was common throughout the state, wheat streak mosaic virus was sporadic in the west, and wheat soilborne mosaic virus was common in the east. Other higher moisture diseases such as tan spot and leaf rust were also common in some parts of the state. The southwest and some of the Panhandle were affected by drought. Overall, with the additional moisture in what is normally a drought prone area, yields that were not affected by frost tended to be above average. In general, Infinity, Millennium, and Goodstreak performed well across or in specific sections of the state.

2. Diseases

As mentioned above, the warm fall led to fall infections of wheat streak (west) and soilborne mosaic (east) viruses and to low levels of stripe rust infection (western NE). In the spring, stripe rust (everywhere in NE), leaf rust (eastern NE), wheat streak (western NE) and soilborne mosaic virus (eastern NE) were common. With the above average moisture in western NE, tan spot was also common. In eastern Nebraska, Fusarium head blight (scab) came in late in the season at low levels. Scab was not sufficiently important that wheat grain was tested for mycotoxin. Drs. John Watkins, Stephen Wegulo, and Roy French continue to be invaluable in disease

identification, survey, and understanding.

3. Insects

In general, most insect pests were at low levels on wheat in 2004-2005. Russian wheat aphid damage was small and required little spraying. Chinch bugs and Hessian fly were generally minor. Wheat curl mite, the vector for wheat streak mosaic virus, and aphids, the vectors for barley yellow dwarf virus, were generally unimportant insect pests though they can carry devastating diseases.

4. Wheat Production

The 2005 Nebraska Wheat Crop was estimated at 68,600,000 bu, which represented a 39 bu/a state average yield on 1,760,000 harvested acres. The 2005 crop was 12% higher than the 2004 crop (61,100,00 bu, which represented a 37 bu/a state average yield on 1,650,000 harvested acres). Despite continued genetic improvement, the main determinant in wheat production seems to be acres harvested, government programs, and weather (which also affects disease pressure and sprouting).

5. Cultivar Distribution

The 2006 wheat variety survey is the most current data available. Agripro Jagalene (23.4% of the state) was the most widely grown cultivar followed by Pronghorn (10.1%), Alliance (10.1%) and Millennium (9.5%).). The rise of Jagalene was very rapid, going from 4.5% in 2004 to 23.8% in 2006. Pronghorn is a tall (conventional height) wheat that has consistently done well in the drought prone areas of western Nebraska. A new tall wheat, Goodstreak (3.7%) seems to be very well received and should replace some of Pronghorn's and Buckskin's acreage. Millennium is an excellent wheat that is the replacement for Arapahoe with its broad adaptability, excellent disease resistance, and good end-use quality. Alliance is a semi-dwarf the variety having the greatest impact since the release of Arapahoe, but its impact is more localized, as Alliance does not have the broad adaptation in eastern Nebraska that Arapahoe had.

While no wheat listed below has all of the characteristics of an ideal wheat, the diverse wheats provide the grower an opportunity to choose high yielding, high quality wheats that have resistance or tolerance to the diseases or insects prevalent in his or her region. Cultivars developed by the University of Nebraska wheat improvement program occupied 57% of the state acreage. Other public varieties occupied 12% and private varieties occupied 31% of the state acreage.

	Percent									
Variety	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
2137	-----	1.4	3.6	8.2	10.4	8.0	10.3	7.8	4.3	3.5
2145										1.0
Above										1.3
Agripro Abilene	2.2	2.4	2.7	2.7	2.5	1.3	1.4	1.7	1.7	
Agripro Jagalene								4.5	16.8	23.8
Agripro Ogallala	1.5	1.6	1.2	1.4	2.2	1.5	3.6	2.4	2.0	1.4
Agripro Thunderbolt							2.0	3.0	1.9	1.9
Alliance	7.3	8.4	10.4	15.1	16.0	16.6	11.5	13.6	10.1	10.1
Arapahoe	30.1	28.3	25.0	19.8	13.4	13.0	8.7	6.8	5.2	2.9
Buckskin	6.0	6.5	5.0	2.9	4.7	6.2	7.3	4.9	3.7	5.0
Centura	9.8	7.7	7.7	6.9	3.7	3.4	1.8	2.1	2.4	1.9

Goodstreak						0.0			1.7	3.7
Jagger	-----	-----	1.1	2.9	2.4	3.4	3.9	2.8	3.1	2.5
Karl/Karl 92	6.9	6.6	5.5	4.4	4.1	3.3	3.8	3.3	2.7	2.7
Millennium						3.5	6.1	11.1	10.7	9.5
Niobrara	6.5	7.5	11.4	10.3	9.3	6.9	5.4	3.5	2.2	
Other Private Varieties	3.1	1.9	1.9	2.0	2.2	3.9	3.4	4.4	4.0	3.8
Other Public Varieties	5.4	5.9	4.1	5.4	7.6	6.5	4.9	8.8	7.2	6.1
Platte						0.0	1.0	1.3	1.6	
Pronghorn	-----	4.6	7.8	6.9	10.9	10.8	10.3	10.4	11.4	10.1
TAM 111										1.2
Wahoo						0.0	1.8	1.7	1.8	1.8
Wesley					1.1	2.2	3.6	5.9	5.5	5.8

6. New Cultivars

In 2005, two new cultivars (Hallam and Infinity CL) were formally released. They were recommended for release in 2004 and have been described in the 2004 report. The release statements can be found at:

Hallam: http://agronomy.unl.edu/grain/hallam.PDF
Infinity CL: http://agronomy.unl.edu/grain/infinity.PDF

One experimental line NE99495, which has exceptional end-use quality, has been licensed to the Kansas Organic Producers. The license is part of our effort to ensure that the germplasm developed at the University of Nebraska for the public good is broadly available to interested parties. NE99495 is a hard red winter wheat with the pedigree Alliance/Karl 92. The cross was made in 1993. NE99495 is an F_3-derived line that was selected in the F_4 generation. The F_1 generation was grown in the greenhouse in 1993-94. The F_2 and F_3 generations were grown in bulk at the Agricultural Research and Development Center at Ithaca, Nebraska in 1995 and 1996, respectively. Random heads were chosen from the F_3 bulk and planted as head rows, which were harvested in 1997. The F_3-derived F_5 family was harvested as a single observation plot in 1998. NE99495 was identified in 1999 and was grown at six unreplicated locations in 1997. It has been tested in replicated trials at six to seven locations per year from 2000 to present. In addition, NE99495 was tested in the Northern Regional Performance Nursery in 2002 and 2003, and in Nebraska cultivar performance trials in 2003 and 2004. NE99495 is semidwarf wheat with medium plant height for a semidwarf cultivar and acceptable winterhardiness for production in Nebraska. It is slightly later than Alliance and slightly earlier than Millennium for flowering date. It is susceptible to wheat streak mosaic and wheat soilborne virus and stripe rust; and moderately resistant to Hessian fly and stem rust. It is moderately susceptible to moderately resistant to leaf rust. It has good yield potential and has genetically lower test weight.

III. FIELD RESEARCH

1. Increase of New Experimental Lines

Based on last year's results and our recent releases, we have decided to increase one line, NE01643 for possible release in 2006. NE01643 is a hard red winter wheat with the pedigree Millennium sib/ ND8974; where ND8974 is Seward/Archer (hence the full pedigree would be Millennium sib//Seward/Archer). The cross was made in 1995. NE01643 is an F_3-derived line that was selected in the F_4 generation. The F_1 generation was grown in the greenhouse in 1995-96. The F_2 and F_3 generations were grown in bulk at the Agricultural Research and Development Center at Ithaca, Nebraska in 1997 and 1998, respectively. Random heads were chosen from the F_3 bulk and planted as head rows, which were harvested in 1999. The F_3-derived F_5 family was harvested as a single observation plot in 2000. NE01643 was identified in 2001 and was grown at six unreplicated locations in 2001. It has been tested in replicated trials at six to seven locations per year from 2002 to present. In addition, NE01643 was tested in the Northern Regional Performance Nursery in 2004 and 2005, and in Nebraska cultivar performance trials in 2004 and 2005. NE01643 is semidwarf wheat with medium plant height for a semidwarf cultivar and acceptable winterhardiness for production in Nebraska. It is later than Alliance and Millennium and slightly later than Harry for flowering date. NE01643 has excellent grain yield (topped the NRPN in 2004, data being analyzed for 2005; topped the state variety in 2005 and best 2 –year average for 2004 and 2005). In addition, it has very good test weight and is moderately resistant to leaf and stem rust, and to Hessian fly. It is moderately susceptible to fusarium head blight and powdery mildew and susceptible to stripe rust and soilborne/spindle streak mosaic virus. Its end-use quality is minimally acceptable (not a star). See also:

http://agronomy.unl.edu/grain/NE01643.PDF

With the release of new varieties Antelope, Arrowsmith, Goodstreak, Hallam, Harry, Infinity, Millennium, Nuplains, Wahoo, and Wesley many of the most advanced current breeding lines are not expected to be released.

2. Nebraska Variety Testing

Numerous entries were included in some or all of the locations in the Fall Sown Small Grain Variety Tests in 2005. Fourteen dryland and four irrigated locations were harvested for yield data. In 2005, the tope ten entries for dryland production were:

Entry	Yield (bu/a)	Entry	Yield (bu/a)
NE01643	56.7	Goodstreak	50.4
Infinity CL	52.4	Blend 1	50.1
NE01481	51.4	NE01604	50.1
Millennium	51.4	NE00403	50.1
NuFrontier	50.9	Gen. Mills 10006	49.8

Of the released lines tested in all dryland locations, Turkey (38.1 bu/a) and Scout 66 (39.1 bu/a) as expected, and Lakin (41.4 bu/a) had the lowest grain yields. These yield levels are near or higher than the state average yield (39 bu/a) indicating our nurseries tend to be on better production areas than many parts of the state

In 2004, the top ten entries for dryland production were:

Entry	Yield (bu/a)	Entry	Yield (bu/a)
Jagalene	57.1	Harry	52.1
Blend #10	55.1	Infinity CL	51.8

NuHills	54.6	NE99495	51.7
2137	53.8	Trego	51.6
W99-194	52.6	Wesley	51.6

The two year averages for all the lines grown in all of the dryland locations in 2004 and 2005 can be found at: http://agronomy.unl.edu/grain/NF01643.PDF on page 2.

In 2003, the top ten entries for dryland production were:

Entry	**Yield (bu/a)**	**Entry**	**Yield (bu/a)**
Wahoo	64.2	NuFrontier	62.3
Millennium	63.4	Harry	62.3
Wesley	62.9	NW99L7068	62.2
Jagalene	62.5	Trego	62.0
NH01046	62.5	NW99L7083	61.6

3. Irrigated Wheat Trials:

In 2005, another irrigated environment was added another irrigated environments (Chase county). Hence we now have three irrigated testing sites for evaluating our materials and should be able to do a better job of providing producers with data that is meaningful to their farm. The top ten lines in 2005:

Variety	Yield bu/a	Variety	Yield bu/a
NuHorizon (W)	97.1	NI01824	90.0
N02Y5117	93.5	Dumas	89.6
NI02425	92.1	TAM 111	89.4
Blend #10	91.1	NuFrontier (W)	88.7
NW97S139-1 (W)	90.1	Gen. Mills 10006 (W)	87.7

The top ten lines for 2004 in Nebraska and Wyoming were:

Entry	Yield bu/a	Entry	Yield bu/a
Yumar	121.2	NW99L7068	115.2
NW97S139-1	120.4	Blend #10	113.9
NI03427	117.9	Halt	113.5
NW98S097	116.0	NuHorizon	113.3
Wesley	115.7	NE97V121	112.9

The top ten lines for 2003 were:

Entry	Yield (bu/a) bu/a	Entry	Yield (bu/a) bu/a
Wesley	97	Antelope	93
NuFrontier	96	2145	93
NI02402	94	NE97V121	92
Jagalene	94	Wahoo	90
NH01046	93	Halt	89

The irrigated data this year continue to show the benefits of having a dedicated irrigated wheat development nursery. Two of the top ten lines came directly from the irrigated wheat development nursery. In addition, it is good to see a number of experimental lines in the best lines group. We hope that with the three locations there will be more consistent performance among the irrigated wheat lines. Currently there is a yearly shuffle among the tope lines and it is hard for growers to choose the most consistent performer.

As in the past, we have an experimental line irrigated nursery, which is grown under irrigation in western Nebraska and under dryland conditions throughout the state. The goal of this nursery is to identify higher yielding lines under irrigation and under higher rainfall conditions, which periodically occur in Nebraska.

Of the check varieties, Jagalene performed well. However, Wesley and Antelope did not perform as well as expected. A number of experimental lines also performed well, in particular NI04421 (in both 2004 and 2005). In reviewing the data, we will probably need to increase the fertility and yield level at Lincoln to help select the very best yield yielding lines for eastern NE and for better production under irrigation.

The data for the 2005 Nursery is:

VARIETY	Linc. bu/a	Rank	N.Platte bu/a	Rank	Hemming. bu/a	Rank	**Irrigated bu/a**	**Rank**	Dryland Avg. bu/a	Rank	**State Avg. bu/a**	Rank
Jagalene	66.93	27	64.32	2	89.38	3	**101.44**	**7**	73.54	3	**80.52**	2
NI04403	69.08	21	26.60	40	83.41	16	**68.88**	**40**	59.70	34	**61.99**	37
NI04414	74.51	9	49.50	21	86.99	8	**82.66**	**26**	70.33	7	**73.42**	15
NI04421	81.72	1	71.81	1	88.09	6	**110.63**	**1**	80.54	1	**88.06**	1
NI04424	56.69	35	43.18	29	79.93	19	**83.49**	**24**	59.93	33	**65.82**	33
NI04425	66.50	29	30.71	38	79.64	20	**91.84**	**19**	58.95	35	**67.17**	29
NI04426	67.67	26	44.40	28	88.17	5	**92.26**	**18**	66.75	20	**73.13**	16
NI04427	72.03	14	43.31	30	83.59	14	**98.53**	**10**	66.31	22	**74.37**	13
NI04428	76.21	8	42.54	33	88.31	4	**101.03**	**9**	69.02	12	**77.02**	11
NI04430	78.81	5	50.32	19	86.99	9	**96.85**	**11**	72.04	4	**78.24**	6
NI04436	77.29	7	48.27	24	83.42	15	**93.10**	**17**	69.66	8	**75.52**	12
NI03427	79.47	4	52.36	17	79.49	21	**101.44**	**8**	70.44	5	**78.19**	7
NI04419	66.54	28	40.02	35	78.61	24	**78.48**	**32**	61.72	28	**65.91**	32
NI04431	61.58	33	42.54	32	89.70	2	**90.59**	**20**	64.61	26	**71.10**	23
NE03486	80.69	2	60.80	4	81.91	17	**93.93**	**15**	74.47	2	**79.33**	3
NE03581	71.86	15	33.99	37	95.46	1	**75.14**	**37**	67.10	19	**69.11**	28
NI05701	52.24	38	54.52	11	62.83	39	**72.64**	**39**	56.53	37	**60.56**	38
NI05702	69.22	20	47.81	25	81.30	18	**82.66**	**25**	66.11	23	**70.25**	25
NI05703	68.53	24	49.54	20	65.08	38	**75.15**	**36**	61.05	30	**64.58**	34
NI05704	65.71	30	27.06	39	76.67	29	**80.99**	**30**	56.48	38	**62.61**	36
Wesley	73.71	11	40.01	34	61.84	40	**76.82**	**35**	58.52	36	**63.10**	35
NI05705	70.69	16	56.03	9	77.68	26	**85.58**	**22**	68.13	17	**72.50**	18

NI05706	69.35	19	49.15	22	83.63	12	**95.18**	**13**	67.38	18	**74.33**	14
NI05707	68.89	23	52.59	16	85.80	11	**82.24**	**28**	69.09	11	**72.38**	19
NI05708	67.96	25	51.36	18	86.20	10	**80.99**	**31**	68.51	16	**71.63**	21
NI05709	42.19	40	53.81	13	65.30	37	**77.23**	**34**	53.77	40	**59.63**	39
NI05710	51.76	39	45.53	27	65.62	36	**73.89**	**38**	54.30	39	**59.20**	40
NI05711	69.84	17	62.31	3	75.61	32	**104.37**	**3**	69.25	10	**78.03**	8
NI05712	79.75	3	48.62	23	77.72	25	**82.24**	**29**	68.70	15	**72.08**	20
NI05713	77.68	6	54.63	10	78.85	23	**101.86**	**6**	70.39	6	**78.26**	5
NI05714	74.32	10	47.07	26	87.46	7	**108.13**	**2**	69.62	9	**79.25**	4
NI05715W	64.57	31	53.80	12	76.88	28	**86.42**	**21**	65.08	25	**70.42**	24
NI05716W	54.73	36	57.64	8	71.36	35	**93.51**	**16**	61.24	29	**69.31**	26
NI05717W	73.08	12	34.71	36	78.92	22	**78.07**	**33**	62.24	27	**66.20**	31
NI05718W	60.31	34	58.58	6	76.39	30	**95.60**	**12**	65.09	24	**72.72**	17
NI05719W	72.33	13	53.32	15	74.40	33	**85.16**	**23**	66.68	21	**71.30**	22
NI05720W	69.36	18	60.51	5	77.03	27	**101.86**	**5**	68.97	13	**77.19**	10
NI05721W	53.26	37	58.02	7	71.40	34	**82.66**	**27**	60.89	31	**66.34**	30
NI05722W	68.93	22	54.02	14	83.62	13	**103.53**	**4**	68.86	14	**77.53**	9
Antelope	62.65	32	43.26	31	76.30	31	**94.77**	**14**	60.74	32	**69.25**	27
GRAND MEA	**68.22**		**48.96**		**79.52**		**89.05**		**65.57**		**71.44**	
CV	6.80		11.73		5.96		**9.94**		0.00			
LSD	6.31		7.81		6.45		**12.03**		0.00			

The data for the 2004 nursery are:

					----------bu/a----------					bu/a		bu/a	
VARIETY	HD04L May	HT04L (in)	Dis.	Lodg.	Lincoln	N. Platte	Hemming.	St. Avg Dry	Rank	Sidney Irr.	Rank	St. Avg.	Rank
NI01824	10.5	33.5	5.5	1.0	89.48	62.10	60.30	70.6	11	97.3	43	77.3	26
NI03415	13.5	34.0	7.5	1.0	67.88	53.45	60.05	60.5	47	99.9	41	70.3	47
NI03418	14.0	33.0	5.0	1.0	92.65	54.38	59.08	68.7	16	104.8	33	77.7	20
NI03419	14.0	33.0	5.5	0.0	82.23	55.90	54.50	64.2	40	107.5	24	75.0	38
NI03424	14.0	35.5	4.5	0.5	94.23	53.53	53.53	67.1	28	92.8	47	73.5	39
NI03426	14.5	34.0	5.0	0.0	94.30	54.75	52.83	67.3	27	105.6	30	76.9	29
NI03427	18.0	37.0	4.0	1.0	95.55	67.20	57.03	73.3	4	110.8	18	82.6	9
NI03434	16.5	38.0	4.5	0.5	88.40	50.78	47.25	62.1	46	101.7	37	72.0	44
NI04401	16.0	32.0	6.5	0.0	80.58	62.55	59.05	67.4	25	103.6	35	76.5	30
NI04402	18.0	31.0	6.0	0.0	66.83	46.20	50.15	54.4	50	100.5	40	65.9	50
NI04403	18.5	34.0	4.5	0.0	91.13	49.83	51.50	64.2	41	112.1	12	76.2	32
NI04404	17.5	39.5	5.5	1.0	82.33	49.85	55.60	62.6	45	88.4	49	69.1	49
NI04405	17.0	39.0	5.5	1.0	79.78	57.80	54.38	64.0	43	96.4	44	72.1	43
NI04406	17.5	35.0	5.0	0.0	80.78	56.63	61.08	66.2	33	106.6	27	76.3	31
Jagalene	16.0	32.5	4.0	0.0	90.78	61.93	61.98	71.6	9	124.5	1	84.8	2
NI04407	17.5	33.5	5.5	0.0	77.05	55.83	63.15	65.3	37	105.4	31	75.4	35
NI04408	18.5	35.5	4.5	0.0	84.85	57.53	60.73	67.7	23	108.9	22	78.0	18
NI04409	18.0	35.5	5.5	0.5	97.08	63.13	57.68	72.6	6	117.9	3	83.9	5
NI04410	18.0	33.5	7.0	0.0	78.30	55.23	63.28	65.6	36	93.8	46	72.7	40
NI04411	18.5	32.5	4.0	0.0	96.60	70.68	60.13	75.8	2	106.6	28	83.5	6

