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1987 NEBRASKA COOPERATIVE WHEAT INVESTIGATIONS

Report to the  
NEBRASKA WHEAT DEVELOPMENT, UTILIZATION  
AND MARKETING BOARD

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December 1987

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### I. INTRODUCTION

Wheat improvement research in Nebraska is cooperative between the Agricultural Research Division, IANR of the University of Nebraska-Lincoln, and the Agricultural Research Service/USDA, North Central Region. Winter wheat breeding, which includes variety, line and germplasm development, is a major component of the wheat improvement research. This report will deal only with that portion of the total wheat research effort. The basic project is located in the Department of Agronomy at the University of Nebraska-Lincoln. Very important contributions come from researchers at the Nebraska outstate stations, from researchers in the Department of Plant Pathology (both state and federal), from plant pathologists located at the USDA Cereal Rust Laboratory, St. Paul, Minnesota, and USDA entomologists at Manhattan, Kansas. All of these invest time and funds in this program. A grant from the Nebraska Wheat Development, Utilization and marketing Board provides key financial support for this research.

### II. THE 1987 NEBRASKA WHEAT CROP

#### 1. Growing Conditions

The 1987 Nebraska wheat crop was generally very good. The majority of growers were able to plant at optimum planting dates in the fall of 1986. Some growers have begun planting very early to avoid possible bad weather at optimum planting dates. Early planting increases the risk of Hessian fly infestation and this pest caused yield losses in some fields near Ogallala. Late planted (due to inclement weather) wheat in eastern Nebraska did suffer winter injury. The generally favorable fall conditions continued with a mild winter, adequate spring moisture, and generally good harvest weather. The winter injury was probably caused by a brief, but severe cold snap in early November and a blizzard in early March. In eastern Nebraska, an early, hot spring and excessive rainfall favored stiff-strawed, semi-dwarf cultivars. The newly released Redland, a selection from Brule, performed particularly well, as did Brule and Colt. Taller wheats, such as Centura, performed below expectations. Maturity was not a major factor in most of Nebraska as TAM107 (early) and the later cultivars, Redland and Brule, performed well. Siouxland continued to perform well, though it lodged in some fields.

#### 2. Diseases

Disease problems were moderate. Foliar diseases (stem rust, leaf rust, tan spot, Septoria spp., and Cephalosporium stripe) were minor. This is a sharp contrast with the previous year when stem rust was a major disease. However, races of leaf rust that are virulent on the previously resistant cultivars Siouxland (Lr24 and Lr26) and Norkan (Lr1 and Lr24) were identified. Leaf rust is generally not a major disease in Nebraska. Barley yellow dwarf virus and wheat steak mosaic virus were more prevalent than normal and may have been this year's major diseases on wheat.

#### 4. Insects

The Russian wheat aphid migrated into Nebraska in 1986 and was found in much of the western part of the state in 1987. Though it caused significant losses in neighboring states, particularly Colorado, losses in Nebraska seem to be mainly in areas where the aphid overwintered (sheltered valleys) and on spring grains. The Russian wheat aphid is a new pest and it is difficult to predict its future role in Nebraska wheat production. With its destructive potential, it will certainly need close monitoring. Hessian fly, as mentioned previously, was a significant problem in fields of wheat planted early with susceptible varieties near Ogallala.

#### 5. Wheat Production

The wheat yield for Nebraska was 44 bushels per acre from 1,950,000 harvested acres for a total production of 85,800,000 bushels. This yield is a state record. The decline in planted and harvested acres continues as a result of the low wheat prices and the farm programs. Quality determinations by Doty Laboratories Inc. were as follows:

Nebraska	Protein Ave.	Overall Bake
Northeast	11.8	fair+
Southeast	11.7	fair
North Central	12.0	good-
Southwest	12.4	good
Panhandle	11.1	fair+

Quality standards are being impacted by zero-time baking methods and high speed mixers. These procedures will require stronger gluten proteins (longer dough mixing times and tolerances).

#### 6. Cultivar Distribution

Brule continued to be the most widely grown cultivar in 1987 (22.5% of the total acreage). This is a reduction from its peak of being grown on 32.6% of the total acreage in 1985. With the release of Redland, a selection out of Brule, and the favorable 1987 yield performance, the combined acreage of Redland and Brule may increase in 1988. Siouxland and Centura continue to rapidly gain in popularity (Table 1). Centurk and Centurk 78 continue to decline in popularity, but remain important wheats in Nebraska. While no wheat listed in Table 1 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 region. Overall, publicly developed varieties were grown on 87.4% of the state. USDA-Nebraska releases are grown on approximately 80% of the state. Privately released varieties are grown on the remaining 12.6% of the state.

