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**MALTING QUALITY OF BARLEY VARIETIES AND SELECTIONS
GROWN IN ROCKY MOUNTAIN AND WESTERN STATIONS IN 2001**

A. D. Budde, B. L. Jones, E. D. Goplin, D. M. Peterson and Staff

This is a joint progress report of cooperative investigations being conducted in the Agricultural Research Service of the U.S. Department of Agriculture and State Agricultural Experiment Stations. It contains preliminary data that have not been sufficiently confirmed to justify general release; interpretations may be modified with additional experimentation. Confirmed results will be published through established channels. The report is primarily a tool available to cooperators and their official staffs and for those persons who have a direct and special interest in the development of improved malting barleys.

This report includes data furnished by the Agricultural Research Service as well as by the State Agricultural Experiment Stations. The report is not intended for publication and should not be referred to in literature citations nor quoted in publicity or advertising. Use of the data may be granted for certain purposes upon written request to the agency or agencies involved.

Samples malted and analyzed by the Cereal Crops Research Unit, Madison WI

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Table of Contents

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	Page #
Introduction	1
Materials	1
Methods	1, Appendix A
Rankings and Quality Scores	1, Appendix B
Western Regional Spring Barley Nursery - 2001 Includes (Tables 1-6)	2
Evaluations	
Samples Submitted from:	
Idaho	4
Montana	9
Oregon	10
Washington	15
Analytical Data	Table #'s
Samples Submitted from:	
Western Regional Spring Barley Nursery	1 - 6
Idaho	7 – 20
Montana	21 - 23
Oregon	24 - 33
Washington	34 - 53
Malting and Analytical Methods Used	Appendix A
Criteria for Calculation of Quality Scores	Appendix B

MALTING QUALITY OF BARLEY VARIETIES AND SELECTIONS GROWN AT THE ROCKY MOUNTAIN AND WESTERN STATIONS IN 2001

Introduction

At the Cereal Crops Research Unit, we malt barleys received from public sector breeders and evaluate each line for its commercial malting quality. We malt and analyze each submission as consistently as possible, to allow comparison of the lines with each other. Our objective is to provide accurate data and evaluations of new selections and to facilitate the development of improved malting barleys.

Materials

The 2053 samples upon which this report is based came from several locations; either as a part of the Western Regional Spring Barley Nursery or as experimental selections from several research programs. Individual breeders' experimental lines from stations in Idaho, Montana, Oregon and Washington were processed and evaluated.

Methods

Most of our analyses were performed according to the Methods of Analysis of the ASBC, 8th edition, 1992. Details of the analyses are listed in Appendix A.

Rankings and Quality Scores

The best performing entries in each table can be found by consulting the Overall Rank Value column. The rank values were determined by the quality scores that were generated for each submission, with the rank order proceeding from low (best)

to high (poorest). The quality scores were computed for each line on the basis of the sum of its individually scored parameters. Scores are assigned to each of the malt quality traits based upon how closely the trait values conform to what industry wants them to be. The closer the analytical data are to the ideal, the more points are awarded. The most important quality traits (extract, soluble protein, etc.) are weighted more than those of lesser importance. This gives a relative assessment of the overall performance of each line. The criteria used to generate the quality scores are listed in Appendix B.

Western Regional Spring Barley Nursery – 2001 Crop

Nursery samples were received for malting quality evaluation from three experimental stations located in three states. The parentages of the nursery entries are listed in Table 1. Fourteen of 22 entries (#9 - #22) were new in this year's nursery.

These samples were germinated for 5 days and rotated for 3 minutes every half hour, which should have yielded malts having modification levels that are similar to those produced by industry. The malting conditions and analytical methods employed are listed in Appendix A. The criteria and value assignments used to calculate quality scores are listed in Appendix B.

The mean values for 11 quality factors over the three stations located in the Western Region are listed in Table 2 and over all varieties in Table 3. Individual station data are reported in Tables 4 through 6. Evaluations of data from individual locations and overall performance evaluations, derived primarily from Tables 2 and 3, are presented below.

Most of the plump barleys from Aberdeen, ID (Table 4) had unacceptably high protein contents and a quarter of their extract values fell below the desired minimum.

A third of the soluble protein values were too low and this, combined with the high total protein contents, resulted in unacceptably low S/T ratios for two thirds of the submissions. The diastatic power values fluctuated considerably, with five values that were too high and fourteen that were too low. Half of the α -amylase and β -glucan levels were too high. The best performers were Lacey, 94AB13449, CDC Bold, CDC Helgason, Foster, 92AB5180, Colter and 97AB8333.

Most of the plump barleys from Fairfield, MT (Table 5) had excellent protein contents and their extract values were generally exceptional, averaging over 81%. Even the feed barleys that were included in this nursery showed good extract levels.

Fourteen soluble protein values were too low, but nearly all of those were from feed barleys. Over half of the diastatic power levels were too low, possibly due to the low total protein levels, while half of the submissions had unacceptably high α -amylase values. Most of the β -glucan levels were high, with 27 exceeding the maximum limit. The best performers were 6B95-2482, CDC Helgason, Drummond, 92AB-5180, 6B95-2089, PB1-97-2R-7090, ND15422, 95SR316A, CDC Copeland and TR167.

A quarter of the barleys from Pullman, WA (Table 6) were too thin, but they had good protein levels. The extract and soluble protein values were very good. Most of the diastatic power and β -glucan levels were good, however all but two of the α -amylase values exceeded the upper limits. The best performers were 6B95-2089, 6B95-2482, 95SR316A, ND15422, Morex, Legacy, 92AB5180 and 2B96-5057.

Overall, the submissions from Fairfield and Pullman (Table 2) performed very well and much better than those from Aberdeen. The barleys from all locations were plump, but those from Fairfield were plumpest. The average protein contents of the barleys from Fairfield were very good, while those from Pullman were mostly good and those from Aberdeen were a bit high. The extract values of the Fairfield malts were exceptional, averaging over 82%, while those from Pullman were very good, at 81.7%, and those from Aberdeen were adequate, at 79.5%. The diastatic power values were best at Pullman, a little bit too low at Fairfield and although the average

value at Aberdeen was good, it was the result of many individual values that were either too low or too high. The α -amylase values from all three locations tended to be high, however the Pullman values were higher than those from the other locations. The lines grown at Pullman were well modified, with β -glucan levels averaging 128 ppm, while those from samples grown at the other locations were generally high.

Overall, most of these lines were plump, but their protein contents tended to be a bit high (Table 3), although only three exceeded the upper limits. The extract and soluble protein levels of this year's nursery were generally excellent. Most of the averaged diastatic power values looked good, but only because of locational effects. The low values of the barleys from Fairfield balanced the high values from Pullman, while the results from Aberdeen varied between too high and too low. Three quarters of the α -amylase averages were too high, while the β -glucan levels ranged from three that were excellent to five that were unacceptably high. The best performers overall were 6B95-2482, 6B95-2089, 92AB5180, 95SR316A, ND15422 and Legacy.

Crop Year 2001 Evaluations

Submissions from Idaho

2000 – 2001 Aberdeen Winter Barley Nurseries A and B – Aberdeen

Table 7 – 21 Entries

Most of these plump barleys had excellent protein contents, with only four having extract values that were below the desired minimum. The soluble protein and S/T values were generally low. Most of the enzyme levels were good, while β -glucan levels ranged from excellent to eight that exceeded the maximum limit. The best

performers were 94AB1274, 96AB474, 95AB2299, 88AB539-B, 92AB1810 and 92AB1841.

2000 –2001 Aberdeen Winter Barley Nursery C – Aberdeen

Table 8 – 18 Entries

Only five of these plump barleys had unacceptably high protein contents. The extract values were very good, averaging 80%. Half of the soluble protein contents were too low, which strongly influenced the S/T ratios with two thirds of the values falling below the desired minimum. Most of the diastatic power levels were good, while the α -amylase levels tended to be a little too high. Five of the β -glucan levels exceeded the maximum limit. The best performers were 86AB1061, 94AB1274, 95AB2299 and 94AB1269.

2000 - 2001 Weston Winter Barley Nursery – Weston

Table 9 – 3 Entries

These three entries were thin and had unacceptably high protein contents and low extract values. All of the soluble protein and S/T values were also too low. The diastatic power level for 85AB216 was too low, while the α -amylase value for 94AB1274 was a bit high, and the β -glucan levels for all three lines were surprisingly good. Even so, none of these lines performed well.

2000 Aberdeen Barley Nursery D – Aberdeen

Table 10 – 23 Entries

Most of these plump barleys had unacceptably high protein contents. The extract levels were generally good as were the wort color values. A quarter of the soluble protein levels were too low and nearly all of the S/T ratios were below the desired limit. The diastatic power levels were generally good, while about half of the

α -amylase and β -glucan values were too high. The best performers were Alexis, 93AB835 and 85AB2323.

2000-2001 Aberdeen Barley Nursery A – Aberdeen

Table 11 – 38 Entries

Most of these plump barleys had unacceptably high protein contents. Most of the extract and soluble protein levels were good, while most S/T ratios were too low. The diastatic power levels were generally good, while about half of the α -amylase and β -glucan levels exceeded the desired limits. The best performers were C57 and 2B97-4077. C56 and 95M4623 scored well, however the high total protein contents detract from their commercial usefulness.

2001 Aberdeen Barley Nursery J – Aberdeen

Table 12 – 19 Entries

Most of these barleys were plump and had good protein levels. The extract values were generally good, while soluble protein contents ranged from six that were too low to one that exceeded the maximum desired limit. The diastatic power values varied considerably, with five that were too low and three that were too high. A third of the α -amylase and half of the β -glucan values were too high. The best performers were 92AB5180, 96AB9040, Foster and B2601.

2001 Aberdeen Spring and Winter Drill Strip Series – Aberdeen

Table 13 – 11 Entries

Half of these barleys had unacceptably high protein contents. Most of the extract and soluble protein values were good, while half of the S/T ratios were too low. The diastatic power values were generally good, while nearly half of the α -amylase levels were too high. The β -glucan contents ranged from excellent to two that

exceeded the maximum limit. The best performers were 92AB5180, 98AB12362 and 95AB2299.

2001 Tetonia Barley Nursery A – Tetonia

Table 14– 38 Entries

Nearly all of these plump barleys had unacceptably high protein contents. Over a quarter of the extract and soluble protein values were too low. Those soluble protein levels that were acceptable tended to be low, which was desirable, however when combined with the high total protein contents, resulted in all but one S/T ratio being unacceptably low. Three quarters of the diastatic power and half of the α -amylase values were too high. A third of the β -glucan levels were unacceptably high. None of these lines showed good malting quality.

2001 Tetonia Barley Nursery B – Tetonia

Table 15 – 30 Entries

Although most of these barleys were plump, all had unacceptably high protein contents, while most of the extract values were unacceptably low. The soluble protein levels were generally a bit low, with five falling below the desired limit and this combined with the high total protein levels resulted in all but one S/T ratio being unacceptably low. Most of the diastatic power and two thirds of the α -amylase levels were too high. None of these lines performed well.

2001 Steptoe/Morex QTL Progeny - Aberdeen

Table 16 – 68 Entries

A third of these plump barleys had unacceptably high protein contents. Over three quarters of the extract and half of the soluble protein and amylolitic values were too low. Most of the β -glucan levels were too high. The best performers were M0108, M0641, M1115 and Morex.

2001 Tetonia Barley Nursery C – Aberdeen

Table 17 – 47 Entries

Nearly all of these barleys had unacceptably high protein contents, while most extract values were too low. The soluble protein levels ranged from fifteen that were too low to a couple that were too high. Half of the amylolitic values and a third of the β -glucan levels were too high. The best performer was 97AB8333.

2001 Aberdeen Barley Non-Replicated Trial – Aberdeen

Table 18 – 42 Entries

Half of these plump barleys had unacceptably high protein contents. Most of the extract values were good, with the experiment averaging nearly 80%. The soluble protein and S/T values were generally good. Two thirds of the diastatic power levels were too low, while just under half of the α -amylase values were too high. A third of the β -glucan levels exceeded the maximum limit. The best performers were 99AB11073, 98AB12362, 99AB11201, 99AB10781 and 99AB11290.

2001 B Nursery – Tetonia

Table 19 – 38 Entries

All of these plump barleys had unacceptably high protein contents. Three quarters of the extract values were too low, while soluble protein levels ranged from six that were too low to two that exceeded the upper limit. Over half of the amylolitic values were too high. Half of the β -glucan levels from the two-rowed submissions were too high. The best performers were 96RWA1194, 96RWA1222 and 96RWA1218.

2001 B Nursery – Aberdeen

Table 20 – 38 Entries

A third of the two-rowed barleys were too thin, while nearly three quarters of these submissions had unacceptably high protein contents. Over a third of the extract values fell below the desired limit, while the soluble protein levels were generally good. Over a quarter of the diastatic power values were too low, while three quarters of the α -amylase levels were too high. Half of the β -glucan contents exceeded the upper limit. The best performers were 97ID12698 and 98ID87.

Submissions from Montana

2001 Experiment 220100, Irrigated Instate Trial – Bozeman

Table 21 – 44 Entries

These barleys had excellent protein contents even though half of them were too thin. A quarter of the extract and three quarters of the soluble protein values were too low. Thirteen of the diastatic power levels were too low, while fifteen α -amylase values were too high. Half of the β -glucan contents exceeded the upper limit. The best performers were NORD1958 and MT970116, however both exhibited very low soluble protein levels.

2001 Experiment 310101, Early Yield Trial – Bozeman

Table 22 – 56 Entries

Nearly three quarters of these barleys were too thin, however only eleven had unacceptably high protein contents. Over a third of the extract and most of the soluble protein values were too low. Half of the diastatic power levels were too low, while over a quarter of the α -amylase values exceeded the upper limits. These submissions did not modify well with our standard malting protocol, as determined

by the very high β -glucan levels. The best performers were MT970116 and PI605472.

2001 Experiment 300101, Preliminary Yield Trial – Bozeman

Table 23 – 200 Entries

Most of these plump barleys had very good protein contents. The extract values were generally good, but over half of the soluble protein and most of the S/T values were too low. Most of the amylolitic levels were good, but nearly all of the β -glucan contents were too high. The best performers were MT010162, MT010148, MT010150, MT010158, MT010179, MT010145, MT010169, MT010121, MT010177, MT010138, and MT010218.

Submissions from Oregon

2001 OSU Malting Samples – Aberdeen, ID

Table 24 – 12 Entries

Over half of these submissions had unacceptably high protein contents. A third of the extract values were too low, but the soluble protein values were good, with one exception. The β -glucan and diastatic power values were generally good, while half of the α -amylase levels exceeded the upper limits. The best performers were STAB113, and KAB47.

2001 OSU ORWB Malting Barleys – Pendleton, OR, Pullman, WA and Aberdeen, ID

Table 25 - 23 Entries

Most of the barleys from Pendleton were too thin and did not meet the six -rowed barley threshold for kernel weight, however their protein levels were uniformly good. Most of the β -glucan and S/T levels fell within the desired limits. Half of the soluble

protein and diastatic power values were too low, while half of the alpha-amylase levels were unacceptably high.

Over half of the submissions from Pullman, WA yielded acceptable kernel weight and plumpness values, while most of the protein levels were good. The β -glucan, wort protein, α -amylase and S/T values were generally good, but only ORWB 18 had an acceptable diastatic power level.

Most of the Aberdeen, ID barleys had suitable plumpness, and three quarters of the protein contents were good. The extract values were too low for 5 of 8 samples. All of the S/T ratios and half of the soluble protein contents were too low. Three quarters of the samples contained unacceptably low diastatic power levels, while the α -amylase levels were generally good.

The best performing submissions performed differently depending upon where they were grown. ORWB 18 yielded high malt quality when grown at Pendleton, but was much lower at the other two locations. The top selections from Pullman were ORWB 15 and 20, while ORWB 1 showed excellent overall quality when grown at Aberdeen.

2001 OSU PenFT Malting Barleys - Pendleton

Table 26 - 82 Entries

Over 85% of these submissions had acceptable kernel weights, however, slightly over half were too thin. The protein levels were uniformly good, as were the extract values, except for those of PenFT 3 and 5. The wort proteins ranged from good to a bit low, while half of the S/T ratios were outside the desired limits. Three quarters of the diastatic power values were less than desirable, whereas less than a quarter of the α -amylase measures were unacceptable. Most of the malted barleys contained good β -glucan levels, however a few were too low. The best performing samples were PenFT 52, 46, 33, 39 and 54.

2002 OSU Yield Trials – Pendleton

Table 27 – 25 Entries

A third of these samples were thin and two thirds had unacceptably high protein contents. Only five extract values exceeded the minimum desired limit and most of the rest were very low. Half of the soluble protein levels were too low and when combined with the high total protein contents, resulted in nearly all S/T ratios being too low. The diastatic power levels ranged from nine that were too low, to four that exceeded the upper limit. A third of the α -amylase and β -glucan values exceeded the upper limits. The best performers were AB2R-14 and AB2R-19.

2001 OSU Yield Trial – Pendleton, OR and Pullman, WA

Table 28 – 50 Entries

Half of the barleys submitted from the Pendleton location were thin and nearly all had unacceptably high protein levels. Only 6RYT-3 had a good extract value and most of the other values were quite low. The soluble protein levels ranged from six that were too low, to one that was a bit too high. All of the S/T ratios were low, except for 6RYT-3, which was too high. A third of the diastatic power levels were too low, while a quarter of the α -amylase values exceeded the upper limit. The β -glucan levels ranged between several that were excellent, to ten that were too high.

A third of the barleys from Pullman were thin and half had unacceptably high protein contents. Over half of the extract and diastatic power values were too low. A third of the soluble protein levels were too low, while a third of the α -amylase contents exceeded the upper limit. The β -glucan levels ranged from several that were excellent to ten that exceeded the upper limit.

The best performers, 6RYT 9 and 2RYT 18, were both from Pullman.

2001 RCSLYT Samples

Fifty-two RCSLYT lines were each grown at five locations: Pendleton, OR, Aberdeen, ID, Pullman, WA, Saskatoon, SA, and Bozeman, MT. These samples were separated into tables according to the location where they were grown.

2001 OSU RCSLYT - Pendleton

Table 29 - 52 Entries

The RCSLYT samples grown at Pendleton were plump, but had high protein contents. The extract values were too low for all but two samples. Under-modification was evident, as a large majority of the samples had low S/T ratios and high β -glucan contents. None of these lines performed very well.

2001 OSU RCSLYT - Aberdeen

Table 30 - 52 Entries

Over a quarter of the samples from Aberdeen were thin and all had unacceptably high protein contents. Most of the extract values fell below the desired limit. The soluble protein levels ranged from eight that were too low to thirteen that exceeded the maximum desired limit. Three quarters of the S/T ratios were too low, in spite of the higher soluble protein levels. The diastatic power levels ranged from twelve that were too low to seventeen that exceeded the upper limit, while half of the α -amylase values were too high. These samples did not modify well as indicated by their high β -glucan contents. None of these lines performed well.

2001 OSU RCSLYT - Pullman

Table 31 – 52 Entries

Most of these plump barleys had good protein contents, and only nine extract values were too low. The soluble protein contents were generally good, but half of the S/T ratios were outside of the desired range, with 21 too low and five too high. The diastatic power levels were generally good, while three quarters of the α -amylase and a third of the β -glucan values exceeded the upper limits. The best performers were RCSLYT 86, RCSLYT Garnet, RCSLYT 18, RCSLYT 47, and RCSLYT Harrington.

2001 OSU RCSLYT - Saskatoon

Table 32 - 52 Entries

Most of these barleys were plump, however all but two had unacceptably high protein contents. The presence of a large number of green kernels was also noted. These malts did not modify well using our malting conditions, as evidenced by nearly all of the S/T ratios being unacceptably low and all of the β -glucan levels exceeding the upper limit. A quarter of the diastatic power levels were too high, while half of the α -amylase values were a bit over the upper limit. None of these lines performed well.

2001 OSU RCSLYT - Bozeman

Table 33 - 52 Entries

Even though over a third of these barleys were thin, only four had unacceptably high protein contents. Over half of the extract values exceeded the desired minimum limit. Most of the soluble protein levels were good, but over half of the S/T ratios were low, indicating that these malts may have been under modified by our malting protocol. Other indicators of poor modification were the generally high β -glucan levels. A third of the diastatic power values were low, while nearly half of the α -

amylase levels were too high. The best performers were RCSLYT 50, RCSLYT 83, RCSLYT Garnet, RCSLYT 10, RCSLYT 103, RCSLYT 81 and RCSLYT Harrington.

Submissions from Washington

2001 Harrington/Baronesse QTL Malting Analysis – Royal Slope

Table 34 – 89 Entries

A quarter of these plump barleys had unacceptably high protein contents. The extract and soluble protein values were very good, but all of the lines had β -glucan levels that were too high. The diastatic power values were generally low, with nearly half being too low, while most of the α -amylase values exceeded the maximum limit. The best performers were NZK00-165 and NZK00-170.

2001 Preliminary State Uniform Nursery – Royal Slope

Table 35 – 41 Entries

The protein contents of these plump barleys ranged from very good to seven that were unacceptably high. The extract values were generally good, with several submissions exceeding 81%. The soluble protein levels showed considerable variation, with a dozen that were unacceptably low and eight that exceeded the maximum limit. Nearly half of the diastatic power values were too low, while over half of the α -amylase levels exceeded the upper limit. Most of the β -glucan levels were unacceptably high, indicating these barleys were not well modified by our malting protocol. The best performers were WA9263-98, Harrington, 99NZ445, WA10497-97, WA7194-98 and WA7276-98.

2001 State Uniform Nursery – Royal Slope

Table 36 – 31 Entries

Most of these plump barleys had good protein contents. The extract values were generally quite good, however most soluble protein contents were too low. Two thirds of the diastatic power values were below the minimum level, while the α -amylase values were generally good. The β -glucan levels were quite high, indicating that these barleys were poorly modified by our malting protocol. The best performers were Bancroft, Farmington, Harrington, Camas, Valier and Jersey, however, only Jersey seemed to modify reasonably well.

2001 State Uniform Nursery – Pullman

Table 37 – 31 Entries

Most of these plump barleys had good protein contents. The extract values ranged from good to excellent, with several lines over 82%. Three quarters of the soluble protein levels were unacceptably low. The diastatic power values were generally low, with thirteen that fell below the minimum limit, however ORCA and BCD47 had unacceptably high diastatic power values. Over a third of the α -amylase levels and half of the β -glucan values were too high. The best performers were 98NZ234, Harrington and 85AB2323. WA8674-96 and WA8601-97 scored well, but their very low soluble protein values detracted from their commercial usefulness.

2001 Preliminary State Uniform Nursery – Pullman

Table 38 – 41 Entries

Although a dozen of these submissions were too thin, most of their protein contents were very good. The extract values were generally good to outstanding. The soluble protein levels ranged from sixteen that were too low to a couple that exceeded the upper limit. Nearly half of the diastatic power values were too low,

while half of the α -amylase and β -glucan levels were too high. The best performers were 99NZ445, WA9262-98, WA7527-97, WA7751-98 and WA9263-98.

2001 Yield Nursery #1 – Pullman

Table 39 – 28 Entries

These plump barleys had decent protein contents. The extract values ranged from good to outstanding, averaging over 80%. Over half of the soluble protein levels were too low, while a third of the β -glucan values were too high. The diastatic power values were generally good, but half of the submissions had α -amylase values that were too high. The best performers were WA9444-99, WA10701-99, WA8268-99, WA10503-99, WA10362-99, WA10435-99 and WA10241-99.

2001 Yield Nursery #2 – Pullman

Table 40 – 24 Entries

Most of these plump barleys had excellent protein contents. The extract values were very good, averaging over 80%. Two thirds of the soluble protein values were too low, while two thirds of the α -amylase levels were too high. A third of the lines had diastatic power and β -glucan values that exceeded the upper limits. The best performers were WA9942-99, WA10412-99, WA7621-99 and WA8925-99.

2000 Yield Nursery #3 – Pullman

Table 41 – 28 Entries

A third of these plump barleys had unacceptably high protein contents. The extract levels were very good, averaging over 80%. Half of the soluble protein values were too low, while the diastatic power levels tended to be a bit low, with seven that fell under the minimum limit. Over half had α -amylase and β -glucan levels that were too high. The best performers were WA10525-99, WA7655-99, Harrington, WA10428-99, WA10720-99, WA9019-99 and WA7996-99.

2001 Yield Nursery #4 – Pullman

Table 42 – 29 Entries

The protein contents of these plump barleys ranged from excellent to a bit too high. The extract values were very good, averaging over 80%. Two thirds of the soluble protein and a third of the diastatic power values were too low. Half of the submissions had α -amylase and β -glucan values that were too high. The best performers were WA10101-99, Harrington and WA9996-99.

2001 Yield Nursery #5 – Pullman

Table 43 – 27 Entries

The protein contents of these plump barleys ranged from excellent to three that exceeded the maximum limit. Only three extract values fell below the minimum limit, but three quarters of the soluble protein levels were unacceptably low. Half of the diastatic power values were too low, while half of the β -glucan levels were too high. Ten lines had α -amylase values that were too high. The best performers were Harrington, WA9788-99 and WA7560-99.

2001 Yield Nursery #6 – Pullman

Table 44 – 21 Entries

Nearly all of these plump barleys had good total protein contents. The extract values were very good, except for those of the CMB94A.* lines. Two thirds of the submissions had soluble protein levels that were too low, contributing greatly to the generally low S/T ratios. Half of the diastatic power values were too low, while a third of the α -amylase levels were too high. The β -glucan levels for a third of the lines were very good. The best performers were Morex, WA9218-99, WA10807-99, WA11709-99 and WA8051-99.

2001 Pro-Ant Free Nursery #1 – Royal Slope

Table 45 – 30 Entries

Unacceptably high protein contents were found in over half of these plump barleys. The extract values were very good except for that of 2000NZ191. The soluble protein levels ranged between two that were too low and eighteen that were too high. One half of the submissions had elevated β -glucan and S/T values. The diastatic power levels ranged from thirteen that were too low to three that were too high, while most of the α -amylase values exceed the upper limits. The best performers were 2000NZ316, 2000NZ307, 2000NZ255 and 2000NZ250.

2001 Pro-Ant Free Nursery #2 – Royal Slope

Table 46 – 30 Entries

Only six of these plump barleys had unacceptably high protein contents. The extract values were excellent averaging nearly 81%. The soluble protein levels ranged from three that were too low to eight that exceeded the upper limit. Over half of the diastatic power levels were below the minimum, while over half of the α -amylase and β -glucan levels exceeded the upper limits. The best performers were 2000NZ772, 2000NZ705, 2000NZ205, 2000NZ777, 2000NZ515, 99NZ417 and 2000NZ400.

2001 Brazil Nursery at Pullman – Pullman

Table 47 – 23 Entries

Most of these barleys were plump, but had unacceptably high protein contents. Half of the extract, two thirds of the soluble protein and all of the S/T values were too low. Half of the diastatic power values were low in spite of the high total protein levels. The α -amylase levels were generally good, while most β -glucan contents were high. The best performer was the Morex experimental control.

2001 Harrington/Baronesse QTL #1 – Pullman

Table 48 – 30 Entries

A third of these plump barleys had unacceptably high protein contents. The extract values were excellent, except for that of Baronesse. Most of the soluble protein levels were excellent, but two thirds of the S/T ratios were too low. The diastatic power levels ranged from four that were too low, to five that exceeded the desired limits, while nearly all α -amylase values were too high. Most of the β -glucan levels were high, with a third of them exceeding the maximum limit. The best performers were NZDK 00-148, NZDK 97, NZDK 00-137, NZDK 64, NZDK 00-160, NZDK 00-171, NZDK 00-154, NZDK 00-151 and NZDK 00-175.

2001 Harrington / Baronesse QTL #1 – Fairfield

Table 49 – 30 Entries

These plump barleys had excellent “low” protein contents. The extract values were exceptional, averaging over 83%. The soluble protein levels were generally low, however only five fell below the minimum limit. Two thirds of the S/T ratios were too high, mostly because of the low total protein contents. The diastatic power levels were quite low as would be expected with the total protein levels found in this experiment. Nearly all α -amylase values were too high, while only three β -glucan levels exceeded the maximum limit. The best performers were NZDK00-150, NZDK00-108, NZDK14, NZDK55, NZDK00-171, NZDK97, NZDK00-156, NZDK00-146, NZDK00-137, NZDK00-175 and NZDK00-170.

2001 Harrington / Baronesse QTL#2 – Pullman

Table 50 – 30 Entries

A third of these barleys had unacceptably high protein contents. All extract values, except that of Baronesse were excellent, averaging 81%. The soluble protein values were excellent, but two thirds of the S/T ratios were below the minimum limit. Most

of the diastatic power values were good, while most of the α -amylase levels exceeded the maximum limit. The β -glucan contents ranged from a bit high to nine that exceeded the maximum limit. The best performers were NZDK00-107, NZDK00-157, NADK00-131, NZDK00-102, NZDK00-112, and NZDK00-110.

2001 Malt ISL Nursery, Replicate 1 – Pullman

Table 51 – 59 Entries

All of the ‘feed type’ barleys were plump and had good, low protein contents. The ‘malting type’ barleys were mostly plump, but a third of them had unacceptably high protein levels. The feed type barley worts were hazy, had low extract, soluble protein and S/T values, while their β -glucan contents were unacceptably high. The malting barley worts were generally clear, with good extract, soluble protein and β -glucan levels. The amylolitic values of the malting type malts were much better than those of the feed type malts. The best performers were M0307, M0549, M0108, M0621 and M0902.

2001 Malt ISL Nursery, Replicate #2 – Pullman

Table 52 – 59 Entries

Most of these barleys were plump, with the feed type barleys being plumper than the malting type barleys. Twelve malting type barleys had unacceptably high protein values. The feed type worts were generally hazy, while the malting type worts were clear. The soluble protein levels of the feed type barleys were nearly all too low, while those of the malting type barleys were pretty good. Most of the diastatic power values were too low, but those that were good came from malting type barleys. Most of the α -amylase levels were good, and all that were a bit low came from feed type barleys. The β -glucan levels tended to be much higher in the feed type malts than from the malting type malts. The best performers were M703, M0109, M0223, M0108, M0542, M0402, M0923 and M1415.

2001 Single Replicate Nursery #1 – Pullman

Table 53 – 75 Entries

A quarter of these plump barleys had unacceptably high protein contents. The extract values were quite good, but nearly half of the soluble protein contents were too low. Two thirds of the S/T ratios were too low, while a third of the β -glucan levels were too high. A third of the diastatic power levels were too low, while over half of the α -amylase levels were too high. The best performers were WA-00-NZ-248, WA-00-NZ-278, WA10427-00, WA17283-00, WA-00-NZ-45, WA12238-00, WA-00-NZ-87, WA7701-00 and WA10326-00.

Entries in the Western Regional Spring Barley Nursery - 2001 Crop

Table 1

Entry No.	New Entry	Id	Cultivar or Selection	Rowed	Parentage
1	CI 15773		MOREX	6	Cree/Bonanza
2	PI 564743		STANDER	6	Robust 2*/3/Cree/Bonanza//Manker/4/Robust/Bumper
3	SK 76333		HARRINGTON	2	Klages/3/Gazelle/Betzes//Centenial
4	OR2967102		BCD 47 (OR2967102)	2	Harrington/Orca//D172(Shyri/Galena)
5	BA6B93-2978		LEGACY (6B93-2978)	6	6B86-3517/Excel
6	SK-TR150		CDC COPELAND (TR150)	2	WM861-5/TR118
7	ND15422		ND15422	6	ND9712//ND11646/Stander
8	ND15477		DRUMMOND (ND15477)	6	ND9712//Stander/ND12200
9	X 92AB5180		92AB5180	6	83AB5432/SR40
10	X WA8682-96		WA8682-96	2	A308/Baronesse
11	X WA10138-96		WA10138-96	2	WA7758-89/Baronesse
12	X 6B95-2482		6B95-2482	6	6B89-2126/ND10981
13	X 6B95-2089		6B95-2089	6	6B84-2912/B1601/6B88-3213
14	X 2B96-5057		2B96-5057	2	B1215/B88-5336
15	X 2B97-4077		2B97-4077	2	B1215/2B91-4947
16	X 2B97-4299		2B97-4299	2	2B91-4947/2B91-4450
17	X		CDC SELECT	2	
18	X TR 167		TR 167	2	
19	X MT960099		MT960099	2	Manley/Baronesse
20	X MT970116		MT970116	2	Klages/Baronesse
21	X 95SR149C		95SR149C	2	Bancroft/Harrington
22	X 95SR316A		95SR316A	2	Bancroft/Crystal

WESTERN REGIONAL SPRING BARLEY NURSERY - 2001 Crop

Table 2 - Station Means* of Barley and Malt Quality Factors for 22 Varieties or Selections**.

Location	Barley											Ave. Quality Score		
	Kernel		Barley		Malt		Wort		Barley		Wort			
	Weight (mg)	on 6/64" (%)	Color (Agtron)	Extract (%)	Color (%)	Protein (%)	Protein (%)	S/T (%)	DP (°)	Alpha- amylase (20° DU)	Beta- glucan (ppm)			
Aberdeen, ID	42.5 A	91.6 B	66.1 B	79.5 C	1.79	14.3 C	5.25	38.2 B	134 A	64.7 A	267 B	28.9		
Fairfield, MT	41.7 A	97.5 A	78.5 A	82.3 A	1.91	12.0 A	5.12	44.9 A	108 B	65.1 A	298 B	43.0		
Pullman, WA	36.1 B	86.1 C	79.3 A	81.7 B	1.74	12.6 B	5.23	43.0 A	133 A	75.4 B	128 A	41.0		

* Within each column, means followed by the same letter are not significantly different (alpha=0.05), according to Duncan's Multiple Range test.

** MOREX, STANDER, HARRINGTON, BCD 47, LEGACY, CDC COPELAND, ND15422, DRUMMOND, 92AB5180, WA8682-96, WA10138-96
6B95-2482, 6B95-2089, 2B96-5057, 2B97-4077, 2B97-4299, CDC SELECT, TR 167, MT960099, MT970116, 95SR149C, 95SR316A

WESTERN REGIONAL SPRING BARLEY NURSERY - 2001 Crop

Table 3 - Varietal Means* of Barley and Malt Quality Factors for 3 Stations**.

Variety or Selection	Rowed	Barley		Malt		Barley		Wort		S/T	DP (°)	Alpha-		Beta-		Ave. Quality Score	Overall Rank		
		Kernel		Barley	Malt	Barley	Wort	Protein	Protein			amylase (20° DU)	glucan (ppm)	Beta-					
		Weight (mg)	on 6/64 (%)	Color (Agtron)	Extract (%)	Wort Color	Protein (%)	(%)	(%)					Beta-					
MOREX	6	35.1	EF	84.2	73.7	80.1	1.6	AB	14.0	5.22	EFG	38.8 CDEF	155 ABCDE	58.8	BCD	278	ABCDE	40	7
STANDER	6	36.3	CDEF	91.1	74	81.6	2.0	CDE	12.9	6.06	I	48.9 A	127 BCDEFG	81.0	HIJ	202	ABCD	35	15
HARRINGTON	2	42.0	ABCDE	94.4	74.3	81.9	1.6	AB	13.3	5.56	GH	44.1 ABCD	120 EFGH	70.7	DEFGHI	294	ABCDE	36	13
BCD 47 (OR2967102)	2	44.8	A	94.9	71	79.9	1.8	BCDE	13.8	5.50	G	40.9 BCDE	159 ABC	80.0	GHJ	230	ABCDE	30	21
LEGACY (6B93-2978)	6	34.3	F	86.0	82	81.1	1.7	ABC	12.4	5.60	GH	48.3 AB	141 ABCDEF	73.5	EFGHI	216	ABCDE	40	6
CDC COPELAND (TR150)	2	44.1	AB	96.2	81.3	81.5	1.6	AB	13.4	5.44	FG	42.6 ABCD	124 BCDEFG	74.3	EFGHI	95	A	37	12
ND15422	6	36.9	BCDEF	95.4	79.7	80.8	1.9	BCDE	13.3	5.48	G	42.9 ABCD	162 AB	65.3	BCDEF	234	ABCDE	41	5
DRUMMOND (ND15477)	6	36.0	DEF	92.9	78.7	80.7	1.7	ABC	13.3	5.28	EFG	41.0 ABCDE	166 A	65.9	BCDEFG	177	ABCD	39	8
92AB5180	6	36.6	CDEF	81.3	67.7	81.7	1.9	BCDE	11.6	5.31	EFG	47.7 AB	131 ABCDEFG	62.4	BCDE	136	AB	45	3
WA8682-96	2	43.5	ABC	96.9	72.3	80.1	1.8	BCDE	12.9	4.54	BC	36.4 DEF	84.7 HI	52.2	AB	416	E	34	18
WA10138-96	2	44.1	AB	95.9	68.3	79.7	2.6	E	12.6	3.94	A	31.9 F	68 I	39.9	A	361	CDE	27	22
6B95-2482	6	35.5	EF	92.3	78	80.7	2.1	DE	13.0	4.98	DE	40.4 BCDE	159 ABCD	58.8	BCD	175	ABCD	48	1
6B95-2089	6	36.6	CDEF	91.5	76	81.4	1.8	ABCD	12.7	5.08	DEF	41.3 ABCDE	130 ABCDEFG	55.3	BC	162	ABC	47	2
2B96-5057	2	41.3	ABCDEF	96.6	75	81.8	1.7	ABC	13.1	5.32	EFG	43.3 ABCD	118 EFGH	72.8	DEFGHI	170	ABCD	38	9
2B97-4077	2	42.1	ABCDE	84.1	70.7	81.3	1.9	BCDE	12.8	5.23	EFG	44.0 ABCD	105 FGH	84.7	IJ	228	ABCDE	34	18
2B97-4299	2	42.2	ABCDE	91.9	72.3	82.5	1.8	ABCD	12.3	5.02	DE	43.9 ABCD	120 DEFGH	78.7	FGHIJ	255	ABCDE	35	16
CDC SELECT	2	39.4	ABCDEF	95.3	78	82.0	1.7	ABC	12.8	5.56	GH	45.0 ABC	123 CDEFGH	84.7	IJ	101	AB	37	10
TR 167	2	40.2	ABCDEF	93.0	73.7	82.0	2.2	D	13.1	5.88	HI	46.5 ABC	126 BCDEFG	91.1	I	92	A	36	14
MT960099	2	41.0	ABCDEF	86.1	70.3	81.0	1.8	BCDE	12.5	5.21	EFG	43.7 ABCD	108 FGH	73.4	EFGHI	295	ABCDE	33	20
MT970116	2	46.0	A	97.5	72	80.7	1.4	A	13.4	4.45	B	34.7 EF	99.7 GHI	52.6	ABC	353	CDE	37	10
95SR149C	2	42.4	ABCDE	90.1	71.5	80.2	1.5	A	13.6	4.78	BCD	36.3 DEF	109 FGH	54.8	BC	381	DE	35	17
95SR316A	2	43.2	ABCDE	91.4	78.7	82.0	1.6	AB	12.8	4.83	CD	39.5 CDE	107 FGH	66.8	CDEFGH	313	BCDE	42	4

* Within each column, means followed by the same letter are not significantly different (alpha=0.05), according to Duncan's Multiple Range test.

** Aberdeen, ID; Fairfield, MT and Pullman, WA

2001 WESTERN REGIONAL SPRING BARLEY NURSERY AND ADDITIONS - ABERDEEN, ID

Table 4

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein						
4451	MOREX	6	36.1	82.9	63	77.9	1.6	1	15.2	5.06	35.5	168	56.7	328	27	23
4452	STANDER	6	38.4	92.7	61	80.4	2.1	1	13.8	6.16	46.8	134	74.6	285	34	12
4453	HARRINGTON	2	45.1	98.0	67	79.9	1.6	1	14.9	5.79	40.7	135	67.8	338	31	16
4454	PB1-95-2R-A629	2	48.3	97.1	57	76.2	n.d.	3	15.5	3.70	24.1	77	36.5	671	14	34
4455	PB1-97-2R-7090	2	48.7	96.9	67	80.0	1.6	1	14.2	4.80	34.9	97	55.6	381	30	19
4456	BZ594-20	2	47.7	95.0	65	77.1	1.2	1	13.5	3.85	28.6	81	41.9	444	19	31
4457	BZ596-117	2	48.2	96.8	56	76.6	1.5	2	14.4	3.95	29.1	93	46.4	419	18	32
4458	BCD-47 (OR2967102)	2	47.2	94.4	65	78.7	1.8	1	14.4	5.55	40.0	162	79.3	224	27	23
4459	92AB5180	6	39.4	91.3	57	81.6	2.1	1	11.6	5.43	48.2	119	58.9	214	42	6
4460	WA8682-96	2	46.3	96.2	64	78.2	1.7	2	14.5	4.51	31.1	87	51.9	492	26	25
4461	WA8709-96	2	42.0	89.1	60	75.3	n.d.	3	14.9	3.77	25.7	54	38.2	581	11	36
4462	WA10147-96	2	45.7	97.4	60	76.6	n.d.	3	14.5	3.48	25.6	55	33.3	522	10	37
4463	WA10138-96	2	47.1	97.5	62	77.4	n.d.	3	14.4	3.93	27.5	75	37.5	399	14	34
4464	LEGACY (BA6B93-2978)	6	36.5	91.2	72	79.9	1.8	1	13.7	5.77	43.8	145	67.6	419	39	9
4465	6B95-2482	6	37.5	91.7	70	78.6	n.d.	3	14.4	4.86	35.3	180	54.1	224	31	16
4467	6B95-2089	6	38.9	95.1	60	79.5	1.7	1	14.2	5.38	38.2	140	59.5	223	36	10
4468	2B96-5057	2	44.2	96.7	69	79.6	1.7	1	15.1	5.48	36.2	138	71.8	172	29	20
4469	2B97-4077	2	44.5	*66.0	63	79.3	1.9	1	14.9	5.42	38.6	118	76.5	315	21	30
4470	2B97-4299	2	46.8	96.8	61	80.4	2.0	1	14.4	5.15	37.7	126	70.1	297	32	15
4471	CDC COPELAND (TR150)	2	48.6	98.4	*86	80.4	1.7	1	14.6	5.58	39.6	140	74.4	36	22	28
4472	CDC SELECT	2	41.6	95.2	69	80.8	1.6	1	14.0	5.51	40.6	134	76.8	63	33	13
4473	TR 167	2	43.0	96.4	63	80.7	2.1	1	14.2	6.07	43.6	141	87.0	88	31	16
4474	CDC BOLD	2	46.0	90.8	74	82.1	1.7	1	13.5	5.38	40.6	103	59.6	137	46	3
4475	CDC HELGASON (TR346)	2	42.6	95.1	67	81.0	1.5	1	13.3	4.75	36.5	118	63.6	205	44	4
4476	MT960099	2	42.5	81.8	59	79.6	1.9	1	13.9	5.28	40.4	92	72.0	376	22	28
4477	MT960228	2	43.8	90.1	60	77.4	1.6	2	14.0	3.82	28.5	90	39.3	439	15	33
4478	MT970116	2	49.8	97.3	64	79.5	1.3	1	14.3	4.31	30.6	109	48.5	289	33	13
4479	ND15422	6	38.5	94.4	71	79.1	2.0	1	14.7	5.66	39.0	194	65.2	220	25	26
4480	DRUMMOND (ND15477)	6	38.5	94.4	68	79.1	1.7	1	14.4	5.41	39.4	187	62.0	162	25	26
4481	95SR149C	2	40.9	82.9	69	78.6	1.3	1	14.3	4.53	33.0	103	48.8	386	28	21

Table 4

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight (mg)	6/64" (%)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)						
4483	95SR316A	2	42.7	83.0	71	79.8	1.5	1	14.1	4.67	34.9	115	61.3	317	28	21
4484	COLTER	6	38.6	86.1	65	80.5	1.5	1	11.6	4.08	37.3	107	48.2	297	42	6
4485	FOSTER	6	39.8	94.9	64	79.5	1.8	1	13.0	5.30	42.1	138	58.8	338	44	4
4486	LACEY	6	38.4	93.1	60	80.5	1.6	1	13.4	5.20	40.7	151	57.7	195	53	1
4487	94AB13449	6	38.3	91.5	63	81.8	n.d.	3	11.5	4.96	45.9	112	55.1	147	53	1
4488	96AB10468	6	38.3	89.7	71	80.6	1.8	2	11.5	3.89	36.5	104	44.5	339	35	11
4489	97AB8333	6	35.6	84.9	62	80.7	n.d.	3	11.4	4.54	42.3	94	51.7	476	42	6
4466	HARRINGTON MALT CHECK	2	39.2	94.3	79	81.7	1.7	1	11.7	5.32	48.7	109	70.2	109	43	
4482	HARRINGTON MALT CHECK	2	40.2	94.0	78	81.9	1.7	1	11.3	5.29	48.0	111	72.8	80	48	
Minima			35.6	81.8	56	75.3	1.2		11.4	3.48	24.1	54	33.3	36	10	
Maxima			49.8	98.4	74	82.1	2.1		15.5	6.16	48.2	194	87.0	671	53	
Means			42.6	92.7	64	79.3	1.7		13.9	4.89	36.7	119	58.2	310	30	
Standard Deviations			4.2	4.9	5	1.6	0.2		1.1	0.74	6.1	34	13.5	144	11	
Coefficients of Variation			9.9	5.2	7	2.1	13.9		7.9	15.15	16.7	29	23.2	46	37	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by C. Erickson, USDA/ARS - Aberdeen, ID

2001 WESTERN REGIONAL SPRING BARLEY NURSERY - FAIRFIELD, MT

Table 5

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein (%)	Protein (%)	S/T (%)	DP (°ASBC)	amylase (20°DU)	glucan (ppm)	Score	Rank
4524	STEPTOE	2	45.3	98.3	76	78.0	3.0	3	11.6	3.79	35.5	57	37.1	1048	24	36
4525	BARONESSE	6	44.9	98.4	71	78.1	2.0	2	14.0	3.88	28.8	86	39.1	723	20	39
4526	MOREX	6	37.1	94.6	79	80.8	1.6	1	13.5	5.22	39.9	138	51.9	413	45	11
4527	STANDER	6	37.1	97.1	79	82.7	2.1	1	12.6	6.18	50.7	112	75.2	248	30	32
4528	HARRINGTON	2	43.5	98.4	77	83.7	1.7	1	12.0	5.44	48.6	97	70.4	384	39	20
4529	PB1-95-2R-517	2	44.3	98.4	63	78.5	2.2	2	14.3	4.04	29.4	69	37.5	943	19	40
4530	PB1-95-2R-A629	2	46.5	98.4	65	80.1	3.0	3	13.7	4.13	31.3	80	38.3	855	21	37
4531	PB1-97-2R-7090	2	48.2	99.1	73	82.8	1.9	1	11.8	4.91	43.1	90	53.3	386	48	6
4532	BZ594-20	2	47.0	99.6	68	80.0	1.5	1	12.2	4.26	36.4	81	42.3	498	36	26
4533	BZ596-117	2	47.7	99.1	70	79.7	1.7	1	12.7	4.74	38.4	108	50.5	349	39	20
4534	BCD 47 (OR2967102)	2	46.6	98.6	70	80.7	2.0	1	13.9	5.64	42.5	149	76.5	285	30	32
4535	93AB688	2	39.8	93.3	80	81.9	1.5	1	10.2	3.89	40.7	87	44.7	292	44	14
4536	92AB5180	6	38.4	*90.8	75	82.1	2.0	1	11.4	5.22	48.5	116	56.2	144	50	4
4537	UT 003757	2	41.8	94.8	72	78.6	2.6	3	12.4	3.86	33.3	62	36.1	571	27	35
4538	UT 004467	2	38.7	*91.7	75	77.7	2.9	3	11.4	3.99	36.2	57	38.7	461	21	37
4539	UT 95B1216-4087	2	39.2	95.2	79	81.2	1.5	1	10.9	3.63	36.6	54	42.5	576	36	26
4540	UT 97B1480-1632	2	42.0	95.6	68	78.6	1.5	1	12.2	3.91	33.1	77	35.9	646	29	34
4541	WA8682-96	2	44.8	99.1	77	81.3	2.1	2	11.5	4.44	39.0	72	49.1	479	45	11
4542	WA8709-96	2	46.6	98.8	71	80.6	2.1	3	11.5	3.92	35.4	51	38.9	441	31	29
4544	WA10147-96	2	43.7	98.7	70	80.5	2.8	3	10.9	3.60	33.4	45	37.2	507	31	29
4545	WA10138-96	2	46.0	98.8	69	80.9	3.0	3	11.6	4.06	35.2	61	37.6	453	31	29
4546	LEGACY (6B93-2978)	6	35.9	96.3	88	82.4	1.9	1	10.9	5.60	55.4	114	73.2	163	38	23
4547	6B95-2482	6	36.6	98.0	84	81.5	2.6	3	12.3	5.04	43.2	141	53.6	225	59	1
4548	6B95-2089	6	37.0	95.4	85	82.6	2.0	2	11.5	4.93	43.8	101	43.2	196	50	4
4549	2B96-5057	2	42.1	98.7	79	83.5	1.8	1	11.2	5.09	49.5	93	68.4	232	42	17
4550	2B97-4077	2	44.4	97.7	72	82.7	2.0	1	11.8	5.12	47.3	85	78.4	254	38	23
4551	2B97-4299	2	44.6	98.9	76	84.2	1.9	1	10.1	4.78	50.2	86	71.9	314	39	20
4552	CDC COPELAND (TR150)	2	44.1	98.3	80	82.5	1.5	1	12.3	5.21	44.2	105	67.5	177	47	9
4553	CDC SELECT	2	40.8	98.9	81	83.1	1.6	1	11.8	5.42	47.0	112	82.1	183	44	14
4554	TR 167	2	42.4	99.4	78	83.6	2.3	1	11.5	5.64	51.3	107	92.3	118	46	10

