



"Double Colored Man Tou" steamed buns, photo by Roy Chung

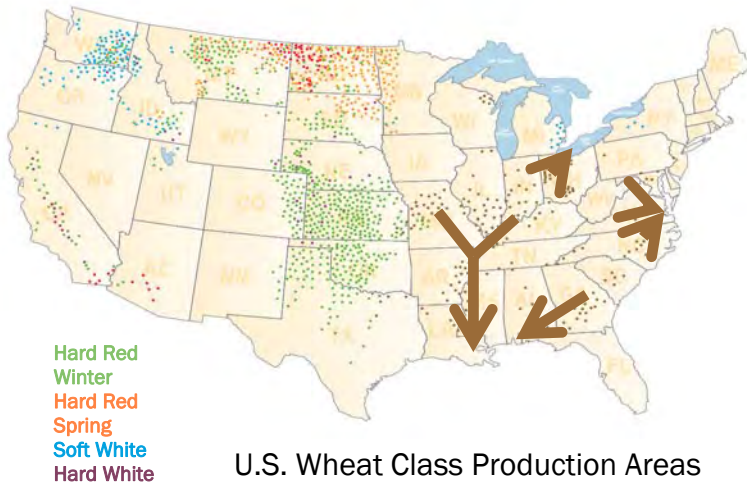
# 2014 Soft Red Winter Wheat Quality Survey



U.S. WHEAT  
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## Survey Overview



SRW States and Areas Surveyed

**Weather and Harvest:** Soft red winter wheat (SRW) is grown over a wide area of the eastern United States. The area seeded to SRW in fall 2013 for the 2014 harvest was about 8.5 million acres (3.4 million hectares), down from 10.0 million acres (4.0 million hectares) the previous year but similar to the five-year. Average yield per harvested acre is estimated to be down somewhat from the record yield of 2013, but well above the previous five-year average, reflecting the generally good growing conditions. The 2014 SRW production, estimated at 12.5 MMT, is down nearly 3 MMT from the large 2013 crop but is about 1 MMT larger than the previous five-year average.

Most of the SRW growing area received ample, and even excessive, moisture throughout the growing season, and crop conditions were predominantly fair to excellent through harvest. However, excessive moisture in many areas, both during flowering and during harvest, adversely affected quality in many areas.

**Survey Methods:** Sample collection and analysis were conducted by the Great Plains Analytical Laboratory, Kansas City, Missouri. For 2014, 527 samples were collected from elevators in 18 reporting areas across nine states. Samples were collected at two different times, reflecting early and late harvest. Test weight, moisture, protein, thousand kernel weight, wheat ash and falling number were determined on all individual samples, and the remaining tests were determined on 36 composite samples. The results were weighted by five-year average production for the 18 reporting areas and combined into “Composite Average”, “East Coast” and “Gulf Port” values. Gulf Port states include Arkansas, Illinois, Indiana, Kentucky, Missouri, and Ohio and account for about 80% of production in the states surveyed. East Coast states include Maryland, North Carolina and Virginia and represent the remaining 20% of production in the states surveyed. The states surveyed typically account for 60-65% of total SRW production.

**Wheat and Grade Data:** The overall average grade is U.S. No. 2, though the overall average test weight just barely meets the No. 2 grade requirement. Average protein is slightly lower than last year and the five-year average. Average dockage and total defects are both below last year and the five-year averages, indicating that the crop has relatively few visual defects. However, falling number values are again below the five-year average, though somewhat better than the very low values of the 2013 crop. The samples from Gulf Port

states show the adverse effects of excessive moisture during growing and harvest while the East Coast states largely avoided these conditions.

The overall average test weight of 58.0 lb/bu (76.3 kg/hl) is 0.4 lb/bu (0.5 kg/hl) below 2013 and 0.6 lb/bu (0.8 kg/hl) below the five-year average. The Gulf Port average test weight of 57.8 lb/bu (76.1 kg/hl) is below the five-year average for these states, while the East Coast average of 58.7 lb/bu (77.3 kg/hl) is 1.5 lb/bu (2.0 kg/hl) above last year and similar to the five-year average. The average total defects value of 1.8% is 1.0 percentage point lower than last year and 0.4 percentage point below the five-year average. Both the Gulf Ports (2.0%) and East Coast (1.1%) have average total defects below the respective five-year averages.

While wheat protein content of 9.8% is slightly below the five-year average of 10.1%, overall sedimentation and wet gluten averages are similar to the respective five-year averages. Wheat falling number of 304 seconds for the Gulf Ports states is similar to the low value of 2013 and well below the five-year average. In contrast, the average falling number of 340 for the East Coast states is well above the five-year average. The overall DON average of 2.2 ppm is higher than 2013 and the five-year average. The DON average for the six Gulf Port states is 2.5 ppm, well above 2013 and the five-year average, while the average of 0.6 ppm for the three East Coast states is below 2013 and the five-year average.

**Flour and Baking Data:** Buhler laboratory mill flour extraction and flour ash are similar to the five-year averages overall for both East Coast and Gulf Port states, suggesting that the crop has typical SRW milling characteristics. The dough properties suggest the crop is somewhat weaker than recent crops. Farinograph peak, stability and absorption values, especially for the Gulf Ports states, are somewhat lower than the five-year averages. Alveograph P, L and W values for both Gulf Ports and East Coast states are somewhat lower than five-year averages. However, cookie spread ratios and loaf volumes area all higher than last year and the respective five-year averages.

**Summary:** The 2014 SRW crop has variable quality. The wet growing season and harvest rain delays mainly affected the six Gulf Port states in the survey, resulting in areas with reduced test weight, reduced falling numbers and increased DON values. Buyers are encouraged to review their quality specifications to ensure that their purchases meet their expectations.

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## Soft Red Winter 2014 Survey - All Samples

|   | Composite Average |           |           | East Coast* |           |           | Gulf Ports* |           |           |
|---|-------------------|-----------|-----------|-------------|-----------|-----------|-------------|-----------|-----------|
|   | 2014              | 2013      | 5-Year    | 2014        | 2013      | 5-Year    | 2014        | 2013      | 5-Year    |
| <b>Wheat Grade Data</b>                           |                   |           |           |             |           |           |             |           |           |
| Test Weight (lb/bu)                               | 58.0              | 58.4      | 58.6      | 58.7        | 57.2      | 58.9      | 57.8        | 58.7      | 58.5      |
| Test Weight (kg/hl)                               | 76.3              | 76.8      | 77.1      | 77.3        | 75.3      | 77.6      | 76.1        | 77.3      | 77.0      |
| Damage - Total (%)                                | 1.0               | 2.1       | 1.5       | 0.5         | 3.7       | 1.8       | 1.1         | 1.7       | 1.4       |
| Foreign Material (%)                              | 0.2               | 0.1       | 0.2       | 0.1         | 0.2       | 0.1       | 0.2         | 0.1       | 0.2       |
| Shrunken and Broken (%)                           | 0.6               | 0.5       | 0.5       | 0.5         | 0.5       | 0.5       | 0.6         | 0.5       | 0.5       |
| Total Defects (%)                                 | 1.8               | 2.8       | 2.2       | 1.1         | 4.3       | 2.4       | 2.0         | 2.3       | 2.2       |
| Grade   | 2                 | 2         | 2         | 2           | 3         | 2         | 3           | 2         | 2         |
| <b>Wheat Non-Grade Data</b>                       |                   |           |           |             |           |           |             |           |           |
| Dockage (%)                                       | 0.4               | 0.5       | 0.7       | 0.4         | 0.5       | 0.9       | 0.4         | 0.5       | 0.7       |
| Moisture (%)                                      | 13.0              | 13.4      | 12.9      | 12.7        | 13.4      | 13.0      | 13.0        | 13.4      | 12.9      |
| Protein (%) 12%/0% mb                             | 9.8/11.1          | 9.9/11.3  | 10.1/11.4 | 9.7/11.1    | 10.0/11.4 | 10.5/11.9 | 9.8/11.1    | 9.9/11.3  | 10.0/11.3 |
| Wheat Ash (%) 14%/0% mb                           | 1.52/1.77         | 1.49/1.73 | 1.53/1.77 | 1.51/1.76   | 1.48/1.72 | 1.50/1.74 | 1.52/1.77   | 1.50/1.74 | 1.54/1.79 |
| 1000 Kernel Weight (g)                            | 31.3              | 33.6      | 32.5      | 33.4        | 34.5      | 33.8      | 30.8        | 33.3      | 32.2      |
| Wheat Falling Number (sec)                        | 311               | 294       | 322       | 340         | 262       | 314       | 304         | 302       | 324       |
| Kernel Size (%) lg/med/sm                         | 84/16/00          | 85/14/01  | 82/17/01  | 87/13/00    | 87/12/01  | 83/16/01  | 84/16/00    | 85/14/01  | 83/16/01  |
| Single Kernel Hardness                            | 22.5              | 16.4      | 23.0      | 20.3        | 13.4      | 23.1      | 22.9        | 17.1      | 23.0      |
| Single Kernel Weight (mg)                         | 31.1              | 34.2      | 32.3      | 32.1        | 35.3      | 33.3      | 30.9        | 34.0      | 32.1      |
| Single Kernel Diameter (mm)                       | 2.57              | 2.65      | 2.49      | 2.59        | 2.65      | 2.51      | 2.57        | 2.65      | 2.49      |
| Sedimentation (cc)                                | 12.2              | 11.4      | 12.2      | 12.5        | 11.5      | 14.4      | 12.2        | 11.4      | 11.7      |
| DON (ppm)   | 2.2               | 1.4       | 1.3       | 0.6         | 2.2       | 1.0       | 2.5         | 1.2       | 1.4       |
| <b>Flour Data</b>                                 |                   |           |           |             |           |           |             |           |           |
| Lab Mill Extraction (%)                           | 70.5              | 70.2      | 70.4      | 70.7        | 69.8      | 69.9      | 70.4        | 70.4      | 70.6      |
| Flour Color - *L                                  | 91.3              | 93.4      | 93.3      | 92.7        | 93.3      | 93.2      | 91.0        | 93.4      | 93.3      |
| Flour Color - *a                                  | -2.9              | -2.8      | -3.0      | -3.0        | -2.8      | -3.0      | -2.9        | -2.8      | -3.0      |
| Flour Color - *b                                  | 8.2               | 7.8       | 8.1       | 8.7         | 8.0       | 8.1       | 8.1         | 7.8       | 8.1       |
| Flour Protein (%) 14%/0% mb                       | 8.3/9.6           | 8.3/9.7   | 8.4/9.8   | 8.2/9.6     | 8.4/9.8   | 8.8/10.2  | 8.3/9.6     | 8.2/9.5   | 8.3/9.7   |
| Flour Ash (%) 14%/0% mb                           | 0.43/0.50         | 0.42/0.49 | 0.44/0.51 | 0.42/0.49   | 0.43/0.50 | 0.44/0.51 | 0.43/0.50   | 0.42/0.49 | 0.44/0.51 |
| Wet Gluten (%)                                    | 22.2              | 20.7      | 22.2      | 21.3        | 21.6      | 23.4      | 22.5        | 20.4      | 22.0      |
| Gluten Index                                      | 80.0              | 88.3      | 79.2      | 79.3        | 83.9      | 80.4      | 80.2        | 89.5      | 79.0      |
| Falling Number (sec)                              | 322               | 278       | 325       | 341         | 263       | 318       | 318         | 282       | 327       |
| Amylograph (65g) (BU)                             | 497               | 302       | 558       | 553         | 235       | 500       | 485         | 319       | 571       |
| Starch Damage (%)                                 | 4.7               | 4.4       | 4.5       | 4.4         | 4.4       | 4.5       | 4.7         | 4.4       | 4.5       |
| Solvent Retention Capacity                        |                   |           |           |             |           |           |             |           |           |
| Water/50% Sucrose                                 | 54/103            | 55/105    | 56/108    | 56/107      | 54/105    | 57/109    | 54/103      | 54/102    | 56/105    |
| 5% Lactic Acid/5% Na <sub>2</sub> CO <sub>3</sub> | 111/77            | 114/79    | 114/82    | 109/79      | 115/81    | 117/83    | 112/78      | 113/79    | 112/82    |
| <b>Dough Properties</b>                           |                   |           |           |             |           |           |             |           |           |
| Farinograph Peak (min)                            | 1.3               | 1.3       | 1.6       | 1.4         | 1.2       | 1.8       | 1.3         | 1.3       | 1.5       |
| Farinograph Stability (min)                       | 2.4               | 2.8       | 2.8       | 2.7         | 2.5       | 2.8       | 2.3         | 2.8       | 2.8       |
| Farinograph Absorption (%)                        | 52.0              | 53.2      | 52.5      | 52.9        | 53.2      | 53.0      | 51.8        | 53.2      | 52.3      |
| Alveograph P (mm)                                 | 32                | 35        | 38        | 35          | 34        | 39        | 32          | 35        | 37        |
| Alveograph L (mm)                                 | 79                | 94        | 89        | 75          | 96        | 96        | 80          | 93        | 87        |
| Alveograph W (10-4 joules)                        | 72                | 85        | 86        | 75          | 83        | 95        | 71          | 85        | 84        |
| Alveograph P/L                                    | 0.41              | 0.37      | 0.42      | 0.46        | 0.35      | 0.41      | 0.39        | 0.38      | 0.43      |
| <b>Baking Evaluation</b>                          |                   |           |           |             |           |           |             |           |           |
| Crumb Grain                                       | 4.8               | 5.1       | 5.2       | 4.9         | 4.9       | 5.4       | 4.8         | 5.2       | 5.2       |
| Crumb Texture                                     | 4.9               | 4.5       | 5.1       | 4.9         | 4.6       | 5.4       | 4.9         | 4.4       | 5.0       |
| Loaf Volume (cc)                                  | 724               | 695       | 715       | 729         | 722       | 727       | 723         | 688       | 712       |
| Cookie Spread Ratio                               | 9.6               | 9.2       | 9.1       | 9.4         | 9.0       | 8.6       | 9.6         | 9.2       | 9.1       |
| <b>% Area Production</b>                          | 100.0%            |           |           | 18.5%       |           |           | 81.5%       |           |           |

\* East Coast - Maryland, Virginia, North Carolina; Gulf Ports - Arkansas, Illinois, Indiana, Kentucky, Missouri, Ohio