TABLE 1. NEBRASKA--WHEAT VARIETIES  
ESTIMATED PERCENTAGES PLANTED TO EACH VARIETY, 1983-1987

Variety	Percent				
	1983	1984	1985	1986	1987
Brule	2.6	20.1	32.7	28.6	22.5
Siouxland	-----	-----	-----	2.8	17.0
Centura	-----	-----	1.2	6.9	14.3
Centurk & Centurk 78	40.0	28.1	20.5	19.0	12.4
Colt	-----	-----	-----	3.5	4.2
Buckskin	5.3	4.4	6.0	5.4	3.8
Scout & Scout 66	9.7	6.4	5.1	5.0	3.5
AgriPro Hawk	.7	3.5	4.5	4.7	3.4
AgriPro Rocky	6.4	4.4	3.9	3.3	1.7
AgriPro Wings	6.6	8.4	3.9	2.6	1.7
Newton	2.2	2.5	1.5	1.5	1.5
Bennett	4.7	3.1	2.5	1.3	1.2
Vona	4.3	5.2	3.8	3.2	1.2
Gage	3.4	2.1	2.5	1.0	1.0
Arkan	-----	-----	-----	-----	.9
Other Public Varieties	14.0	8.7	6.7	4.5	3.9
Other Private Varieties	.1	3.1	5.2	6.7	5.8

### 6. New Cultivars

TAM 200 was jointly released by University of Nebraska with Texas A & M University. The parentage of TAM 200 is TX71A1039-V1\*3/Amigo. The line is a high yielding semi-dwarf wheat which has performed well under mild winters in Nebraska and in states to our south and west. It has good resistance to stem rust. Its level of winterhardiness appears to be similar to Vona. Additional testing under more severe winters may be necessary to determine its true level of winterhardiness. Cody, Redland, and Norkan (joint release with Kansas) were released in 1986. Redland and Norkan, both short wheats, have attracted greater interest than Cody, a tall wheat.

## III. FIELD RESEARCH

### 1. Increase of New Experimentals

NE82656 was given to the Foundation Seeds Division for increase. NE82656 has had an excellent yield record in Nebraska and in the Northern Regional Performance Nursery. Its performance is equivalent to or better than Siouxland and Redland. It is resistant to stem rust, moderately resistant to leaf rust and to the Great Plains race of Hessian fly, and has some tolerance to Cephalosporium stripe (though it is not as tolerant as Cody). It is winterhardy, medium to late maturity, and tall with moderate straw. The pedigree of NE82656 is Brule/3/Parker\*4/Agent//Beloterkovskaia 198/Lancer. Two other wheats, NE82533 and NE82438, are under small increase.

## 2. Field Plot Trial and Outstate Testing

Twenty entries were included in statewide testing at 12 locations in 1987. The top ten cultivars were:

<u>Entry</u>	<u>Av. Yield</u> <u>bu/a</u>	<u>Entry</u>	<u>Av. Yield</u> <u>bu/a</u>
TAM107	61	Brule	57
Abilene	60	Redland	57
RHS 7846	60	NE82656	57
Bounty Hybrid 205	59	Vona	56
Bounty Hybrid 301	59	Colt	54

Turkey had the lowest yield with 38 bu/a. In 1986, the highest yielding variety was NE82656 at 52 bu/a. Hybrids continue to do well in these tests, but not sufficiently well to pay for the increased cost of seed.

## 3. Irrigated Wheat Trials

Irrigated wheat trials were planted at Mead, North Platte, and Scottsbluff. The trial at Scottsbluff was abandoned due to severe hail damage. The trial at North Platte was damaged by atrazine carry-over from the previous crop. The trial at Mead did not show a response to irrigation. Hence no meaningful data was obtained on the performance of irrigated wheat. The trials were replanted for harvest in 1988.