NI04412	18.5	37.5	3.0	0.5	99.83	61.00	60.03	73.6	3	117.3	4	84.6	4
NI04413	19.5	40.0	4.5	0.0	96.88	51.98	52.23	67.0	29	99.4	42	75.1	36
NI04414	17.0	36.0	5.0	0.0	98.70	62.38	56.00	72.4	7	115.0	8	83.0	7
NI04415	19.0	37.0	4.5	0.5	88.10	51.33	52.53	64.0	42	89.8	48	70.4	46
NI04416	17.5	37.0	4.5	0.0	104.33	48.58	55.73	69.6	13	107.0	26	78.9	14
NI04417	18.0	35.0	5.0	0.5	84.33	59.38	60.10	67.9	22	100.7	39	76.1	33
NI04418	12.0	37.5	5.5	1.0	84.20	58.63	59.33	67.4	26	85.6	50	71.9	45
NI04419	13.0	32.5	7.0	1.5	88.10	64.05	59.55	70.6	12	114.0	10	81.4	10
NI04420	13.0	35.0	5.5	1.0	94.45	56.25	65.53	72.1	8	115.4	6	82.9	8
Antelope	17.0	35.5	6.0	0.0	78.78	43.75	68.10	63.5	44	109.8	20	75.1	37
NI04421	16.5	36.0	6.0	0.5	96.50	67.45	71.45	78.5	1	115.4	7	87.7	1
NI04422	17.0	35.5	5.0	0.0	86.63	49.50	64.13	66.8	30	107.4	25	76.9	28
NI04423	12.0	35.5	6.0	1.0	84.23	60.73	61.18	68.7	15	104.2	34	77.6	22
NI04424	18.0	32.5	6.0	0.0	71.98	47.03	57.95	59.0	49	112.3	11	72.3	42
NI04425	16.0	32.0	5.5	0.0	91.63	48.80	57.08	65.8	35	112.1	13	77.4	24
NI04426	14.0	35.5	5.5	0.5	100.28	43.58	59.18	67.7	24	110.2	19	78.3	17
NI04427	13.0	33.5	5.0	0.0	89.45	50.55	64.78	68.3	18	115.6	5	80.1	12
NI04428	13.5	33.0	6.5	0.0	96.48	55.23	60.78	70.8	10	111.8	14	81.1	11
NI04429	13.5	33.0	6.5	0.0	93.78	50.70	59.43	68.0	21	105.2	32	77.3	27
NI04430	18.0	34.5	4.5	0.5	93.78	50.28	54.85	66.3	32	114.4	9	78.3	16
NI04431	19.5	34.0	4.5	1.0	84.45	49.80	59.08	64.4	39	110.8	17	76.0	34
NI04432	18.5	36.5	4.0	1.0	98.38	52.33	55.18	68.6	17	111.5	16	79.3	13
NI04433	16.0	37.0	4.5	0.5	74.88	48.90	55.83	59.9	48	101.4	38	70.3	48
NI04434	17.0	37.0	5.5	0.5	96.53	44.05	58.80	66.5	31	109.8	21	77.3	25
Wesley	17.0	33.5	4.0	0.0	94.38	47.20	56.83	66.1	34	111.6	15	77.5	23
NI04435	17.0	35.5	5.0	1.0	98.03	47.08	63.10	69.4	14	103.1	36	77.8	19
NI04436	14.0	36.0	6.0	0.0	96.88	59.60	62.78	73.1	5	119.6	2	84.7	3
NI04437	18.0	39.5	5.5	1.0	88.40	52.40	53.05	64.6	38	95.8	45	72.4	41
NI04438	17.0	35.0	6.0	0.0	91.33	53.88	59.58	68.3	19	108.8	23	78.4	15
NI04439	12.0	37.5	5.0	1.0	97.43	48.75	57.85	68.0	20	106.5	29	77.6	21
Average	16.1	35.5	5.2	0.5	91.4	52.8	59.4	67.9		108.0		77.9	

The results for 2003 are:

			Linc.	N. Platte	Sidney						
VARIETY	Hdate	YRUST	Yield	Yield	Yield	Rank	Height Avg.	Yield Avg. Dry	Rank	Yield Avg.	Rank
			bu/a	bu/a	bu/a		in.	bu/a		bu/a	
NI02402	21.00	9	78.68	68.13	104.73	2	32.75	73.41	16	83.85	6
NI02401	22.50	4	93.60	65.80	68.15	45	31.50	79.70	7	75.85	21
NI02414	21.00	3	87.60	51.53	82.51	26	33.00	69.57	25	73.88	28
NI02416	21.00	9	67.28	57.43	72.72	42	33.00	62.36	34	65.81	41
NI02418	21.50	5	76.20	62.35	73.20	41	35.25	69.28	26	70.58	32
NI02419	27.00	9	45.35	67.60	97.58	7	32.00	56.48	43	70.18	33
NI02420	24.50	8	66.38	66.75	91.91	13	32.00	66.57	27	75.01	23
NI02422	21.00	9	79.18	52.10	77.90	37	30.75	65.64	28	69.73	34
NI01828	27.00	2	82.73	64.23	89.13	18	32.25	73.48	15	78.70	12
NI01803	20.00	7	79.33	39.73	104.65	3	31.50	59.53	39	74.57	26
NI01824	20.50	1	94.65	70.75	117.04	1	34.75	82.70	3	94.15	1

NI03401	24.50	8	42.15	58.48	81.54	28	33.75	50.32	48	60.72	43
NI03402	20.50	9	76.78	66.73	78.68	35	33.00	71.76	20	74.06	27
NI03403	21.50	9	85.20	66.58	94.97	11	34.25	75.89	10	82.25	8
WESLEY	25.50	1	84.40	75.65	91.68	14	33.25	80.03	6	83.91	5
NI03404	22.00	3	78.05	63.10	96.19	10	35.50	70.58	23	79.11	10
NI03405	28.50	7	63.78	55.80	88.89	19	31.75	59.79	38	69.49	36
NI03406	26.50	8	53.85	53.20	71.46	44	33.75	53.53	46	59.50	47
NI03407	26.50	8	28.15	57.38	78.35	36	29.25	42.77	50	54.63	49
NI03408	21.50	8	69.98	57.93	80.07	33	32.25	63.96	31	69.33	37
NI03409	25.50	8	63.35	52.25	65.17	49	32.75	57.80	41	60.26	44
NI03410	23.00	7	46.00	52.98	57.15	50	32.00	49.49	49	52.04	50
NI03411	22.00	9	50.93	62.70	88.80	20	31.50	56.82	42	67.48	39
NI03412	22.00	9	66.45	49.28	67.92	46	35.00	57.87	40	61.22	42
NI03413	23.50	4	82.40	67.43	85.03	23	36.25	74.92	12	78.29	14
NI03414	27.00	5	64.60	62.23	75.94	40	33.50	63.42	33	67.59	38
NI03415	21.00	6	60.55	70.08	103.59	5	34.50	65.32	29	78.07	15
NI03416	21.00	9	81.53	63.10	87.27	22	35.25	72.32	19	77.30	18
NI03417	21.50	3	84.13	58.25	84.99	24	33.25	71.19	22	75.79	22
NW97S278	27.00	2	57.68	65.30	90.15	17	34.25	61.49	36	71.04	31
NI03418	21.50	1	87.05	66.38	97.27	8	33.75	76.72	8	83.57	7
NI03419	22.50	1	74.88	52.35	104.02	4	32.25	63.62	32	77.08	19
NI03420	27.50		66.28	57.65	94.27	12	32.75	61.97	35	72.73	30
NI03421	21.00	1	77.80	67.73	82.12	27	33.50	72.77	17	75.88	20
NI03422	27.00	7	80.68	66.78	88.40	21	32.00	73.73	14	78.62	13
NI03423	26.50	5	85.53	59.15	76.08	38	31.25	72.34	18	73.59	29
NI03424	25.00	1	90.43	58.70	90.39	15	31.75	74.57	13	79.84	9
NI03425	23.50	8	74.95	68.08	81.03	29	33.00	71.52	21	74.69	25
NI03426	26.00	1	96.53	67.53	90.20	16	33.25	82.03	4	84.75	4
NI03427	26.00	1	98.75	71.95	96.27	9	35.50	85.35	2	88.99	3
NI03428	28.00	3	91.15	60.60	80.19	31	33.25	75.88	11	77.31	17
NI03429	27.00	3	84.43	68.55	80.42	30	28.00	76.49	9	77.80	16
NI03430	26.00	9	66.90	62.83	79.08	34	32.75	64.87	30	69.60	35
NI03431	26.00	9	48.88	60.45	65.23	48	33.00	54.67	45	58.19	48
JAGALENE	23.00	1	104.98	74.48	97.63	6	32.00	89.73	1	92.36	2
NI03432	27.50	5	71.60	69.13	84.11	25	34.00	70.37	24	74.95	24
NI03433	28.00	9	54.40	56.53	67.62	47	28.75	55.47	44	59.52	46
NI03434	23.50	1	96.93	67.08	72.18	43	34.00	82.01	5	78.73	11
NI03435	26.50	9	50.95	51.73	75.97	39	34.00	51.34	47	59.55	45
NI03436	25.50	9	58.58	63.08	80.12	32	33.00	60.83	37	67.26	40

In 2005, 15 lines were continued for further testing in the irrigated nursery and 3 lines were advanced to the Nebraska Triplicate Nursery (NTN). Currently in the NIN there are 3lines from this nursery. In 2004, 12 lines were continued for further testing in the irrigated nursery and 10 lines were advanced to the Nebraska Triplicate Nursery (NTN). In 2003, 8 lines were continued for further testing in the irrigated nursery and 5 lines were advanced to the NTN. In the 2004 NIN, one Irrigated/Dry sample was submitted for large-scale quality analyses to the Nebraska Wheat Quality Laboratory, entry NI02425. The flour yield from the Buhler Mill was 72.0%. (Good). The Mill Type was noted to be Fair+. Flour protein was 11.9 % (14MB), and the baking scores were:

Good+ (External), Good-(Crumb Grain) and Fair (Crumb Texture). The texture was noted to be weak. It needs to be noted that with all the bread produced from the 2004 advanced nurseries, the texture was often adversely affected by extensive rainfall prior to harvest. From the 2004 Triplicate Nursery, three entries were analyzed by large-scale methods. These were NI01824, NI 03418 and NI 03427. All three samples had acceptable quality. However, the first two entries were noted to have slightly weak crumb texture. NI03427 received a Good- texture score. Ten experimental lines and one check (Wesley) were received and analyzed from the 2004 Duplicate Nursery. One entry, NI 04421, received very good to good bread scores, and the quality indicates very good quality potential overall. The nine additional lines had acceptable quality characteristics. Again, rainfall at harvest adversely impacted the crumb texture. The check sample, Wesley, received a texture score of Fair, and the texture was noted to be"Gummy."

4. Nebraska Intrastate Nursery:

The 2005 Nebraska Intrastate Nursery (NIN) was planted at six locations (Lincoln, Clay Center, North Platte, Sidney, Hemingford, and Mead, NE). As a cost savings, Lincoln had four replications, but all other trials had three replications. Because we are concerned about end-use quality and maintaining the high levels we have had in the past, our "cumulative" quality score is listed under the column listed as "QUAL" (1 = exceptional; 2 = Nebraska historical quality; 3 = minimally acceptable, low protein will hurt this line; 9 = do not let the door hit you on the way out if you ever send it to the quality lab again). Two of the better lines NE02495 and NE02592 were retained for their yield potential but will never be advanced for possible release. The 2005 data are listed below:

VARIETY	QUAL	Linc.	Rank	Mead	Ran	C.Center	Ran	N. Platte	Ran	Sidney	Ran	Hemm.	Ran	State Avg.	Rank
		Bu/a		Bu/a		Bu/a		Bu/a		Bu/a		Bu/a			
WESLEY	**2.0**	**69.61**	**39**	**72.90**	**35**	**68.65**	**39**	**42.58**	**40**	**22.00**	**60**	**57.63**	**59**	**55.56**	**57**
ALLIANCE	**2.0**	**69.78**	**38**	**63.08**	**54**	**67.83**	**42**	**41.10**	**45**	**52.50**	**28**	**80.23**	**8**	**62.42**	**42**
N97V121	2.0	64.27	50	83.89	5	68.74	38	43.22	37	36.83	59	64.73	51	60.28	47
NE99489	1.0	79.07	5	57.87	57	59.24	55	41.61	42	54.50	24	76.92	17	61.54	44
NE99495	1.0	77.38	8	72.83	36	63.81	49	36.19	53	47.83	46	79.26	11	62.88	39
NE99656-1	1.0	76.01	12	71.50	40	60.54	52	40.16	47	51.83	31	80.37	6	63.40	36
NE00403	2.0	74.87	17	62.33	55	73.69	29	37.97	52	54.50	23	82.02	5	64.23	31
NE01422	2.0	69.15	41	78.63	16	68.11	41	51.94	14	56.83	12	76.39	19	66.84	18
NE01481	2.0	79.56	2	82.94	6	75.32	24	42.71	39	49.67	41	79.26	12	68.24	12
NE01508	1.0	53.43	59	81.94	11	60.00	54	45.84	31	44.67	51	67.56	44	58.91	52
NE01533	1.0	65.23	48	73.65	33	76.73	20	51.34	15	44.50	52	71.04	37	63.75	35
NE01550	1.0	73.22	25	66.21	52	70.61	36	50.15	21	41.33	55	63.09	55	60.77	46
NE01603	1.0	73.71	22	73.26	34	78.53	15	41.57	43	40.67	56	64.45	54	62.03	43
NE01604	1.0	73.84	20	86.09	3	78.10	16	47.74	25	55.50	18	73.08	27	69.06	10
NE01643	3.0	79.30	3	76.91	20	88.13	3	45.89	30	62.50	2	78.42	13	71.86	4
NE02465	1.0	66.69	47	77.41	17	75.59	23	44.62	33	56.33	14	76.70	18	66.22	23
NE02484	2.5	55.33	58	67.52	49	71.80	34	43.14	38	51.00	34	71.45	35	60.04	48
NE02495	**9.0**	85.80	1	85.98	4	76.90	18	50.42	20	52.17	30	75.45	24	71.12	**7**
NE02513	2.0	70.11	37	74.66	24	85.29	4	47.83	24	51.00	35	71.41	36	66.72	20
NE02528	2.0	70.29	35	74.53	25	80.00	12	57.24	5	55.67	17	71.80	34	68.26	11
NE02532	2.0	64.84	49	65.42	53	71.28	35	50.66	19	55.00	21	77.86	15	64.18	33
NE02533	2.0	70.87	33	74.31	26	74.34	26	46.65	28	55.33	20	84.28	3	67.63	16
NE02549	2.0	73.03	27	68.23	47	75.97	22	52.69	11	53.33	25	77.58	16	66.81	19
NE02558	2.0	70.49	34	74.03	29	81.21	10	64.38	2	60.50	7	79.60	9	71.70	5
NE02584	2.0	69.24	40	82.81	7	90.49	2	54.51	8	50.83	36	67.37	46	69.21	9

NE02588	2.0	73.40	24	69.47	42	81.38	9	52.71	10	51.33	32	72.03	31	66.72	21
NE02592	9.0	72.81	28	94.00	1	82.85	5	68.66	1	49.67	40	74.59	25	73.76	1
HARRY		**78.71**	**7**	**66.47**	**51**	**49.83**	**59**	**22.37**	**60**	**50.50**	**37**	**83.70**	**4**	**58.60**	**55**
MILLENNIUM		**76.44**	**10**	**73.88**	**30**	**78.73**	**14**	**44.97**	**32**	**53.33**	**26**	**76.38**	**20**	**67.29**	**17**
Hallam	**1.0**	**73.11**	**26**	**68.34**	**46**	**72.77**	**33**	**39.58**	**48**	**49.00**	**43**	**73.69**	**26**	**62.75**	**41**
Infinity	**2.0**	**72.54**	**30**	**80.57**	**12**	**73.79**	**28**	**49.71**	**23**	**55.00**	**22**	**76.34**	**21**	**67.99**	**14**
WAHOO		**68.47**	**43**	**69.16**	**43**	**67.23**	**44**	**50.82**	**17**	**57.17**	**11**	**78.01**	**14**	**65.14**	**27**
NH01036	2.5	62.00	54	66.69	50	52.63	58	35.20	55	45.83	49	67.79	43	55.02	59
NH01037	2.5	76.23	11	61.21	56	60.85	51	32.21	57	49.33	42	71.92	32	58.63	54
NI02425	2.0	76.97	9	88.34	2	77.20	17	59.61	4	57.50	10	71.90	33	71.92	3
NE03417	2.0	56.65	57	73.80	32	60.05	53	35.36	54	49.67	39	62.90	56	56.41	56
NE03424	2.0	63.96	51	76.23	21	58.61	56	34.95	56	52.83	27	66.01	50	58.77	53
NE03432	1.0	61.42	55	71.80	39	64.12	48	47.62	26	48.33	45	62.16	57	59.24	50
NE03435	1.0	73.71	23	79.27	15	81.55	8	46.47	29	38.17	58	59.91	58	63.18	38
NE03457	2.0	63.65	53	75.23	22	75.14	25	51.16	16	64.67	1	79.54	10	68.23	13
NE03458	1.0	78.89	6	68.49	44	80.30	11	52.04	13	61.50	3	88.45	1	71.61	6
NE03488	2.0	74.10	19	68.38	45	73.09	32	43.99	34	60.83	6	70.09	39	65.08	28
NE03490	2.0	75.43	13	75.22	23	73.59	30	38.76	50	49.83	38	70.05	40	63.81	34
NE03522	3.0	73.84	21	71.99	38	73.28	31	38.99	49	48.67	44	69.79	42	62.76	40
NH03609	2.0	74.34	18	82.41	8	76.73	21	40.53	46	46.67	48	64.71	52	64.23	32
NH03614	1.0	72.08	32	70.24	41	68.54	40	41.15	44	61.33	4	75.84	23	64.86	30
NI01824	2.0	47.45	60	77.09	19	67.03	45	54.38	9	45.00	50	64.52	53	59.25	49
NI03418	2.0	67.66	45	74.15	27	76.80	19	46.66	27	56.17	15	69.84	41	65.21	26
NI03427	2.0	74.99	16	73.82	31	79.81	13	43.24	36	51.00	33	67.53	45	65.07	29
NW03637	1.0	72.19	31	79.53	13	66.01	46	38.11	51	40.33	57	70.46	38	61.11	45
NW03638	3.0	67.77	44	77.22	18	68.94	37	55.71	6	55.67	16	72.40	29	66.29	22
NW03654	2.5	66.82	46	72.73	37	67.71	43	50.13	22	56.50	13	80.30	7	65.70	24
NW03665	2.0	68.75	42	82.25	9	63.37	50	50.81	18	47.17	47	67.23	48	63.26	37
NW03666	2.0	72.70	29	79.50	14	81.99	7	42.23	41	43.33	53	72.03	30	65.30	25
NW03670	1.0	75.24	14	67.55	48	74.09	27	54.58	7	60.50	8	75.98	22	67.99	15
NW03681	3.0	70.29	36	82.03	10	82.30	6	59.98	3	58.83	9	67.27	47	70.12	8
NW03698	3.0	79.30	4	54.92	58	64.50	47	26.75	59	55.50	19	72.92	28	58.98	51
GOODSTREAK		**75.12**	**15**	**74.08**	**28**	**93.36**	**1**	**52.35**	**12**	**61.00**	**5**	**84.38**	**2**	**73.38**	**2**
SCOUT66		**60.33**	**56**	**54.44**	**59**	**45.45**	**60**	**30.53**	**58**	**41.83**	**54**	**54.66**	**60**	**47.87**	**60**
CHEYENNE		**63.87**	**52**	**49.08**	**60**	**56.56**	**57**	**43.78**	**35**	**52.33**	**29**	**66.54**	**49**	**55.36**	**58**
GRAND MEAN		**70.61**		**73.31**		**71.85**		**45.80**		**51.39**		**72.50**			
CV	0.000	7.29		6.39		8.73		10.22		8.47		6.76			
LSD	0.000	6.02		6.34		8.49		6.34		5.89		6.64			

All of the testing sites had very good grain yields. Hemingford was sprayed with fungicides so this is a "disease-free" nursery. Goodstreak, Millennium, and Infinity CL performed very well among the "released" varieties, but a number of excellent experimental lines are progressing well towards future release (the previously mentioned NE01643 with minimally acceptable end-use quality and NI02425 with better quality).