# 2014 State Summary

## All Samples

|   | Arkansas  | Missouri  | Illinois  | Indiana   | Ohio      | Kentucky  | North Carolina | Virginia  | Maryland  |
|---|-----------|-----------|-----------|-----------|-----------|-----------|----------------|-----------|-----------|
| <b>Wheat Grade Data - from Individual Samples</b>         |           |           |           |           |           |           |                |           |           |
| Test Weight (Lab) (lb/bu)                                 | 56.9      | 56.9      | 56.3      | 57.9      | 59.2      | 58.4      | 57.8           | 59.6      | 59.0      |
| Count   | 56        | 66        | 69        | 69        | 91        | 37        | 64             | 38        | 37        |
| <b>Wheat Grade Data - from Area Composite Samples</b>     |           |           |           |           |           |           |                |           |           |
| Test Weight (lb/bu)                                       | 57.0      | 57.4      | 56.7      | 58.0      | 59.1      | 59.0      | 57.5           | 60.1      | 59.1      |
| Test Weight (kg/hl)                                       | 75.1      | 75.6      | 74.6      | 76.3      | 77.8      | 77.6      | 75.8           | 79.1      | 77.8      |
| Damage - Total (%)  | 1.4       | 0.6       | 1.5       | 1.4       | 1.0       | 0.7       | 0.9            | 0.1       | 0.6       |
| Foreign Material (%)                                      | 0.3       | 0.2       | 0.4       | 0.2       | 0.0       | 0.0       | 0.0            | 0.0       | 0.0       |
| Shrunken and Broken (%)                                   | 0.7       | 0.7       | 0.9       | 0.7       | 0.5       | 0.2       | 0.7            | 0.5       | 0.4       |
| Total Defects (%)   | 2.4       | 1.4       | 2.8       | 2.3       | 1.5       | 0.9       | 1.6            | 0.6       | 1.0       |
| Grade   | 3         | 3         | 3         | 2         | 2         | 2         | 3              | 1         | 2         |
| <b>Wheat Non-Grade Data - from Individual Samples</b>     |           |           |           |           |           |           |                |           |           |
| Moisture (%)  | 12.4      | 13.1      | 13.0      | 13.3      | 13.8      | 12.8      | 12.9           | 12.8      | 13.1      |
| Protein (%) 12%/0% mb                                     | 9.8/11.1  | 10.8/12.3 | 10.1/11.5 | 10.0/11.4 | 9.2/10.5  | 9.6/11.0  | 10.5/11.9      | 9.5/10.8  | 9.3/10.5  |
| Ash (%) 14%/0% mb   | 1.50/1.75 | 1.53/1.78 | 1.56/1.82 | 1.57/1.83 | 1.50/1.75 | 1.46/1.70 | 1.56/1.81      | 1.45/1.68 | 1.54/1.79 |
| 1000 Kernel Weight (g)                                    | 29.5      | 30.3      | 27.7      | 32.2      | 33.8      | 32.6      | 31.6           | 34.9      | 34.2      |
| Wheat Falling Number (sec)                                | 266       | 300       | 314       | 316       | 316       | 313       | 348            | 335       | 333       |
| DON (ppm)   | 1.1       | 1.7       | 5.2       | 2.9       | 0.7       | 3.5       | 0.3            | 0.6       | 1.1       |
| <b>Wheat Non-Grade Data - from Area Composite Samples</b> |           |           |           |           |           |           |                |           |           |
| Dockage (%)   | 0.5       | 0.3       | 0.5       | 0.6       | 0.3       | 0.3       | 0.6            | 0.4       | 0.4       |
| Moisture (Lab) (%)  | 12.7      | 13.3      | 12.9      | 12.8      | 13.5      | 12.8      | 12.4           | 12.8      | 12.9      |
| Protein (Lab) (%)   | 9.5       | 10.5      | 10.0      | 10.0      | 9.2       | 9.3       | 10.8           | 9.2       | 9.2       |
| Kernel Size (%) lg/med/sm                                 | 79/20/01  | 83/17/00  | 78/21/01  | 84/15/01  | 89/11/00  | 87/13/00  | 82/17/01       | 91/09/00  | 88/12/00  |
| Single Kernel Hardness                                    | 16.6      | 22.5      | 28.5      | 20.7      | 24.2      | 22.5      | 21.6           | 15.2      | 20.3      |
| Single Kernel Weight (mg)                                 | 30.1      | 28.6      | 27.5      | 34.4      | 34.3      | 31.8      | 30.9           | 33.9      | 32.7      |
| Single Kernel Diameter (mm)                               | 2.58      | 2.51      | 2.47      | 2.64      | 2.65      | 2.59      | 2.56           | 2.64      | 2.59      |
| Sedimentation (cc)  | 11.3      | 14.8      | 11.6      | 13.2      | 10.8      | 12.5      | 13.5           | 10.0      | 12.6      |
| DON (ppm)   | 1.2       | 2.1       | 5.9       | 3.2       | 1.2       | 5.3       | 1.4            | 0.8       | 1.1       |
| <b>Flour Data</b>   |           |           |           |           |           |           |                |           |           |
| Lab Mill Extraction (%)                                   | 70.5      | 70.4      | 71.0      | 69.5      | 70.1      | 70.7      | 69.9           | 70.3      | 70.7      |
| Flour Color - *L  | 81.7      | 92.8      | 92.6      | 93.2      | 93.4      | 92.7      | 92.5           | 92.9      | 93.2      |
| Flour Color - *a  | -3.1      | -2.5      | -3.0      | -2.9      | -2.8      | -3.0      | -3.0           | -3.1      | -2.9      |
| Flour Color - *b  | 7.4       | 7.7       | 8.8       | 8.2       | 7.9       | 8.8       | 8.9            | 8.6       | 8.2       |
| Flour Protein (%) 14%/0% mb                               | 8.3/9.7   | 8.9/10.4  | 8.4/9.8   | 8.0/9.3   | 7.7/9.0   | 8.2/9.5   | 8.8/10.2       | 7.8/9.1   | 7.9/9.1   |
| Flour Ash (%) 14%/0% mb                                   | 0.42/0.49 | 0.45/0.52 | 0.42/0.49 | 0.45/0.52 | 0.46/0.53 | 0.40/0.46 | 0.44/0.52      | 0.42/0.49 | 0.40/0.46 |
| Wet Gluten (%)  | 21.1      | 26.6      | 23.7      | 21.1      | 20.4      | 21.4      | 23.0           | 20.4      | 19.8      |
| Gluten Index  | 96.2      | 85.2      | 59.6      | 80.3      | 86.2      | 77.9      | 78.0           | 87.9      | 82.1      |
| Falling Number (sec)                                      | 271       | 303       | 328       | 344       | 338       | 323       | 336            | 350       | 334       |
| Amylograph (65g) (BU)                                     | 253       | 393       | 609       | 564       | 583       | 470       | 496            | 564       | 622       |
| Starch Damage (%)   | 5.6       | 3.9       | 5.1       | 5.2       | 4.5       | 4.0       | 4.7            | 3.5       | 4.8       |
| <b>Dough Properties</b>                                   |           |           |           |           |           |           |                |           |           |
| Farinograph Peak (min)                                    | 1.3       | 1.5       | 1.1       | 1.2       | 1.3       | 1.1       | 1.6            | 1.4       | 1.3       |
| Farinograph Stability (min)                               | 2.2       | 2.8       | 2.0       | 2.2       | 2.7       | 2.4       | 3.0            | 2.7       | 2.6       |
| Farinograph Absorption (%)                                | 52.9      | 52.4      | 51.4      | 52.0      | 51.1      | 50.9      | 54.5           | 52.0      | 52.5      |
| Alveograph P (mm)   | 38        | 33        | 25        | 36        | 33        | 27        | 33             | 35        | 39        |
| Alveograph L (mm)   | 84        | 109       | 89        | 50        | 50        | 99        | 86             | 60        | 65        |
| Alveograph W (10-4 joules)                                | 97        | 92        | 58        | 60        | 56        | 69        | 79             | 66        | 78        |
| Alveograph P/L  | 0.45      | 0.30      | 0.27      | 0.73      | 0.65      | 0.27      | 0.38           | 0.58      | 0.60      |
| <b>Baking Evaluation</b>                                  |           |           |           |           |           |           |                |           |           |
| Crumb Grain   | 5.0       | 4.5       | 4.4       | 5.1       | 5.0       | 4.5       | 4.5            | 5.1       | 5.5       |
| Crumb Texture   | 5.2       | 5.2       | 4.7       | 4.7       | 5.5       | 4.0       | 4.5            | 5.1       | 5.9       |
| Loaf Volume (cc)  | 745       | 726       | 711       | 718       | 722       | 713       | 744            | 732       | 724       |
| Cookie Spread Ratio                                       | 9.2       | 9.5       | 9.9       | 9.9       | 10.0      | 9.1       | 9.6            | 9.5       | 9.3       |