Table 5

Lab No.	Variety or Selection	Rowed	Kernel Weight (mg)	on 6/64"	Barley Color (Agtron)	Malt Extract (%)	Wort Color	Wort Clarity	Barley Protein (%)	Wort Protein (%)	S/T (%)	DP (°ASBC)	Alpha-amylase (20°DU)	Beta-glucan (ppm)	Quality Score	Overall Rank
4555	CDC BOLD	2	37.2	95.8	84	84.1	1.9	1	11.0	5.15	50.2	105	77.9	305	34	28
4556	CDC HELGASON (TR346)	2	43.0	99.2	78	82.6	1.9	1	12.4	4.97	40.4	113	69.9	368	51	2
4557	MT960099	2	44.1	96.5	73	82.5	1.7	1	11.3	4.76	45.1	90	75.7	373	44	14
4558	MT960228	2	45.5	98.4	78	81.0	2.0	2	11.2	3.91	36.2	89	42.6	634	38	23
4559	MT970116	2	45.9	98.6	76	81.3	1.5	1	12.9	4.47	37.3	96	53.2	510	42	17
4560	ND15422	6	38.9	97.5	88	81.9	1.8	1	12.3	5.22	44.5	139	61.8	372	48	6
4561	DRUMMOND (ND15477)	6	37.2	97.9	87	81.8	1.6	1	12.4	5.18	42.1	141	64.4	303	51	2
4562	95SR149C	2	43.8	97.3	74	81.7	1.6	1	12.9	5.03	39.6	115	60.7	376	41	19
4563	95SR316A	2	46.1	98.9	80	82.8	1.8	1	12.3	5.00	41.8	105	69.6	352	48	6
4564	MERIT	2	43.0	97.3	75	83.2	2.0	1	12.1	5.45	48.7	122	89.8	279	45	11
4543	HARRINGTON MALT CHECK	2	39.3	94.2	82	81.9	1.9	1	12.3	5.57	48.5	98	69.5	129	43	
4565	HARRINGTON MALT CHECK	2	40.0	93.5	83	81.7	1.7	1	12.0	5.36	47.0	103	75.3	116	43	
Minima			35.9	93.3	63	77.7	1.5		10.1	3.60	28.8	45	35.9	118	19	
Maxima			48.2	99.6	88	84.2	3.0		14.3	6.18	55.4	149	92.3	1048	59	
Means			42.5	97.7	76	81.4	2.0		12.0	4.72	41.3	95	57.1	411	39	
Standard Deviations			3.6	1.6	6	1.8	0.5		1.0	0.68	6.6	27	16.9	212	10	
Coefficients of Variation			8.5	1.6	8	2.2	22.8		8.1	14.32	16.1	28	29.6	52	25	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by S. Henderson, BARI - Ft. Collins, CO

2001 WESTERN REGIONAL SPRING BARLEY NURSERY AND ADDITIONS - PULLMAN, WA

Table 6

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort			Alpha-	Beta-	Quality	Overall		
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein	S/T	DP	amylase	glucan		
(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank		
4566	STANDER	6	33.4	83.4	82	81.7	1.9	1	12.4	5.83	49.3	135	93.1	72	42	9
4567	6B95-2089	6	33.8	84.1	83	82.2	1.6	1	12.5	4.93	42.0	149	63.2	66	54	1
4568	WA 10138-96	2	39.3	91.5	74	80.9	2.5	2	11.9	3.83	33.1	68	44.6	232	35	16
4569	BCD 47	2	40.5	91.6	78	80.4	1.7	1	13.2	5.30	40.1	167	84.2	181	34	18
4570	CDC SELECT	2	35.9	91.9	84	82.0	1.8	1	12.5	5.75	47.3	122	95.2	56	35	16
4571	2B97-4077	2	37.4	88.6	77	82.0	1.8	1	11.8	5.14	46.1	112	99.2	116	42	9
4572	MOREX	6	32.2	75.0	79	81.5	1.6	1	13.2	5.39	41.0	160	67.9	93	47	5
4573	LEGACY	6	30.4	70.6	86	81.0	1.5	1	12.5	5.42	45.7	163	79.8	65	44	6
4574	DRUMMOND	6	32.2	86.5	81	81.2	1.7	1	13.1	5.26	41.6	171	71.3	66	42	9
4575	6B95-2482	6	32.5	87.2	80	82.0	1.8	1	12.2	5.03	42.6	155	68.7	75	54	1
4576	92AB5180	6	32.1	61.8	71	81.5	1.7	1	11.9	5.27	46.4	158	72.1	50	44	6
4577	2B97-4299	2	35.2	80.1	80	82.9	1.4	1	12.4	5.13	43.7	149	94.2	153	33	20
4578	CDC COPELAND	2	39.6	92.0	78	81.7	1.7	1	13.2	5.53	43.9	126	80.9	73	42	9
4579		2	34.7	82.6	69	81.5	*2.9	2	13.0	4.56	37.9	126	48.1	268	40	13
4580		2	40.7	92.4	85	83.3	1.6	1	11.9	4.81	41.7	100	69.6	270	50	3
4581	MT970116	2	42.4	96.5	76	81.4	1.4	1	12.9	4.58	36.3	94	56.2	261	37	15
4582	2B96-5057	2	37.7	94.3	77	82.3	1.7	1	12.9	5.38	44.2	123	78.3	105	44	6
4583	MT960099	2	36.5	80.1	79	81.0	1.9	1	12.4	5.60	45.6	142	72.6	136	34	18
4584	ND 15422	6	33.4	94.2	80	81.4	1.8	1	12.8	5.55	45.3	152	68.9	110	49	4
4585	WA 8682-96	2	39.4	95.3	76	80.7	1.7	2	12.6	4.66	39.0	95	55.7	276	30	21
4586	HARRINGTON	2	37.4	86.9	79	82.2	1.6	1	13.0	5.44	43.0	128	74.0	160	38	14
4587		2	35.1	83.1	80	81.8	2.1	1	13.5	5.93	44.6	129	94.0	71	30	21
4589	MOREX MALT CHECK	6	31.3	70.8	75	80.4	2.0	1	13.0	6.15	51.0	122	72.9	76	27	
Minima			30.4	61.8	69	80.4	1.4		11.8	3.83	33.1	68	44.6	50	30	
Maxima			42.4	96.5	86	83.3	2.5		13.5	5.93	49.3	171	99.2	276	54	
Means			36.0	85.9	79	81.7	1.7		12.6	5.20	42.7	133	74.2	134	41	
Standard Deviations			3.3	8.6	4	0.7	0.2		0.5	0.49	3.8	27	15.3	79	7	
Coefficients of Variation			9.3	10.0	5	0.8	13.8		3.9	9.42	8.9	20	20.6	59	17	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by S. Ullrich, Washington State University - Pullman

2000-2001 ABERDEEN WINTER BARLEY NURSERIES A AND B - ABERDEEN, ID

Table 7

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight (mg)	6/64" (%)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)						
710	OR STAB 7	6	33.8	80.5	54	80.8	1.9	1	12.9	4.41	36.2	129	55.3	222	34	13
711	OR STAB 47	6	38.3	93.5	51	76.3	2.2	1	14.9	4.91	33.1	115	50.2	302	26	17
712	OR STAB 113	6	37.2	93.2	53	80.4	2.2	2	11.7	3.87	34.9	110	44.4	157	38	11
713	WA 1614-95	6	33.2	77.1	51	76.0	2.4	2	11.5	3.86	34.6	89	37.8	518	21	21
714	85AB216	2	47.9	98.0	50	80.6	1.6	1	13.3	4.87	37.7	146	56.2	52	34	13
715	86AB1034	2	48.7	96.2	62	79.3	1.2	1	13.3	4.27	33.3	110	48.6	331	32	15
716	94AB1269	2	51.9	98.3	45	80.3	1.8	1	13.0	4.90	37.9	114	68.1	231	41	7
718	94AB1274	2	48.3	97.2	54	82.0	1.8	1	12.2	4.94	40.5	114	68.7	72	54	1
719	95AB2299	2	45.0	97.5	60	80.7	1.6	1	12.6	5.17	42.2	123	80.8	115	46	3
720	88AB536-B	6	34.6	90.6	61	79.5	1.6	1	12.5	4.39	35.5	152	54.8	165	41	7
721	88AB539-B	6	33.2	84.9	63	79.4	1.6	1	13.1	4.65	37.5	154	57.0	162	45	4
722	92AB1308	6	32.9	75.1	57	79.3	n.d.	3	11.0	3.92	36.6	127	48.3	267	35	12
723	92AB1810	6	34.8	89.3	67	79.3	1.8	1	12.8	4.71	38.4	160	56.5	171	45	4
724	92AB1841	6	33.9	84.6	68	79.3	1.6	1	13.3	4.65	35.7	165	55.2	218	42	6
725	94AB1777	6	35.1	89.1	53	80.8	n.d.	3	11.1	4.42	41.9	88	42.4	401	39	10
726	96AB474	6	39.8	93.2	50	79.8	1.6	1	11.1	4.64	44.0	92	57.9	138	52	2
727	00AB278	6	32.2	81.0	51	81.1	1.8	2	12.4	4.47	37.8	120	54.3	70	41	7
728	00AB363	6	42.3	97.5	59	79.8	1.3	2	11.8	3.89	35.7	127	44.7	360	32	15
729	00AB547	6	38.0	91.3	57	78.1	n.d.	3	12.8	3.73	30.5	109	42.3	343	23	20
730	PLAISANT	2	40.0	94.4	68	77.9	1.8	2	11.3	3.43	30.8	93	40.9	397	25	18
731	00AB1	6	36.0	73.8	65	77.3	n.d.	3	13.7	3.78	29.1	144	44.4	547	24	19
717	HARRINGTON MALT CHECK	2	39.8	94.9	82	80.9	1.7	1	11.6	5.23	47.3	110	79.9	48	36	
Minima			32.2	73.8	45	76.0	1.2		11.0	3.43	29.1	88	37.8	52	21	
Maxima			51.9	98.3	68	82.0	2.4		14.9	5.17	44.0	165	80.8	547	54	
Means			38.9	89.3	57	79.4	1.8		12.5	4.37	36.4	123	52.8	249	37	
Standard Deviations			6.1	7.9	7	1.6	0.3		1.0	0.49	3.9	23	10.5	142	9	
Coefficients of Variation			15.7	8.9	12	2.0	17.2		8.0	11.13	10.6	19	19.8	57	26	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by C. Erickson, USDA/ARS - Aberdeen

2000-2001 ABERDEEN WINTER BARLEY NURSERY C - ABERDEEN, ID

Table 8

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein		amylase	glucan	Quality	Score	Rank
732	85AB216	2	43.4	*89.2	49	79.5	1.7	1	13.6	5.02	39.0	158	55.6	47	27	13
733	86AB1034	2	47.3	96.7	49	79.5	1.3	1	12.6	4.35	35.6	107	50.6	269	35	9
734	86AB1061	2	44.1	96.2	50	80.8	1.7	1	11.8	4.69	40.8	118	56.1	98	55	1
735	92AB827	2	49.3	98.5	43	78.9	1.6	1	14.4	4.80	34.0	102	58.0	394	27	13
736	94AB1219	2	44.3	98.3	58	79.9	1.5	1	11.9	4.40	39.7	111	55.2	356	36	8
738	94AB1269	2	48.3	98.4	47	82.1	2.0	1	11.6	4.97	43.9	100	67.8	161	51	4
739	94AB1274	2	48.8	98.3	52	82.8	1.7	1	12.3	4.76	41.8	108	67.5	120	55	1
740	94AB1347	2	44.2	97.1	52	79.8	1.3	1	13.0	4.17	33.0	121	56.2	278	34	10
741	94AB1386	2	44.4	98.6	47	80.9	2.3	1	12.2	5.27	46.3	136	67.2	78	39	6
742	95AB2262	2	46.5	98.4	52	79.6	1.5	1	12.7	4.26	36.3	103	56.3	198	31	11
743	95AB2299	2	43.3	96.6	55	81.1	1.7	1	12.7	5.06	40.5	127	73.9	137	53	3
744	95AB2314	2	51.2	98.0	51	78.9	1.3	1	13.2	4.05	33.1	89	50.4	369	25	15
745	00AB14	2	51.8	98.7	58	81.6	1.6	1	12.6	4.92	41.1	148	60.9	290	42	5
746	FANFARE	2	45.4	96.4	43	79.3	1.2	1	12.5	3.78	31.6	79	38.0	153	28	12
747	MERIAN	2	50.3	98.1	47	78.7	1.5	1	13.9	3.86	30.0	77	44.6	330	23	16
748	OPAL	2	50.1	99.0	52	78.4	1.3	1	13.8	3.94	28.9	147	34.7	381	16	18
749	RIFLE	2	45.0	98.8	58	78.4	n.d.	3	13.5	3.48	26.2	74	35.6	287	21	17
750	88AB536-B	6	35.0	99.0	62	79.5	1.8	1	12.1	4.46	39.9	128	51.2	184	39	6
737	HARRINGTON MALT CHECK	2	39.5	94.3	82	81.9	1.7	1	11.4	5.15	45.8	100	70.2	57	44	
Minima			35.0	96.2	43	78.4	1.2		11.6	3.48	26.2	74	34.7	47	16	
Maxima			51.8	99.0	62	82.8	2.3		14.4	5.27	46.3	158	73.9	394	55	
Means			46.3	97.9	51	80.0	1.6		12.8	4.46	36.8	113	54.4	230	35	
Standard Deviations			4.0	1.0	5	1.3	0.3		0.8	0.51	5.5	25	11.1	112	12	
Coefficients of Variation			8.6	1.0	10	1.6	17.4		6.2	11.41	15.1	22	20.5	49	34	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by C. Erickson, USDA/ARS - Aberdeen

2000 - 2001 WESTON WINTER BARLEY NURSERY - WESTON, ID

Table 9

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight (mg)	6/64" (%)	Color (Agrton)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)		amylase (ppm)	glucan	Quality Score	Rank	
751	88AB536-B	6	31.8	40.4	99	75.9	1.6	1	14.3	3.94	29.2	154	47.7	79	23	1
752	85AB216	6	39.0	61.5	83	77.1	1.2	1	14.6	3.97	27.8	119	44.9	142	18	2
753	94AB1274	2	37.8	70.9	86	77.8	1.2	1	14.2	4.01	30.2	107	60.9	154	9	3
737	HARRINGTON MALT CHECK	2	39.5	94.3	82	81.9	1.7	1	11.4	5.15	45.8	100	70.2	57	44	
Minima			31.8	40.4	83	75.9	1.2		14.2	3.94	27.8	107	44.9	79	9	
Maxima			39.0	70.9	99	77.8	1.6		14.6	4.01	30.2	154	60.9	154	23	
Means			36.2	57.6	89	76.9	1.4		14.4	3.97	29.1	127	51.1	125	17	
Standard Deviations			3.8	15.6	9	1.0	0.2		0.2	0.03	1.2	24	8.5	40	7	
Coefficients of Variation			10.6	27.1	10	1.2	17.4		1.4	0.86	4.1	19	16.7	32	43	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by C. Erickson, USDA/ARS - Aberdeen

2000 ABERDEEN BARLEY NURSERY D - ABERDEEN, ID

Table 10

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein (%)	Protein (%)		Rank				
1589	ALEXIS	2	44.3	95.2	68	79.5	1.3	1	13.4	4.02	30.2	104	44.5	149	42	1
1590	CDC BOLD	2	44.6	84.5	76	81.5	1.7	1	13.7	5.29	39.6	111	57.5	200	30	9
1592	B1202	2	42.6	89.8	69	78.4	1.3	1	14.9	4.67	32.4	109	55.0	286	28	12
1593	CONLON	2	48.6	98.3	72	78.8	1.4	1	14.2	4.14	31.1	127	49.5	451	30	9
1594	COOPER	2	40.1	78.4	65	79.0	1.2	1	13.8	3.84	28.1	72	39.9	235	17	22
1595	CRYSTAL II	2	45.5	93.8	79	78.9	1.4	1	14.5	4.76	34.1	125	58.0	552	30	9
1596	GARNET	2	45.9	95.8	78	79.7	1.4	1	14.4	4.89	35.6	146	61.7	331	26	17
1597	HARRINGTON	2	42.5	92.7	73	80.4	1.4	1	13.6	5.08	38.7	138	62.9	258	33	7
1598	CDC KENDALL	2	41.2	95.0	74	79.8	1.4	1	14.3	5.18	36.8	184	69.6	95	28	12
1599	MERIT	2	41.9	89.9	76	80.6	1.7	1	14.2	5.09	37.3	144	76.6	225	26	17
1600	SEEBE	2	44.0	91.8	73	*74.4	1.1	1	16.3	3.81	23.9	116	39.8	268	26	17
1601	CDC STRATUS	2	43.6	92.3	76	79.3	1.3	1	14.8	5.08	35.4	172	58.8	173	26	17
1602	2B96-5038	2	48.0	98.6	74	83.3	2.0	1	12.7	6.15	50.0	130	87.7	74	37	4
1603	HE 6890	2	45.9	94.0	*56	77.8	1.2	1	14.2	4.11	29.7	95	41.1	449	23	21
1604	2ND16461	2	45.9	96.9	76	79.4	1.3	1	13.0	4.28	34.6	83	50.4	680	28	12
1605	85AB2323	2	47.9	94.6	78	79.9	1.3	1	13.9	4.80	34.9	118	49.5	475	40	3
1606	SAMISH 23(ML2323-2-2-1)	2	42.7	92.9	72	77.8	1.4	2	13.5	3.84	29.3	86	31.7	736	16	23
1607	93AB835	2	46.6	94.8	76	80.3	1.7	1	13.8	5.59	40.6	128	74.3	88	41	2
1608	95AB18478	2	47.6	98.3	76	79.3	1.4	1	14.4	4.41	31.7	110	52.6	537	34	6
1609	96AB10328	2	45.0	96.6	75	79.8	1.4	1	14.2	4.93	36.4	113	54.0	505	37	4
1610	97AB6361	2	47.6	96.5	68	78.1	1.2	1	14.1	4.08	30.5	95	45.0	447	27	16
1611	97AB6643	2	50.2	94.5	78	80.3	1.6	1	14.1	5.36	39.3	127	56.9	224	32	8
1612	98AB11402	2	43.8	83.1	76	79.5	1.3	1	15.4	5.06	34.8	144	50.4	165	28	12
1591	HARRINGTON MALT CHECK	2	39.4	94.1	80	82.0	1.6	1	11.5	5.40	49.7	110	69.5	52	39	
1613	HARRINGTON MALT CHECK	2	39.3	93.6	79	81.7	1.8	1	11.8	5.70	52.6	108	75.1	31	36	
Minima			40.1	78.4	65	77.8	1.1		12.7	3.81	23.9	72	31.7	74	16	
Maxima			50.2	98.6	79	83.3	2.0		16.3	6.15	50.0	184	87.7	736	42	
Means			45.0	93.0	74	79.6	1.4		14.1	4.71	34.6	121	55.1	330	30	
Standard Deviations			2.6	5.0	4	1.2	0.2		0.8	0.63	5.3	27	13.1	190	7	
Coefficients of Variation			5.7	5.4	5	1.5	14.0		5.4	13.26	15.4	22	23.8	58	23	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by C. Erickson, USDA/ARS - Aberdeen

2000-2001 ABERDEEN BARLEY NURSERY A - ABERDEEN, ID

Table 11

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight	6/64"	Color	Extract	Wort	Protein	S/T	DP		Quality	Score	Rank		
1614	BCD 47 (OR2967102)	2	48.7	96.6	66	79.0	1.5	1	15.0	5.38	36.7	169	77.2	280	22	35
1615	B 1202	2	45.6	95.7	65	79.6	1.5	1	15.2	5.26	35.6	109	57.3	162	29	19
1616	2B96-5057	2	40.3	91.9	65	78.7	1.6	1	15.2	5.55	38.0	143	72.0	137	25	31
1617	2B97-4077	2	44.6	87.5	71	80.0	1.9	1	13.7	5.69	41.8	120	83.1	124	39	4
1618	2B97-4299	2	46.5	96.0	64	80.7	1.9	1	13.8	5.25	38.6	131	74.4	229	29	19
1619	2B97-4484	2	43.2	91.4	71	81.2	1.6	1	13.8	5.62	42.4	136	80.0	150	37	7
1620	GALENA	2	43.3	94.5	72	78.4	1.2	1	13.4	4.29	32.1	96	42.8	302	32	14
1621	GARNET	2	50.0	98.4	74	81.0	1.5	1	14.5	5.34	39.2	141	65.7	278	28	25
1622	HARRINGTON	2	40.7	83.2	69	80.1	1.4	1	14.4	5.49	39.2	132	68.4	249	23	33
1623	IDAGOLD II (C32)	2	45.7	94.7	64	79.1	1.1	1	13.5	3.63	27.3	88	37.2	546	20	37
1624	MERIT	2	41.3	85.0	63	80.7	1.8	1	14.5	5.52	38.3	128	77.7	255	29	19
1625	AC METCALFE	2	42.8	92.1	68	81.2	1.5	1	15.0	5.69	39.9	132	81.1	83	36	10
1626	MORAVIAN 14	2	38.7	93.5	62	78.9	1.8	2	13.7	4.30	31.4	107	41.2	269	26	29
1627	MORAVIAN 37 (C37)	2	47.5	98.9	62	79.4	1.4	1	15.0	4.76	32.5	136	44.7	213	37	7
1628	ORCA	2	52.7	98.4	62	79.3	1.8	1	14.9	5.87	39.9	153	70.9	141	26	29
1629	CDC STRATUS	2	44.6	94.1	76	80.7	1.3	1	13.9	5.40	40.4	170	64.5	79	30	16
1630	VALIER	2	43.2	96.4	76	81.1	1.2	1	14.7	5.27	37.2	125	67.6	290	35	12
1631	MT910189	2	45.3	87.9	67	79.9	1.2	1	14.2	5.13	37.7	129	64.9	214	30	16
1633	H3860224	2	44.4	94.7	65	79.7	1.3	1	14.9	5.27	36.3	121	66.3	548	29	19
1634	WA9504-94	2	41.2	90.3	68	79.7	1.7	2	14.0	4.58	33.1	110	41.3	456	38	5
1635	WA8682-96	2	42.9	89.2	67	78.3	1.2	1	14.7	4.45	31.5	89	50.3	516	25	31
1636	C40	2	42.9	96.4	60	79.5	1.2	1	14.5	5.25	38.3	131	52.3	130	37	7
1637	C46	2	39.7	92.6	72	80.8	1.0	1	13.5	4.76	35.8	114	55.9	356	30	16
1638	C53	2	45.7	94.6	75	82.2	1.2	1	13.9	5.19	38.8	110	68.8	89	36	10
1639	C56	2	48.8	97.2	64	79.2	1.1	1	15.2	4.93	33.8	120	47.9	259	40	1
1640	C57	2	42.0	96.0	71	*83.5	1.5	1	12.7	5.58	46.4	135	62.5	86	40	1
1641	85AB2323	2	47.5	92.3	70	79.9	1.2	1	14.9	5.41	37.5	126	56.4	383	29	19
1642	90AB241	2	45.6	97.2	69	81.1	1.1	1	14.5	5.29	38.4	129	73.9	421	32	14
1643	94AB12990	2	48.8	95.4	74	80.4	1.0	1	14.2	5.18	38.3	113	56.2	369	29	19
1644	95AB11469	2	51.7	97.4	74	79.1	0.9	1	12.8	4.01	31.9	113	43.0	557	35	12

Table 11

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein		amylase	glucan	Quality	Score	Rank
1645	95M4623	2	47.3	95.7	69	79.7	0.9	1	14.7	4.68	33.8	114	47.0	458	40	1
1646	95SR7A	2	42.0	77.0	68	77.2	1.0	1	14.3	3.98	28.2	112	38.5	436	18	38
1647	95SR149C	2	40.2	76.8	70	79.5	1.0	1	13.9	4.51	33.9	102	52.6	428	28	25
1648	95SR316A	2	44.8	80.0	69	79.9	1.6	1	14.4	4.78	34.9	109	56.5	295	28	25
1649	95SR19D	2	44.0	85.9	69	79.8	1.5	1	15.1	5.25	37.1	138	55.0	386	28	25
1650	98AB11865	2	42.7	90.3	76	78.8	1.3	1	13.3	4.04	30.5	84	33.4	597	21	36
1651	98AB11993	2	43.2	95.2	63	80.2	1.6	1	13.3	5.04	38.1	100	65.2	183	38	5
1652	PB1-95-2R-522	2	45.8	89.5	67	78.3	1.4	1	12.8	3.83	31.5	56	37.2	637	23	33
1632	HARRINGTON MALT CHECK	2	39.4	93.2	79	82.2	1.4	1	11.9	5.46	49.3	101	72.1	94	43	
1653	HARRINGTON MALT CHECK	2	39.0	94.1	84	82.3	1.7	1	11.5	5.57	51.1	117	68.4	68	42	
Minima			38.7	76.8	60	77.2	0.9		12.7	3.63	27.3	56	33.4	79	18	
Maxima			52.7	98.9	76	82.2	1.9		15.2	5.87	46.4	170	83.1	637	40	
Means			44.6	92.1	68	79.8	1.4		14.2	4.99	36.2	120	58.7	305	30	
Standard Deviations			3.3	5.7	4	1.0	0.3		0.7	0.58	4.0	22	14.0	159	6	
Coefficients of Variation			7.4	6.2	6	1.3	20.1		5.0	11.70	11.1	19	23.9	52	20	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by C. Erickson, USDA/ARS - Aberdeen

2001 ABERDEEN BARLEY NURSERY J - ABERDEEN, ID

Table 12

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein (%)	Protein (%)		amylase (20°DU)	glucan (ppm)	Quality Score	Rank	
2402	B2601	6	35.4	76.8	72	79.9	2.0	1	13.3	5.29	42.8	140	58.1	334	45	4
2403	COLTER	6	36.7	64.8	70	80.2	1.6	1	11.5	4.14	37.9	121	45.6	215	37	10
2404	FOSTER	6	37.3	83.3	70	79.1	1.8	1	13.2	5.25	41.9	147	56.4	316	47	3
2405	MOREX	6	34.2	87.6	69	78.3	1.6	1	14.8	5.16	35.5	180	57.4	273	30	17
2406	SISLER (BT433)	6	32.3	75.8	83	79.5	1.5	1	13.3	5.33	40.8	176	70.1	206	33	15
2407	STANDER	6	33.5	76.1	77	79.5	1.8	1	13.9	5.36	40.1	152	62.4	260	40	7
2408	91AB8479	6	36.5	81.1	76	78.6	1.4	1	13.6	4.85	36.3	162	57.5	206	39	8
2409	92AB5180	6	36.7	77.4	67	80.5	1.8	1	11.9	4.97	45.2	141	54.4	170	61	1
2410	95AB15086	6	33.6	65.1	76	78.9	1.6	1	13.6	5.29	39.6	165	61.2	147	34	13
2411	95AB15176	6	35.8	78.8	79	79.0	1.8	1	12.7	4.49	35.6	141	45.2	269	41	6
2412	96AB9040	6	33.9	60.0	75	80.6	n.d.	3	12.1	4.97	43.0	133	56.9	185	48	2
2413	96AB9697	6	38.2	94.1	71	80.1	1.3	1	12.4	4.44	36.4	125	47.7	319	39	8
2414	97AB7489	6	34.6	80.1	73	80.0	1.9	1	13.8	6.03	44.6	132	78.8	340	36	12
2416	97AB9084	6	33.4	71.7	80	78.3	2.0	2	14.9	5.22	37.5	184	54.2	341	27	18
2417	98AB12287	6	38.2	62.9	74	78.5	1.6	1	11.9	4.08	35.3	120	40.4	509	25	19
2418	98AB12364	6	32.9	72.8	77	78.4	1.7	1	12.8	4.64	38.4	137	56.4	291	37	10
2419	98AB12435	6	37.0	87.8	80	79.4	n.d.	3	11.6	4.36	38.8	80	44.6	408	31	16
2420	98AB12904	6	36.4	78.1	73	79.9	n.d.	3	11.8	4.44	40.2	113	46.9	185	42	5
2421	6B94-7012	6	36.1	85.8	74	78.4	1.9	1	15.0	5.89	41.0	154	63.0	266	34	13
2415	MOREX MALT CHECK	6	31.0	71.1	80	80.7	2.3	1	12.2	6.13	51.1	110	77.8	99	36	
Minima			32.3	60.0	67	78.3	1.3		11.5	4.08	35.3	80	40.4	147	25	
Maxima			38.2	94.1	83	80.6	2.0		15.0	6.03	45.2	184	78.8	509	61	
Means			35.4	76.8	75	79.3	1.7		13.1	4.96	39.5	142	55.6	276	38	
Standard Deviations			1.8	9.1	4	0.8	0.2		1.1	0.55	3.1	25	9.4	90	8	
Coefficients of Variation			5.1	11.9	6	1.0	12.2		8.6	11.05	7.8	18	16.9	33	22	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by C. Erickson, USDA/ARS - Aberdeen

2001 ABERDEEN SPRING AND WINTER DRILL STRIP SERIES - ABERDEEN, ID

Table 13

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight	6/64"	Color	Extract	Wort	Protein	Protein	S/T	DP	amylase	glucan	Quality	Score	Rank
2456	HARRINGTON	2	41.2	89.1	79	80.5	1.5	1	15.0	5.60	38.0	124	65.8	356	26	11
2458	90AB241	2	43.0	94.2	75	80.2	1.5	1	14.1	5.19	39.1	126	64.9	352	29	9
2459	92AB5180	6	38.0	83.3	68	81.5	1.9	1	11.1	4.87	46.9	141	55.2	136	57	1
2460	98AB12362	2	38.7	92.9	74	81.3	1.8	1	12.0	4.76	44.4	129	52.0	221	55	2
2461	MOREX	6	35.0	70.4	68	77.2	1.6	1	14.4	4.87	35.5	171	51.4	231	27	10
2462	85AB216	6	44.9	94.6	49	79.4	1.9	1	14.8	5.48	37.6	148	57.8	115	40	4
2463	88AB536-B	6	34.0	87.0	71	78.3	1.9	1	14.6	5.22	38.0	160	56.5	171	37	7
2464	92AB1308	6	32.5	61.2	61	77.6	1.6	1	13.8	4.85	37.0	156	59.0	228	33	8
2465	94AB1269	2	48.2	96.6	54	81.0	1.9	1	13.6	5.31	41.8	112	72.3	246	40	4
2466	94AB1274	2	46.2	99.9	64	81.0	1.8	1	13.1	5.29	42.1	108	72.7	249	39	6
2467	95AB2299	2	42.3	95.0	68	80.0	1.6	1	13.2	5.09	41.3	115	80.8	172	46	3
2457	MOREX MALT CHECK	6	31.3	69.5	77	80.9	2.1	1	12.1	6.05	51.3	121	77.4	55	29	
			Minima	32.5	61.2	49	77.2	1.5	11.1	4.76	35.5	108	51.4	115	26	
			Maxima	48.2	99.9	79	81.5	1.9	15.0	5.60	46.9	171	80.8	356	57	
			Means	40.4	87.7	66	79.8	1.7	13.6	5.14	40.2	135	62.6	225	39	
			Standard Deviations	5.2	11.9	9	1.5	0.2	1.2	0.28	3.4	21	9.5	78	10	
			Coefficients of Variation	12.8	13.6	14	1.9	9.4	8.9	5.36	8.6	15	15.2	34	27	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by C. Erickson, USDA/ARS - Aberdeen

2001 TETONIA BARLEY NURSERY A - TETONIA, ID

Table 14

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight (mg)	6/64" (%)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)		amylase (20°DU)	glucan (ppm)	Quality Score	Rank	
2697	BCD 47 (OR2967102)	2	45.6	96.5	68	78.2	1.4	1	14.1	5.09	36.5	202	70.9	204	26	14
2698	B 1202	2	39.3	86.0	73	76.9	1.3	1	14.9	4.57	32.0	133	52.2	284	25	19
2699	2B96-5057	2	38.9	96.2	74	78.0	1.3	1	14.0	4.51	32.2	152	59.8	215	23	21
2700	2B97-4077	2	38.6	*79.3	74	78.2	1.6	1	13.8	4.93	37.0	153	73.4	215	18	30
2701	2B97-4299	2	40.4	89.5	76	78.9	1.6	1	14.0	4.58	33.6	169	68.5	240	23	21
2702	2B97-4484	2	39.7	86.3	82	80.3	1.8	1	13.5	5.37	40.5	140	77.3	131	29	8
2703	GALENA	2	40.2	92.9	74	77.5	1.5	1	14.2	4.15	31.2	127	42.0	238	28	10
2704	GARNET	2	42.5	96.6	81	78.7	1.4	1	14.0	4.83	36.5	167	60.0	243	26	14
2705	HARRINGTON	2	38.9	91.6	81	79.2	1.2	1	13.3	4.72	36.5	154	57.5	212	28	10
2706	IDAGOLD II (C32)	2	39.7	90.8	79	76.6	1.5	2	14.4	3.41	24.2	102	32.1	524	12	36
2707	MERIT	2	37.3	80.8	83	78.7	1.5	1	14.7	4.85	35.2	185	72.4	202	16	34
2708	AC METCALFE	2	39.9	92.9	79	80.5	1.5	1	13.8	5.21	39.5	163	79.7	76	22	24
2709	MORAVIAN 14	2	35.7	88.1	71	78.4	n.d.	3	14.4	4.44	32.6	132	40.6	105	32	3
2710	MORAVIAN 37 (C37)	2	41.9	97.1	71	79.0	1.5	1	13.9	4.41	33.3	168	43.4	127	36	2
2711	ORCA	2	49.3	98.6	63	78.1	*2.1	1	14.6	5.52	38.6	152	70.3	180	22	24
2713	CDC STRATUS	2	42.8	95.2	77	79.0	1.4	1	14.7	5.09	35.6	197	64.8	237	26	14
2714	VALIER	2	38.5	89.7	79	76.5	1.3	1	14.3	4.21	29.9	147	62.2	348	7	38
2715	MT910189	2	44.1	95.7	81	79.7	1.2	1	13.5	4.75	35.9	156	68.6	360	26	14
2716	H3860224	2	40.8	95.0	72	78.0	1.1	1	14.5	4.52	31.7	172	68.3	486	22	24
2717	WA9504-94	2	39.2	94.3	64	78.5	n.d.	3	14.0	4.55	32.6	153	36.6	259	25	19
2718	WA8682-96	2	42.2	95.5	75	77.7	1.6	1	13.3	4.03	32.3	114	47.6	397	31	5
2719	C40	2	38.7	95.1	71	78.6	1.5	1	15.0	5.15	35.0	175	47.7	54	26	14
2720	C46	2	37.7	94.0	77	78.7	1.3	1	13.7	4.42	32.8	146	52.2	375	22	24
2721	C53	2	41.1	93.9	77	80.4	1.4	1	13.5	5.01	37.0	145	58.3	54	28	10
2722	C56	2	44.2	97.2	72	79.1	1.3	1	14.4	4.66	34.2	155	43.3	101	37	1
2723	C57	2	36.0	92.1	82	80.2	1.7	1	13.8	5.34	39.7	198	55.6	31	17	31
2724	85AB2323	2	46.0	94.3	79	78.6	1.4	1	14.6	4.93	36.1	156	51.1	270	30	6
2725	90AB241	2	40.2	95.8	78	78.8	1.4	1	14.2	4.82	35.2	169	59.6	143	29	8
2726	94AB12990	2	45.2	95.5	78	78.9	1.4	1	14.3	4.91	35.7	154	53.0	296	30	6
2727	95AB11469	2	47.0	97.0	80	76.9	1.3	1	13.5	3.81	29.3	147	37.9	468	16	34

Table 14

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight (mg)	6/64" (%)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)						
2728	95M4623	2	44.4	96.4	77	77.7	1.3	1	14.6	4.37	31.2	156	45.4	385	19	28
2729	95SR7A	2	44.2	92.4	86	76.7	1.2	1	13.4	3.46	27.1	155	34.4	413	17	31
2730	95SR149C	2	39.2	88.1	81	77.1	1.4	1	14.3	4.33	32.5	155	45.2	223	17	31
2731	95SR316A	2	40.7	88.8	85	78.6	1.3	1	13.9	4.48	33.5	160	62.6	175	23	21
2732	95SR19D	2	45.0	95.3	81	79.0	1.6	1	13.3	4.66	36.3	143	51.3	354	32	3
2733	98AB11865	2	42.1	94.0	81	77.4	1.6	1	13.6	3.93	29.3	112	34.3	413	19	28
2734	98AB11993	2	39.8	94.9	76	78.1	1.3	1	13.4	4.21	31.7	128	56.5	190	28	10
2735	9B1-95-2R-522	2	44.8	92.6	74	75.7	1.7	1	13.8	3.53	27.4	78	35.0	*728	12	36
2712	HARRINGTON MALT CHECK	2	39.1	93.6	81	81.6	1.7	1	11.6	5.48	49.8	113	72.3	53	42	
2736	HARRINGTON MALT CHECK	2	39.6	93.6	82	81.0	1.9	1	11.7	5.37	49.8	104	63.4	105	40	
Minima			35.7	80.8	63	75.7	1.1		13.3	3.41	24.2	78	32.1	31	7	
Maxima			49.3	98.6	86	80.5	1.8		15.0	5.52	40.5	202	79.7	524	37	
Means			41.4	93.2	77	78.3	1.4		14.0	4.57	33.7	152	54.5	249	24	
Standard Deviations			3.1	3.8	5	1.1	0.2		0.5	0.52	3.6	25	13.2	128	7	
Coefficients of Variation			7.6	4.1	7	1.4	10.7		3.5	11.29	10.7	17	24.2	51	28	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by C. Erickson, USDA/ARS - Aberdeen

2001 TETONIA BARLEY NURSERY B - TETONIA, ID

Table 15

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight	6/64"	Color	Extract	Wort	Protein	S/T	DP	amylase	glucan	Quality	Score	Rank	
2737	95AB11469	2	44.2	95.3	84	76.0	1.4	1	14.8	4.03	27.9	158	43.4	429	19	11
2738	95M4623	2	42.0	95.0	79	76.3	1.4	1	14.9	4.45	29.8	159	46.3	401	26	4
2739	97AB7973	2	40.0	95.7	79	76.2	1.4	1	15.7	4.50	30.1	161	55.3	276	19	11
2740	98AB11993	2	36.6	90.8	77	76.5	1.3	1	15.9	4.50	29.1	164	67.3	188	17	14
2741	LEGACY (BA6B93-2978)	6	32.4	87.6	80	78.2	1.7	1	14.4	5.75	41.0	206	82.1	106	31	2
2742	6B95-2482	6	33.8	90.5	78	76.8	2.0	1	15.3	5.29	36.5	212	64.3	98	26	4
2743	6B95-2089	6	34.7	90.4	75	78.3	1.7	1	14.7	5.29	37.2	158	62.8	63	33	1
2744	2B96-5057	2	37.2	93.0	76	76.1	1.7	1	16.3	5.27	33.3	168	73.1	229	13	24
2745	2B97-4077	2	38.3	87.1	76	76.6	1.9	1	15.6	5.35	34.5	155	87.8	343	10	27
2746	2B97-4299	2	36.8	84.1	76	77.2	1.9	1	15.2	4.76	32.5	181	74.3	363	9	28
2747	CDC BOLD	2	36.6	*70.3	81	78.0	1.7	1	14.7	5.02	34.4	149	60.8	275	16	16
2748	CDC HELGASON (TR346)	2	37.4	92.2	78	76.4	1.7	1	15.7	4.91	31.8	167	65.0	388	14	20
2749	MT960099	2	35.3	*67.0	77	76.4	1.7	1	14.7	4.92	34.0	156	78.5	239	12	25
2750	MT960228	2	38.8	91.1	82	75.2	1.9	2	14.9	3.58	25.7	134	42.2	379	19	11
2751	MT970116	2	40.7	93.7	78	76.6	1.4	1	15.7	4.47	29.7	162	54.3	172	25	6
2752	95SR7A	2	39.1	88.1	88	75.5	1.5	1	14.7	3.73	26.6	171	38.3	231	14	20
2753	FARMINGTON (WA9504-94)	2	34.8	83.7	*62	74.1	n.d.	3	*17.5	5.00	29.2	180	43.6	431	14	20
2754	WA8682-96	2	38.1	88.8	81	74.8	1.6	2	15.4	4.65	31.9	130	51.2	427	21	8
2755	GARNET	2	37.1	87.0	87	75.6	1.5	1	16.1	5.03	31.9	203	68.4	259	15	17
2756	HARRINGTON	2	35.1	87.2	82	77.6	1.4	1	15.1	5.23	36.6	185	73.8	142	15	17
2758	MERIT	2	36.6	83.4	82	77.7	1.9	1	15.3	5.60	37.8	188	87.7	220	8	29
2759	CDC STRATUS	2	39.1	89.6	83	77.9	1.4	1	15.6	5.46	35.5	221	71.7	146	17	14
2760	VALIER (MTLB-30)	2	36.9	90.5	76	76.8	1.6	1	16.0	4.97	32.0	165	70.8	339	14	20
2761	MT910189	2	40.7	90.2	81	77.9	1.2	1	15.2	5.09	35.7	193	74.8	214	21	8
2762	BZ594-20	2	41.8	95.5	68	74.9	1.4	1	15.7	4.42	28.9	151	46.1	251	28	3
2763	BZ596-117	2	40.8	94.4	74	74.9	1.3	1	15.4	4.23	28.2	129	47.1	329	25	6
2764	PB1-95-2R-522	2	38.5	81.0	74	73.8	1.6	2	14.6	3.88	26.9	*79.3	33.8	*688	3	30
2765	85AB2323	2	43.6	95.7	80	77.5	1.8	2	15.7	5.47	35.6	175	52.8	226	21	8
2766	90AB241	2	38.1	95.7	78	77.1	1.5	1	15.6	5.27	34.6	170	66.4	304	12	25
2767	94AB12990	2	40.3	89.2	84	76.3	1.7	1	16.0	5.28	34.0	175	58.6	286	15	17

Table 15

Lab No.	Variety	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality				
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein		Quality			
		(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score		
2736	HARRINGTON MALT CHECK	2	39.6	93.6	82	81.0	1.9	1	11.7	5.37	49.8	104	63.4	105	40
2757	HARRINGTON MALT CHECK	2	39.5	94.4	81	80.9	1.9	1	11.7	5.74	53.0	120	74.9	64	39
Minima			32.4	81.0	68	73.8	1.2		14.4	3.58	25.7	129	33.8	63	3
Maxima			44.2	95.7	88	78.3	2.0		16.3	5.75	41.0	221	87.8	431	33
Means			38.2	90.2	79	76.4	1.6		15.3	4.85	32.4	170	61.4	267	18
Standard Deviations			2.8	4.1	4	1.2	0.2		0.5	0.57	3.8	23	14.8	104	7
Coefficients of Variation			7.4	4.6	5	1.6	13.2		3.3	11.67	11.6	13	24.0	39	39

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by C. Erickson, USDA/ARS - Aberdeen

2001 STEPTOE/MOREX QTL PROGENY - ABERDEEN, ID

Table 16

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight	6/64"	Color	Extract	Wort	Protein	Protein	S/T	DP	amylase	glucan	Quality	Score	Rank
2768	S0833	6	39.8	86.8	63	73.0	2.5	2	12.4	3.52	29.5	54	32.0	636	21	32
2769	M1303	6	38.3	91.3	73	75.6	1.7	1	15.5	5.00	33.8	128	44.2	264	26	25
2770	S0107	6	43.9	95.6	58	74.0	2.2	1	12.5	3.78	32.6	60	35.9	605	22	30
2771	M1219	6	40.1	91.5	67	77.1	1.8	1	14.1	5.16	37.4	143	53.0	289	36	8
2772	M0703	6	39.9	91.8	66	77.7	1.6	1	14.8	5.28	36.7	147	54.7	224	36	8
2773	M0549	6	34.9	76.6	60	77.2	1.9	1	14.0	5.34	38.3	139	51.1	461	24	28
2774	S0112	6	46.0	94.7	61	74.5	2.4	2	12.2	3.92	33.2	65	37.5	610	21	32
2775	STEPTOE	6	41.5	89.7	58	73.0	n.d.	3	12.3	3.36	28.6	51	31.6	666	20	47
2776	M1115	6	37.4	83.1	61	77.0	1.8	1	14.0	5.06	37.2	158	50.7	241	41	4
2777	S1543	6	45.1	93.2	67	74.9	2.2	3	12.4	3.54	30.1	65	37.0	487	20	47
2778	M0641	6	36.7	75.5	63	76.1	1.8	2	15.1	5.46	37.4	189	49.3	426	19	58
2779	S1101	6	41.0	91.0	58	73.8	n.d.	3	11.9	3.61	33.2	51	28.7	601	20	47
2781	M1521	6	39.9	93.0	69	78.6	1.8	1	15.0	5.53	37.9	174	61.0	235	22	30
2782	SB4414	6	41.1	87.0	59	74.3	2.3	2	12.6	3.89	32.9	66	38.1	573	16	62
2783	SO312	6	42.6	93.3	60	73.6	n.d.	3	11.9	3.39	28.8	51	31.9	710	20	47
2784	M0108	6	36.5	87.1	66	78.0	1.7	1	14.8	5.29	37.6	147	53.0	240	36	8
2785	M0923	6	37.5	88.1	69	78.5	1.7	1	14.8	5.56	39.9	143	40.6	270	33	17
2786	MOREX	6	38.1	89.6	72	78.5	1.6	1	14.1	5.64	41.2	155	54.5	209	41	4
2787	S0401	6	42.9	93.5	57	74.1	n.d.	3	10.7	3.36	32.0	51	28.1	641	20	47
2788	S1345	6	41.6	92.1	59	74.3	n.d.	3	12.0	3.36	29.7	49	29.7	645	20	47
2789	M1502	6	36.0	79.4	62	75.7	2.1	2	14.2	4.72	34.6	107	39.9	453	18	61
2790	S1445	6	36.8	77.7	62	73.1	2.1	2	12.5	3.65	31.1	66	31.0	517	21	32
2791	S0503	6	42.6	89.6	61	74.1	2.1	2	12.2	3.52	29.9	56	32.6	509	21	32
2792	S1235	6	39.9	89.1	62	74.7	2.3	2	11.5	3.39	31.1	57	30.5	511	21	32
2793	M0402	6	35.7	81.3	63	77.6	1.7	1	14.3	5.27	38.5	157	49.9	344	33	17
2794	M1563	6	34.3	78.1	64	76.6	1.7	1	15.1	5.12	35.1	119	52.0	389	26	25
2795	S0615	6	44.6	94.3	64	75.1	2.1	2	11.8	3.81	32.6	66	36.7	505	21	32
2796	M0307	6	36.4	82.0	74	78.3	1.6	1	14.2	4.92	36.6	136	49.5	340	34	15
2797	M0107	6	35.1	78.0	65	77.0	1.6	1	14.2	4.78	34.6	136	47.3	329	30	21
2798	M1415	6	37.0	78.4	63	77.8	1.4	1	13.8	4.78	34.8	163	50.4	325	35	14

Table 16

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein						
			(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank	
2800	S0731	6	39.0	80.5	60	72.6	2.2	2	12.7	3.64	30.1	56	35.2	515	16	62
2801	M0208	6	34.6	77.6	70	78.9	1.5	1	13.3	4.93	38.0	170	48.4	248	42	3
2802	S0911	6	40.7	93.3	65	74.8	2.8	2	11.1	3.67	33.6	59	35.0	508	21	32
2803	S0205	6	40.8	89.6	62	73.1	2.9	2	10.9	3.27	30.3	53	34.3	484	21	32
2804	M1303	6	34.3	76.6	73	75.4	1.7	1	13.4	4.38	33.2	113	40.9	383	19	58
2805	S0107	6	41.3	91.3	74	74.5	2.8	2	11.2	3.44	32.8	62	34.8	516	21	32
2806	M0703	6	36.7	85.3	75	78.4	2.1	2	13.4	4.61	35.6	115	45.3	403	34	15
2807	S0112	6	41.5	90.4	60	74.6	2.7	2	11.8	3.84	33.6	67	36.1	516	21	32
2808	M1115	6	34.6	68.3	71	77.6	1.7	2	12.9	4.74	37.4	139	49.0	350	29	23
2809	S0205	6	37.6	71.7	61	71.3	3.1	2	12.8	3.47	28.8	60	31.9	520	14	68
2810	M1521	6	37.6	85.0	70	78.1	1.9	2	14.4	4.97	36.2	150	48.9	357	36	8
2811	S0312	6	43.4	93.7	68	74.8	3.1	2	11.4	3.31	29.8	52	30.3	510	21	32
2812	M0923	6	36.8	86.6	71	78.0	1.9	2	14.2	5.19	36.7	153	47.7	320	36	8
2813	S0401	6	43.7	95.8	66	75.5	3.2	2	11.0	3.37	31.1	56	31.6	514	21	32
2814	M1502	6	34.3	72.3	72	75.7	1.8	2	14.1	4.64	33.7	103	44.9	450	20	47
2815	S0503	6	39.5	84.1	64	73.3	n.d.	3	11.6	3.49	32.4	53	29.8	522	20	47
2816	M0402	6	33.1	66.0	68	76.3	1.9	2	14.2	5.25	37.4	164	50.5	396	24	28
2817	S0615	6	41.8	91.9	72	75.2	n.d.	3	9.3	3.72	41.1	63	39.9	467	20	47
2818	M0107	6	33.5	70.8	65	77.2	1.7	2	14.0	4.91	35.6	135	49.1	362	27	24
2819	S0731	6	40.2	85.0	64	72.7	n.d.	3	12.7	3.58	29.2	51	33.6	520	15	66
2820	MOREX	6	35.7	80.7	74	78.1	1.7	2	14.5	5.11	35.6	151	53.6	330	36	8
2821	S0833	6	39.1	86.1	63	73.5	n.d.	3	11.7	3.47	30.7	56	29.7	522	20	47
2823	M0208	6	35.4	84.0	66	77.8	1.8	2	14.8	4.99	35.2	170	48.5	347	25	27
2824	S0911	6	41.1	92.7	69	75.1	n.d.	3	12.0	3.76	33.5	81	35.7	499	20	47
2825	M0307	6	33.2	69.6	76	77.9	1.7	1	12.1	4.66	38.9	118	49.0	334	31	19
2826	S1101	6	38.8	87.3	62	73.4	2.7	2	11.2	3.12	29.7	51	30.9	770	21	32
2827	M1563	6	35.2	85.9	71	79.3	2.2	2	12.8	4.86	39.8	98	48.0	338	37	6
2828	S1235	6	34.5	73.5	60	72.0	2.3	2	11.9	3.32	29.6	58	31.8	685	19	58
2829	M0549	6	33.2	76.2	67	78.2	2.0	2	14.1	4.88	35.6	138	45.5	359	31	19
2830	S1345	6	38.6	88.7	69	75.2	2.5	2	10.3	3.40	34.8	54	30.6	743	16	62