Thirty-five entries were received at the Wheat Quality Laboratory from the 2004 NIN (continued in the 2005 NIN) for large-scale analysis. This group included thirty experimental lines and five checks. Two lines were noted to have exceptionally good quality potential. These are: NE02533 and NE02549. In a year when the majority of entries (experimental and released varieties) had crumb texture quality adversely affected by pre-harvest rainfall, these two lines had Good+ and VGood- texture scores. There were no lines recommended to be eliminated for poor quality characteristics. Experimental entry, NE01643, earmarked for future release, received minimally

acceptable bread scores.

From the 2004 Triplicate Nursery,(2005NIN) twenty-five samples were also received at the Nebraska Quality Laboratory for large scale evaluations. There were twenty two experimental lines and three checks. Entry NE03417 was noted for exceptionally good bread production potential. It was note for: Bright White crumb grain, and received scores of: External = Good, Crumb Grain = Very good, Crumb Texture = Very good-. Three experimental white wheat lines had good or acceptable Falling Number Values. A Falling Number Value of 250 seconds or above indicates a resistance to pre-harvest sprouting. These lines are: NW03670, NW03681, and, NW03698. In this nursery, as in all the advanced nurseries from 2004 crop, the majority of the entries, (experimental or released) had texture scores that were adversely affected by pre-harvest sprout damage.

Thirty-one experimental lines were retained for continued testing in the 2006 NIN if you include lines that are reselections of previous selections. The reselections came form our NIN purity trial where we identified stripe rust resistant lines or lines with better microquality attributes in heterogeneous selections. Ten released varieties were also retained to represent the primary varieties grown in Nebraska.

The 2004 data are listed below:

VARIETY	Linc	Mead	C.Center	N.Platte	Sidney	Alliance	STAVG04	St. Rank	Winner. SD	TWT
WESLEY	91.71	23.79	70.20	60.93	50.00	54.18	58.47	38	39.9	53.2
ALLIANCE	95.56	30.35	63.12	64.39	49.95	49.40	58.80	33	45.0	57.6
N97V121	95.51	30.03	71.57	66.18	56.58	54.03	62.32	10	45.8	54.2
Hallam	100.68	36.71	70.86	54.27	49.43	46.06	59.67	27	42.7	55.6
NE99464	84.76	29.78	64.93	61.29	51.57	50.21	57.09	44	42.8	54.8
NE99495	96.65	35.82	50.80	62.52	54.86	51.60	58.71	35	32.3	53.9
NE99543	91.82	41.15	60.17	59.47	51.05	53.60	59.54	28	40.8	58.5
NE00403	86.62	30.99	59.97	55.92	53.21	55.01	56.95	45	47.2	55.1
NE00564	92.83	23.45	60.77	49.32	55.27	53.69	55.89	50	36.5	53.4
NE00633	87.97	26.78	67.12	64.36	51.14	49.43	57.80	42	39.2	56.9
NE00658	91.63	28.56	41.28	58.53	53.14	49.69	53.81	54	44.0	56.5
NE01422	100.73	41.79	78.05	49.23	48.62	47.61	61.01	16	53.1	57.4
NE01481	105.84	29.96	62.29	56.16	49.12	47.64	58.50	37	46.5	55.7
NE01508	85.37	25.10	83.52	58.08	53.59	46.96	58.77	34	25.4	53.7
NE01533	97.81	39.71	76.41	49.71	50.69	45.62	59.99	24	49.4	57.7
NE01603	98.53	29.91	70.92	71.68	46.65	48.34	61.01	17	45.5	58.6
NE01550	91.74	28.79	66.90	63.42	47.93	53.09	58.65	36	39.4	57.3
NE01604	95.86	41.15	66.26	61.39	56.70	59.71	63.51	7	42.7	55.8
NE01564	98.82	36.19	52.05	56.37	52.81	53.66	58.32	41	49.1	56.3
NE01643	93.92	34.63	75.34	60.39	51.91	56.75	62.16	12	57.4	58.0
NE01709	90.75	31.40	72.62	55.99	47.72	48.10	57.76	43	41.7	56.0
NI01828	96.71	16.82	54.66	53.08	50.78	45.03	52.85	56	38.9	55.0
NE99533-3	83.35	23.53	47.43	64.12	54.38	59.28	55.35	52	38.2	53.5
NE99533-5	83.00	18.12	61.86	61.17	55.69	53.26	55.52	51	45.1	59.2
NE99656-1	104.93	28.70	58.56	58.37	54.93	50.12	59.27	29	46.8	57.7
NE99489	110.09	28.97	75.67	57.73	51.86	50.87	62.53	9	49.6	55.6
NE99656	102.86	30.60	66.56	60.43	53.93	49.08	60.58	22	48.9	56.7
NE00435	88.30	11.34	63.84	60.55	41.61	54.91	53.43	55	34.7	56.6
HARRY	99.44	34.65	54.14	63.40	58.66	54.62	60.82	20	41.4	52.0
MILLENNIUM	91.76	31.95	71.93	62.50	49.79	50.26	59.70	26	51.7	57.5

WAHOO	101.60	30.14	54.58	63.85	53.49	47.10	58.46	39	53.0	56.0
NE02484	93.92	21.69	79.94	61.05	51.16	52.23	60.00	23	35.6	53.8
NE02495	94.39	48.53	67.45	64.97	52.84	57.71	64.32	4	44.5	55.9
NE02496	91.46	37.67	78.86	54.19	53.65	50.81	61.11	14	40.0	52.0
NE02513	93.50	36.09	69.18	57.56	52.75	55.50	60.76	21	44.1	58.3
NE02528	91.89	35.33	63.62	61.75	53.78	59.91	61.05	15	42.0	58.2
NE02533	102.03	28.46	68.45	63.78	53.60	57.32	62.27	11	47.1	56.8
NE02545	91.83	28.90	52.95	55.79	50.17	47.82	54.58	53	45.2	56.4
NE02549	95.24	30.46	62.45	61.55	55.49	54.04	59.87	25	58.7	58.9
NE02558	103.94	47.39	70.37	61.26	53.22	56.23	65.40	2	58.3	58.2
NE02584	99.26	37.18	83.17	70.23	57.11	59.91	67.81	1	51.9	59.5
NE02588	102.54	33.40	66.81	63.84	50.07	49.97	61.11	13	51.0	55.1
NE02592	106.29	40.35	63.87	59.98	52.29	43.30	61.01	19	53.5	57.6
NE02647	88.61	14.61	66.57	57.89	44.52	43.05	52.54	57	36.9	54.0
NE02672	96.75	23.32	62.20	57.60	55.90	41.99	56.29	48	43.5	55.1
NI02425	96.54	39.36	82.50	59.06	57.98	54.88	65.05	3	43.6	55.1
Infinity CL	103.62	35.86	70.38	63.00	55.46	57.42	64.29	5	45.3	58.3
NE02465	97.68	22.17	79.25	54.63	47.09	53.72	59.09	31	19.9	49.8
NE02501	86.28	34.54	71.39	55.67	51.70	53.50	58.85	32	38.5	56.3
NE02512	82.86	28.99	37.30	52.12	45.16	48.39	49.14	60	37.0	58.1
NE02532	95.27	37.81	82.27	63.93	50.25	55.41	64.16	6	49.8	58.0
NH01036	95.60	33.07	79.83	59.20	51.24	47.11	61.01	18	43.4	54.4
NH01037	100.30	27.44	74.67	50.50	51.96	49.81	59.11	30	39.7	53.8
NH01048	97.60	26.88	67.16	53.52	56.04	49.23	58.41	40	52.3	55.4
NH01049	92.16	19.54	72.24	55.52	50.39	45.73	55.93	49	37.6	51.5
NH01042	87.45	20.98	71.59	60.11	50.67	47.83	56.44	47	45.1	54.4
CHEYENNE	86.33	22.98	51.71	50.21	50.00	46.40	51.27	58	46.3	56.4
SCOUT66	75.40	25.07	47.97	52.19	48.71	46.51	49.31	59	44.0	59.7
PRONGHORN	93.03	21.53	61.20	55.91	50.60	57.96	56.71	46	41.2	57.2
GOODSTREAK	100.98	40.64	67.83	57.05	54.67	56.06	62.87	8	50.3	57.8
GRAND MEAN	94.66	30.52	66.13	58.98	51.93	51.48	58.95		44.02	
CV	4.33	11.44	9.65	8.32	5.85	6.99			13.8	
LSD	4.80	4.72	8.64	6.65	4.11	4.87			9.8	

Data for 2003 NIN are given below:

					----------Yield----------								
VARIETY	H.date	Height (in)	Dis	Dis	Linc. bu/a	Mead bu/a	C. Center bu/a	N.Platte bu/a	Sidney bu/a	Julesburg bu/a	Average bu/a	Rank	Tst.Wgt lbs/bu
WESLEY	26.00	31.58	3	BYD	85.39	24.65	74.01	55.95	51.01	63.60	59.10	16	57.65
ALLIANCE	26.00	31.29	4	BYD	76.43	34.88	65.92	51.58	52.56	74.45	59.30	14	59.00
HARRY	27.00	32.09	3	BYD	78.98	44.37	63.85	53.56	68.36	69.90	63.17	5	56.10
NE96737	24.00	32.81	5	TS	77.88	31.09	55.34	58.20	46.61	61.20	55.05	37	58.40
N97V121	23.67	32.15	6	BYD	74.12	45.70	65.07	62.27	44.64	64.50	59.38	12	58.80
NE98466	23.67	32.61	4	TS	68.86	29.27	68.11	43.72	46.91	61.30	53.03	45	58.50
NE98471	26.00	33.52	4	TS	67.63	41.32	74.98	39.93	54.26	66.60	57.45	22	57.55
NE98632	27.33	33.77	5	YR	66.84	42.01	57.88	50.54	48.54	61.05	54.48	40	58.60
NI98439	26.67	33.11	3	BYD	72.14	22.30	65.61	54.22	42.04	68.40	54.12	42	58.90

NE99464	26.33	32.52	1		65.96	36.44	62.83	47.34	64.51	65.60	57.11	24	59.80
NE99489	27.67	34.83	3	YR	78.72	36.12	67.88	53.63	43.73	56.85	56.16	28	57.95
NE99495	26.33	33.86	4	TS	77.34	49.12	69.87	54.88	59.44	56.40	61.18	7	58.70
NE99543	25.00	34.19	5	YR	75.67	50.19	65.07	51.96	43.24	57.65	57.30	23	58.00
NE99656	26.33	33.15	3	YR	71.30	46.98	65.80	55.15	52.12	54.35	57.62	20	58.70
NE99579	26.33	32.52	3	TS	72.07	28.21	59.32	53.11	55.31	63.30	55.22	36	57.75
CULVER	26.33	33.44	5	YR	68.64	33.83	52.34	53.73	46.86	61.60	52.83	47	58.60
MILLENNIUM	26.67	33.52	1	BYD	84.99	47.27	73.48	58.31	56.47	60.75	63.55	3	58.30
WAHOO	27.00	33.40	3	TS	80.48	27.45	61.39	57.17	66.96	62.60	59.34	13	57.95
NE00403	25.33	30.31	5	TS	74.33	32.73	71.42	49.67	48.91	72.55	58.27	18	59.00
NE00429	21.67	31.33	3	TS	76.24	23.28	64.64	52.29	39.51	55.80	51.96	50	58.00
NE00435	22.33	31.73	5	YR	68.67	27.42	54.60	47.04	51.26	61.65	51.77	51	57.55
NE00479	25.33	32.67	1	BYD	87.00	40.05	78.42	44.70	51.36	60.15	60.28	8	57.00
NE00481	27.33	34.52	2		72.88	32.44	70.18	51.07	49.79	59.65	56.00	32	58.30
NE00507	25.67	32.88	8	YR, TS	58.98	35.21	47.30	51.70	47.88	56.90	49.66	56	56.05
NE00544	26.00	35.44	4	BYD	74.29	40.67	60.89	52.76	48.83	59.10	56.09	30	58.80
NE00564	24.00	32.29	5	YR	83.58	29.52	80.60	50.31	42.92	60.85	57.96	19	59.00
NE00633	25.33	33.65	5	TS	72.80	36.89	66.22	53.22	49.29	62.05	56.75	25	58.60
NE00658	26.67	33.92	5	TS	69.09	33.25	41.95	55.09	47.68	61.10	51.36	54	58.80
NE00679	27.33	33.33	3	TS	71.36	29.55	53.16	42.41	55.30	63.00	52.46	49	56.65
NE01422	26.00	32.44	3	TS	77.87	39.71	76.14	49.88	55.71	60.40	59.95	9	58.10
NUPLAINS	28.33	31.69	9	YR	56.45	19.93	50.00	37.27	54.96	48.40	44.50	59	59.55
NIOBRARA	26.33	35.31	7	YR	56.64	29.99	58.87	49.94	55.06	65.30	52.63	48	58.95
NE01435	25.33	32.73	3	TS	79.59	22.50	68.49	56.32	36.88	54.00	52.96	46	59.30
NE01481	25.33	34.13	2	TS	73.50	35.65	78.46	55.62	40.71	65.70	58.27	17	58.80
NE01506	23.00	32.46	6	YR	76.11	45.18	62.38	40.25	41.61	54.45	53.33	44	59.00
NE01508	21.67	31.98	6	YR	79.63	36.99	79.51	47.42	52.43	59.45	59.24	15	59.70
NE01509	22.33	31.38	7	YR	72.91	32.33	53.51	56.16	54.52	57.05	54.41	41	57.10
NE01533	26.33	33.06	2	YR	86.06	50.34	75.92	58.93	42.19	62.05	62.58	6	58.85
NE01602	26.00	32.56	3	YR	74.32	35.31	67.04	54.63	46.78	55.80	55.65	33	58.80
NE01534	23.67	32.17	3	YR	73.26	41.05	64.57	47.75	46.35	56.85	54.97	39	59.50
NE01603	27.33	32.60	7	BYD, YR	76.64	36.28	67.19	52.14	48.91	55.70	56.14	29	59.15
NE01550	26.00	33.65	5	YR	80.55	30.84	71.39	49.44	44.59	55.50	55.39	34	58.85
NE01604	26.00	35.61	4	TS	91.20	52.73	77.34	59.33	45.34	59.40	64.22	2	59.80
NE01564	26.33	32.98	6	YR	65.72	37.85	62.12	60.30	55.90	54.25	56.02	31	57.65
NE01552	26.00	33.15	6	YR	83.41	31.52	69.27	46.38	42.93	49.40	53.82	43	57.75
GOODSTREAK	26.33	35.27	3	TS	85.34	50.60	75.87	51.31	46.41	48.05	59.60	11	59.50
PRONGHORN	24.00	36.00	3	TS	79.73	31.64	65.67	64.23	44.46	54.05	56.63	26	58.40
SCOUT66	25.67	35.50	6	TS	63.20	32.55	38.51	40.03	35.97	46.60	42.81	60	59.15
CHEYENNE	27.33	35.88	6	TS	76.12	32.02	47.60	49.03	44.34	60.05	51.53	52	59.30
NE01601	26.33	33.02	7	TS	70.65	25.27	65.64	51.63	44.10	51.20	51.42	53	58.30
NE01643	27.33	34.37	6	YR	87.62	41.42	76.81	62.39	58.59	60.45	64.55	1	58.50
NE01709	25.33	32.44	2	TS	78.69	29.96	79.61	51.99	41.76	50.20	55.37	35	58.20
NI01808	28.00	32.19	1		68.17	14.68	60.96	59.03	47.07	41.15	48.51	57	56.70
NI01828	28.00	32.29	3	YR	79.40	24.24	71.21	52.75	52.16	50.55	55.05	38	59.60
NE99533-1	26.33	32.88	8	YR	70.33	35.02	61.21	49.06	32.22	51.40	49.87	55	61.30
NE99533-2	26.67	31.38	8	YR	47.51	24.60	56.53	56.74	45.67	53.50	47.43	58	60.00
NE99533-3	27.00	32.31	9	YR	67.82	30.46	63.56	54.78	66.94	61.55	57.52	21	59.05

NE99533-4	26.33	31.19	7	YR	77.63	37.17	73.59	57.76	34.81	56.80	56.29	27	60.10
NE99533-5	27.00	31.63	3		79.33	32.80	79.29	47.59	59.04	59.70	59.63	10	60.00
NE99656-1	27.67	33.92	8	YR	69.75	41.84	81.01	69.33	59.11	58.85	63.32	4	58.75
GRAND MEAN	25.84	33.08			74.30	34.91	65.62	52.42	49.23	58.68	55.86		58.58

Data from 2003 to 2005 from the Nebraska Intrastate Nursery for Grain Yield (bu/a)

VARIETY	Linc.	Mead	ClayCen.	N.Platte	Sidney	Aliance	Average	**Rank**
ALLIANCE	80.59	42.77	65.62	52.36	51.67	64.82	59.16	**9**
CHEYENNE	75.44	34.69	51.96	47.67	48.89	56.47	52.15	**14**
CULVER	81.58	49.52	71.18	54.38	54.18	70.22	62.44	**5**
Goodstreak	86.38	51.88	73.17	48.39	48.28	59.88	61.44	**6**
Hallam	81.93	47.48	59.65	41.90	54.47	69.16	58.35	**10**
HARRY	**86.35**	**51.37**	**70.99**	**53.84**	**59.05**	**66.90**	**64.47**	**2**
MILLENNIUM	80.34	54.37	71.38	54.68	47.70	57.50	61.36	**8**
NE01422	86.05	54.81	76.50	47.27	51.33	63.44	63.04	**3**
NE01604	88.79	56.93	77.24	55.54	54.85	69.07	66.85	**1**
NE01643	86.87	44.64	70.46	54.80	55.00	66.84	63.02	**4**
NE99495	83.33	52.15	60.40	52.52	55.38	65.99	61.41	7
SCOUT66	69.02	42.26	51.24	47.68	47.28	62.26	52.17	**13**
WAHOO	83.90	43.50	61.54	54.53	47.48	52.37	57.57	**12**
WESLEY	88.55	24.22	72.11	58.44	50.51	54.18	58.34	**11**

Note the excellent, consistent performance of NE01643, NE01604, and NE01422. These lines area under increase for possible release. NE01643 might be released in 2006. Also, note the lower yields of Wahoo (favored in late seasons), Wesley (requires moisture/irrigation), and Hallam (favored in eastern NE), which is an indication of narrower areas of adaptability.