### Soft Red Winter 2014 Survey - All Samples

|   | Arkansas |      |      | Missouri |      | Illinois |      | Indiana |      | Ohio |      | Kentucky | North Carolina |      | Virginia |      | Maryland |      |
|---|----------|------|------|----------|------|----------|------|---------|------|------|------|----------|----------------|------|----------|------|----------|------|
|   | S        | C    | N    | W        | E    | W        | E    | S       | N    | S    | N    |          | S              | NE   | W        | E    | W        | E    |
| <b>Wheat Grade Data - from Individual Samples</b>         |          |      |      |          |      |          |      |         |      |      |      |          |                |      |          |      |          |      |
| Test Weight (Lab) (lb/bu)                                 | 57.1     | 57.4 | 56.2 | 57.6     | 56.5 | 57.0     | 55.8 | 57.2    | 58.4 | 58.2 | 59.4 | 58.4     | 57.7           | 58.4 | 58.7     | 59.8 | 57.9     | 59.4 |
| Count   | 16       | 26   | 14   | 33       | 33   | 38       | 31   | 22      | 47   | 28   | 63   | 37       | 35             | 29   | 11       | 27   | 11       | 26   |
| <b>Wheat Grade Data - from Area Composite Samples</b>     |          |      |      |          |      |          |      |         |      |      |      |          |                |      |          |      |          |      |
| Test Weight (lb/bu)                                       | 57.2     | 57.4 | 56.5 | 57.9     | 57.1 | 57.3     | 56.2 | 57.9    | 58.1 | 58.7 | 59.3 | 59.0     | 57.4           | 58.6 | 59.2     | 60.4 | 58.8     | 59.3 |
| Test Weight (kg/hl)                                       | 75.3     | 75.5 | 74.4 | 76.2     | 75.2 | 75.5     | 74.0 | 76.2    | 76.4 | 77.2 | 78.0 | 77.6     | 75.5           | 77.1 | 77.9     | 79.4 | 77.4     | 78.0 |
| Damage - Total (%)  | 1.4      | 1.7  | 1.0  | 1.0      | 0.4  | 1.3      | 1.7  | 2.0     | 1.0  | 1.0  | 1.0  | 0.7      | 1.0            | 0.4  | 0.4      | 0.0  | 0.4      | 0.7  |
| Foreign Material (%)                                      | 0.3      | 0.5  | 0.0  | 0.0      | 0.3  | 0.4      | 0.5  | 0.5     | 0.0  | 0.2  | 0.0  | 0.0      | 0.0            | 0.2  | 0.2      | 0.0  | 0.2      | 0.0  |
| Shrunken and Broken (%)                                   | 0.7      | 1.0  | 0.5  | 0.7      | 0.7  | 0.7      | 1.1  | 1.2     | 0.4  | 0.7  | 0.5  | 0.2      | 0.7            | 0.6  | 0.4      | 0.5  | 0.6      | 0.4  |
| Total Defects (%)   | 2.3      | 3.1  | 1.5  | 1.7      | 1.3  | 2.4      | 3.3  | 3.7     | 1.4  | 1.8  | 1.5  | 0.9      | 1.7            | 1.1  | 0.9      | 0.5  | 1.1      | 1.0  |
| Grade   | 3        | 3    | 3    | 3        | 3    | 3        | 3    | 3       | 2    | 2    | 2    | 2        | 3              | 2    | 2        | 1    | 2        | 2    |
| <b>Wheat Non-Grade Data - from Individual Samples</b>     |          |      |      |          |      |          |      |         |      |      |      |          |                |      |          |      |          |      |
| Moisture (%)  | 13.1     | 12.2 | 12.2 | 13.5     | 12.8 | 12.7     | 13.4 | 13.0    | 13.5 | 13.9 | 13.8 | 12.8     | 12.9           | 13.1 | 12.9     | 12.8 | 13.5     | 12.9 |
| Protein (%) 12% mb  | 9.4      | 10.0 | 9.8  | 11.3     | 10.5 | 10.0     | 10.2 | 10.3    | 9.8  | 9.4  | 9.2  | 9.6      | 10.6           | 9.6  | 9.5      | 9.5  | 9.8      | 9.1  |
| Ash (%) 14% mb  | 1.43     | 1.56 | 1.48 | 1.52     | 1.53 | 1.55     | 1.57 | 1.60    | 1.55 | 1.56 | 1.49 | 1.46     | 1.57           | 1.49 | 1.46     | 1.44 | 1.58     | 1.52 |
| 1000 Kernel Weight (g)                                    | 30.4     | 29.5 | 28.8 | 31.6     | 29.6 | 28.5     | 27.0 | 29.6    | 34.0 | 33.7 | 33.8 | 32.6     | 31.3           | 33.6 | 33.2     | 35.3 | 32.5     | 34.8 |
| Wheat Falling Number (sec)                                | 255      | 283  | 251  | 309      | 294  | 313      | 315  | 315     | 317  | 315  | 316  | 313      | 349            | 343  | 333      | 335  | 326      | 335  |
| DON (ppm)   | 0.6      | 0.8  | 1.7  | 0.8      | 2.2  | 4.7      | 5.6  | 4.5     | 1.8  | 0.7  | 0.7  | 3.5      | 0.3            | 0.4  | 0.9      | 0.6  | 1.1      | 1.1  |
| <b>Wheat Non-Grade Data - from Area Composite Samples</b> |          |      |      |          |      |          |      |         |      |      |      |          |                |      |          |      |          |      |
| Dockage (%)   | 0.7      | 0.5  | 0.3  | 0.2      | 0.4  | 0.4      | 0.5  | 0.8     | 0.4  | 0.5  | 0.3  | 0.3      | 0.7            | 0.2  | 0.4      | 0.4  | 0.5      | 0.4  |
| Moisture (%)  | 13.1     | 12.8 | 12.3 | 13.5     | 13.2 | 12.5     | 13.3 | 12.2    | 13.2 | 13.7 | 13.5 | 12.8     | 12.4           | 12.9 | 13.2     | 12.7 | 13.7     | 12.6 |
| Protein (%) 12% mb  | 9.2      | 9.6  | 9.7  | 10.9     | 10.2 | 10.0     | 10.1 | 10.1    | 9.9  | 9.4  | 9.2  | 9.3      | 11.0           | 9.4  | 9.4      | 9.2  | 9.6      | 9.1  |
| Kernel Size Large (Over 7) (%)                            | 81       | 80   | 79   | 84       | 82   | 80       | 76   | 80      | 88   | 89   | 89   | 86       | 81             | 89   | 90       | 91   | 86       | 88   |
| Kernel Size Medium (Over 9) (%)                           | 18       | 19   | 21   | 15       | 18   | 19       | 23   | 20      | 11   | 11   | 11   | 13       | 19             | 11   | 10       | 9    | 13       | 11   |
| Kernel Size Small (Thru 9) (%)                            | 1        | 0    | 1    | 0        | 0    | 1        | 1    | 1       | 0    | 0    | 0    | 0        | 1              | 0    | 0        | 0    | 0        | 0    |
| Single Kernel Hardness                                    | 18.0     | 13.0 | 20.3 | 22.2     | 22.6 | 26.2     | 30.4 | 26.5    | 16.7 | 19.8 | 25.1 | 22.5     | 21.2           | 23.9 | 21.5     | 13.6 | 25.3     | 18.5 |
| Single Kernel Weight (mg)                                 | 27.8     | 33.5 | 27.4 | 30.4     | 27.6 | 27.8     | 27.3 | 30.6    | 37.0 | 34.3 | 34.3 | 31.8     | 30.8           | 31.4 | 32.5     | 34.3 | 34.1     | 32.2 |
| Single Kernel Diameter (mm)                               | 2.46     | 2.72 | 2.49 | 2.55     | 2.49 | 2.48     | 2.46 | 2.55    | 2.71 | 2.65 | 2.65 | 2.59     | 2.56           | 2.56 | 2.59     | 2.66 | 2.66     | 2.57 |
| Sedimentation (cc)  | 9        | 12   | 12   | 18       | 13   | 13       | 11   | 12      | 14   | 12   | 11   | 13       | 14             | 14   | 10       | 10   | 15       | 12   |
| DON (ppm)   | 0.4      | 1.0  | 1.9  | 0.7      | 2.9  | 5.9      | 5.8  | 5.2     | 1.8  | 1.1  | 1.2  | 5.3      | 1.6            | 0.4  | 0.8      | 0.8  | 1.1      | 1.1  |
| <b>Flour Data</b>   |          |      |      |          |      |          |      |         |      |      |      |          |                |      |          |      |          |      |
| Lab Mill Extraction (%)                                   | 71.8     | 70.8 | 69.3 | 69.9     | 70.7 | 71.1     | 71.0 | 70.3    | 69.0 | 70.6 | 70.0 | 70.7     | 69.5           | 72.0 | 71.2     | 70.1 | 72.9     | 69.9 |
| Flour Color - *L  | 46.6     | 93.7 | 92.5 | 92.9     | 92.7 | 92.9     | 92.5 | 93.2    | 93.3 | 93.3 | 93.4 | 92.7     | 92.5           | 92.6 | 92.7     | 93.0 | 93.3     | 93.1 |
| Flour Color - *a  | -3.0     | -3.2 | -3.0 | -2.5     | -2.6 | -3.0     | -3.1 | -2.8    | -2.9 | -3.1 | -2.8 | -3.0     | -3.0           | -3.1 | -3.2     | -3.1 | -2.7     | -3.0 |
| Flour Color - *b  | 3.9      | 8.6  | 8.5  | 7.4      | 7.8  | 8.3      | 9.2  | 8.1     | 8.3  | 8.5  | 7.8  | 8.8      | 8.9            | 8.9  | 8.7      | 8.6  | 7.8      | 8.3  |
| Flour Protein (%) 14% mb                                  | 8.1      | 8.4  | 8.5  | 9.3      | 8.7  | 8.6      | 8.3  | 8.2     | 7.9  | 7.6  | 7.7  | 8.2      | 8.9            | 8.3  | 8.1      | 7.8  | 8.1      | 7.8  |
| Flour Ash (%) 14% mb                                      | 0.42     | 0.43 | 0.41 | 0.45     | 0.45 | 0.44     | 0.41 | 0.47    | 0.44 | 0.44 | 0.46 | 0.40     | 0.45           | 0.42 | 0.41     | 0.43 | 0.42     | 0.39 |
| Wet Gluten (%)  | 20.2     | 21.1 | 21.6 | 30.0     | 24.8 | 24.1     | 23.4 | 24.1    | 19.1 | 22.0 | 20.1 | 21.4     | 23.3           | 21.3 | 20.6     | 20.4 | 19.0     | 20.0 |
| Gluten Index  | 97.7     | 94.0 | 98.0 | 95.5     | 79.5 | 65.7     | 54.7 | 67.7    | 89.0 | 67.3 | 90.1 | 77.9     | 79.5           | 69.8 | 88.1     | 87.9 | 99.3     | 76.0 |
| Falling Number (sec)                                      | 288      | 293  | 233  | 333      | 286  | 324      | 332  | 360     | 334  | 335  | 339  | 323      | 335            | 343  | 368      | 346  | 307      | 343  |
| Amylograph (65g) (BU)                                     | 245      | 330  | 160  | 585      | 285  | 570      | 640  | 600     | 540  | 595  | 580  | 470      | 485            | 555  | 540      | 570  | 555      | 645  |
| Starch Damage (%)   | 4.4      | 6.0  | 5.9  | 4.8      | 3.4  | 5.1      | 5.1  | 4.3     | 5.8  | 4.2  | 4.6  | 4.0      | 4.8            | 4.6  | 3.5      | 3.6  | 5.4      | 4.6  |
| <b>Dough Properties</b>                                   |          |      |      |          |      |          |      |         |      |      |      |          |                |      |          |      |          |      |
| Farinograph Peak (min)                                    | 1.4      | 1.3  | 1.4  | 1.9      | 1.3  | 1.2      | 1.1  | 1.1     | 1.3  | 1.3  | 1.3  | 1.1      | 1.6            | 1.4  | 1.3      | 1.5  | 1.5      | 1.3  |
| Farinograph Stability (min)                               | 2.0      | 2.4  | 2.0  | 3.8      | 2.2  | 2.6      | 1.5  | 2.1     | 2.3  | 2.9  | 2.6  | 2.4      | 3.2            | 2.5  | 2.7      | 2.7  | 3.3      | 2.4  |
| Farinograph Absorption (%)                                | 51.7     | 53.7 | 52.8 | 53.9     | 51.6 | 51.5     | 51.3 | 51.1    | 52.7 | 51.2 | 51.1 | 50.9     | 55.0           | 52.1 | 51.6     | 52.2 | 52.6     | 52.5 |
| Alveograph P (mm)   | 35       | 41   | 37   | 39       | 30   | 29       | 21   | 28      | 42   | 34   | 33   | 27       | 32             | 34   | 33       | 36   | 49       | 36   |
| Alveograph L (mm)   | 86       | 84   | 84   | 124      | 101  | 90       | 89   | 46      | 52   | 40   | 53   | 99       | 93             | 81   | 59       | 61   | 64       | 66   |
| Alveograph W (10-4 joules)                                | 86       | 108  | 93   | 126      | 73   | 73       | 46   | 44      | 72   | 50   | 58   | 69       | 81             | 77   | 62       | 67   | 108      | 68   |
| Alveograph P/L  | 0.41     | 0.49 | 0.43 | 0.31     | 0.29 | 0.32     | 0.24 | 0.61    | 0.80 | 0.85 | 0.62 | 0.27     | 0.34           | 0.42 | 0.56     | 0.59 | 0.76     | 0.55 |
| <b>Baking Evaluation</b>                                  |          |      |      |          |      |          |      |         |      |      |      |          |                |      |          |      |          |      |
| Crumb Grain   | 5.0      | 5.5  | 4.5  | 4.5      | 4.5  | 5.0      | 4.0  | 6.0     | 4.5  | 5.0  | 5.0  | 4.5      | 4.5            | 4.5  | 5.5      | 5.0  | 5.5      | 5.5  |
| Crumb Texture   | 5.0      | 5.5  | 5.0  | 5.5      | 5.0  | 5.5      | 4.0  | 5.0     | 4.5  | 5.5  | 5.5  | 4.0      | 4.5            | 4.5  | 5.5      | 5.0  | 5.5      | 6.0  |
| Loaf Volume (cc)  | 725      | 738  | 770  | 750      | 713  | 725      | 700  | 700     | 730  | 708  | 725  | 713      | 750            | 713  | 713      | 738  | 743      | 718  |
| Cookie Spread Ratio                                       | 9.1      | 9.6  | 8.9  | 8.6      | 10.0 | 9.3      | 10.4 | 10.1    | 9.8  | 9.9  | 10.0 | 9.1      | 9.6            | 9.3  | 9.3      | 9.6  | 8.6      | 9.5  |

