

# 2017 HARVEST

## U.S. PACIFIC NORTHWEST

*Soft White Wheat Quality Report*



*This project is funded by the Idaho Wheat Commission,  
Oregon Wheat Commission, Washington Grain  
Commission, U.S. Wheat Associates, and  
Wheat Marketing Center, Inc.*



# EXECUTIVE SUMMARY



*Photo courtesy of Oregon Wheat Commission*

*Cover photo courtesy of Tribe Media/Reflective Brands, and Flory Farms*

Pacific Northwest (PNW) soft white wheat and white club wheat production experienced close to ideal conditions this year. Total production of both soft white and club wheat exceeded the three-year average. Protein levels were lower than last year; soft white and white club kernels were similar size and weight with similar test weight to last year, indicating excellent milling quality. Milled flour had low ash content, sound falling number values, and acceptable Amylograph peak viscosity. Dough testing indicated typically weak gluten strength for soft white and white club wheat flour. All production zone averages for sponge cake volumes were lower than last year; however, their total scores were equivalent to or greater than last year and the three-year averages. Chinese southern type steamed bread total scores of all production zones were similar to the three-year average.

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# PACIFIC NORTHWEST WHEAT PRODUCTION

**U.S. soft white wheat is grown in the Pacific Northwest, which includes the states of Idaho, Oregon, and Washington.**

Pacific Northwest soft white wheat is known for its white bran, low moisture content, and weak gluten characteristics. Consequently, soft white wheat is well suited for products such as cakes, pastries, cookies, crackers, pancakes, snack foods, flat breads, and Chinese southern-type steamed breads.

The soft white wheat class includes the subclasses of white club wheat and western white wheat. White club wheat has very weak gluten characteristics. Western white wheat is a blend of the white club wheat subclass and soft white wheat. The amount of white club wheat in western white wheat ranges from 10 to 90 percent. The minimum percentage of white club wheat in western white wheat is 10 percent and any higher amounts are contract specifications that are negotiated between buyer and seller (typically 10-30%).



## SOFT WHITE AND WHITE CLUB WHEAT SUMMARY

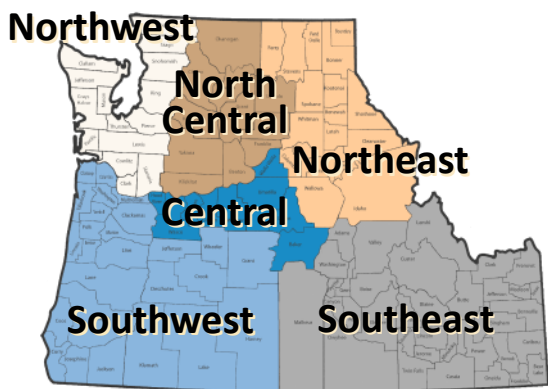
	Soft White		White Club	
	2017	3 yr av	2017	3 yr av
<b>Test Weight</b> (lb/bu)	60.9	60.5	60.2	60.3
<b>Hectoliter Weight</b> (kg/hl)	80.1	79.5	79.2	79.3
<b>Grade</b>	1SWH	1SWH	1WHCB	1WHCB
<b>Dockage</b> (%)	0.5	0.5	0.5	0.6
<b>Wheat Moisture</b> (%)	8.9	9.3	8.3	8.8
<b>Wheat Protein</b> (%; 12% mb)	9.6	10.6	9.4	10.9
<b>Wheat Ash</b> (%; 14% mb)	1.32	1.32	1.27	1.27
<b>1000 Kernel Weight</b> (g; 14% mb)	35.5	33.8	32.5	30.2
<b>Wheat Falling Number</b> (seconds; 14% mb)	335	341	348	333
<b>Flour Extraction</b> (%)	74.0	74.6	74.0	74.6
<b>Flour Ash</b> (%; 14% mb)	0.39	0.47	0.39	0.46
<b>Flour Wet Gluten</b> (%; 14% mb)	20.5	25.9	20.8	24.7
<b>Farinograph: Absorption</b> (%; 14% mb)	51.6	54.2	49.9	53.4
<b>Peak Time</b> (minutes)	1.8	2.7	1.5	1.8
<b>Stability Time</b> (minutes)	3.0	3.3	1.2	1.3
<b>Alveograph: L</b> (mm)	79	102	54	76
<b>W</b> (10 <sup>-4</sup> joules)	92	103	49	49
<b>Production</b> (mmt)	5.27	5.09	0.36	0.30



Photo courtesy of Tidewater Transportation & Terminals



## Production Zones



## Weather

The Pacific Northwest had nearly ideal growing conditions for the 2017 soft white wheat (SW) crop. There was limited adequate soil moisture at planting, and most of the area received adequate rainfall during winter and spring. Late spring was generally warm and dry, while wheat harvest was mostly hot and dry. USDA estimates total 2017 SW production at 6.14 million metric tons (MMT), down slightly from 2016. Of that, the Washington Grain Commission estimates white club (WC) accounts for 359,000 metric tons (MT).