Table 16

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight (mg)	6/64" (%)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)						
2831	M1415	6	37.6	83.3	72	78.5	1.7	1	14.0	4.98	37.9	159	52.3	384	37	6
2832	M0108	6	35.3	85.3	74	79.7	2.3	2	12.3	4.83	40.3	130	48.5	306	51	1
2833	M1219	6	37.5	81.4	67	77.7	1.8	2	13.3	4.88	38.1	127	49.8	345	30	21
2834	S1445	6	38.6	88.6	69	74.5	2.2	2	11.7	3.38	30.9	50	31.4	861	21	32
2835	STEPTOE	6	41.7	92.3	69	74.7	2.7	2	10.2	3.15	31.1	48	29.3	784	16	62
2836	S1543	6	41.3	88.3	67	75.4	2.5	2	10.9	3.40	32.9	61	32.5	588	21	32
2837	M0641	6	37.8	86.7	68	78.0	1.8	1	13.2	5.02	40.9	172	49.8	298	43	2
2838	SB4414	6	42.2	91.9	68	75.8	n.d.	3	10.2	3.37	36.2	63	35.2	723	15	66
2780	MOREX MALT CHECK	6	31.1	70.6	75	79.6	2.4	1	12.4	6.24	52.8	112	65.5	74	29	
2799	MOREX MALT CHECK	6	31.1	70.7	77	79.8	2.1	1	12.1	5.95	50.3	116	73.8	67	32	
2822	MOREX MALT CHECK	6	31.7	69.6	80	79.4	2.0	1	12.9	5.97	48.3	115	80.7	71	24	
Minima			33.1	66.0	57	71.3	1.4		9.3	3.12	28.6	48	28.1	209	14	
Maxima			46.0	95.8	76	79.7	3.2		15.5	5.64	41.2	189	61.0	861	51	
Means			38.6	85.2	66	75.8	2.1		12.8	4.26	34.3	100	41.1	461	26	
Standard Deviations			3.3	7.4	5	2.1	0.5		1.5	0.80	3.5	46	8.9	154	8	
Coefficients of Variation			8.4	8.7	8	2.7	21.7		11.3	18.83	10.2	46	21.7	33	33	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by C. Erickson, USDA/ARS - Aberdeen

2001 TETONIA BARLEY NURSERY C - ABERDEEN, ID

Table 17

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight (mg)	6/64" (%)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)		amylase (20°DU)	glucan (ppm)	Score	Rank	
2839	ALEXIS	2	39.7	94.9	68	77.0	1.8	1	15.6	4.60	31.5	136	56.8	68	23	13
2840	B1202	2	37.1	80.5	74	75.6	1.5	1	16.6	4.82	30.3	117	62.6	266	19	17
2841	CONLON	2	44.4	97.7	77	78.1	1.6	2	15.0	4.96	33.6	133	62.5	290	29	6
2842	CRYSTAL II	2	38.3	82.6	81	76.8	1.8	2	16.5	5.27	33.6	148	73.0	397	6	45
2844	HARRINGTON	2	36.2	86.0	80	77.6	1.4	1	15.8	5.09	33.4	139	69.5	228	19	17
2845	IDAGOLD II(C32)	2	38.8	89.7	75	75.2	1.7	2	15.8	3.50	23.0	94	33.7	549	6	45
2846	JERSEY (CEB 9538)	2	37.2	91.3	62	76.0	1.6	1	15.9	4.48	29.4	133	54.2	81	29	6
2847	MANLEY	2	37.6	86.4	78	77.0	1.8	1	16.8	5.29	32.5	162	78.7	297	11	38
2848	MERIT	2	37.7	96.6	77	77.4	1.6	1	16.7	5.15	31.6	151	78.4	317	10	41
2849	MORAVIAN 37 (C37)	2	40.4	96.6	70	77.0	2.0	2	15.3	4.73	31.0	166	47.9	104	31	3
2850	ORCA	2	45.5	95.8	66	76.6	1.9	1	16.4	5.82	35.8	190	82.2	65	18	21
2851	CDC STRATUS	2	38.8	88.1	82	76.9	1.4	1	15.6	5.03	32.7	194	67.2	329	14	33
2852	NO 96/1113	2	37.3	90.4	63	75.9	1.6	1	15.6	4.70	30.2	132	48.7	128	32	2
2853	SL 95511	2	37.2	90.2	64	75.6	n.d.	3	15.6	3.98	26.9	80	41.8	211	15	29
2854	YU 597-390	2	38.7	87.5	70	75.0	1.3	1	15.4	4.26	27.9	154	63.5	135	14	33
2855	YU 597-399	2	36.2	87.1	69	75.7	1.6	1	15.9	4.88	31.6	149	79.4	74	15	29
2856	BZ 598-055	2	35.6	77.7	81	75.3	n.d.	3	15.0	3.47	23.8	89	33.8	402	0	47
2857	BZ 598-056	2	37.8	89.6	79	77.3	1.8	1	15.5	4.97	33.8	126	66.2	402	19	17
2858	BZ 598-058	2	38.9	83.8	88	75.8	1.7	1	15.6	4.60	30.3	129	53.1	244	25	11
2859	BZ 598-059	2	40.0	86.6	80	76.3	1.6	1	15.4	5.06	33.8	159	59.4	202	17	23
2860	BZ 598-072	2	38.4	86.5	86	75.7	n.d.	3	15.3	4.35	29.0	138	49.2	427	16	28
2861	BZ 598-074	2	36.6	82.6	78	73.8	n.d.	3	16.2	4.04	26.5	129	44.5	573	14	33
2862	PB1-99-2R-9013	2	37.7	81.4	83	73.9	1.7	2	16.9	4.06	25.2	110	39.9	550	9	44
2863	PB1-99-2R-9015	2	37.8	83.6	75	73.3	1.7	2	15.7	4.00	25.6	125	40.1	484	15	29
2864	PB1-99-2R-9057	2	37.8	82.7	71	74.7	1.4	1	15.7	4.13	26.9	135	39.1	448	10	41
2866	95SR7A	2	39.8	88.4	84	76.3	1.3	1	14.8	3.98	27.4	165	41.3	268	17	23
2867	95SR149C	2	35.9	81.0	79	76.4	1.5	1	16.1	4.82	30.8	168	62.2	255	12	37
2868	95SR316A	2	38.5	82.8	84	76.7	1.5	1	16.2	4.67	29.3	147	71.8	411	11	38
2869	98ID66	2	36.8	93.2	76	75.7	1.6	1	16.4	4.52	28.3	151	59.3	344	14	33
2870	98ID196	2	40.0	91.6	87	77.3	1.7	1	15.6	5.28	34.6	203	65.4	159	15	29

Table 17

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight (mg)	6/64" (%)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)						
2871	98ID240	2	40.0	90.7	85	77.1	1.6	1	14.8	4.71	32.2	131	62.9	157	25	11
2872	99AHF 4-840	2	35.7	86.3	75	76.3	1.7	1	15.7	5.30	34.9	145	83.4	250	11	38
2873	99AHF 5-47	2	38.5	79.9	80	72.3	1.5	2	16.4	3.76	24.4	140	41.0	511	10	41
2874	96M5611	2	41.0	92.4	78	74.4	1.2	1	16.7	4.17	25.9	152	41.8	470	18	21
2875	85AB2323	2	41.7	91.3	79	76.6	1.5	1	16.0	5.31	33.9	178	60.3	186	17	23
2876	96AB8289	2	41.0	90.6	85	75.0	1.3	1	15.7	3.83	24.8	138	38.4	465	19	17
2877	97AB6696	2	43.5	95.6	73	75.3	1.6	1	17.1	4.69	28.2	131	45.0	427	30	5
2878	98AB11695	2	37.7	93.5	77	75.4	1.6	1	15.6	4.07	26.6	145	45.5	268	17	23
2879	COLTER	6	34.7	81.6	81	78.5	1.4	1	*12.8	3.83	32.0	101	47.4	413	28	8
2880	FOSTER	6	34.6	91.6	78	75.0	1.6	1	14.2	5.04	38.0	162	66.3	174	26	9
2881	LACEY	6	34.3	85.5	77	77.4	1.5	1	15.3	5.23	35.0	183	63.4	128	26	9
2882	LEGACY	6	33.0	88.4	81	78.0	1.5	1	15.1	5.48	37.6	188	89.3	267	22	14
2883	MOREX	6	33.4	88.9	76	77.5	1.4	1	15.2	4.94	34.5	180	68.0	254	22	14
2884	CDC SISLER	6	31.8	86.2	77	77.5	1.6	1	15.1	5.43	37.0	188	83.4	234	17	23
2885	6B96-3373	6	34.1	91.4	78	76.4	1.8	1	15.2	5.18	35.9	191	64.0	199	22	14
2887	6B96-3733	6	35.8	95.7	80	78.4	1.7	1	14.9	5.97	41.5	184	77.0	140	31	3
2888	97AB8333	6	31.6	85.4	77	78.7	1.7	1	*12.9	5.11	41.9	122	64.0	172	35	1
2843	HARRINGTON MALT CHECK	2	39.3	93.8	81	81.5	1.9	1	11.9	5.55	50.5	98	73.2	66	39	
2865	HARRINGTON MALT CHECK	2	39.0	93.2	81	81.9	2.0	1	11.1	5.64	52.7	98	73.4	78	39	
2886	MOREX MALT CHECK	6	30.4	66.6	76	79.4	1.8	1	12.5	5.70	49.2	128	70.8	121	28	
Minima			31.6	77.7	62	72.3	1.2		14.2	3.47	23.0	80	33.7	65	0	
Maxima			45.5	97.7	88	78.7	2.0		17.1	5.97	41.9	203	89.3	573	35	
Means			37.8	88.3	77	76.2	1.6		15.7	4.69	31.2	147	58.9	286	18	
Standard Deviations			2.9	5.1	6	1.4	0.2		0.6	0.60	4.5	29	14.9	142	8	
Coefficients of Variation			7.7	5.7	8	1.8	10.5		4.1	12.78	14.3	20	25.3	50	42	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by C. Erickson, USDA/ARS - Aberdeen

2001 ABERDEEN BARLEY NONREPLICATED TRIAL - ABERDEEN, ID

Table 18

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein						
			(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank	
2889	99AB10761	6	37.5	89.9	68	79.5	2.3	2	12.5	4.91	41.4	89	59.3	417	44	14
2890	99AB10774	6	37.8	94.6	80	80.9	2.7	2	10.7	4.95	46.6	98	54.6	277	48	7
2891	99AB10781	6	36.1	91.3	77	80.0	2.4	2	12.2	4.91	43.8	100	52.6	300	50	4
2892	99AB10914	2	47.7	98.8	62	80.8	1.9	1	14.9	5.87	41.7	124	64.1	227	37	20
2894	99AB10931	2	46.6	95.3	69	79.1	1.8	1	14.1	5.61	40.5	136	62.2	309	28	30
2895	HARRINGTON	2	42.4	92.3	66	80.5	1.6	1	14.5	5.98	42.8	129	72.1	268	37	20
2896	99AB10933	2	47.0	95.1	67	79.4	1.7	1	13.6	5.44	42.0	137	66.4	194	31	26
2897	99AB10938	2	49.3	96.3	68	78.1	1.7	1	15.1	5.33	36.6	165	59.4	410	19	39
2898	99AB10976	2	45.8	93.9	70	81.0	2.1	1	14.6	6.25	44.8	133	78.9	259	34	23
2899	99AB10991	2	38.9	92.8	66	77.5	1.5	2	15.9	4.30	27.5	88	43.8	*710	15	42
2900	99AB10993	2	39.6	92.6	63	79.2	n.d.	3	15.4	5.24	34.7	122	50.4	270	28	30
2901	99AB11045	2	43.0	93.5	63	79.5	1.8	1	15.0	5.83	41.0	134	68.9	227	34	23
2902	99AB11073	6	37.8	89.5	60	80.6	1.7	1	11.4	4.62	43.1	90	54.4	262	54	1
2903	99AB11106	6	40.3	86.7	66	78.9	1.5	1	13.4	4.93	37.4	120	53.4	187	38	17
2904	99AB11108	6	40.4	88.7	73	80.4	1.4	1	11.3	4.49	41.2	111	50.1	150	47	8
2905	99AB11123	6	40.5	90.5	60	78.9	1.7	2	14.8	4.51	30.9	112	43.7	321	19	39
2906	COLTER	6	36.9	*73.4	65	80.4	1.7	1	11.0	4.43	42.0	110	50.1	146	49	6
2907	99AB11146	6	37.0	86.1	65	80.7	1.9	1	10.3	3.68	36.8	75	38.2	237	30	28
2908	99AB11173	6	37.6	87.1	61	80.3	1.9	1	10.4	4.52	46.9	83	51.8	163	37	20
2909	99AB11201	6	36.2	80.2	69	79.1	1.9	1	11.5	4.76	44.7	96	51.2	44	51	3
2910	99AB11205	6	41.3	94.4	66	81.9	1.8	1	11.2	5.26	49.6	114	59.1	154	46	12
2911	99AB11210	6	40.3	87.6	66	81.0	1.8	1	10.7	5.00	47.5	112	62.6	216	42	15
2912	99AB11215	6	40.6	87.1	67	80.3	1.6	1	12.1	5.02	44.9	127	65.0	263	47	8
2913	99AB11285	6	38.3	85.4	74	77.8	1.7	2	13.5	4.14	32.9	73	37.8	367	16	41
2915	99AB11290	6	34.1	82.4	81	80.3	2.1	2	12.4	4.82	40.6	97	46.5	434	50	4
2916	99AB11327	6	36.9	87.9	76	79.9	n.d.	3	10.7	4.40	42.2	94	45.3	480	39	16
2917	99AB11333	6	39.4	90.1	75	80.9	n.d.	3	10.6	4.84	46.6	84	48.7	250	47	8
2918	99AB11339	6	38.0	94.8	79	78.9	1.8	1	14.0	5.67	41.0	141	56.8	72	38	17
2919	99AB11352	6	36.9	92.0	80	79.2	2.2	2	13.3	5.15	40.2	135	59.5	76	46	12
2920	99AB11453	6	40.9	95.8	77	78.6	2.2	1	15.4	6.52	42.9	*200	68.0	222	24	34

Table 18

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein (%)	Protein (%)		Quality Score	Rank			
2921	99AB11581	2	46.7	95.8	75	78.7	1.5	1	14.5	4.89	33.9	149	61.4	365	23	37
2922	98AB11823	2	42.8	89.8	69	78.6	1.9	2	13.6	5.24	41.4	95	62.8	303	25	33
2923	98AB11962	2	42.9	95.8	66	76.9	n.d.	3	14.0	4.15	30.1	118	51.5	291	24	34
2924	98AB11978	2	44.4	97.7	66	79.6	n.d.	3	14.5	5.17	36.7	98	62.0	336	24	34
2925	98AB11999	2	45.4	94.7	70	79.4	2.4	1	14.5	6.49	48.0	107	80.3	123	30	28
2926	98AB12123	2	51.5	98.5	69	79.0	1.8	1	15.0	5.68	40.1	137	67.2	484	28	30
2927	98AB12132	2	49.8	98.1	70	80.5	1.9	1	14.4	5.61	39.5	140	65.5	388	22	38
2928	HARRINGTON	2	39.4	85.1	71	79.6	1.6	1	14.3	5.68	40.6	117	64.4	274	32	25
2929	98AB12439	6	36.9	90.0	68	80.1	n.d.	3	10.9	4.90	47.3	74	52.1	278	47	8
2930	97AB8186	6	35.7	87.1	63	79.4	1.6	1	13.2	4.54	36.8	113	41.2	293	31	26
2931	98AB12362	6	40.7	94.0	77	80.4	2.4	2	13.1	5.24	43.3	137	57.3	136	53	2
2932	98AB12905	6	35.9	86.0	57	80.8	2.7	1	11.0	5.74	54.5	86	71.3	243	38	17
2893	MOREX MALT CHECK	6	30.3	68.8	76	79.4	1.8	1	12.3	5.77	51.1	126	71.1	93	33	
2914	MOREX MALT CHECK	6	30.8	68.5	78	79.1	2.0	1	12.7	5.56	47.3	132	67.5	71	28	
2933	MOREX MALT CHECK	6	30.1	67.8	80	79.0	2.0	1	12.8	5.69	48.1	130	68.0	65	24	
Minima			34.1	80.2	57	76.9	1.4		10.3	3.68	27.5	73	37.8	44	15	
Maxima			51.5	98.8	81	81.9	2.7		15.9	6.52	54.5	165	80.3	484	54	
Means			40.9	91.3	69	79.7	1.9		13.1	5.11	41.1	112	57.4	261	36	
Standard Deviations			4.4	4.6	6	1.1	0.3		1.7	0.64	5.4	23	10.2	105	11	
Coefficients of Variation			10.6	5.0	9	1.3	17.5		13.0	12.55	13.2	20	17.7	40	31	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by C. Erickson, USDA/ARS - Aberdeen

2001 B NURSERY - TETONIA, ID

Table 19

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight (mg)	6/64" (%)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)		amylase (20°DU)	glucan (ppm)	Quality Score	Rank	
3124	95SR343C	2	39.8	86.6	75	77.8	n.d.	3	15.7	4.86	32.0	204	61.1	351	12	31
3125	95SR149C	2	35.8	71.3	74	75.0	1.4	2	15.7	4.41	28.6	188	51.0	281	15	23
3126	95SR316A	2	38.4	83.1	71	77.1	1.5	2	15.5	4.61	30.0	194	74.1	200	13	29
3127	98ID242	2	40.8	86.5	71	77.0	n.d.	3	14.8	4.61	32.8	165	64.4	313	14	28
3128	95SR35E	2	39.6	85.6	77	77.2	1.4	2	15.6	4.82	31.6	208	54.6	382	17	19
3129	95SR34A	2	39.7	89.4	71	77.5	1.5	1	15.0	4.62	31.4	193	53.4	414	18	16
3130	95SR132B	2	35.3	69.7	72	76.7	1.5	2	16.1	4.79	31.0	176	49.3	220	18	16
3131	98ID251	2	37.3	80.7	78	74.7	1.6	2	15.7	4.28	27.8	155	47.1	296	11	32
3132	98ID240	2	39.4	90.5	74	77.1	n.d.	3	14.8	4.65	32.7	141	62.0	300	17	19
3133	95SR19D	2	40.4	89.6	76	77.4	1.5	1	14.6	4.71	33.0	217	53.6	497	20	14
3134	98ID112	2	39.6	92.3	71	74.9	1.6	2	15.5	4.32	28.4	188	54.3	274	15	23
3135	98ID84	2	37.0	84.6	69	74.3	n.d.	3	15.5	4.29	28.3	176	51.5	273	7	37
3136	98ID80	2	35.7	85.5	73	74.1	n.d.	3	16.0	3.85	24.9	146	43.2	325	10	34
3137	98ID196	2	39.5	87.4	73	77.0	1.6	1	15.5	5.05	34.0	224	60.8	291	17	19
3138	97ID1049	2	39.5	84.0	71	76.4	1.6	1	15.8	4.80	32.0	202	62.9	396	11	32
3139	98ID243	2	40.1	83.2	76	76.8	1.9	2	15.1	4.57	30.9	166	69.5	295	15	23
3140	97ID1192	2	36.6	76.4	65	75.0	1.5	1	16.2	5.08	31.5	202	71.8	380	9	35
3141	97ID1199	2	40.9	84.5	63	77.3	1.6	1	15.3	4.87	32.2	170	66.8	416	13	29
3142	98ID77	2	35.6	80.5	72	76.5	1.4	1	15.1	4.99	33.8	196	74.1	83	16	22
3143	98ID73	2	37.9	81.6	79	74.3	n.d.	3	14.1	3.64	27.5	146	39.1	444	4	38
3145	CRYSTAL	2	39.2	79.8	75	77.1	n.d.	3	15.0	5.35	35.9	180	73.3	264	8	36
3146	GARNET	2	40.0	91.0	73	77.8	1.7	1	15.4	4.97	32.8	203	70.0	137	25	8
3147	BANCROFT	2	38.5	84.5	71	77.8	1.4	1	15.5	4.81	32.0	179	52.9	371	15	23
3148	HARRINGTON	2	37.0	86.8	74	78.6	1.4	1	15.3	5.16	34.1	185	73.2	152	15	23
3149	97ID1269A	6	36.3	90.6	70	78.7	1.7	1	14.5	5.85	41.0	181	68.2	162	27	7
3150	96RWA1192	6	39.4	92.6	74	78.6	2.1	1	14.0	6.06	44.8	139	77.8	77	28	6
3151	97ID1234	6	35.2	89.5	69	79.4	2.0	1	14.6	6.45	44.4	163	95.0	142	35	4
3152	97ID1269B	6	35.1	87.3	65	78.4	1.6	1	14.4	5.54	39.8	184	69.4	179	22	11
3153	96RWA1194	6	36.6	87.3	70	78.9	1.9	1	14.0	5.89	43.3	166	73.9	118	40	1
3154	97ID1270	6	33.5	88.4	67	78.6	1.5	1	14.1	5.46	38.9	191	84.6	262	22	11

Table 19

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight (mg)	6/64" (%)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)		amylase (ppm)	glucan	Quality Score	Rank	
3155	97ID1225	6	37.8	91.9	72	77.2	1.9	1	14.7	5.36	36.7	150	64.9	230	25	8
3156	96RWA1218	6	37.2	88.5	64	79.7	1.8	1	14.7	5.96	40.9	154	82.1	162	37	3
3157	96RWA1222	6	38.4	88.7	77	81.0	1.4	1	14.2	5.07	37.6	150	71.9	171	39	2
3158	97ID1252	6	34.7	88.5	76	77.5	1.9	1	14.7	5.82	39.9	191	75.3	184	18	16
3159	96RWA1211	6	36.3	84.5	70	78.7	1.7	1	15.3	5.58	38.8	154	79.0	167	29	5
3160	MOREX	6	33.8	84.9	72	77.6	1.5	1	15.1	5.16	34.8	201	65.3	183	22	11
3161	98ID87	2	40.1	93.9	75	77.9	1.7	1	15.4	4.89	32.9	169	69.3	116	25	8
3162	98ID67	2	39.9	94.2	76	75.4	1.4	1	14.9	3.84	25.9	141	50.0	281	19	15
3144	HARRINGTON MALT CHECK	2	39.3	93.7	80	80.7	2.0	2	11.6	5.56	51.8	137	75.8	31	32	
3163	HARRINGTON MALT CHECK	2	40.0	92.8	82	81.1	1.8	1	11.3	5.19	47.2	111	72.1	78	42	
Minima			33.5	69.7	63	74.1	1.4		14.0	3.64	24.9	139	39.1	77	4	
Maxima			40.9	94.2	79	81.0	2.1		16.2	6.45	44.8	224	95.0	497	40	
Means			37.8	85.9	72	77.2	1.6		15.1	4.97	33.9	177	64.8	258	19	
Standard Deviations			2.1	5.5	4	1.6	0.2		0.6	0.63	5.1	23	12.3	107	9	
Coefficients of Variation			5.5	6.4	5	2.1	12.2		3.9	12.75	14.9	13	19.0	42	46	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by P. Bregitzer, USDA/ARS - Aberdeen

2001 B NURSERY - ABERDEEN, ID

Table 20

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight	6/64"	Color	Extract	Wort	Protein	S/T	DP		Quality	Score	Rank		
3164	95SR343C	2	43.5	89.7	71	79.3	1.6	1	14.0	4.75	35.0	134	53.3	218	32	9
3165	95SR149C	2	42.6	88.5	72	78.8	1.6	1	13.3	4.38	34.0	99	51.3	210	30	13
3166	95SR316A	2	44.4	92.5	69	79.8	1.7	1	13.8	4.74	34.4	119	69.8	181	36	5
3167	98ID242	2	44.7	91.5	64	77.7	1.7	1	14.3	4.50	32.1	105	61.5	240	26	19
3168	95SR35E	2	44.8	91.4	65	79.6	1.6	1	13.4	4.87	37.0	132	53.6	350	39	3
3169	95SR34A	2	43.8	91.1	67	78.9	1.6	1	14.1	4.68	34.0	122	55.5	410	30	13
3170	95SR132B	2	39.9	75.1	71	78.9	1.5	1	13.9	4.50	33.3	90	46.3	255	25	21
3171	98ID251	2	43.5	89.2	63	76.1	1.5	1	14.9	4.19	29.0	100	49.1	273	24	23
3172	98ID240	2	42.8	88.0	62	77.5	2.0	1	14.9	4.89	34.0	99	64.4	255	24	23
3173	98SR19D	2	41.4	78.4	66	80.0	1.5	1	13.2	4.74	37.4	121	56.8	266	35	6
3174	98ID112	2	43.6	88.8	63	76.6	1.4	1	14.7	4.39	30.4	124	53.2	242	24	23
3175	98ID84	2	41.0	84.8	61	75.9	1.7	2	14.1	3.93	28.0	85	42.4	427	12	37
3176	98ID80	2	39.5	89.7	62	74.7	1.7	2	15.4	3.69	24.7	79	41.8	532	13	36
3177	98ID196	2	43.4	91.4	65	78.0	2.0	1	16.0	5.52	34.6	175	59.1	199	18	32
3178	97ID1049	2	43.5	90.3	65	77.7	1.7	1	15.3	5.16	35.0	142	60.4	334	15	35
3179	98ID243	2	42.3	82.9	69	77.1	1.7	1	15.0	4.67	31.5	109	62.7	318	18	32
3180	97ID1192	2	39.7	80.4	59	78.2	1.8	1	14.3	5.30	37.1	115	63.5	366	18	32
3181	97ID1199	2	42.2	68.9	59	78.1	1.6	1	14.6	4.53	32.0	109	62.4	213	25	21
3182	98ID77	2	39.6	85.3	60	77.0	1.4	1	14.8	5.01	34.3	114	67.5	176	24	23
3183	98ID73	2	39.8	69.9	67	74.4	1.5	2	14.6	3.65	25.3	85	39.9	639	7	38
3184	CRYSTAL	2	44.4	90.9	72	78.9	1.7	1	14.6	4.98	34.4	121	68.4	372	30	13
3185	GARNET	2	43.4	92.0	68	78.4	1.6	1	15.2	5.36	36.0	163	70.1	284	22	29
3186	BANCROFT	2	40.9	74.2	68	78.5	1.4	1	13.7	4.48	34.4	116	48.2	396	31	12
3188	HARRINGTON	2	40.5	82.8	62	78.4	1.5	1	14.9	5.23	35.6	108	70.4	288	20	30
3189	97ID1269A	6	37.6	88.9	67	78.4	1.7	1	13.7	5.22	39.8	130	68.4	316	28	18
3190	96RWA1192	6	39.3	85.5	65	77.9	1.7	1	14.0	5.15	38.4	98	63.9	392	24	23
3191	97ID1234	6	36.3	85.4	64	79.1	1.7	1	13.4	5.47	41.9	128	70.7	444	32	9
3192	97ID1269B	6	37.2	89.2	66	79.3	1.6	1	13.9	5.31	40.3	142	62.0	286	42	1
3193	96RWA1194	6	38.5	88.9	64	79.4	1.8	1	13.3	5.63	44.7	125	67.7	182	35	6
3194	97ID1270	6	36.9	92.6	71	79.6	1.9	1	12.5	5.38	43.2	117	68.7	552	32	9

Table 20

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight	6/64"	Color	Extract	Wort	Protein	S/T	DP		Score	Rank			
3195	97ID1225	6	39.6	92.0	65	77.6	2.4	1	14.4	5.91	42.1	112	63.1	455	20	30
3196	96RWA1218	6	36.4	79.3	69	80.3	1.8	1	13.9	5.54	42.2	114	71.3	330	35	6
3197	96RWA1222	6	41.1	85.0	68	82.4	1.8	1	12.7	5.40	45.8	109	73.6	242	38	4
3198	97ID1252	6	36.0	84.2	68	78.8	2.1	1	14.3	6.15	46.4	138	63.0	274	23	28
3199	96RWA1211	6	37.8	89.0	63	80.8	2.2	1	13.5	6.11	46.7	129	72.1	223	30	13
3200	MOREX	6	34.1	77.7	70	77.9	1.8	1	15.0	5.43	38.0	156	59.0	313	26	19
3201	98ID87	2	45.9	94.0	62	80.9	1.9	1	14.1	5.85	44.0	111	69.5	113	41	2
3202	98ID67	2	44.2	97.4	65	77.3	1.3	1	15.3	4.66	32.7	104	54.2	217	30	13
3163	HARRINGTON MALT CHECK	2	40.0	92.8	82	81.1	1.8	1	11.3	5.19	47.2	111	72.1	78	42	
3187	HARRINGTON MALT CHECK	2	40.0	95.8	78	80.9	1.7	1	11.3	5.13	48.2	140	60.5	88	42	
Minima			34.1	68.9	59	74.4	1.3		12.5	3.65	24.7	79	39.9	113	7	
Maxima			45.9	97.4	72	82.4	2.4		16.0	6.15	46.7	175	73.6	639	42	
Means			41.0	86.2	66	78.4	1.7		14.2	4.98	36.3	118	60.5	310	27	
Standard Deviations			3.0	6.7	4	1.6	0.2		0.8	0.61	5.6	21	9.2	113	8	
Coefficients of Variation			7.3	7.7	5	2.1	13.1		5.5	12.29	15.3	18	15.2	37	31	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by P. Bregitzer, USDA/ARS - Aberdeen

2001 EXPERIMENT 220100, IRRIGATED INTRASTATE TRIAL - BOZEMAN, MT

Table 21

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight	6/64"	Color	Extract	Wort	Protein	Protein	S/T	DP	amylase	glucan	Quality	Score	Rank
1067	ND13299	2	36.2	79.7	73	79.0	1.5	1	12.2	3.16	27.5	46	35.1	439	20	36
1068	SK 76333	2	37.4	77.1	84	81.0	1.4	1	11.3	4.25	37.8	97	58.6	423	26	22
1069	CI 15773	6	33.4	72.2	89	78.5	1.7	2	13.2	4.40	34.3	137	47.1	369	29	19
1070	6B932978	6	33.3	75.7	84	78.3	1.5	2	13.0	4.88	37.9	145	62.3	318	32	13
1071	2B914947	2	41.8	89.3	76	79.8	1.4	1	12.5	4.46	35.6	105	61.4	212	35	7
1072	PI605472	2	39.9	84.6	82	81.9	1.6	1	12.6	4.77	38.0	135	70.4	279	33	11
1073	PI601736	2	38.0	72.1	78	*73.6	1.4	2	13.3	3.57	27.2	96	34.2	385	12	44
1074	NORD1958	2	40.3	89.6	76	79.5	1.1	2	12.9	3.60	30.0	116	47.3	119	41	1
1076	N96/1116	2	44.5	93.7	75	79.3	2.2	2	12.5	3.65	30.7	80	41.0	136	34	9
1077	TR128	2	38.6	57.6	75	79.4	1.5	1	12.2	4.01	33.3	95	42.9	81	32	13
1078	MT950186	2	39.3	81.3	77	79.0	1.8	2	11.7	3.40	30.6	53	42.8	397	24	27
1079	MT960099	2	37.7	60.7	75	80.0	1.6	1	12.5	4.52	38.0	116	59.7	179	31	17
1080	MT960100	2	39.0	74.7	77	79.1	1.6	1	12.0	4.36	37.4	90	64.5	118	25	24
1081	MT960101	2	36.2	62.2	84	80.7	1.5	2	13.2	4.67	36.1	117	68.9	97	34	9
1082	MT960222	2	36.1	70.4	91	77.5	1.8	2	11.9	3.61	31.3	103	42.8	350	22	32
1083	MT960226	2	39.6	83.8	88	78.2	1.5	2	11.1	3.35	31.1	74	37.5	350	21	34
1084	MT960228	2	37.4	67.3	81	77.8	2.1	2	12.1	3.61	31.4	95	35.7	239	18	40
1085	MT970026	2	40.0	80.4	79	77.7	1.2	1	12.8	3.50	27.6	107	34.8	487	15	43
1086	MT970110	2	38.9	77.8	83	78.9	2.1	2	12.4	3.67	31.3	97	34.5	527	21	34
1087	MT970116	2	42.3	87.5	78	80.2	1.2	1	12.1	3.75	32.7	98	45.3	208	41	1
1088	MT970148	2	36.5	77.4	82	80.5	1.5	1	12.2	4.36	36.9	86	55.2	240	22	32
1089	MT970155	2	41.4	88.0	78	79.7	1.4	1	13.2	4.47	36.4	101	63.6	286	35	7
1090	MT970229	2	41.3	83.5	82	78.5	1.5	2	12.0	3.63	31.1	90	40.6	413	26	22
1091	MT981004	2	40.4	84.7	82	74.9	1.4	1	12.3	4.02	34.9	66	59.8	183	19	39
1092	MT981006	2	38.6	79.4	82	79.6	1.4	1	12.1	4.25	36.8	73	54.3	226	28	21
1093	MT981030	2	37.0	88.7	76	78.3	2.0	2	12.0	3.48	29.4	70	41.0	443	25	24
1094	MT981039	2	38.1	85.5	88	81.8	1.5	1	11.4	4.25	39.7	99	57.6	109	38	3
1095	MT981042	2	40.9	81.1	72	78.7	1.8	2	12.1	3.36	28.3	99	44.7	273	33	11
1096	MT981080	2	37.1	65.9	79	78.7	1.4	1	12.3	4.36	36.5	113	57.7	85	30	18
1097	MT981091	2	42.3	88.8	79	79.5	1.1	1	11.9	3.65	30.9	100	40.5	422	38	3

Table 21

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight (mg)	6/64"	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)		amylase (ppm)	glucan	Quality Score	Rank	
1098	MT981177	2	39.8	85.0	75	77.6	1.2	1	12.8	3.60	28.5	107	39.8	372	20	36
1100	MT981210	2	39.5	85.3	87	81.1	1.4	1	12.6	4.67	39.8	133	58.1	226	36	6
1101	MT981212	2	39.1	86.1	87	78.5	1.2	1	12.7	3.75	29.9	108	39.3	399	24	27
1102	MT981238	2	46.5	93.5	83	79.7	1.5	1	13.3	4.74	35.7	117	67.4	428	38	3
1103	MT990023	2	36.7	69.6	84	79.3	1.3	1	12.7	3.95	31.3	116	48.5	131	32	13
1104	MT990041	2	36.1	74.2	81	81.7	1.5	1	12.6	5.13	40.9	151	73.3	106	32	13
1105	MT990074	2	37.5	77.1	83	78.6	1.4	1	12.4	4.19	35.0	112	55.5	490	23	31
1106	MT990084	2	39.6	78.0	69	76.5	n.d.	3	13.4	3.54	26.8	115	36.0	627	18	40
1107	MT990106	2	36.7	80.2	72	77.5	n.d.	3	12.4	3.69	30.5	108	36.9	570	18	40
1108	MT990132	2	38.8	85.4	72	76.5	1.7	2	12.2	3.12	26.6	36	35.7	720	20	36
1109	MT990156	2	39.3	91.5	78	78.9	2.0	3	12.0	3.48	30.3	71	37.5	595	25	24
1110	MT990172	2	38.1	90.1	75	78.2	1.3	2	12.2	3.27	28.5	76	40.0	660	29	19
1111	MT990244	2	43.8	90.4	79	76.3	1.3	2	13.0	3.55	27.5	101	35.5	736	24	27
1112	MT990249	2	45.1	92.7	76	78.1	1.3	2	13.2	3.73	29.2	71	37.1	669	24	27
1075	HARRINGTON MALT CHECK	2	39.3	93.9	81	82.2	1.9	1	11.7	5.49	49.8	111	78.6	44	42	
1099	HARRINGTON MALT CHECK	2	38.8	94.0	81	81.9	2.0	1	11.4	5.54	51.0	109	80.0	44	39	
Minima			33.3	57.6	69	74.9	1.1		11.1	3.12	26.6	36	34.2	81	12	
Maxima			46.5	93.7	91	81.9	2.2		13.4	5.13	40.9	151	73.3	736	41	
Means			39.1	80.5	80	78.9	1.5		12.4	3.94	32.7	98	48.2	344	27	
Standard Deviations			2.8	9.1	5	1.5	0.3		0.5	0.52	4.1	25	11.8	185	7	
Coefficients of Variation			7.1	11.3	6	1.9	17.9		4.4	13.07	12.4	25	24.4	54	27	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by T. Blake and P. Hensleigh, Montana State University - Bozeman

2001 EXPERIMENT 310101, EARLY YIELD TRIAL - BOZEMAN, MT

Table 22

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein (%)	Protein (%)	S/T (%)	DP (°ASBC)	amylase (20°DU)	glucan (ppm)	Quality Score	Rank
1113	MT000033	2	46.2	88.7	75	73.3	1.5	2	14.0	3.95	29.2	39	35.6	800	13	45
1114	MT000034	2	44.2	93.7	65	75.7	n.d.	3	13.0	3.47	27.1	50	36.3	721	19	29
1115	MT000038	2	35.9	59.2	90	78.1	1.5	2	12.5	4.47	37.0	134	54.0	454	30	11
1116	MT000040	2	34.9	67.6	86	79.7	1.5	2	12.9	4.67	36.8	136	60.0	513	24	17
1117	MT000045	2	38.7	80.7	80	79.5	1.4	2	13.0	4.34	34.7	140	55.4	592	15	40
1118	MT000047	2	36.3	68.9	82	80.0	1.5	1	12.4	4.41	37.1	130	59.1	458	30	11
1119	MT000049	2	34.8	*25.5	*36	79.7	n.d.	3	*15.7	3.76	24.2	104	40.7	370	18	31
1120	MT000051	2	32.0	*20.0	60	81.7	1.3	2	14.1	3.73	26.8	63	41.8	830	18	31
1121	MT000054	2	33.9	43.9	*51	83.4	n.d.	3	13.1	3.57	27.6	94	38.9	289	22	22
1122	MT000058	2	35.5	51.8	*45	81.7	n.d.	3	14.5	3.40	24.4	74	34.7	550	10	49
1124	MT000059	2	36.3	60.3	*41	83.7	n.d.	3	14.6	3.66	26.8	106	43.2	285	24	17
1125	MT000060	2	37.0	58.5	*47	83.7	1.1	2	13.7	3.49	26.6	89	41.4	411	18	31
1126	MT000063	2	38.9	87.3	72	79.5	1.3	1	12.8	4.35	35.4	102	56.4	547	23	20
1127	MT000066	2	36.6	86.5	71	78.9	1.3	2	12.9	4.15	32.8	108	52.0	550	21	23
1128	MT000069	2	34.8	71.4	76	75.6	1.2	2	13.6	3.39	25.7	81	37.8	662	5	55
1129	MT000072	2	40.9	86.7	65	78.2	1.4	2	12.8	3.72	31.1	63	40.1	425	24	17
1130	MT000078	2	38.8	82.4	82	81.1	1.3	1	12.5	4.37	37.1	106	56.2	227	31	8
1131	MT000081	2	38.2	74.5	84	80.3	1.3	1	12.8	4.46	35.9	111	58.4	279	33	5
1132	MT000089	2	39.5	85.6	81	77.3	1.2	2	12.8	3.75	29.5	86	40.0	614	18	31
1133	MT000092	2	37.1	85.4	76	76.2	n.d.	3	13.1	3.40	26.1	78	45.3	683	15	40
1134	MT000109	2	42.0	88.3	84	79.0	1.2	1	12.9	4.31	34.2	106	46.9	531	29	13
1135	MT000114	2	38.3	69.6	84	79.0	1.4	1	13.3	4.60	35.3	123	50.4	510	31	8
1136	MT000122	2	35.7	66.3	77	75.8	1.1	2	14.4	3.70	26.4	119	38.6	561	12	48
1137	MT000125	2	39.2	76.1	83	79.8	1.1	2	12.1	3.92	34.5	114	52.8	459	31	8
1138	MT000127	2	39.8	81.8	85	81.5	1.4	1	12.5	4.69	39.1	116	65.0	351	33	5
1139	MT000128	2	39.3	80.8	83	79.9	1.3	1	12.7	4.34	36.5	109	68.4	400	20	26
1140	MT000130	2	42.9	87.6	84	78.8	1.2	1	12.2	3.81	32.1	92	51.7	606	28	14
1141	MT000138	2	42.1	88.1	78	80.4	1.4	1	12.9	4.70	38.0	119	57.2	505	36	3
1142	MT000153	2	38.6	69.7	76	76.1	n.d.	3	12.7	3.28	26.5	81	34.1	714	7	53
1143	MT000156	2	37.4	64.5	82	75.4	1.3	1	13.0	3.36	26.3	78	34.3	762	7	53

Table 22

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein (%)	Protein (%)	S/T	DP	amylase (°ASBC)	glucan (ppm)	Quality Score	Rank
1144	MT000157	2	41.9	77.2	75	75.8	n.d.	3	13.4	3.42	26.7	94	37.4	649	13	45
1145	MT000158	2	38.1	71.7	82	79.1	1.2	1	12.8	4.23	33.8	104	53.8	504	21	23
1146	MT000159	2	39.1	78.3	78	77.3	1.3	1	12.5	3.37	27.7	41	39.6	595	18	31
1148	MT000169	2	39.7	84.5	74	77.2	1.3	1	12.8	3.48	29.2	93	38.9	512	13	45
1149	MT000177	2	44.5	91.0	75	77.6	n.d.	3	12.9	3.66	28.6	88	37.4	549	19	29
1150	MT000178	2	43.8	90.2	74	78.0	1.6	1	13.0	4.28	33.1	94	59.5	496	21	23
1151	MT000180	2	37.1	73.8	80	77.7	2.1	2	12.9	3.69	29.6	69	37.4	535	10	49
1152	MT000181	2	38.7	73.7	79	77.7	1.9	2	13.1	4.09	31.9	101	39.1	362	16	39
1153	MT000182	2	39.4	85.9	77	77.4	2.0	2	13.5	3.93	29.7	129	40.1	354	20	26
1154	MT000183	2	40.0	73.6	81	77.7	1.7	2	13.2	3.75	29.1	82	42.0	349	17	36
1155	MT000203	2	33.1	46.1	69	77.2	1.3	1	14.0	3.63	26.6	105	35.7	462	10	49
1156	MT000214	2	39.2	87.3	64	78.0	2.0	2	13.4	3.64	27.8	58	35.5	541	15	40
1157	MT000218	2	36.8	69.3	80	77.9	2.0	2	13.0	3.59	28.6	106	32.7	545	10	49
1158	MT000219	2	32.4	62.0	82	77.9	1.2	1	13.0	3.91	31.1	92	43.3	395	14	44
1159	MT000220	2	36.1	61.9	77	77.2	1.5	2	12.8	3.68	29.4	98	40.7	611	17	36
1160	MT000223	2	40.2	76.8	65	78.3	1.3	1	12.7	3.65	29.6	68	40.4	209	25	16
1161	MT000224	2	35.5	52.5	76	75.6	1.6	2	13.7	3.58	26.7	88	30.6	610	1	56
1162	MT000237	2	39.3	74.5	78	79.5	1.2	1	13.1	4.70	37.6	131	62.7	315	27	15
1163	MT000239	2	39.3	84.8	75	80.2	1.2	1	12.6	4.66	37.0	122	64.6	255	33	5
1164	MT960099	2	37.6	63.2	75	79.8	1.5	1	12.5	4.91	41.0	121	73.6	218	36	3
1165	MT960100	2	36.2	55.3	80	79.2	1.4	1	12.3	4.40	37.1	98	68.5	304	20	26
1166	MT970110	2	39.9	80.0	80	78.0	1.9	1	13.0	3.58	28.1	93	37.6	531	17	36
1167	MT970116	2	42.4	87.5	77	79.9	1.0	1	12.2	3.77	31.3	97	44.8	311	38	1
1168	SK76333	2	35.8	71.2	82	78.6	1.1	1	12.5	4.32	35.4	114	56.4	425	23	20
1169	ND13299	2	36.3	78.0	74	78.5	1.6	1	12.8	3.30	27.4	58	38.4	416	15	40
1170	PI605472	2	42.7	92.4	79	80.5	1.2	1	13.3	4.70	37.1	129	58.3	394	38	1

Table 22

Lab No.	Variety	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-					
			Weight	6/64"	Color	Extract	Wort	Protein	Protein	S/T	DP	amylase	glucan	Quality	
		(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	
1123	HARRINGTON MALT CHECK	2	39.5	94.3	81	81.7	1.8	1	11.3	5.23	46.8	109	71.0	98	43
1147	HARRINGTON MALT CHECK	2	39.1	93.4	78	82.0	1.8	1	11.5	5.41	49.9	108	76.7	103	43
1171	HARRINGTON MALT CHECK	2	39.7	93.3	84	82.3	1.5	1	11.5	5.57	51.4	115	72.5	39	39
Minima			32.0	43.9	60	73.3	1.0		12.1	3.28	24.2	39	30.6	209	1
Maxima			46.2	93.7	90	83.7	2.1		14.6	4.91	41.0	140	73.6	830	38
Means			38.4	75.0	77	78.7	1.4		13.0	3.95	31.3	97	46.7	484	21
Standard Deviations			3.1	12.4	6	2.1	0.3		0.6	0.46	4.5	24	10.9	150	9
Coefficients of Variation			8.0	16.6	8	2.7	18.8		4.4	11.63	14.3	25	23.4	31	43

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by T. Blake and P. Hensleigh, Montana State University - Bozeman

2001 EXPERIMENT 300101, PRELIMINARY YIELD TRIAL - BOZEMAN, MT

Table 23

Lab No.	Variety or Selection	Rowed	Kernel Weight (mg)	on 6/64"	Barley Color (Agtron)	Malt Extract (%)	Wort Color	Wort Clarity	Barley Protein (%)	Wort Protein (%)	S/T (%)	DP (°ASBC)	Alpha-amylase (20°DU)	Beta-glucan (ppm)	Quality Score	Overall Rank
1772	MT010001	2	43.6	96.1	80	78.5	1.4	2	12.5	3.54	28.3	99	43.7	597	31	120
1773	MT010002	2	45.0	97.0	80	76.3	n.d.	3	12.9	3.32	26.3	86	37.2	772	19	183
1774	MT010004	2	41.6	98.3	79	77.7	1.4	2	13.5	3.46	26.8	105	37.7	636	18	186
1775	MT010005	2	43.9	93.4	74	78.2	1.1	1	12.9	3.36	27.1	88	43.4	505	28	139
1776	MT010006	2	39.1	89.6	78	77.9	1.6	2	12.6	3.54	29.0	109	47.7	411	22	173
1777	MT010007	2	40.1	92.5	76	78.0	*1.9	2	12.8	3.41	27.0	97	42.6	442	26	153
1778	MT010008	2	40.5	96.0	79	79.3	1.1	1	12.6	3.57	29.0	103	42.4	393	31	120
1779	MT010009	2	41.6	94.5	80	78.4	*1.7	2	12.0	3.41	29.6	75	40.7	525	31	120
1780	MT010014	2	41.0	95.6	76	78.1	1.1	1	13.4	3.65	28.2	123	46.4	648	34	100
1781	MT010016	2	41.0	92.4	74	79.1	1.1	1	13.1	4.13	31.5	104	45.7	458	31	120
1782	MT010019	2	42.1	97.4	77	80.4	1.4	1	12.9	4.57	37.4	119	60.3	296	41	48
1783	MT010020	2	42.8	97.3	74	80.7	1.5	1	12.4	4.65	37.9	113	60.2	351	43	33
1784	MT010022	2	42.6	97.4	75	80.8	1.4	1	12.4	4.69	38.1	123	62.6	325	43	33
1785	MT010023	2	42.1	95.7	73	80.2	1.3	1	12.7	4.45	36.9	105	55.5	483	35	87
1786	MT010024	2	42.3	98.4	76	81.6	1.3	1	12.3	4.28	36.9	96	52.1	287	43	33
1787	MT010026	2	42.8	96.0	88	81.7	1.1	1	11.8	4.25	38.3	109	55.1	389	36	75
1789	MT010028	2	41.1	89.0	84	80.1	1.3	1	12.0	4.65	40.5	112	55.0	565	49	13
1790	MT010031	2	43.6	97.6	85	81.0	1.2	1	12.0	4.31	35.9	126	61.1	378	39	62
1791	MT010032	2	41.4	94.0	75	81.3	1.3	1	12.4	4.51	37.9	117	65.3	306	45	24
1792	MT010033	2	42.9	94.3	92	80.8	1.2	1	12.6	4.51	38.4	118	51.1	577	42	41
1793	MT010034	2	43.8	97.1	82	79.6	1.2	1	12.5	4.36	36.5	114	46.2	614	43	33
1794	MT010035	2	43.8	95.9	80	79.4	1.3	1	12.2	4.49	38.5	125	53.2	368	44	27
1795	MT010036	2	45.5	97.0	77	78.8	1.3	1	12.6	4.06	32.6	115	49.0	575	35	87
1796	MT010037	2	42.5	92.2	81	78.3	1.2	1	11.9	3.90	33.5	118	43.1	476	40	51
1797	MT010038	2	44.8	98.6	83	81.7	1.2	1	11.8	4.67	43.0	127	63.1	437	51	9
1798	MT010040	2	44.5	96.3	83	81.4	1.1	1	12.2	4.56	38.7	126	64.2	424	46	20
1799	MT010041	2	41.0	95.6	85	80.0	1.1	1	11.9	4.02	35.7	96	51.6	831	36	75
1800	MT010043	2	42.3	95.6	79	79.8	1.1	1	11.9	3.86	33.0	105	46.3	451	40	51
1801	MT010047	2	44.6	96.2	84	80.1	1.2	1	12.4	4.59	38.1	125	63.2	581	43	33
1802	MT010049	2	42.7	97.5	86	79.2	1.1	1	12.4	4.25	35.6	111	59.7	770	33	104