## 4. Nebraska Intrastate Nursery

The Nebraska Intrastate Nursery (NIN) was seeded at five locations and all were harvested. Excellent data was obtained from four locations (Clay Center, North Platte, Sidney, and Alliance). The data from Mead was marginal due to severe and irregular winterkilling. The top ten lines for yield were:

<u>Entry</u>	<u>Av. Yield</u> <u>bu/a</u>	<u>Entry</u>	<u>Av. Yield</u> <u>bu/a</u>
OK83396	59.7	NE83407*	57.8
TAM108	59.6	NE83406	57.8
TAM200	59.1	Brule	57.5
NE82656*	58.3	Redland	56.8
NE83498	57.9	Centura	56.7

\* Entered into USDA regional trials

Thirteen lines were retained for further testing. This is a low retention rate compared to previous years. A number of previously high yielding lines had poor yields in 1987. They were dropped from further testing because they were considered to be too sensitive to environmental changes.

## 5. Nebraska Triplicate Nursery

As opposed to 1985 and 1986, Siouland was not the highest yielding line in the Nebraska Triplicate Nursery (NTN). It was eighth for yield. TAM107 (57.5 bu/a) had the highest yield. Brule and Colt were third and ninth respectively in the nursery. The highest yielding experimental lines had Colt and/or Cody as a parent. These lines may represent a group of high and more consistent yielding lines than many of our existing cultivars. Sixteen lines were advanced to the Nebraska Intrastate Nursery.

## 6. Regional Nurseries

The Southern Regional Performance Nursery was harvested at Lincoln, Clay Center, North Platte, Sidney, and Alliance. Yields were similar to the NIN and NTN. The highest yielding lines were short statured, early wheats that were favored in the 1987 growing season. The four highest yielding lines were RH855001 (69.7 bu/a), AGC-111 (69.4 bu/a), TXGH10563 (68.5 bu/a), and TX713622 (66.7 bu/a). The Northern Regional Performance Nursery was harvested at Lincoln, North Platte, Sidney, and Alliance. Yields were also similar to the NIN and NTN. The highest yielding lines were all hybrids: Bounty 205 (65.0 bu/a), Bounty 301 (63.0 bu/a), and XNH1359 (61.0 bu/a). NAPB Abilene was the highest yielding pureline (59.8bu/a), followed by Norkan (57.7 bu/a) and NE82656 (56.8bu/a). NE82656 performed well at every location except Lincoln where it suffered some winter injury due to late planting. Being a later variety, it also suffered by the early season and dry conditions at Lincoln.

## 7. Multiple-Location Observation Nursery

All six replications of this nursery were harvested. Of the 249 lines including checks that were evaluated, 43 were advanced to the NTN. The check TAM107 performed extremely well in this nursery which is indicative of the unusual 1987 season. A number of experimental lines performed better than Redland, the best yielding Nebraska check variety. A number of entries in the nursery were high protein lines from the USDA program. While they did not perform well across Nebraska, they have excellent plant types and were selected as future parents.

## 8. Early Generation Nurseries

### a. Single-plot Observation Nursery

Nine hundred and eighty-eight lines including checks were evaluated in 1987. Of this group 281 were selected for further testing. Included were eight lines that came from plants selected for resistance to the Hessian fly by the USDA/ARS entomology team at Manhattan, Kansas. Additional lines having Hessian fly resistance would have been selected, but winterkilling was particularly severe in this nursery.

#### b. Headrow Nursery

Over 31,000 headrows were planted at Mead. All of the headrows survived the winter in excellent condition. Some later types were injured by moisture and heat stress late in the season. Over 1500 were selected for further testing. This is a significant increase over the two previous years and represents the first lines selected from bulks that were not damaged in the severe winter of 1983-1984.

#### a. F<sub>3</sub> bulk hybrids

Five hundred and five bulk hybrids consisting of mainly single and three-way crosses were grown in 1987. The bulks survived the winter well. The moisture and heat stress slightly impaired the ability to select among the best bulks, however, over 37,000 heads were selected for planting in fall, 1987.

#### b. F<sub>2</sub> bulk hybrids

The F<sub>2</sub> bulk hybrid nursery contained only 272 bulks. This is lower than previous years and represents the reduced crossing efforts due to the approaching retirement of Dr. Schmidt. Those bulks that survived the winter were advanced to the F<sub>3</sub> bulk nursery.

### 9. Winter Durum and Triticale Nursery

Excellent progress continued in identifying durum wheats having good winterhardiness (superior to winter barley), high testweight, and good disease and lodging resistance. The decision to begin an orderly close-out of the winter durum breeding efforts was made due to resource limitations. No new crosses will be made. The segregating materials will be advanced until they are discarded or deposited in the National Small Grains Collection. The existing advanced lines will be deposited.