5. Nebraska Triplicate Nursery (NTN):

The same comments about the NIN data apply to the NTN with the exception that wheat soilborne mosaic virus was much more severe in this nursery than in the NIN at Lincoln. The 2005 data are:

VARIETY	Linc.	RK	Mead	RK	C.Cen.	RK	N. Plat	RK	Sidn.	RK	Hemm.	RK	St. Avg.	RK	HT	HD
	bu/a		bu/a		bu/a		bu/a		bu/a		bu/a		bu/a		in	d
NE04424	77.0	20	85.3	3	91.9	2	56.9	5	52.2	13	75.5	46	73.1	4	35.8	17.2
NE04435	49.8	54	86.1	1	93.4	1	50.4	18	47.6	29	72.1	50	66.6	17	35.2	19.2
NE04449	69.8	34	76.5	15	81.3	9	39.8	42	49.1	26	87.5	3	67.3	13	32.8	19.4
NE04466	56.0	49	84.3	5	77.6	14	48.5	24	55.5	7	86.3	6	68.0	11	33.2	21.8
NE04475	42.7	58	85.3	2	75.6	22	53.7	12	55.8	6	90.1	2	67.2	14	35.3	21.4
NE04488	49.0	55	84.7	4	62.3	53	33.6	51	31.1	60	63.0	59	53.9	58	34.4	20.6
NE04490	99.0	1	82.0	8	84.6	6	64.5	2	59.7	2	86.6	5	79.4	1	36.4	20.4
NE04495	77.8	18	75.2	18	54.4	58	35.9	46	44.4	40	79.2	30	61.1	43	35.3	19.4
NE04496	86.7	4	68.4	43	70.9	38	34.3	50	40.7	52	81.8	19	63.8	33	33.6	20.1
NE04437	67.3	39	62.5	57	73.0	33	46.1	27	56.0	5	81.5	21	64.4	30	33.0	17.7
NE04499	81.3	13	62.5	56	56.3	57	29.2	59	41.8	48	79.9	28	58.5	55	35.7	20.0
NE04508	41.8	59	69.3	39	58.2	56	25.4	60	43.7	42	83.3	16	53.6	59	36.9	22.2
NE04509	51.8	52	72.3	30	70.7	39	33.0	52	49.8	23	77.9	33	59.3	52	43.0	21.2
NE04529	82.8	10	75.8	17	77.2	16	30.9	56	41.3	50	79.8	29	64.6	27	53.7	23.1
NE04537	62.2	43	77.9	10	85.1	5	56.9	4	54.2	9	83.6	12	70.0	6	39.8	20.9

NE04544	81.7	12	77.6	13	52.1	60	32.4	53	43.2	45	85.5	9	62.1	41	37.0	21.3
NE04547	71.3	30	74.6	22	75.8	21	47.4	25	38.1	56	71.6	52	63.2	38	31.6	20.8
NE04548	74.7	24	69.7	36	70.9	37	45.9	28	36.8	57	63.4	58	60.2	47	25.2	22.0
NE04549	71.2	31	76.4	16	69.1	45	47.3	26	36.3	58	65.4	57	60.9	44	30.5	22.3
Jagalene	**74.5**	**25**	**79.2**	**9**	**87.3**	**3**	**61.4**	**3**	**57.2**	**4**	**84.3**	**10**	**74.0**	**3**	**32.1**	**19.2**
NE04550	93.8	2	67.4	45	73.5	30	35.2	49	52.7	11	86.0	7	68.1	10	38.2	21.0
NE04574	56.7	48	61.3	59	61.5	54	49.8	21	62.0	1	76.9	40	61.4	42	34.9	22.3
NE04583	59.5	47	73.5	26	73.7	29	44.0	34	52.2	14	78.7	32	63.6	35	34.6	21.6
NE04584	61.8	44	75.1	19	70.0	43	35.8	47	49.2	25	83.4	14	62.6	40	36.8	22.2
NE04465	60.5	46	77.9	11	83.1	8	50.9	17	51.3	16	80.4	26	67.3	12	32.8	20.1
NE04587	48.8	56	66.2	48	73.0	34	39.0	43	42.4	47	66.8	56	56.0	57	30.4	21.6
NE04607	67.5	38	74.7	21	77.0	17	30.8	57	38.6	54	75.7	45	60.7	45	35.0	21.3
NE04613	70.1	33	73.9	23	75.9	20	50.4	19	46.3	30	70.7	54	64.6	28	33.9	22.6
NE04615	55.7	50	72.1	31	75.2	24	31.1	55	45.0	37	81.9	18	60.2	48	31.4	22.5
NE04617	62.3	42	73.5	27	74.7	25	44.6	32	50.5	21	78.9	31	64.1	31	37.7	24.5
NE04636	78.7	16	65.9	49	64.3	51	51.5	15	50.6	20	80.9	22	65.3	24	40.9	23.6
NE04653	85.0	5	72.1	32	73.8	28	50.0	20	38.2	55	77.6	34	66.1	19	36.1	21.9
NE04662	73.0	26	62.9	55	75.3	23	53.8	11	50.8	19	80.5	24	66.0	20	35.8	22.4
NE04665	83.8	7	71.9	33	79.0	12	54.9	8	49.8	24	76.9	39	69.4	7	36.7	23.1
NE04667	64.8	40	65.1	52	73.1	32	55.7	7	43.8	41	77.3	37	63.3	37	35.1	23.1
NW04668	62.8	41	67.0	46	62.8	52	38.9	44	43.3	44	82.0	17	59.5	50	33.4	17.8
NW04673	79.0	15	69.6	37	80.6	11	49.5	22	52.3	12	83.3	15	69.1	8	35.3	20.0
NW04679	75.0	23	68.8	40	76.9	18	54.6	10	43.7	43	69.2	55	64.7	26	36.8	21.0
NE04477	52.2	51	73.9	24	73.4	31	45.3	30	41.2	51	75.8	44	60.3	46	33.6	20.7
Pronghorn	**48.2**	**57**	**69.6**	**38**	**70.2**	**41**	**38.8**	**45**	**53.4**	**10**	**80.4**	**25**	**60.1**	**49**	**38.4**	**20.0**
NW04685	75.5	22	73.4	28	76.3	19	51.1	16	45.5	34	76.7	41	66.4	18	34.5	20.9
NW04686	71.5	28	74.8	20	69.6	44	44.0	33	45.7	33	77.3	36	63.8	32	33.8	21.2
NW04687	82.0	11	68.2	44	66.7	48	45.7	29	45.3	35	83.5	13	65.2	25	34.8	21.1
NW04688	89.8	3	69.8	35	74.0	27	44.7	31	44.7	38	85.6	8	68.1	9	34.5	20.9
NW04689	83.3	8	64.6	53	69.1	46	43.3	37	41.4	49	80.8	23	63.7	34	35.4	20.5
NW04693	40.2	60	66.5	47	65.9	50	32.0	54	39.7	53	72.3	49	52.8	60	34.6	21.4
NW04697	61.3	45	71.1	34	83.9	7	42.2	38	44.5	39	77.2	38	63.4	36	35.3	22.9
NW04698	76.8	21	68.5	42	59.2	55	30.6	58	48.6	27	71.7	51	59.2	53	33.2	23.5
NW04699	50.0	53	82.0	7	78.5	13	43.6	36	50.8	18	72.6	48	62.9	39	32.9	24.3
NI04411	80.0	14	61.5	58	72.2	35	51.5	14	54.8	8	75.2	47	65.9	21	30.4	23.5
NI04412	72.5	27	68.5	41	66.2	49	43.8	35	51.8	15	84.2	11	64.5	29	35.5	23.3
NI04414	77.0	19	73.7	25	74.0	26	52.1	13	48.2	28	76.1	43	66.9	15	35.5	22.9
NI04416	68.0	36	77.8	12	77.6	15	54.6	9	45.2	36	76.6	42	66.6	16	34.8	21.2
NI04419	78.0	17	64.5	54	54.1	59	35.8	48	46.3	31	77.5	35	59.4	51	32.9	17.8
NI04420	83.2	9	82.7	6	86.5	4	56.2	6	50.0	22	86.9	4	74.3	2	35.5	17.3
NI04421	70.8	32	65.4	51	81.0	10	71.3	1	57.5	3	92.6	1	73.1	5	37.1	20.4
NI04428	84.8	6	72.5	29	68.1	47	41.0	40	45.7	32	80.1	27	65.4	23	32.8	19.1
NI04439	67.8	37	60.3	60	70.1	42	41.0	39	43.2	46	71.3	53	58.9	54	35.3	20.6
NI04427	71.5	29	76.6	14	72.0	36	41.0	41	51.3	17	81.7	20	65.7	22	33.9	19.8
Wesley	**69.3**	**35**	**65.8**	**50**	**70.4**	**40**	**49.0**	**23**	**33.3**	**59**	**59.8**	**60**	**57.9**	**56**	**31.7**	**21.9**
GRAND MEA	**69.4**		**72.3**		**72.8**		**44.9**		**47.1**		**78.3**		**64.1**		**35.0**	**21.1**
CHECK MEA	**64.0**		**71.5**		**76.0**		**49.7**		**48.0**		**74.8**		**64.0**			

CV	16.5	6.1	7.3	10.2	7.8	7.5						
LSD	15.5	6.0	7.2	6.2	5.0	7.9						

The nursery mean is near the check line mean, indicating there are many high yielding experimental lines. Jagalene continues to perform at many locations. Nineteen lines were advanced to the 2005 NIN.

From the 2004 Duplicate Nursery (2005 NTN), forty seven experimental lines and two checks (Jagalene and Pronghorn) were received at the Nebraska Wheat Quality Laboratory for large scale analyses. Two experimental entries were noted for outstanding bread quality. In a year where excessive rainfall prior to harvest adversely affecting bread quality, both of these lines indicate potential for very good bread making. These entries are: NE04466, and NE04508. There were no lines recommended to be eliminated for poor quality. However, the vast majority of crumb texture scores were low, due to the adverse affect of pre-harvest sprouting in 2004. There were thirteen experimental lines with noted with NW designations for white wheat. Three of these lines, NW04697, NW04698, and NW04699 had Falling Numbers above 300 seconds. This would indicate resistance to pre-harvest sprouting. From the other ten entries, the Falling Numbers were below 300 seconds. This indicates a susceptibility to pre-harvest sprouting.

The 2004 data are:

VARIETY	HD AVG	HT. Avg.	Dis.Avg.	Linc.	Mead	Cl. Center	N. Platte	Sidney	Hemming.	St. Avg.	Rank
NW03405	15.0	27.9	5.2	96.94	35.03	78.33	70.85	49.67	61.93	65.46	6
NE03417	15.1	29.9	5.3	89.15	42.12	67.19	60.88	47.88	55.24	60.41	33
NE03424	15.0	30.2	5.9	90.81	36.06	73.88	62.35	54.69	60.02	62.97	11
NE03426	13.8	28.8	5.9	87.36	40.49	59.25	52.62	44.96	58.33	57.17	54
NE03428	15.5	27.3	6.4	93.38	40.06	74.91	50.89	50.39	51.98	60.27	35
NE03432	15.1	29.7	6.4	99.29	32.27	54.59	60.06	54.25	63.39	60.64	32
NE03434	14.8	25.6	6.9	75.49	27.83	49.45	51.18	37.99	55.82	49.63	60
NE03435	17.3	27.1	5.9	96.68	33.00	75.56	62.51	47.42	59.84	62.50	14
NE03439	14.4	28.4	6.1	92.81	31.91	69.35	51.00	50.73	53.47	58.21	49
NE03442	15.0	28.3	5.4	91.01	36.98	67.82	59.84	51.04	54.84	60.26	36
NE03452	13.5	29.3	6.1	80.16	37.17	66.04	53.21	44.09	52.17	55.47	56
NE03454	17.6	27.4	6.7	84.86	30.18	64.96	50.04	43.28	53.21	54.42	58
NE03457	17.7	25.9	5.7	93.01	35.64	71.21	61.06	50.39	60.95	62.04	16
NE03458	17.3	25.8	5.3	95.78	39.80	70.20	72.37	56.11	69.11	67.23	2
NE03473	16.5	26.7	6.7	95.82	30.46	68.13	60.58	55.82	58.52	61.56	22
NE03482	18.1	28.0	5.9	95.74	32.78	61.16	64.57	50.64	59.84	60.79	30
NE03486	18.3	27.5	5.2	102.94	25.23	65.58	64.86	48.01	55.59	60.37	34
NE03488	18.3	27.5	5.1	100.18	37.61	70.45	67.40	49.29	58.77	63.95	8
NE03490	17.5	26.5	5.3	106.62	35.57	64.79	66.31	55.07	65.89	65.71	5
Jagalene	16.5	26.1	4.8	95.77	23.77	78.28	62.65	53.33	51.26	60.84	29
NE03491	16.4	28.1	6.8	98.40	29.31	68.81	62.25	51.68	59.14	61.60	21
NE03511	14.6	27.4	6.8	88.01	31.76	72.43	56.96	49.70	55.35	59.04	41
NE03515	17.4	29.8	6.4	93.97	31.58	58.28	68.13	52.84	56.11	60.15	37
NE03518	16.4	29.1	5.2	100.03	42.30	76.27	59.13	56.56	60.21	65.75	4
NE03520	17.7	31.0	5.1	89.05	32.64	59.71	59.79	48.78	55.14	57.52	53
NE03522	17.3	30.7	5.0	97.81	38.14	59.96	60.50	55.22	60.33	61.99	17
NE03524	17.5	28.0	5.5	89.22	30.03	67.68	59.80	42.65	53.42	57.13	55
NE03531	14.2	27.1	7.5	83.15	35.40	58.54	61.83	50.02	62.21	58.53	45
NE03532	18.7	28.0	5.7	90.88	38.74	55.13	64.02	49.73	56.04	59.09	40
NE03535	18.8	27.6	5.9	97.18	33.05	62.74	60.48	51.16	61.44	61.01	26

NE03580	19.6	28.9	7.2	97.59	25.92	63.79	65.80	52.05	60.81	60.99	27
NE03581	20.5	27.2	5.1	107.77	29.27	54.72	63.92	41.04	59.36	59.35	39
NE03582	20.3	27.9	6.2	93.53	18.24	75.18	61.62	43.93	59.97	58.75	42
NE03595	20.0	28.2	7.0	97.74	21.80	56.00	60.09	49.49	61.34	57.74	51
NH03609	18.4	27.3	6.0	97.00	32.85	78.37	66.55	53.80	58.94	64.59	7
NH03614	16.5	27.0	5.8	99.49	33.81	90.56	69.50	53.74	65.08	68.70	1
NW03621	13.8	27.6	5.0	85.96	39.53	68.22	57.32	45.51	55.07	58.60	44
NW03631	16.7	29.9	7.1	98.66	22.83	63.05	57.65	46.27	61.80	58.38	47
NW03637	17.7	28.8	6.1	95.62	36.67	62.55	63.97	46.41	62.53	61.29	24
Millennium	18.9	30.0	5.0	98.84	29.24	70.62	65.55	55.33	57.39	62.83	12
NW03638	16.3	29.4	5.9	99.07	35.81	68.15	68.06	51.62	57.56	63.38	10
NW03640	17.6	28.7	6.3	92.10	33.18	57.86	63.10	47.89	56.41	58.42	46
NW03642	15.9	28.6	6.7	84.13	27.70	73.85	58.06	48.15	58.01	58.32	48
NE03643	17.7	26.0	6.1	92.79	36.26	77.42	59.10	47.13	57.27	61.66	20
NW03644	18.5	28.7	6.6	82.88	27.21	48.89	60.26	51.23	61.61	55.35	57
NW03647	17.9	30.7	5.9	90.82	22.79	54.58	53.14	44.63	55.30	53.54	59
NW03654	15.1	28.5	5.6	95.61	35.29	56.34	60.61	52.48	65.36	60.95	28
NW03665	18.1	29.3	6.2	99.08	26.03	66.30	61.68	47.73	66.75	61.26	25
NW03666	18.8	28.8	5.8	99.28	32.79	57.10	65.53	51.05	64.62	61.73	19
NW03670	18.1	29.9	6.2	93.54	34.99	69.51	61.46	54.55	62.22	62.71	13
NW03671	17.6	28.3	6.0	93.39	31.74	43.78	61.64	59.53	55.86	57.66	52
NW03681	19.3	28.0	4.9	102.15	39.92	82.37	65.68	51.45	53.33	65.82	3
NW03694	20.9	29.1	6.0	105.91	29.77	64.26	59.93	48.78	55.83	60.75	31
NW03698	21.6	29.1	5.0	98.01	23.31	56.73	64.20	53.10	60.82	59.36	38
NI01824	13.6	27.6	6.4	95.17	33.20	69.31	63.62	52.17	57.17	61.77	18
NI03418	15.3	26.9	6.6	96.25	30.97	76.46	62.26	55.62	58.99	63.43	9
NI03426	17.7	26.8	5.7	98.86	18.88	69.25	64.78	47.90	52.50	58.70	43
NI03427	19.8	26.7	5.3	97.52	23.90	73.73	69.36	48.44	56.03	61.50	23
NI03434	18.4	27.3	5.7	86.56	25.65	81.48	59.28	48.20	46.64	57.97	50
Pronghorn	16.0	29.4	6.2	92.07	38.48	69.64	62.71	50.41	59.97	62.21	15

The data for 2003 was:

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VARIETY	H.date	Height	Linc.	Mead	C.Center	N. Platte	Sidney	Ave.	Rank	SR
NE02423	24.5	31.5	70.1	51.76	65.50	55.71	41.86	56.99	36	2-
NE02427	23.3	39.5	84.8	53.51	46.32	54.55	54.28	58.69	30	2
NE02462	23.5	37.2	79.3	56.21	47.30	53.74	45.85	56.48	37	2,S
NE02463	22.8	36.8	77.8	46.73	75.31	54.70	40.59	59.03	27	2-
NE02464	24.0	36.6	64.3	47.73	47.12	58.69	44.19	52.41	49	2=
NE02465	23.0	35.9	81.5	43.93	70.44	61.39	46.64	60.78	20	23
NE02484	21.0	35.8	85.8	59.26	68.00	61.43	37.90	62.48	15	0
NE02495	25.0	37.3	83.6	57.71	70.49	63.16	46.67	64.33	10	0
NE02496	25.0	35.1	88.4	55.10	80.86	61.15	55.16	68.13	4	0
NE02497	23.2	37.7	79.6	42.29	52.42	61.12	39.83	55.05	43	0
NE02498	23.3	35.6	85.5	54.12	71.58	66.73	58.71	67.33	5	2-
NE02501	21.7	37.0	89.7	55.42	59.39	58.51	49.68	62.54	14	0
NE02504	23.3	39.4	81.5	46.28	66.76	52.74	44.04	58.26	32	2=