N-North, S-South, E-East, W-West, C-Central, NE-North East, NA-Not Available

### Soft Red Winter 2014 Survey - Early Samples

|   | Arkansas |      |      | Missouri |      | Illinois |      | Indiana |      | Ohio |      | Kentucky | North Carolina |      | Virginia |      | Maryland |      |
|---|----------|------|------|----------|------|----------|------|---------|------|------|------|----------|----------------|------|----------|------|----------|------|
|   | S        | C    | N    | W        | E    | W        | E    | S       | N    | S    | N    |          | S              | NE   | W        | E    | W        | E    |
| <b>Wheat Grade Data - from Individual Samples</b>         |          |      |      |          |      |          |      |         |      |      |      |          |                |      |          |      |          |      |
| Test Weight (Lab) (lb/bu)                                 | 57.9     | 57.4 | 56.4 | 57.5     | 56.7 | 57.8     | 56.5 | 58.0    | 58.8 | 58.3 | 59.9 | 59.3     | 58.2           | 59.0 | 59.7     | 60.3 | 58.7     | 59.5 |
| Count   | 8        | 13   | 7    | 19       | 17   | 19       | 14   | 11      | 23   | 15   | 31   | 19       | 18             | 14   | 6        | 14   | 6        | 12   |
| <b>Wheat Grade Data - from Area Composite Samples</b>     |          |      |      |          |      |          |      |         |      |      |      |          |                |      |          |      |          |      |
| Test Weight (lb/bu)                                       | 57.8     | 57.4 | 56.3 | 58.1     | 57.8 | 58.0     | 56.3 | 58.8    | 57.8 | 58.7 | 59.5 | 59.5     | 57.3           | 59.3 | 60.7     | 61.0 | 59.3     | 59.7 |
| Test Weight (kg/hl)                                       | 76.1     | 75.6 | 74.2 | 76.5     | 76.1 | 76.4     | 74.2 | 77.4    | 76.1 | 77.3 | 78.3 | 78.3     | 75.5           | 78.0 | 79.8     | 80.2 | 78.0     | 78.6 |
| Damage - Total (%)  | 2.0      | 1.3  | 2.0  | 0.7      | 0.7  | 1.3      | 2.0  | 1.3     | 1.3  | 0.7  | 0.7  | 0.0      | 0.7            | 0.0  | 0.7      | 0.0  | 0.7      | 0.0  |
| Foreign Material (%)                                      | 0.3      | 0.7  | 0.0  | 0.0      | 0.3  | 0.0      | 0.7  | 0.3     | 0.0  | 0.3  | 0.0  | 0.0      | 0.0            | 0.3  | 0.3      | 0.0  | 0.3      | 0.0  |
| Shrunken and Broken (%)                                   | 0.6      | 0.9  | 0.5  | 0.7      | 0.7  | 0.8      | 1.4  | 0.6     | 0.4  | 0.5  | 0.3  | 0.1      | 0.8            | 0.6  | 0.2      | 0.4  | 0.8      | 0.3  |
| Total Defects (%)   | 2.9      | 2.9  | 2.5  | 1.4      | 1.7  | 2.1      | 4.1  | 2.2     | 1.7  | 1.5  | 1.0  | 0.1      | 1.5            | 0.9  | 1.2      | 0.4  | 1.8      | 0.3  |
| Grade   | 3        | 3    | 3    | 2        | 3    | 2        | 3    | 2       | 3    | 2    | 2    | 2        | 3              | 2    | 1        | 1    | 2        | 2    |
| <b>Wheat Non-Grade Data - from Individual Samples</b>     |          |      |      |          |      |          |      |         |      |      |      |          |                |      |          |      |          |      |
| Moisture (%)  | 12.9     | 12.5 | 12.1 | 13.5     | 12.8 | 12.7     | 13.0 | 13.1    | 13.5 | 14.3 | 14.2 | 12.9     | 13.3           | 13.0 | 12.9     | 13.1 | 13.4     | 13.4 |
| Protein (%) 12% mb  | 9.5      | 10.1 | 9.6  | 11.3     | 10.4 | 9.9      | 9.8  | 10.1    | 9.7  | 9.2  | 9.1  | 9.5      | 10.7           | 9.4  | 9.4      | 9.2  | 9.8      | 8.9  |
| Ash (%) 14% mb  | 1.40     | 1.56 | 1.47 | 1.51     | 1.50 | 1.50     | 1.62 | 1.57    | 1.55 | 1.60 | 1.50 | 1.50     | 1.56           | 1.49 | 1.44     | 1.44 | 1.63     | 1.49 |
| 1000 Kernel Weight (g)                                    | 30.4     | 29.8 | 29.5 | 31.1     | 29.7 | 28.6     | 26.4 | 29.9    | 34.0 | 34.1 | 34.3 | 33.9     | 31.3           | 34.3 | 33.5     | 35.0 | 32.0     | 34.5 |
| Wheat Falling Number (sec)                                | 265      | 287  | 245  | 310      | 290  | 318      | 320  | 321     | 315  | 320  | 321  | 318      | 349            | 340  | 335      | 335  | 336      | 333  |
| DON (ppm)   | 0.7      | 0.7  | 1.5  | 0.7      | 1.7  | 5.2      | 5.7  | 4.2     | 1.1  | 0.4  | 0.6  | 2.1      | 0.3            | 0.4  | 0.5      | 0.6  | 0.2      | 0.7  |
| <b>Wheat Non-Grade Data - from Area Composite Samples</b> |          |      |      |          |      |          |      |         |      |      |      |          |                |      |          |      |          |      |
| Dockage (%)   | 0.7      | 0.6  | 0.3  | 0.2      | 0.4  | 0.4      | 0.5  | 0.5     | 0.4  | 0.5  | 0.4  | 0.2      | 0.9            | 0.2  | 0.4      | 0.5  | 0.4      | 0.5  |
| Moisture (%)  | 13.2     | 13.7 | 12.2 | 13.6     | 13.0 | 12.2     | 12.8 | 12.5    | 13.2 | 13.9 | 13.8 | 12.6     | 12.7           | 12.7 | 13.0     | 12.5 | 14.7     | 13.4 |
| Protein (%) 12% mb  | 9.1      | 9.7  | 9.7  | 10.7     | 10.3 | 9.9      | 10.0 | 10.3    | 9.4  | 9.3  | 9.2  | 9.0      | 11.3           | 9.8  | 9.3      | 9.1  | 9.7      | 8.9  |
| Kernel Size Large (Over 7) (%)                            | 82       | 80   | 79   | 81       | 81   | 79       | 74   | 79      | 90   | 89   | 90   | 87       | 76             | 90   | 92       | 91   | 86       | 88   |
| Kernel Size Medium (Over 9) (%)                           | 18       | 20   | 20   | 18       | 18   | 21       | 25   | 20      | 10   | 11   | 10   | 13       | 22             | 10   | 8        | 9    | 13       | 12   |
| Kernel Size Small (Thru 9) (%)                            | 1        | 0    | 1    | 0        | 0    | 1        | 1    | 1       | 0    | 0    | 0    | 0        | 1              | 0    | 0        | 0    | 0        | 0    |
| Single Kernel Hardness                                    | 21.9     | 10.7 | 20.3 | 24.6     | 23.3 | 27.6     | 31.7 | 27.6    | 15.9 | 23.6 | 30.5 | 22.3     | 21.6           | 34.6 | 22.0     | 18.3 | 38.8     | 21.9 |
| Single Kernel Weight (mg)                                 | 29.6     | 33.5 | 27.3 | 30.0     | 28.8 | 27.5     | 26.5 | 31.3    | 38.0 | 34.2 | 34.0 | 33.7     | 31.1           | 27.6 | 33.8     | 32.4 | 33.6     | 31.9 |
| Single Kernel Diameter (mm)                               | 2.54     | 2.71 | 2.49 | 2.54     | 2.52 | 2.50     | 2.43 | 2.56    | 2.74 | 2.66 | 2.67 | 2.65     | 2.57           | 2.42 | 2.66     | 2.61 | 2.65     | 2.57 |
| Sedimentation (cc)  | 9        | 10   | 13   | 19       | 13   | 14       | 10   | 12      | 15   | 12   | 11   | 12       | 15             | 12   | 10       | 10   | 17       | 11   |
| DON (ppm)   | 0.3      | 0.6  | 3.4  | 1.1      | 2.1  | 6.1      | 5.7  | 4.9     | 1.5  | 0.9  | 1.0  | 3.7      | 2.8            | 0.5  | 0.5      | 0.8  | 0.3      | 1.0  |
| <b>Flour Data</b>   |          |      |      |          |      |          |      |         |      |      |      |          |                |      |          |      |          |      |
| Lab Mill Extraction (%)                                   | 71.8     | 71.2 | 69.4 | 69.6     | 72.3 | 70.4     | 70.8 | 71.4    | 70.3 | 69.0 | 69.2 | 70.6     | 69.0           | 72.3 | 71.1     | 69.9 | 74.7     | 70.1 |
| Flour Color - *L  | 0.0      | 93.8 | 92.7 | 92.8     | 92.6 | 92.9     | 92.6 | 93.3    | 93.3 | 93.2 | 93.3 | 92.7     | 92.2           | 92.1 | 92.5     | 93.0 | 93.0     | 92.8 |
| Flour Color - *a  | -2.9     | -3.2 | -2.9 | -2.4     | -2.5 | -3.0     | -3.1 | -2.7    | -2.9 | -3.0 | -2.7 | -2.9     | -3.0           | -2.9 | -3.3     | -3.3 | -2.5     | -3.1 |
| Flour Color - *b  | 0.0      | 8.5  | 8.2  | 7.3      | 7.6  | 8.2      | 9.4  | 8.0     | 8.2  | 8.4  | 7.7  | 8.6      | 8.7            | 8.8  | 9.2      | 9.1  | 7.7      | 8.8  |
| Flour Protein (%) 14% mb                                  | 8.1      | 8.5  | 8.6  | 9.4      | 8.7  | 8.8      | 8.0  | 8.3     | 7.8  | 7.6  | 7.6  | 8.0      | 9.3            | 8.5  | 8.4      | 7.7  | 8.4      | 7.8  |
| Flour Ash (%) 14% mb                                      | 0.42     | 0.45 | 0.42 | 0.48     | 0.46 | 0.45     | 0.40 | 0.47    | 0.47 | 0.44 | 0.46 | 0.39     | 0.48           | 0.44 | 0.40     | 0.40 | 0.47     | 0.38 |
| Wet Gluten (%)  | 18.7     | 20.7 | 22.4 | 29.8     | 24.2 | 23.9     | 22.3 | 24.4    | 20.2 | 23.1 | 19.7 | 21.6     | 26.1           | 22.5 | 20.1     | 18.9 | 19.4     | 20.1 |
| Gluten Index  | 98.5     | 94.6 | 96.9 | 96.9     | 73.1 | 70.3     | 58.0 | 71.3    | 79.4 | 70.8 | 89.7 | 74.0     | 82.1           | 70.9 | 97.8     | 97.7 | 99.0     | 82.8 |
| Falling Number (sec)                                      | 296      | 314  | 244  | 349      | 291  | 338      | 337  | 364     | 321  | 324  | 348  | 332      | 340            | 330  | 366      | 331  | 331      | 332  |
| Amylograph (65g) (BU)                                     | 280      | 380  | 140  | 610      | 300  | 660      | 620  | 580     | 600  | 590  | 510  | 430      | 410            | 490  | 610      | 600  | 550      | 640  |
| Starch Damage (%)   | 4.6      | 5.8  | 7.0  | 4.6      | 4.2  | 5.3      | 5.3  | 3.8     | 6.2  | 3.8  | 4.6  | 3.8      | 4.6            | 5.3  | 2.1      | 3.0  | 5.8      | 4.2  |
| <b>Dough Properties</b>                                   |          |      |      |          |      |          |      |         |      |      |      |          |                |      |          |      |          |      |
| Farinograph Peak (min)                                    | 1.0      | 1.2  | 1.5  | 2.0      | 1.3  | 1.2      | 1.0  | 1.0     | 1.2  | 1.3  | 1.2  | 0.9      | 1.7            | 1.7  | 1.3      | 1.3  | 1.4      | 1.4  |
| Farinograph Stability (min)                               | 1.4      | 2.6  | 2.1  | 4.2      | 2.4  | 2.9      | 1.7  | 2.2     | 1.7  | 2.7  | 2.4  | 2.5      | 3.6            | 2.8  | 2.8      | 2.3  | 3.6      | 3.0  |
| Farinograph Absorption (%)                                | 51.6     | 53.8 | 53.3 | 54.4     | 51.7 | 52.1     | 50.5 | 51.5    | 54.1 | 51.4 | 51.1 | 50.9     | 52.1           | 52.6 | 51.0     | 52.5 | 53.3     | 50.2 |
| Alveograph P (mm)   | 34       | 40   | 38   | 43       | 29   | 31       | 21   | 29      | 48   | 34   | 33   | 27       | 35             | 36   | 31       | 36   | 60       | 28   |
| Alveograph L (mm)   | 85       | 86   | 88   | 116      | 104  | 98       | 85   | 42      | 48   | 39   | 59   | 102      | 94             | 76   | 69       | 71   | 72       | 84   |
| Alveograph W (10-4 joules)                                | 80       | 105  | 101  | 140      | 76   | 84       | 45   | 44      | 77   | 49   | 63   | 70       | 94             | 77   | 65       | 76   | 146      | 65   |
| Alveograph P/L  | 0.40     | 0.47 | 0.43 | 0.37     | 0.28 | 0.32     | 0.25 | 0.69    | 1.00 | 0.87 | 0.56 | 0.26     | 0.37           | 0.47 | 0.45     | 0.51 | 0.83     | 0.33 |
| <b>Baking Evaluation</b>                                  |          |      |      |          |      |          |      |         |      |      |      |          |                |      |          |      |          |      |
| Crumb Grain   | 5        | 6    | 5    | 5        | 5    | 5        | 4    | 6       | 5    | 5    | 5    | 5        | 5              | 4    | 6        | 5    | 6        | 6    |
| Crumb Texture   | 5        | 6    | 5    | 5        | 6    | 6        | 4    | 5       | 5    | 5    | 6    | 4        | 5              | 5    | 6        | 5    | 7        | 6    |
| Loaf Volume (cc)  | 725      | 750  | 765  | 750      | 725  | 725      | 700  | 700     | 725  | 700  | 725  | 700      | 750            | 725  | 725      | 750  | 750      | 735  |
| Cookie Spread Ratio                                       | 9.4      | 9.1  | 9.1  | 7.9      | 10.2 | 8.8      | 10.5 | 9.7     | 9.4  | 9.9  | 9.3  | 9.9      | 8.7            | 8.7  | 9.3      | 9.6  | 7.4      | 9.3  |

N-North, S-South, E-East, W-West, C-Central, NE-North East, NA-Not Available

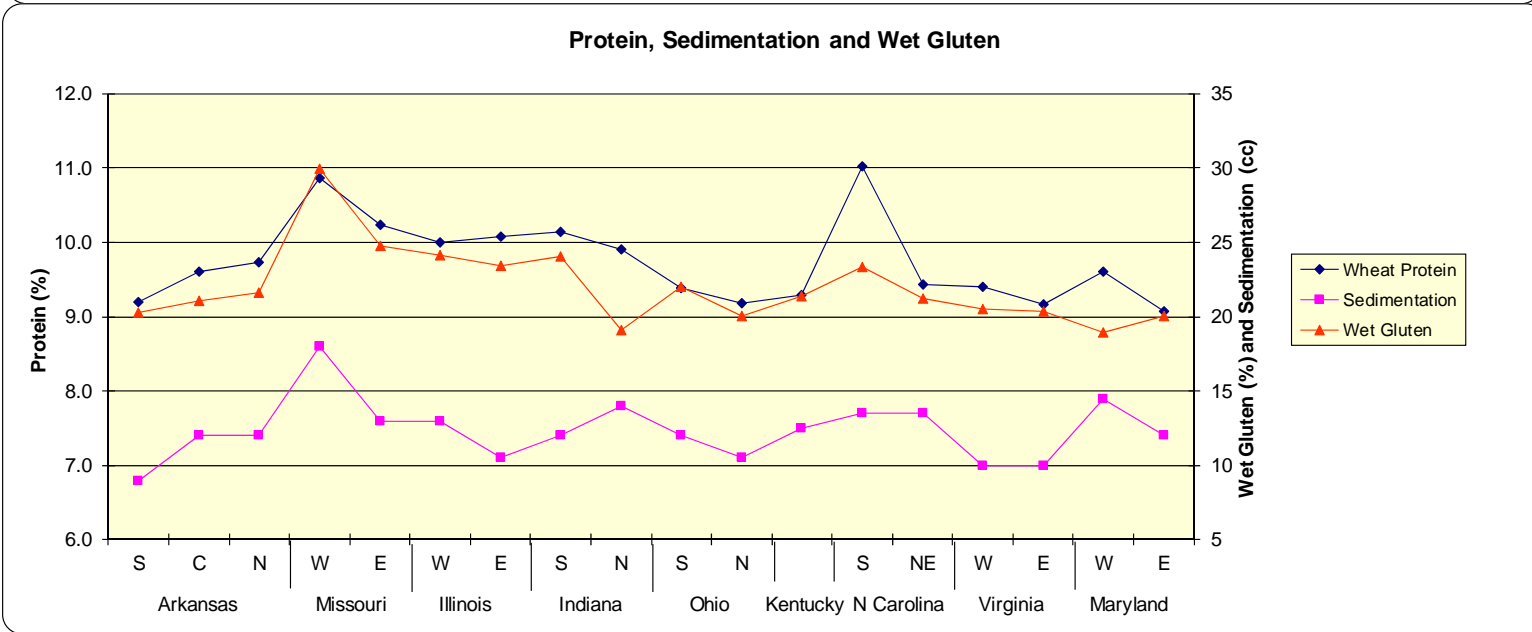
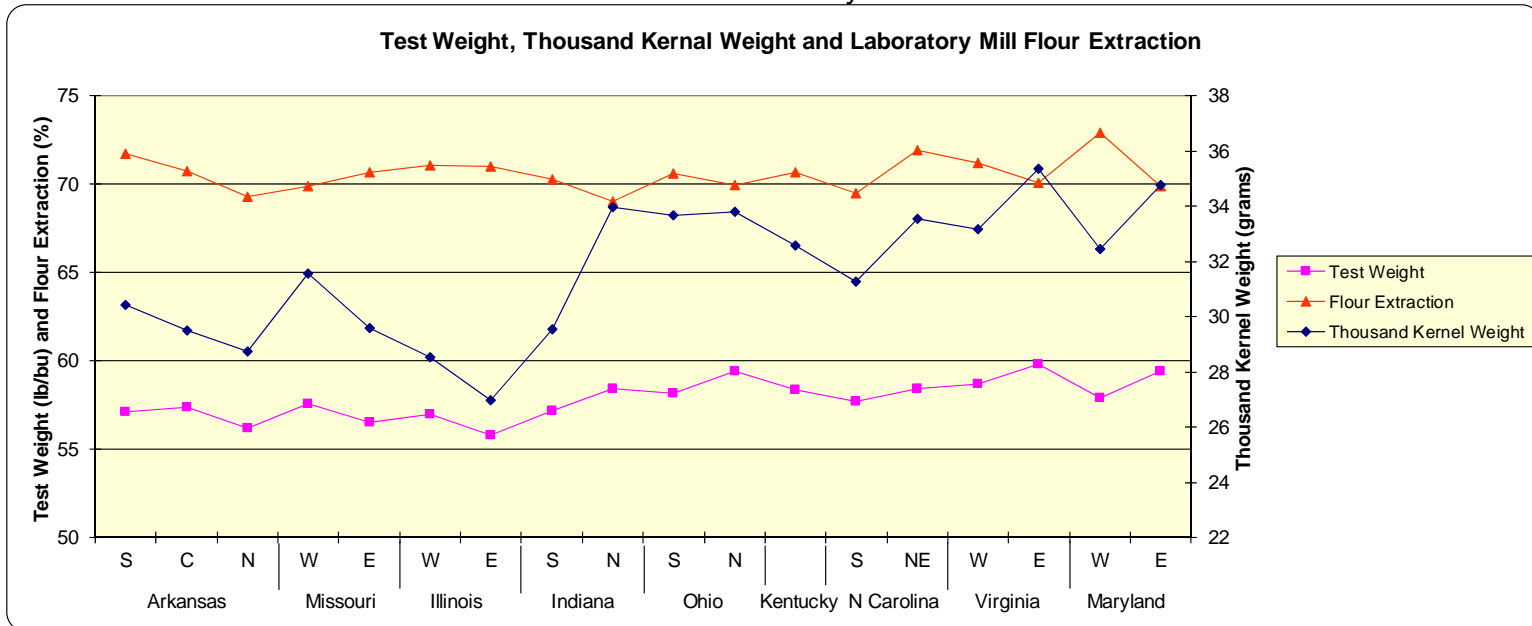
Soft Red Winter 2014 Survey - Late Samples