Good progress in developing high yielding, lodging and disease resistant, high testweight triticales with wheat maturity was made in 1987. Two lines, NE83T12 and NE86T666 were advanced to the NIN. Both are superior to existing commercially available triticale varieties based on tests at Lincoln. NE83T12 was also put into the Outstation Testing program and given to the Foundation Seeds Division for a small increase.

### 10. Doubled Haploid Study

Forty-four doubled haploids of Centurk were compared to Centurk and Centurk 78 in replicated yield trials harvested at Mead, North Platte, Sidney, and Alliance. The purpose of this study is to evaluate whether a new and potentially much more efficient breeding strategy may have utility in the breeding program. The doubled haploids were developed by using tissue culture in which plants are regenerated from immature pollen grains (saving a minimum of two years in the breeding program). An additional year of data is required before the study can be summarized, but the tissue culture technique does not appear to have induced deleterious changes in the regenerated plants. Ms. V. Keppenne, a graduate student, has transferred the tissue culture techniques to the University of Nebraska and is developing a better understanding of the utility of the technique.

### 11. Chromosome Substitution Lines

A series of lines in which a single pair of chromosomes has been transferred from Cheyenne, the most important ancestor in the Nebraska Wheat Improvement efforts, to Wichita, an important wheat from Kansas, and vice versa have been developed by Dr. M. R. Morris. These lines were evaluated at one location in 1987. An additional two years of study will be necessary before the results can be summarized. However, preliminary indications are that some chromosomes have significant effects on maturity, yield, and testweight. This research will give a better understanding of how to manipulate the genetics of performance and the role of the environment in modifying performance. Mr. T. Berke, a graduate student on the project, will be in charge of this research as well as coordinating the development of the winter barley varieties.

### 12. Non-red Grain Wheat

One purple grain wheat is currently being tested in the NIN. Crosses continue to be made to white and purple wheats to develop lines with greater yield potential for specialty markets. None of the previous crosses to white wheats have led to superior experimental lines with good performance. This program was decreased in effort due to resource constraints.

### 13. Spring Wheat and Triticale

The spring wheat and triticale variety trials at Mead are part of the Nebraska Out-state Testing Project. The trials were also at Concord, Sidney, Scottsbluff (lost to hail), and Alliance. A complete report of these lines can be found in E. C. 87-102, Nebraska Spring Small Grain Variety Test. Yields were lower than previous years due to a hot June and varied widely between testing locations (hence will not be summarized here).

## IV. GREENHOUSE RESEARCH

The F<sub>1</sub> wheat populations were grown only in the Lincoln Greenhouses to avoid possible losses to winterkilling. Two hundred seventy-two F<sub>1</sub> populations were grown. This is lower than normal. These crosses for these populations were made after the retirement of Dr. John Schmidt and before his replacement could be hired. An additional 440 wheat crosses were made. This number of crosses is slightly more than normal. The program will try to make 300-400 crosses annually. The populations and crosses mainly were made for plant breeding purposes. Some crosses were made for genetic studies and for strategic, long range population improvement. In the durum and triticale program, 17 and 48 crosses were made respectively.



## V. 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 quality, wheat nutritional improvement, wheat cytogenetics, plant physiology and production practices. Much of the production research is located at the outlying stations. 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 attempt to reduce their production costs.

## Summary

An excellent wheat crop was produced in 1987 despite some insect damage, late planting and winterkilling in parts of the state. The estimated 44 bu/a is a state record for average grain yield. Brule continued to be the most widely grown variety in Nebraska and grown on 22.5% of the state acreage. Russian wheat aphid, a new and potentially devastating insect pest, was widespread in western Nebraska. Generally, the winter wheat crop had only sporadic damage from this pest.

TAM 200 was jointly released with Texas A&M University. It is a high yielding semi-dwarf wheat with stem rust resistance. Its level of winterhardiness appears to be similar to Vona and should be a valuable addition to the list of wheat varieties for Nebraska. Growers in areas where Vona can be grown should consider this variety. NE82656 continues to perform well. It will be considered for release in 1988. Its performance has been equivalent or better to Siouxland and Brule in the last two years of statewide testing. It has good stem rust resistance, moderate resistance to leaf rust and Hessian fly, and some tolerance to Cephalosporium stripe.