NE02511	24.5	37.4	60.8	50.87	37.38	51.93	58.10	51.82	50	2=
NE02512	22.0	36.0	90.9	50.63	60.69	57.71	32.87	58.56	31	;
NE02513	23.5	34.5	99.1	46.11	70.10	70.33	59.48	69.02	2	;
NE02515	22.2	34.8	73.5	43.02	70.30	59.92	40.85	57.52	35	23
NE02528	25.0	36.3	90.0	50.26	68.85	67.01	52.13	65.65	9	0
NE02529	23.3	38.0	60.2	48.82	59.36	62.02	49.72	56.02	39	;
Jagalene	24.3	34.7	91.4	50.50	98.28	66.49	47.00	70.73	1	
NE02530	26.0	37.6	74.4	52.12	56.46	64.67	50.68	59.67	24	2=
NE02532	24.5	34.7	70.4	50.63	65.06	64.76	54.45	61.06	18	2-
NE02533	24.3	38.3	89.9	49.29	87.65	61.76	41.42	66.00	8	---
NE02537	25.0	33.7	71.2	46.83	64.58	57.44	48.49	57.71	34	2
NE02538	26.2	35.4	73.0	46.93	51.86	52.48	47.13	54.28	46	0
NE02541	26.2	35.7	57.5	46.38	29.09	50.15	44.33	45.49	57	23
NE02543	25.3	36.8	31.9	42.74	30.18	53.26	49.00	41.42	59	23
NE02545	26.7	36.3	78.9	50.84	65.45	57.12	54.70	61.40	17	2=
NE02549	27.2	35.8	85.3	46.83	68.24	65.18	49.09	62.93	12	0
NE02558	25.2	37.3	78.3	68.86	57.45	66.17	47.79	63.71	11	2
NE02568	23.3	34.7	71.0	51.16	66.61	63.38	48.68	60.17	22	2=
NE02584	24.2	35.7	91.1	54.66	87.28	64.12	47.14	68.86	3	2=
NE02586	25.3	31.4	73.3	46.62	64.64	63.26	41.74	57.91	33	2-
NE02588	26.8	37.7	89.3	34.65	65.26	65.04	54.73	61.80	16	2=
NE02592	26.5	39.4	88.4	54.24	78.34	63.07	46.71	66.15	7	23
NE02593	27.8	34.6	67.2	43.16	43.95	54.30	44.53	50.63	53	0
NE02594	27.7	34.5	47.6	35.22	31.85	47.44	44.17	41.26	60	23
NE02603	27.3	37.8	60.3	42.86	36.82	49.93	45.59	47.10	55	0
NE02605	26.7	36.7	75.7	45.96	57.39	50.51	48.85	55.68	41	0,S
Pronghorn	23.8	41.2	72.8	35.47	46.08	56.74	44.16	51.05	51	
NE02615	28.3	37.3	85.1	50.55	60.57	59.28	47.27	60.55	21	;
NE02616	28.8	36.4	61.7	44.98	59.57	64.37	47.49	55.62	42	0
NE02629	23.3	34.8	55.0	43.74	43.13	54.00	31.67	45.51	56	0
NE02636	25.7	34.2	70.5	37.74	52.94	59.89	46.23	53.46	48	2
NE02647	22.8	34.4	94.6	49.47	73.67	58.97	28.34	61.01	19	0
NE02648	28.3	34.1	64.9	35.86	39.24	62.78	41.57	48.87	54	0
NE02656	25.2	39.8	72.4	47.82	54.39	63.04	42.22	55.97	40	2-,S
NE02660	27.8	39.5	82.7	49.71	56.71	62.54	46.21	59.57	25	2
NE02662	29.8	37.2	54.9	48.73	48.72	63.63	55.56	54.31	45	2-
NE02665	27.2	34.1	76.9	41.22	70.55	54.27	51.98	58.98	28	;
NE02672	27.2	37.0	80.2	37.80	68.38	69.55	56.87	62.56	13	0
NE02680	30.2	33.2	55.1	33.42	28.58	52.97	42.85	42.58	58	0,2=
NE02683	26.7	36.3	83.6	44.76	67.70	60.54	37.84	58.89	29	2
NI02402	23.7	36.3	76.8	42.89	55.36	64.00	43.00	56.41	38	
NI02425	24.2	36.3	86.0	58.52	71.58	63.72	52.54	66.47	6	
NI02427	26.8	35.0	65.1	27.80	58.06	61.09	42.81	50.97	52	
NI01808	28.0	34.9	74.9	32.75	45.03	64.07	52.05	53.76	47	
NH01045	25.2	38.1	62.2	53.70	50.14	56.33	51.18	54.71	44	1
NH01046	28.2	37.7	66.5	51.29	63.62	66.95	52.21	60.11	23	3
Wesley	26.5	34.2	80.5	42.30	69.11	58.84	45.36	59.22	26	
Mean	25.3	36.2	75.2	47.2	59.6	59.8	46.9	57.8		

6. Regional Nurseries

In 2005, we continued to combine into one larger nursery the Southern Regional Performance Nursery (SRPN), the Northern Regional Performance Nursery (NRPN), which were planted at Lincoln, North Platte, Sidney, and Alliance. At Clay Center, only the SRPN was planted. In addition, we planted in unreplicated plots, our imi mutants to get an idea of how well they performed across the state. The best imi mutants were entered into the State Variety Trial and selected for parents. The data for 2005 are:

		Lincoln	N. Platte	Sidney	Hemm.	St. Avg.	Rank
LINE	CLASS	**bu/a**	**bu/a**	**bu/a**	**bu/a**	**bu/a**	
Kharkof	HRW	37.00	30.35	44.17	60.00	42.88	111
Scout 66	HRW	32.17	30.90	38.33	63.00	41.10	114
TAM-107	HRW	42.50	27.55	41.50	80.33	47.97	107
Trego	HWW	70.67	37.35	47.33	88.33	60.92	33
T140		64.83	48.08	38.67	72.67	56.06	67
T141		75.67	43.18	36.83	66.67	55.59	71
T138		70.00	32.48	42.50	69.33	53.58	84
T149		63.83	27.77	41.67	78.33	52.90	88
KS02HW34	HWW	61.67	53.88	52.50	80.00	62.01	25
KS02HW35-5	HWW	67.50	51.98	50.33	88.33	64.54	16
KS03HW158	HWW	76.17	45.40	43.67	82.83	62.02	24
OK93P656H3299-2C04	**HRW**	**95.67**	**46.33**	**49.17**	**89.00**	**70.04**	**2**
OK00421	HRW	73.00	29.23	49.00	71.67	55.73	70
OK01817	HRW	49.83	41.98	46.67	75.17	53.41	86
OK01307	HRW	72.17	49.63	39.83	80.83	60.62	36
OK98G508W-4C04	HWW	72.50	36.95	49.83	89.83	62.28	22
TX00D1390	HRW	81.33	39.28	52.17	88.33	65.28	12
TX01D3232	HRW	71.00	45.53	43.50	74.33	58.59	51
TX01V5314	HRW	75.17	57.15	50.00	84.50	66.70	11
TX01V5719	HRW	78.67	41.73	41.00	71.33	58.18	54
TX01V6008	HRW	68.33	55.05	39.33	78.83	60.39	37
TX01U2598	HRW	63.00	44.32	19.17	50.67	44.29	109
CO00016	HRW	74.00	20.10	37.33	63.67	48.78	103
CO00554	HRW	71.33	41.13	40.67	85.00	59.53	46
CO00739	HRW	64.50	34.77	39.33	68.67	51.82	96
CO00796	HRW	57.50	30.02	43.67	84.83	54.00	77
NE00403	HRW	78.17	39.52	54.00	95.50	66.80	10
NE01481	HRW	91.00	43.50	44.83	79.33	64.67	15
NE01533	HRW	69.83	48.48	42.50	78.50	59.83	41

NI03418	HRW	64.33	55.45	47.00	82.83	62.40	20
HV9W98-926W	HWW	76.83	39.48	36.50	78.50	57.83	56
HV9W99-558	HRW	72.33	47.43	33.17	68.17	55.28	73
HV9W00-143R	HRW	59.50	32.82	42.33	73.00	51.91	94
HV9W00-1784R	HRW	66.50	59.63	53.83	89.00	67.24	8
HV9W00-993W	**HWW**	**87.83**	**37.30**	**56.67**	**90.50**	**68.08**	**5**
OK00514	HRW	72.00	49.53	45.17	72.00	59.68	43
OK00618W	HWW	78.50	40.87	49.33	81.67	62.59	18
OK00611W	HWW	76.83	48.60	32.67	71.50	57.40	57
SD02068	HRW	56.17	28.32	45.50	89.50	54.87	74
W03-20	HRW	63.50	38.45	41.83	65.33	52.28	92
W04-417	HRW	52.50	59.80	49.33	86.50	62.03	23
BC97-ROM50W	HWW	106.83	52.52	39.67	71.17	67.55	7
AP01T1112	HRW	73.50	55.18	35.33	74.67	59.67	44
AP01T1114	HRW	67.33	54.48	35.83	68.67	56.58	63
AP02T4342		49.00	52.25	48.83	85.67	58.94	49
AP03T7412		62.00	49.67	28.33	70.17	52.54	91
97x0850-16	HRW	95.00	36.45	46.83	93.50	67.95	6
N02Y5106	HRW	58.17	46.85	46.50	77.17	57.17	58
Harding	HRW	33.33	27.88	45.50	61.83	42.14	113
Nuplains	HWW	59.17	26.68	40.50	81.17	51.88	95
Nekota	HRW	54.83	17.53	34.67	69.00	44.01	110
N02Y5075	HRW	52.50	52.47	41.83	75.00	55.45	72
N02Y5078	HRW	56.00	51.28	45.00	75.33	56.90	60
N02Y5117	HRW	57.83	55.75	47.67	72.17	58.35	53
NP-02	HWW	46.67	28.45	37.33	84.17	49.15	100
TX00V1117	HRW	68.83	40.52	56.00	84.83	62.55	19
NE01604	HRW	58.67	57.03	51.67	79.33	61.68	29
NE02513	HRW	85.83	42.65	45.67	80.83	63.75	17
NE02528	**HRW**	**89.67**	**53.15**	**54.00**	**80.17**	**69.25**	**4**
NE02584	HRW	91.33	46.17	49.33	74.00	65.21	13
NE02592	HRW	62.83	62.07	38.83	76.17	59.98	40
NI03427	HRW	92.83	43.75	43.00	69.67	62.31	21
NE01643	**HRW**	**71.33**	**56.25**	**56.00**	**94.67**	**69.56**	**3**
NH01036	HRW	54.67	36.67	42.33	81.00	53.67	82
NH01048	HRW	60.67	45.20	55.33	84.67	61.47	30
NI02425	**HRW**	**93.17**	**54.52**	**49.83**	**82.67**	**70.05**	**1**
SD00032	HRW	60.33	35.75	45.67	77.67	54.85	75
SD00258	HRW	61.50	47.57	50.83	80.50	60.10	38

SD01054	HRW	86.67	29.23	56.33	75.75	62.00	26
SD02024	HRW	41.50	27.58	36.83	86.17	48.02	106
SD02039	HRW	44.83	25.43	52.00	88.67	52.73	89
SD02480	HRW	54.67	33.90	50.00	76.17	53.68	80
SD02771	HRW	51.50	18.63	44.67	81.58	49.10	101
SD01W064	HWW	88.00	39.93	50.50	89.50	66.98	9
SD02W129	HWW	61.67	31.87	47.33	83.17	56.01	68
SD98W175-1	HWW	76.67	53.53	47.50	82.67	65.09	14
Wahoo		61.17	37.68	49.17	86.50	58.63	50
Millennium		63.50	46.12	47.17	90.00	61.70	28
Millennium-23	ALS1	62.40	41.51	48.78	79.59	58.07	55
Millennium-27	ALS1	64.40	45.61	50.28	78.59	59.72	42
Millennium-29	ALS1	64.90	45.06	43.28	73.09	56.58	62
Millennium-30	ALS1	60.90	37.46	37.28	79.09	53.68	81
Millennium-33	ALS1	64.90	37.51	43.28	80.09	56.44	65
Millennium-34	ALS1	66.40	44.46	38.28	77.09	56.56	64
Millennium-41	ALS1	69.90	40.81	50.28	81.59	60.64	35
Millennium-42	ALS1	68.40	44.16	46.28	77.59	59.11	48
Millennium-45	ALS1	72.90	49.66	48.78	73.09	61.11	32
Millennium-51	ALS1	63.40	45.56	41.78	77.09	56.96	59
Millennium-52	ALS1	46.90	41.01	47.28	89.09	56.07	66
Millennium-53	ALS1	51.90	46.21	42.78	72.09	53.24	87
Wahoo-1	ALS1	67.20	43.99	42.28	84.85	59.58	45
Wahoo-21	ALS1	66.70	22.44	40.78	80.85	52.69	90
Wahoo-23	ALS1	50.20	44.04	50.78	82.35	56.84	61
Wahoo-24	ALS1	51.70	32.29	28.78	81.85	48.66	105
Wahoo-25	ALS1	51.20	32.84	40.78	70.35	48.79	102
Wahoo-27	ALS1	43.70	42.49	40.28	87.85	53.58	83
Wahoo-29	ALS1	51.20	19.44	31.78	68.85	42.82	112
Wahoo-30	ALS1	61.20	25.34	35.78	72.35	48.67	104
Wahoo-33	ALS1	65.20	42.84	41.78	97.35	61.79	27
Wahoo-38	ALS1	47.70	33.34	49.28	77.35	51.92	93
Wahoo-39	ALS1	55.20	33.59	47.28	79.85	53.98	78
Wahoo-40	ALS1	46.70	26.49	45.28	86.35	51.21	97
Millennium-2	**ALS2**	67.41	47.55	43.44	81.56	**59.99**	**39**
Millennium-4	**ALS2**	47.91	46.50	46.94	92.56	**58.48**	**52**
Millennium-9	**ALS2**	55.91	42.40	53.94	93.56	**61.45**	**31**
Millennium-10	**ALS2**	55.91	37.05	46.94	74.06	**53.49**	**85**
Millennium-18	**ALS2**	52.91	52.50	44.94	73.06	**55.85**	**69**

Wahoo-2	**ALS2**	65.91	35.35	43.94	69.56	**53.69**	**79**
Wahoo-4	**ALS2**	51.91	40.30	40.94	103.56	**59.18**	**47**
Wahoo-5	**ALS2**	44.91	41.75	43.44	86.06	**54.04**	**76**
Wahoo-12	**ALS2**	44.91	43.15	46.44	67.06	**50.39**	**98**
Wahoo-17	**ALS2**	34.91	39.00	39.94	71.56	**46.35**	**108**
Above	ALS1	42.41	31.90	41.94	82.56	49.70	99
Infinity CL	ALS1	65.91	46.45	47.94	83.06	60.84	34
Average		**64.00**	**41.28**	**44.39**	**79.13**	**57.20**	

One of the pleasant surprises with this nursery is that three of the top 4 lines were developed in Nebraska. The data for the 2005 SRPN is below.

			Lincoln	C.Center	N. Platte	Sidney	Hemm.	St. Avg.	Rank
	LINE	CLASS	**bu/a**	**bu/a**	**bu/a**	**bu/a**	**bu/a**	**bu/a**	
1	Kharkof	HRW	37.00	47.67	30.35	44.17	60.00	43.84	47
2	Scout 66	HRW	32.17	40.50	30.90	38.33	63.00	40.98	48
3	TAM-107	HRW	42.50	40.67	27.55	41.50	80.33	46.51	46
4	Trego	HWW	70.67	60.67	37.35	47.33	88.33	60.87	26
5	T140		64.83	74.17	48.08	38.67	72.67	59.68	28
6	T141		75.67	67.50	43.18	36.83	66.67	57.97	34
7	T138		70.00	66.17	32.48	42.50	69.33	56.10	37
8	T149		63.83	63.67	27.77	41.67	78.33	55.05	40
9	KS02HW34	HWW	61.67	85.17	53.88	52.50	80.00	66.64	10
10	KS02HW35-5	HWW	67.50	94.17	51.98	50.33	88.33	70.46	4
11	KS03HW158	HWW	76.17	77.67	45.40	43.67	82.83	65.15	12
12	OK93P656H3299-2C04	HRW	95.67	79.67	46.33	49.17	89.00	71.97	3
13	OK00421	HRW	73.00	57.83	29.23	49.00	71.67	56.15	36
14	OK01817	HRW	49.83	61.50	41.98	46.67	75.17	55.03	41
15	OK01307	HRW	72.17	78.00	49.63	39.83	80.83	64.09	16
16	OK98G508W-4C04	HWW	72.50	66.83	36.95	49.83	89.83	63.19	21
17	TX00D1390	HRW	81.33	84.00	39.28	52.17	88.33	69.02	6
18	TX01D3232	HRW	71.00	76.33	45.53	43.50	74.33	62.14	23
19	TX01V5314	HRW	75.17	81.67	57.15	50.00	84.50	69.70	5
20	TX01V5719	HRW	78.67	64.17	41.73	41.00	71.33	59.38	29
21	TX01V6008	HRW	68.33	78.33	55.05	39.33	78.83	63.98	18
22	TX01U2598	HRW	63.00	56.33	44.32	19.17	50.67	46.70	45
23	CO00016	HRW	74.00	44.85	20.10	37.33	63.67	47.99	44
24	CO00554	HRW	71.33	67.67	41.13	40.67	85.00	61.16	24

25	CO00739	HRW	64.50	51.67	34.77	39.33	68.67	51.79	43
26	CO00796	HRW	57.50	54.33	30.02	43.67	84.83	54.07	42
27	NE00403	HRW	78.17	77.83	39.52	54.00	95.50	69.00	7
28	NE01481	HRW	91.00	78.33	43.50	44.83	79.33	67.40	9
29	NE01533	HRW	69.83	83.83	48.48	42.50	78.50	64.63	14
30	NI03418	HRW	64.33	77.50	55.45	47.00	82.83	65.42	11
31	HV9W98-926W	HWW	76.83	63.67	39.48	36.50	78.50	59.00	32
32	HV9W99-558	HRW	72.33	74.83	47.43	33.17	68.17	59.19	30
33	HV9W00-143R	HRW	59.50	69.50	32.82	42.33	73.00	55.43	39
34	HV9W00-1784R	HRW	66.50	91.83	59.63	53.83	89.00	72.16	1
35	HV9W00-993W	HWW	87.83	64.83	37.30	56.67	90.50	67.43	8
36	OK00514	HRW	72.00	86.50	49.53	45.17	72.00	65.04	13
37	OK00618W	HWW	78.50	69.67	40.87	49.33	81.67	64.01	17
38	OK00611W	HWW	76.83	83.73	48.60	32.67	71.50	62.67	22
39	SD02068	HRW	56.17	74.50	28.32	45.50	89.50	58.80	33
40	W03-20	HRW	63.50	70.50	38.45	41.83	65.33	55.92	38
41	W04-417	HRW	52.50	69.00	59.80	49.33	86.50	63.43	20
42	BC97-ROM50W	HWW	106.83	89.83	52.52	39.67	71.17	72.00	2
43	AP01T1112	HRW	73.50	80.00	55.18	35.33	74.67	63.74	19
44	AP01T1114	HRW	67.33	78.83	54.48	35.83	68.67	61.03	25
45	AP02T4342		49.00	66.50	52.25	48.83	85.67	60.45	27
46	AP03T7412		62.00	75.17	49.67	28.33	70.17	57.07	35
47	97x0850-16	HRW	95.00	50.83	36.45	46.83	93.50	64.52	15
48	N02Y5106	HRW	58.17	67.00	46.85	46.50	77.17	59.14	31
	Average		**68.91**	**70.11**	**42.89**	**43.21**	**77.69**	**60.56**	

In looking at the two data sets (combined RPN and SPRN separately), a number of points are clear. The Nebraska early germplasm needs better straw so it can complete better in the south central region (e.g. Clay Center). Better straw strength will also help our irrigated wheat breeding efforts. In order to focus on this region, we will probably have to modify our Lincoln and Clay Center selection nurseries to look for "race-horse" wheats that can really perform when conditions are right. Perhaps the fertility level at Lincoln needs to be increased to eliminate some of the taller lines with weaker straw. If this were done, then Mead will become the selection nursery for the later lines that are well adapted to the longer season of western Nebraska. Lincoln was heavily infected with wheat soilborne mosaic virus in this nursery, so line that performed well in Lincoln had resistance that is a major improvement over our past releases. Another major point is that our better-adapted lines appear to be later flowering, maturing lines (e.g. those that will enter the NRPN in preference to the SRPN) as can be seen by their doing very well across the state in the RPN combined nursery. A small point is the very good yield of NE00403 is not visually obvious which makes the breeder concerned with his visual selection capabilities and NE00403 could not be advanced because it was consistently "ragged" in appearance. It could not be purified to a uniform type. Also, in comparing the NIN and RPN, SRPN data, it appears to be a line with variable yield response from trial to trial.