|   | Arkansas |      |      | Missouri |      | Illinois |      | Indiana |      | Ohio |      | Kentucky | North Carolina |      | Virginia |      | Maryland |      |
|---|----------|------|------|----------|------|----------|------|---------|------|------|------|----------|----------------|------|----------|------|----------|------|
|   | S        | C    | N    | W        | E    | W        | E    | S       | N    | S    | N    |          | S              | NE   | W        | E    | W        | E    |
| <b>Wheat Grade Data - from Individual Samples</b>         |          |      |      |          |      |          |      |         |      |      |      |          |                |      |          |      |          |      |
| Test Weight (Lab) (lb/bu)                                 | 56.4     | 57.3 | 56.0 | 57.6     | 56.4 | 56.2     | 55.2 | 56.4    | 58.1 | 58.0 | 58.9 | 57.4     | 57.2           | 57.9 | 57.5     | 59.3 | 57.0     | 59.3 |
| Count   | 8        | 13   | 7    | 14       | 16   | 19       | 17   | 11      | 24   | 13   | 32   | 18       | 17             | 15   | 5        | 13   | 5        | 14   |
| <b>Wheat Grade Data - from Area Composite Samples</b>     |          |      |      |          |      |          |      |         |      |      |      |          |                |      |          |      |          |      |
| Test Weight (lb/bu)                                       | 56.6     | 57.3 | 56.7 | 57.7     | 56.4 | 56.6     | 56.0 | 57.0    | 58.3 | 58.6 | 59.0 | 58.4     | 57.4           | 57.8 | 57.7     | 59.7 | 58.3     | 58.8 |
| Test Weight (kg/hl)                                       | 74.5     | 75.5 | 74.7 | 76.0     | 74.3 | 74.5     | 73.8 | 75.1    | 76.7 | 77.1 | 77.6 | 76.9     | 75.6           | 76.1 | 76.0     | 78.6 | 76.7     | 77.4 |
| Damage - Total (%)  | 0.7      | 2.0  | 0.0  | 1.3      | 0.0  | 1.3      | 1.3  | 2.7     | 0.7  | 1.3  | 1.3  | 1.3      | 1.3            | 0.7  | 0.0      | 0.0  | 0.0      | 1.3  |
| Foreign Material (%)                                      | 0.3      | 0.3  | 0.0  | 0.0      | 0.3  | 0.7      | 0.3  | 0.7     | 0.0  | 0.0  | 0.0  | 0.0      | 0.0            | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Shrunken and Broken (%)                                   | 0.7      | 1.0  | 0.5  | 0.6      | 0.6  | 0.6      | 0.8  | 1.7     | 0.4  | 0.8  | 0.6  | 0.3      | 0.6            | 0.5  | 0.5      | 0.6  | 0.4      | 0.4  |
| Total Defects (%)   | 1.7      | 3.3  | 0.5  | 1.9      | 0.9  | 2.6      | 2.4  | 5.1     | 1.1  | 2.1  | 1.9  | 1.6      | 1.9            | 1.2  | 0.5      | 0.6  | 0.4      | 1.7  |
| Grade   | 3        | 3    | 3    | 3        | 3    | 3        | 3    | 3       | 2    | 2    | 2    | 2        | 3              | 3    | 3        | 2    | 2        | 2    |
| <b>Wheat Non-Grade Data - from Individual Samples</b>     |          |      |      |          |      |          |      |         |      |      |      |          |                |      |          |      |          |      |
| Moisture (%)  | 13.3     | 11.9 | 12.3 | 13.5     | 12.9 | 12.7     | 13.6 | 12.8    | 13.6 | 13.4 | 13.4 | 12.7     | 12.4           | 13.1 | 13.0     | 12.6 | 13.7     | 12.5 |
| Protein (%) 12% mb  | 9.3      | 9.8  | 10.1 | 11.3     | 10.6 | 10.2     | 10.5 | 10.6    | 10.0 | 9.6  | 9.3  | 9.8      | 10.5           | 9.8  | 9.5      | 9.8  | 9.8      | 9.2  |
| Ash (%) 14% mb  | 1.47     | 1.56 | 1.50 | 1.54     | 1.56 | 1.60     | 1.53 | 1.63    | 1.55 | 1.52 | 1.48 | 1.42     | 1.59           | 1.49 | 1.48     | 1.45 | 1.53     | 1.55 |
| 1000 Kernel Weight (g)                                    | 30.5     | 29.3 | 28.1 | 32.1     | 29.5 | 28.5     | 27.4 | 29.2    | 33.9 | 33.1 | 33.4 | 31.2     | 31.2           | 32.9 | 32.7     | 35.8 | 33.0     | 35.0 |
| Wheat Falling Number (sec)                                | 244      | 279  | 257  | 309      | 299  | 308      | 311  | 309     | 318  | 310  | 311  | 307      | 350            | 345  | 331      | 335  | 314      | 337  |
| DON (ppm)   | 0.6      | 1.0  | 1.8  | 0.8      | 2.7  | 4.3      | 5.5  | 4.8     | 2.4  | 1.1  | 0.9  | 4.9      | 0.3            | 0.3  | 1.3      | 0.6  | 2.0      | 1.3  |
| <b>Wheat Non-Grade Data - from Area Composite Samples</b> |          |      |      |          |      |          |      |         |      |      |      |          |                |      |          |      |          |      |
| Dockage (%)   | 0.7      | 0.4  | 0.2  | 0.2      | 0.4  | 0.4      | 0.5  | 1.1     | 0.4  | 0.5  | 0.2  | 0.3      | 0.5            | 0.2  | 0.4      | 0.3  | 0.5      | 0.3  |
| Moisture (%)  | 13.0     | 11.9 | 12.4 | 13.4     | 13.4 | 12.8     | 13.7 | 12.0    | 13.2 | 13.5 | 13.2 | 13.1     | 12.0           | 13.1 | 13.4     | 12.9 | 12.7     | 11.9 |
| Protein (%) 12% mb  | 9.3      | 9.5  | 9.7  | 11.1     | 10.2 | 10.1     | 10.2 | 10.0    | 10.5 | 9.5  | 9.2  | 9.6      | 10.8           | 9.0  | 9.5      | 9.3  | 9.6      | 9.2  |
| Kernel Size Large (Over 7) (%)                            | 81       | 81   | 78   | 87       | 82   | 82       | 79   | 80      | 87   | 88   | 88   | 85       | 85             | 88   | 88       | 91   | 86       | 88   |
| Kernel Size Medium (Over 9) (%)                           | 19       | 19   | 21   | 13       | 18   | 18       | 21   | 19      | 13   | 12   | 12   | 14       | 15             | 12   | 12       | 9    | 13       | 11   |
| Kernel Size Small (Thru 9) (%)                            | 1        | 0    | 1    | 0        | 1    | 1        | 1    | 1       | 1    | 0    | 0    | 0        | 1              | 0    | 0        | 0    | 0        | 0    |
| Single Kernel Hardness                                    | 14.2     | 15.2 | 20.2 | 19.9     | 22.0 | 24.8     | 29.1 | 25.4    | 17.5 | 15.9 | 19.7 | 22.8     | 20.8           | 13.3 | 21.0     | 8.8  | 11.8     | 15.1 |
| Single Kernel Weight (mg)                                 | 26.0     | 33.5 | 27.6 | 30.8     | 26.4 | 28.1     | 28.1 | 30.0    | 36.0 | 34.5 | 34.7 | 30.0     | 30.5           | 35.3 | 31.2     | 36.1 | 34.6     | 32.5 |
| Single Kernel Diameter (mm)                               | 2.38     | 2.73 | 2.49 | 2.55     | 2.46 | 2.46     | 2.48 | 2.53    | 2.67 | 2.63 | 2.63 | 2.53     | 2.55           | 2.70 | 2.51     | 2.70 | 2.67     | 2.57 |
| Sedimentation (cc)  | 9        | 14   | 11   | 17       | 13   | 12       | 11   | 12      | 13   | 12   | 10   | 13       | 12             | 15   | 10       | 10   | 12       | 13   |
| DON (ppm)   | 0.5      | 1.4  | 0.4  | 0.3      | 3.6  | 5.7      | 6.0  | 5.5     | 2.1  | 1.3  | 1.3  | 6.9      | 0.5            | 0.4  | 1.0      | 0.7  | 1.8      | 1.2  |
| <b>Flour Data</b>   |          |      |      |          |      |          |      |         |      |      |      |          |                |      |          |      |          |      |
| Lab Mill Extraction (%)                                   | 71.7     | 70.3 | 69.2 | 70.2     | 69.0 | 71.8     | 71.2 | 69.2    | 67.7 | 72.2 | 70.7 | 70.7     | 70.0           | 71.6 | 71.3     | 70.2 | 71.1     | 69.7 |
| Flour Color - *L  | 93.2     | 93.5 | 92.2 | 92.9     | 92.8 | 92.8     | 92.3 | 93.0    | 93.3 | 93.3 | 93.5 | 92.6     | 92.8           | 93.0 | 92.8     | 92.9 | 93.6     | 93.4 |
| Flour Color - *a  | -3.0     | -3.2 | -3.0 | -2.5     | -2.6 | -2.9     | -3.1 | -2.9    | -2.9 | -3.1 | -2.9 | -3.0     | -3.0           | -3.3 | -3.0     | -2.9 | -2.9     | -2.9 |
| Flour Color - *b  | 7.8      | 8.6  | 8.8  | 7.5      | 8.0  | 8.3      | 9.0  | 8.2     | 8.4  | 8.5  | 7.9  | 8.9      | 9.0            | 9.0  | 8.2      | 8.0  | 7.9      | 7.8  |
| Flour Protein (%) 14% mb                                  | 8.1      | 8.2  | 8.5  | 9.3      | 8.6  | 8.4      | 8.5  | 8.2     | 7.9  | 7.7  | 7.9  | 8.4      | 8.4            | 8.0  | 7.8      | 7.8  | 7.7      | 7.8  |
| Flour Ash (%) 14% mb                                      | 0.41     | 0.42 | 0.40 | 0.42     | 0.45 | 0.44     | 0.42 | 0.47    | 0.41 | 0.43 | 0.47 | 0.41     | 0.42           | 0.41 | 0.43     | 0.45 | 0.37     | 0.41 |
| Wet Gluten (%)  | 21.8     | 21.5 | 20.9 | 30.2     | 25.3 | 24.3     | 24.6 | 23.7    | 18.1 | 20.9 | 20.4 | 21.2     | 20.5           | 20.0 | 21.0     | 21.8 | 18.6     | 20.0 |
| Gluten Index  | 96.8     | 93.4 | 99.0 | 94.0     | 85.8 | 61.0     | 51.3 | 64.0    | 98.6 | 63.7 | 90.4 | 81.7     | 76.8           | 68.6 | 78.3     | 78.1 | 99.6     | 69.2 |
| Falling Number (sec)                                      | 279      | 271  | 221  | 317      | 280  | 309      | 327  | 355     | 347  | 345  | 330  | 313      | 330            | 355  | 370      | 360  | 282      | 354  |
| Amylograph (65g) (BU)                                     | 210      | 280  | 180  | 560      | 270  | 480      | 660  | 620     | 480  | 600  | 650  | 510      | 560            | 620  | 470      | 540  | 560      | 650  |
| Starch Damage (%)   | 4.2      | 6.2  | 4.9  | 4.9      | 2.5  | 4.9      | 4.9  | 4.9     | 5.3  | 4.6  | 4.6  | 4.2      | 4.9            | 3.8  | 4.9      | 4.2  | 4.9      | 4.9  |
| <b>Dough Properties</b>                                   |          |      |      |          |      |          |      |         |      |      |      |          |                |      |          |      |          |      |
| Farinograph Peak (min)                                    | 1.7      | 1.4  | 1.2  | 1.7      | 1.2  | 1.2      | 1.2  | 1.2     | 1.4  | 1.2  | 1.4  | 1.2      | 1.5            | 1.0  | 1.2      | 1.7  | 1.5      | 1.2  |
| Farinograph Stability (min)                               | 2.5      | 2.2  | 1.9  | 3.4      | 2.0  | 2.2      | 1.3  | 2.0     | 2.8  | 3.1  | 2.8  | 2.2      | 2.7            | 2.1  | 2.6      | 3.0  | 2.9      | 1.7  |
| Farinograph Absorption (%)                                | 51.7     | 53.5 | 52.2 | 53.3     | 51.4 | 50.8     | 52.1 | 50.7    | 51.3 | 51.0 | 51.1 | 50.8     | 57.8           | 51.6 | 52.1     | 51.8 | 51.9     | 54.7 |
| Alveograph P (mm)   | 36       | 42   | 35   | 34       | 30   | 27       | 21   | 27      | 35   | 34   | 32   | 27       | 28             | 32   | 35       | 35   | 37       | 44   |
| Alveograph L (mm)   | 87       | 82   | 80   | 131      | 98   | 82       | 93   | 50      | 56   | 41   | 46   | 96       | 91             | 86   | 48       | 50   | 55       | 47   |
| Alveograph W (10-4 joules)                                | 92       | 110  | 84   | 111      | 69   | 62       | 46   | 44      | 66   | 50   | 52   | 67       | 67             | 77   | 59       | 58   | 70       | 71   |
| Alveograph P/L  | 0.41     | 0.51 | 0.44 | 0.26     | 0.31 | 0.33     | 0.23 | 0.54    | 0.63 | 0.83 | 0.70 | 0.28     | 0.31           | 0.37 | 0.73     | 0.70 | 0.67     | 0.94 |
| <b>Baking Evaluation</b>                                  |          |      |      |          |      |          |      |         |      |      |      |          |                |      |          |      |          |      |
| Crumb Grain   | 5        | 5    | 4    | 4        | 4    | 5        | 4    | 6       | 4    | 5    | 5    | 4        | 4              | 5    | 5        | 5    | 5        | 5    |
| Crumb Texture   | 5        | 5    | 5    | 6        | 4    | 5        | 4    | 5       | 4    | 6    | 5    | 4        | 4              | 4    | 5        | 5    | 4        | 6    |
| Loaf Volume (cc)  | 725      | 725  | 775  | 750      | 700  | 725      | 700  | 700     | 735  | 715  | 725  | 725      | 750            | 700  | 700      | 725  | 735      | 700  |
| Cookie Spread Ratio                                       | 8.7      | 10.0 | 8.7  | 9.3      | 9.8  | 9.8      | 10.2 | 10.4    | 10.1 | 9.8  | 10.7 | 8.3      | 10.5           | 9.9  | 9.3      | 9.5  | 9.7      | 9.7  |