Table 23

Lab No.	Variety or Selection	Rowed	Kernel Weight (mg)	on 6/64"	Barley Color (Agtron)	Malt Extract (%)	Wort Color	Wort Clarity	Barley Protein (%)	Wort Protein (%)	S/T (%)	DP (°ASBC)	Alpha-amylase (20°DU)	Beta-glucan (ppm)	Quality Score	Overall Rank
1803	MT010050	2	39.6	86.9	89	77.0	1.1	1	14.1	4.08	29.6	118	56.6	778	14	198
1804	MT010051	2	42.1	95.4	87	79.0	1.1	1	12.3	4.42	36.4	110	60.7	713	37	68
1805	MT010052	2	41.1	96.8	88	79.1	1.1	1	12.4	4.31	35.8	102	66.4	840	29	134
1806	MT010053	2	40.8	93.4	91	78.7	1.0	1	13.1	4.38	35.6	119	65.6	791	27	145
1807	MT010055	2	41.4	95.6	86	78.3	1.1	1	13.0	4.33	33.7	130	58.2	721	24	164
1809	MT010056	2	41.5	96.8	86	78.5	1.1	1	13.3	4.40	34.9	116	61.0	750	27	145
1810	MT010057	2	43.1	91.0	72	75.5	*1.9	2	14.2	3.64	26.7	102	35.2	597	19	183
1811	MT010058	2	44.8	94.7	70	78.0	*1.8	2	12.5	3.60	29.6	86	40.2	526	32	113
1812	MT010059	2	41.9	96.2	71	76.6	n.d.	3	13.0	3.25	25.6	82	37.5	741	18	186
1813	MT010060	2	43.8	96.5	76	77.3	1.6	2	12.9	3.67	28.7	83	37.5	599	20	179
1814	MT010061	2	43.5	95.6	77	76.3	n.d.	3	12.9	3.30	26.0	88	35.8	733	19	183
1815	MT010062	2	45.4	98.5	75	78.3	n.d.	3	12.7	3.54	29.0	93	39.6	525	23	167
1816	MT010063	2	44.7	96.4	81	80.0	1.4	1	12.9	4.39	35.9	98	46.6	668	35	87
1817	MT010066	2	43.2	97.7	78	79.7	*1.7	1	12.1	4.47	38.7	113	54.8	563	47	17
1818	MT010067	2	44.8	97.7	87	81.1	1.3	1	11.6	4.11	37.8	90	54.8	591	36	75
1819	MT010068	2	43.4	94.3	79	75.2	n.d.	3	*15.2	3.59	23.8	101	38.0	824	18	186
1820	MT010069	2	41.8	95.4	76	76.2	1.3	2	13.7	3.69	27.8	121	42.0	731	24	164
1821	MT010070	2	41.2	96.4	79	80.7	1.3	1	11.9	4.52	40.8	120	67.0	531	47	17
1822	MT010071	2	37.3	*78.8	83	78.8	1.2	1	12.9	4.59	36.8	140	60.6	565	18	186
1823	MT010075	2	42.1	97.6	78	78.8	1.3	1	12.0	4.01	35.7	110	60.0	603	30	129
1824	MT010076	2	43.1	94.9	80	79.6	1.3	1	12.3	4.41	37.3	105	57.3	679	40	51
1825	MT010077	2	42.2	94.1	78	79.5	1.2	1	12.4	4.38	37.0	127	65.4	550	36	75
1826	MT010078	2	41.8	89.7	86	78.6	1.2	1	13.1	4.33	33.8	124	57.2	484	25	155
1827	MT010079	2	40.8	83.1	84	78.1	1.1	1	13.3	4.25	33.6	132	51.2	588	23	167
1828	MT010080	2	43.3	96.3	80	79.4	1.2	1	12.7	4.29	36.3	121	59.9	525	31	120
1830	MT010081	2	42.7	96.0	79	79.8	1.1	1	12.3	4.27	36.2	115	56.4	516	36	75
1831	MT010082	2	41.4	89.2	87	78.9	1.2	1	12.6	4.34	35.7	135	62.4	466	22	173
1832	MT010083	2	42.2	94.9	80	79.4	1.2	1	12.9	4.59	37.7	135	69.1	494	35	87
1833	MT010084	2	42.8	95.6	78	79.5	1.0	1	11.9	3.98	34.6	102	55.5	344	33	104
1834	MT010086	2	45.5	97.3	85	80.4	1.1	1	12.2	4.51	38.1	119	60.8	372	43	33

Table 23

Lab No.	Variety or Selection	Rowed	Kernel Weight (mg)	on 6/64"	Barley Color (Agtron)	Malt Extract (%)	Wort Color	Wort Clarity	Barley Protein (%)	Wort Protein (%)	S/T (%)	DP (°ASBC)	Alpha-amylase (20°DU)	Beta-glucan (ppm)	Quality Score	Overall Rank
1835	MT010087	2	44.2	90.4	82	79.3	1.2	1	13.1	4.68	37.1	120	67.8	589	35	87
1836	MT010089	2	43.1	96.5	78	80.3	1.1	1	11.8	4.31	39.1	128	59.5	397	36	75
1837	MT010090	2	42.0	93.7	75	77.0	0.9	1	13.7	3.50	26.3	112	47.2	757	25	155
1838	MT010091	2	44.7	96.2	74	79.8	1.1	1	11.7	3.66	32.6	82	47.2	513	36	75
1839	MT010092	2	41.5	96.0	74	78.6	1.1	1	12.7	4.14	34.5	85	61.1	510	20	179
1840	MT010093	2	41.7	96.9	75	78.9	1.0	1	12.7	3.93	33.1	103	46.8	371	31	120
1841	MT010094	2	43.1	97.6	80	78.9	1.0	1	12.5	3.57	29.4	91	43.1	669	28	139
1842	MT010095	2	43.2	93.9	80	79.2	1.0	1	12.4	3.73	31.1	91	38.7	539	30	129
1843	MT010096	2	43.1	91.5	82	77.7	1.1	1	13.7	3.69	28.0	116	37.0	477	23	167
1844	MT010097	2	43.8	95.2	78	79.7	1.1	1	12.2	3.60	31.4	100	40.5	401	40	51
1845	MT010098	2	46.1	97.3	76	78.3	1.1	1	13.6	3.86	30.4	126	38.3	415	27	145
1846	MT010099	2	46.3	91.3	82	79.0	1.1	1	12.6	3.94	32.7	136	40.8	443	32	113
1847	MT010100	2	45.9	95.4	79	77.3	1.1	1	13.7	3.62	26.5	146	36.5	554	16	192
1848	MT010101	2	45.4	91.2	81	79.2	1.1	1	12.6	3.72	29.8	101	38.1	481	29	134
1849	MT010104	2	44.3	92.7	83	79.1	1.1	1	12.2	3.62	30.4	123	38.9	424	37	68
1851	MT010105	2	43.6	95.1	*61	*84.1	1.1	2	13.7	3.68	28.0	52	35.9	*1058	25	155
1852	MT010106	2	39.7	88.7	73	75.8	1.3	1	*14.7	3.84	26.9	65	34.1	800	7	200
1853	MT010107	2	45.3	90.9	77	78.1	1.3	1	11.4	3.39	30.0	51	36.4	798	30	129
1854	MT010108	2	43.0	94.8	77	77.7	1.1	1	13.7	3.93	29.7	56	39.9	840	16	192
1855	MT010109	2	44.9	97.3	79	78.0	1.0	1	12.8	3.89	31.0	58	37.9	689	21	178
1856	MT010110	2	41.9	91.5	72	79.3	1.2	1	13.0	4.09	33.6	107	51.0	448	28	139
1857	MT010111	2	44.1	91.8	84	79.0	1.2	1	12.6	4.10	32.9	93	54.0	493	25	155
1858	MT010112	2	42.3	92.6	85	78.3	1.1	1	12.8	3.98	32.1	92	49.6	506	28	139
1859	MT010113	2	42.0	89.2	75	78.0	1.1	1	12.7	3.99	32.8	92	51.4	490	22	173
1860	MT010114	2	42.6	98.3	81	78.0	1.6	2	12.8	3.89	31.0	112	47.8	583	34	100
1861	MT010115	2	44.1	97.8	79	78.4	1.2	1	12.9	4.02	31.6	89	50.1	625	25	155
1862	MT010116	2	43.1	97.8	78	78.6	1.3	1	13.2	4.03	30.8	96	55.2	531	25	155
1863	MT010117	2	43.6	93.8	85	79.2	1.0	1	11.7	3.68	32.0	80	43.0	528	33	104
1864	MT010118	2	42.2	96.4	80	78.4	1.6	2	12.5	3.53	28.8	89	46.3	600	27	145
1865	MT010120	2	42.7	96.3	74	79.8	1.3	1	12.6	4.77	39.2	134	69.9	318	35	87

Table 23

Lab No.	Variety or Selection	Rowed	Kernel Weight (mg)	on 6/64"	Barley Color (Agtron)	Malt Extract (%)	Wort Color	Wort Clarity	Barley Protein (%)	Wort Protein (%)	S/T (%)	DP (°ASBC)	Alpha-amylase (20°DU)	Beta-glucan (ppm)	Quality Score	Overall Rank
1866	MT010121	2	41.4	95.5	83	81.7	1.2	1	11.0	4.43	41.9	116	59.7	239	53	8
1867	MT010122	2	42.1	96.3	75	79.4	1.0	1	12.4	4.09	34.0	122	46.0	391	40	51
1868	MT010123	2	40.9	93.9	72	79.4	1.0	1	13.3	4.21	33.0	116	49.7	451	37	68
1869	MT010124	2	42.1	96.1	82	79.5	1.0	1	12.7	4.21	33.7	120	50.7	420	35	87
1870	MT010125	2	38.6	86.3	80	79.5	0.9	1	13.5	4.35	33.0	119	48.9	467	33	104
1872	MT010126	2	42.7	98.4	76	80.2	0.9	1	12.4	3.60	29.6	100	37.4	315	37	68
1873	MT010127	2	42.6	96.2	74	79.4	0.8	1	13.4	4.02	30.4	117	44.6	353	38	67
1874	MT010128	2	40.9	96.2	82	80.1	0.9	1	12.4	3.80	32.2	97	44.8	653	39	62
1875	MT010130	2	43.7	96.2	81	81.9	1.1	1	12.5	5.27	42.8	120	52.5	236	49	13
1876	MT010131	2	41.1	95.8	74	77.5	n.d.	3	13.7	3.49	26.9	95	38.2	636	13	199
1877	MT010133	2	42.1	97.8	72	79.4	n.d.	3	12.2	3.47	30.7	86	41.6	437	31	120
1878	MT010134	2	43.9	96.0	74	78.9	n.d.	3	12.2	3.52	29.1	96	38.7	317	32	113
1879	MT010135	2	42.4	93.5	68	78.4	*1.8	2	12.8	3.53	28.9	78	35.6	623	24	164
1880	MT010136	2	41.0	94.8	74	79.1	*1.8	2	12.9	3.80	30.9	113	42.7	420	33	104
1881	MT010137	2	41.2	89.3	79	79.1	1.1	1	13.0	4.13	32.4	94	49.6	406	25	155
1882	MT010138	2	41.8	94.6	77	78.8	1.6	2	12.4	3.71	30.1	97	39.5	625	32	113
1883	MT010142	2	41.7	86.7	82	81.7	1.2	1	11.1	4.13	40.3	89	52.3	238	41	48
1884	MT010144	2	43.5	93.0	82	82.2	1.3	1	13.0	5.27	42.4	118	54.1	310	46	20
1885	MT010145	2	44.5	93.8	85	82.4	1.3	1	11.6	4.97	43.3	114	58.3	224	54	6
1886	MT010146	2	42.3	99.0	81	81.4	1.3	1	12.9	4.73	38.0	114	55.8	373	41	48
1887	MT010147	2	43.5	97.6	81	82.0	1.3	1	12.9	5.10	41.9	134	50.8	275	46	20
1888	MT010148	2	43.4	97.6	79	82.1	1.3	1	12.1	5.13	44.4	123	47.2	123	61	2
1889	MT010150	2	44.3	95.7	75	82.1	1.2	1	11.3	4.35	41.9	118	49.5	141	58	3
1890	MT010151	2	42.9	96.0	81	80.9	1.4	1	13.3	4.97	39.1	141	52.0	386	35	87
1891	MT010152	2	42.5	97.0	77	81.0	1.5	1	12.1	5.20	44.5	128	53.5	309	48	16
1893	MT010153	2	38.8	89.7	84	80.5	1.4	1	12.7	4.73	37.8	130	55.2	575	33	104
1894	MT010154	2	42.6	94.9	80	80.6	1.4	1	13.0	5.10	42.1	151	57.3	408	36	75
1895	MT010155	2	41.3	92.8	74	80.0	1.4	1	14.0	5.05	37.0	136	56.5	525	29	134
1896	MT010156	2	40.8	94.3	76	80.3	1.4	1	12.9	5.05	40.1	134	55.3	534	39	62
1897	MT010157	2	39.9	97.5	87	81.4	1.3	1	11.5	4.43	39.8	99	57.5	477	40	51

Table 23

Lab No.	Variety or Selection	Rowed	Kernel Weight (mg)	on 6/64"	Barley Color (Agrtron)	Malt Extract (%)	Wort Color	Wort Clarity	Barley Protein (%)	Wort Protein (%)	S/T (%)	DP (°ASBC)	Alpha-amylase (20°DU)	Beta-glucan (ppm)	Quality Score	Overall Rank
1898	MT010158	2	43.4	97.4	74	82.4	1.4	1	11.9	4.79	41.8	146	45.6	95	58	3
1899	MT010159	2	38.3	90.3	77	80.5	1.3	1	12.8	4.73	37.9	117	46.5	451	42	41
1900	MT010160	2	41.7	95.8	82	81.1	1.2	1	12.1	4.30	36.2	114	48.4	618	45	24
1901	MT010161	2	40.2	88.4	79	80.5	1.2	1	12.6	4.86	39.6	138	50.0	637	39	62
1902	MT010162	2	43.3	96.6	68	82.7	1.5	1	11.6	5.08	44.1	121	52.1	145	62	1
1903	MT010163	2	41.3	92.8	80	80.8	1.2	1	12.5	4.62	37.5	121	48.9	346	44	27
1904	MT010164	2	43.7	94.3	81	79.6	1.2	1	13.1	4.64	35.6	137	47.3	400	42	41
1905	MT010165	2	45.4	97.3	83	80.3	1.0	1	12.5	4.35	34.9	142	41.3	563	31	120
1906	MT010166	2	45.4	97.7	79	79.6	1.1	1	12.4	4.24	35.5	135	42.6	419	40	51
1907	MT010167	2	44.3	97.6	77	80.0	1.3	1	13.4	4.59	36.2	129	49.0	544	45	24
1908	MT010168	2	44.4	98.3	77	79.3	1.1	1	12.8	4.13	32.4	151	43.7	559	28	139
1909	MT010169	2	44.3	96.2	87	82.1	1.4	1	11.2	4.79	44.3	117	60.8	203	54	6
1910	MT010170	2	40.1	*75.3	84	78.6	1.2	1	12.7	4.34	34.9	122	48.4	708	29	134
1911	MT010171	2	41.2	94.0	81	80.6	1.4	1	12.6	4.62	39.6	120	49.6	527	44	27
1912	MT010172	2	42.8	94.0	78	79.2	1.1	1	12.5	4.13	33.4	101	47.8	791	37	68
1914	MT010173	2	*48.1	96.7	83	80.5	1.3	1	12.0	4.46	38.3	89	51.0	588	40	51
1915	MT010174	2	44.6	92.0	77	80.2	1.4	1	12.2	4.51	38.3	80	47.0	444	43	33
1916	MT010175	2	44.2	88.4	75	78.2	1.0	1	13.4	3.95	30.3	100	41.1	506	30	129
1917	MT010176	2	44.5	98.2	76	80.8	1.2	1	12.0	4.35	37.4	108	44.8	341	40	51
1918	MT010177	2	46.5	97.4	82	81.6	1.4	1	11.9	4.54	41.0	75	48.9	354	51	9
1919	MT010178	2	42.6	91.8	74	79.1	1.1	1	13.1	4.00	31.6	83	41.3	654	28	139
1920	MT010179	2	43.2	86.2	81	80.8	1.3	1	12.5	4.75	40.3	113	49.1	250	56	5
1921	MT010180	2	42.9	97.5	81	81.3	1.2	1	12.4	4.81	39.3	119	55.2	321	46	20
1922	MT010182	2	43.2	94.9	75	79.2	1.5	1	13.2	4.59	34.7	96	53.7	473	36	75
1923	MT010183	2	42.5	98.0	76	80.7	1.3	1	12.2	4.48	37.1	95	53.9	451	44	27
1924	MT010184	2	41.8	85.3	78	78.6	1.3	1	12.2	4.27	35.4	105	48.2	591	34	100
1925	MT010185	2	43.6	95.4	76	78.1	1.6	2	12.1	3.85	32.0	109	41.4	512	36	75
1926	MT010186	2	38.1	*73.2	84	76.8	1.2	1	14.0	4.34	32.2	120	44.4	644	18	186
1927	MT010187	2	43.4	95.4	80	79.8	1.4	1	11.8	4.37	37.9	87	51.7	417	33	104
1928	MT010188	2	39.8	82.4	83	76.8	1.1	2	12.4	3.52	29.2	103	30.3	733	17	191

Table 23

Lab No.	Variety or Selection	Rowed	Kernel Weight (mg)	on 6/64"	Barley Color (Agrtron)	Malt Extract (%)	Wort Color	Wort Clarity	Barley Protein (%)	Wort Protein (%)	S/T (%)	DP (°ASBC)	Alpha-amylase (20°DU)	Beta-glucan (ppm)	Quality Score	Overall Rank
1929	MT010189	2	41.2	91.6	79	78.6	1.3	1	11.9	4.06	34.0	102	46.6	571	36	75
1930	MT010190	2	38.1	*79.4	80	77.5	1.2	1	12.6	4.03	32.6	94	50.0	668	16	192
1931	MT010191	2	41.7	97.6	75	80.9	1.3	1	12.1	4.56	38.5	111	54.5	284	49	13
1932	MT010193	2	41.1	91.0	81	79.4	1.3	1	13.7	5.07	37.0	162	55.2	502	22	173
1933	MT010194	2	41.0	92.4	80	79.2	1.1	1	12.8	4.51	36.4	145	46.6	573	34	100
1935	MT010195	2	41.0	96.4	77	80.3	1.3	1	11.9	4.77	40.6	130	59.9	487	47	17
1936	MT010196	2	43.7	93.5	81	80.0	1.2	1	12.4	4.56	38.1	135	50.3	540	44	27
1937	MT010197	2	41.1	91.4	89	80.4	1.2	1	12.7	4.73	37.9	126	65.4	412	37	68
1938	MT010198	2	39.3	88.0	86	79.7	1.2	1	12.9	4.25	34.2	99	60.9	700	23	167
1939	MT010199	2	40.9	95.1	83	79.0	1.2	1	13.3	4.44	34.5	88	55.2	779	27	145
1940	MT010200	2	42.0	98.4	83	79.6	1.1	1	13.1	4.26	33.9	114	60.8	748	31	120
1941	MT010201	2	42.6	98.4	84	79.5	1.3	2	12.3	4.11	35.7	97	59.0	713	32	113
1942	MT010202	2	42.8	98.4	81	80.5	1.2	1	12.4	4.56	37.4	103	69.5	609	40	51
1943	MT010203	2	43.0	94.6	81	80.4	1.4	1	13.1	4.81	37.7	143	54.0	301	35	87
1944	MT010204	2	39.3	88.5	88	78.7	1.3	1	13.9	4.71	34.6	118	74.2	547	25	155
1945	MT010205	2	42.6	91.8	73	80.3	1.5	1	13.8	5.08	38.4	120	60.9	215	36	75
1946	MT010206	2	43.1	96.8	73	79.1	1.2	1	12.6	3.99	32.8	111	47.0	414	35	87
1947	MT010207	2	42.0	90.1	75	79.3	1.3	1	13.3	4.17	31.9	112	49.6	331	35	87
1948	MT010208	2	41.8	94.6	80	80.4	1.2	1	12.0	3.96	34.9	130	43.0	213	42	41
1949	MT010209	2	43.2	94.4	71	79.0	1.2	1	12.9	4.10	32.9	112	46.5	309	35	87
1950	MT010210	2	45.3	97.9	75	78.1	1.2	1	13.5	4.16	31.6	101	43.4	503	27	145
1951	MT010212	2	43.2	96.9	76	81.2	1.3	1	12.9	4.41	36.9	100	54.8	321	42	41
1952	MT010213	2	40.2	96.9	82	79.7	1.2	1	12.3	4.33	37.1	135	55.4	427	32	113
1953	MT010214	2	41.8	98.0	77	81.2	1.3	1	12.2	4.71	40.3	106	66.8	220	50	11
1954	MT010215	2	41.0	96.6	84	81.3	1.2	1	12.7	4.89	41.2	137	59.0	414	42	41
1956	MT010216	2	41.8	91.2	73	78.8	1.2	1	12.8	4.01	32.0	89	43.8	449	27	145
1957	MT010217	2	40.4	94.3	84	78.7	1.3	1	12.7	4.17	34.9	90	55.3	506	20	179
1958	MT010218	2	42.2	93.9	81	80.0	1.2	1	12.0	4.61	39.2	112	52.8	264	50	11
1959	MT010219	2	44.1	96.1	78	80.6	1.2	1	12.1	4.48	40.0	85	60.7	215	44	27
1960	MT010220	2	44.8	92.3	76	77.4	1.4	2	13.6	3.67	28.1	82	38.0	557	15	197

Table 23

Lab No.	Variety or Selection	Rowed	Kernel Weight (mg)	on 6/64"	Barley Color (Agrtron)	Malt Extract (%)	Wort Color	Wort Clarity	Barley Protein (%)	Wort Protein (%)	S/T (%)	DP (°ASBC)	Alpha-amylase (20°DU)	Beta-glucan (ppm)	Quality Score	Overall Rank
1961	MT010221	2	43.6	94.5	77	78.3	*1.7	2	12.3	3.60	29.8	82	40.0	484	32	113
1962	MT010222	2	42.5	98.3	74	78.6	1.0	1	13.2	3.77	28.8	78	36.3	377	25	155
1963	MT010223	2	42.2	96.9	67	78.4	1.1	1	12.4	3.42	28.2	80	33.6	507	26	153
1964	MT010225	2	43.0	98.9	72	78.6	1.0	1	12.5	3.96	32.7	93	40.9	323	33	104
1965	MT010226	2	40.3	*63.4	74	82.9	1.2	1	13.9	3.48	26.0	62	33.6	954	16	192
1966	MT010227	2	41.5	91.9	75	77.5	1.1	1	12.7	3.47	27.9	*42.	33.2	913	16	192
1967	MT010229	2	40.7	94.7	80	77.5	1.0	1	14.0	4.13	30.7	108	43.6	713	22	173
1968	MT010231	2	41.9	94.4	69	78.0	n.d.	3	12.3	3.46	29.1	74	33.8	513	23	167
1969	MT010234	2	43.8	93.1	80	79.9	1.1	1	13.1	4.07	32.7	97	48.3	466	35	87
1970	MT010235	2	44.4	97.5	82	81.4	1.1	1	12.0	4.25	38.2	100	54.1	227	43	33
1971	MT010238	2	41.1	96.6	72	79.0	1.1	1	13.9	4.43	32.7	73	45.8	867	29	134
1972	MT010242	2	40.7	95.6	81	78.2	1.0	1	12.6	3.73	30.5	83	42.5	686	27	145
1973	MT010243	2	43.2	95.0	80	79.6	1.0	1	13.5	4.59	34.6	124	53.2	564	37	68
1974	MT010244	2	46.1	94.8	80	80.5	1.0	1	12.9	4.44	35.7	138	49.5	345	42	41
1976	MT010245	2	45.2	97.1	79	80.5	1.1	1	12.9	4.74	37.9	138	54.7	349	39	62
1977	MT960099	2	40.4	*76.9	72	80.5	1.4	1	12.1	4.68	39.6	112	64.1	294	40	51
1978	MT960101	2	39.9	88.9	83	79.6	1.2	1	12.5	4.29	34.3	99	60.9	448	23	167
1979	ND 13299	2	38.6	96.5	73	79.5	1.2	1	11.6	3.17	28.3	*37.9	36.4	401	30	129
1980	SK 76333	2	*36.1	*73.1	82	79.3	1.1	1	13.5	4.60	34.8	127	57.4	368	20	179
1981	TR128	2	40.2	*69.0	68	78.2	1.4	1	13.2	4.01	32.1	100	46.5	150	33	104
1788	HARRINGTON MALT CHECK	2	39.6	94.4	80	81.8	1.8	1	12.0	5.16	44.4	92	67.4	252	40	
1808	HARRINGTON MALT CHECK	2	39.3	94.2	80	81.5	1.6	1	11.5	5.31	47.8	103	72.3	226	39	
1829	HARRINGTON MALT CHECK	2	39.4	94.2	83	81.4	1.6	1	11.7	5.37	49.2	116	79.0	84	46	
1850	HARRINGTON MALT CHECK	2	39.3	94.4	80	81.9	1.7	1	11.8	5.34	49.0	115	73.2	80	46	
1871	HARRINGTON MALT CHECK	2	39.1	92.8	83	81.9	1.4	1	12.1	5.38	47.8	110	70.5	119	46	

Table 23

Lab No.	Variety or Selection	Rowed	Kernel Weight (mg)	on 6/64"	Barley Color (Agtron)	Malt Extract (%)	Wort Color	Wort Clarity	Barley Protein (%)	Wort Protein (%)	S/T (%)	DP (°ASBC)	Alpha-amylase (20°DU)	Beta-glucan (ppm)	Quality Score
1892	HARRINGTON MALT CHECK	2	39.8	94.2	81	82.0	1.7	1	11.8	5.49	48.2	111	70.7	75	42
1913	HARRINGTON MALT CHECK	2	39.5	94.1	81	81.6	1.7	1	11.7	5.41	49.2	103	71.9	178	39
1934	HARRINGTON MALT CHECK	2	39.6	93.9	81	82.1	1.7	1	11.5	5.48	51.3	105	74.2	127	43
1955	HARRINGTON MALT CHECK	2	39.2	93.6	80	81.8	1.6	1	11.9	5.44	49.7	123	79.2	116	46
1975	HARRINGTON MALT CHECK	2	40.1	93.3	83	82.1	1.6	1	11.7	5.44	49.2	108	67.8	117	45
Minima			37.3	82.4	67	75.2	0.8		11.0	3.17	23.8	51	30.3	95	7
Maxima			46.5	99.0	92	82.9	1.6		14.2	5.27	44.5	162	74.2	954	62
Means			42.5	94.6	79	79.4	1.2		12.6	4.20	34.4	109	50.0	497	34
Standard Deviations			1.7	3.2	5	1.4	0.1		0.6	0.47	4.5	20	9.1	169	10
Coefficients of Variation			4.1	3.4	6	1.8	12.3		5.0	11.24	13.2	19	18.1	34	30

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy

Samples Submitted by T. Blake and P. Hensleigh, Montana State University - Bozeman

2001 OSU MALTING SAMPLES - ABERDEEN, ID

Table 24

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein						
		(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank		
3203	HARRINGTON	2	31.8	74.3	68	78.6	1.7	1	14.4	5.93	41.7	124	67.8	307	21	11
3204	BU 27	2	37.5	87.0	79	78.1	1.7	1	14.0	5.40	40.0	138	65.1	127	28	8
3205	BU 37	2	40.5	91.4	64	74.6	1.5	1	14.4	4.81	33.7	125	58.2	659	25	10
3206	BU 38	2	43.4	92.7	74	79.3	1.8	1	13.3	5.27	40.7	146	69.8	175	32	6
3207	AJO 61	2	45.1	87.8	77	77.9	1.5	1	13.4	4.67	36.6	108	60.7	453	26	9
3208	STANDER	6	36.6	84.4	74	80.2	2.5	1	13.4	6.54	51.6	131	72.1	223	34	3
3209	STAB 7	6	31.9	54.9	80	78.8	1.8	1	14.0	5.00	36.7	155	54.8	197	34	3
3210	STAB 47	6	37.1	74.3	76	76.7	2.0	1	14.8	5.49	37.4	155	57.2	138	31	7
3211	STAB 113	6	35.1	78.4	82	78.1	1.8	1	12.5	4.62	37.3	115	45.0	193	38	1
3212	KAB 47	6	29.2	53.9	77	79.0	1.8	1	13.6	5.04	38.0	132	59.7	132	38	1
3213	KAB 51	6	39.1	90.7	68	78.2	2.1	1	15.0	5.69	38.9	132	55.0	178	33	5
3214	MOREX	6	33.4	73.0	68	77.5	1.9	1	15.1	5.75	39.6	182	58.7	205	20	12
3215	MOREX MALT CHECK	6	29.8	65.7	78	79.5	2.2	1	12.4	6.16	52.0	126	70.5	69	24	
Minima			29.2	53.9	64	74.6	1.5		12.4	4.62	33.7	108	45.0	69	20	
Maxima			45.1	92.7	82	80.2	2.5		15.1	6.54	52.0	182	72.1	659	38	
Means			36.2	77.6	74	78.2	1.9		13.9	5.41	40.3	136	61.1	235	30	
Standard Deviations			5.0	13.2	6	1.4	0.3		0.9	0.59	5.5	19	7.7	159	6	
Coefficients of Variation			13.8	17.0	7	1.8	14.4		6.2	10.89	13.6	14	12.6	68	20	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by P. Hayes and A. Corey, Oregon State University - Corvallis

2001 OSU ORWB MALTING SAMPLES - PENDLETON, OR, PULLMAN, WA AND ABERDEEN, ID

Table 25

Lab No.	Variety or Selection	Location	Rowed	Kernel Weight (mg)	on 6/64"	Barley Color (Agtron)	Malt Extract (%)	Wort Color	Wort Clarity	Barley Protein (%)	Wort Protein (%)	S/T (%)	DP (°ASBC)	Alpha-amylase (20°DU)	Beta-glucan (ppm)	Quality Score	Overall Rank
4748	1 ORWB 1	Pendleton, OR	6	26.9	52.3	71	78.5	1.8	1	13.2	5.25	41.6	170	58.1	155	34	9
4749	2 ORWB 7	Pendleton, OR	6	22.5	20.9	73	78.9	1.8	1	11.0	4.44	44.3	132	60.4	70	28	16
4750	3 ORWB 8	Pendleton, OR	6	26.9	61.8	67	79.0	1.6	1	12.2	4.52	39.9	115	53.0	342	26	18
4751	4 ORWB 10	Pendleton, OR	6	23.9	43.3	63	79.1	1.8	1	12.0	4.87	42.1	120	63.5	123	38	5
4752	5 ORWB 12	Pendleton, OR	6	30.1	81.1	68	77.6	1.6	1	13.0	4.56	36.3	140	53.9	213	33	12
4753	6 ORWB 15	Pendleton, OR	6	25.0	42.5	65	79.4	1.8	1	12.1	4.70	40.3	135	60.8	161	38	5
4754	7 ORWB 18	Pendleton, OR	6	29.1	69.5	70	79.3	1.8	1	12.4	4.85	41.9	122	62.0	83	40	4
4755	8 ORWB 20	Pendleton, OR	6	27.2	67.6	71	80.2	1.7	1	11.3	4.42	41.3	110	50.1	53	37	7
4756	9 ORWB 1	Pullman, WA	6	29.9	74.0	70	79.3	2.1	1	13.3	5.83	45.1	171	61.3	119	34	9
4757	10 ORWB 7	Pullman, WA	6	24.4	30.3	75	80.4	1.7	1	10.4	4.58	46.4	117	60.1	75	20	22
4758	11 ORWB 10	Pullman, WA	6	26.3	67.9	58	79.8	2.0	1	13.2	5.79	45.6	123	62.7	191	25	19
4759	12 ORWB 12	Pullman, WA	6	32.6	84.1	64	78.7	2.4	2	13.0	5.10	39.9	123	52.0	241	37	7
4760	13 ORWB 15	Pullman, WA	6	29.1	67.6	67	80.6	1.7	1	12.1	4.75	41.5	115	57.4	178	43	3
4761	14 ORWB 18	Pullman, WA	6	31.4	77.9	64	78.1	2.2	1	14.0	6.04	43.9	147	66.8	131	34	9
4762	15 ORWB 20	Pullman, WA	6	29.0	77.2	71	79.8	1.9	1	11.5	4.94	44.8	117	53.8	73	48	1
4763	16 ORWB 1	Aberdeen, ID	6	33.7	86.6	64	79.1	1.7	1	13.3	4.94	39.9	154	57.0	162	45	2
4764	17 ORWB 7	Aberdeen, ID	6	23.9	27.0	65	76.5	1.9	1	13.2	4.62	36.9	130	53.9	120	32	13
4765	18 ORWB 8	Aberdeen, ID	6	33.1	71.5	62	77.7	n.d.	3	12.3	4.29	36.2	79	45.9	436	25	19
4766	19 ORWB 10	Aberdeen, ID	6	27.4	62.0	58	77.8	2.1	1	14.3	5.27	38.5	106	62.4	176	12	23
4767	20 ORWB 12	Aberdeen, ID	6	33.1	72.4	64	76.5	1.7	1	13.5	4.16	32.7	105	50.1	323	22	21
4768	21 ORWB 15	Aberdeen, ID	6	30.2	67.7	68	79.3	1.7	1	13.3	4.66	36.2	125	58.0	160	32	13
4769	22 ORWB 18	Aberdeen, ID	6	33.2	75.1	74	76.7	1.8	1	14.5	5.11	36.0	129	59.6	141	28	16
4770	23 ORWB 20	Aberdeen, ID	6	32.6	77.1	65	78.2	n.d.	3	12.7	4.32	35.2	120	48.1	210	29	15
4778	HARRINGTON MALT CHECK		2	34.8	81.6	86	80.0	1.4	1	12.0	5.13	46.7	91	61.5	109	29	
4779	MOREX MALT CHECK		6	31.0	70.5	78	79.3	2.1	1	12.3	5.99	50.5	122	73.2	94	36	
Minima				22.5	20.9	58	76.5	1.6		10.4	4.2	32.7	79	45.9	53	12.0	
Maxima				33.7	86.6	75	80.6	2.4		14.5	6.0	46.4	171	66.8	436	48.0	
Means				28.8	63.4	67	78.7	1.8		12.7	4.9	40.3	126	57.0	171	32.2	
Standard Deviations				3.4	18.6	5	1.2	0.2		1.0	0.5	3.8	21	5.5	94	8.4	
Coefficients of Variation				12.0	29.3	7	1.5	11.6		8.2	10.32	9.4	16	9.6	55	26	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy

Samples Submitted by P. Hayes and A. Corey, Oregon State University - Corvallis

2001 OSU PENFT MALTING SAMPLES - PENDLETON, OR

Table 26

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein (%)	Protein (%)		amylase (20°DU)	glucan (ppm)	Quality Score	Rank	
4771	24 PenFT 3	6	25.0	19.2	90	77.1	1.6	1	13.9	5.08	39.1	182	62.1	102	21	89
4772	25 PenFT4	6	25.7	29.5	80	78.6	1.6	1	13.2	4.59	36.3	155	64.4	136	25	83
4773	26 PenFT 5	6	28.0	36.2	83	77.4	1.6	1	13.7	4.85	37.3	141	64.2	74	26	81
4774	27 PenFT6	6	27.5	58.1	80	79.1	1.5	1	12.6	4.56	38.8	138	53.5	63	28	78
4775	28 PenFT 7	6	29.0	67.4	70	80.2	1.7	1	12.9	5.10	41.7	94	68.4	41	34	52
4776	29 PenFT11	6	28.3	70.3	71	80.6	1.6	1	12.6	4.97	41.6	88	67.0	55	37	36
4777	30 PenFT12	6	30.8	61.2	76	78.4	1.6	1	12.2	4.85	40.5	125	66.6	78	35	46
4780	31 PenFT 13	6	28.6	55.6	81	79.0	1.4	1	12.2	4.70	40.6	139	55.4	136	48	6
4781	32 PenFT 16	6	27.7	46.6	76	79.8	1.5	1	12.1	4.43	37.5	133	59.7	168	30	70
4782	33 PenFT 17	6	29.1	67.4	76	79.8	1.5	1	11.9	4.36	39.3	117	48.0	64	31	60
4783	34 PenFT19	6	28.0	68.1	74	81.5	1.7	1	12.9	5.01	42.1	85	59.8	39	35	46
4784	35 PenFT 22	6	28.4	65.7	79	79.5	1.5	1	11.9	4.37	39.1	118	47.5	68	31	60
4785	36 PenFT 25	6	27.0	48.1	78	79.7	1.6	1	12.6	4.46	37.7	133	56.5	150	25	83
4786	37 PenFT 26	6	27.4	48.6	84	78.4	1.4	1	12.8	4.56	37.7	146	52.0	189	28	78
4787	38 PenFT 27	6	29.5	60.2	80	78.4	1.6	1	13.4	4.81	37.4	134	57.9	72	31	60
4788	39 PenFT 28	6	29.0	74.6	71	81.7	1.7	1	11.8	4.85	44.5	72	59.5	29	43	11
4789	40 PenFT 31	6	27.6	53.8	78	80.4	1.5	1	11.0	4.47	42.9	118	59.4	94	38	29
4790	41 PenFT 32	6	31.0	63.5	80	78.9	1.6	1	12.7	4.92	42.1	118	58.6	64	34	52
4791	42 PenFT 33	6	28.0	52.7	86	80.4	1.5	1	11.8	4.87	43.9	133	55.6	94	51	2
4792	43 PenFT 36	6	29.8	70.1	77	80.3	1.6	1	11.2	4.49	42.1	105	52.9	38	39	21
4793	44 PenFT 39	6	28.3	54.6	78	80.8	1.6	1	11.4	4.39	41.5	101	54.2	111	43	11
4794	45 PenFT 42	6	29.9	77.3	77	81.0	1.5	1	10.1	4.11	44.7	85	48.2	39	36	42
4795	46 PenFT 43	6	31.3	70.5	81	79.9	1.6	1	10.2	4.62	48.5	91	59.6	49	35	46
4796	47 PenFT 44	6	30.3	82.7	71	83.1	1.7	1	10.7	4.77	49.3	58	61.6	28	38	29
4797	48 PenFT 45	6	29.8	69.1	82	81.0	1.5	1	10.2	4.58	46.5	104	55.2	79	26	81
4798	49 PenFT46	6	29.5	72.7	75	80.3	1.5	1	10.9	4.38	43.6	99	47.7	59	42	13
4799	50 PenFT 48	6	26.6	44.6	79	79.8	1.6	1	11.9	4.50	41.1	124	54.2	120	38	29
4800	51 PenFT 51	6	27.9	62.6	79	82.1	1.7	1	11.4	5.04	45.9	72	58.3	26	38	29
4801	52 PenFT 52	6	27.5	40.8	88	79.2	1.5	1	11.8	4.86	42.4	136	52.0	120	49	4
4802	53 PenFT 54	6	29.7	49.7	83	78.3	1.6	1	12.1	4.94	41.8	125	58.8	82	41	18

Table 26

Lab No.	Variety or Selection	Rowed	Kernel Weight (mg)	on 6/64"	Barley Color (Agtron)	Malt Extract (%)	Wort Color	Wort Clarity	Barley Protein (%)	Wort Protein (%)	S/T (%)	DP (°ASBC)	Alpha-amylase (20°DU)	Beta-glucan (ppm)	Quality Score	Overall Rank
4803	54 PenFT 56	6	27.0	62.2	83	81.6	1.6	1	9.3	4.28	47.4	83	57.5	75	24	88
4804	55 PenFT 58	6	30.8	69.3	80	79.6	1.8	1	9.9	4.40	49.0	68	56.0	50	25	83
4805	56 PenFT 59	6	28.2	64.8	91	81.7	1.6	1	8.9	4.24	52.4	76	54.2	49	29	72
4806	57 PenFT 61	6	29.7	80.8	74	80.5	1.6	1	9.0	3.95	45.9	62	48.3	27	36	42
4807	58 PenFT 63	6	29.0	79.3	79	83.1	1.8	1	8.8	4.14	53.2	30	54.9	20	31	60
4808	59 PenFT 66	6	31.2	70.4	82	79.5	1.7	1	10.5	4.77	47.9	85	56.0	74	35	46
4809	60 PenFT 68	6	28.1	65.3	81	81.1	1.6	1	10.5	4.46	46.9	85	56.4	91	30	70
4812	61 PenFT 70	6	29.3	79.6	78	83.1	1.7	1	10.0	4.73	50.0	50	60.9	27	31	60
4813	62 PenFT 71	6	30.1	78.8	77	80.9	1.5	1	10.7	4.41	45.0	83	50.3	43	46	8
4814	63 PenFT 72	6	28.2	63.1	91	81.5	1.5	1	10.1	4.51	48.9	101	54.9	53	29	72
4815	64 NTPen 1	6	27.8	40.7	86	78.4	1.5	1	13.0	4.43	36.0	145	55.5	104	29	74
4816	65 NTPen 2	6	31.9	61.3	81	76.4	1.6	1	14.1	4.86	36.8	140	61.6	57	20	92
4896	141 PenFT rp2 3	6	31.1	40.8	80	77.9	1.6	1	13.7	5.11	40.4	134	54.0	162	37	35
4897	142 PenFT rp2 4	6	30.7	48.1	67	78.7	1.7	1	13.3	4.67	37.5	125	58.5	150	29	66
4898	143 PenFT rp2 5	6	33.2	57.7	76	77.8	1.7	1	13.5	5.13	40.8	137	61.2	72	31	55
4899	144 PenFT rp2 6	6	32.1	64.1	76	79.0	1.6	1	12.1	4.54	40.6	127	47.8	73	39	21
4900	145 PenFT rp2 7	6	31.5	62.0	73	79.4	1.8	1	13.3	5.32	42.8	97	68.2	41	29	66
4901	146 PenFT rp2 11	6	31.4	71.7	72	81.2	1.8	1	12.0	5.12	44.7	77	63.8	38	41	18
4902	147 PenFT rp2 12	6	33.9	64.4	73	78.3	1.8	1	13.0	4.94	41.0	123	61.2	80	31	55
4903	148 PenFT rp2 13	6	30.9	48.1	81	77.6	1.6	1	12.0	4.75	42.2	135	57.0	169	39	21
4904	149 PenFT rp2 16	6	30.6	45.6	75	79.3	1.7	1	11.0	4.56	41.8	126	62.3	131	35	44
4905	150 PenFT rp2 17	6	31.9	56.1	77	78.6	1.6	1	11.2	4.60	42.2	130	53.0	53	39	21
4908	151 PenFT rp2 19	6	31.7	72.4	71	81.0	1.8	1	12.1	5.07	43.9	89	68.9	43	44	10
4909	152 PenFT rp2 22	6	32.3	63.2	74	79.4	1.6	1	12.1	4.47	39.6	126	50.9	52	34	50
4910	153 PenFT rp2 25	6	30.4	53.5	68	79.3	1.7	1	12.5	4.61	39.9	138	61.9	126	36	41
4911	154 PenFT rp2 26	6	31.6	57.0	79	79.0	1.5	1	12.5	4.85	42.0	150	57.7	123	48	6
4912	155 PenFT rp2 27	6	33.8	64.8	74	78.0	1.7	1	12.7	5.02	41.2	137	69.8	48	35	44
4913	156 PenFT rp2 28	6	31.6	78.7	71	81.6	1.7	1	10.7	4.86	48.1	67	64.0	33	38	29
4914	157 PenFT rp2 31	6	31.3	66.0	71	80.5	1.7	1	10.3	4.55	47.8	105	67.4	83	28	71
4915	158 PenFT rp2 32	6	34.5	76.3	73	79.1	1.7	1	11.8	4.85	44.0	114	63.0	53	42	13

Table 26

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort	S/T	DP	Alpha-	Beta-	Overall		
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein (%)	Protein (%)	(%)	(°ASBC)	amylase (20°DU)	glucan (ppm)		
4916	159 PenFT rp2 33	6	32.7	65.5	80	79.8	1.6	1	10.8	4.64	46.3	129	59.2	87	42	13
4917	160 PenFT rp2 36	6	32.7	76.1	73	79.5	1.6	1	10.4	4.44	44.6	109	52.2	47	37	35
4918	161 PenFT rp2 39	6	33.3	75.9	72	80.3	1.7	1	10.6	4.21	43.4	94	60.5	140	42	13
4919	162 PenFT rp2 42	6	33.9	83.9	69	80.1	1.5	1	10.3	4.32	46.3	100	46.2	65	37	35
4920	163 PenFT rp2 43	6	35.0	83.9	69	79.6	1.8	1	10.9	4.91	49.0	104	61.3	54	39	21
4921	164 PenFT rp2 44	6	32.3	90.0	66	81.9	1.8	1	10.9	4.88	49.3	67	66.2	34	39	21
4922	165 PenFT rp2 45	6	33.4	83.4	78	80.6	1.5	1	10.3	4.55	48.6	105	59.6	96	38	29
4923	166 PenFT rp2 46	6	33.2	84.6	72	80.1	1.4	1	10.9	4.35	43.5	106	47.8	105	51	2
4924	167 PenFT rp2 48	6	33.5	75.7	66	80.2	1.6	1	11.7	4.70	43.7	118	64.2	122	49	4
4925	168 PenFT rp2 51	6	32.5	80.3	66	81.9	1.8	1	11.4	5.12	47.3	79	67.9	41	42	13
4926	169 PenFT rp2 52	6	32.6	79.1	75	79.7	1.4	1	11.5	4.79	44.7	129	59.4	124	52	1
4927	170 PenFT rp2 54	6	34.8	85.1	70	78.4	1.6	1	12.0	4.87	42.8	123	67.3	76	41	18
4928	171 PenFT rp2 56	6	32.0	69.7	73	81.2	1.6	1	9.4	4.38	51.2	93	62.3	55	25	76
4929	172 PenFT rp2 58	6	34.8	82.9	77	79.7	1.6	1	10.0	4.52	50.3	90	57.6	46	31	55
4930	173 PenFT rp2 59	6	33.9	81.6	80	81.5	1.5	1	8.7	4.32	53.6	98	57.9	43	34	50
4931	174 PenFT rp2 61	6	33.2	85.8	73	80.1	1.6	1	8.4	4.11	52.5	79	49.9	49	37	35
4932	175 PenFT rp2 63	6	32.5	89.5	70	82.9	1.7	1	8.7	4.44	51.7	48	58.5	22	31	55
4933	176 PenFT rp2 66	6	34.8	80.0	73	79.2	1.5	1	10.7	4.77	46.9	114	60.3	45	39	21
4934	177 PenFT rp2 68	6	33.2	75.0	71	80.8	1.5	1	10.5	4.63	46.8	113	60.2	119	39	21
4935	178 PenFT rp2 70	6	32.6	85.8	68	82.1	1.6	1	10.0	4.68	50.4	67	60.8	27	34	50
4936	179 PenFT rp2 71	6	33.0	79.5	75	80.7	1.6	1	9.5	4.41	49.0	94	51.2	46	37	35
4937	180 PenFT rp2 72	6	33.7	78.3	78	80.6	1.6	1	10.2	4.76	49.9	107	56.4	98	45	9