7. Multiple-Location Observation Nursery

Six replications (locations) in Nebraska (Lincoln, Mead, Clay Center, North Platte, Sidney, and Hemingford of this nursery were harvested and used for selection. The data from Kansas arrived too late to impact our selections, but is valuable information for our south central breeding efforts. The table gives the grain yields for all of the locations, the average, the rank and the averages of the ranks to give an idea of the "stability" of the lines. A high yielding line could be high yield because it is did spectacularly well in some locations and average in others (high rank average) or it did consistently well across all locations (low rank average). All of the top ten lines were higher yielding than any plot of the replicated check lines. Fifty-four lines were advanced for further testing.

		----------bu/a----------									bu/a	
ENTRY	VARIETY	Linc	Mead	C.Cen	N.Plat	Sid.	Hemm.	**stavg**	**strank**	**strankavg**	KS	rank
25	NE05425	82.50	95.10	88.50	60.75	52.50	73.00	**75.4**	**1**	**34.5**	72.06	29
117	NW05517	84.00	88.60	83.00	73.80	45.50	73.50	**74.7**	**2**	**42.5**	76.42	7
26	NE05426	83.50	89.50	84.50	60.10	43.00	72.00	**72.1**	**3**	**55.8**	62.11	125
34	NE05434	92.00	80.35	82.50	62.75	50.00	65.00	**72.1**	**4**	**55.3**	49.76	250
96	NE05496	95.50	73.30	79.00	47.05	53.50	84.00	**72.1**	**5**	**39.7**	77.54	5
214	NW05614	99.00	84.15	81.00	46.90	45.50	74.50	**71.8**	**6**	**55.2**	75.30	11
27	NE05427	92.50	81.30	86.50	55.15	52.50	60.50	**71.4**	**7**	**62.3**	50.50	242
215	NW05615	100.50	89.70	65.50	55.10	44.00	73.00	**71.3**	**8**	**68.8**	70.24	37
95	NE05495	61.50	74.70	91.00	50.85	59.50	87.50	**70.8**	**9**	**55.0**	64.38	95
68	NE05468	57.50	86.25	76.50	65.25	55.00	79.00	**69.9**	**10**	**52.3**	65.41	80
60	Jagalene	79.50	74.05	74.50	56.40	54.00	72.50	**68.5**	**14**	**57.5**	62.14	124
240	Goodstreak	73.50	80.75	58.00	55.20	62.50	76.00	**67.7**	**19**	**74.2**	69.15	49
80	Millennium	51.50	68.20	82.00	52.45	55.50	81.50	**65.2**	**44**	**76.0**	57.86	173
120	Alliance	73.00	67.05	64.00	49.25	57.00	76.00	**64.4**	**49**	**87.0**	69.15	48
200	Wesley	88.50	65.20	78.50	50.20	32.00	62.00	**62.7**	**65**	**128.7**	66.88	65

8. Early Generation Nurseries

a. Single-plot Observation Nursery

Seventeen hundred seventy-seven lines were evaluated at Lincoln in 2005. Of the 1777 lines and checks, 1330 where red or mixed red and white seeded (including over 90 herbicide tolerant lines) and 380 where white seeded. Of this group, 528 were harvested and 421 samples were submitted for Quadrumat Junior milling, flour protein content, and dough mixing properties. As in the past, the turn-around time in the Wheat Quality Laboratory was excellent (all quality evaluations completed by the end of August). On the basis of agronomic and quality performance, 202 red and 83 white were selected for further testing.

b. Headrow Nursery

Over 41,000 headrows were planted at Lincoln. In general, the headrow nursery had an excellent start due to early planting (our two planting crew effort) and adequate moisture with little winter injury. Unfortunately, we were very limited by space and the head row fields were scattered at Lincoln and some studies were planted t Mead. Harvest went well. We harvested over 1800 lines and planted 1836 (1382 red or segregating red and white; and 454 white wheat lines). Of the red and white wheat lines, 259 where sent to Dr. Baltensperger for planting at Scottsbluff in our irrigated observation nursery, 87 for herbicide tolerance testing, and 284 lines to Gary Hein to test for wheat steak mosaic virus tolerance.

a. F_3 bulk hybrids

The F_3 bulk hybrid nursery contained 823 red or red and white segregating bulks. All plots were planted at Mead and most were planted at Sidney. Most bulks survived the winter, but lodging was severe at Mead, so a number of possible western wheat bulks where straw strength is less important may have been lost. Stripe rust was epidemic at Mead, so selection was also against heavily infected bulks. Surprisingly, some severely infected bulks visually finished very well indicating there may be a level of tolerance to this disease. The number of F_3 bulks is large. Over 37,500 head rows were selected for fall planting. The headrows were planted in stages to ensure we had adequate field space for our replicated trials. In general, their emergence and stands were excellent though the fall was warmer and drier than normal. The project goal remains to have sufficiently good segregating F_3 material to select about 40 - 45,000 headrows.

b. F_2 bulk hybrids

The F_2 bulk hybrid nursery contained 823 bulks and check plots with most of them planted at Mead. Sixty-four bulks were plants at Lincoln for herbicide selection. The bulks generally survived the winter, but some were winterkilled (those involving wintertender parents). As in the past, we continue to share our bulks with other programs and receive bulks from other programs. Due to the large number of bulks, about 706 bulks (including 67 from Colorado State University) were advanced as individual bulks for further consideration in 2006 from our program.

9. Winter Triticale Nursery

In 2005, no new triticale lines were recommended for release, however, NE426GT and NE422T continue to perform well. Because triticale is a small market crop, we are carefully deciding how best to release new triticale cultivars so as to not cause inventory problems with the previously released cultivars. We are now beginning to move to higher ad more consistent grain yield levels. The triticale-breeding program received about $6,172 this year in research and development fees, which is less than the $10,000, which was received in 2004. These funds will be extremely important in developing a sustainable triticale-breeding program. A growing concern is that some producers are saving seed and replanting it on their farms or selling it to others. This practice will hinder the development of new triticale varieties and an ethical seed business. The practice of brown bagging is historically common in triticale and the University needs to protect its intellectual property rights. While the future is always uncertain, triticale continues to be given a careful look to determine if it can aid producers. The results of the 2005 triticale variety grain trial were:

2005	Linc.		Mead		Sidney				State	
	Yield	Rank	Yield	Rank	Yield	Rank	Heading	Height	**Yield**	**Rank**

VARIETY	lbs/a		lbs/a		lbs/a		Date	(in)	**lbs/a**		TYPE
NE426GT	5366	2	3333	27	3354	15	20.2	43.3	**4018**	**12**	GR
NT00428	4521	23	3546	20	3549	10	20.0	44.1	**3872**	**20**	GR
NT01410	5030	10	4100	8	3192	21	20.2	45.3	**4108**	**7**	GR
NT01451	5529	1	4103	7	4099	2	20.9	45.5	**4577**	**1**	GR
NT02403	5342	3	3597	18	3120	25	20.0	45.7	**4020**	**11**	GR
NT02410	5265	5	3430	25	3110	26	20.7	47.8	**3935**	**16**	GR
NT02419	5120	8	4453	3	2736	36	21.1	46.4	**4103**	**8**	GR
NT02421	5218	6	4690	1	2957	30	20.3	47.4	**4288**	**3**	GR/FO
NT02431	4566	22	4297	5	3600	8	21.4	44.4	**4154**	**5**	GR/FO
NT02454	4754	15	3602	17	3301	17	20.6	46.1	**3885**	**19**	GR
NE03T407	4631	17	3441	23	3959	4	20.0	47.0	**4010**	**13**	GR
NE03T411	4454	26	4253	6	3130	24	20.1	43.9	**3946**	**15**	GR
NE03T416	5128	7	3887	12	3367	14	19.4	43.5	**4127**	**6**	GR
NE03T432	4866	12	2446	38	3172	22	20.6	45.2	**3495**	**27**	GR
NE03T451	4691	16	3495	22	3353	16	20.7	45.6	**3846**	**21**	GR
JAGGER	3685	37	3703	13	2145	39	16.6	33.1	**3178**	**37**	GR, wheat
NE03T456	3953	33	3662	14	3468	12	22.1	48.4	**3694**	**24**	GR
NT02458	5314	4	3639	15	3540	11	21.0	46.2	**4165**	**4**	GR.FO
NE03T452	4504	24	2708	34	2984	29	19.0	44.9	**3399**	**33**	3SEED FLORET
NT00421	4317	28	2043	40	2881	34	20.8	47.6	**3080**	**38**	A-/FO
NT01435	4971	11	3170	28	4065	3	23.2	46.9	**4069**	**9**	F/G
NE422T	3785	36	2735	33	3229	19	25.4	55.9	**3249**	**36**	FO
NT00449	3613	38	3371	26	3138	23	20.9	50.8	**3374**	**34**	FO
NT02435	4619	19	4361	4	4309	1	20.9	50.1	**4429**	**2**	FO
TRICAL	2899	40	2074	39	2915	32	25.6	52.7	**2629**	**40**	FO
NE03T413	4477	25	3966	10	3052	28	20.7	52.0	**3831**	**22**	FO
NE03T449	4021	31	3579	19	2633	37	25.2	57.4	**3411**	**32**	FO
NE03T454	3806	35	3081	29	3376	13	24.3	54.1	**3421**	**30**	FO
NT02456	4215	30	2909	32	2926	31	22.5	49.3	**3350**	**35**	FO.A-
NE03T447	3599	39	3011	30	2122	40	24.1	55.1	**2911**	**39**	FO?
NT04403	4277	29	2591	35	3890	5	21.1	48.5	**3586**	**26**	F
NT04407	4330	27	4043	9	2829	35	22.3	51.9	**3734**	**23**	F
NT04415	4007	32	3431	24	3585	9	19.6	45.3	**3675**	**25**	G
NT04417	4597	20	3950	11	3291	18	21.2	43.5	**3946**	**14**	G
NT04424	4804	13	4502	2	2895	33	20.3	44.9	**4067**	**10**	G
NT04427	5105	9	3638	16	3057	27	20.9	45.3	**3933**	**17**	G
NT04429	4795	14	2938	31	2510	38	20.8	46.2	**3415**	**31**	G
NT04431	4623	18	2589	36	3219	20	21.3	45.1	**3477**	**28**	G
NT04432	4587	21	3504	21	3637	7	20.7	43.4	**3909**	**18**	G
NT04451	3878	34	2555	37	3841	6	23.4	44.8	**3425**	**29**	G
GRAND MEA	**4310**		**3234**		**3214**		**22.0**	**48.8**	**3586**		
CV	8.9		13.5		9.3						
LSD	547.7		636.2		408.0						

The forage data for the 2005 triticale variety trial was provided by Dr. Ken Vogel and the USDA-ARS. Again NE426GT and NE422T performed well, but other experimental lines are equal or better to these lines. An awnless

wheat line that can be used for grazing or hay (NE97426) does not have the forage potential of triticale. Mr. Lekgari A. Lekgari continued to work on his M.S. thesis to study triticale forage yields. Ms. Chatuporn Kuleung, in collaboration with Dr. Ismail Dweikat and completed her Ph.D. studies and determined the that the considerable molecular genetic resources in one crop (for example, wheat) can be used to study a crop with less developed molecular genetic resources (for example, triticale). She is also studied the genetic diversity within triticale. The 2005 forage data are:

2005		---------	**Mead----**	--------	--------	--------	**Sidney**	------	-------	----------	------	**Average**	-------
		Dry Matter	Dry Matter	Rank	H date	Height	Dry Matter	Dry Matter	Rank	Height	Dry Matter	Dry Matter	Rank
VARIETY	TYPE		Ton/a			in		Ton/a		in		Ton/a	
NE426GT	GR	0.384	5.479	13	22.0	38.4	0.392	4.032	4	39.1	0.388	**4.756**	7
NT00428	GR	0.380	6.072	5	22.1	42.2	0.336	2.755	29	34.0	0.358	**4.414**	19
NT01410	GR	0.398	5.959	6	21.5	42.8	0.353	2.931	28	39.5	0.376	**4.445**	18
NT01451	GR	0.372	5.822	7	22.4	42.5	0.360	3.517	17	40.4	0.366	**4.670**	10
NT02403	GR	0.368	5.533	11	21.4	43.8	0.353	3.715	11	41.7	0.361	**4.624**	11
NT02410	GR	0.363	5.188	20	21.9	41.0	0.370	3.370	22	42.6	0.367	**4.279**	23
NT02419	GR	0.360	5.600	10	22.4	43.7	0.380	3.392	21	42.0	0.370	**4.496**	14
NT02421	GR	0.432	6.651	2	22.4	40.1	0.401	3.522	16	42.3	0.417	**5.087**	2
NT02431	GR	0.440	6.897	1	22.2	40.1	0.362	3.430	19	38.1	0.401	**5.164**	1
NT02454	GR	0.405	6.509	3	22.3	43.6	0.382	3.262	24	39.6	0.394	**4.886**	5
NE03T407	GR	0.361	5.199	19	21.9	45.4	0.361	3.702	13	46.2	0.361	**4.451**	16
NE03T411	GR	0.405	5.648	8	21.9	45.6	0.362	3.247	25	39.8	0.384	**4.448**	17
NE03T416	GR	0.395	5.526	12	22.0	47.3	0.393	3.994	5	40.6	0.394	**4.760**	6
NE03T432	GR	0.379	5.417	14	21.9	44.9	0.368	3.711	12	40.3	0.374	**4.564**	12
NE03T451	GR	0.365	5.118	22	22.3	40.9	0.347	3.610	14	42.0	0.356	**4.364**	21
NE97426	GR-wheat	0.389	4.692	28	22.0	40.9	0.346	2.743	30	34.1	0.368	**3.718**	30
NE03T456	GR	0.337	5.013	25	23.3	44.2	0.332	3.217	26	44.2	0.335	**4.115**	28
NT02458	GR.FO	0.359	5.128	21	22.6	40.2	0.373	3.834	6	40.8	0.366	**4.481**	15
NE03T452	3 seed Flor.	0.414	5.035	24	20.2	36.3	0.360	2.995	27	37.9	0.387	**4.015**	29
NT00421	A-/FO	0.359	5.340	17	23.5	38.3	0.361	3.486	18	42.9	0.360	**4.413**	20
NT01435	F/G	0.365	6.342	4	25.0	47.0	0.335	3.798	9	42.5	0.350	**5.070**	3
NE422T	FO	0.327	5.074	23	28.7	46.9	0.354	3.327	23	48.2	0.341	**4.201**	26
NT00449	FO	0.365	5.004	26	23.2	44.2	0.360	3.526	15	45.4	0.363	**4.265**	24
NT02435	FO	0.358	4.838	27	22.5	43.4	0.387	3.403	20	43.4	0.373	**4.121**	27
TRICAL	FO	0.326	4.549	30	29.3	40.9	0.347	4.097	3	48.4	0.337	**4.323**	22
NE03T413	FO	0.313	4.632	29	23.4	37.6	0.346	3.800	8	48.2	0.330	**4.216**	25
NE03T449	FO	0.349	5.351	15	28.4	51.3	0.373	4.539	1	53.6	0.361	**4.945**	4
NE03T454	FO	0.350	5.275	18	27.6	45.0	0.347	4.109	2	50.0	0.349	**4.692**	9
NT02456	FO.A-	0.349	5.342	16	24.5	43.4	0.357	3.767	10	45.5	0.353	**4.555**	13
NE03T447	FO?	0.369	5.635	9	27.3	42.2	0.382	3.833	7	50.8	0.376	**4.734**	8
GRAND MEA		**0.371**	**5.462**		**23.4**	**42.8**	**0.363**	**3.555**		**42.8**	**0.367**	**4.509**	
CV		8.125	10.738		2.7	11.8	11.220	14.739		7.0			
LSD		0.035	0.690		0.8	5.9	0.048	0.616		3.5			

The results of the 2004 triticale variety trial harvested for grain were:

GRAIN

	---	---	Mead---	---	---	Lincoln---	---	Sidney---	State	
	Hdate	Height	Grain Yield	Hdate	Height	Grain Yield	Heights	Grain Yield	Average	St. Rank
VARIETY	In May	in	lbs/a	In May	in	lbs/a	in	lbs/a	lbs/a	
NE426GT	19.0	37.5	3805	13.3	44.7	6913	34.6	4082	4933	1
NT00428	18.4	38.6	3476	13.0	46.7	7217	34.1	3876	4857	2
NT01410	17.5	42.0	3876	13.0	46.7	6535	33.7	3976	4796	3
NT01451	19.9	38.2	3825	13.3	43.7	6326	33.1	4106	4752	6
NT02403	17.9	39.6	3596	13.0	44.0	5836	33.6	3437	4290	17
NT02410	17.8	42.5	2770	13.0	47.0	6350	33.7	3588	4236	18
NT02419	19.0	42.4	3910	13.7	48.7	6671	33.8	3755	4779	4
NT02421	17.2	43.0	3375	12.7	47.3	6464	34.8	3819	4552	13
NT02431	19.1	42.4	3456	14.0	48.3	6917	33.8	3578	4650	8
NT02454	18.1	41.9	3884	13.0	45.3	6097	33.2	4173	4718	7
NE03T407	17.5	42.0	3716	11.0	49.0	6410	34.1	3709	4612	10
NE03T411	18.2	40.5	3734	13.3	46.3	6081	33.3	4009	4608	11
NE03T416	14.8	38.1	3179	12.0	45.0	6272	32.4	4160	4537	14
NE03T432	20.5	40.3	2610	13.7	45.3	5518	32.1	3839	3989	22
NE03T451	18.9	40.9	3456	14.0	47.7	6105	33.1	4359	4640	9
JAGGER	15.2	27.0	619	10.0	34.7	3975	31.0	3424	2673	30
NE03T456	21.0	43.2	2498	15.7	46.7	6601	33.7	4433	4511	15
NT02458	19.3	42.7	3478	14.0	45.0	6611	34.4	4227	4772	5
NE03T452	14.7	39.6	3397	10.7	43.7	5895	34.2	3672	4321	16
NT00421	20.7	41.0	2110	13.0	47.3	5917	35.0	3655	3894	24
NT01435	21.9	41.5	2715	15.7	48.3	4958	32.5	3691	3788	26
NE422T	25.2	53.1	2822	20.3	54.7	6129	39.2	3464	4139	20
NT00449	18.6	45.3	2904	12.3	51.3	5820	37.5	3581	4102	21
NT02435	18.4	41.3	3062	13.7	50.0	5955	35.0	3605	4208	19
TRICAL	26.1	49.6	1374	22.0	51.3	4556	37.1	2864	2931	29
NE03T413	18.6	47.5	3414	12.7	53.7	6488	39.6	3808	4570	12
NE03T449	23.6	52.8	1625	17.0	59.3	6425	40.8	3230	3760	27
NE03T454	23.6	51.0	2084	16.7	58.3	5360	39.3	3449	3631	28
NT02456	20.7	40.2	2307	16.0	51.7	5774	35.3	3785	3955	23
NE03T447	21.8	49.6	2105	16.7	60.0	5665	38.6	3667	3812	25
GRAND MEA	19.4	42.5	2972.8	14.1	48.4	6061.4	34.9	3767.4	4267.2	
CV	3.7	3.1	10.26	5.4	3.3	8.9	4.8	5.7		
LSD	1.0	1.8	416.40	1.0	2.2	738.7	2.3	295.0		