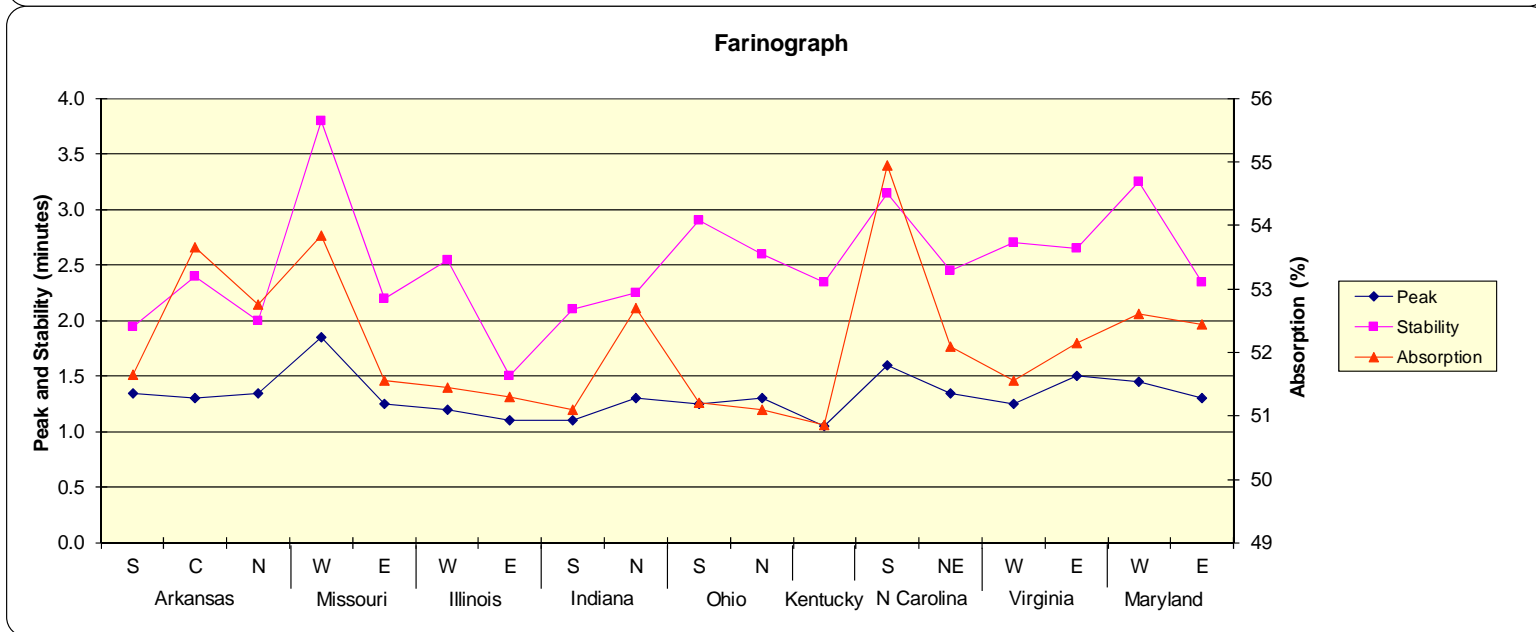
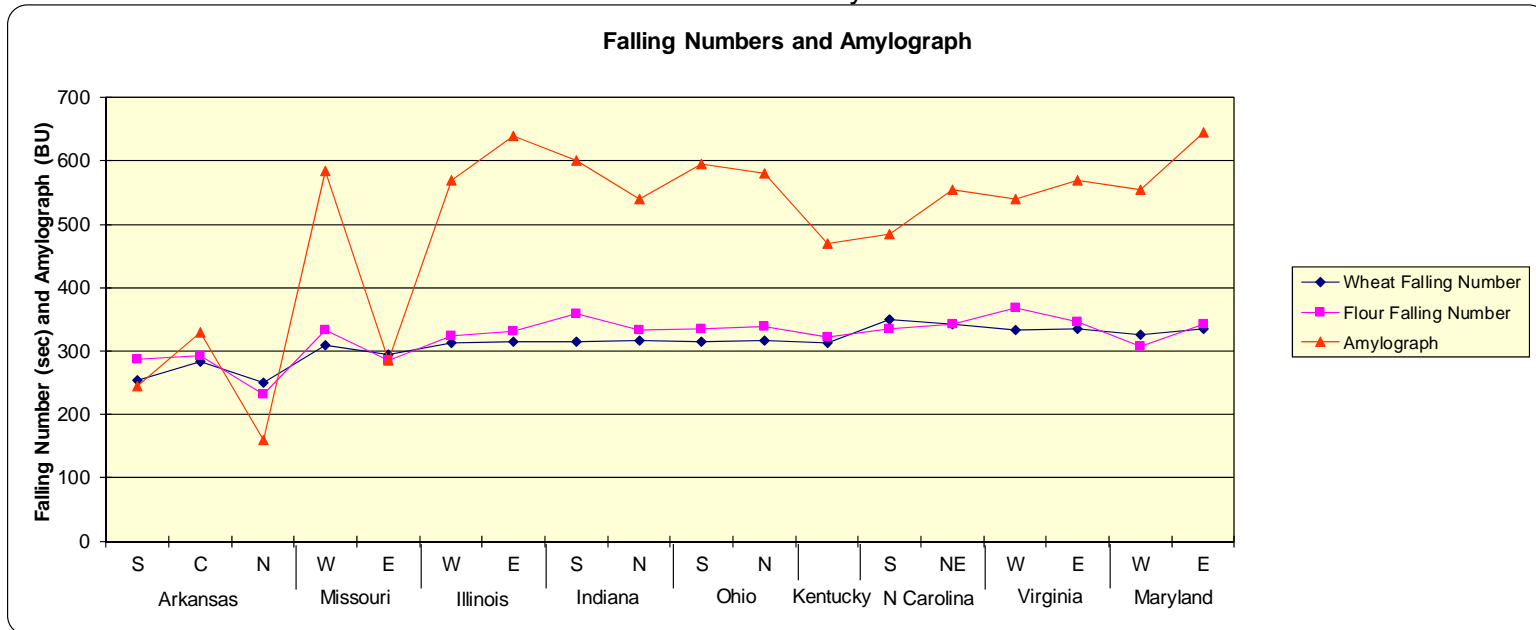
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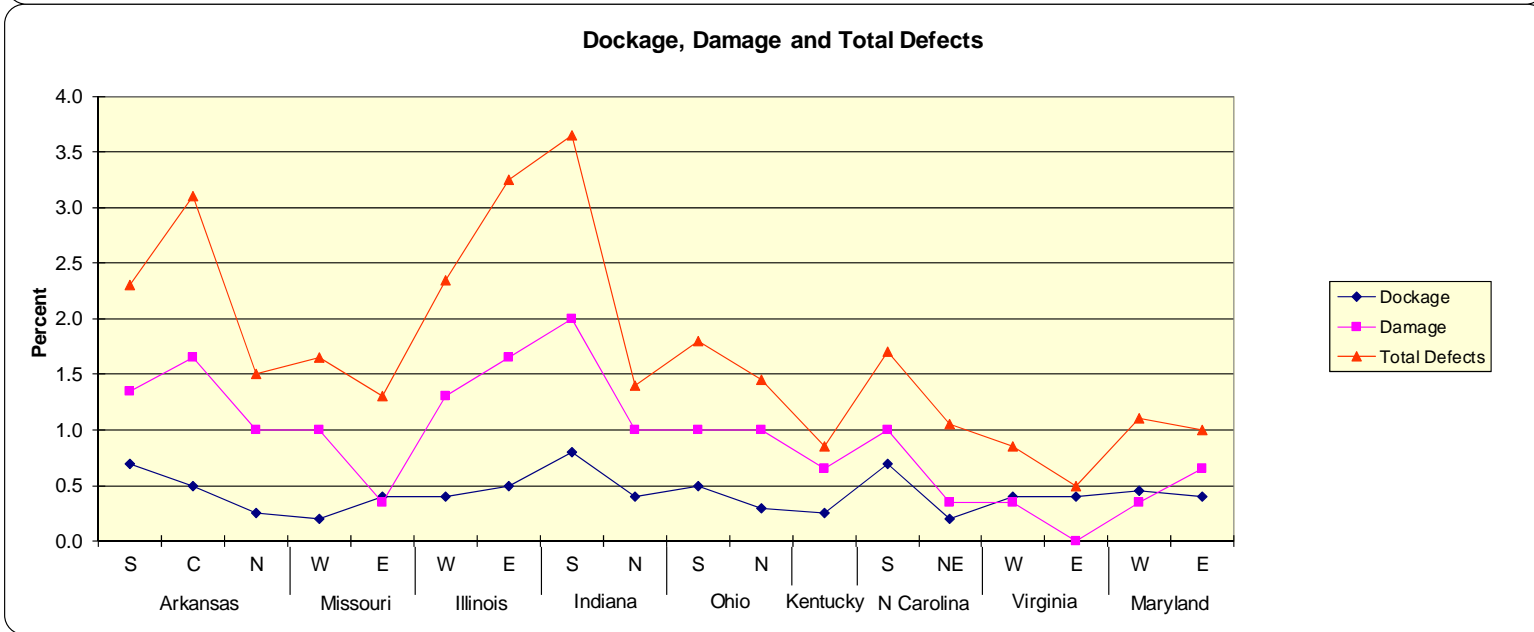
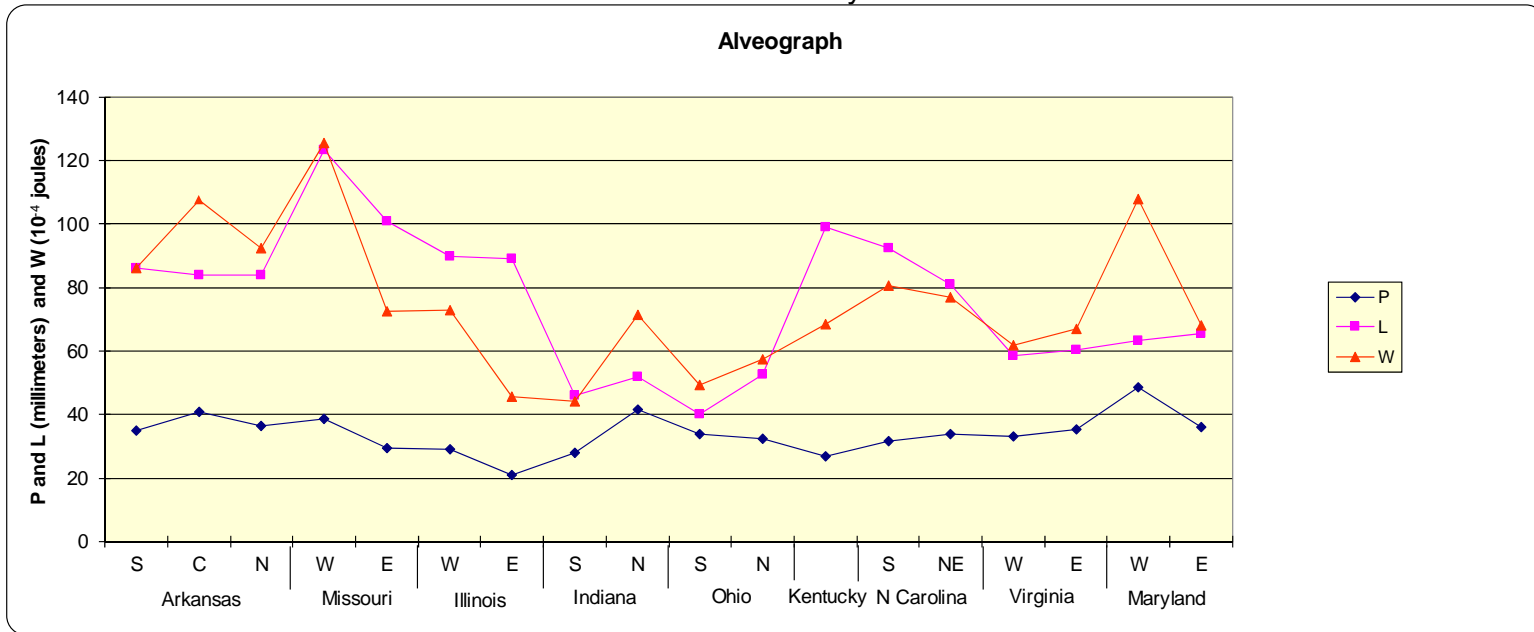
# Comparisons of 2014 Results For Selected Quality Factors



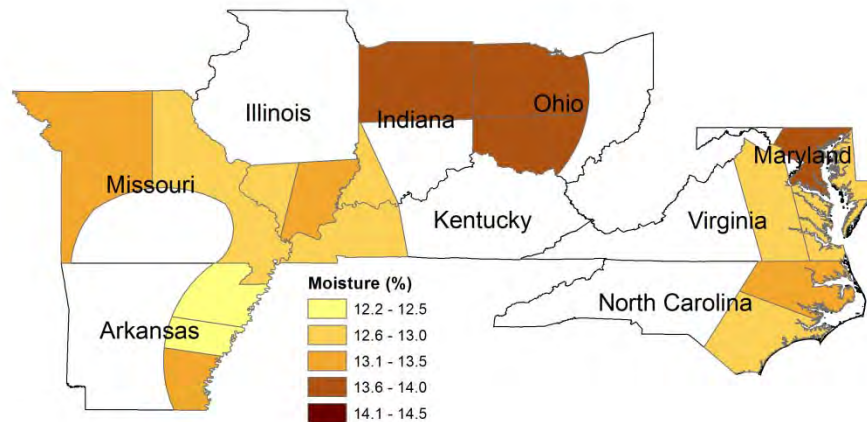
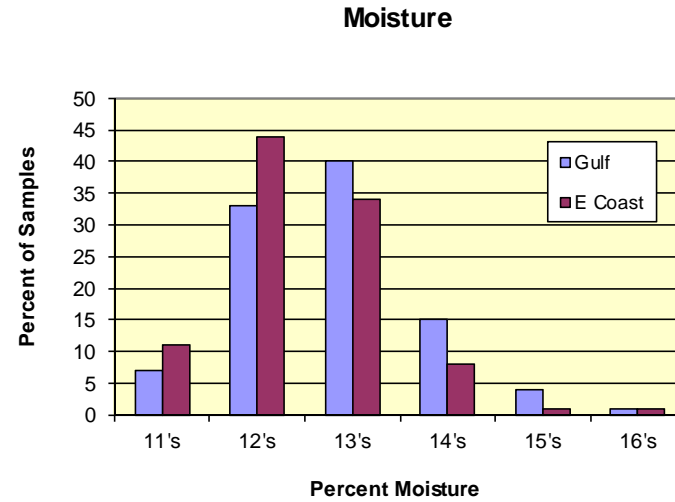
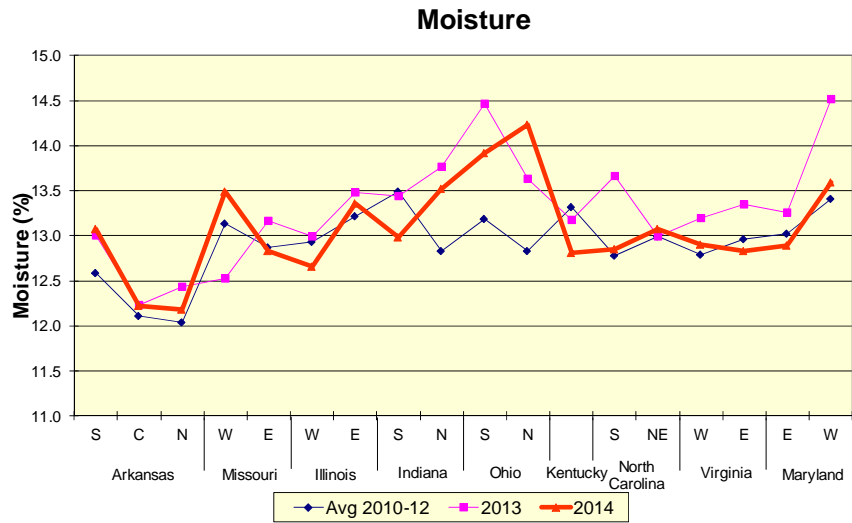
# Comparisons of 2014 Results For Selected Quality Factors