Table 26

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-		
			Weight	6/64"	Color	Extract	Wort	Protein	Protein	S/T	DP	Quality
(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(%)	(%)	(°ASBC)	(20°DU)	(ppm)
4778	HARRINGTON MALT CHECK	2	34.8	81.6	86	80.0	1.4	1	12.0	5.13	46.7	91
4779	MOREX MALT CHECK	6	31.0	70.5	78	79.3	2.1	1	12.3	5.99	50.5	122
4810	HARRINGTON MALT CHECK	2	35.3	80.5	86	80.3	1.3	1	12.0	5.12	45.7	99
4811	MOREX MALT CHECK	6	32.0	72.2	79	79.9	1.9	1	12.7	6.09	49.5	134
4906	HARRINGTON MALT CHECK	2	35.2	80.4	86	80.1	1.4	1	12.0	5.07	46.4	95
4907	MOREX MALT CHECK	6	31.3	68.2	75	79.2	2.2	1	12.8	6.15	51.0	129
4938	HARRINGTON MALT CHECK	2	34.0	80.3	86	80.1	1.3	1	11.7	5.15	48.1	101
4939	MOREX MALT CHECK	6	31.5	70.7	75	79.3	2.0	1	12.8	6.20	53.7	143
Minima			25.0	19.2	66	76.4	1.4	8.4	3.95	36.0	30	46.2
Maxima			35.0	90.0	91	83.1	1.8	14.1	5.32	53.6	182	69.8
Means			30.7	66.1	76	80.0	1.6	11.4	4.7	44.1	107	58.1
Standard Deviations			2.4	14.7	6	1.4	0.1	1.4	0.3	4.4	28	5.8
Coefficients of Variation			7.9	22.2	7	1.8	6.6	12.1	6.10	10.1	26	10.0
												20
												20

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy

Samples Submitted by P. Hayes and A. Corey, Oregon State University - Corvallis

2001 OSU YIELD TRIALS - PENDLETON, OR

Table 27

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-			Beta-	Overall			
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein	S/T	DP	amylase	glucan	Quality	Score
4817	66 AB6R 12	6	24.1	*19.2	79	77.0	1.4	1	13.0	5.13	40.8	112	55.5	133	30	6
4818	67 AB6R 18	6	27.6	*52.1	77	76.7	1.6	1	11.8	4.40	38.4	113	46.8	212	22	12
4819	68 AB2R 14	2	37.5	96.9	58	81.2	1.4	1	11.4	4.07	38.0	58	43.2	122	41	1
4820	69 AB2R 16	2	40.7	98.1	63	78.7	1.3	1	13.3	3.98	30.4	107	42.0	345	31	5
4821	70 AB2R 17	2	41.4	98.2	58	77.3	1.4	1	13.2	3.89	30.6	112	40.5	274	33	4
4822	71 AB2R 18	2	38.2	97.8	79	81.4	n.d.	3	11.2	3.39	31.3	53	36.4	193	34	3
4823	72 AB2R 19	2	28.3	74.3	78	80.3	1.5	1	11.5	5.00	44.1	144	55.7	135	38	2
4851	98 AugPYT 1	2	32.7	74.9	69	76.7	1.5	1	15.5	5.39	36.3	137	67.2	208	12	22
4852	99 AugPYT 23	2	40.0	94.6	56	76.4	1.4	1	14.6	4.60	32.4	157	57.8	257	21	14
4853	100 AugPYT 27	2	36.9	92.0	61	75.6	1.5	1	14.0	4.33	30.9	104	46.7	334	18	18
4854	101 AugPYT 29	2	36.1	87.7	65	76.7	1.4	1	14.5	4.38	31.6	109	47.2	246	19	15
4855	102 AugPYT 36	2	39.2	91.4	58	75.1	1.5	1	15.4	4.50	31.1	126	46.7	426	30	6
4856	103 AugPYT 49	2	38.1	90.3	53	74.6	1.6	1	15.8	4.94	31.9	124	58.6	173	26	8
4857	104 AugPYT 59	2	37.0	87.8	55	74.9	1.8	1	15.3	4.70	31.4	96	47.0	226	26	8
4858	105 AugPYT62	2	39.3	94.1	59	76.0	1.4	1	15.7	4.78	31.2	143	62.9	225	19	15
4859	106 AugPYT 66	2	34.4	63.3	66	72.3	1.4	1	15.5	4.10	27.1	86	40.8	416	9	25
4860	107 AugPYT 96	2	37.7	95.4	58	73.8	1.7	1	14.9	4.00	27.7	79	42.5	335	14	20
4861	108 AugPYT 107	2	37.3	86.8	72	78.5	1.4	1	14.1	4.81	36.3	118	58.8	70	26	8
4862	109 AugPYT 110	2	35.6	84.5	62	75.0	1.7	1	14.8	4.67	32.0	89	59.3	224	12	22
4863	110 AugPYT 130	2	41.0	96.8	63	73.9	1.4	1	16.2	4.08	26.2	107	41.7	328	22	12
4864	111 AugPYT 136	6	36.0	88.6	71	74.6	1.4	1	15.1	4.18	28.6	111	43.0	281	19	15
4865	112 AugPYT 186	2	37.8	80.4	62	73.5	1.7	1	15.2	4.12	27.5	88	41.5	186	12	22
4866	113 AugPYT 189	2	37.8	91.5	58	76.1	*2.3	1	15.2	5.71	39.5	117	73.3	120	24	11
4867	114 AugPYT194	2	38.8	94.2	66	71.9	1.4	1	15.3	3.99	27.8	93	37.4	472	13	21
4868	115 AugPYT 196	2	42.2	97.7	68	75.2	2.0	1	16.4	*6.39	39.2	141	58.3	251	15	19

Table 27

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-					
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein (%)	Protein (%)	S/T (%)	DP (°ASBC)	amylase (20°DU)	glucan (ppm)	Quality Score
4842	HARRINGTON MALT CHECK	2	34.9	81.6	78	80.3	1.6	1	11.8	5.12	46.6	88	59.1	71	25
4843	MOREX MALT CHECK	6	31.1	70.8	68	79.4	2.4	1	12.7	6.08	51.1	116	68.5	68	24
4874	HARRINGTON MALT CHECK	2	35.1	81.0	88	79.6	1.3	1	11.9	4.95	42.3	94	62.3	67	34
4875	MOREX MALT CHECK	6	31.2	69.0	74	78.7	1.9	1	12.7	5.92	50.4	131	73.9	65	25
Minima			24.1	63.3	53	71.9	1.3		11.2	3.39	26.2	53	36.4	70	9
Maxima			42.2	98.2	79	81.4	2.0		16.4	5.71	44.1	157	73.3	472	41
Means			36.6	89.4	65	76.1	1.5		14.4	4.46	32.9	109	50.0	248	23
Standard Deviations			4.4	9.0	8	2.5	0.2		1.5	0.53	4.8	26	9.9	102	9
Coefficients of Variation			11.9	10.0	12	3.2	10.8		10.8	11.93	14.7	23	19.8	41	39

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy

Samples Submitted by P. Hayes and A. Corey, Oregon State University - Corvallis

2001 OSU YIELD TRIALS - PENDLETON, OR AND PULLMAN, WA

Table 28

Lab No.	Variety or Selection	Location	Rowed	Kernel Weight (mg)	on 6/64"	Barley Color (Agrtron)	Malt Extract (%)	Wort Color	Wort Clarity	Barley Protein (%)	Wort Protein (%)	S/T (%)	DP (°ASBC)	Alpha-amylase (20°DU)	Beta-glucan (ppm)	Quality Score	Overall Rank
4824	73 6RYT 3	Pendleton, OR	6	35.5	94.9	76	80.0	1.8	1	13.7	6.21	48.2	146	71.1	101	38	4
4825	74 6RYT 4	Pendleton, OR	6	28.6	51.4	85	77.9	1.9	2	14.1	4.90	36.7	135	51.3	154	24	20
4826	75 6RYT 7	Pendleton, OR	6	32.5	71.8	76	74.7	1.6	1	16.6	5.85	37.1	166	59.3	111	28	10
4827	76 6RYT 9	Pendleton, OR	6	29.9	65.6	74	74.7	1.6	1	15.8	5.45	35.0	170	47.3	106	21	30
4828	77 6RYT 11	Pendleton, OR	6	23.5	*19.8	81	76.3	1.6	1	15.0	5.21	35.0	124	57.8	65	16	38
4829	78 6RYT 13	Pendleton, OR	6	33.6	71.9	67	73.1	1.9	1	17.2	5.78	33.9	117	48.4	269	23	26
4830	79 6RYT 14	Pendleton, OR	6	33.9	76.8	70	74.7	1.6	1	14.1	4.87	35.7	102	48.3	236	27	13
4831	80 6RYT 15	Pendleton, OR	6	31.7	50.2	84	74.6	2.0	2	12.6	4.19	34.3	92	44.4	393	14	39
4832	81 6RYT 16	Pendleton, OR	6	34.1	60.3	72	71.7	1.8	1	14.8	4.61	31.6	106	46.9	413	21	30
4833	82 6RYT 17	Pendleton, OR	6	34.2	75.7	63	71.5	2.1	1	16.9	5.99	35.9	172	53.6	142	27	13
4834	83 6RYT 18	Pendleton, OR	6	34.5	92.2	73	77.2	1.6	1	15.7	5.81	39.5	166	57.1	154	26	15
4835	84 2RowYT 12	Pendleton, OR	2	37.9	87.2	65	73.8	1.5	1	16.1	4.31	27.8	95	37.3	316	13	41
4836	85 2RowYT 2	Pendleton, OR	2	35.0	83.5	68	77.4	1.8	1	14.3	5.26	39.1	107	64.9	162	12	42
4837	86 2RowYT 15	Pendleton, OR	2	36.3	73.0	71	75.9	1.7	1	15.0	5.26	35.9	149	64.9	48	8	49
4838	87 2RowYT 16	Pendleton, OR	2	33.6	40.3	70	74.4	1.4	1	15.0	3.88	27.0	87	40.0	377	9	47
4839	88 2RowYT 17	Pendleton, OR	2	41.8	86.6	58	71.8	1.6	1	16.3	4.50	28.2	132	52.3	*705	24	20
4840	89 2RowYT 18	Pendleton, OR	2	36.1	90.4	63	76.0	2.1	1	15.6	5.36	35.1	124	67.2	127	24	20
4841	90 2RowYT 20	Pendleton, OR	2	37.9	87.1	61	73.8	1.7	1	15.0	4.47	30.0	97	36.2	438	20	32
4844	91 2RowYT 25	Pendleton, OR	2	34.5	53.9	68	74.2	2.1	2	14.8	5.44	39.0	94	58.4	97	11	45
4845	92 2RowYT 28	Pendleton, OR	2	38.4	87.2	57	73.7	2.0	2	15.6	4.12	26.4	80	35.3	338	10	46
4846	93 2RowYT 30	Pendleton, OR	2	33.6	50.7	71	73.7	2.5	1	15.4	3.99	27.1	83	35.8	301	6	50
4847	94 2RowYT 31	Pendleton, OR	2	35.5	60.4	67	75.4	1.7	1	14.4	4.72	33.2	119	70.4	159	19	34
4848	95 2RowYT 34	Pendleton, OR	2	34.2	75.6	64	72.1	1.4	2	16.9	4.83	29.6	121	43.3	219	25	18
4849	96 2RowYT 39	Pendleton, OR	2	39.6	95.1	72	73.2	2.1	2	15.8	4.50	29.4	98	41.9	424	26	15
4850	97 2RowYT 41	Pendleton, OR	2	34.5	86.6	66	74.2	*2.6	1	15.6	4.26	27.8	63	35.8	373	9	47
4869	116 6RYT 3	Pullman, WA	6	33.3	87.5	78	81.4	1.9	1	13.0	5.93	47.8	137	78.8	54	37	5
4870	117 6RYT 4	Pullman, WA	6	29.3	57.5	81	79.5	1.4	1	13.4	4.96	38.4	133	54.5	151	37	5
4871	118 6RYT 7	Pullman, WA	6	31.2	57.1	77	76.1	1.8	1	15.2	5.74	40.3	155	63.3	62	24	20
4872	119 6RYT 9	Pullman, WA	6	30.5	75.3	73	78.4	1.4	1	13.8	5.10	38.3	155	50.0	103	46	1
4873	120 6RYT 11	Pullman, WA	6	26.1	51.1	85	79.7	1.3	1	13.2	5.18	41.9	131	64.4	72	33	8

Table 28

Lab No.	Variety or Selection		Rowed	Kernel Weight (mg)	on 6/64"	Barley Color (Agtron)	Malt Extract (%)	Wort Color	Wort Clarity	Barley Protein (%)	Wort Protein (%)	S/T (%)	DP (°ASBC)	Alpha-amylase (20°DU)	Beta-glucan (ppm)	Quality Score	Overall Rank
4876	121 6RYT 13	Pullman, WA	6	33.6	80.1	65	77.1	1.8	2	15.4	5.33	36.7	121	54.0	300	24	20
4877	122 6RYT 14	Pullman, WA	6	34.5	85.1	69	75.8	1.7	2	14.1	4.80	35.7	86	51.7	198	28	10
4878	123 6RYT 15	Pullman, WA	6	31.5	62.2	87	76.2	1.7	2	12.7	4.09	34.4	85	47.2	318	17	37
4879	124 6RYT 16	Pullman, WA	6	34.6	72.7	73	73.3	1.7	2	14.1	4.61	33.7	100	47.3	363	23	26
4880	125 6RYT 17	Pullman, WA	6	30.9	62.6	75	72.4	2.5	2	15.3	6.03	39.7	152	56.4	190	19	34
4881	126 6RYT 18	Pullman, WA	6	31.1	66.0	84	79.9	1.8	1	13.1	5.58	42.8	125	56.4	81	37	5
4882	127 2RowYT 12	Pullman, WA	2	41.3	82.9	71	75.4	1.7	2	14.1	4.17	30.4	85	39.6	293	12	42
4883	128 2RowYT 2	Pullman, WA	2	40.3	96.1	82	81.0	1.7	1	12.4	5.25	44.4	91	67.4	172	39	3
4884	129 2RowYT 15	Pullman, WA	2	41.9	93.0	83	78.3	1.7	1	13.7	5.22	39.4	130	66.3	165	28	10
4885	130 2RowYT 16	Pullman, WA	2	41.0	85.7	83	76.7	1.4	1	12.5	3.71	30.1	79	42.3	538	26	15
4886	131 2RowYT 17	Pullman, WA	2	44.8	90.9	72	74.4	1.5	1	14.2	4.29	30.3	103	48.9	*652	23	26
4887	132 2RowYT 18	Pullman, WA	2	40.9	95.3	76	80.0	2.0	1	13.0	5.25	43.2	112	71.5	135	45	2
4888	133 2RowYT 20	Pullman, WA	2	43.8	87.7	70	74.9	2.1	2	16.1	5.05	32.4	91	43.9	535	23	26
4889	134 2RowYT 25	Pullman, WA	2	41.2	88.1	75	78.7	1.8	1	13.1	5.12	39.2	83	59.2	211	24	20
4890	135 2RowYT 28	Pullman, WA	2	41.1	93.8	72	76.9	1.9	2	14.2	4.04	29.2	72	40.0	291	20	32
4891	136 2RowYT 30	Pullman, WA	2	42.1	91.1	77	76.7	n.d.	3	13.5	3.99	29.6	73	39.1	365	14	39
4892	137 2RowYT 31	Pullman, WA	2	40.8	87.5	79	78.0	1.9	1	13.5	5.04	39.2	105	74.5	246	32	9
4893	138 2RowYT 34	Pullman, WA	2	38.8	72.7	76	74.5	1.6	1	14.9	4.60	32.8	84	44.0	303	18	36
4894	139 2RowYT 39	Pullman, WA	2	44.2	94.3	78	73.2	n.d.	3	16.1	4.50	29.0	99	38.5	548	25	18
4895	140 2RowYT 41	Pullman, WA	2	39.1	92.5	85	76.6	n.d.	3	12.9	3.96	31.9	54	34.8	524	12	42
4842	HARRINGTON MALT CHECK		2	34.9	81.6	78	80.3	1.6	1	11.8	5.12	46.6	88	59.1	71	25	
4843	MOREX MALT CHECK		6	31.1	70.8	68	79.4	2.4	1	12.7	6.08	51.1	116	68.5	68	24	
4874	HARRINGTON MALT CHECK		2	35.1	81.0	88	79.6	1.3	1	11.9	4.95	42.3	94	62.3	67	34	
4875	MOREX MALT CHECK		6	31.2	69.0	74	78.7	1.9	1	12.7	5.92	50.4	131	73.9	65	25	
Minima				23.5	40.3	57	71.5	1.3		12.4	3.71	26.4	54	34.8	48	6	
Maxima				44.8	96.1	87	81.4	2.5		17.2	6.21	48.2	172	78.8	548	46	
Means				35.8	77.1	73	75.8	1.8		14.6	4.91	35.0	112	52.1	245	23	
Standard Deviations				4.8	15.2	7	2.5	0.3		1.3	0.65	5.4	30	11.8	142	10	
Coefficients of Variation				13.4	19.8	10	3.4	14.5		8.8	13.33	15.5	27	22.6	58	41	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy

Samples Submitted by P. Hayes and A. Corey, Oregon State University - Corvallis

2001 OSU RCSLYT MALTING SAMPLES - PENDLETON, OR

Table 29

Lab No.	Variety or Selection	Rowed	Kernel Weight (mg)	on 6/64"	Barley Color	Malt Extract (%)	Wort Color	Wort Clarity	Barley Protein (%)	Wort Protein (%)	S/T (%)	DP (°ASBC)	Alpha-amylase (20°DU)	Beta-glucan (ppm)	Quality Score	Overall Rank
4940	1 RCSLYT Harrington	2	37.7	88.9	75	78.4	1.6	1	13.4	5.45	41.9	110	61.3	248	32	1
4941	2 RCSLYT 103	2	38.3	86.0	64	75.0	1.5	1	15.2	5.05	35.3	79	52.2	355	18	25
4942	3 RCSLYT 81	2	39.5	87.2	76	76.7	1.4	1	13.5	5.39	40.9	120	58.7	252	30	3
4943	4 RCSLYT Baronesse	2	37.0	81.7	79	74.8	1.9	2	13.9	4.03	29.4	87	41.9	151	11	41
4944	5 RCSLYT 1	2	41.0	84.2	67	73.4	1.2	1	14.8	4.29	30.2	111	48.2	329	20	14
4945	6 RCSLYT 53	2	37.9	79.9	77	76.6	1.6	1	14.6	5.59	39.2	113	61.6	190	15	31
4946	7 RCSLYT 109	2	39.3	76.6	62	73.3	1.2	1	14.3	3.95	28.9	87	42.8	405	11	41
4947	8 RCSLYT 98	2	38.3	85.2	67	74.0	1.5	1	16.0	5.56	35.7	129	59.3	307	17	26
4948	9 RCSLYT Garnet	2	35.4	88.1	81	77.4	1.6	1	14.2	5.22	37.0	131	59.5	148	19	21
4949	10 RCSLYT 42	2	38.1	57.1	71	75.0	1.6	1	14.0	5.16	38.2	77	58.4	515	7	51
4950	11 RCSLYT 140	2	37.3	72.8	67	77.3	1.5	1	13.5	5.28	39.5	74	63.5	163	8	49
4951	12 RCSLYT 18	2	35.9	71.9	73	78.9	1.4	1	14.1	5.43	40.3	118	66.2	255	24	8
4952	13 RCSLYT Xena	2	39.3	94.4	69	76.7	1.3	1	14.2	4.41	31.3	88	51.2	295	23	9
4953	14 RCSLYT 86	2	39.5	83.2	72	74.3	1.3	1	15.2	4.25	28.8	89	41.8	375	11	41
4954	15 RCSLYT Xena	2	38.5	93.5	68	77.0	1.2	1	14.4	4.49	32.0	93	52.1	313	20	14
4955	16 RCSLYT 38	2	36.4	76.6	69	74.4	1.4	1	15.5	5.37	34.9	134	68.3	224	12	38
4956	17 RCSLYT 3	2	37.0	57.5	72	75.2	1.4	1	16.5	5.61	34.4	134	63.6	405	9	46
4957	18 RCSLYT 63	2	36.6	91.3	73	76.0	1.3	1	15.2	5.39	36.5	124	67.0	208	20	14
4958	19 RCSLYT Garnett	2	36.4	90.8	74	78.4	1.4	1	14.4	5.29	38.7	138	62.2	156	21	12
4959	20 RCSLYT 97	2	39.7	92.6	72	75.7	1.2	1	15.2	4.78	32.5	117	51.5	307	27	5
4960	21 RCSLYT 32	2	36.5	82.9	74	77.3	1.3	1	13.9	5.23	38.4	113	64.6	172	15	31
4961	22 RCSLYT 135	2	34.3	72.3	69	73.7	1.3	1	15.9	5.15	33.0	123	62.4	278	15	31
4962	23 RCSLYT Harrington	2	35.2	80.9	77	77.9	1.3	1	14.7	5.51	40.2	122	66.4	174	20	14
4963	24 RCSLYT 5	2	37.2	82.4	72	74.0	1.0	1	16.1	4.18	27.0	121	43.9	399	16	30
4964	25 RCSLYT Baronesse	2	34.5	81.5	78	75.1	1.7	2	14.5	4.35	31.2	101	44.0	171	15	31
4965	26 RCSLYT 120	2	36.8	77.0	63	75.3	1.3	1	15.4	5.53	37.5	120	57.6	349	12	38
4966	27 RCSLYT 139	2	39.0	87.1	75	76.0	1.3	1	15.5	5.43	36.3	124	64.9	359	17	26
4967	28 RCSLYT 47	2	40.0	77.5	67	77.1	1.4	1	14.5	5.09	35.9	89	68.5	434	11	41
4968	29 RCSLYT 112	2	35.6	84.4	65	75.9	1.6	1	15.1	5.53	38.6	182	70.9	257	8	49
4969	30 RCSLYT Harrington	2	35.9	81.9	74	77.3	1.6	1	14.4	5.77	41.3	128	69.8	196	20	14

Table 29

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight (mg)	6/64" (%)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)		S/T (%)	DP (°ASBC)	amylase (20°DU)	glucan (ppm)	Quality Score
4972	31 RCSLYT 75	2	40.4	74.6	56	73.5	1.6	1	16.9	5.86	34.9	155	66.7	393	9	46
4973	32 RCSLYT Xena	2	39.5	94.4	66	76.3	1.5	1	14.4	4.64	33.0	100	49.9	257	30	3
4974	33 RCSLYT 95	2	36.5	81.6	70	75.3	1.4	1	14.7	4.69	32.2	134	44.4	266	23	9
4975	34 RCSLYT Baronesse	2	34.4	78.2	75	74.7	*2.4	2	14.5	4.47	31.6	97	43.8	124	26	6
4976	35 RCSLYT 36	2	31.9	*30.6	74	77.0	1.5	1	15.4	5.10	34.3	114	62.6	339	12	38
4977	36 RCSLYT 83	2	35.3	81.0	61	74.4	1.8	1	15.2	5.94	40.7	158	65.4	134	17	26
4978	37 RCSLYT 108	2	35.6	75.4	73	77.3	1.6	1	14.4	5.76	41.4	115	65.5	151	20	14
4979	38 RCSLYT Garnet	2	37.0	89.7	76	77.3	1.6	1	14.6	5.54	39.1	140	65.3	183	15	31
4980	39 RCSLYT 54	2	36.0	80.9	76	75.4	1.5	1	15.3	5.64	38.6	124	61.7	298	15	31
4981	40 RCSLYT Garnet	2	38.6	93.5	73	77.8	1.7	1	14.4	5.52	39.9	136	64.6	175	19	21
4982	41 RCSLYT Harrington	2	35.4	80.6	70	76.4	1.5	1	14.5	5.66	40.3	111	66.2	216	20	14
4983	42 RCSLYT 30	2	38.2	78.6	67	77.5	1.5	1	14.3	5.68	41.6	104	64.6	281	19	21
4984	43 RCSLYT 78	2	38.3	84.2	64	74.9	1.5	1	15.4	5.53	37.4	183	65.6	390	7	51
4985	44 RCSLYT 39	2	36.7	87.0	74	72.8	1.4	1	14.8	4.30	29.6	119	46.7	137	26	6
4986	45 RCSLYT Baronesse	2	36.8	88.8	69	73.6	*2.5	2	15.1	4.28	29.5	102	44.0	142	22	11
4987	46 RCSLYT 130	2	36.2	77.1	62	75.1	1.6	1	14.9	5.62	39.0	128	55.0	220	19	21
4988	47 RCSLYT 10	2	38.5	71.6	64	74.8	1.5	1	14.5	5.10	35.8	140	58.9	491	11	41
4989	48 RCSLYT 50	2	43.7	94.1	67	76.2	1.6	1	14.8	5.33	38.2	94	59.2	309	15	31
4990	49 RCSLYT 58	2	36.1	63.7	64	75.4	1.6	1	14.4	5.32	37.9	107	60.8	313	9	46
4991	50 RCSLYT 127	2	37.6	78.1	68	74.6	1.3	1	14.2	4.76	35.7	95	54.7	557	17	26
4992	51 RCSLYT Xena	2	40.2	95.6	65	77.0	1.3	1	14.4	4.76	34.6	98	49.2	281	32	1
4993	52 RCSLYT 40	2	43.8	88.4	64	77.2	1.5	1	14.6	5.89	42.7	91	67.0	277	21	12
4938	HARRINGTON MALT CHECK	2	34.0	80.3	86	80.1	1.3	1	11.7	5.15	48.1	101	62.6	90	33	
4939	MOREX MALT CHECK	6	31.5	70.7	75	79.3	2.0	1	12.8	6.20	53.7	143	67.7	80	31	
4970	HARRINGTON MALT CHECK	2	34.5	79.8	87	80.4	1.4	1	11.8	5.32	48.8	102	66.6	107	33	
4971	MOREX MALT CHECK	6	31.2	69.0	77	80.1	2.0	1	13.2	6.42	53.4	148	79.5	96	35	
Minima			31.9	57.1	56	72.8	1.0		13.4	3.95	27.0	74	41.8	124	7	
Maxima			43.8	95.6	81	78.9	1.9		16.9	5.94	42.7	183	70.9	557	32	
Means			37.5	82.0	70	75.8	1.5		14.8	5.14	36.0	116	58.2	276	17	
Standard Deviations			2.2	8.7	5	1.5	0.2		0.7	0.54	4.1	24	8.6	105	6	
Coefficients of Variation			5.9	10.6	8	2.0	11.6		4.8	10.57	11.3	20	14.9	38	37	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by P. Hayes and A. Corey, Oregon State University - Corvallis

2001 OSU RCSLYT MALTING SAMPLES - ABERDEEN, ID

Table 30

Lab No.	Variety or Selection	Rowed	Kernel Weight (mg)	on 6/64"	Barley Color (Agtron)	Malt Extract (%)	Wort Color	Wort Clarity	Barley Protein (%)	Wort Protein (%)	S/T (%)	DP (°ASBC)	Alpha-amylase (20°DU)	Beta-glucan (ppm)	Quality Score	Overall Rank
4994	53 RCSLYT Harrington	2	36.1	67.7	70	77.2	1.5	1	14.9	6.12	42.2	150	60.5	249	10	40
4995	54 RCSLYT 103	2	43.0	88.2	67	77.3	1.4	1	14.7	5.17	37.0	88	49.0	388	20	15
4996	55 RCSLYT 81	2	39.1	78.5	74	77.2	1.3	1	15.5	5.64	37.6	145	60.1	239	10	40
4997	56 RCSLYT Baronesse	2	41.3	82.6	68	73.8	1.7	2	15.8	4.31	27.8	111	44.5	403	19	18
4998	57 RCSLYT 1	2	45.0	86.3	65	73.3	1.2	1	16.2	4.54	28.8	127	43.9	658	31	2
4999	58RCSLYT 53	2	36.8	62.0	81	75.0	1.3	1	16.8	6.06	36.0	178	60.6	272	5	50
5000	59 RCSLYT 109	2	38.1	63.8	62	72.5	1.1	1	16.6	4.49	28.1	91	40.1	527	18	23
5001	60 RCSLYT 98	2	38.6	78.2	71	73.6	1.4	1	16.8	6.07	36.7	162	54.4	388	8	46
5004	61 RCSLYT Garnet	2	45.4	93.1	77	78.6	1.6	1	15.8	5.75	36.8	158	56.5	403	19	18
5005	62 RCSLYT 42	2	38.8	53.2	66	74.1	1.9	1	15.5	5.89	40.2	93	57.7	546	12	36
5006	63 RCSLYT 140	2	40.1	74.1	62	76.7	1.8	1	15.1	6.23	43.7	97	65.3	334	15	31
5007	64 RCSLYT 18	2	40.0	82.4	70	79.2	1.7	1	14.8	6.29	44.1	130	63.0	277	22	10
5008	65 RCSLYT Xena	2	42.5	87.7	71	76.3	1.4	1	14.1	4.13	29.7	73	44.0	489	17	26
5009	66 RCSLYT 86	2	40.9	79.4	72	74.9	1.7	2	15.7	4.67	29.8	100	41.1	573	23	8
5010	67 RCSLYT Xena	2	42.6	85.0	71	76.4	1.2	1	14.2	4.22	30.6	72	43.3	496	17	26
5011	68 RCSLYT 38	2	38.0	69.5	70	74.1	1.5	1	16.9	6.01	36.1	144	59.3	375	4	52
5012	69 RCSLYT 3	2	39.0	48.6	68	75.3	1.5	1	16.8	6.03	36.6	130	60.3	427	8	46
5013	70 RCSLYT 63	2	41.6	84.6	68	77.0	1.6	1	15.0	6.08	40.5	129	63.9	309	18	23
5014	71 RCSLYT Garnet	2	45.0	92.7	74	78.9	1.8	1	15.1	5.57	37.5	146	58.8	404	19	18
5015	72 RCSLYT 97	2	42.1	85.4	70	76.2	1.4	1	15.4	4.72	30.8	115	46.9	438	31	2
5016	73 RCSLYT 32	2	36.4	59.1	75	76.6	1.7	1	16.1	6.14	40.4	139	62.4	213	14	33
5017	74 RCSLYT 135	2	39.7	80.9	75	75.4	1.6	1	15.1	5.23	35.4	117	51.3	465	18	23
5018	75 RCSLYT Harrington	2	36.4	72.9	77	78.0	1.6	1	14.7	5.95	41.4	130	61.8	287	20	15
5019	76 RCSLYT 5	2	40.1	77.1	70	74.0	1.2	1	16.0	4.34	28.1	80	39.0	620	10	40
5020	77 RCSLYT Baronesse	2	39.6	81.2	68	73.6	1.8	2	15.3	4.10	27.1	74	38.5	411	7	49
5021	78 RCSLYT 120	2	38.3	64.5	70	74.8	1.8	1	16.3	5.67	35.2	118	48.7	364	21	12
5022	79 RCSLYT 139	2	38.5	67.0	71	76.9	1.7	1	15.9	6.00	38.9	139	59.0	373	11	38
5023	80 RCSLYT 47	2	43.8	81.6	65	79.4	1.6	1	14.8	5.39	38.0	89	61.9	426	17	26
5024	81 RCSLYT 112	2	39.7	85.6	70	77.8	1.6	1	14.3	5.49	40.8	181	60.7	380	15	31
5025	82 RCSLYT Harrington	2	40.1	87.2	69	79.7	1.6	1	14.1	5.68	40.4	123	61.0	294	34	1

Table 30

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight (mg)	6/64" (%)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)						
5026	83 RCSLYT 75	2	44.3	77.1	58	74.3	1.5	1	16.3	5.54	34.6	124	54.4	594	21	12
5027	84 RCSLYT Xena	2	44.3	87.9	71	77.1	1.2	1	14.6	4.07	29.3	77	42.9	574	17	26
5028	85 RCSLYT 95	2	34.3	43.7	73	72.3	1.4	1	16.8	4.51	28.3	192	39.6	332	13	34
5029	86 RCSLYT Baronesse	2	41.3	74.4	71	74.1	1.9	2	15.4	4.25	28.6	90	43.1	469	12	36
5030	87 RCSLYT 36	2	36.5	48.2	75	75.5	1.5	1	15.2	4.88	32.8	93	51.1	458	13	34
5031	88 RCSLYT 83	2	38.9	80.5	65	74.6	1.6	1	15.1	5.73	39.3	187	57.0	223	10	40
5032	89 RCSLYT 108	2	35.8	69.0	73	76.4	1.4	1	15.6	5.63	37.1	150	59.8	222	8	46
5033	90 RCSLYT Garnet	2	46.1	96.8	72	79.3	1.4	1	14.9	5.46	38.7	167	55.3	323	19	18
5036	91 RCSLYT 54	2	41.9	90.1	77	78.0	1.5	1	14.9	5.85	41.2	132	58.2	406	23	8
5037	92 RCSLYT Garnet	2	45.6	95.1	74	78.8	1.5	1	13.9	5.41	40.3	150	58.5	360	24	6
5038	93 RCSLYT Harrington	2	36.2	67.9	69	77.9	1.6	1	15.2	6.05	39.9	155	61.8	250	5	50
5039	94 RCSLYT 30	2	41.7	77.9	63	78.2	1.7	1	15.4	6.37	43.0	139	64.6	301	19	18
5040	95 RCSLYT 78	2	40.4	73.2	65	75.3	1.7	1	15.4	5.95	39.6	*254	63.8	464	9	44
5041	96 RCSLYT 39	2	43.6	81.2	71	73.9	1.2	1	16.4	4.73	29.9	138	45.6	378	25	5
5042	97 RCSLYT Baronesse	2	41.0	85.4	67	74.6	1.7	2	15.1	4.19	28.7	97	39.9	372	16	30
5043	98 RCSLYT 130	2	38.5	79.9	68	77.2	1.4	1	15.6	5.60	36.3	149	50.1	331	11	38
5044	99 RCSLYT 10	2	34.7	60.8	71	73.9	1.6	1	15.5	5.59	37.3	176	54.7	572	9	44
5045	100 RCSLYT 50	2	46.6	93.6	74	78.2	1.6	1	15.0	5.86	40.9	127	58.0	379	31	2
5046	101 RCSLYT 58	2	41.7	84.9	72	77.5	1.4	1	14.3	5.16	37.6	114	54.0	380	20	15
5047	102 RCSLYT 127	2	41.8	82.1	75	76.3	1.3	1	14.1	4.81	34.6	103	51.1	598	21	12
5048	103 RCSLYT Xena	2	43.5	89.5	68	77.9	1.4	1	14.2	4.53	33.7	80	40.2	396	24	6
5049	104 RCSLYT 40	2	45.0	82.8	64	77.6	1.8	1	15.5	6.66	44.2	117	61.9	262	22	10
5002	HARRINGTON MALT CHECK	2	34.0	79.6	83	80.3	1.4	1	11.6	5.24	47.6	99	61.1	93	33	
5003	MOREX MALT CHECK	6	30.7	71.1	77	79.4	2.0	1	12.0	6.36	54.6	127	70.1	99	33	
5034	HARRINGTON MALT CHECK	2	35.2	80.2	85	80.2	1.2	1	11.6	5.14	47.7	101	59.7	106	33	
5035	MOREX MALT CHECK	6	31.5	69.0	79	79.6	1.8	1	12.5	6.10	51.9	140	73.3	103	37	
Minima			34.3	43.7	58	72.3	1.1		13.9	4.07	27.1	72	38.5	213	4	
Maxima			46.6	96.8	81	79.7	1.9		16.9	6.66	44.2	192	65.3	658	34	
Means			40.6	77.3	70	76.2	1.5		15.4	5.36	36.0	125	53.5	398	17	
Standard Deviations			3.1	12.4	4	2.0	0.2		0.8	0.72	5.0	32	8.4	112	7	
Coefficients of Variation			7.7	16.1	6	2.6	12.8		5.3	13.49	13.9	26	15.6	28	42	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by P. Hayes and A. Corey, Oregon State University - Corvallis

2001 OSU RCSLYT MALTING SAMPLES - PULLMAN, WA

Table 31

Lab No.	Variety or Selection	Rowed	Kernel Weight (mg)	on 6/64"	Barley Color (Agtron)	Malt Extract (%)	Wort Color	Wort Clarity	Barley Protein (%)	Wort Protein (%)	S/T (%)	DP (°ASBC)	Alpha-amylase (20°DU)	Beta-glucan (ppm)	Quality Score	Overall Rank
5050	105 RCSLYT Harrington	2	38.4	93.5	83	83.1	1.5	1	11.6	5.36	49.1	116	72.2	169	42	4
5051	106 RCSLYT 103	2	38.9	91.1	75	78.8	1.4	1	12.8	4.59	36.9	91	55.9	299	28	41
5052	107 RCSLYT 81	2	41.4	96.2	82	80.2	1.5	1	13.0	5.40	44.5	126	70.3	253	41	6
5053	108 RCSLYT Baronesse	2	40.4	94.4	80	78.5	2.1	2	12.7	4.06	34.2	93	45.9	184	29	40
5054	109 RCSLYT 1	2	42.7	92.3	82	75.9	1.5	1	13.7	4.35	32.4	120	48.6	444	26	46
5055	110 RCSLYT 53	2	40.6	96.9	82	80.8	1.5	1	13.0	5.35	43.2	122	67.9	173	41	6
5056	111 RCSLYT 109	2	41.5	94.0	60	77.0	1.2	1	13.2	4.03	32.5	97	44.3	475	27	44
5057	112 RCSLYT 98	2	40.7	96.5	70	78.5	1.4	1	13.6	5.49	43.1	148	66.9	269	26	46
5058	113 RCSLYT Garnet	2	41.1	95.8	82	80.9	1.6	1	12.9	5.13	41.9	146	62.2	233	34	28
5059	114 RCSLYT 42	2	41.4	*88.8	65	78.3	1.7	1	13.2	5.08	41.2	90	62.0	*635	30	38
5060	115 RCSLYT 140	2	42.0	96.1	59	81.4	1.6	1	12.5	5.40	43.8	108	70.3	187	41	6
5061	116 RCSLYT 18	2	40.5	95.6	75	83.4	1.2	1	12.7	5.38	45.1	126	66.7	208	44	3
5062	117 RCSLYT Xena	2	41.3	95.2	78	80.5	1.2	1	12.4	4.19	36.6	93	50.4	229	35	26
5063	118 RCSLYT 86	2	41.1	96.9	77	79.9	1.2	1	13.2	4.55	36.2	116	43.3	289	47	1
5064	119 RCSLYT Xena	2	42.3	94.6	74	80.0	1.3	1	12.7	4.43	37.5	95	52.7	242	38	19
5065	120 RCSLYT 38	2	40.4	95.4	77	78.8	1.6	1	13.4	5.53	42.7	128	72.9	307	35	26
5068	121 RCSLYT 3	2	40.1	*87.1	73	78.4	1.8	1	*15.3	5.90	40.1	127	65.8	362	28	41
5069	122 RCSLYT 63	2	42.8	97.9	77	80.6	1.8	1	13.6	5.49	42.3	104	69.3	228	34	28
5070	123 RCSLYT Garnet	2	41.5	97.1	78	80.1	1.7	1	13.9	5.40	39.3	129	61.9	301	28	41
5071	124 RCSLYT 97	2	43.0	97.7	78	78.2	1.4	1	13.9	4.88	37.6	117	54.5	358	34	28
5072	125 RCSLYT 32	2	40.9	95.1	83	82.0	1.5	1	12.2	5.30	46.5	106	70.6	180	41	6
5073	126 RCSLYT 135	2	39.1	92.6	81	79.3	1.5	1	12.8	5.04	40.7	118	61.6	286	40	13
5074	127 RCSLYT Harrington	2	40.7	96.1	81	82.1	1.8	1	13.0	5.67	46.0	110	68.3	187	39	14
5075	128 RCSLYT 5	2	43.7	96.2	75	77.8	1.3	2	13.5	4.25	33.5	104	43.6	452	27	44
5076	129 RCSLYT Baronesse	2	41.7	96.4	80	79.1	n.d.	3	12.1	4.05	35.3	79	45.8	167	33	33
5077	130 RCSLYT 120	2	42.9	95.3	63	77.9	1.7	1	14.4	5.54	39.9	110	57.8	348	22	50
5078	131 RCSLYT 139	2	42.7	96.7	81	81.0	2.0	1	13.1	5.74	47.4	103	63.7	249	37	21
5079	132 RCSLYT 47	2	41.9	94.1	71	82.7	1.6	1	12.4	5.22	43.7	81	69.4	287	42	4
5080	133 RCSLYT 112	2	42.7	97.5	74	80.4	1.6	1	12.6	5.27	44.1	138	69.8	295	39	14
5081	134 RCSLYT Harrington	2	39.3	96.1	80	81.7	1.6	1	13.0	5.55	43.6	108	71.1	200	39	14

Table 31

Lab No.	Variety or Selection	Rowed	Kernel Weight (mg)	on 6/64"	Barley Color (Agtron)	Malt Extract (%)	Wort Color	Wort Clarity	Barley Protein (%)	Wort Protein (%)	S/T (%)	DP (°ASBC)	Alpha-amylase (20°DU)	Beta-glucan (ppm)	Quality Score	Overall Rank
5082	135 RCSLYT 75	2	45.2	95.0	67	77.5	1.6	1	13.9	5.38	38.7	113	65.8	414	22	50
5083	136 RCSLYT Xena	2	43.1	97.0	72	80.1	1.3	1	12.4	4.38	36.0	77	50.5	257	36	24
5084	137 RCSLYT 95	2	39.8	94.7	84	78.8	1.2	1	12.5	4.17	34.7	135	46.5	234	37	21
5085	138 RCSLYT Baronesse	2	43.7	98.4	73	77.4	n.d.	3	13.7	4.34	32.1	85	46.6	221	20	52
5086	139 RCSLYT 36	2	37.8	*86.5	78	75.9	1.5	1	13.2	5.16	40.0	104	63.9	277	25	48
5087	140 RCSLYT 83	2	41.8	98.3	66	79.4	1.6	1	13.4	5.61	42.5	150	64.6	193	34	28
5088	141 RCSLYT 108	2	40.5	96.1	80	81.5	1.5	1	13.3	5.41	43.1	103	67.3	184	41	6
5089	142 RCSLYT Garnet	2	42.3	97.6	80	80.4	1.6	1	13.1	5.39	41.7	122	62.3	340	39	14
5090	143 RCSLYT 54	2	42.5	97.1	78	80.5	1.5	1	13.6	5.77	44.1	110	62.2	318	34	28
5091	144 RCSLYT Garnet	2	42.2	96.9	80	81.3	1.5	1	13.2	5.07	40.0	114	61.1	320	46	2
5092	145 RCSLYT Harrington	2	41.3	96.2	78	82.1	1.5	1	12.6	5.44	46.4	105	69.0	244	36	24
5093	146 RCSLYT 30	2	41.9	96.0	67	81.5	1.6	1	13.5	6.04	45.5	105	73.9	201	38	19
5094	147 RCSLYT 78	2	43.9	96.4	70	79.7	1.4	1	13.3	5.26	42.7	*176	68.3	444	32	35
5095	148 RCSLYT 39	2	40.3	94.4	78	77.6	1.4	1	12.8	4.55	36.9	107	55.6	251	30	38
5096	149 RCSLYT Baronesse	2	41.1	94.2	78	79.5	2.1	2	11.2	3.97	36.8	80	46.1	117	41	6
5097	150 RCSLYT 130	2	39.7	95.2	72	80.2	1.4	1	12.9	5.17	41.3	112	57.5	230	39	14
5100	151 RCSLYT 10	2	40.9	91.0	80	79.1	1.6	1	11.8	4.78	42.0	143	65.3	450	37	21
5101	152 RCSLYT 50	2	*46.8	98.5	77	80.8	1.6	1	12.4	5.31	45.0	96	66.2	303	41	6
5102	153 RCSLYT 58	2	39.5	90.1	73	78.0	1.4	1	13.2	4.97	38.4	113	59.7	314	32	35
5103	154 RCSLYT 127	2	39.9	93.0	76	77.0	1.3	1	13.0	4.56	35.4	101	58.8	554	25	48
5104	155 RCSLYT Xena	2	40.8	95.1	74	80.4	1.4	2	12.1	4.10	35.5	80	50.1	334	31	37
5105	156 RCSLYT 40	2	44.5	97.2	75	81.8	1.7	1	12.9	5.91	48.5	90	69.7	238	33	33
5066	HARRINGTON MALT CHECK	2	34.7	81.6	86	80.3	1.5	1	11.6	5.38	48.1	100	62.6	117	33	
5067	MOREX MALT CHECK	6	31.0	70.0	77	79.8	2.1	1	12.3	6.34	53.4	146	69.7	96	40	
5098	HARRINGTON MALT CHECK	2	34.9	81.2	87	79.8	1.3	1	11.6	5.28	49.3	91	61.6	89	29	
5099	MOREX MALT CHECK	6	31.0	70.7	75	79.4	1.9	1	12.3	6.24	54.5	134	66.2	83	37	
Minima			37.8	90.1	59	75.9	1.2		11.2	3.97	32.1	77	43.3	117	20	
Maxima			45.2	98.5	84	83.4	2.1		14.4	6.04	49.1	150	73.9	554	47	
Means			41.4	95.5	76	79.8	1.5		13.0	5.05	40.5	110	60.7	280	35	
Standard Deviations			1.5	1.9	6	1.8	0.2		0.6	0.57	4.4	18	9.1	93	7	
Coefficients of Variation			3.7	2.0	8	2.2	13.1		4.7	11.38	10.9	17	15.0	33	19	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by P. Hayes and A. Corey, Oregon State University - Corvallis

2001 OSU RCSLYT MALTING SAMPLES - SASKATOON, SK

Table 32

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort		S/T	DP (°ASBC)	Alpha-	Beta-	Quality Score	Overall Rank
			Weight (mg)	6/64" (%)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)	(%)		amylase (20°DU)	glucan (ppm)		
5106	157 RCSLYT Harrington	2	39.1	89.2	80	77.9	1.3	1	14.0	5.25	38.3	129	59.7	398	17	38
5107	158 RCSLYT 103	2	40.0	89.6	69	75.2	1.5	1	15.6	4.94	32.2	101	48.5	548	25	5
5108	159 RCSLYT 81	2	39.7	88.0	79	77.0	1.5	1	14.2	5.12	36.8	126	55.1	379	17	38
5109	160 RCSLYT Baronesse	2	41.4	92.0	76	74.0	n.d.	3	15.0	3.97	27.1	93	38.2	653	13	45
5110	161 RCSLYT 1	2	42.5	94.9	65	72.4	1.3	1	15.9	4.82	30.6	132	45.9	616	30	1
5111	162 RCSLYT 53	2	40.2	85.4	80	76.7	1.4	1	15.8	5.70	37.6	140	54.1	375	20	22
5112	163 RCSLYT 109	2	43.7	93.2	62	72.9	1.3	2	15.5	4.16	27.7	98	37.9	732	19	25
5113	164 RCSLYT 98	2	39.7	82.8	70	74.5	1.4	1	16.5	5.55	34.1	147	51.3	529	11	49
5114	165 RCSLYT Garnet	2	43.4	94.8	76	77.7	1.5	1	15.2	5.43	37.7	153	60.2	410	15	42
5115	166 RCSLYT 42	2	43.3	80.7	64	74.8	1.5	1	15.1	5.25	36.7	103	51.6	734	18	32
5116	167 RCSLYT 140	2	43.0	91.0	64	77.3	1.6	1	14.7	5.64	40.3	109	59.5	353	24	7
5117	168 RCSLYT 18	2	41.3	90.9	75	78.1	1.4	1	15.1	5.88	40.0	155	61.4	308	18	32
5118	169 RCSLYT Xena	2	42.2	93.4	76	75.9	1.4	2	14.1	4.23	31.4	81	40.4	521	18	32
5119	170 RCSLYT 86	2	40.6	84.7	80	75.1	n.d.	3	14.3	4.61	33.4	106	37.9	572	19	25
5120	171 RCSLYT Xena	2	42.2	89.4	77	76.4	1.7	2	13.4	4.34	34.1	83	41.4	519	21	19
5121	172 RCSLYT 38	2	39.0	81.9	77	74.6	1.4	2	15.1	5.25	34.8	146	55.0	489	6	52
5122	173 RCSLYT 3	2	41.5	*71.6	77	74.2	1.4	1	16.3	5.57	34.3	136	53.7	652	17	38
5123	174 RCSLYT 63	2	42.0	90.6	75	76.5	1.4	1	14.8	5.52	39.8	130	58.0	423	22	12
5124	175 RCSLYT Garnet	2	43.9	95.7	76	78.2	1.4	1	14.7	5.19	36.0	157	59.2	389	19	25
5125	176 RCSLYT 97	2	43.3	91.5	77	75.7	1.4	2	15.0	4.70	32.8	133	47.8	521	29	2
5126	177 RCSLYT 32	2	41.8	90.8	78	77.6	1.2	1	15.0	5.00	35.7	141	56.3	418	18	32
5127	178 RCSLYT 135	2	39.0	86.6	78	74.3	1.3	1	15.1	4.98	33.9	137	53.2	543	22	12
5128	179 RCSLYT Harrington	2	39.5	89.3	76	76.8	1.4	1	14.5	5.59	40.5	138	63.8	381	19	25
5129	180 RCSLYT 5	2	41.3	85.0	75	74.3	1.6	2	14.6	4.31	30.1	107	40.7	644	19	25
5132	181 RCSLYT Baronesse	2	41.1	92.8	76	74.0	n.d.	3	14.8	4.19	28.7	87	39.8	540	13	45
5133	182 RCSLYT 120	2	40.3	83.7	68	74.4	1.6	1	16.0	5.62	36.2	129	50.5	554	20	22
5134	183 RCSLYT 139	2	44.2	91.8	76	76.4	1.6	1	15.0	5.64	38.2	128	55.8	580	22	12
5135	184 RCSLYT 47	2	41.7	76.0	74	76.5	1.4	1	14.2	5.14	36.3	91	56.6	459	9	51
5136	185 RCSLYT 112	2	39.6	90.4	74	76.8	1.4	1	14.5	5.20	37.9	173	57.7	455	12	47
5137	186 RCSLYT Harrington	2	40.5	92.3	78	77.8	1.4	1	14.1	5.57	39.8	123	59.6	377	21	19