The forage data for the 2004 triticale variety trial was provided by Dr. Ken Vogel and the USDA-ARS. The 2004 data are:

	---	---	Mead---	---	'---Sidney---	---	State	State
	Hdate	Height	Dry matter	Forage YLD	Dry matter	Forage YLD	Average	Rank
VARIETY	In May	in	At Cutting (%)	t/a	At Cutting (%)	t/a	t/a	
NE426GT	19.0	39.9	0.347	4.92	0.455	2.96	3.94	2
NT00428	19.0	41.0	0.327	4.50	0.500	2.91	3.71	12

NT01410	18.1	41.8	0.335	4.50	0.468	2.78	3.64	18
NT01451	20.7	39.1	0.334	4.45	0.473	2.87	3.66	16
NT02403	18.6	40.9	0.334	4.71	0.465	2.88	3.80	5
NT02410	18.8	42.9	0.338	4.66	0.455	2.89	3.78	6
NT02419	18.5	43.2	0.342	4.54	0.443	2.93	3.74	8
NT02421	18.9	43.5	0.334	4.66	0.470	2.76	3.71	11
NT02431	19.0	41.7	0.330	4.21	0.460	2.65	3.43	26
NT02454	19.3	40.5	0.324	4.50	0.460	2.80	3.65	17
NE03T407	15.9	44.2	0.334	4.59	0.468	3.06	3.83	4
NE03T411	16.9	41.6	0.343	4.58	0.493	2.85	3.72	9
NE03T416	15.9	41.5	0.346	4.41	0.453	2.65	3.53	22
NE03T432	19.3	38.8	0.326	4.11	0.488	2.74	3.43	27
NE03T451	18.9	40.5	0.332	4.41	0.460	2.71	3.56	20
NE97426	18.4	31.5	0.364	3.37	0.580	2.41	2.89	30
NE03T456	21.6	42.1	0.315	4.60	0.428	2.95	3.78	7
NT02458	19.8	40.9	0.334	4.50	0.445	2.88	3.69	13
NE03T452	16.3	40.7	0.350	4.89	0.490	2.83	3.86	3
NT00421	21.7	41.1	0.336	4.26	0.430	2.81	3.54	21
NT01435	22.9	42.4	0.303	4.61	0.443	2.74	3.68	15
NE422T	25.9	51.0	0.311	4.43	0.420	2.83	3.63	19
NT00449	18.9	45.2	0.349	4.47	0.465	2.95	3.71	10
NT02435	19.9	42.1	0.348	4.44	0.463	2.93	3.69	14
TRICAL	25.4	50.3	0.327	4.27	0.410	2.16	3.22	29
NE03T413	20.3	47.4	0.348	5.04	0.445	2.88	3.96	1
NE03T449	23.5	53.1	0.341	4.33	0.450	2.61	3.47	24
NE03T454	24.5	51.5	0.300	4.30	0.433	2.62	3.46	25
NT02456	21.8	41.7	0.319	4.00	0.438	2.67	3.34	28
NE03T447	22.0	49.9	0.338	4.52	0.450	2.47	3.50	23
GRAND MEA	20.0	43.1	0.334	4.46	0.460	2.77	3.62	
CV	3.7	3.4	3.351	7.29	4.248	8.85		
LSD	0.9	1.7	0.013	0.38	0.023	0.29		

The grain yield data for 2003 are:

VARIETY	TYPE	H. Date	Height	Lodging	Linc.	Mead	Sidney	Avg.	Rank
NE95T426	GR	25.49	49.67	4.15	5618.2	3098.5	3735.9	4150.9	1
NE95T427	GR	25.15	51.32	2.95	5908.1	3148.2	3395.3	4150.5	2
NE96T422	FO	29.84	62.84	5.77	4010.2	1693.1	1879.2	2527.5	27
NE96T441	FO	30.34	59.82	6.11	3920.9	1387.8	1734.3	2347.7	28
NE98T424	GR	25.00	51.35	3.07	4596.9	2995.4	3032.1	3541.5	9
NE98T425	FO/GR	26.02	53.17	4.22	3941.0	2785.8	2157.3	2961.4	21
NE99T440	GR/FO	25.52	53.17	3.73	4638.3	2549.2	2351.2	3179.6	19
NE99T441	FO	28.15	53.69	4.98	3969.2	2798.1	1887.8	2885.0	23
NT00421	A-/FO	27.15	53.19	5.47	4208.8	2462.4	1968.3	2879.8	25
PRESTO	GR	26.17	52.34	3.59	4858.3	2415.6	2544.6	3272.8	17
NT00428	GR	24.99	49.67	3.65	5016.8	3236.0	2706.0	3652.9	6
NT00449	FO	24.65	56.34	4.70	4684.5	2531.3	2756.9	3324.2	16

NT01402	gr?	23.67	50.17	4.98	3531.2	2781.3	2421.2	2911.2	22
NT01410	GR	25.67	50.82	3.88	4462.1	3139.4	2795.2	3465.6	12
NT01435	F/G	27.99	52.50	7.55	4321.6	3129.8	3049.2	3500.2	10
NT01446	gr?	25.00	50.82	4.79	3776.4	2631.0	2114.6	2840.7	26
NT01451	GR	26.69	49.49	5.12	5321.6	2345.5	3212.2	3626.4	7
NT01456	GR	27.82	50.85	7.17	3662.7	2027.6	2963.7	2884.7	24
NT02403	GR	25.65	51.65	6.40	5020.0	3181.3	3568.0	3923.1	3
ARAPAHOE	GR	26.17	42.69	5.07	4440.9	2477.7	2874.4	3264.3	18
NT02410	GR	25.32	51.52	2.55	4904.5	2402.8	2931.8	3413.0	14
NT02419	GR	26.02	51.19	3.19	5235.9	1939.8	3494.1	3556.6	8
NT02421	GR	25.49	53.50	3.09	5128.4	2708.1	2460.3	3432.3	13
NT02431	GR	26.99	50.65	3.36	5316.0	1818.6	2970.1	3368.2	15
NT02435	FO	26.69	54.50	4.74	5547.4	3078.9	2952.0	3859.4	4
NT02451	FO?	27.84	53.32	6.48	4280.9	2215.6	2592.5	3029.7	20
NT02454	GR	25.82	51.17	4.70	4711.8	2625.3	3776.7	3704.6	5
NT02456	FO.A-	28.32	56.82	6.88	3379.0	1659.7	1690.5	2243.1	29
NT02458	GR.FO	26.67	49.67	3.54	5497.0	2555.4	2408.2	3486.9	11
TRICAL	FO	31.84	61.85	6.79	3120.4	1145.8	2186.5	2150.9	30
GRAND MEAN		26.60	52.65	4.76	4567.6	2498.8	2687.0	3251.2	

Spring triticale nurseries the past several years have helped us identify six lines for testing in multi-environment trials for forage production and grain yield to select the best for release.

9B. Spring Triticale Nursery

Several years ago a spring triticale program was launched to identify spring types with a dual use potential. Six lines have been advanced to multi-location trials at this stage and they are all selections out of CIMMYT material. This is a cooperative project with the USDA-ARS. Yield data from 2005 is shown below.

Triticale Averaged Over Four Locations 2005.

Entry	Yield lb/acre
NET 1	3225
NET 6	3225
NET 2	3160
NET 5	3150
NET 3	3115
NET 7	3110
NET 4	2775
FORGE	2355
OXEN	2070
trical 2700	1985

10. Wheat Transformation and Tissue Culture Studies

Wheat transformation has been greatly reduced though it continues to be a key strategic effort in the wheat improvement overall effort. In collaboration with Dr. T. Clemente and Ms. S. Sato of the Transformation Core facility (does our wheat transformation), Dr. J. Watkins and Ms. J. Schimelfenig of the Department of Plant Pathology (does the screening of conventionally bred and transgenic wheat lines with FHB) and Drs. A. Mitra and M. Dickman, also of the Department of Plant Pathology, we were looking at studying new concepts in disease resistance. We have had the transgenic lines independently tested and the effects, if present, were small and less than that of Alsen (an elite FHB tolerant spring wheat with resistance derived from Sumai 3. We have crossed these lines into winter populations to see if there may be secondary effect. Clearly great care is need to insure that the no transgenic wheat co-mingle with our breeding program. This concern was minor when the transgenic wheat was being done in spring wheat backgrounds (spring wheat is killed by our winter, hence should never appear in our winter wheat breeding lines, but will require a higher level of scrutiny with the winter wheat crosses).

11. Chromosome Substitution Lines

This research was undertaken with the expectation as we learn more about the wheat genome, we would be able to develop better breeding strategies. It is done in collaboration with Drs. Kent Eskridge, Kulvinder Gill (now the Vogel Chair at Washington State University), and Ismail Dweikat. In 2005 we evaluated 230 recombinant inbred chromosome lines in a Cheyenne background for chromosome 3A (CNN(RICL3A)) in a four replicated trial in three environments (Lincoln, Mead, and Sidney). Unfortunately, Lincoln was severely damaged by wheat soilborne mosaic virus. The plots at Mead (best) and Sidney were generally pretty good. We are increasing seed of recombinant chromosome lines involving 3A and 6A in a Cheyenne background (CNN(RICL3A+6A)) to study epistasis and WI(RICL3A)s to compare to our CNN(RICL3A)s. Dr. Mujeeb Kazi created these lines for us using doubled haploid techniques and we are very appreciative of his efforts. We are increasing the seed of CNN(RICL3A+6A)) and WI(RICL3A)s for future experiments. We will continue our large field tests of CNN(RICL3A)s at Lincoln, Mead and Sidney to identify where the genes affecting agronomic performance are found on chromosome 3A.

12. White Wheat

Dr. Bob Graybosch, USDA-ARS and I continue our orderly transfer of white wheat germplasm to the state wheat breeding. The cooperation has been excellent and the goal will be to continue the University of Nebraska wheat improvement effort, while building a unified cultivar release program. Nuplains, Antelope and Arrowsmith have been release and are available to grower. The first white wheat developed from the this program was entered into the Nebraska State Variety Trials this fall. The progress on this front has been slower than we would like and we continue to try to find ways to speed up the effort. Optical sorting to separate red and white seed in segregating bulks to increase the number of pure white seeded bulks may be very helpful. As in the past, we screened all of the lines advanced in 2005 for low polyphenol oxidase, an enzyme that is believed to discolor wet noodles and other wheat products. The results were as follows:

Nursery 2006	Total Number of Lines	Low PPO Lines	Higher PPO Lines	Low PPO Percent of Lines
NIN	60	4	56	6.67
Triplicate	60	4	56	6.67
Duplicate	300	44	256	14.67
Irrigated-Dry	40	5	35	12.50
Observation	1836	217	1619	11.82

* Low PPO is scored on a 0-5 scale with 0 having no discoloration and 5 being virtually black in the assay. Lines with scores of 2 or below were considered as being low PPO for this summary.

The interesting aspect of the PPO assays is that while the majority of lines with low PPO were white seeded as would be expected because the source of low PPO was from white wheat parents, a number of red lines also had low PPO. Even in red wheat germplasm where low PPO is not critical, we believe it will be preferred. Hence we seem to have rapidly moved this trait into our germplasm. The PPO scores from 2005 seemed to be higher than those from 20045 indicating the environment can modify this trait.

13. Collaborative Research on Wheat Diseases

Dr. John Watkins (retired in 2006) and Dr. Stephen Wegulo (hired in 2005 as Dr. Watkins' successor), Department of Plant Pathology, and their staff continue to inoculate our experimental lines with wheat stem rust and Fusarium head blight (FHB, research funded by the U.S. What and Barley Scab Initiative), and as time permits with wheat leaf rust. The greenhouse tests were good for stem rust with Ms. Julie Schimelfenig (works with Drs. Watkins and Wegulo). In 2005, we had a low level of stem rust infection at Mead and for the first time found stem rust attacking one of triticales. Rye is normally very resistant to stem rust and usually so in triticale (a cross between durum wheat and rye). The major event in stem rust research is the emergence of a new race Ug99 (Ug 99---for its being first found in Uganda in 1999) that can overcome some of the previously very durable resistance genes in wheat. Much of the world is very concerned about this race as it attacks Sr6 and Sr31. Its most likely path will be from Kenya/Ethiopia to North Africa (Egypt) and the Middle East to Central Asia. Virtually all of the wheat varieties in this area are susceptible and the consequences would be dire for small, barely self-sufficient farmers. Even where there are resistant varieties, the seed industry is weak and it would be impossible to rapidly change varieties. Fortunately, in addition to using Sr6, our program is built upon Sr24 (very common in our lines), SrAmigo (less common), Sr36 (rare, but found in Vista), Srtmp (from Triumph, found in a few of our wheat varieties), and Sr2 (found in Scout 66 so it can be readily added back to our germplasm) remain effective against all of known races (including Ug 99). Of course, with diseases, eternal vigilance is the key and we are very fortunate to have continued our breeding efforts on this potentially devastating disease despite the last major epidemic in the Great Plains occurring in 1986.

We will continue to add new Sr resistance alleles into our program to ensure that we stay ahead of this changing pathogen. We also found out that Lr16, a common leaf rust resistance gene in our varieties is a very weak resistance gene (by global standards), but is enhanced with other minor Lr genes. Hence while Lr24 is defeated (there are races which attack it), it is likely that our selecting Lr16 resistance also partially selects for Lr24 (which is linked to Sr24) and may explain why so many of lines have Lr16, Sr24, and Lr24.

Dr. Watkin's efforts to determine the virulence patterns of leaf rust in Nebraska are being continued by Dr. Wegulo and have greatly helped understand this important disease and why some previously resistant lines became susceptible and other previously susceptible lines are becoming for resistant. Their efforts are closely coordinated with Dr. Yue Jin, USDA-ARS, Cereal Disease Lab, who also tests our lines with a set of stem rust races to identify the resistance genes in those lines. In addition, John and Stephen are the "eyes and ears" of the program when it comes to knowing what diseases are affecting wheat production in Nebraska.

Work continues on introgressing the resistance from *Agropyron* (the first real resistance/tolerance to wheat streak mosaic virus developed by Dr. Joe Martin, Kansas State University at Hays, Kansas and his co-workers) into adapted wheat varieties. A number of lines that may have this source of resistance were given to Gary Hein who is testing them in the field in Scottsbluff, NE. The frequency of lines carrying virus resistance remains lower than expected and it is our hope that molecular marker will be used to enrich our populations and enhance our frequency of elite lines with resistance.

Molecular markers will be an important aspect of our research on developing Fusarium head blight (FHB, syn. scab) resistant lines. Working with FHB is hard because the disease assay must be done when the plants are at flowering (hence it is a very long assay) and it is very environmentally sensitive. Hence anything that can be done to select for plants in the seedling stages (as molecular markers would allow you to do) is very important. In 2005, we shipped every FHB parent (65 lines) to Dr. Guihua Bai (USDA-ARS at Kansas State University) for haplotyping so we will know if they have any of the known FHB QTL markers. This information will allow us to use a directed molecular marker approach in future generations. To foster our ability to better track populations, we have changed our greenhouse planting plans so that each parent line has one plant per pot (hence we will have pure seed of each parent line). Though it was too late for this year, we will no longer send three way cross seed involving FHB crosses to Arizona, but will retain them in Lincoln so we can enrich the population by selecting those F_1 plants with the most FHB QTL markers.

In 2006, we will develop a series of crosses that should have fixed FHB QTLs, hence assuring that we will have at least one FHB QTL in the resultant populations. For example, we will cross hard red spring wheat lines with the 3BS QTL from Sumai 3 to soft red winter lines from Virginia with the 3BS QTL from Sumai 3 to one of the four currently identified Nebraska lines which have the marker at the 3BS QTL. The three way crosses will have two hard wheat parents and two winter wheat parents. We will use molecular markers to enrich the 3-way cross population (score the F_1 plants) with other molecular markers for possible segregating FHB QTLs to ensure we have plants than truly contain the 3BS QTL from Sumai 3 and additional FHB QTLs. In the F2 and possibly F3 bulk generations, we will use optical sorting to enrich the populations for kernel hardness (remove the soft kernel genotypes) and for elevated kernel protein level. Currently experiments to determine the efficacy of optical sorting for hardness and protein content are underway with Dr. Floyd Dowell of the USDA-ARS, Manhattan, KS. In this approach, minimally we should create populations that are fixed for the 3BS QTL, enriched for other FHB QTLs, and selected for hardness and protein content prior to visual selection.

As the early generation selection is based upon visual selection (at best only moderately effective selection system), we do weight our early generation selection indices heavily towards sampling for FHB tolerant populations to insure we have numerous potentially FHB tolerant lines in later generations. To test if this approach has merit, we will be screening a number of our head row populations for known FHB tolerant QTLs using molecular markers and harvesting those with and without the known FHB QTLs to determine how different our selections will be if they are based upon QTL markers and on visual selection. In the next generation we will harvest the FHB QTL lines and the non-FHB QTL lines to see if the FHB QTL lines that were not visually selected will survive the agronomic performance selection or become only parents.

14. Considerations on Nursery Sites

Due to reduced funding, we made the decision in 2002 to drop our testing sites at Grant and McCook. Both sites will be missed as Grant provides a useful back up site for western Nebraska and McCook was an ideal southwestern Nebraska site to complement North Platte. With additional funding to study the genetics of wheat agronomic performance, we have effectively increased our nursery size by three additional testing sites (2700 plots), hence we are currently unable to expand further. We (Dr. Kent Eskridge and I) are beginning to see the benefit of using incomplete block designs. Alpha-lattice statistical designs with incomplete blocks of 5 seem to be very effective. We tried small blocks (blocks of 2), but they were too small.

15. Global Change Research

Our global change efforts continue to evolve. We are now working as part of a broad based team to see if we can use climate and weather data to predict wheat phenology (specifically wheat heading date). Our idea is that the cumulative wheat data sets from regional nurseries provide excellent historical data that can be matched with good weather data to help us understand why we can see a 10 to 14 day fluctuation in wheat heading and maturity in the

Great Plains.

16. Plant Height and Diversity in Wheat

Mr. Zakaria Aj-alouni will be working with Dr. Guihua Bai (USDA-ARS, Genotyping Center) and Drs. Ali and Dweikat to determine the frequency or semi-dwarfing genes in our breeding lines. We are interested in knowing if *Rht*$_1$ or *Rht*$_2$ may have better height characteristics in our tall and short plant height environments. Rht are "reduced height" genes that are the basis of the Green Revolution. So far most lines appear to have the *Rht*$_1$ gene, but more research is needed. We are also wondering why there are so many different responses to the environment for lines with *Rht*$_1$ which we believe there must be useful modifier genes in the background that affect of *Rht*$_1$.