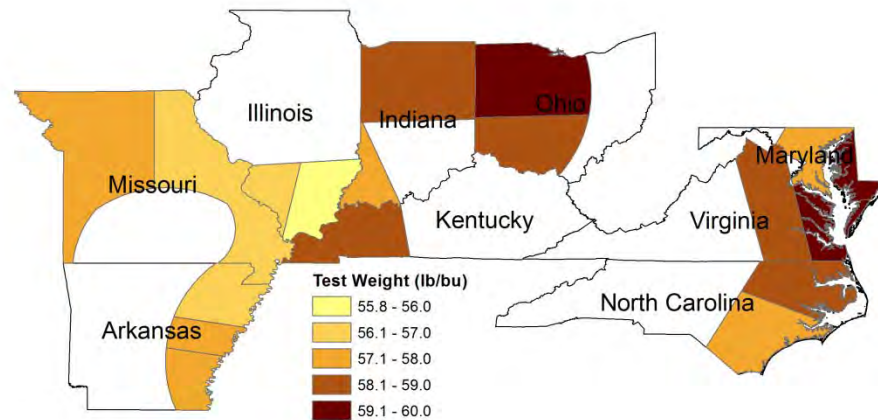
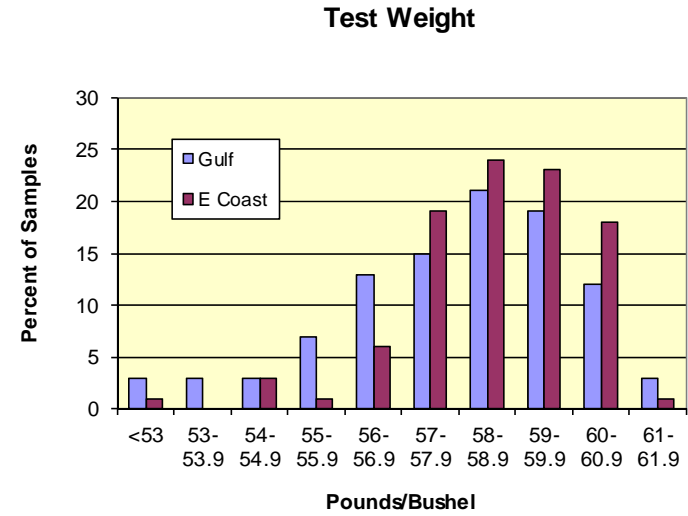
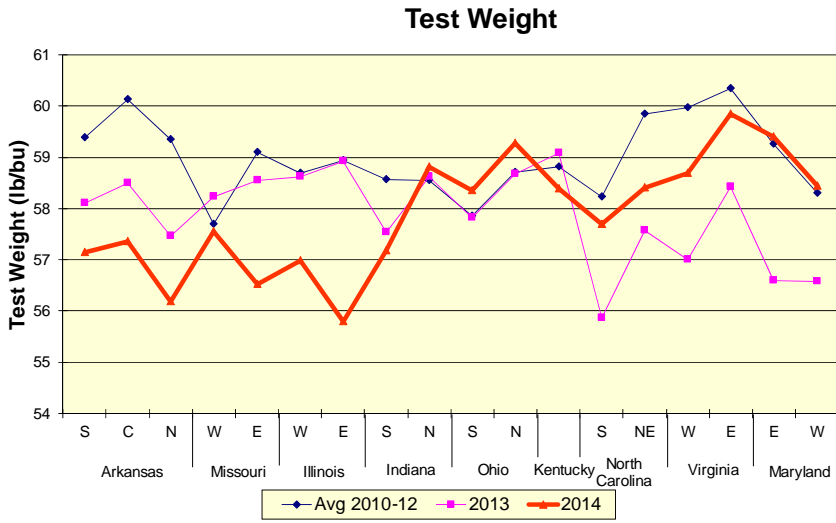
## Comparisons of 2014 Results For Selected Quality Factors



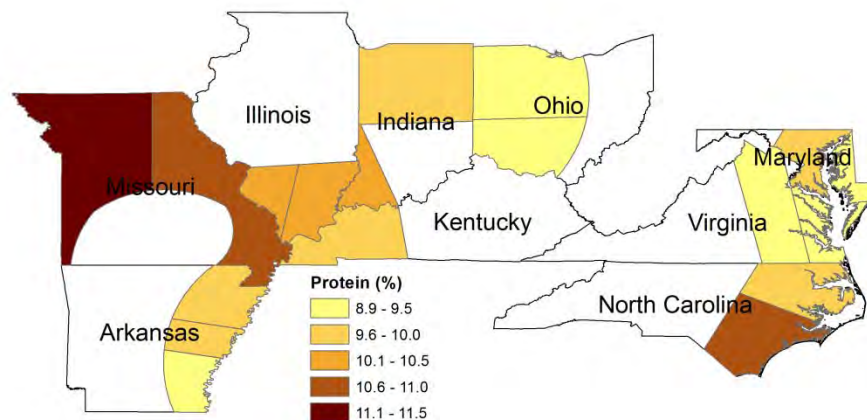
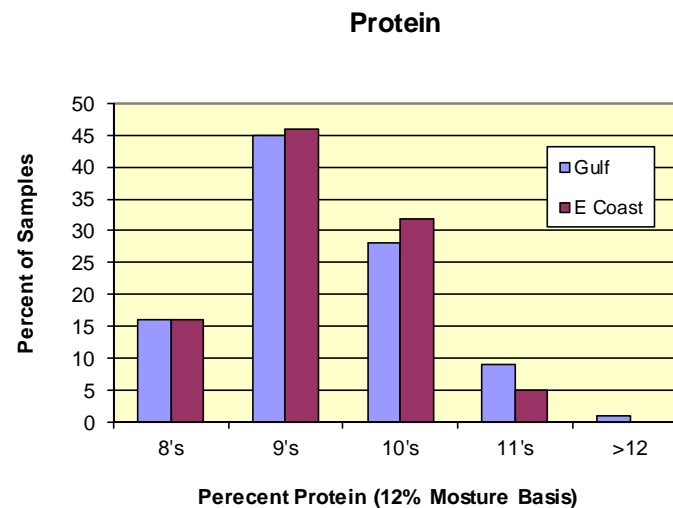
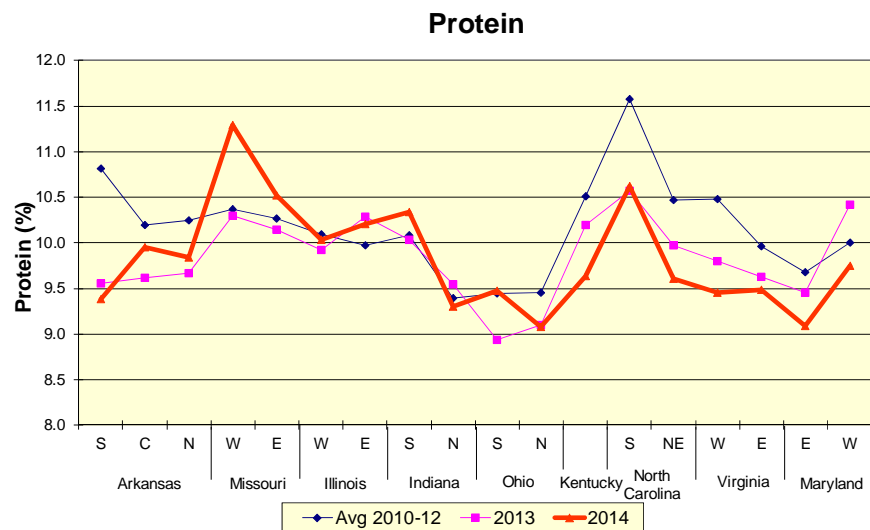
## Distribution of 2014 Results and Comparisons with Previous Years For Selected Quality Factors



## Distribution of 2014 Results and Comparisons with Previous Years For Selected Quality Factors

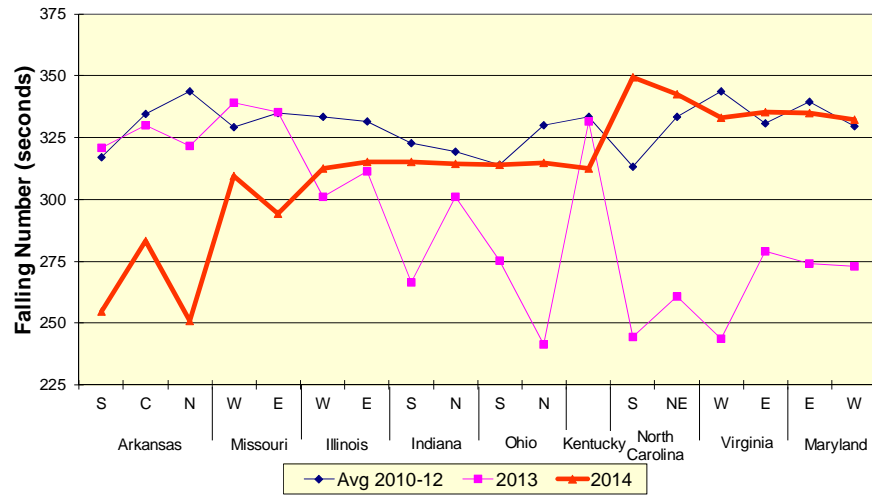


## Distribution of 2014 Results and Comparisons with Previous Years For Selected Quality Factors

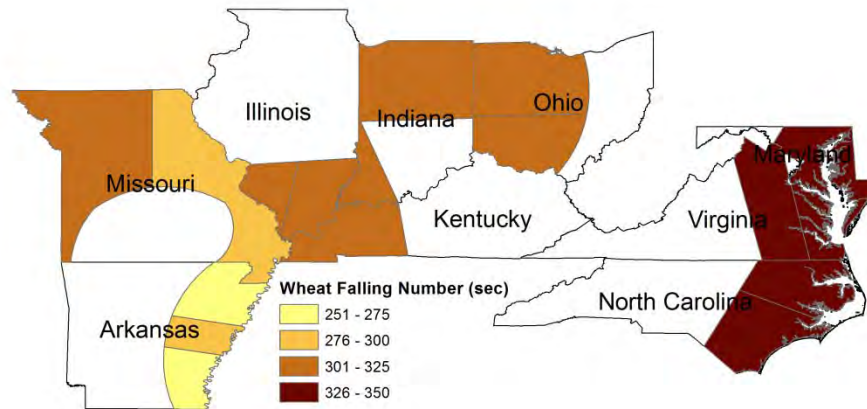
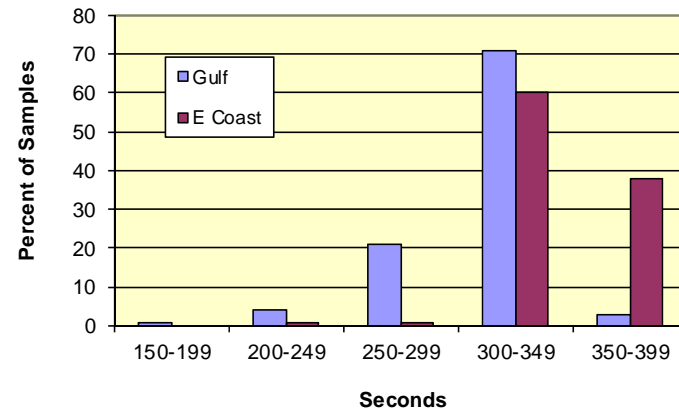


## Distribution of 2014 Results and Comparisons with Previous Years For Selected Quality Factors

**Falling Number**

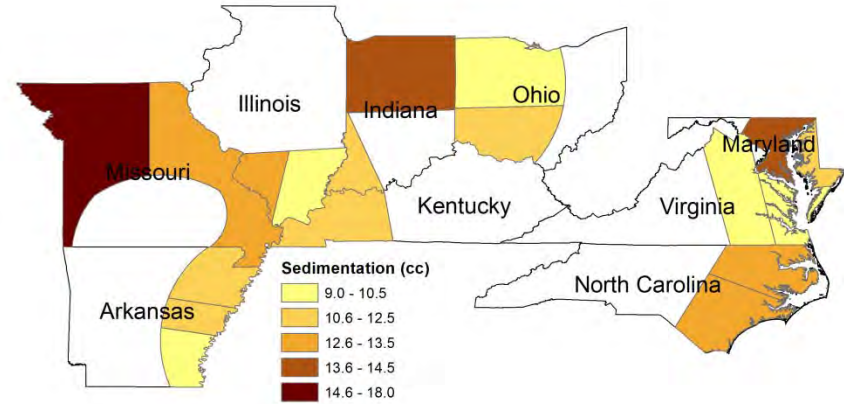
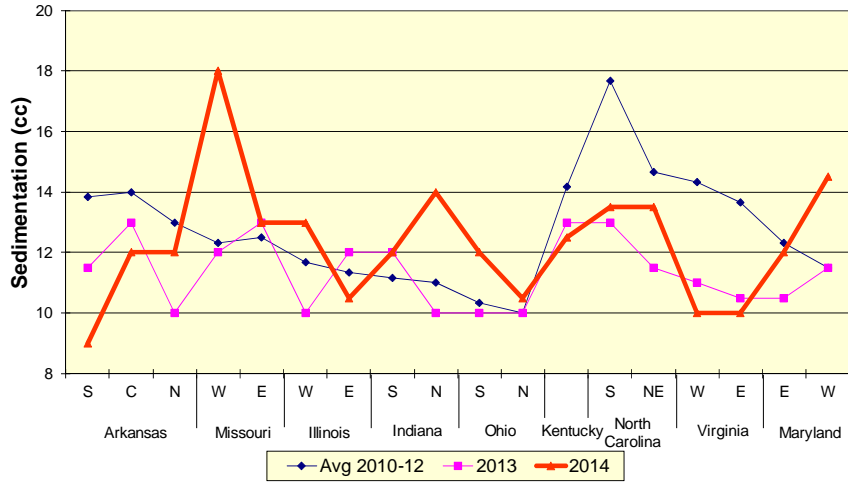