Table 32

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein (%)	Protein (%)		amylase (20°DU)	glucan (ppm)	Quality Score	Rank	
5138	187 RCSLYT 75	2	43.4	79.1	64	73.0	1.6	1	16.6	5.80	35.6	145	58.2	602	10	50
5139	188 RCSLYT Xena	2	45.0	95.2	73	76.0	1.3	1	13.9	4.34	32.2	90	45.1	509	19	25
5140	189 RCSLYT 95	2	41.4	92.3	78	74.8	1.1	1	14.8	4.21	29.3	170	39.1	502	15	42
5141	190 RCSLYT Baronesse	2	42.1	95.8	75	73.0	n.d.	3	15.7	4.24	28.0	100	40.2	568	21	19
5142	191 RCSLYT 36	2	37.5	*63.8	76	74.7	1.4	1	15.3	4.87	33.5	111	52.7	605	20	22
5143	192 RCSLYT 83	2	41.1	93.1	72	75.6	1.5	1	14.6	5.66	39.1	162	56.9	333	14	44
5144	193 RCSLYT 108	2	40.4	93.0	81	78.0	1.4	1	14.3	5.51	40.5	119	59.0	334	26	3
5145	194 RCSLYT Garnet	2	43.6	95.6	75	78.2	1.5	1	14.1	5.42	38.6	127	61.1	395	26	3
5146	195 RCSLYT 54	2	41.1	86.6	81	76.4	1.4	1	14.3	5.34	38.1	116	56.0	503	19	25
5147	196 RCSLYT Garnet	2	43.2	94.2	72	78.4	1.5	1	14.2	5.44	39.5	133	62.2	377	23	11
5148	197 RCSLYT Harrington	2	40.9	93.7	77	78.1	1.3	1	14.5	5.34	38.6	122	63.7	407	25	5
5149	198 RCSLYT 30	2	42.1	87.4	72	77.7	1.6	1	14.6	6.06	42.7	113	64.3	364	22	12
5150	199 RCSLYT 78	2	41.4	87.6	71	75.1	1.4	1	14.0	5.19	37.3	188	62.7	531	12	47
5151	200 RCSLYT 39	2	40.6	93.1	66	74.0	1.1	1	15.2	4.31	29.3	133	47.0	378	22	12
5152	201 RCSLYT Baronesse	2	42.6	97.0	75	73.2	n.d.	3	15.9	4.12	26.6	111	43.4	571	24	7
5153	202 RCSLYT 130	2	40.1	91.3	73	75.9	1.3	1	15.3	5.54	36.6	144	50.2	437	18	32
5154	203 RCSLYT 10	2	41.3	81.3	76	75.1	1.2	1	14.4	4.65	32.5	150	50.2	718	17	38
5155	204 RCSLYT 50	2	46.9	96.2	78	77.0	1.3	1	15.0	5.46	37.5	123	56.5	517	22	12
5156	205 RCSLYT 58	2	39.5	79.5	71	75.0	1.4	1	15.2	5.22	35.2	123	54.8	525	18	32
5157	206 RCSLYT 127	2	40.6	82.9	79	75.5	1.4	1	14.5	4.82	34.2	116	51.9	670	24	7
5158	207 RCSLYT Xena	2	42.2	91.7	74	76.3	1.5	1	13.3	4.18	31.9	86	41.1	536	24	7
5159	208 RCSLYT 40	2	45.2	88.5	76	77.0	*2.0	1	14.7	6.42	45.2	113	62.4	341	22	12
5130	HARRINGTON MALT CHECK	2	35.1	79.3	86	80.1	1.3	1	11.2	5.34	52.0	95	60.8	105	29	
5131	MOREX MALT CHECK	6	31.1	72.9	78	79.5	2.1	1	12.1	6.53	57.4	129	69.7	121	33	
Minima			37.5	76.0	62	72.4	1.1		13.3	3.97	26.6	81	37.9	308	6	
Maxima			46.9	97.0	81	78.4	1.7		16.6	6.42	45.2	188	64.3	734	30	
Means			41.6	89.5	74	75.8	1.4		14.9	5.09	35.3	125	52.5	496	19	
Standard Deviations			1.8	5.1	5	1.6	0.1		0.7	0.59	4.2	24	8.0	112	5	
Coefficients of Variation			4.3	5.7	6	2.1	9.2		4.9	11.60	11.9	20	15.2	23	26	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by P. Hayes and A. Corey, Oregon State University - Corvallis

2001 OSU RCSLYT MALTING SAMPLES - BOZEMAN, MT

Table 33

Lab No.	Variety or Selection	Rowed	Kernel Weight (mg)	on 6/64"	Barley Color	Malt Extract (%)	Wort Color	Wort Clarity	Barley Protein (%)	Wort Protein (%)	S/T (%)	DP (°ASBC)	Alpha-amylase (20°DU)	Beta-glucan (ppm)	Quality Score	Overall Rank
5160	209 RCSLYT Harrington	2	40.0	89.4	82	80.7	1.2	1	11.9	5.12	45.3	118	61.1	292	44	7
5161	210 RCSLYT 103	2	42.8	90.7	74	78.4	1.3	1	12.1	4.66	41.0	59	48.2	356	45	5
5164	211 RCSLYT 81	2	43.7	94.4	80	79.9	1.3	1	12.3	5.26	45.2	113	62.3	311	44	7
5165	212 RCSLYT Baronesse	2	39.0	77.1	78	75.0	1.8	2	12.6	3.70	30.9	73	36.3	420	12	51
5166	213 RCSLYT 1	2	41.4	75.7	68	*73.0	1.2	1	14.0	3.95	29.0	98	40.8	753	17	45
5167	214 RCSLYT 53	2	40.3	79.9	86	78.4	1.2	1	12.9	5.17	41.3	131	55.3	314	27	29
5168	215 RCSLYT 109	2	39.9	73.5	61	75.2	1.2	1	13.1	3.95	31.3	79	34.8	633	9	52
5169	216 RCSLYT 98	2	40.7	85.6	77	77.7	1.2	1	13.1	5.10	40.5	133	52.9	488	34	19
5170	217 RCSLYT Garnet	2	39.8	88.8	84	79.3	1.3	1	12.5	4.94	40.0	136	61.7	420	27	29
5171	218 RCSLYT 42	2	43.7	74.9	61	76.3	1.5	1	13.7	4.86	37.3	85	50.9	717	18	44
5172	219 RCSLYT 140	2	43.7	88.7	64	79.1	1.4	1	12.8	5.10	40.1	87	60.4	415	27	29
5173	220 RCSLYT 18	2	41.9	91.4	78	80.5	1.3	1	13.0	5.53	44.0	131	63.0	235	38	13
5174	221 RCSLYT Xena	2	42.2	87.6	79	78.4	1.2	1	11.6	3.58	31.9	73	38.3	525	28	28
5175	222 RCSLYT 86	2	43.1	87.1	82	77.9	1.4	2	12.3	4.18	34.6	103	37.6	490	27	29
5176	223 RCSLYT Xena	2	41.2	81.8	82	77.7	1.2	1	11.6	3.71	32.9	77	40.7	528	23	38
5177	224 RCSLYT 38	2	43.7	94.8	73	78.0	1.3	1	13.9	5.36	39.4	120	65.4	412	22	39
5178	225 RCSLYT 3	2	39.5	62.9	81	77.2	1.4	1	14.0	5.35	39.3	125	62.8	497	14	50
5179	226 RCSLYT 63	2	42.4	89.9	79	78.6	1.3	1	13.4	5.06	39.6	108	61.9	440	30	25
5180	227 RCSLYT Garnet	2	40.6	90.4	82	79.1	1.3	1	13.0	5.01	39.4	130	59.4	431	31	22
5181	228 RCSLYT 97	2	44.2	93.0	80	77.8	1.2	1	13.2	4.42	35.6	119	46.9	482	38	13
5182	229 RCSLYT 32	2	40.3	85.1	82	79.3	1.3	1	12.9	4.78	39.4	124	57.0	289	35	18
5183	230 RCSLYT 135	2	41.2	90.7	82	77.2	1.2	1	13.3	4.58	35.5	109	54.3	444	31	22
5184	231 RCSLYT Harrington	2	37.6	80.1	88	80.3	1.3	1	12.1	5.09	44.2	121	63.0	263	41	11
5185	232 RCSLYT 5	2	41.2	77.7	86	76.0	1.2	1	12.3	3.85	31.7	88	33.4	533	16	47
5186	233 RCSLYT Baronesse	2	37.7	75.1	84	75.8	1.7	2	12.1	3.79	32.1	75	36.5	359	15	48
5187	234 RCSLYT 120	2	42.4	88.9	68	78.0	1.3	1	13.1	4.88	38.4	106	45.3	447	37	16
5188	235 RCSLYT 139	2	41.7	79.0	78	78.6	1.3	1	13.3	5.04	40.1	139	55.4	369	31	22
5189	236 RCSLYT 47	2	40.5	73.4	80	79.7	1.4	1	12.9	4.78	39.8	93	63.2	358	25	35
5190	237 RCSLYT 112	2	41.3	90.7	77	79.3	1.3	1	12.8	4.78	39.8	180	57.3	378	27	29
5191	238 RCSLYT Harrington	2	35.9	69.7	83	79.4	1.4	1	12.6	5.18	42.7	134	61.5	279	26	34

Table 33

Lab No.	Variety or Selection	Rowed	Kernel Weight (mg)	on 6/64"	Barley Color (Agtron)	Malt Extract (%)	Wort Color	Wort Clarity	Barley Protein (%)	Wort Protein (%)	S/T (%)	DP (°ASBC)	Alpha-amylase (20°DU)	Beta-glucan (ppm)	Quality Score	Overall Rank
5192	239 RCSLYT 75	2	44.1	78.8	73	76.9	1.5	1	14.3	5.43	39.9	128	61.5	459	17	45
5193	240 RCSLYT Xena	2	41.0	83.2	81	77.7	1.2	1	12.1	3.75	32.1	69	38.2	591	20	42
5196	241 RCSLYT 95	2	42.1	85.9	81	77.1	1.1	1	12.3	3.86	31.6	154	36.8	435	24	37
5197	242 RCSLYT Baronesse	2	37.8	70.6	81	75.6	*2.0	2	11.9	3.88	33.7	70	36.5	371	15	48
5198	243 RCSLYT 36	2	36.2	60.4	79	76.6	1.2	1	12.2	4.30	37.3	92	48.6	524	19	43
5199	244 RCSLYT 83	2	42.4	92.7	70	78.7	1.4	1	12.4	5.20	43.1	124	52.4	268	48	2
5200	245 RCSLYT 108	2	40.6	88.7	83	80.5	1.3	1	11.7	5.01	45.1	103	57.1	307	42	10
5201	246 RCSLYT Garnet	2	43.4	93.0	78	80.2	1.4	1	12.4	4.99	41.4	115	55.7	430	48	2
5202	247 RCSLYT 54	2	40.9	83.4	82	78.6	1.3	1	12.1	4.99	42.4	109	52.1	492	40	12
5203	248 RCSLYT Garnet	2	43.6	93.2	85	80.1	1.4	1	12.2	4.88	43.0	109	55.0	430	45	5
5204	249 RCSLYT Harrington	2	40.3	89.0	84	80.7	1.4	1	11.6	4.99	45.7	95	62.3	375	38	13
5205	250 RCSLYT 30	2	43.6	93.4	74	80.2	1.7	1	12.6	5.80	49.0	95	66.5	264	30	25
5206	251 RCSLYT 78	2	43.5	92.3	76	77.9	1.6	1	11.8	5.27	46.7	166	60.4	442	25	35
5207	252 RCSLYT 39	2	43.6	93.3	73	77.0	1.2	1	12.2	4.08	34.8	107	42.1	403	33	21
5208	253 RCSLYT Baronesse	2	41.6	89.6	78	76.9	*1.9	2	11.8	3.78	33.3	72	38.5	365	22	39
5209	254 RCSLYT 130	2	43.1	93.8	70	79.2	1.4	1	12.8	5.12	42.3	114	48.5	332	43	9
5210	255 RCSLYT 10	2	42.7	81.8	78	78.6	1.4	1	11.4	4.54	40.4	127	49.6	563	47	4
5211	256 RCSLYT 50	2	47.0	91.1	79	79.9	1.4	1	12.2	4.98	42.5	96	54.3	402	49	1
5212	257 RCSLYT 58	2	41.0	80.6	76	79.2	1.4	1	12.0	4.83	40.4	92	53.4	361	36	17
5213	258 RCSLYT 127	2	40.3	79.0	80	77.6	1.2	1	12.4	4.44	37.4	90	45.4	582	30	25
5214	259 RCSLYT Xena	2	42.3	84.5	81	77.7	1.1	1	11.5	3.67	33.4	72	37.2	539	21	41
5215	260 RCSLYT 40	2	47.6	93.0	76	79.5	1.6	1	13.1	5.99	46.5	106	63.7	273	34	19
5162	HARRINGTON MALT CHECK	2	34.9	80.2	79	80.0	1.3	1	11.7	5.32	48.8	107	65.0	66	29	
5163	MOREX MALT CHECK	6	31.2	71.8	78	79.9	1.9	1	12.1	6.40	56.4	140	78.5	59	36	
5194	HARRINGTON MALT CHECK	2	34.2	82.4	82	80.2	1.4	1	11.5	5.34	50.0	90	64.2	71	25	
5195	MOREX MALT CHECK	6	31.1	71.3	74	79.4	2.0	1	12.2	6.30	54.0	124	76.9	78	29	
Minima			35.9	60.4	61	75.0	1.1		11.4	3.58	29.0	59	33.4	235	9	
Maxima			47.6	94.8	88	80.7	1.8		14.3	5.99	49.0	180	66.5	753	49	
Means			41.6	84.6	78	78.3	1.3		12.6	4.70	38.9	107	51.6	425	30	
Standard Deviations			2.3	8.3	6	1.5	0.1		0.7	0.61	4.9	26	10.0	114	11	
Coefficients of Variation			5.5	9.8	8	1.9	10.9		5.5	13.03	12.5	24	19.4	27	35	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by P. Hayes and A. Corey, Oregon State University - Corvallis

2001 HARRINGTON/BARONESSE QTL MALTING ANALYSIS - ROYAL SLOPE, WA

Table 34

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein						
		(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank		
1	BARONESSE REP1	2	43.3	90.6	69	*77.6	1.4	1	12.6	*3.90	31.8	71	41.8	489	24	80
2	BARONESSE REP2	2	45.5	90.0	70	78.2	1.5	1	13.1	4.02	31.6	76	42.6	442	28	64
3	BARONESSE REP3	2	42.3	88.9	72	78.4	1.4	1	13.0	*3.97	31.1	72	42.0	484	26	79
4	HARRINGTON REP1	2	41.4	86.5	77	80.4	1.5	1	13.8	5.93	45.6	106	68.9	465	28	64
5	HARRINGTON REP2	2	40.8	86.7	73	80.8	1.5	1	13.1	5.72	46.1	114	71.6	450	31	46
6	HARRINGTON REP3	2	43.2	92.5	75	80.9	1.6	1	13.8	5.73	43.8	95	70.2	574	31	46
7	NZDK7 REP1	2	40.5	85.8	75	78.8	1.1	1	13.5	4.39	33.5	96	46.3	649	29	56
8	NZDK7 REP2	2	40.6	84.5	75	79.1	1.2	1	13.4	4.43	33.9	94	46.0	608	29	56
9	NZDK7 REP3	2	40.4	81.2	71	78.7	1.2	1	13.6	4.63	35.3	102	48.6	625	28	64
10	NZDK14 REP1	2	46.4	90.1	72	80.8	1.8	1	12.9	5.99	47.2	93	67.1	520	27	70
11	NZDK14 REP2	2	40.8	81.3	68	80.7	1.7	1	14.0	5.88	44.7	94	70.2	545	21	89
12	NZDK14 REP3	2	42.4	87.5	71	81.5	1.7	1	12.1	5.89	49.2	91	69.7	479	33	34
13	NZDK55 REP1	2	44.0	89.1	71	78.9	1.5	1	13.1	5.42	43.6	93	78.1	530	27	70
14	NZDK55 REP2	2	43.8	88.4	74	81.5	1.7	1	12.7	5.74	47.3	101	78.2	441	32	38
15	NZDK55 REP3	2	42.6	89.8	71	81.3	1.6	1	13.4	5.62	42.7	95	80.3	538	37	13
16	NZDK56 REP1	2	44.8	90.3	77	81.7	1.6	1	13.0	5.83	47.7	98	78.4	398	34	30
17	NZDK56 REP2	2	41.9	88.3	74	80.9	1.7	1	13.5	5.58	42.4	103	81.4	400	33	34
18	NZDK56 REP3	2	41.8	89.2	72	81.1	1.6	1	12.9	5.53	46.3	94	86.3	397	27	70
19	NZDK59 REP1	2	41.1	89.8	80	80.7	1.9	1	12.8	5.32	42.2	94	67.0	471	29	56
20	NZDK59 REP2	2	40.7	87.2	80	80.1	1.4	1	13.0	4.77	37.3	95	65.1	471	32	38
21	NZDK59 REP3	2	43.1	93.2	77	79.3	1.5	1	13.7	5.35	39.9	101	66.5	455	23	84
22	NZDK62 REP1	2	43.6	90.5	78	79.5	1.3	1	13.1	4.71	38.0	91	58.6	527	31	46
24	NZDK62 REP2	2	45.6	94.8	80	79.7	1.4	1	13.2	4.97	39.6	94	59.2	461	31	46
25	NZDK62 REP3	2	44.0	92.1	76	78.4	1.3	1	14.5	4.90	34.6	92	55.6	619	23	84
26	NZDK64 REP1	2	45.6	94.9	73	80.9	1.6	1	12.9	5.27	41.0	80	76.0	510	32	38
27	NZDK64 REP2	2	42.1	94.7	75	80.5	1.8	1	13.8	5.78	45.2	91	75.2	410	27	70
28	NZDK64 REP3	2	44.1	93.5	77	80.7	1.8	1	13.2	5.95	46.9	87	73.5	399	27	70
29	NZDK97 REP1	2	46.3	94.1	76	81.2	1.6	1	14.0	5.44	39.9	103	77.1	576	29	56
30	NZDK97 REP2	2	46.7	95.9	72	80.3	1.8	1	14.3	6.05	42.8	108	78.4	424	28	64
31	NZDK97 REP3	2	43.7	92.1	73	81.6	1.7	1	13.5	5.68	42.6	102	79.5	427	39	4

Table 34

Lab No.	Variety or Selection	Rowed	Kernel Weight (mg)	on 6/64"	Barley Color (Agtron)	Malt Extract (%)	Wort Color	Wort Clarity	Barley Protein (%)	Wort Protein (%)	S/T (%)	DP (°ASBC)	Alpha-amylase (20°DU)	Beta-glucan (ppm)	Quality Score	Overall Rank
32	NZDK00-106 REP1	2	43.5	94.2	71	80.8	1.4	1	13.3	5.32	41.5	88	71.3	480	32	38
33	NZDK00-106 REP2	2	42.2	87.3	70	80.7	1.5	1	13.2	5.19	42.4	88	69.1	460	30	51
34	NZDK00-106 REP3	2	42.5	89.1	72	80.7	1.5	1	13.1	5.38	42.5	87	70.0	485	30	51
35	NZDK00-108 REP1	2	44.3	89.5	71	80.3	1.5	1	13.4	5.46	42.2	94	68.9	468	30	51
36	NZDK00-108 REP2	2	44.0	89.9	72	81.2	1.6	1	12.0	5.28	45.3	83	69.6	424	38	10
37	NZDK00-108 REP3	2	40.3	85.5	74	80.5	1.5	1	13.5	5.35	41.2	88	69.4	534	29	56
38	NZDK00-109 REP1	2	41.6	87.8	80	80.0	1.6	1	13.2	5.77	45.0	71	70.4	393	29	56
39	NZDK00-109 REP2	2	42.6	89.1	77	80.1	1.4	1	12.4	5.16	44.0	64	67.4	622	35	23
40	NZDK00-109 REP3	2	44.8	91.6	77	80.4	1.9	1	13.2	6.09	48.5	62	74.1	454	24	80
41	NZDK00-111 REP1	2	38.5	81.9	75	80.0	1.3	1	13.2	5.29	41.1	73	71.2	521	24	80
42	NZDK00-111 REP2	2	43.5	88.7	75	80.9	1.4	1	12.7	5.15	40.7	68	65.6	512	30	51
43	NZDK00-111 REP3	2	44.6	94.0	73	79.9	1.6	1	13.7	5.54	41.7	77	72.7	488	27	70
44	NZDK00-117 REP1	2	44.9	90.3	69	80.7	1.7	1	12.9	5.59	45.1	94	79.2	431	32	38
47	NZDK00-117 REP3	2	45.0	92.4	64	80.1	1.5	1	13.5	5.70	42.7	99	77.5	413	36	17
48	NZDK00-123 REP1	2	43.0	89.5	71	81.0	1.7	1	13.0	5.88	45.5	104	77.2	380	37	13
49	NZDK00-123 REP2	2	42.8	87.1	75	81.5	1.5	1	12.6	5.61	44.8	92	73.4	478	33	34
50	NZDK00-123 REP3	2	41.8	89.0	73	81.6	1.5	1	13.4	5.48	42.1	94	75.0	512	32	38
51	NZDK00-137 REP1	2	43.3	91.0	78	80.9	1.5	1	13.4	5.36	42.2	96	71.6	468	36	17
52	NZDK00-137 REP2	2	42.7	91.6	74	80.2	1.4	1	13.4	5.25	42.0	93	64.5	575	32	38
53	NZDK00-137 REP3	2	41.5	87.9	75	80.0	1.3	1	12.5	5.32	43.6	99	64.1	540	33	34
54	NZDK00-146 REP1	2	42.5	91.1	74	81.1	1.5	1	13.3	5.36	42.0	91	64.6	637	35	23
55	NZDK00-146 REP2	2	40.3	89.2	73	81.2	1.4	1	12.8	5.42	44.1	98	66.3	549	36	17
56	NZDK00-146 REP3	2	37.8	82.7	73	80.6	1.5	1	13.2	5.53	44.4	90	67.1	538	22	87
57	NZDK00-148 REP1	2	44.1	93.6	74	80.9	1.7	1	13.3	5.82	44.6	109	69.2	346	36	17
58	NZDK00-148 REP2	2	42.8	92.1	77	80.4	1.4	1	13.5	5.62	44.4	95	64.5	488	32	38
59	NZDK00-148 REP3	2	45.2	95.2	69	80.5	1.5	1	13.3	5.89	45.9	104	67.9	375	36	17
60	NZDK00-150 REP1	2	42.4	88.4	69	80.8	1.6	1	12.9	5.47	44.1	91	63.1	616	30	51
61	NZDK00-150 REP2	2	38.5	82.5	74	80.6	1.4	1	13.0	5.26	41.7	99	64.4	583	28	64
62	NZDK00-150 REP3	2	44.6	93.2	67	79.1	1.7	1	*15.0	6.11	42.1	113	70.8	489	28	64
63	NZDK00-151 REP1	2	42.2	90.5	77	81.6	1.5	1	12.9	5.43	43.1	85	62.9	601	35	23

Table 34

Lab No.	Variety or Selection	Rowed	Kernel Weight (mg)	on 6/64"	Barley Color	Malt Extract (%)	Wort Color	Wort Clarity	Barley Protein (%)	Wort Protein (%)	S/T (%)	DP (°ASBC)	Alpha-amylase (20°DU)	Beta-glucan (ppm)	Quality Score	Overall Rank
64	NZDK00-151 REP2	2	44.9	93.8	73	80.8	1.7	1	13.6	5.82	43.8	95	69.7	426	27	70
65	NZDK00-151 REP3	2	41.8	89.1	70	80.8	1.6	1	13.3	5.46	42.1	88	64.2	579	29	56
66	NZDK00-153 REP1	2	39.9	89.5	73	81.2	1.5	1	13.0	5.51	44.8	101	67.4	529	34	30
67	NZDK00-153 REP2	2	41.8	91.0	74	80.3	1.4	1	12.8	5.27	43.4	102	64.0	495	35	23
68	NZDK00-153 REP3	2	44.0	93.8	75	79.6	1.7	1	14.1	6.44	46.7	108	70.5	419	23	84
69	NZDK00-154 REP1	2	41.3	92.0	76	80.6	1.4	1	12.5	5.29	43.8	94	64.2	505	36	17
70	NZDK00-154 REP2	2	41.2	92.1	75	80.7	1.4	1	12.6	5.24	43.7	103	63.5	457	35	23
72	NZDK00-154 REP3	2	39.8	89.3	74	80.6	1.5	1	13.0	5.40	44.2	99	66.2	412	31	46
73	NZDK00-155 REP1	2	38.7	83.4	76	80.6	1.4	1	13.2	5.00	38.4	101	60.3	587	27	70
74	NZDK00-155 REP2	2	40.5	86.7	73	80.0	1.3	1	13.1	4.85	38.7	117	60.9	471	35	23
75	NZDK00-155 REP3	2	40.7	90.4	73	79.5	1.1	1	12.7	4.76	37.8	107	53.1	523	38	10
76	NZDK00-156 REP1	2	39.4	86.8	74	80.3	1.1	1	12.6	4.52	37.4	96	52.5	577	34	30
77	NZDK00-156 REP2	2	39.4	83.8	74	79.4	1.2	1	13.7	5.07	38.4	117	55.5	467	22	87
78	NZDK00-156 REP3	2	39.0	83.4	73	80.2	1.2	1	13.2	5.07	41.1	112	56.7	569	35	23
79	NZDK00-160 REP1	2	43.4	94.7	76	80.7	1.3	1	12.8	5.17	40.5	117	60.5	408	39	4
80	NZDK00-160 REP2	2	41.4	90.8	76	80.3	1.2	1	13.3	5.04	39.1	114	55.6	392	37	13
81	NZDK00-160 REP3	2	39.2	85.0	73	78.9	1.2	1	14.0	4.90	35.5	116	53.8	532	29	56
82	NZDK00-165 REP1	2	42.5	90.5	80	80.4	1.4	1	12.0	5.21	45.4	110	67.1	382	44	1
83	NZDK00-165 REP2	2	43.1	91.5	76	81.6	1.4	1	12.4	5.32	43.8	102	69.5	465	44	1
84	NZDK00-165 REP3	2	42.7	92.1	77	81.4	1.3	1	12.4	5.40	45.2	101	68.6	438	44	1
85	NZDK00-170 REP1	2	46.9	95.4	76	81.2	1.5	1	13.0	5.61	44.6	107	64.6	496	39	4
86	NZDK00-170 REP2	2	49.2	96.6	78	80.7	1.6	1	13.5	5.66	43.9	112	66.6	489	39	4
87	NZDK00-170 REP3	2	44.3	91.0	75	81.7	1.5	1	12.9	5.64	44.3	109	66.4	411	39	4
88	NZDK00-171 REP1	2	47.1	92.7	80	81.3	1.4	1	13.2	5.43	43.4	98	65.6	529	39	4
89	NZDK00-171 REP2	2	40.8	85.1	76	80.3	1.4	1	13.7	5.06	38.3	101	62.1	687	27	70
90	NZDK00-171 REP3	2	45.8	89.2	78	80.2	1.3	1	13.2	5.44	41.4	122	64.0	521	37	13
92	NZDK00-175 REP1	2	43.7	94.6	83	80.1	1.3	1	14.1	5.49	40.6	120	69.0	415	34	30
93	NZDK00-175 REP2	2	41.4	90.6	*87	80.3	1.4	1	13.4	5.41	42.2	120	68.6	338	38	10
94	NZDK00-175 REP3	2	42.1	89.7	82	79.0	1.3	1	14.1	5.35	38.5	119	74.6	450	24	80

Table 34

Lab No.	Variety or Selection	Rowed	Kernel Weight (mg)	on 6/64"	Barley Color (Agtron)	Malt Extract (%)	Wort Color (%)	Wort Clarity	Barley Protein (%)	Wort Protein (%)	S/T (%)	DP (°ASBC)	Alpha-amylase (20°DU)	Beta-glucan (ppm)	Quality Score	Overall Rank
23	HARRINGTON MALT CHECK	2	39.6	94.5	76	81.9	1.8	1	11.8	5.51	49.8	97	72.9	57	39	
45	HARRINGTON MALT CHECK	2	40.2	95.0	78	82.0	1.7	1	11.5	5.26	48.4	95	68.9	84	45	
46	HARRINGTON MALT CHECK	2	39.9	94.9	72	81.9	1.5	1	11.7	5.22	45.9	97	73.1	132	48	
71	HARRINGTON MALT CHECK	2	39.4	95.2	77	81.1	1.6	1	11.7	5.23	46.8	95	67.9	139	43	
91	HARRINGTON MALT CHECK	2	39.4	87.1	80	80.8	1.3	1	11.8	4.83	43.5	116	62.2	156	46	
Minima			37.8	81.2	64	78.2	1.1		12.0	4.02	31.1	62	41.8	338	21	
Maxima			49.2	96.6	83	81.7	1.9		14.5	6.44	49.2	122	86.3	687	44	
Means			42.7	89.8	74	80.4	1.5		13.2	5.40	42.1	97	66.6	490	32	
Standard Deviations			2.2	3.5	3	0.8	0.2		0.5	0.41	3.8	13	9.0	74	5	
Coefficients of Variation			5.2	3.9	5	1.0	12.2		3.7	7.66	8.9	13	13.4	15	16	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy

Samples Submitted by A. Kleinhofs, Washington State University - Pullman

2001 PRELIMINARY STATE UNIFORM NURSERY - ROYAL SLOPE, WA

Table 35

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight	6/64"	Color	Extract	Wort	Protein	Protein	S/T	DP	amylase	glucan			
(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(%)	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank	
395	99NZ 102	6	43.0	94.7	77	79.6	2.4	2	13.5	6.12	48.6	102	68.4	445	23	34
396	99NZ 339	6	38.2	91.5	75	78.5	2.1	1	13.6	5.77	45.3	118	51.5	418	36	14
397	99NZ 237	6	41.5	94.1	79	79.6	2.5	1	14.2	7.30	53.5	158	95.1	176	29	27
398	WA 7527-97	2	45.7	94.5	80	81.5	1.4	1	12.6	5.66	46.8	108	81.5	344	34	19
399	99NZ 60	6	46.7	98.0	84	79.6	2.4	2	13.7	6.40	49.1	122	77.6	387	23	34
400	99NZ 95	6	40.8	94.8	85	78.8	1.9	2	12.8	5.66	45.9	135	78.9	444	32	20
401	WA 10491-97	2	45.5	95.0	77	81.4	1.4	1	12.3	5.27	46.1	80	67.2	400	35	16
402	MOREX	6	40.4	95.6	85	80.3	1.1	1	14.1	5.23	37.9	177	60.3	405	29	27
403	WA 7770-98	2	45.1	93.2	83	80.9	1.2	1	12.7	5.42	42.8	126	79.4	512	39	8
404	99NZ 104	6	45.2	96.5	85	80.7	2.2	1	12.4	6.31	53.7	129	97.3	134	39	8
405	WA 8120-98	2	43.7	96.9	83	79.9	1.1	1	12.5	4.29	35.9	123	52.3	338	35	16
406	WA 7908-96	2	*54.5	96.0	88	79.8	1.4	1	13.4	5.69	43.8	141	64.6	599	32	20
407	99NZ 42	6	39.8	87.3	80	77.3	1.9	1	14.0	6.36	47.7	137	81.3	414	16	40
408	WA 9262-98	6	40.0	94.1	85	80.2	1.3	1	12.5	5.49	45.1	116	82.7	210	38	11
409	99NZ 66	6	42.6	92.7	81	80.6	2.3	1	13.5	6.92	53.7	122	84.3	400	27	32
410	WA 8532-98	6	38.9	96.1	90	77.6	1.5	2	11.3	3.69	33.4	100	39.6	774	21	36
411	WA 7758-97	2	48.2	99.3	69	77.3	1.3	2	12.0	3.65	32.5	100	38.9	604	29	27
412	WA 8439-97	2	48.4	96.6	71	79.0	1.1	1	12.7	3.75	30.5	63	42.0	612	28	30
413	WA 7194-98	2	46.2	96.0	86	81.3	1.1	1	13.0	4.96	40.2	103	57.2	522	43	5
414	99NZ 241	6	42.5	95.3	81	78.3	2.1	1	12.6	5.72	49.3	160	74.8	254	31	22
416	99NZ 7	6	41.6	91.3	77	77.8	1.8	1	13.8	5.95	46.2	153	82.9	444	27	32
417	WA 10497-97	2	47.2	96.1	78	80.5	1.1	1	11.9	4.44	39.3	100	53.4	337	44	4
418	99NZ 445	2	44.2	94.3	80	81.9	1.5	1	12.7	5.12	41.3	105	52.3	177	46	3
419	WA 7276-98	2	44.8	92.7	76	80.3	1.3	1	12.7	4.85	40.6	100	60.3	303	40	7
420	WA 9263-98	6	40.1	91.3	85	80.7	1.2	1	12.1	4.95	42.7	138	74.7	314	48	1
421	99NZ 569	2	44.8	91.9	77	80.9	1.2	1	12.0	3.98	35.3	86	47.1	371	36	14
422	WA 7751-98	2	44.6	92.1	79	80.7	1.4	1	11.8	4.80	42.4	92	77.5	562	41	6
423	WA 7779-98	2	40.7	91.8	87	78.8	1.3	1	13.5	4.65	35.5	136	54.9	707	30	24
424	WA 8481-97	2	46.3	94.0	76	79.8	1.1	1	12.4	4.27	36.2	103	53.1	356	37	13
425	WA 7153-98	2	49.1	97.3	80	77.8	1.1	1	13.6	4.29	33.1	94	49.1	730	19	38

Table 35

Lab No.	Variety or Selection	Rowed	Kernel Weight (mg)	on 6/64"	Barley Color (Agtron)	Malt Extract (%)	Wort Color	Wort Clarity	Barley Protein (%)	Wort Protein (%)	S/T (%)	DP (°ASBC)	Alpha-amylase (20°DU)	Beta-glucan (ppm)	Quality Score	Overall Rank
426	99NZ 68	6	45.8	96.8	89	80.9	2.3	1	12.5	6.15	52.2	88	79.1	233	35	16
427	CMB93A. 1231-H-1	6	46.1	97.3	67	75.3	1.5	1	*16.9	6.03	36.3	128	66.7	316	12	41
428	99NZ 221	6	39.5	93.9	82	78.0	2.2	1	13.4	5.99	47.7	137	78.6	140	31	22
429	B1202	2	47.3	93.0	77	79.7	1.1	1	13.0	4.93	38.3	116	66.1	341	38	11
430	WA 7754-98	2	43.2	89.6	84	78.4	1.0	1	13.0	3.96	31.6	115	50.2	751	30	24
431	WA 8410-97	2	46.5	91.0	76	78.3	1.2	1	13.0	3.63	28.5	61	42.5	463	28	30
432	WA 9837-98	2	45.1	91.3	74	78.3	1.1	1	13.5	3.64	28.2	69	39.6	598	20	37
433	WA 7290-98	2	43.5	94.7	76	79.4	1.7	1	13.6	4.44	33.6	87	48.9	583	30	24
434	HARRINGTON	2	44.2	93.1	82	81.4	1.4	1	12.1	5.10	43.2	102	70.4	568	48	1
435	WA 7763-98	2	38.6	85.8	78	76.8	1.0	1	12.8	3.66	31.0	78	40.4	917	19	38
436	99NZ 426	2	42.2	92.5	81	82.1	1.4	1	11.5	3.99	35.4	85	49.0	345	39	8
415	MOREX MALT CHECK	6	31.2	71.5	75	80.3	1.6	1	12.6	5.83	47.9	158	84.9	49	37	
Minima			38.2	85.8	67	75.3	1.0		11.3	3.63	28.2	61	38.9	134	12	
Maxima			49.1	99.3	90	82.1	2.5		14.2	7.30	53.7	177	97.3	917	48	
Means			43.7	93.9	80	79.5	1.5		12.9	5.08	41.0	112	63.7	438	32	
Standard Deviations			2.9	2.8	5	1.5	0.5		0.7	0.99	7.3	27	16.3	183	9	
Coefficients of Variation			6.7	3.0	6	1.9	30.2		5.6	19.39	17.7	24	25.6	42	27	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by S. E. Ullrich, Washington State University - Pullman

2001 STATE UNIFORM NURSERY - ROYAL SLOPE, WA

Table 36

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein						
		(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank		
437	FARMINGTON	2	42.5	94.1	76	80.3	2.2	2	12.4	4.20	35.4	108	40.5	555	39	2
438	HARRINGTON	2	43.5	92.8	80	81.2	1.3	1	12.9	5.15	40.9	106	65.4	589	39	2
440	WA 8682-96	2	44.6	92.4	80	79.6	1.4	1	12.9	4.14	33.4	77	51.0	713	28	16
441	WA 8709-96	2	50.5	98.0	73	79.1	1.3	1	11.7	3.54	31.1	50	40.9	675	33	9
442	WA 10147-96	2	48.4	97.3	70	79.1	2.1	2	12.4	3.60	29.8	50	38.7	888	29	14
443	CAMAS	2	46.4	93.6	86	81.3	1.0	1	12.2	4.09	34.9	94	41.5	674	39	2
444	BANCROFT	2	46.2	95.6	79	81.3	1.2	1	12.9	5.03	40.7	110	54.2	702	47	1
445	85AB2323	2	50.2	96.9	86	81.1	1.4	1	13.7	5.01	38.7	101	56.8	668	33	9
446	ORCA	2	52.3	98.8	72	79.0	2.3	1	15.2	*6.39	42.7	135	71.6	380	25	21
447	BCD 47	2	47.9	93.4	79	80.5	1.3	1	13.2	5.00	40.0	136	78.8	569	35	7
448	VALIER	2	40.4	93.1	78	80.9	1.3	1	12.7	4.80	40.0	97	68.6	545	39	2
449	PB1-95-2R-517	2	46.5	95.5	62	76.4	1.8	2	14.4	3.60	25.9	66	36.0	902	15	30
450	PB1-95-2R-A629	2	46.1	95.6	69	78.0	2.2	2	13.2	3.71	28.4	82	37.1	867	24	23
451	98NZ223	2	44.0	91.9	71	80.6	1.3	1	11.7	3.87	35.4	84	55.9	421	29	14
452	98NZ015	2	43.4	93.1	67	79.3	2.5	2	12.3	3.92	34.6	57	41.5	659	32	12
453	98NZ533	2	42.9	92.4	79	80.8	1.3	1	12.1	3.99	34.1	61	53.4	571	33	9
454	98NZ234	2	45.2	96.4	80	81.5	1.7	1	13.3	5.37	41.7	91	69.8	374	35	7
455	JERSEY	2	41.4	89.5	71	81.4	1.1	1	11.8	3.75	34.4	89	48.7	180	39	2
456	PONGO	2	43.0	93.3	77	77.8	1.7	2	12.3	3.16	27.0	71	34.6	704	21	27
457	MENTOR	2	44.8	96.6	76	79.8	1.7	2	12.6	3.65	31.0	106	39.0	547	31	13
458	H3869224	2	44.1	94.0	78	79.1	1.2	1	14.4	4.64	34.6	104	57.2	847	27	17
459	WA 10138-96	2	48.1	96.1	72	76.8	2.0	2	13.9	3.56	27.4	61	36.2	765	15	30
460	WA 8769-96	2	44.0	92.7	72	75.7	1.5	2	15.1	3.86	26.5	75	40.6	829	18	29
461	WA 8792-96	2	46.1	94.9	68	77.0	1.4	1	14.7	4.02	29.1	76	47.8	757	19	28
462	EA 8674-96	2	43.4	93.8	82	78.4	1.5	2	13.4	3.86	30.2	87	40.7	840	27	17
464	WA 7478-97	2	45.5	92.7	70	76.5	2.2	2	11.7	3.63	31.5	56	37.1	738	25	21
465	WA 8601-97	2	47.9	95.9	72	78.1	2.4	2	12.5	3.36	28.7	55	38.7	620	24	23
466	WA 10467-97	2	45.9	96.5	69	77.4	1.7	2	12.9	3.77	29.4	87	42.8	712	23	26
467	WA 13898-97	2	44.4	95.0	62	78.5	2.0	2	12.6	4.01	32.5	69	48.0	690	27	17
468	WA 8608-97	2	45.2	94.8	73	78.1	2.1	2	12.6	3.44	29.4	54	36.2	722	24	23

Table 36

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein						
		(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank	
469	WA 10144-96	2	47.9	98.1	72	79.2	2.3	2	12.9	3.76	30.2	62	40.7	644	27	17
439	HARRINGTON MALT CHECK	2	39.7	95.2	82	81.9	1.5	1	11.7	5.17	48.1	105	71.0	156	39	
463	HARRINGTON MALT CHECK	2	39.5	95.1	81	81.8	1.6	1	11.6	5.26	47.7	96	71.8	159	39	
Minima			40.4	89.5	62	75.7	1.0		11.7	3.16	25.9	50	34.6	180	15	
Maxima			52.3	98.8	86	81.5	2.5		15.2	5.37	42.7	136	78.8	902	47	
Means			45.6	94.7	74	79.2	1.7		13.0	4.05	33.2	82	48.1	656	29	
Standard Deviations			2.7	2.1	6	1.7	0.4		1.0	0.59	4.9	23	12.2	163	8	
Coefficients of Variation			5.9	2.2	8	2.1	25.8		7.5	14.53	14.8	28	25.4	25	27	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by S. E. Ullrich, Washington State University - Pullman

2001 STATE UNIFORM NURSERY - PULLMAN, WA

Table 37

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein (%)	Protein (%)		amylase (20°DU)	glucan (ppm)	Quality Score	Rank	
470	FARMINGTON	2	36.1	90.8	69	81.1	n.d.	3	12.7	4.19	35.4	108	45.4	362	31	13
471	HARRINGTON	2	36.4	87.1	78	82.4	1.4	1	12.0	4.79	42.7	100	76.7	209	44	2
472	WA 8682-96	2	40.1	95.3	76	79.5	1.5	1	13.2	4.34	34.5	95	56.9	362	27	22
473	WA 8709-96	2	39.1	92.2	73	78.1	1.7	2	13.3	3.52	28.3	61	39.5	399	21	30
474	WA 10147-96	2	40.1	92.9	72	78.9	2.7	2	12.0	3.37	28.5	49	38.1	436	28	18
475	CAMAS	2	41.7	96.2	77	76.1	1.2	1	12.2	4.39	36.7	109	48.2	367	32	12
476	BANCROFT	2	37.2	85.9	81	80.6	1.3	1	13.1	4.85	38.2	138	57.9	360	28	18
477	85AB2323	2	40.7	93.8	83	82.3	1.5	1	12.6	4.97	39.5	119	59.3	312	40	5
478	ORCA	2	44.4	98.0	56	78.4	2.4	1	*15.2	6.05	40.1	170	78.4	106	28	18
479	BCD 47	2	41.3	94.6	76	79.4	1.4	1	13.1	4.97	39.3	160	89.2	195	30	15
480	VALIER	2	34.5	83.6	77	81.6	1.4	1	12.5	4.58	38.6	118	76.3	195	39	6
481	PB1-95-2R-517	2	40.3	88.2	65	78.4	2.3	2	13.4	3.50	26.5	90	42.5	360	24	27
482	PB1-95-2R-A629	2	40.1	89.5	66	78.5	2.4	2	13.2	3.47	27.3	107	39.7	453	25	25
483	98NZ223	2	36.2	79.2	81	80.7	1.2	1	12.1	3.87	32.4	115	69.2	182	29	17
484	98NZ015	2	38.0	92.7	60	79.8	2.3	2	12.6	3.99	32.4	66	44.6	368	25	25
485	98NZ533	2	37.5	89.1	80	82.4	1.4	1	11.3	3.92	36.2	67	61.6	236	28	18
486	98NZ234	2	40.2	94.5	75	83.1	2.3	2	12.8	5.52	43.2	112	73.7	93	47	1
488	JERSERY	2	36.6	94.7	62	82.5	1.1	1	11.9	3.84	35.0	110	63.1	67	37	7
489	PONGO	2	33.9	83.9	79	79.6	1.6	2	12.0	3.37	28.7	91	39.1	392	22	29
490	MENTOR	2	35.5	94.5	78	79.4	1.3	1	13.5	3.97	31.6	118	44.2	247	31	13
491	H3869224	2	37.0	89.6	76	81.6	1.1	1	13.2	4.45	35.8	129	73.3	377	34	10
492	WA 10138-96	2	42.1	94.1	72	80.1	2.8	2	12.8	3.65	28.9	81	44.2	171	33	11
493	WA 8769-96	2	40.3	92.9	74	79.0	1.5	1	12.4	3.63	30.1	94	45.4	261	35	8
494	WA 8792-96	2	41.6	96.5	71	79.1	1.5	1	13.1	3.90	30.9	103	52.9	143	35	8
495	WA 8674-96	2	39.7	94.6	79	80.8	1.9	1	12.4	3.91	32.6	124	48.4	274	43	3
496	WA 7478-97	2	38.0	89.4	71	80.0	1.7	1	12.7	3.57	28.7	78	38.8	509	23	28
497	WA 8601-97	2	40.1	92.3	76	80.6	2.7	2	11.5	3.54	30.7	77	45.4	146	41	4
498	WA 10467-97	2	37.0	91.0	83	79.0	n.d.	3	12.2	3.82	32.3	104	46.2	373	30	15
499	WA 13898-97	2	37.9	95.3	71	80.1	n.d.	3	13.2	4.05	32.9	93	50.6	430	21	30
500	WA 8608-97	2	39.1	93.1	72	79.7	n.d.	3	13.1	3.89	30.9	89	47.3	304	26	23

Table 37

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort			Alpha-	Beta-	Quality	Overall	
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein (%)	Protein (%)	S/T (%)	DP (°ASBC)	amylase (20°DU)	glucan (ppm)		
501	WA 10144-96	2	37.9	90.0	76	78.9	n.d.	3	12.1	3.46	29.6	66	41.1	378	26	23
487	HARRINGTON MALT CHECK	2	39.3	94.3	80	82.2	1.4	1	11.8	5.37	46.5	132	72.1	24	36	
Minima			33.9	79.2	56	76.1	1.1		11.3	3.37	26.5	49	38.1	67	21	
Maxima			44.4	98.0	83	83.1	2.8		13.5	6.05	43.2	170	89.2	509	47	
Means			38.7	91.5	74	80.1	1.8		12.6	4.11	33.5	101	54.1	292	31	
Standard Deviations			2.4	4.2	7	1.6	0.5		0.6	0.65	4.6	27	14.3	117	7	
Coefficients of Variation			6.3	4.6	9	1.9	30.8		4.6	15.92	13.7	27	26.4	40	23	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by S. E. Ullrich, Washington State University - Pullman

2001 PRELIMINARY STATE UNIFORM NURSERY - PULLMAN, WA

Table 38

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort			Alpha-	Beta-	Quality	Overall	
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein	S/T	DP	amylase	glucan		
			(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank	
502	99NZ 102	6	33.9	72.6	78	78.8	2.2	1	11.9	5.41	46.8	112	65.2	206	30	24
503	99NZ 339	6	31.3	62.2	71	77.8	2.0	1	12.0	4.59	39.0	117	47.6	242	26	30
504	99NZ 237	6	35.1	87.0	69	78.8	2.6	1	14.0	6.49	48.4	153	86.2	95	35	15
505	WA 7527-97	2	38.4	95.9	77	81.4	1.3	1	12.5	4.75	38.8	129	75.8	274	41	3
506	99NZ 60	6	36.1	78.9	82	79.9	2.2	1	12.0	5.68	48.4	105	72.8	251	35	15
507	99NZ 95	6	32.4	63.3	82	79.3	1.7	1	11.7	4.93	45.0	117	80.2	245	39	6
508	WA 10491-97	2	36.1	74.3	78	80.4	1.2	1	12.2	4.65	38.8	99	59.2	287	33	18
509	MOREX	6	29.5	52.3	83	79.2	1.2	1	14.2	4.98	37.3	190	55.3	100	29	28
511	WA 7770-98	2	36.2	82.1	86	80.7	1.2	1	12.5	4.66	37.7	138	73.2	352	25	32
512	99NZ 104	6	34.9	68.8	86	79.8	2.2	1	11.7	5.64	50.1	124	93.1	166	30	24
513	WA 8120-98	2	35.2	89.0	78	80.1	1.1	1	12.4	4.01	32.5	117	51.0	255	36	10
514	WA 7908-96	2	*47.2	96.2	74	80.2	1.6	1	13.3	5.40	42.7	133	61.1	422	36	10
515	99NZ 42	6	33.4	60.8	78	78.3	2.0	1	12.8	5.62	47.6	134	83.2	208	26	30
516	WA 9262-98	6	33.6	83.3	80	81.0	1.3	1	12.7	5.09	43.2	132	78.5	109	50	2
517	99NZ 66	6	36.3	78.8	79	80.7	2.2	1	12.4	6.16	53.2	109	92.3	222	35	15
518	WA 8532-98	6	36.3	89.0	75	77.9	n.d.	3	11.4	4.09	37.3	118	43.0	303	24	35
519	WA 7758-97	2	41.1	91.3	64	77.6	1.3	2	13.2	3.34	25.8	88	33.2	483	15	40
520	WA 8439-97	2	38.9	93.4	71	77.4	n.d.	3	13.2	3.55	27.3	68	37.6	453	16	38
521	WA 7194-98	2	38.7	95.0	80	79.9	1.1	1	13.2	4.27	33.7	99	46.8	605	32	21
522	99NZ 241	6	32.1	64.2	78	76.9	2.4	1	13.0	5.42	43.7	165	68.5	122	31	23
523	99NZ 7	6	35.6	81.3	71	79.2	2.4	1	12.4	5.68	47.8	132	76.3	203	39	6
524	WA 10497-97	2	37.9	94.5	81	80.3	1.3	1	12.6	4.26	35.8	111	50.1	323	30	24
525	99NZ 445	2	36.3	92.4	74	83.1	1.7	1	11.9	4.83	40.9	102	49.0	144	57	1
526	WA 7276-98	2	41.5	98.1	66	80.0	1.5	1	13.9	4.60	34.9	104	54.8	192	36	10
527	WA 9263-98	6	33.0	70.2	81	82.8	1.5	1	11.9	5.35	46.7	138	82.2	47	40	5
528	99NZ 569	2	37.9	86.5	79	81.2	1.7	1	12.0	4.12	35.2	79	42.2	363	32	21
529	WA 7751-98	2	38.8	92.9	72	82.6	1.4	1	12.5	4.58	39.7	114	72.2	288	41	3
530	WA 7779-98	2	35.6	86.6	83	82.4	n.d.	3	13.1	4.53	36.4	125	54.3	355	36	10
532	WA 8481-97	2	37.0	84.8	81	80.2	n.d.	3	12.8	3.92	32.2	109	48.2	279	26	30
533	WA 7153-98	2	43.6	98.4	70	79.2	1.3	1	12.3	3.74	30.7	79	47.4	396	33	18