Experimental lines that have been developed after the severe winter of 1983-84 which have excellent agronomic performance are beginning to be identified. In recent years, experimental lines were selected almost entirely upon their ability to survive the winter. Winterhardiness alone is insufficient for cultivar release.

The winter triticale program will continue and one experimental line, NE83T12, is under preliminary increase. It is a high-yielding, strong-strawed (for triticale), and stem rust resistant triticale with good test-weight. Due resource constraints, the white wheat program has been reduced and the winter durum program is being discontinued.

87 NIN test weight

ENTRY	MEAD	CLAY CE	N PLATTE	SIDNEY	ALLIANC	MEAN-TWT	STD-TWT
LANCER	62.50	59.50	58.20	60.00	59.90	60.02	1.40
BRULE	62.00	56.00	56.00	57.80	57.50	57.86	2.20
REDLAND	61.20	57.00	55.40	57.90	58.20	57.94	1.90
CODY	62.80	58.00	58.00	60.00	60.10	59.78	1.77
NEB2438	61.60	57.00	57.40	58.80	59.00	58.76	1.62
NEB2533	62.00	58.50	58.40	60.30	60.00	59.84	1.32
CENTURA	62.10	58.00	60.50	61.50	60.80	60.58	1.40
SCOUT66	62.80	59.50	60.30	63.00	61.00	61.32	1.38
COLT	60.50	56.50	57.80	59.00	58.40	58.44	1.32
NEB2656	61.70	58.00	57.10	58.70	58.00	58.70	1.58
NEB3404	61.50	56.00	56.70	58.20	58.00	58.08	1.89
NEB3406	61.10	56.50	55.20	58.00	57.70	57.70	1.97
NEB3407	60.10	57.50	56.00	57.60	57.60	57.76	1.32
CENTURK78	62.50	58.00	59.60	60.10	59.40	59.92	1.47
ARKAN	62.40	56.50	56.70	57.10	59.30	58.40	2.24
NEB3498	62.80	58.00	59.00	58.60	59.00	59.48	1.70
NEB4557	63.00	60.00	60.00	61.10	61.10	61.04	1.10
NEB4581	61.20	57.50	57.90	60.00	60.00	59.32	1.40
NEB3432	62.00	58.00	60.00	60.00	59.80	59.96	1.27
GAGE	62.10	57.50	59.10	59.30	59.00	59.40	1.49
HOMESTEAD	61.50	57.00	58.80	58.60	58.20	58.82	1.48
LANCOTA	60.40	57.50	56.40	59.00	59.20	58.50	1.40
NORKAN	63.00	59.00	58.50	61.00	60.10	60.32	1.60
NEB5556	61.00	58.00	59.90	60.40	59.20	59.70	1.04
TAM107	61.90	58.50	58.10	59.00	59.20	59.34	1.34
CHEYENNE	62.00	58.00	58.40	58.20	60.00	59.32	1.52
BUCKSKIN	60.80	57.00	56.00	56.80	58.00	57.72	1.67
NEB5623	60.80	58.00	57.00	57.20	58.00	58.20	1.36
NEB5707	62.80	60.00	60.00	60.80	60.50	60.82	1.04
ROUGHRIDE	61.70	56.50	56.80	58.30	58.80	58.42	1.86
VONA	59.90	58.00	56.90	58.00	57.80	58.12	0.98
SIOUXLAND	62.40	59.00	59.20	60.00	60.00	60.12	1.21
CARSON	59.30	58.00	56.80	56.40	56.80	57.46	1.07
KSB31374	61.50	59.00	57.20	59.00	59.30	59.20	1.37
OKB3396	59.60	58.00	57.30	58.80	59.50	58.64	0.88
TAM200	61.90	60.50	60.80	61.70	62.00	61.38	0.61
TAM108	60.00	56.00	58.00	58.20	58.80	58.20	1.30