IV. GREENHOUSE RESEARCH

In 2005, the majority of F_1 wheat populations were grown at Yuma, AZ. Only populations needing additional crosses are being grown in the Lincoln Greenhouses. This change reduced our greenhouse space and greenhouse labor, and provided much greater quantities of F_2 seed.

V. PROPRIETARY RESEARCH

With the advent of plant biotechnology, the necessity and desirability of interacting with commercial companies has increased. We continue to breed herbicide tolerant wheat with one company as can be seen by the release of Infinity CL wheat. In cooperation with a company skilled in creating mutations and with the owner of the herbicide tolerant trait, we received Millennium (2003), Wahoo (2003), and Goodstreak (2004) and additional lines with both of the most common herbicide tolerant mutants. This new germplasm is a major step forward in two ways. First we now have lines adapted to Nebraska carrying the needed genes. Hence in future crosses we will use the elite, adapted lines as parents. Secondly, as we try to develop double mutant lines, they can be easily created within Wahoo, Goodstreak, and Millennium by simply intercrossing Wahoo, Goodstreak, or Millennium with the two genes. One major concern with our continued interactions with private companies is that they have the expectation that their intellectual property will be protected by our agreements and for the derived commercial lines. Historically, the University of Nebraska has been reticent to aggressively enforce its intellectual property rights under the Plant Variety Protection Act. Non-enforcement or weak enforcement will jeopardize all future collaborations with companies who have the reasonable expectation that their intellectual property will be handled in accordance to the law.

We received our fifth year of research and development fees from an agreement with Paramount Seed Farms (a commercial seed company) for the exclusive release of our winter barley germplasm. We are increasing a number of barley lines for further testing and as possible new products. The 2005 data for the Barley Variety Trial were:

2005	Lincoln	-----	Mead	-----	Sidney	------	--------	Colby, KS	------	------				
VARIETY	Yield (lbs/a)	Rk	Yield (lbs/a)	Rk	Yield (lbs/a)	Rk	Lodg.	Yield (lbs/a)	Rk	Most.	Hdavg. d	Htavg. in	**Average (lbs/a)**	**Rank**
Perkins	**3755.3**	**40**	**3391.5**	**21**	**2499.8**	**29**	**6.3**	**3856.8**	**38**	**13.75**	**16.8**	**30.8**	**3376**	**39**
TAMBAR 501	**4645.5**	**36**	**2287.5**	**38**	**2830.5**	**22**	**1.3**	**4437.8**	**34**	**11.75**	**10.6**	**30.4**	**3550**	**37**
P-721	**4273.5**	**38**	**2907.0**	**27**	**3039.8**	**12**	**3.8**	**4927.3**	**20**	**13.25**	**13.5**	**29.5**	**3787**	**30**
P-954	**5322.8**	**9**	**3763.5**	**15**	**1496.3**	**39**	**1.3**	**5067.0**	**12**	**13.75**	**13.0**	**28.2**	**3912**	**21**
P-713	**4981.5**	**27**	**3850.5**	**14**	**3052.5**	**11**	**10.0**	**5029.3**	**14**	**11.75**	**12.0**	**31.9**	**4228**	**11**
NB97891*	5160.0	14	4075.5	9	2603.3	26	11.3	5613.8	1	12.75	11.2	30.3	4363	8
P-919	**5016.0**	**24**	**4048.5**	**10**	**2859.8**	**21**	**3.8**	**3646.8**	**40**	**12.25**	**9.4**	**32.4**	**3893**	**25**

NB98936	5043.0	22	3747.0	16	1707.8	38	5.0	4942.0	18	13.00	12.1	29.2	3860	27
NB99845*	5734.5	1	4299.0	4	3857.3	2	1.3	5245.3	7	12.50	10.7	29.0	4784	1
NB99874	5511.0	4	4260.0	6	3294.0	7	10.0	5170.3	9	13.50	16.9	31.7	4559	3
NB99875	5220.8	13	4308.0	3	3508.5	4	15.0	4880.5	23	14.75	13.4	31.5	4479	4
NB99881	4645.5	35	2899.5	28	2175.8	33	6.3	4896.5	22	13.50	13.9	29.9	3654	34
NB99885	5304.0	11	3513.0	19	1881.8	37	7.5	5375.3	5	12.00	10.9	30.1	4019	17
NB018131	5304.8	10	4162.5	7	3073.5	9	3.8	5229.3	8	12.00	9.6	33.3	4443	6
NB018163	5110.5	18	3157.5	23	2535.8	27	11.3	5062.3	13	12.25	10.5	31.8	3967	19
NB018180	4700.3	33	3933.0	11	2769.0	23	5.0	4703.0	27	12.75	11.1	33.7	4026	15
NB018187	5088.8	19	3861.0	13	2716.5	24	18.8	5381.8	4	12.25	12.8	30.4	4262	9
NB018199*	5580.8	3	4690.5	1	3390.0	6	6.3	5119.0	10	12.75	10.9	31.8	4695	2
NB018211	4981.5	26	4111.5	8	3455.3	5	12.5	4923.5	21	12.00	11.3	33.1	4368	7
NB03402	5301.8	12	2986.5	26	2516.3	28	2.5	4812.0	24	12.00	10.3	27.5	3904	22
NB03403	5424.8	7	2080.5	40	3058.5	10	2.5	4981.3	16	12.25	10.3	32.2	3886	26
NB03423	5066.3	20	2563.5	33	2475.8	30	8.8	5003.5	15	13.00	11.9	31.6	3777	31
NB03429	5118.0	17	2530.5	35	2109.8	34	0.0	5399.5	3	12.25	13.2	27.0	3789	29
NB03435	4712.3	32	2347.5	36	2878.5	19	10.0	4941.0	19	12.25	14.1	28.8	3720	32
NB03437	5672.3	2	2551.5	34	1991.3	36	3.8	5362.3	6	12.50	14.9	29.6	3894	24
NB03439	5462.3	6	3088.5	24	3944.3	1	3.8	4521.8	31	13.00	12.9	33.9	4254	10
NB03440	5355.8	8	3556.5	18	3162.0	8	3.8	4386.0	36	13.25	13.1	32.5	4115	13
NB04427	5469.8	5	4387.5	2	2898.8	16	0.0	5074.8	11	12.75	11.9	32.8	4458	5
NB04439	5059.5	21	3399.0	20	912.8	40	1.3	4554.3	30	13.00	15.8	30.8	3481	38
NB04440	5016.8	23	3918.0	12	2221.5	32	2.5	4596.5	29	13.75	14.0	32.5	3938	20
NB04442	4892.3	28	2676.0	32	3028.5	13	0.0	5544.0	2	12.50	13.1	32.8	4035	14
NB04428	5139.8	16	4272.0	5	2017.5	35	2.5	4644.3	28	12.75	11.8	31.1	4018	18
NB04418	5158.5	15	3630.0	17	2886.8	18	3.8	4403.8	35	11.75	11.8	32.4	4020	16
NB04416	4673.3	34	2308.5	37	2987.3	14	5.0	4498.3	32	11.75	12.8	32.0	3617	35
NB04412	4869.8	29	3082.5	25	2867.3	20	6.3	4778.0	25	12.75	12.8	33.3	3899	23
NB04436	4624.5	37	3390.0	22	3687.8	3	1.3	4956.0	17	13.00	15.2	31.9	4165	12
NB04422	3868.5	39	2763.0	30	2346.8	31	2.5	3708.3	39	11.00	12.3	32.9	3172	40
NB04426	4810.5	31	2683.5	31	2934.8	15	0.0	4742.8	26	13.00	12.9	31.9	3793	28
NB04424	5015.3	25	2766.0	29	2685.0	25	1.3	4216.0	37	13.25	13.4	30.8	3671	33
NB04420	4860.0	30	2215.5	39	2892.8	17	1.3	4454.0	33	12.00	12.9	32.1	3606	36
GRAND MEAN	**5023.8**		**3361.6**		**2731.3**		**5.1**	**4827.1**		**12.66**	**12.6**	**31.2**	**3986**	**0**
CV	8.3		22.1		17.0		87.2	11.6						
LSD	489.3		1250.6		544.4		5.2	657.5						

* Advanced lines under test with Paramount Seed Farms.

Spring Barley has been decimated the last several years by Russian wheat aphids. Burton, the first release of a RWA resistant spring barley was made last year as a multi-state cooperative effort. Burton will greatly enhance the ability of producers in the High Plains to utilize spring barley as part of their rotations. Additional releases are anticipated as two more heat tolerant lines are being increased by Foundation Seed this spring and are planned for release as Sidney and Stoneham. They have two different sources of RWA resistance and the heat tolerance of the recurrent parent Otis.

With the current level of private sector investments in research, additional public-private interactions are to be expected. A key goal will be to develop working relationships that benefit the producer, the customer, and the public good.

VI. Spring-Sown Wheat Research

A small spring-sown wheat breeding effort was initiated in 1997 by Drs. Baltensperger (project leader) and Baenziger and this has expanded to be cooperative with Dr. Karl Glover at South Dakota State University . Dr. D. Baltensperger works closely with Dr. D. Lyon on intensified cropping systems as it is expected that spring wheat will be used in new cropping systems. More than 40 advanced spring wheat lines were evaluated for hardness by the wheat quality lab and those evaluated as hard were tested for other quality parameters. Since these lines all have excellent grain yield based on results from the past two years, those with adequate quality will be advanced to final stages of pre-release multi-location testing including increases this spring. Two lines, NE 108-46 and NE 188-24 will be tested in the Uniform Regional Spring Trials this year. The imi-tolerant lines have been recrossed to add a second gene for resistance and are being screened in the field this year, but are at least three years from release without fast tract nurseries, which are not currently planned.

Data from several of this years nurseries are shown below.

Scottsbluff NE Irrigated Spring Wheat Trial 2005

Entry #	ENTRY	YIELD	TEST WT	HT
		Bu/Acre	Lbs/Bushel	Inches
16	SD3870	90	59.3	33
32	SD3927	83	59.6	30
38	NE188-24	83	57.2	28
15	SD3868	79	58.5	32
41	NE108-46	78	57.6	28
2	OXEN	77	57.1	29
25	SD3900	76	57.1	34
40	NE126-4	74	59.0	27
23	SD3897	73	57.5	33
5	GRANGER	73	58.3	33
11	SD3687	73	56.7	34
33	SD3931	73	58.7	33
14	SD3860	73	58.0	32
18	SD3879	73	57.8	32
45	NE-126-5	72	57.3	30
13	SD3854	71	60.7	33
17	SD3875	71	59.5	34
31	SD3920	71	60.4	30
29	SD3910	71	56.3	30
36	SD3937	69	59.4	33
12	SD3851	68	60.6	32
28	SD3909	68	58.9	28
6	REEDER	68	58.8	31
4	BRIGGS	68	59.7	31
39	NE126-35	67	59.4	28
37	SD3938	67	58.3	29
9	FORGE	67	59.4	32
34	SD3934	66	60.1	32

24	SD3899	66	57.2	31
44	Hanna	65	60.2	34
7	KNUDSON	65	59.8	31
1	RUSS	65	57.5	32
10	ALSEN	62	59.1	28
30	SD3911	62	61.2	30
35	SD3936	61	58.1	29
43	Outlook	61	57.7	28
20	SD3882	61	58.6	31
22	SD3889	60	57.4	33
26	SD3902	60	58.4	34
21	SD3888	59	58.3	32
8	STEELE-ND	59	58.5	32
3	WALWORTH	56	58.2	29
19	SD3880	54	58.8	30
27	SD3907	52	59.1	28
42	NE106-4	52	57.3	28
	Average	68	58.6	31
	LSD (.05)	15	0.8	3

HARD RED SPRING WHEAT UNIFORM REGIONAL NURSERY 2005 SIDNEY, NEBRASKA

URN	entry #	YIELD BU/ACRE	TEST WT LBS/BUSHEL	HT inches
43	NE 108-46	30	48.0	25
23	MN00261-4	30	51.3	28
6	SD3687	29	46.6	29
4	Verde	29	48.1	26
26	MN02072	29	52.1	29
40	NE 188-24	28	42.6	25
48	Oxen	27	46.2	27
17	98S0113-20	27	52.0	26
35	ND03/1-15	27	48.2	30
50	Reeder	26	51.3	26
8	SD3854	26	51.1	28
7	SD3851	26	51.7	31
14	CA-904-743	26	51.6	25
38	ND04/3-18	25	50.1	28
21	NDSW0348	25	45.3	28
36	ND03/1-9	24	48.4	32
5	Keene	24	48.6	32
37	ND03/1-13	23	48.3	30
10	SD3870	23	48.6	28

9	SD3868		23	48.4	28
34	MT 0266		23	47.5	30
31	BW367		23	46.6	28
20	Forge		22	48.2	32
15	98S0127-06		22	47.0	27
49	Hanna		22	49.8	30
29	BW361		22	47.3	27
12	CA-904-742		22	52.7	29
18	99S0006-2		21	47.7	28
3	2375		21	49.7	27
44	NE 106-4		21	46.6	26
24	MN01311-A		21	50.4	29
42	NE 126-4		21	48.6	31
32	00H04*J3		20	49.4	28
33	MT 0245		20	45.6	25
28	WA007957*		20	47.9	29
22	NDSW0350		20	45.9	27
11	CA-904-741*		20	44.5	21
25	MN01333-A		20	47.4	29
45	NE 126-5		19	46.4	27
27	MN02252-A		18	46.9	26
16	97S0254-8-1		18	48.4	26
2	Chris		18	48.8	29
41	NE 126-35		17	46.7	25
39	ND04/3-19		17	45.4	26
19	99S0051-3-1		17	47.6	24
46	Outlook		17	45.3	23
1	Marquis		12	46.1	31
30	BW364		12	43.0	30
47	Russ		11	42.9	28
13	BZ-999-592		10	47.2	25
	*white				
		Average	22	47.9	28
		LSD (.05)	4	1.6	5
		C.V.	12.4	2.0	10.4

Irrigated Spring Wheat Nursery
SAREC, Lingle WY 2005

	Entry	Yield (Bu/A)	Heading Date (June)	Heading Height (in)
NE	108-46	48.1	16	26

NE 126-4	44.3	18	28
Oxen	42.8	15	25
NE 126-5	42.7	19	30
Hanna	41.8	16	30
Reeder	40.8	16	27
NE 106-4	39.0	18	27
Forge	38.5	12	29
NE 126-35	36.9	19	28
Russ	33.5	16	28
Outlook	32.4	20	28
NE 188-24	31.4	19	25
Average	39.4	17	27
DRS 0.05	15.1	3	2

High Plains Ag Lab, Sidney, NE Dryland Spring Wheat Trial 2005

Entry #	ENTRY	YIELD Bu/Acre
14	Briggs	22
4	NE 108-46	20
1	NE 188-24	19
11	Reeder	19
10	Hanna	18
9	Oxen	16
12	Forge	15
6	NE 126-5	15
3	NE 126-4	13
7	Outlook	13
2	NE 126-35	12
5	NE 106-4	11
8	Russ	9
	Average	16
	LSD (.05)	3

VI. ALLIED RESEARCH

The wheat breeding or variety development project is only one phase of wheat improvement research at the University of Nebraska-Lincoln. The project interacts and depends on research in wheat germplasm development, wheat quality, wheat nutritional improvement, wheat cytogenetics, plant physiology and production practices, and variety testing. Much of the production research is located at the research and extension centers. All components

are important in maintaining a competitive and improving wheat industry in Nebraska. The allied research is particularly necessary as grain classification and quality standards change and as growers try to reduce their production costs.

The program also depends on interactions and collaborations with the Wheat Board, Nebraska Wheat Growers Association, regional advisory boards, Foundation Seeds Division, Nebraska Crop Improvement Association, the milling and baking industry, and other interested groups and individuals. The Nebraska Wheat Quality Laboratory cooperates closely with the Wheat Quality Council and baked the large-scale cooperator samples. Numerous groups have visited the laboratory and participated in discussions on quality and marketing. Through these interactions, the program is able to remain focused and dedicated to being a premier provider of quality varieties, information, and technologies to help maintain the Nebraska Wheat Industry.

Summary

The 2005 Nebraska Wheat Crop was estimated at 68,600,000 bu, which represented a 39 bu/a state average yield on 1,760,000 harvested acres. The 2005 crop was 12% higher than the 2004 crop (61,100,00 bu, which represented a 37 bu/a state average yield on 1,650,000 harvested acres). Despite continued genetic improvement, the main determinant in wheat production seems to be acres harvested, government programs, and weather (which also affects disease pressure and sprouting).

Two new cultivars (Hallam and Infinity CL) were formally released in 2005. The release statements can be found at:
Hallam: http://agronomy.unl.edu/grain/hallam.PDF
Infinity CL: http://agronomy.unl.edu/grain/infinity.PDF

One experimental line NE99495, which has exceptional end-use quality, has been licensed to the Kansas Organic Producers. The license is part of our effort to ensure that the germplasm developed at the University of Nebraska for the public good is broadly available to interested parties. NE99495 is a hard red winter wheat with the pedigree Alliance/Karl 92. The cross was made in 1993. NE99495 is an F_3-derived line that was selected in the F_4 generation. NE99495 was identified in 1999 and was grown at six unreplicated locations in 1997. It has been tested in replicated trials at six to seven locations per year from 2000 to present. In addition, NE99495 was tested in the Northern Regional Performance Nursery in 2002 and 2003, and in Nebraska cultivar performance trials in 2003 and 2004. NE99495 is semidwarf wheat with medium plant height for a semidwarf cultivar and acceptable winterhardiness for production in Nebraska. It is slightly later than Alliance and slightly earlier than Millennium for flowering date. It is susceptible to wheat streak mosaic and wheat soilborne virus and stripe rust; and moderately resistant to Hessian fly and stem rust. It is moderately susceptible to moderately resistant to leaf rust. It has good yield potential and has genetically lower test weight.

Based on last year's results and our recent releases, we have decided to increase one line, NE01643 for possible release in 2006. NE01643 is a hard red winter wheat with the pedigree Millennium sib/ ND8974; where ND8974 is Seward/Archer (hence the full pedigree would be Millennium sib//Seward/Archer). The cross was made in 1995. NE01643 is an F_3-derived line that was selected in the F_4 generation. NE01643 was identified in 2001 and was grown at six unreplicated locations in 2001. It has been tested in replicated trials at six to seven locations per year from 2002 to present. In addition, NE01643 was tested in the Northern Regional Performance Nursery in 2004 and 2005, and in Nebraska cultivar performance trials in 2004 and 2005. NE01643 is semidwarf wheat with medium plant height for a semidwarf cultivar and acceptable winterhardiness for production in Nebraska. It is later than Alliance and Millennium and slightly later than Harry for flowering date. NE01643 has excellent grain yield (topped the NRPN in 2004, data being analyzed for 2005; topped the state variety in 2005 and best 2 –year average for 2004 and 2005). In addition, it has very good test weight and is moderately resistant to leaf and stem rust, and to Hessian fly. It is moderately susceptible to fusarium head blight and powdery mildew and susceptible to stripe rust and soilborne/spindle streak mosaic virus. Its end-use quality is minimally acceptable (not a star). See also:
http://agronomy.unl.edu/grain/NE01643.PDF

With the release of new varieties Antelope, Arrowsmith, Goodstreak, Hallam, Harry, Infinity, Millennium, Nuplains, Wahoo, and Wesley many of the most advanced current breeding lines are not expected to be released.

The generous support of the Nebraska Wheat Board is gratefully acknowledged.