Table 38

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort			Alpha-	Beta-	Quality	Overall	
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein	S/T	DP	amylase	glucan		
		(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank		
534	99NZ 68	6	35.5	72.0	86	79.7	2.1	1	10.9	5.01	47.5	83	70.6	159	37	9
535	CMB93A 1231-H-1	6	40.5	94.9	60	75.6	1.6	1	*15.9	5.96	38.1	161	66.5	111	26	30
536	99NZ 221	6	30.9	59.3	79	77.0	2.1	1	12.7	5.19	43.8	124	60.9	149	30	24
537	B1202	2	38.6	88.4	76	80.6	1.1	1	12.6	4.50	36.1	115	59.3	270	36	10
538	WA 7754-98	2	35.4	79.6	84	77.3	1.0	1	13.7	3.81	28.7	112	45.8	562	16	38
539	WA 8410-97	2	38.9	92.9	69	79.3	1.8	2	12.7	3.52	28.8	60	39.3	353	21	37
540	WA 9837-98	2	37.7	91.0	77	78.4	1.6	2	13.9	3.57	26.3	69	36.0	418	14	41
541	WA 7290-98	2	40.1	94.2	67	79.1	1.2	1	13.2	3.93	31.0	85	46.7	433	27	29
542	HARRINGTON	2	39.6	92.2	77	81.7	1.3	1	12.8	4.90	39.8	134	77.2	232	38	8
543	WA 7763-98	2	37.6	79.8	78	78.7	1.1	1	11.7	3.40	30.4	82	41.2	613	23	36
544	99NZ 426	2	34.4	83.4	81	82.2	1.3	1	12.0	4.16	36.5	88	54.2	130	33	18
510	MOREX MALT CHECK	6	31.5	72.7	77	80.4	1.8	1	12.5	5.97	50.7	137	78.6	70	39	
531	MOREX MALT CHECK	6	30.8	72.0	78	81.0	1.9	1	12.6	5.86	49.7	148	76.2	59	37	
Minima			29.5	52.3	60	75.6	1.0		10.9	3.34	25.8	60	33.2	47	14	
Maxima			43.6	98.4	86	83.1	2.6		14.2	6.49	53.2	190	93.1	613	57	
Means			36.4	82.7	77	79.7	1.6		12.6	4.69	38.7	113	60.4	279	32	
Standard Deviations			3.1	12.3	6	1.7	0.5		0.7	0.80	7.1	27	16.4	141	9	
Coefficients of Variation			8.4	14.8	8	2.2	28.1		5.9	17.07	18.4	24	27.1	51	28	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by S. E. Ullrich, Washington State University - Pullman

2001 YIELD NURSERY #1 - PULLMAN, WA

Table 39

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein (%)	Protein (%)		amylase (20°DU)	glucan (ppm)	Quality Score	Rank	
545	WA 9764-99	2	35.3	86.5	76	79.1	1.6	2	12.1	4.05	34.8	88	52.5	209	25	24
546	WA 10328-99	2	39.8	92.5	74	83.1	1.1	1	12.6	5.44	45.1	107	68.3	298	39	8
547	WA 9336-99	2	39.8	95.0	75	79.7	1.7	2	12.8	4.14	34.9	88	49.5	414	27	19
548	WA 9027-99	2	41.0	93.5	69	79.2	1.4	1	12.6	4.32	35.5	75	59.5	264	23	26
549	WA 10503-99	2	39.9	97.1	72	82.1	1.4	1	12.4	4.54	38.8	105	59.6	80	43	4
550	WA 10139-99	2	35.5	86.3	72	80.0	1.9	2	12.6	3.66	31.1	101	50.4	300	27	19
552	WA 10433-99	2	35.9	83.7	76	81.3	n.d.	3	*11.5	3.63	32.3	71	44.0	359	27	19
553	WA 10533-99	2	39.6	95.3	69	81.7	1.3	1	12.9	4.34	34.7	123	59.6	96	38	10
554	HARRINGTON	2	38.4	91.5	76	82.7	1.3	1	12.4	4.72	39.2	156	83.9	190	39	8
555	WA 10241-99	2	42.0	97.1	71	81.2	1.8	2	12.6	4.70	38.8	111	56.5	351	40	6
556	WA 7190-99	2	38.5	93.2	67	79.2	n.d.	3	12.6	3.54	29.0	76	39.5	527	20	27
557	WA 9328-99	2	38.0	93.3	76	78.6	1.1	1	12.6	3.74	30.5	145	51.3	467	20	27
558	WA 9689-99	2	38.9	94.5	68	79.1	0.9	1	12.7	3.83	30.8	108	49.2	192	32	14
559	WA 9701-99	2	38.0	89.3	73	78.7	1.1	1	12.7	3.78	32.2	126	43.4	252	31	17
560	WA 9029-99	2	40.2	94.9	64	78.4	0.9	1	*14.4	4.43	31.5	108	59.5	329	26	23
561	WA 9747-99	2	36.3	87.1	78	77.7	0.9	1	12.8	3.54	28.4	120	42.0	271	27	19
562	WA 10362-99	2	39.0	91.9	76	82.0	1.0	1	12.5	4.65	39.1	138	70.4	217	43	4
563	WA 7244-99	2	40.3	92.2	72	78.8	1.5	2	12.9	3.61	28.3	113	44.3	250	36	13
564	WA 10435-99	2	41.7	94.2	69	79.9	1.0	1	13.1	4.52	35.4	130	67.8	208	40	6
565	WA 9133-99	2	39.8	96.4	74	80.9	1.1	1	12.8	5.11	41.1	151	85.8	221	32	14
566	WA 8504-99	2	35.0	85.0	86	80.8	1.2	1	12.5	5.41	44.5	171	83.1	133	32	14
567	WA 9444-99	2	41.8	91.8	74	82.2	1.1	1	12.7	5.07	40.8	123	67.8	168	48	1
568	WA 9069-99	2	41.4	92.4	69	81.2	1.2	2	12.4	4.12	34.6	96	57.4	254	37	11
569	WA 8268-99	2	42.7	92.7	77	81.4	1.0	1	12.3	4.79	39.3	138	65.9	214	46	2
570	WA 9739-99	2	36.1	86.5	73	78.3	0.9	1	12.5	4.20	35.1	116	66.6	242	29	18
571	WA 9320-99	2	41.5	95.4	68	79.2	n.d.	3	12.4	3.71	30.4	111	44.6	526	37	11
572	WA 10701-99	2	41.9	91.8	81	82.0	1.1	1	12.0	4.95	42.4	151	70.9	175	46	2
573	WA 7163-99	2	36.5	85.2	78	78.6	n.d.	3	12.4	3.54	28.9	106	35.6	363	25	24

Table 39

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality				
			Weight 6/64"	(mg)	Color (Agrton)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)					
551	HARRINGTON MALT CHECK	2	39.3	94.0	79	81.7	1.4	1	11.8	5.14	47.4	110	72.0	149	43
574	HARRINGTON MALT CHECK	2	40.4	94.5	77	81.7	0.9	1	12.1	5.13	46.0	146	70.6	85	46
Minima			35.0	83.7	64	77.7	0.9		12.0	3.54	28.3	71	35.6	80	20
Maxima			42.7	97.1	86	83.1	1.9		13.1	5.44	45.1	171	85.8	527	48
Means			39.1	91.7	73	80.3	1.2		12.6	4.29	35.3	116	58.2	270	33
Standard Deviations			2.3	3.9	5	1.5	0.3		0.2	0.59	4.9	25	13.6	115	8
Coefficients of Variation			5.9	4.3	6	1.9	23.8		2.0	13.72	14.0	22	23.4	42	24

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by S. E. Ullrich, Washington State University - Pullman

2001 YIELD NURSERY #2 - PULLMAN, WA

Table 40

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein (%)	Protein (%)		Rank				
575	WA 8925-99	6	33.9	76.7	80	80.9	1.2	1	13.5	5.51	43.8	152	66.8	170	43	4
576	WA 10178-99	2	37.4	90.4	70	79.1	1.3	2	12.8	3.65	29.4	113	51.1	240	29	15
577	WA 8860-99	2	42.8	95.9	66	78.3	0.8	1	14.5	4.28	31.2	190	45.1	508	23	22
578	WA 10175-99	2	39.2	92.1	79	82.4	0.9	1	12.4	4.65	38.3	142	65.1	266	39	7
579	WA 7958-99	2	40.8	94.4	76	81.0	1.1	1	13.1	5.08	40.8	181	73.8	172	38	8
580	WA 9057-99	2	42.4	96.4	72	80.4	1.2	2	12.7	4.38	36.3	173	67.3	317	23	22
581	HARRINGTON	2	36.1	83.4	81	82.4	1.3	1	12.6	4.80	40.3	155	78.9	178	32	11
582	WA 7628-99	2	37.7	91.5	73	81.3	1.2	1	12.7	4.26	36.1	130	72.7	230	32	11
583	WA 7621-99	2	38.0	93.6	75	82.0	1.3	1	12.2	4.65	40.4	134	75.4	202	48	3
584	WA 10412-99	2	37.1	91.5	77	81.1	1.5	1	11.8	4.87	43.0	124	82.3	48	49	2
585	WA 9673-99	2	41.5	98.4	63	80.1	1.1	1	12.2	3.73	30.6	98	47.8	235	42	5
586	WA 7210-99	2	40.7	95.5	66	80.9	*2.4	2	11.9	3.91	33.1	98	43.2	170	41	6
587	WA 9412-99	2	40.6	97.1	74	80.1	1.1	1	12.0	4.04	34.6	76	55.2	315	28	17
588	WA 9776-99	2	37.6	89.8	77	80.8	1.2	1	11.7	4.34	39.7	102	66.0	156	29	15
589	WA 7813-98	2	38.7	95.2	72	79.6	1.5	2	12.2	3.74	31.5	103	44.3	492	36	9
590	WA 8050-99	2	42.7	94.4	67	78.7	1.8	2	13.7	4.46	33.7	143	57.2	222	25	21
591	WA 10407-99	2	37.8	91.8	78	78.6	2.0	2	12.7	3.70	29.7	118	46.4	284	32	11
592	WA 7650-99	2	35.6	86.6	79	80.8	1.2	1	12.2	4.26	37.4	141	67.5	310	22	24
593	WA 7617-99	2	37.1	89.9	76	81.4	1.1	1	11.9	4.16	37.7	128	72.8	212	35	10
594	WA 9942-99	2	38.9	90.4	82	82.6	1.3	1	12.5	5.06	42.7	135	70.4	142	52	1
596	WA 9623-99	2	38.9	94.9	65	78.5	1.6	2	12.9	3.77	30.5	121	62.2	172	27	19
597	WA 8528-99	2	39.6	92.2	78	79.3	1.4	2	12.6	4.25	33.8	126	55.0	429	28	17
598	WA 11353-99	2	38.6	79.1	81	79.5	1.3	1	12.9	4.60	36.3	136	76.2	284	30	14
599	WA 9082-99	2	39.4	88.9	72	79.8	1.1	1	13.1	4.01	31.0	87	43.6	330	26	20
595	HARRINGTON MALT CHECK	2	39.6	94.2	79	81.3	1.1	1	11.8	5.02	45.9	147	81.5	85	48	
Minima			33.9	76.7	63	78.3	0.8		11.7	3.65	29.4	76	43.2	48	22	
Maxima			42.8	98.4	82	82.6	2.0		14.5	5.51	43.8	190	82.3	508	52	
Means			38.9	91.3	74	80.4	1.3		12.6	4.34	35.9	129	61.9	254	34	
Standard Deviations			2.3	5.4	6	1.3	0.3		0.6	0.49	4.5	28	12.5	109	9	
Coefficients of Variation			5.8	5.9	8	1.6	21.1		5.1	11.36	12.6	22	20.2	43	26	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by S. E. Ullrich, Washington State University - Pullman

2001 YIELD NURSERY #3 - PULLMAN, WA

Table 41

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein		amylase	glucan	Quality	Score	Rank
600	WA 8597-99	2	40.1	89.6	76	77.4	n.d.	3	12.1	3.55	30.0	122	45.0	271	34	13
601	WA 7365-99	2	37.8	88.9	69	79.2	1.2	1	12.1	3.75	30.8	101	40.6	324	30	17
602	HARRINGTON	2	38.6	92.7	79	82.2	1.6	1	12.0	4.94	43.7	106	77.4	215	48	1
603	WA 11607-99	2	35.8	90.0	73	80.0	1.5	1	13.9	5.11	38.1	116	84.2	223	27	20
604	WA 9094-99	2	39.6	95.1	76	80.1	1.3	1	13.1	4.22	33.8	67	53.4	319	25	23
605	WA 9019-99	2	41.2	95.3	81	80.7	1.5	1	12.5	4.71	38.5	120	49.7	340	44	6
606	WA 11301-99	2	39.9	92.7	75	80.4	1.6	1	12.9	4.86	40.0	100	72.4	407	37	9
608	WA 7655-99	2	39.6	96.4	76	81.9	1.5	1	12.0	4.63	40.2	96	77.1	253	48	1
609	WA 10718-99	2	42.4	92.4	71	82.0	1.7	1	13.0	5.11	41.7	127	62.4	307	42	8
610	WA 8108-99	2	37.6	94.0	77	78.4	n.d.	3	13.7	4.20	33.0	94	43.2	432	16	28
611	WA 10525-99	2	39.2	92.0	75	81.2	1.6	1	12.1	4.77	40.8	93	51.0	188	48	1
612	WA 10451-99	2	37.8	84.4	80	78.4	n.d.	3	12.1	3.67	30.7	104	80.0	370	18	27
613	WA 9434-99	2	42.1	95.9	76	80.6	1.6	1	13.9	5.59	41.2	127	68.6	205	37	9
614	WA 11511-99	2	39.9	91.3	78	80.5	1.3	1	13.7	4.66	35.1	135	51.9	415	31	15
615	WA 8031-99	2	39.7	88.1	75	79.8	1.3	1	12.8	4.37	35.2	94	54.6	404	23	26
616	WA 9371-99	2	40.4	96.6	76	79.0	n.d.	3	14.4	4.16	30.7	104	49.4	*682	24	24
617	WA 7996-99	2	38.9	93.7	70	81.7	1.6	1	12.1	4.70	39.0	95	59.7	219	43	7
618	WA 8339-99	2	39.7	93.2	78	81.0	1.3	1	12.5	4.37	35.4	116	56.1	230	31	15
619	WA 10489-99	2	36.9	*79.6	82	80.4	1.5	1	13.0	4.76	36.9	103	70.6	149	32	14
620	WA 11370-99	2	38.4	93.5	76	78.8	n.d.	3	13.2	3.98	31.4	117	45.5	452	30	17
621	WA 9783-99	2	36.9	91.8	71	81.0	1.3	1	12.7	4.66	37.5	91	65.4	153	29	19
622	WA 10720-99	2	43.6	95.8	72	81.8	*2.2	1	12.9	5.62	45.7	116	66.8	298	45	5
623	WA 9326-99	2	39.7	92.7	79	78.6	1.2	1	13.8	3.93	29.6	119	48.4	485	27	20
624	WA 10428-99	2	40.1	93.0	79	80.1	1.6	1	12.5	4.95	40.8	108	73.8	178	47	4
625	WA 10590-99	2	39.8	95.9	71	79.1	1.3	1	13.6	3.83	29.2	104	45.5	379	24	24
626	WA 7276-98	2	40.8	97.3	65	79.4	1.6	1	13.9	4.49	33.0	94	50.9	376	26	22
627	WA 9052-99	2	39.2	95.8	77	81.0	1.4	1	12.4	4.31	36.0	62	51.7	251	36	11
628	WA 7639-99	2	37.8	91.3	77	81.3	1.5	1	11.9	4.39	40.1	100	72.6	318	36	11

Table 41

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-					
			Weight 6/64"	(%)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)	S/T (°ASBC)	DP (20°DU)	amylase (ppm)	glucan	Quality
607	HARRINGTON MALT CHECK	2	40.0	94.4	84	82.2	1.7	1	11.6	5.62	50.3	101	72.8	126	43
629	HARRINGTON MALT CHECK	2	39.8	94.1	77	81.9	1.7	1	11.5	5.51	50.6	99	69.7	80	39
Minima			35.8	84.4	65	77.4	1.2		11.9	3.55	29.2	62	40.6	149	16
Maxima			43.6	97.3	82	82.2	1.7		14.4	5.62	45.7	135	84.2	485	48
Means			39.4	92.9	75	80.2	1.4		12.9	4.51	36.4	105	59.6	302	34
Standard Deviations			1.7	3.0	4	1.3	0.1		0.7	0.53	4.6	16	12.7	96	9
Coefficients of Variation			4.4	3.2	5	1.6	10.2		5.8	11.74	12.8	16	21.4	32	28

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by S. E. Ullrich, Washington State University - Pullman

2001 YIELD NURSERY #4 - PULLMAN, WA

Table 42

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight (mg)	6/64" (%)	Color (Agrton)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)		DP (20°DU)	amylase (ppm)	glucan	Quality	Score
630	WA 11350-99	2	34.3	86.0	75	80.0	1.7	1	13.0	4.24	33.6	113	54.8	440	28	18
631	WA 7989-99	2	36.8	87.1	77	79.4	1.6	1	13.1	5.12	40.4	123	61.7	212	35	10
632	WA 8783-99	2	44.6	98.3	62	81.8	2.3	1	12.7	5.23	41.5	71	58.7	251	38	5
633	WA 10885-99	2	39.1	90.9	69	79.3	1.3	1	13.1	4.22	32.4	120	68.8	311	25	25
634	WA 9950-99	2	41.4	96.6	75	81.5	1.9	1	13.3	5.29	42.2	103	61.3	320	38	5
635	WA 8569-99	2	38.2	87.6	78	77.8	2.4	2	12.1	3.50	29.0	86	39.4	364	20	28
636	WA 8818-99	2	42.4	92.7	71	78.2	1.1	1	13.0	3.82	30.5	91	43.8	500	28	18
637	WA 10101-99	2	39.9	93.2	74	81.4	1.4	1	12.7	4.78	40.1	114	79.7	108	50	1
638	WA 9723-99	2	37.4	92.7	71	80.1	1.5	1	12.2	3.69	32.3	97	50.0	252	35	10
639	WA 10421-99	2	39.9	90.3	79	80.2	1.4	1	13.1	4.87	39.8	113	67.0	150	38	5
640	WA 9996-99	2	39.2	90.4	83	82.7	1.4	1	12.7	5.14	43.4	104	72.0	208	39	3
641	WA 9625-99	2	38.3	97.7	68	79.3	1.2	1	13.1	3.68	28.9	88	50.4	262	25	25
642	WA 8862-99	2	38.9	87.8	69	80.4	1.1	1	12.2	3.59	30.7	80	40.3	412	31	15
643	WA 10478-99	2	37.7	98.1	79	80.2	1.7	2	11.9	3.49	29.5	77	39.3	392	27	22
644	WA 10818-99	2	39.2	91.8	68	80.6	1.2	1	12.4	4.05	35.3	127	66.9	197	36	9
645	WA 7352-99	2	37.8	87.6	71	78.3	1.1	1	13.5	3.83	29.1	114	38.7	412	20	28
646	WA 8145-99	2	41.2	92.8	75	80.6	1.4	1	12.3	4.40	36.5	126	70.8	207	38	5
647	WA 8140-99	2	39.2	95.8	74	81.3	1.6	1	13.1	5.48	41.8	89	78.4	327	32	13
648	WA 8631-99	2	37.0	92.4	74	79.9	1.0	1	12.9	3.54	28.4	100	39.8	360	27	22
649	WA 8534-99	2	37.8	91.3	81	79.8	1.7	2	12.0	3.45	29.5	81	43.2	306	30	17
650	WA 10715-99	2	39.9	91.6	79	79.5	1.3	1	13.0	4.34	34.6	104	60.8	270	28	18
651	WA 9152-98	2	38.1	92.0	77	80.9	1.1	1	12.9	3.81	30.5	67	48.9	328	28	18
652	WA 9004-99	2	40.2	94.7	74	78.4	1.5	1	13.1	3.90	31.8	66	50.2	332	24	27
653	WA 8302-99	2	37.2	92.0	78	81.0	1.1	1	12.5	3.76	31.1	111	48.1	247	39	3
655	WA 10750-99	2	37.7	95.1	75	81.2	1.3	1	12.9	4.26	34.0	114	60.4	181	32	13
656	WA 10794-99	2	42.2	94.1	75	80.4	1.4	1	13.3	4.83	36.6	144	60.5	341	31	15
657	WA 10189-99	2	37.6	92.0	71	78.8	2.0	1	12.1	3.49	29.1	96	45.5	268	35	10
658	WA 10027-99	2	37.8	93.8	74	79.7	1.2	1	12.4	3.70	30.7	71	56.5	246	27	22
659	HARRINGTON	2	38.8	93.5	79	81.9	1.3	1	12.5	4.69	39.7	120	78.2	233	46	2

Table 42

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-					
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein	S/T	DP	amylase	glucan	Quality
		(mg)	(%)	(Agrton)	(%)	Color	Clarity	(%)	(%)	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score
654	HARRINGTON MALT CHECK	2	40.0	94.2	82	81.5	1.5	1	11.4	5.04	47.1	104	70.4	162	45
Minima			34.3	86.0	62	77.8	1.0		11.9	3.45	28.4	66	38.7	108	20
Maxima			44.6	98.3	83	82.7	2.4		13.5	5.48	43.4	144	79.7	500	50
Means			39.0	92.4	74	80.2	1.4		12.7	4.21	34.2	100	56.4	291	32
Standard Deviations			2.0	3.2	5	1.2	0.4		0.4	0.64	4.9	20	12.8	91	7
Coefficients of Variation			5.2	3.5	6	1.5	24.9		3.5	15.20	14.2	20	22.6	31	22

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by S. E. Ullrich, Washington State University - Pullman

2001 YIELD NURSERY #5 - PULLMAN, WA

Table 43

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-		Beta-	Quality	Overall			
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein	S/T	DP	amylase	glucan		
		(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank		
660	WA 10190-99	2	38.7	90.5	75	79.5	1.9	2	11.9	3.34	29.5	90	46.4	268	35	8
661	WA 8518-99	2	37.7	95.4	84	77.7	1.1	1	13.3	3.60	27.4	71	37.3	536	16	27
662	WA 9338-99	2	38.5	89.8	74	79.5	1.5	1	13.2	4.59	36.4	92	74.4	347	26	21
663	WA 8141-99	2	40.4	90.4	74	79.8	1.4	1	12.1	4.46	40.0	90	69.0	323	35	8
664	WA 8883-99	2	37.6	90.9	66	77.9	1.0	1	13.3	3.74	28.8	97	41.8	483	23	23
665	WA 7301-99	2	37.0	82.9	75	79.2	1.1	1	12.0	3.48	29.8	78	38.2	268	23	23
666	WA 9433-99	2	42.4	92.2	76	79.9	1.4	1	12.5	4.14	33.7	66	53.5	333	33	11
667	WA 10128-99	2	36.1	88.1	75	80.1	1.8	2	12.1	3.60	30.5	93	48.3	163	31	14
668	WA 8370-99	2	38.9	93.5	76	80.2	1.2	1	13.5	4.41	35.3	111	57.9	163	38	4
669	WA 10118-99	2	37.2	91.9	73	79.9	1.5	2	12.5	3.88	32.4	98	46.6	193	37	5
670	WA 9955-99	2	41.8	96.9	76	81.3	1.3	1	12.6	4.38	36.8	113	55.8	253	36	6
671	WA 8385-99	2	40.0	93.7	77	78.5	1.1	1	12.0	3.25	27.7	83	40.0	367	27	18
672	WA 9644-99	2	39.1	94.9	76	79.1	1.3	1	12.5	3.81	32.5	109	50.3	151	29	17
673	HARRINGTON	2	38.1	91.4	81	81.4	1.2	1	12.4	4.61	39.1	114	70.5	283	46	1
674	WA 10040-99	2	39.7	94.4	74	78.6	1.1	1	11.6	3.40	31.3	84	41.7	302	30	15
676	WA 7342-99	2	40.4	94.0	73	79.0	1.1	1	11.9	3.74	31.5	99	42.4	353	36	6
677	WA 7105-99	2	43.9	97.6	73	79.1	2.2	2	13.9	4.05	29.8	82	41.7	446	22	26
678	WA 10803-99	2	38.1	94.3	74	79.7	1.3	2	12.0	3.47	30.3	88	41.4	331	32	12
679	WA 9788-99	2	39.0	92.3	78	80.9	1.4	1	11.4	4.43	41.2	80	66.9	187	41	2
680	WA 10419-99	2	39.6	89.3	78	78.7	1.3	1	13.0	4.32	34.4	106	60.7	260	23	23
681	WA 7138-99	2	43.0	93.7	77	79.4	1.4	1	14.4	4.23	31.2	106	46.5	393	30	15
682	WA 11307-99	2	40.8	92.5	83	79.4	1.3	1	13.7	4.51	34.4	122	70.1	360	32	12
683	WA 7560-99	2	41.4	92.4	83	80.5	1.4	1	12.7	4.59	38.4	122	69.7	251	40	3
684	WA 8042-99	2	40.1	86.5	79	76.6	1.9	2	13.3	3.77	28.7	128	51.1	350	24	22
685	WA 7185-98	2	41.2	95.5	78	78.7	1.2	1	12.7	3.95	31.9	84	53.4	272	27	18
686	WA 7264-99	2	36.8	91.6	69	80.9	1.2	1	12.2	3.75	33.0	69	48.5	204	34	10
687	WA 70350-99	2	39.0	88.0	81	81.2	1.3	1	11.8	4.34	39.9	87	63.0	344	27	18

Table 43

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort		Alpha-	Beta-			
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein (%)	Protein (%)	S/T (%)	DP (°ASBC)	amylase (20°DU)	glucan (ppm)	Quality Score
675	HARRINGTON MALT CHECK	2	39.4	94.1	83	81.5	1.5	1	11.4	5.07	46.9	102	65.8	185	43
Minima			36.1	82.9	66	76.6	1.0		11.4	3.25	27.4	66	37.3	151	16
Maxima			43.9	97.6	84	81.4	2.2		14.4	4.61	41.2	128	74.4	536	46
Means			39.5	92.0	76	79.5	1.3		12.6	3.99	33.2	95	52.8	303	31
Standard Deviations			2.0	3.2	4	1.2	0.3		0.8	0.43	4.0	17	11.5	96	7
Coefficients of Variation			5.0	3.5	5	1.5	20.9		6.0	10.82	12.1	18	21.7	32	22

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by S. E. Ullrich, Washington State University - Pullman

2001 YIELD NURSERY #6 - PULLMAN, WA

Table 44

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort		S/T	DP	Alpha-	Beta-	Quality	Overall
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein (%)	Protein (%)	(°ASBC)	(20°DU)	amylase (ppm)	glucan (ppm)		
688	WA 7821-99	6	36.5	91.9	83	79.3	1.9	2	11.3	4.19	38.5	114	50.2	276	38	8
689	WA 8514-99	2	39.2	89.5	80	79.8	n.d.	3	12.9	3.90	32.6	80	51.3	269	24	16
690	WA 11709-99	6	37.1	83.6	73	79.0	1.5	1	12.1	4.78	42.0	119	62.0	226	44	4
691	HARRINGTON	2	40.1	93.6	80	80.8	1.2	1	12.8	4.70	37.7	126	74.3	324	37	9
692	WA 7805-99	6	34.2	76.1	79	79.2	1.3	1	11.6	4.42	41.5	132	66.2	212	39	7
693	WA 7233-99	2	41.7	96.6	70	80.6	1.4	2	12.5	3.59	30.1	105	44.8	126	40	5
694	WA 9690-99	2	38.3	94.8	60	80.0	n.d.	3	12.8	3.79	32.0	72	55.6	152	22	17
695	WA 8609-99	2	34.4	85.3	69	78.8	1.1	2	13.6	3.51	26.8	106	41.9	378	19	19
697	WA 10582-99	2	37.6	96.9	72	80.6	1.3	2	12.1	3.87	33.0	84	51.0	88	34	12
698	WA 10807-99	2	38.7	91.4	78	81.6	1.6	1	11.7	4.76	43.1	95	73.0	73	48	3
699	WA 7823-99	6	34.1	89.9	83	79.2	1.2	1	10.9	3.96	36.9	117	56.8	228	36	11
700	WA 9205-99	6	37.8	94.8	75	78.7	1.2	1	12.5	4.28	35.7	103	51.8	306	33	13
701	CMB94A.940-I-1M	6	35.9	94.7	72	76.8	n.d.	3	13.2	3.49	27.9	112	40.9	392	19	19
702	WA 9302-99	2	39.2	87.6	78	79.8	1.3	1	11.8	3.64	32.3	64	48.6	372	31	14
703	CMB94A.947-H-1M	6	33.3	70.1	75	75.4	1.7	1	13.5	3.87	29.9	126	50.3	304	22	17
704	WA 8051-99	2	41.8	97.2	69	80.1	1.7	1	12.7	4.69	38.1	120	70.9	40	40	5
705	MOREX	6	31.6	73.6	83	80.7	1.5	1	12.7	4.90	41.1	153	59.0	99	54	1
706	WA 7718-99	6	36.4	94.0	76	78.3	1.3	1	11.6	3.69	33.8	111	43.1	616	30	15
707	CM94A.940-I-1M	6	37.3	92.6	75	76.2	1.6	1	13.1	3.57	28.3	101	39.9	651	17	21
708	WA 9455-99	2	42.2	94.3	73	80.6	1.7	2	13.2	4.06	31.9	118	52.7	232	37	9
709	WA 9218-99	6	36.9	91.6	81	80.9	1.7	1	11.4	5.00	44.6	91	91.5	101	51	2
696	HARRINGTON MALT CHECK	2	39.5	94.4	79	81.9	1.4	1	11.6	5.14	46.3	102	68.6	155	39	
Minima			31.6	70.1	60	75.4	1.1		10.9	3.49	26.8	64	39.9	40	17	
Maxima			42.2	97.2	83	81.6	1.9		13.6	5.00	44.6	153	91.5	651	54	
Means			37.3	89.5	75	79.4	1.5		12.4	4.13	35.1	107	56.0	260	34	
Standard Deviations			2.9	7.7	6	1.6	0.2		0.8	0.50	5.3	21	13.1	163	11	
Coefficients of Variation			7.6	8.6	8	2.0	15.9		6.2	12.22	15.2	20	23.4	63	31	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by S. E. Ullrich, Washington State University - Pullman

2001 PRO-ANT FREE NURSERY #1 - ROYAL SLOPE, WA

Table 45

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight	6/64"	Color	Extract	Wort	Protein	Protein	S/T	DP	amylase	glucan			
(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(%)	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank	
1004	2000NZ333	6	41.8	97.3	86	82.1	n.d.	3	12.8	6.46	51.4	133	72.1	276	32	11
1005	2000NZ157	6	40.4	96.9	80	82.3	2.6	2	12.9	6.20	50.1	127	69.8	373	26	20
1006	2000NZ042	6	42.1	96.8	87	80.8	2.5	2	12.7	6.02	48.9	149	77.2	242	36	5
1007	2000NZ370	2	41.7	93.9	80	80.1	1.7	2	13.1	4.81	38.1	91	56.1	229	32	11
1008	2000NZ348	6	41.7	95.3	81	79.9	1.9	2	14.1	6.03	43.6	151	65.5	177	33	7
1009	2000NZ16	6	40.3	95.2	86	79.6	3.1	2	14.0	6.87	52.6	175	82.0	157	21	27
1011	2000NZ304	2	44.8	95.8	67	79.6	2.0	2	12.3	4.25	36.4	72	46.2	367	35	6
1012	2000NZ018	6	42.6	97.6	84	80.5	3.3	2	14.5	7.58	53.0	154	75.4	342	28	16
1013	2000NZ146	6	40.7	97.2	80	82.4	2.7	2	13.2	6.24	48.6	142	72.7	406	33	7
1014	2000NZ399	2	40.8	91.5	84	82.7	1.9	1	13.0	6.13	48.2	103	80.1	239	33	7
1015	2000NZ307	2	42.8	94.4	67	80.5	1.7	1	12.5	5.09	43.0	104	59.4	319	45	2
1016	2000NZ103	6	37.9	93.1	79	79.2	2.7	2	14.3	6.71	48.3	160	72.1	241	25	22
1017	2000NZ316	2	40.9	93.9	73	82.2	1.6	1	11.2	4.50	42.2	71	60.8	131	50	1
1018	2000NZ197	6	40.7	96.9	80	78.7	2.7	1	14.9	6.64	46.8	117	81.5	188	19	28
1019	2000NZ134	6	40.4	96.9	79	81.4	2.8	2	14.1	6.33	48.1	146	73.2	376	28	16
1020	2000NZ195	6	42.9	98.1	80	78.6	2.2	2	14.9	6.20	43.3	129	67.3	253	23	24
1021	2000NZ335	6	40.4	96.4	83	80.4	2.9	2	14.8	7.50	51.0	159	89.1	194	31	13
1022	2000NZ257	2	40.9	90.7	68	78.2	2.4	2	15.1	5.34	35.8	159	45.8	249	27	18
1023	2000NZ255	2	38.9	91.0	67	79.8	2.7	2	13.2	4.65	35.8	116	48.3	253	44	3
1024	MOREX	6	40.0	95.4	75	79.0	1.7	1	16.0	6.49	41.4	203	67.5	190	27	18
1025	2000NZ191	6	39.5	93.3	77	76.4	2.8	1	15.0	6.52	45.0	121	72.1	393	17	30
1026	2000NZ223	2	43.3	87.7	76	79.4	2.3	1	15.7	6.80	44.6	94	83.4	302	19	28
1027	HARRINGTON	2	43.7	91.9	79	80.3	1.5	1	13.9	6.01	46.2	120	76.8	331	26	20
1028	2000NZ371	2	46.3	89.3	76	81.2	2.0	1	13.0	5.58	44.0	57	70.0	315	33	7
1029	2000NZ126	6	43.7	96.3	85	80.0	2.7	1	14.1	7.04	51.8	125	68.7	307	22	25
1030	2000NZ368	2	44.1	94.9	84	79.5	1.8	1	14.0	5.46	39.7	78	63.1	309	22	25
1032	2000NZ278	2	41.1	91.2	75	79.3	n.d.	3	14.0	4.67	34.6	106	47.7	320	31	13
1033	BARONESSE	2	46.3	93.8	74	79.0	n.d.	3	12.1	4.19	36.5	74	47.9	379	31	13
1034	2000NZ803	6	40.9	97.8	84	80.9	3.0	1	14.8	6.99	50.4	124	80.0	204	25	22
1035	2000NZ250	2	43.1	94.3	69	81.6	2.3	1	13.6	5.30	41.4	119	58.6	211	40	4

Table 45

Lab No.	Variety	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality				
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	S/T	DP	amylase	glucan		
		(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	
1010	MOREX MALT CHECK	6	31.3	71.4	76	79.9	2.0	1	12.6	5.93	50.7	129	78.9	65	27
1031	MOREX MALT CHECK	6	31.4	74.3	73	79.9	2.0	1	12.8	5.99	50.2	121	76.8	60	27
Minima			37.9	87.7	67	76.4	1.5		11.2	4.19	34.6	57	45.8	131	17
Maxima			46.3	98.1	87	82.7	3.3		16.0	7.58	53.0	203	89.1	406	50
Means			41.8	94.5	78	80.2	2.4		13.8	5.95	44.7	123	67.7	276	30
Standard Deviations			2.0	2.7	6	1.4	0.5		1.1	0.94	5.6	34	12.1	76	8
Coefficients of Variation			4.8	2.9	8	1.8	21.6		8.1	15.84	12.5	28	17.9	28	26

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by S. E. Ullrich, Washington State University - Pullman

2001 PRO-ANT FREE NURSERY #2 - ROYAL SLOPE, WA

Table 46

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein						
		(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank		
1036	2000NZ437	2	42.6	92.7	79	79.6	n.d.	3	12.7	4.50	37.3	88	54.1	351	33	17
1037	2000NZ777	2	45.8	92.0	80	81.5	2.0	1	13.1	5.57	43.5	123	66.2	303	42	4
1038	2000NZ301	2	43.4	92.1	78	79.7	1.3	1	10.9	3.38	31.7	65	40.4	443	36	14
1039	2000NZ772	2	43.4	94.3	75	81.5	1.7	1	12.5	4.78	40.1	93	51.9	267	51	1
1040	2000NZ673	2	37.8	88.9	74	80.7	2.2	1	13.8	5.63	42.4	92	65.5	372	20	30
1041	99NZ493	2	41.1	94.7	84	81.4	1.5	1	13.1	4.85	39.3	118	59.4	325	40	8
1042	2000NZ515	2	45.6	90.7	82	82.0	1.9	1	12.1	5.60	47.8	106	77.0	291	42	4
1043	2000NZ400	2	41.5	92.0	85	82.6	2.1	1	12.5	5.83	48.2	97	83.5	295	41	7
1044	98NZ050	6	39.4	89.3	85	79.5	2.7	1	13.2	6.64	52.0	108	83.4	307	24	27
1045	2000NZ5	2	41.2	93.1	89	81.3	2.6	2	12.9	6.25	50.8	81	79.4	214	28	24
1046	99NZ417	2	43.4	95.5	78	82.6	1.9	1	11.6	5.04	46.8	79	75.4	287	42	4
1047	2000NZ484	2	47.6	96.3	72	81.2	1.8	2	13.0	5.14	42.0	94	62.7	279	37	13
1048	99NZ576	2	43.4	91.1	70	81.2	1.4	1	11.7	3.97	35.4	75	45.3	388	39	9
1049	2000NZ418	2	41.4	91.3	79	79.5	n.d.	3	13.3	4.41	34.7	79	54.7	335	32	21
1050	2000NZ205	2	43.1	92.0	85	81.6	1.8	2	11.9	4.88	44.0	75	63.9	355	43	2
1052	2000NZ705	2	44.3	93.1	71	81.3	1.5	1	11.9	4.23	35.9	99	51.6	163	43	2
1053	2000NZ812	2	42.6	94.7	75	82.0	2.2	1	13.8	6.01	44.3	92	74.5	330	27	26
1054	2000NZ507	2	44.3	92.9	80	81.8	1.9	1	12.8	5.66	46.9	105	81.0	361	34	15
1055	BARONESSE	2	45.3	92.5	70	78.8	1.8	2	12.7	3.99	33.0	82	50.2	328	24	27
1056	2000NZ293	2	44.7	92.7	79	80.3	1.7	1	11.6	3.82	33.3	72	46.4	251	39	9
1057	2000NZ305	2	43.2	90.2	67	79.9	1.8	1	13.0	4.07	33.2	84	48.7	418	31	23
1058	2000NZ817	2	42.3	93.3	81	81.6	2.1	1	13.2	5.76	44.3	108	69.5	470	39	9
1059	2000NZ762	2	40.7	89.2	81	80.0	1.4	1	11.8	3.73	32.2	88	49.8	406	33	17
1060	2000NZ269	2	41.5	95.0	71	78.9	2.4	2	14.3	4.76	35.2	146	55.9	262	24	27
1061	2000NZ788	2	41.5	96.2	74	80.7	2.3	1	14.1	5.28	39.3	105	81.0	120	32	21
1062	HARRINGTON	2	44.6	93.4	79	81.7	2.5	1	12.6	5.81	46.8	87	89.6	269	33	17
1063	2000NZ682	2	44.7	92.9	71	80.9	2.4	1	13.0	5.84	45.9	70	86.7	111	39	9
1064	2000NZ363	2	40.2	89.3	79	79.8	n.d.	3	13.5	3.69	28.9	95	41.3	274	28	24
1065	2000NZ456	2	41.9	92.7	78	82.0	1.8	1	13.1	5.46	44.5	95	78.0	329	34	15
1066	MOREX	6	39.3	95.3	82	79.2	1.5	1	15.4	5.29	36.3	*160	60.2	459	33	17

Table 46

Lab No.	Variety	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-		
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	S/T	DP	amylase
1051	HARRINGTON MALT CHECK	2	39.2	94.4	79	82.2	1.8	1	11.3	5.87	56.8	106
												77.8
Minima			37.8	88.9	67	78.8	1.3		10.9	3.38	28.9	65
Maxima			47.6	96.3	89	82.6	2.7		15.4	6.64	52.0	146
Means			42.7	92.6	78	80.8	1.9		12.8	5.00	40.5	93
Standard Deviations			2.2	2.1	5	1.1	0.4		0.9	0.86	6.3	18
Coefficients of Variation			5.1	2.2	7	1.4	19.5		7.3	17.20	15.6	19
												23.0
												28
												20

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by S. E. Ullrich, Washington State University - Pullman

2001 BRAZIL NURSERY AT PULLMAN - PULLMAN, WA

Table 47

Lab No.	Variety or Selection	Rowed	Kernel Weight (mg)	on 6/64"	Barley Color (%)	Malt Extract (%)	Wort Color	Wort Clarity	Barley Protein (%)	Wort Protein (%)	S/T (%)	DP (°ASBC)	Alpha-amylase (20°DU)	Beta-glucan (ppm)	Quality Score	Overall Rank
1654	EMBRAPA 127	2	38.2	98.4	65	78.1	1.7	1	15.0	4.73	32.2	120	58.8	174	30	2
1655	PFC 9214	2	41.6	98.3	62	77.5	1.4	1	14.4	4.09	28.5	83	41.9	591	18	15
1656	PFC 9210-04	2	39.6	96.5	61	77.3	1.8	1	15.2	4.72	32.7	89	54.0	415	20	10
1657	CEV 95076	2	41.0	98.7	65	79.5	1.4	1	13.7	4.27	31.8	87	54.1	446	22	6
1658	EMBRAPA 129	2	40.0	98.0	63	76.7	1.3	1	14.4	3.94	28.0	81	43.4	535	18	15
1659	CEV 96017	2	35.0	76.1	70	77.1	1.4	1	14.6	4.02	28.1	92	47.1	357	9	23
1660	CEV 96060	2	35.3	76.6	67	77.0	2.0	1	15.3	4.61	30.5	102	56.9	229	16	19
1661	GUNTHER	2	36.9	94.8	73	78.4	*2.7	2	13.7	3.76	27.2	74	39.9	460	14	21
1662	PFC 9211	2	41.9	97.7	61	77.0	1.4	1	15.2	4.19	27.8	96	44.0	606	22	6
1663	PFC 9215	2	42.4	98.4	68	76.7	1.2	1	14.5	3.76	26.4	85	42.4	635	19	13
1664	MOREX	6	30.3	*65.1	84	81.0	1.6	1	13.0	5.00	*39.8	147	58.5	121	46	1
1665	CEV 96020	2	37.4	90.9	75	77.2	1.2	1	14.3	3.69	26.8	89	39.8	519	11	22
1666	CEV 95076	2	38.6	97.4	67	79.4	1.3	1	13.3	4.06	30.6	84	54.3	382	25	5
1667	PFC 9213	2	44.4	88.3	55	77.8	1.4	1	15.0	4.16	27.8	110	46.2	505	21	8
1668	CEV 96059	2	37.5	99.8	68	77.9	1.7	1	15.4	4.36	29.3	111	53.6	520	18	15
1669	PFC 9210-05	2	38.8	97.0	65	77.0	2.3	2	14.7	4.66	32.4	94	56.5	416	15	20
1670	EMBRAPA 128	2	38.8	96.1	62	76.9	1.9	2	15.2	4.57	30.3	103	55.7	336	19	13
1671	MN 698	2	39.7	97.9	73	78.7	1.3	1	14.1	4.20	30.7	57	46.4	318	20	10
1672	CEV 96053	2	35.6	96.3	68	78.5	1.5	2	14.9	4.10	28.1	111	45.5	263	27	3
1673	PFC 9325	2	37.2	96.4	76	79.6	1.4	2	14.1	4.17	30.2	102	42.0	232	27	3
1675	CEV 96044	2	41.3	97.6	53	78.7	1.4	2	14.3	3.90	27.4	52	35.9	626	18	15
1676	BR 2	2	39.4	97.3	68	78.0	1.5	1	14.4	4.50	32.7	102	59.5	353	20	10
1677	CEV 96046	2	34.7	88.7	78	78.9	1.3	1	13.0	3.88	30.2	76	40.9	302	21	8
1674	HARRINGTON MALT CHECK	2	39.9	94.8	81	82.2	1.7	1	11.9	5.51	49.4	105	72.3	162	39	
Minima			30.3	76.1	53	76.7	1.2		13.0	3.69	26.4	52	35.9	121	9	
Maxima			44.4	99.8	84	81.0	2.3		15.4	5.00	32.7	147	59.5	635	46	
Means			38.5	94.4	67	78.0	1.5		14.4	4.23	29.5	93	48.6	406	21	
Standard Deviations			3.1	6.6	7	1.1	0.3		0.7	0.36	2.0	20	7.4	147	7	
Coefficients of Variation			8.0	7.0	11	1.4	18.7		4.9	8.41	6.8	22	15.1	36	36	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by S. E. Ullrich, Washington State University - Pullman

2001 HARRINGTON/BARONESSE QTL#1 - PULLMAN, WA

Table 48

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort			Alpha-	Beta-	Overall		
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein (%)	Protein (%)	S/T (%)	DP (°ASBC)	amylase (20°DU)	glucan (ppm)		
1678	BARONESSE	2	38.0	88.0	80	*76.7	*2.5	2	13.2	*3.83	29.7	93	*42.3	288	19	30
1679	HARRINGTON	2	39.1	92.4	81	81.1	1.4	1	13.2	4.94	38.2	133	65.8	235	38	13
1680	NZDK 62	2	39.4	93.8	83	80.9	1.4	1	13.6	4.82	37.8	139	66.5	323	27	26
1681	NZDK 7	2	40.0	91.7	84	80.1	1.4	1	13.8	4.90	36.1	144	71.4	251	28	24
1682	NZDK 56	2	39.6	93.7	82	80.2	1.6	1	14.0	5.26	37.8	152	84.5	203	22	29
1683	NZDK 14	2	39.2	89.9	78	81.0	1.3	1	12.6	4.35	35.8	109	54.0	316	30	23
1684	NZDK 64	2	37.5	92.6	79	81.0	1.6	1	11.4	4.70	43.6	110	73.6	229	46	4
1685	NZDK 59	2	38.6	95.0	83	80.2	1.6	1	12.2	4.88	40.5	103	72.4	330	42	10
1686	NZDK 97	2	40.0	93.8	81	82.4	1.5	1	12.7	5.07	40.0	124	68.3	222	48	1
1687	NZDK 55	2	40.8	94.8	80	81.0	1.2	1	12.7	4.78	38.2	126	61.5	312	37	16
1688	NZDK 00-111	2	37.4	91.1	81	80.4	1.4	1	14.2	5.02	37.2	134	71.3	312	25	27
1689	NZDK 00-106	2	41.0	95.5	78	81.0	1.4	1	13.4	4.83	37.0	131	74.1	297	37	16
1690	NZDK 00-109	2	38.5	92.9	83	81.2	1.5	1	12.9	4.80	38.8	124	73.5	315	38	13
1691	NZDK 00-123	2	40.2	94.0	80	80.2	1.3	1	13.5	4.74	36.4	142	76.8	313	25	27
1692	NZDK 00-108	2	39.4	92.9	78	80.9	1.3	1	13.5	4.90	37.0	138	72.6	325	32	19
1693	NZDK 00-117	2	40.4	93.3	76	80.5	1.3	1	13.9	4.82	35.8	142	73.5	299	28	24
1695	NZDK 00-148	2	38.3	94.1	78	81.9	1.4	1	11.6	4.61	40.7	99	70.2	296	48	1
1696	NZDK 00-154	2	38.0	94.5	80	81.3	1.6	1	11.7	4.85	41.9	93	79.6	211	44	6
1697	NZDK 00-155	2	38.0	94.9	81	81.4	1.5	1	12.4	4.82	41.5	91	79.9	209	42	10
1698	NZDK 00-150	2	37.9	94.8	78	82.1	1.7	1	11.9	5.42	48.5	124	75.5	74	40	12
1699	NZDK 00-151	2	38.8	95.0	77	81.2	1.5	1	12.6	5.00	40.7	109	82.8	176	43	8
1700	NZDK 00-146	2	38.9	93.6	79	79.9	1.5	1	12.7	4.96	39.5	120	87.7	242	38	13
1701	NZDK 00-153	2	39.0	94.3	78	80.6	1.5	1	12.7	4.85	41.3	87	72.9	332	33	18
1702	NZDK 00-137	2	39.7	93.4	79	82.2	1.4	1	12.0	4.80	42.2	104	77.0	201	48	1
1703	NZDK 00-175	2	38.7	95.9	80	81.8	1.4	1	12.4	4.78	39.8	106	72.2	213	43	8
1704	NZDK 00-171	2	42.6	97.1	81	81.6	1.5	1	12.9	4.88	39.6	124	76.4	242	44	6
1705	NZDK 00-156	2	38.0	91.8	81	81.1	1.5	1	13.5	5.02	38.8	135	88.0	167	31	21
1706	NZDK 00-165	2	40.3	95.7	80	81.1	1.3	1	13.9	4.91	36.1	147	86.0	213	31	21
1707	NZDK 00-170	2	40.8	96.3	83	80.3	1.3	1	14.0	4.71	35.0	140	79.6	204	32	19
1708	NZDK 00-160	2	38.1	91.6	77	81.4	1.4	1	12.8	4.77	39.1	128	84.7	136	45	5