87 TRIP test weight

entry	MEAD	CLAYCEN	NPLATTE	SIDNEY	ALLIANC	MEAN-TWT	SDEV-TWT
NE86482	60.00	58.00	57.60	59.90	58.40	58.78	0.99
NE86487	60.00	58.60	57.00	58.00	59.80	58.68	1.12
NE86488	61.00	59.20	58.10	58.20	58.30	58.96	1.09
NE86494	60.00	58.30	57.00	58.50		58.45	1.06
NE86499	60.00	58.50	58.30	59.00	59.80	59.12	0.68
NE86501	60.00	58.10	57.40	57.00	58.00	58.10	1.03
NE86502	61.00	59.10	58.50	58.80	58.50	59.18	0.94
NE86503	60.00	59.20	58.00	58.70	58.00	58.78	0.76
NE86507	59.00	57.90	57.40	58.00		58.08	0.58
NE86509	61.00	58.20	58.00	59.60	59.30	59.22	1.08
NE86527	61.00	58.70	57.70	58.40	59.60	59.08	1.14
NE86582	60.00	59.80	57.90	59.00	59.90	59.32	0.79
NE86592	59.00	58.60	57.10	58.00	58.80	58.30	0.69
NE86606	60.00	58.70	58.00	59.70		59.10	0.80
NE86607	60.00	59.70	59.50	60.50		59.93	0.38
NE87U101	58.00	59.30	59.00	60.00	59.80	59.22	0.71
	60.00	58.74	57.91	58.83	59.02		
	0.79	0.57	0.67	0.90	0.73		

87 DUP test weight

ENTRY	MEAD	CLAY	CEN	N.PLATTE	mean	sdev-twt
NE87403	58.00	59.60	58.10	58.57	58.57	0.73
NE87408	57.50	58.40	58.70	58.20	58.20	0.51
NE87409	59.00	59.30	59.80	59.37	59.37	0.33
NE87411	59.00	59.40	58.00	58.80	58.80	0.59
NE87416	59.00	58.90	59.00	58.97	58.97	0.05
NE87418	58.00	60.00	59.00	59.00	59.00	0.82
NE87446	58.00	58.90	57.90	58.27	58.27	0.45
NE87448	58.00	60.00	58.20	58.73	58.73	0.90
NE87449	55.00	59.80	58.80	57.87	57.87	2.07
NE87451	57.00	59.10	57.00	57.70	57.70	0.99
NE87454	57.00	58.60	57.40	57.67	57.67	0.68
NE87455	58.00	59.10	59.00	58.70	58.70	0.50
NE87457	58.00	57.80	57.40	57.73	57.73	0.25
NE87459	58.00	60.20	59.30	59.17	59.17	0.90
NE87463	59.50	60.90	60.40	60.27	60.27	0.58
NE87475	55.00	58.00	57.90	56.97	56.97	1.39
NE87476	58.00	58.20	57.90	58.03	58.03	0.12
NE87477	58.00	59.40	58.00	58.47	58.47	0.66
NE87499	58.00	58.00	57.80	57.93	57.93	0.09
NE87509	58.00	59.10	60.00	59.03	59.03	0.82
NE87512	57.00	58.10	57.20	57.43	57.43	0.48
NE87513	56.00	59.90	58.50	58.13	58.13	1.61
NE87518	60.00	58.10	56.30	58.13	58.13	1.51
NE87522	59.50	58.70	59.00	59.07	59.07	0.33
NE87525	60.50	59.60	60.20	60.10	60.10	0.37
NE87526	60.00	59.20	59.90	59.70	59.70	0.36
NE87528	60.00	60.30	59.30	59.87	59.87	0.42
NE87543	59.50	58.20	57.00	58.23	58.23	1.02
NE87549	59.00	61.00	58.90	59.63	59.63	0.97
NE87551	57.00	58.80	56.80	57.53	57.53	0.90
NE87554	59.00	60.30	58.20	59.17	59.17	0.87
NE87555	58.00	57.80	57.00	57.60	57.60	0.43
NE87564	57.50	60.00	60.00	59.17	59.17	1.18
NE87603	59.00	59.00	57.80	58.60	58.60	0.57
NE87612	60.00	57.00	56.80	57.93	57.93	1.46
NE87613	60.00	57.90	58.00	58.63	58.63	0.97
NE87614	59.00	58.40	57.60	58.33	58.33	0.57
NE87615	57.00	59.40	57.00	57.80	57.80	1.13
NE87619	58.00	59.00	59.00	58.67	58.67	0.47
NE87627	59.00	57.70	55.50	57.40	57.40	1.44
NE87632	59.50	60.30	58.80	59.53	59.53	0.61
NE87634	57.00	57.60	56.70	57.10	57.10	0.37
NE87636	58.00	60.00	58.60	58.87	58.87	0.84