**Falling Number**

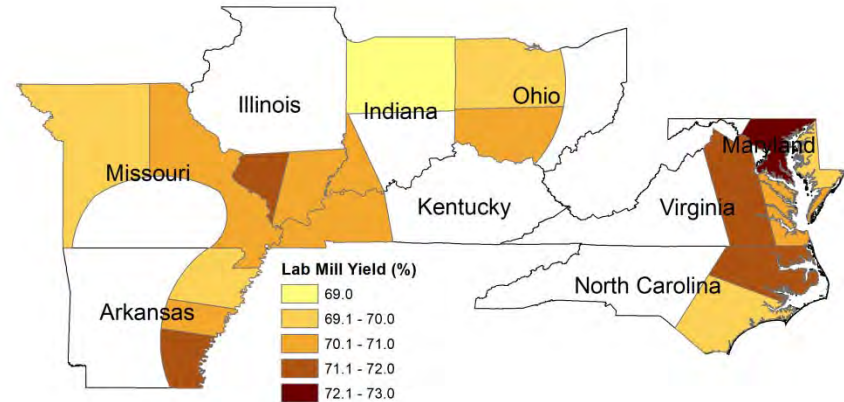
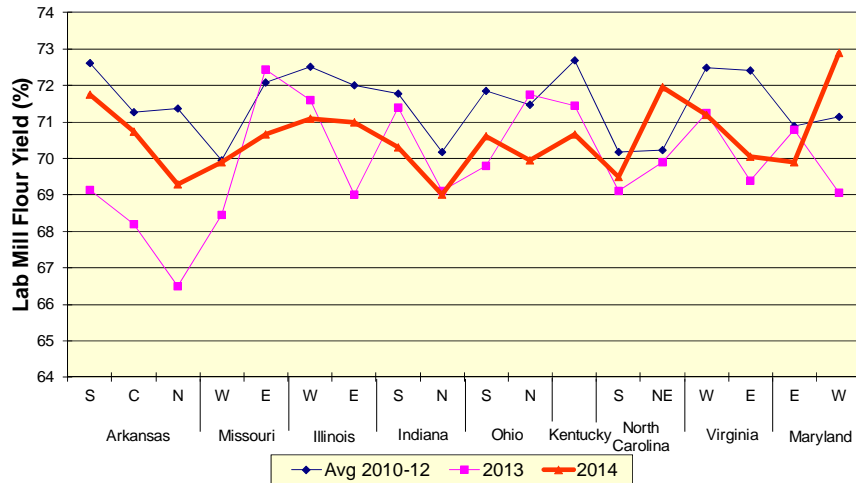


## Distribution of 2014 Results and Comparisons with Previous Years For Selected Quality Factors

### Sedimentation



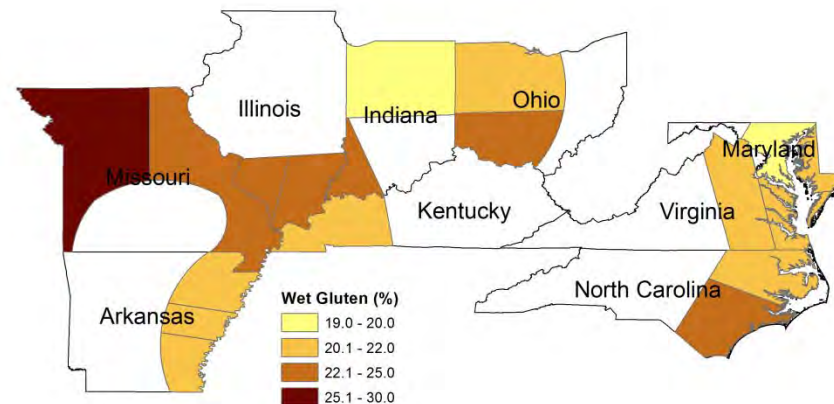
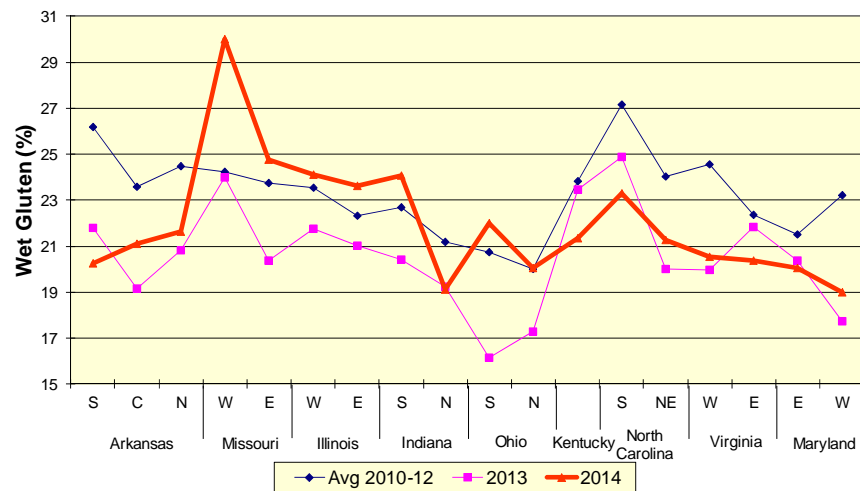
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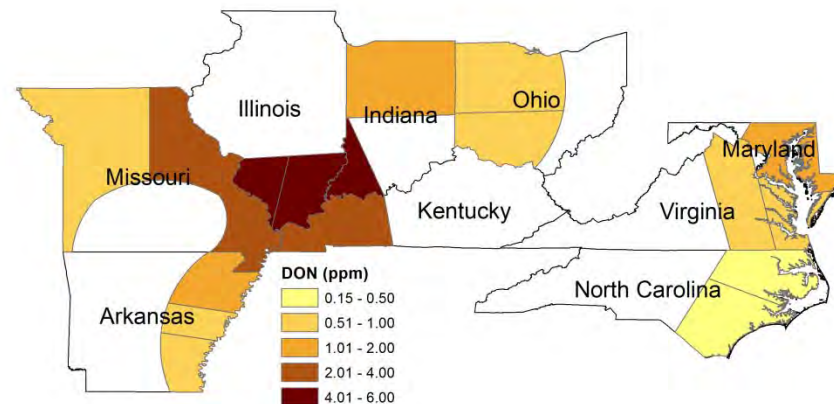
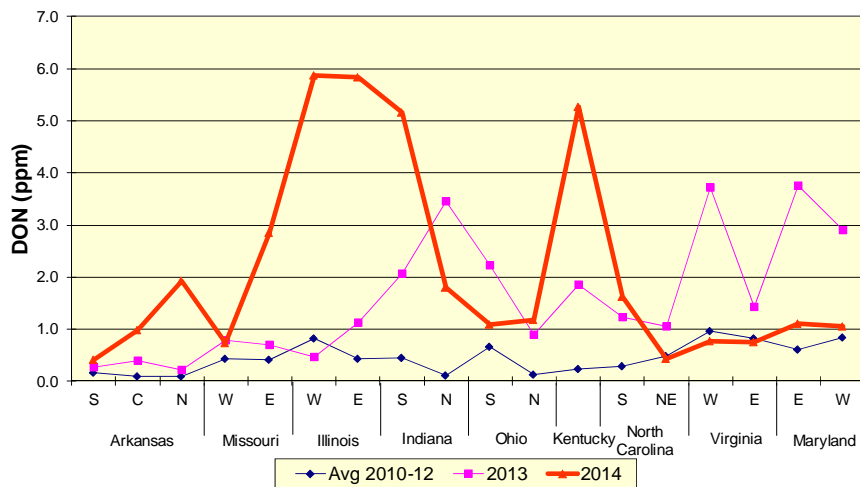


## Distribution of 2014 Results and Comparisons with Previous Years For Selected Quality Factors

### Wet Gluten

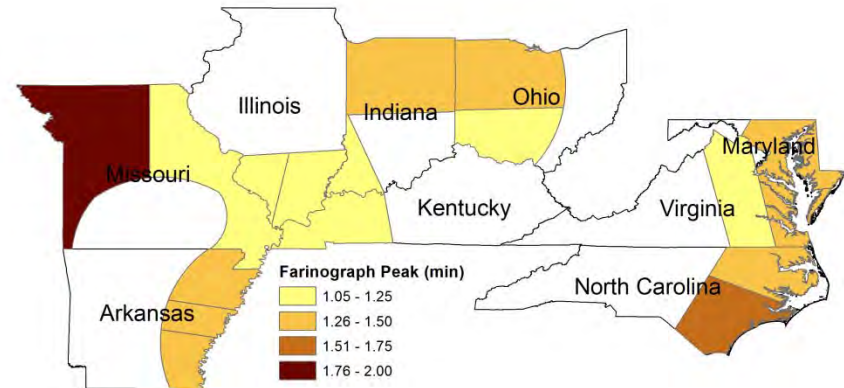
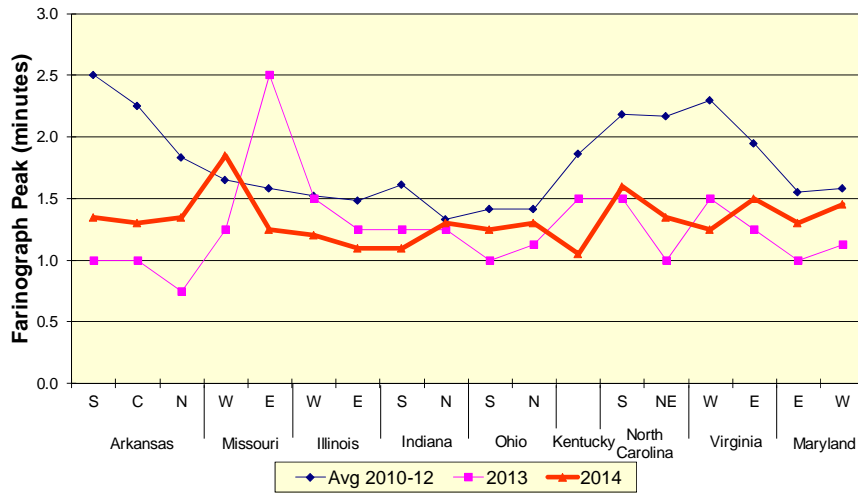


### DON

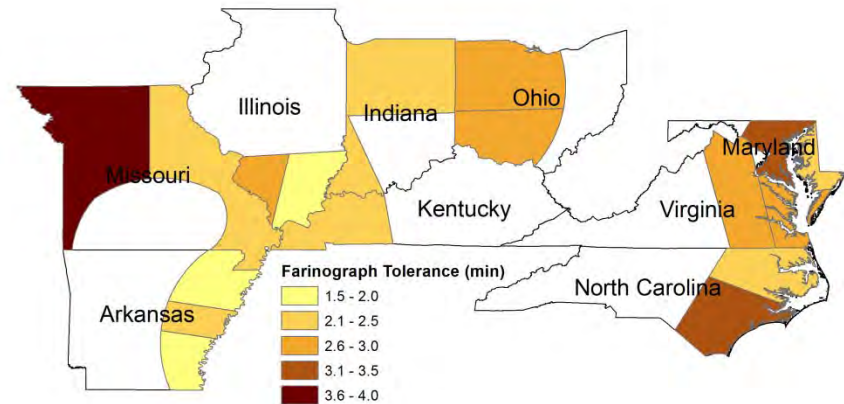
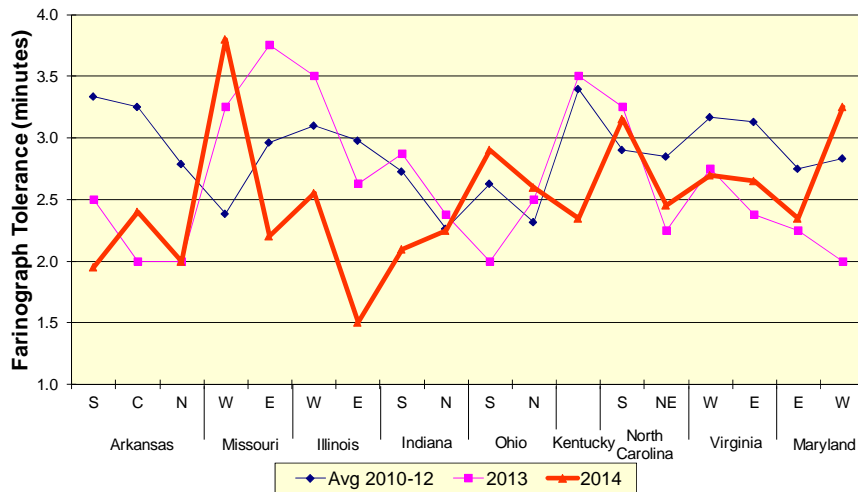


## Distribution of 2014 Results and Comparisons with Previous Years For Selected Quality Factors

### Farinograph Peak

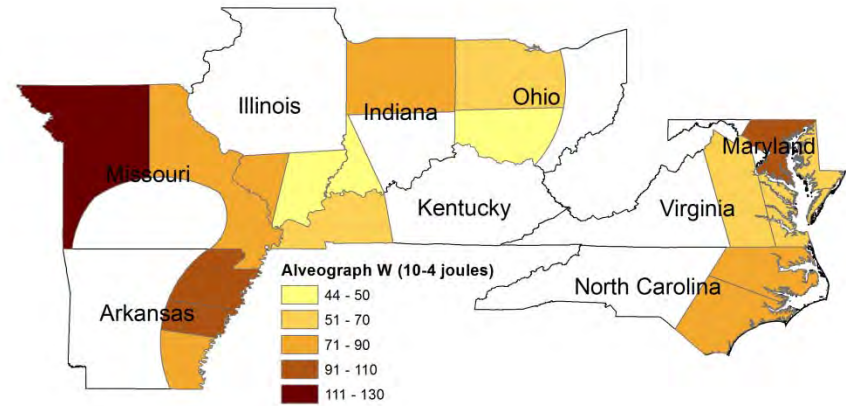
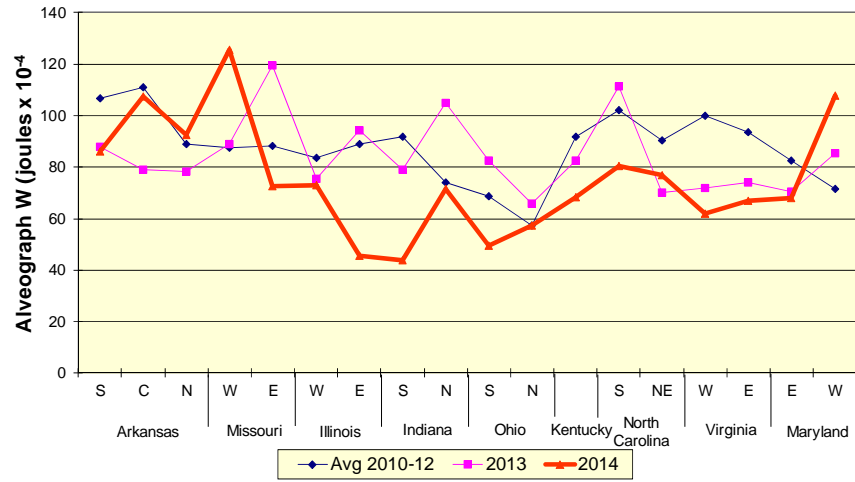


### Farinograph Tolerance



## Distribution of 2014 Results and Comparisons with Previous Years For Selected Quality Factors

### Alveograph W Value



### Alveograph P/L