Table 48

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-					
			Weight 6/64"	(mg)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)	S/T (°ASBC)	DP (20°DU)	amylase (ppm)	glucan Quality	
1694	HARRINGTON MALT CHECK	2	39.5	94.5	80	81.2	1.4	1	12.5	4.61	39.4	101	70.3	273	43
Minima			37.4	88.0	76	79.9	1.2		11.4	4.35	29.7	87	54.0	74	19
Maxima			42.6	97.1	84	82.4	1.7		14.2	5.42	48.5	152	88.0	332	48
Means			39.2	93.6	80	81.0	1.4		12.9	4.87	38.8	122	74.9	249	36
Standard Deviations			1.2	1.9	2	0.6	0.1		0.8	0.19	3.3	19	7.7	65	8
Coefficients of Variation			3.1	2.1	3	0.8	8.0		6.0	3.93	8.5	15	10.3	26	23

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by S. E. Ullrich, Washington State University - Pullman

2001 HARRINGTON/BARONESSE QTL#1 - FAIRFIELD, WA

Table 49

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein (%)	Protein (%)		amylase (20°DU)	glucan (ppm)	Quality Score	Rank	
1709	BARONESSE	2	41.5	90.9	88	*80.1	n.d.	3	10.2	3.82	40.1	71	43.3	159	41	17
1710	HARRINGTON	2	40.2	95.3	90	84.1	1.4	1	9.9	4.68	51.6	95	70.1	201	36	23
1711	NZDK 62	2	41.8	96.4	89	83.3	1.5	1	10.0	4.28	45.5	82	56.8	233	34	27
1712	NZDK 7	2	41.1	93.6	92	82.1	1.2	1	10.2	3.84	39.1	85	47.0	318	38	21
1713	NZDK 56	2	42.6	95.9	84	83.5	1.6	1	11.0	5.08	48.7	93	80.5	152	42	12
1714	NZDK 14	2	43.9	94.9	*75	82.7	1.5	1	10.8	4.78	45.9	89	66.5	276	47	3
1715	NZDK 64	2	42.5	96.9	82	83.1	1.6	1	11.2	4.94	46.4	91	73.4	226	42	12
1716	NZDK 59	2	41.8	97.2	87	82.9	1.5	1	10.5	4.37	44.9	83	64.2	173	39	20
1717	NZDK 97	2	41.9	95.3	86	84.2	1.6	1	10.6	4.89	48.5	95	75.3	145	45	6
1719	NZDK 55	2	43.1	95.2	85	83.7	1.6	1	10.6	4.86	49.4	91	78.2	144	46	4
1720	NZDK 00-111	2	38.6	87.6	87	82.5	1.4	1	10.7	4.52	45.9	69	71.7	254	42	12
1721	NZDK 00-106	2	40.7	90.4	87	83.2	1.4	1	10.0	4.41	49.0	83	61.0	182	36	23
1722	NZDK 00-109	2	38.5	90.4	88	82.8	1.5	1	9.9	4.58	47.3	62	68.7	191	34	27
1723	NZDK 00-123	2	42.4	91.9	86	84.1	1.6	1	10.5	4.74	47.9	94	72.2	157	42	12
1724	NZDK 00-108	2	41.8	93.0	87	83.4	1.4	1	10.6	4.68	48.4	96	67.4	144	49	2
1725	NZDK 00-117	2	41.8	92.7	85	82.9	1.5	1	9.5	4.66	52.3	85	73.8	147	40	19
1726	NZDK 00-148	2	39.2	91.3	90	83.2	1.4	1	10.0	4.45	46.3	92	66.4	218	34	27
1727	NZDK 00-154	2	38.0	90.9	89	83.2	1.4	1	9.9	4.38	45.6	90	64.2	178	30	30
1728	NZDK 00-155	2	37.5	90.0	86	83.4	1.4	1	10.9	4.49	43.6	93	63.4	231	42	12
1729	NZDK 00-150	2	40.3	92.5	83	83.8	1.4	1	10.3	4.73	45.8	98	63.9	201	50	1
1730	NZDK 00-151	2	41.8	95.5	85	84.1	1.5	1	9.8	4.45	48.2	85	62.4	198	36	23
1731	NZDK 00-146	2	39.5	92.1	88	83.0	1.4	1	10.7	4.65	47.5	97	63.7	218	43	8
1732	NZDK 00-153	2	39.0	92.9	88	83.3	1.5	1	10.6	4.67	46.1	94	62.1	314	36	23
1733	NZDK 00-137	2	39.0	87.1	90	*81.0	1.3	1	12.0	4.68	42.5	108	62.2	291	43	8
1734	NZDK 00-175	2	39.7	94.4	87	83.0	1.5	1	10.4	4.63	48.5	97	69.3	154	43	8
1735	NZDK 00-171	2	42.2	93.4	86	82.9	1.5	1	10.6	4.84	46.9	99	65.9	280	46	4
1736	NZDK 00-156	2	37.1	86.3	87	82.5	1.4	1	11.1	4.72	44.2	101	62.4	276	44	7
1737	NZDK 00-165	2	39.7	89.8	89	82.6	1.5	1	10.9	4.70	46.3	101	69.0	301	38	21
1738	NZDK 00-170	2	39.9	93.9	91	83.2	1.6	1	10.9	4.99	50.6	100	72.4	189	43	8
1739	NZDK 00-160	2	38.0	88.9	86	83.2	1.6	1	10.7	4.60	46.7	98	64.4	252	41	17

Table 49

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-					
			Weight	6/64"	Color	Extract	Wort	Wort	S/T	DP	amylase	glucan	Quality		
	(mg)	(%)	(Agrtron)	(%)	Color	Clarity	(%)	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score		
1718	HARRINGTON MALT CHECK	2	40.0	94.2	80	82.3	1.7	1	11.3	5.50	49.8	115	73.2	59	44
1740	HARRINGTON MALT CHECK	2	40.1	93.8	83	82.1	1.7	1	11.9	5.49	47.3	120	70.1	88	48
Minima			37.1	86.3	82	82.1	1.2		9.5	3.82	39.1	62	43.3	144	30
Maxima			43.9	97.2	92	84.2	1.6		12.0	5.08	52.3	108	80.5	318	50
Means			40.5	92.6	87	83.2	1.5		10.5	4.60	46.7	91	66.1	213	41
Standard Deviations			1.8	2.9	2	0.5	0.1		0.5	0.28	2.9	10	7.9	55	5
Coefficients of Variation			4.5	3.2	3	0.6	7.3		4.9	6.14	6.2	11	11.9	26	12

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by S. E. Ullrich, Washington State University - Pullman

2001 HARRINGTON/BARONESSE QTL #2 - PULLMAN, WA

Table 50

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort			Alpha-	Beta-	Overall		
			Weight (mg)	6/64" (%)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)	S/T (%)	DP (°ASBC)	amylase (20°DU)	glucan (ppm)		
1741	BARONESSE	2	38.6	84.9	83	*76.6	*2.5	2	13.2	*3.83	*29.7	93	*42.2	288	18	29
1742	HARRINGTON	2	34.6	76.7	83	80.9	1.4	1	13.3	4.93	38.2	133	65.7	235	28	20
1743	NZDK 28	2	36.8	82.0	89	80.9	1.4	1	13.6	4.81	37.8	139	66.5	323	20	25
1744	NZDK 50	2	35.2	81.2	79	80.0	1.4	1	13.9	4.89	36.1	143	71.3	251	19	27
1745	NZDK 53	2	38.7	86.6	78	80.2	1.6	1	14.0	5.25	37.8	152	84.4	203	20	25
1746	NZDK 62	2	38.9	91.3	81	80.9	1.3	1	12.6	*4.34	35.8	108	53.9	316	29	19
1747	NZDK 91	2	37.7	87.5	83	80.8	1.6	1	11.4	4.69	43.6	109	73.4	229	41	7
1748	NZDK 94	2	37.7	87.3	77	80.0	1.6	1	12.2	4.87	40.5	102	72.2	330	38	11
1749	NZDK 00-131	2	39.1	88.6	79	82.1	1.5	1	12.7	5.05	40.0	124	68.1	222	44	3
1750	NZDK 00-134	2	38.0	87.1	81	80.9	1.2	1	12.7	4.77	38.2	126	61.4	312	33	17
1751	NZDK 00-140	2	38.3	88.2	78	80.5	1.4	1	14.2	5.02	37.2	134	71.4	312	25	22
1752	NZDK 00-141	2	39.6	92.0	79	80.9	1.4	1	13.4	4.83	37.0	131	74.1	297	35	14
1753	NZDK 00-144	2	37.7	89.5	83	81.3	1.5	1	12.9	4.80	38.8	125	73.5	315	34	16
1754	NZDK 00-145	2	37.2	84.7	84	80.4	1.3	1	13.6	4.75	36.4	142	77.0	313	16	30
1755	NZDK 00-147	2	38.0	88.5	79	81.1	1.3	1	13.5	4.91	37.0	138	72.7	325	33	17
1756	NZDK 00-153	2	38.6	87.7	79	80.8	1.3	1	13.9	4.83	35.8	142	73.7	299	24	23
1757	NZDK 00-102	2	39.0	94.2	82	81.5	1.4	1	12.4	4.62	39.4	101	70.5	273	43	4
1758	NZDK 00-107	2	41.4	90.5	79	82.1	1.4	1	11.7	4.62	40.7	99	70.4	296	50	1
1759	NZDK 00-110	2	38.0	90.8	79	81.6	1.6	1	11.8	4.86	41.9	93	79.8	211	42	6
1760	NZDK 00-111	2	37.7	87.4	76	81.6	1.5	1	12.4	4.83	41.5	91	80.1	209	40	9
1762	NZDK 00-112	2	38.5	90.7	74	81.2	1.5	1	12.6	5.00	40.7	109	82.8	176	43	4
1763	NZDK 00-118	2	40.4	90.2	74	80.0	1.5	1	12.7	4.96	39.5	120	87.7	242	40	9
1764	NZDK 00-126	2	40.2	92.0	80	80.6	1.5	1	12.7	4.85	41.3	87	72.9	332	35	14
1765	NZDK 00-157	2	37.7	90.5	80	82.1	1.4	1	12.0	4.80	42.2	104	76.9	201	46	2
1766	NZDK 00-161	2	37.4	90.8	81	81.8	1.4	1	12.4	4.78	39.8	106	72.2	213	41	7
1767	NZDK 00-164	2	36.9	87.4	81	81.7	1.5	1	12.9	4.89	39.6	124	76.4	242	37	13
1768	NZDK 00-166	2	35.6	84.9	81	81.1	1.5	1	13.6	5.01	38.8	135	87.9	167	26	21
1769	NZDK 00-169	2	36.6	82.4	78	81.0	1.3	1	14.0	4.91	36.1	147	85.9	213	19	27
1770	NZDK 00-173	2	33.8	77.9	85	80.3	1.3	1	14.1	4.71	35.0	140	79.6	204	23	24
1771	NZDK 00-174	2	35.5	84.4	83	81.4	1.4	1	12.9	4.77	39.1	128	84.7	136	38	11

Table 50

Lab No.	Variety	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	
			Weight 6/64"	Color (%)	Extract (Agtron)	Wort Color	Wort Clarity	Protein (%)	Protein (%)	S/T (°ASBC)	DP (20°DU)
1761	HARRINGTON MALT CHECK	2	39.3	93.8	85	82.2	1.7	1	12.0	5.42	48.5
										124	75.5
Minima			33.8	76.7	74	80.0	1.2	11.4	4.62	35.0	87
Maxima			41.4	94.2	89	82.1	1.6	14.2	5.25	43.6	152
Means			37.8	87.3	80	81.0	1.4	13.0	4.86	38.8	121
Standard Deviations			1.7	4.1	3	0.6	0.1	0.8	0.14	2.2	19
Coefficients of Variation			4.5	4.8	4	0.8	7.5	5.8	2.78	5.7	16
											10.4
											22
											30

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by S. E. Ullrich, Washington State University - Pullman

2001 MALT ISL NURSERY, REPLICATE 1 - PULLMAN, WA

Table 51

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein						
2142	S0107	6	40.5	95.2	86	77.3	n.d.	3	11.7	3.67	32.6	53	41.0	427	24	39
2143	SO112	6	41.6	95.3	81	77.2	n.d.	3	12.3	4.18	35.3	57	43.7	383	24	39
2144	S0205	6	39.6	93.8	82	77.1	n.d.	3	11.2	3.62	34.7	45	36.8	420	20	47
2145	S0312	6	39.9	93.7	85	77.2	n.d.	3	11.6	3.71	33.2	51	37.7	444	20	47
2146	S0401	6	40.6	94.1	85	77.0	n.d.	3	11.5	3.56	33.7	47	36.0	457	20	47
2147	S0503	6	41.1	94.4	88	78.1	n.d.	3	10.7	3.79	37.7	48	37.8	433	24	39
2148	S0615	6	42.3	96.1	81	77.4	n.d.	3	12.3	4.19	36.7	55	46.2	447	27	34
2149	S0731	6	41.8	95.4	82	78.3	n.d.	3	11.5	4.19	39.8	47	46.4	413	31	27
2150	S0833	6	37.7	92.9	85	78.3	n.d.	3	11.8	4.18	38.4	52	42.6	405	28	30
2151	S0911	6	38.5	93.8	85	77.9	n.d.	3	12.3	4.57	40.0	51	45.8	390	27	34
2152	S1101	6	37.8	92.0	88	77.4	n.d.	3	10.5	3.55	34.4	45	38.0	437	15	59
2153	S1235	6	36.3	91.5	88	77.9	n.d.	3	11.0	3.79	36.0	48	37.9	461	20	47
2154	S1345	6	37.2	92.4	88	78.4	n.d.	3	11.1	4.08	39.7	47	41.5	398	28	30
2155	S1445	6	35.6	90.5	87	77.6	n.d.	3	12.3	4.18	35.1	53	42.1	441	24	39
2156	S1543	6	40.6	94.7	77	78.6	n.d.	3	12.0	4.37	37.8	68	50.8	367	31	27
2157	SB4414	6	39.9	94.3	82	78.3	n.d.	3	11.5	4.10	36.4	57	43.1	378	28	30
2158	S0901	6	40.5	99.0	86	77.9	n.d.	3	11.3	3.78	36.2	54	39.1	448	20	47
2159	S0103	6	42.7	96.1	81	77.7	n.d.	3	11.8	4.33	38.9	65	47.1	411	27	34
2160	S0219	6	39.2	93.4	81	77.0	n.d.	3	11.0	3.55	35.3	40	36.4	462	20	47
2161	S0317	6	41.5	95.2	83	77.8	n.d.	3	11.2	3.86	36.0	54	38.4	439	20	47
2163	S0405	6	40.0	93.5	83	77.1	n.d.	3	11.6	3.75	34.3	52	37.8	440	20	47
2164	S0527	6	39.8	93.7	87	77.9	n.d.	3	11.2	3.97	36.3	56	42.5	359	24	39
2165	S0634	6	41.1	94.8	84	77.6	n.d.	3	11.7	4.17	36.9	58	43.6	374	24	39
2166	S0707	6	41.2	96.0	78	77.6	n.d.	3	12.3	4.61	38.7	57	49.4	395	34	25
2167	S0875	6	39.6	93.2	85	77.9	n.d.	3	11.4	4.13	38.1	52	39.9	398	20	47
2168	S0904	6	38.9	95.5	82	77.3	n.d.	3	12.3	4.43	39.0	59	43.2	366	24	39
2169	S1111	6	38.5	93.0	84	76.6	n.d.	3	11.1	3.77	35.3	49	36.9	453	20	47
2170	S1229	6	37.5	91.6	87	77.8	n.d.	3	10.9	4.13	37.9	48	38.4	422	20	47
2171	S1343	6	37.0	91.9	85	77.4	n.d.	3	11.7	4.23	37.8	45	40.1	406	24	39
2172	STEPTOE	6	39.9	94.8	83	77.0	n.d.	3	12.0	3.73	33.2	46	36.9	487	20	47

Table 51

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein						
		(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank		
2173	M0107	6	34.6	84.7	74	80.3	1.8	1	15.0	5.73	38.5	157	59.9	188	39	16
2174	M0108	6	33.3	83.6	81	81.7	1.7	1	13.1	5.43	42.8	132	58.7	214	46	5
2175	M0208	6	33.8	87.7	77	81.0	2.0	1	14.0	5.80	44.1	166	61.5	160	42	12
2176	M0307	6	34.2	78.3	85	82.2	1.8	1	11.9	4.96	44.2	104	55.9	213	51	1
2177	M0402	6	32.5	72.0	80	79.7	1.7	1	13.7	5.38	41.0	155	56.4	163	44	9
2178	M0549	6	33.1	82.9	76	81.6	1.8	1	13.8	5.36	40.8	149	59.9	156	49	3
2179	M0641	6	35.7	82.8	75	79.9	1.7	1	13.4	5.46	41.2	187	57.4	226	39	16
2180	M0703	6	35.4	81.0	80	80.0	1.8	1	13.9	5.35	40.4	152	61.4	195	45	7
2181	M0923	6	34.8	85.0	80	81.9	1.9	1	13.2	5.43	42.7	130	63.2	202	38	19
2182	M1115	6	35.6	81.6	79	80.8	1.7	2	12.4	4.70	39.1	127	56.0	174	45	7
2184	M1219	6	36.0	86.5	81	80.3	n.d.	3	13.7	4.80	37.0	128	57.0	208	39	16
2185	M1303	6	34.1	82.0	80	79.3	1.7	1	13.5	4.57	35.3	125	52.8	297	34	25
2186	M1415	6	34.9	79.2	83	79.6	1.6	1	13.2	4.96	38.3	167	58.0	195	42	12
2187	M1502	6	33.8	86.8	83	80.0	2.0	2	13.6	4.78	36.9	126	51.4	322	37	21
2188	M1563	6	33.0	86.4	84	79.5	1.8	1	13.6	5.13	38.0	120	55.8	192	38	19
2189	M1521	6	34.7	82.5	79	80.1	1.7	1	14.5	5.12	36.6	153	59.7	164	43	11
2190	M0109	6	34.1	83.5	75	79.7	1.8	1	14.5	5.65	38.9	176	61.1	167	25	38
2191	M0105	6	33.6	71.9	78	78.5	1.7	1	14.2	5.44	38.8	185	57.3	122	28	30
2192	M0223	6	31.7	79.2	84	78.1	1.9	1	13.9	5.09	37.6	162	48.5	164	41	14
2193	M0403	6	32.1	67.4	78	80.7	1.7	1	13.2	5.33	42.3	175	54.7	122	44	9
2194	M0542	6	32.3	70.5	82	79.1	2.1	2	14.0	4.90	36.8	145	48.5	179	40	15
2195	M0621	6	35.0	78.4	78	79.4	2.1	2	13.9	4.98	36.8	153	46.2	204	47	4
2196	M0710	6	35.0	77.5	83	79.4	1.6	1	14.3	4.82	35.8	126	48.1	218	36	22
2197	M0902	6	34.0	78.6	82	80.7	1.7	1	14.2	5.70	42.1	155	53.1	148	51	1
2198	M1128	6	32.8	68.0	79	79.6	1.6	1	13.9	5.11	37.8	174	52.9	189	36	22
2199	M1228	6	34.6	69.8	83	78.7	1.9	2	13.9	4.81	35.8	135	47.5	272	36	22
2200	M1324	6	32.4	74.5	81	77.1	1.7	2	15.8	4.94	32.9	136	45.5	300	27	34
2201	M1444	6	33.7	69.0	80	78.3	1.8	2	14.7	5.25	36.8	168	48.7	202	31	27
2202	MOREX	6	32.2	76.1	82	80.6	1.7	1	14.0	5.38	39.9	144	56.0	102	46	5

Table 51

Lab No.	Variety	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-					
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein	S/T	DP	amylase	glucan	Quality
			(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score
2162	MOREX MALT CHECK	6	31.1	71.0	75	80.0	2.0	1	12.9	5.88	48.5	121	76.0	114	31
2183	MOREX MALT CHECK	6	31.2	70.6	77	79.9	2.0	1	12.5	5.98	50.1	129	79.2	55	32
Minima			31.7	67.4	74	76.6	1.6		10.5	3.55	32.6	40	36.0	102	15
Maxima			42.7	99.0	88	82.2	2.1		15.8	5.80	44.2	187	63.2	487	51
Means			36.8	86.6	82	78.8	1.8		12.7	4.59	37.7	99	48.0	309	32
Standard Deviations			3.3	8.9	3	1.5	0.1		1.3	0.67	2.7	51	8.3	121	10
Coefficients of Variation			8.9	10.2	4	1.9	7.5		10.3	14.69	7.3	51	17.2	39	31

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Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by S. E. Ullrich, Washington State University - Pullman

2001 MALT ISL NURSERY, REPLICATE #2 - PULLMAN, WA

Table 52

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein						
2203	M0542	6	33.0	79.5	79	80.2	1.8	1	13.9	5.36	40.4	142	50.9	154	52	4
2205	S1543	6	38.7	90.4	78	76.4	2.5	2	12.6	3.93	33.2	59	35.7	453	16	55
2206	M0549	6	32.7	83.9	78	80.8	1.7	1	14.0	5.32	38.5	131	50.6	188	44	13
2207	S0317	6	39.1	94.1	85	76.7	n.d.	3	12.1	4.02	35.1	47	33.2	716	20	39
2208	S1111	6	37.9	91.8	84	76.2	2.3	2	12.2	3.68	31.8	41	31.2	778	21	36
2209	M1502	6	32.6	85.3	80	80.2	2.0	2	14.5	4.91	36.0	116	46.6	370	35	27
2210	M1128	6	33.6	81.6	74	81.2	1.6	1	14.1	5.66	40.4	160	53.9	240	47	10
2211	M1219	6	35.5	84.7	77	80.1	1.7	1	13.9	5.12	37.5	117	51.4	235	44	13
2212	S0312	6	39.1	94.5	82	76.8	2.9	2	11.6	3.93	34.9	44	33.0	688	21	36
2213	S0401	6	39.5	93.2	85	77.2	3.0	2	11.3	3.82	34.6	43	34.9	696	21	36
2214	M0710	6	36.5	88.2	79	80.4	1.8	1	13.3	4.78	36.4	107	51.3	292	44	13
2215	M0902	6	33.1	78.8	80	81.2	1.6	1	14.4	5.79	41.6	143	57.9	189	44	13
2216	S0112	6	40.2	95.4	78	76.9	n.d.	3	12.1	4.27	37.4	49	37.1	684	20	39
2217	S0731	6	41.2	94.3	83	76.8	n.d.	3	12.6	4.00	32.9	43	36.9	693	15	57
2218	M0403	6	30.2	65.0	79	78.9	1.7	1	14.3	5.20	38.1	146	49.3	169	37	23
2219	S1101	6	36.1	88.6	84	75.5	n.d.	3	12.2	3.73	32.5	43	33.0	704	20	39
2220	M1303	6	31.5	68.8	82	77.7	1.7	1	14.8	4.43	31.3	112	45.2	341	13	59
2221	S0503	6	40.1	93.0	83	77.4	n.d.	3	11.6	3.90	35.9	49	37.0	563	20	39
2222	M1228	6	34.8	76.4	80	79.5	2.0	1	13.9	5.00	37.6	127	56.9	258	36	25
2223	S0904	6	36.9	90.9	85	76.2	n.d.	3	13.0	4.41	35.0	54	40.4	607	19	54
2224	M0621	6	33.2	71.6	77	78.8	2.0	2	14.8	5.22	36.9	172	54.2	230	30	29
2226	S1343	6	35.7	89.9	87	76.7	n.d.	3	12.1	4.16	34.8	42	38.2	619	20	39
2227	S1445	6	34.5	87.1	88	76.5	n.d.	3	12.4	4.32	36.2	45	38.4	649	20	39
2228	STEPTOE	6	38.0	91.9	85	76.0	n.d.	3	11.9	3.59	32.6	43	34.7	788	20	39
2229	M0107	6	32.8	79.9	74	78.8	1.6	1	15.3	5.45	37.1	153	54.8	207	36	25
2230	S0219	6	37.7	92.8	85	76.4	n.d.	3	11.5	3.67	33.9	38	37.4	527	20	39
2231	M0307	6	33.2	77.9	81	81.1	1.4	1	13.6	4.88	37.6	121	53.2	178	44	13
2232	S1345	6	35.6	88.6	87	76.4	n.d.	3	12.2	3.80	32.8	46	37.0	521	20	39
2233	M0208	6	31.6	71.5	79	81.0	1.8	1	14.1	5.65	41.5	175	57.7	103	38	20
2234	M1444	6	33.3	75.2	80	79.6	1.5	1	14.8	5.44	37.9	146	52.1	182	37	23

Table 52

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein						
		(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank		
2235	S0707	6	39.9	93.6	85	76.9	2.8	2	12.2	4.32	37.2	51	44.0	452	25	32
2236	M1563	6	31.2	78.0	88	81.0	1.6	1	12.9	5.21	43.5	107	51.4	188	48	9
2237	S0527	6	38.5	93.3	88	77.1	n.d.	3	12.2	3.99	33.9	45	38.9	503	20	39
2238	M0105	6	32.8	71.8	81	79.8	0.7	1	14.4	5.42	39.0	164	52.3	114	38	20
2239	M0703	6	34.1	77.9	83	80.0	0.8	1	13.9	4.93	37.0	155	53.7	139	55	1
2240	M0108	6	31.8	71.8	80	81.2	0.9	1	13.9	5.25	38.7	144	53.0	142	52	4
2241	S0405	6	39.2	92.5	88	76.7	n.d.	3	12.1	3.75	31.3	48	37.0	500	20	39
2242	S0901	6	39.4	94.2	85	76.4	n.d.	3	13.0	3.71	29.5	53	35.8	629	15	57
2243	S0103	6	40.8	95.3	83	76.9	1.8	2	13.0	4.12	33.4	55	39.4	523	16	55
2244	S0634	6	40.1	94.8	84	77.8	1.7	2	12.3	4.10	35.0	60	44.5	429	25	32
2245	M1115	6	35.0	82.1	79	81.3	0.8	1	12.9	4.70	36.8	127	51.6	188	44	13
2247	S0107	6	40.2	94.7	84	77.5	n.d.	3	11.8	3.87	34.3	51	40.7	516	24	34
2248	M0223	6	33.6	92.3	81	80.6	0.9	1	13.3	5.28	42.3	133	51.4	232	53	2
2249	S0875	6	36.4	87.9	87	79.1	1.3	2	11.8	4.69	40.2	98	46.2	303	47	10
2250	S0833	6	37.4	91.5	90	77.8	n.d.	3	11.7	4.11	37.2	50	39.2	381	20	39
2251	S1235	6	35.2	88.8	89	77.5	n.d.	3	11.4	4.16	38.6	50	39.5	432	20	39
2252	M0641	6	35.2	81.9	78	80.0	1.2	2	14.3	5.31	37.7	193	51.5	189	31	28
2253	M1415	6	34.3	76.9	83	80.4	1.1	2	13.0	4.88	39.6	136	53.6	129	49	7
2254	S0615	6	39.7	94.2	85	76.1	n.d.	3	12.2	4.36	37.3	57	46.1	439	27	31
2255	M0923	6	34.4	81.5	84	81.9	0.7	1	13.3	5.43	42.0	143	60.4	135	49	7
2256	S0911	6	37.8	91.4	85	77.7	n.d.	3	11.6	4.45	39.2	54	42.2	424	24	34
2257	S0205	6	38.4	89.8	87	77.2	n.d.	3	11.4	3.71	34.2	46	38.1	471	20	39
2258	M1324	6	33.3	82.2	85	79.5	0.6	1	13.8	4.81	35.4	121	55.4	198	38	20
2259	SB4414	6	38.9	85.7	86	78.1	n.d.	3	11.2	4.01	37.2	64	43.6	433	28	30
2260	M0109	6	33.7	82.5	79	81.7	0.9	1	13.9	5.72	44.0	149	59.7	135	53	2
2261	M0402	6	32.6	74.8	80	81.0	0.8	1	13.4	5.47	41.2	158	57.5	144	51	6
2262	S1229	6	35.4	90.6	88	77.3	n.d.	3	11.0	4.08	38.3	52	39.8	496	20	39
2263	M1521	6	34.9	85.1	83	82.1	1.0	2	12.8	5.29	42.5	121	55.6	170	45	12
2264	MOREX	6	32.2	75.7	87	82.3	0.8	1	12.8	5.42	44.6	136	60.3	104	44	13

Table 52

Lab No.	Variety	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-					
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein (%)	Protein (%)	S/T	DP (°ASBC)	amylase (20°DU)	glucan (ppm)	Quality Score
2204	MOREX MALT CHECK	6	30.9	70.7	78	80.1	2.0	1	12.5	6.09	51.5	113	69.1	58	32
2225	MOREX MALT CHECK	6	30.6	71.1	78	80.2	2.1	1	12.2	6.08	52.6	114	72.2	90	36
2246	MOREX MALT CHECK	6	31.2	71.1	76	80.7	1.1	1	12.6	6.21	50.7	126	78.8	40	27
Minima			30.2	65.0	74	75.5	0.6		11.0	3.59	29.5	38	31.2	103	13
Maxima			41.2	95.4	90	82.3	3.0		15.3	5.79	44.6	193	60.4	788	55
Means			35.8	85.4	83	78.7	1.5		12.9	4.61	37.0	95	45.9	376	32
Standard Deviations			3.0	8.0	4	2.0	0.6		1.1	0.67	3.4	48	8.5	208	13
Coefficients of Variation			8.3	9.4	5	2.5	41.7		8.5	14.59	9.2	51	18.5	55	41

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by S. E. Ullrich, Washington State University - Pullman

2001 SINGLE REPLICATE NURSERY #1 - PULLMAN, WA

Table 53

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-			Beta-	Quality	Overall		
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein (%)	Protein (%)	S/T (%)	DP (°ASBC)	amylase (20°DU)	glucan (ppm)		
2468	WA8201-00	6	40.9	95.7	74	84.6	2.1	1	*9.9	5.05	*54.6	82	74.5	106	41	17
2469	WA-00-NZ-232	2	40.5	95.2	78	79.5	1.8	1	13.0	4.70	39.1	92	57.1	192	33	42
2470	WA17571-00	2	37.1	89.0	74	80.4	n.d.	3	12.7	4.16	34.0	144	43.8	192	25	67
2471	WA18459-00	2	39.0	94.8	78	81.5	n.d.	3	12.1	4.60	39.7	87	60.2	129	41	17
2472	WA12266-00	2	40.3	97.4	75	81.2	1.4	1	11.7	4.11	35.7	91	60.5	148	38	24
2473	WA-00-NZ-86	2	37.4	*82.4	72	80.8	n.d.	3	12.2	4.11	35.3	102	58.9	283	24	70
2474	WA-00-NZ-102	2	38.0	86.8	78	81.2	1.4	1	13.2	4.47	34.9	97	58.4	412	33	42
2475	WA17156-00	2	36.9	87.8	60	80.0	2.1	2	13.7	4.05	30.3	92	57.6	225	14	75
2476	WA17857-00	2	38.6	92.2	66	80.5	n.d.	3	13.5	4.42	33.5	107	47.3	547	32	49
2477	WA-00-NZ-153	2	41.6	94.8	83	81.4	1.3	1	12.2	3.98	33.7	105	55.6	300	35	33
2478	WA7701-00	6	37.6	87.8	75	80.4	2.4	1	13.1	5.72	44.0	149	79.8	91	49	8
2479	WA21621-00	2	39.8	91.9	80	81.9	1.4	1	11.7	4.21	36.7	100	63.8	369	33	42
2480	WA-00-NZ-230	2	44.4	95.8	76	78.1	1.9	1	14.2	5.01	36.8	126	82.4	218	33	42
2482	WA-00-NZ-151	2	39.1	93.4	81	80.0	1.2	1	12.5	3.63	30.6	109	50.8	186	37	29
2483	WA17308-00	2	42.4	95.4	75	79.7	1.4	1	11.9	3.77	32.9	93	45.8	241	39	22
2484	WA-00-NZ-231	2	42.4	95.4	73	79.0	1.9	1	14.2	5.19	39.2	100	71.7	157	26	64
2485	WA-00-NZ-24	2	38.5	94.3	75	80.1	1.8	2	13.5	3.42	26.6	74	36.8	490	24	70
2486	WA17309-00	2	40.7	95.1	75	79.6	2.5	2	12.4	3.83	31.8	94	46.5	410	34	35
2487	WA19210-00	2	40.3	97.9	75	76.8	2.2	2	14.1	3.80	27.1	82	45.3	633	17	74
2488	WA15730-00	2	37.9	94.7	72	78.9	2.1	2	12.8	4.02	32.4	85	44.3	475	22	73
2489	WA-00-NZ-172	2	37.0	90.7	76	81.3	2.5	2	11.9	3.75	33.3	86	51.7	363	30	56
2490	WA-00-NZ-190	2	39.9	94.5	76	81.5	1.4	1	12.6	4.27	34.6	114	60.1	209	34	35
2491	WA-00-NZ-22	2	38.8	96.0	80	80.9	1.2	1	11.6	3.57	32.1	74	46.5	509	33	42
2492	WA-00-NZ-49	2	40.9	92.5	77	80.7	1.2	1	13.5	4.27	32.5	100	47.3	387	34	35
2493	WA17405-00	2	39.8	93.4	78	79.4	1.4	1	12.6	3.61	29.6	91	46.8	496	25	67
2494	WA-00-NZ-222	2	41.2	88.6	80	80.0	1.5	1	10.9	4.57	42.9	103	74.1	159	45	11
2495	WA10496-00	2	40.0	93.9	67	81.4	n.d.	3	12.7	3.95	31.7	90	52.6	337	26	64
2496	WA13983-00	2	40.6	94.2	79	83.2	2.0	1	12.8	5.18	42.4	108	78.2	176	41	17
2497	WA17572-00	2	42.9	96.9	75	81.3	1.7	1	13.7	4.73	35.2	144	67.4	221	32	49
2498	WA13130-00	2	43.0	97.6	70	80.5	n.d.	3	12.4	4.16	34.1	63	45.8	321	34	35

Table 53

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein (%)	Protein (%)	S/T (%)	DP (°ASBC)	amylase (20°DU)	glucan (ppm)		
2499	WA7735-00	6	36.0	92.6	76	79.5	1.9	1	13.5	4.91	38.3	120	74.8	292	34	35
2500	WA-00-NZ-195	2	35.9	90.3	63	80.9	1.6	1	13.6	4.50	33.2	117	66.9	166	31	54
2501	HARRINGTON	2	39.7	94.9	79	82.6	1.7	1	13.0	5.15	42.1	113	80.8	212	42	14
2503	WA10326-00	6	38.0	92.5	74	80.5	2.0	1	11.7	4.78	43.4	117	71.3	250	47	9
2504	WA-00-NZ-248	2	44.2	95.2	83	81.3	1.9	1	11.3	4.99	45.4	101	68.0	143	55	1
2505	WA-00-NZ-124	2	43.0	97.9	71	81.6	1.9	1	13.4	5.02	38.6	110	76.8	418	38	24
2506	WA-00-NZ-13	2	38.7	92.0	76	80.9	1.3	1	13.8	4.22	31.1	116	49.0	343	30	56
2507	WA-00-NZ-282	2	41.2	92.4	76	81.2	1.8	1	14.2	5.85	41.3	*171	85.0	168	32	49
2508	WA14127-00	2	43.3	98.2	60	79.1	1.8	2	14.1	3.95	29.1	111	53.2	317	26	64
2509	WA-00-NZ-55	2	35.9	85.6	76	82.7	1.9	1	13.1	5.38	41.2	118	73.3	104	42	14
2510	WA17283-00	2	41.7	98.2	65	82.1	1.6	1	12.1	4.88	42.2	118	81.7	187	53	4
2511	WA-00-NZ-238	2	42.4	91.8	72	80.1	1.2	1	11.5	3.83	34.9	109	57.9	218	36	30
2512	WA16416-00	6	35.3	89.0	69	84.4	2.8	1	11.4	5.41	51.9	116	70.2	67	38	24
2513	WA-00-NZ-203	2	40.0	90.1	82	79.8	1.7	1	12.4	4.52	38.3	104	64.9	182	40	20
2514	WA17867-00	2	39.1	92.5	72	78.5	1.9	2	13.1	4.07	32.5	103	46.9	533	28	60
2515	WA12222-00	2	41.8	96.0	74	80.1	1.4	1	11.8	4.13	35.1	101	52.1	229	39	22
2516	WA16801-00	2	40.4	96.8	60	79.4	1.6	2	13.1	3.76	30.0	116	45.7	357	33	42
2517	WA13180-00	2	41.3	96.6	70	80.3	n.d.	3	12.9	4.46	35.4	71	44.4	297	38	24
2518	WA13534-00	2	39.6	97.5	78	81.7	1.9	1	14.2	5.69	40.8	144	69.1	253	30	56
2519	WA10427-00	2	41.6	94.8	71	83.5	1.8	1	12.0	5.05	43.0	107	70.3	137	54	2
2520	WA7720-00	6	35.8	92.6	84	82.0	2.3	1	11.9	5.69	51.5	135	83.3	133	46	10
2521	WA-00-NZ-87	2	40.3	90.1	70	82.5	1.9	1	12.0	5.23	44.9	134	88.6	121	50	6
2522	WA-00-NZ-214	2	46.0	98.1	67	78.7	2.6	1	15.4	5.65	38.7	125	65.1	243	29	59
2523	WA7310-00	2	41.2	97.1	70	78.9	2.0	2	14.7	4.24	30.5	107	50.3	245	25	67
2525	WA-00-NZ-122	2	36.7	88.6	77	80.4	1.5	1	12.9	3.66	29.5	76	45.6	398	24	70
2526	WA-00-NZ-45	2	39.4	93.6	78	81.4	1.9	2	13.4	4.64	36.0	117	48.0	99	51	5
2527	WA-00-NZ-51	2	39.3	95.0	69	80.8	n.d.	3	12.7	4.46	36.3	126	60.9	115	40	20
2528	WA-00-NZ-11	2	38.6	91.8	75	79.4	1.3	2	13.2	3.86	29.7	95	36.9	356	28	60
2529	WA13565-00	2	38.2	95.1	75	81.2	1.7	1	13.1	5.24	42.0	122	64.9	212	42	14
2530	WA12238-00	2	40.2	92.0	80	81.2	1.8	1	12.1	4.79	42.5	90	60.0	133	50	6

Table 53

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein (%)	Protein (%)	S/T (%)	DP (°ASBC)	amylase (20°DU)	glucan (ppm)	Score	Rank
2531	WA-00-NZ-73	2	35.6	*74.1	73	79.5	1.6	2	12.5	4.40	35.9	112	51.1	346	36	30
2532	HARRINGTON	2	40.1	95.5	78	82.3	1.7	1	13.0	5.42	42.5	128	79.2	159	44	12
2533	WA-00-NZ-35	2	40.3	96.7	71	80.0	1.5	1	12.8	4.19	32.9	105	40.7	410	34	35
2534	WA-00-NZ-278	2	42.6	95.0	78	82.2	1.6	1	11.9	4.87	42.5	115	68.6	205	54	2
2535	WA14547-00	2	39.1	94.6	72	80.1	1.9	1	14.5	4.63	32.5	109	54.5	115	38	24
2536	WA7124-00	2	44.0	95.5	80	81.2	1.7	1	13.9	5.01	37.3	118	68.1	388	36	30
2537	WA-00-NZ-21	2	38.5	94.7	76	79.9	1.5	1	13.0	3.97	32.9	93	42.9	335	28	60
2538	WA14503-00	2	41.3	95.7	80	79.1	1.4	1	11.9	3.76	32.6	103	45.4	107	43	13
2539	HARRINGTON	2	42.1	94.5	77	81.4	1.6	1	13.9	5.31	38.6	123	75.9	253	35	33
2540	WA-00-NZ-147	2	38.6	92.6	79	79.9	1.6	1	13.2	4.64	36.9	107	57.3	357	32	49
2541	WA-00-NZ-154	2	39.5	95.7	69	82.5	n.d.	3	13.0	5.72	47.3	105	97.7	72	32	49
2542	WA16057-00	2	38.6	95.7	78	78.3	3.0	1	12.5	3.84	32.5	83	45.0	290	28	60
2543	WA-00-NZ-234	2	45.4	97.7	75	80.1	n.d.	3	13.4	5.47	43.0	94	88.4	163	33	42
2544	WA14535-00	2	41.7	94.7	73	80.4	*3.5	1	11.9	4.36	39.9	87	59.0	66	31	54
2545	WA-00-NZ-167	2	41.7	94.8	78	79.5	2.0	1	12.6	4.05	35.1	104	51.1	245	34	35
2481	HARRINGTON MALT CHECK	2	39.4	93.6	81	82.3	1.7	1	11.8	5.43	48.2	107	74.3	74	39	
2502	HARRINGTON MALT CHECK	2	40.1	94.7	83	82.4	1.7	1	11.7	5.45	48.5	107	77.2	87	45	
2524	HARRINGTON MALT CHECK	2	39.4	94.4	80	82.0	1.7	1	11.9	5.40	48.7	112	71.3	67	42	
2546	HARRINGTON MALT CHECK	2	39.8	93.7	84	81.9	1.8	1	11.4	5.29	48.0	106	69.5	67	39	
Minima			35.3	85.6	60	76.8	1.2		10.9	3.42	26.6	63	36.8	66	14	
Maxima			46.0	98.2	84	84.6	3.0		15.4	5.85	51.9	149	97.7	633	55	
Means			40.0	93.9	74	80.7	1.8		12.8	4.53	36.7	105	60.6	259	35	
Standard Deviations			2.3	2.9	5	1.4	0.4		0.9	0.63	5.4	18	14.2	130	9	
Coefficients of Variation			5.9	3.1	7	1.7	22.5		7.0	13.95	14.8	17	23.4	50	24	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by S. E. Ullrich, Washington State University - Pullman

Appendix A: **METHODS**

Cleaning All samples were cleaned on a Carter Dockage Tester and any material not retained on a 5/64" screen was discarded.

Barley Mill Ground barley was prepared with a Labconco Burr mill that was adjusted so that only 35% of the grist remained on a 525 µm sieve after 3 min of shaking and tapping.

Kernel Weight The number of kernels in a 20 g aliquot of each sample was counted electronically and the '1000 kernel weight' was calculated.

Plumpness Samples were sized on a Eureka-Niagra Barley Grader and the percentage of the seeds retained on a 6/64" screen was determined.

Barley Color The brightness of the grains was measured using an Agtron M45-D analyzer.

Barley Moisture Content Five g of ground sample was dried for 3 h at 106°C. The percentage of weight loss that occurred during this drying was calculated.

Barley Protein Content Total nitrogen values were obtained using an automated Dumas combustion procedure with a LECO FP-528 analyzer. Nitrogen values were converted to protein percentages by multiplication by 6.25.

Malting Conditions 170 g (db) barley samples were steeped at 16°C for 32-48 h, to 45% moisture, by alternating 4 h of wet steep with 4 h of air rest. The steeped samples were placed in a chamber for 5 d at 17°C and near 100% R.H., in cans that were rotated for 3.0 min every 30 min. The germinated grain (green malt) was kilned for 24 h as follows: 0.5 h from 25°C to 49°C, 9.5 h at 49°C, 0.5 h from 49°C to 54°C, 4.0 h at 54°C, 0.5 h from 54°C to 60°C, 3.0 h at 60°C, 0.5 h from 60°C to 68°C, 2.0 h at 68°C, 0.5h from 68°C to 85°C, and 3.0 h at 85°C.

Malt Mill Fine-grind malts were prepared with a Miag laboratory cone mill that was adjusted so that 10% of the grist remained on a 525 µm sieve after 3 min of shaking, with tapping. Coarse-grind malts were prepared with a corrugated roll mill that was adjusted so that 75% of the grist remained on a 525 µm sieve. Ground malts for moisture, protein and amyloytic activity analyses were ground in a Labconco Burr mill (see Barley Mill).

Malt Moisture Content See Barley Moisture Content.

Malt Protein Content See Barley Protein Content.

Malt Extract The finely ground samples were extracted using the Malt-4 procedure (Methods of Analysis of the ASBC, 8th ed, 1992), except that all weights and volumes specified for the method were halved. The specific gravity of the filtrate was measured with an Anton/Parr DMA5000 density meter. The density data were used to calculate the amount of soluble material present in the filtrate, and thus the percentage that was extracted from the malt.

Wort Color was determined on a Skalar SAN plus analyzer by subtracting the absorbance at 700 nm from that at 430nm and dividing by a factor that was determined by comparison with values obtained in a collaborative test.

Wort Clarity was assessed by visual inspection.

β-Glucan Levels were determined on a Skalar SAN plus analyzer by using the Wort-18 fluorescence flow injection analysis method with calcofluor as the fluorescent agent (Methods of Analysis of the ASBC, 8th ed, 1992).

Soluble (Wort) Protein Levels were determined on a Skalar SAN plus analyzer using the Wort-17 UV-spectrophotometric method (Methods of Analysis of the ASBC, 8th ed, 1992).

S/T Ratio was calculated as Soluble Protein / Total Malt Protein

Diastatic Power Values were determined on a Skalar SAN plus analyzer by the automated ferricyanide procedure Malt-6A (Methods of Analysis of the ASBC, 8th ed, 1992).

α-Amylase activities were measured on a Skalar SAN plus analyzer by heating the extract to 73°C to inactivate any β-amylase present. The remaining (α-amylase) activity was measured as described for Diastatic Power Values.

Quality Scores were calculated by using a modification of the method of Clancy and Ullrich (Cereal Chem. 65:428-430, 1988). The criteria used to quantify individual quality factors are listed in Table A1.

Overall Rank Values were ordered from low to high based on their Quality Scores. A rank of '1' was assigned to the sample with the best quality score.

Appendix B

2001 Crop Year

Quality Score Parameters for 2- and 6-rowed barleys

Quality parameter	2-rowed		6-rowed	
	condition	score	condition	score
Kernel Weight (mg)	> 42.0	5	> 32.0	5
	40.1–42.0	4	30.1–32.0	4
	38.1–40.0	2	28.1–30.0	2
	≤ 38.0	0	≤ 28.0	0
on 6/64 "	≥ 90.0	5	≥ 77.0	5
	85.0–89.9	3	70.0–76.9	3
	< 85.0	0	< 70.0	0
Malt Extract (% db)	≥ 81.0	10	≥ 80.0	10
	79.5–80.9	7	79.0–79.9	7
	78.0–79.4	4	78.0–78.9	4
	< 78.0	0	< 78.0	0
Wort Clarity 3=hazy 2=slightly hazy 1=clear	= 3	0	= 3	0
	= 2	1	= 2	1
	= 1	2	= 1	2
	1=clear			
Barley Protein (% db)	≥ 13.5	0	≥ 14.0	0
	12.6–13.4	5	12.6–13.9	5
	10.1–12.5	10	10.6–12.5	10
	≤ 10.0	5	≤ 10.5	5
Wort Protein (% db)	> 6.0	0	> 6.0	0
	5.1–6.0	3	5.3–6.0	3
	4.4–5.0	7	4.6–5.2	7
	< 4.4	0	< 4.6	0
S/T (Soluble/Total Protein, % db)	> 46.0	0	> 46.0	0
	40.0–46.0	5	40.0–46.0	5
	< 40.0	0	< 40.0	0
DP (Diastatic Power, ° ASBC)	> 140.0	0	> 170.0	0
	130.1–140.0	4	160.1–170.0	4
	110.0–130.0	7	140.0–160.0	7
	95.0–109.9	4	130.0–139.9	4
	< 95.0	0	< 130.0	0
Alpha-amylase (20° DU)	> 55.0	0	> 60.0	0
	50.1–55.0	4	55.1–60.0	4
	40.0–50.0	7	45.0–55.0	7
	35.0–39.9	4	40.0–44.9	4
	< 35.0	0	< 40.0	0
Beta-glucan (ppm)	< 40	0	< 40	0
	40–80	3	40–80	3
	80 – 150	7	80 – 150	7
	150 – 300	3	150 – 300	3
	> 300	0	> 300	0