### 2017 SOFT WHITE AND WHITE CLUB WHEAT

#### PRODUCTION *by production zone*

Production Zone	Million Metric Tons (mmt)	Million Bushels
North Central	1.73	63.6
Northeast	1.68	61.6
Central	1.21	44.4
Southeast	0.65	23.8
Southwest	0.36	13.1
Northwest	0.02	0.8
<b>Total</b>	<b>5.65</b>	<b>207.3</b>

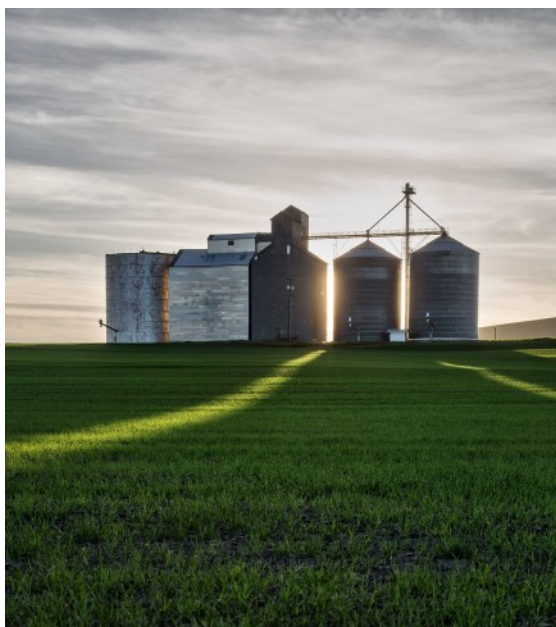
*Wheat production estimates courtesy of  
Washington Grain Commission.*



## Wheat Samples

At harvest, wheat samples were collected from a number of sources, including state and private grain inspection agencies and commercial wheat handling operations throughout the Pacific Northwest. Sample collection was based on wheat production in each location. For the 2017 harvest, Wheat Marketing Center (WMC) received and tested 512 soft white wheat and 96 white club wheat samples from Idaho, Oregon, and Washington. Federal Grain Inspection Service (FGIS) graded and ran wheat protein on each sample. WMC conducted wheat, flour, Solvent Retention Capacity (SRC), dough, and finished product tests on composites based on production zones and protein levels.

The top Soft White varieties planted in Washington were Otto, SY Ovation, Curiosity CL+, and ORCF-102; in Oregon ORCF 101; and in Idaho SY Ovation. ARS Crescent was the top Club variety planted in Washington.



*Photo courtesy of Idaho Wheat Commission*

# WHEAT QUALITY

Production Zone	Wheat Protein Range 12% mb %	Grade	Test Weight lb/bu	Dockage %	Whole Kernel Moisture %	Wheat Falling Number 14% mb seconds	Wheat Ash 14% mb %	Thousand Kernel Weight 14% mb g	SKCS Kernel Hardness Index	Whole Meal Wet Gluten 14% mb %
<b>NORTH CENTRAL</b>	<8.5	1SWH	60.3	0.3	8.5	336	1.25	34.0	26	12.7
Soft White	8.5-9.4	1SWH	61.3	0.3	8.5	336	1.25	35.5	29	17.3
Wheat Estimated	9.5-10.4	1SWH	61.1	0.4	8.5	342	1.30	33.9	29	22.5
Production	10.5-12.0	1SWH	60.9	0.6	8.8	353	1.33	33.5	32	25.7
1.50 MMT	<b>2017 Average</b>	<b>1SWH</b>	<b>61.0</b>	<b>0.4</b>	<b>8.6</b>	<b>343</b>	<b>1.28</b>	<b>34.2</b>	<b>29</b>	<b>20.7</b>
	2016 Average	1SWH	61.4	0.5	9.7	317	1.20	35.8	32	22.1
	3 Year Average	1SWH	60.6	0.4	9.0	350	1.28	32.4	31	25.3
<b>NORTHEAST</b>	<8.5	1SWH	61.0	0.6	8.5	349	1.39	36.3	26	16.8
Soft White	8.5-9.4	1SWH	62.0	0.5	8.3	339	1.33	35.5	29	18.6
Wheat Estimated	9.5-10.4	1SWH	62.2	0.4	8.5	344	1.31	35.7	31	21.8
Production	10.5-12.0	1SWH	61.9	0.5	8.6	366	1.39	35.3	36	23.3
1.60 MMT	<b>2017 Average</b>	<b>1SWH</b>	<b>62.0</b>	<b>0.5</b>	<b>8.4</b>	<b>345</b>	<b>1.33</b>	<b>35.7</b>	<b>30</b>	<b>20.5</b>
	2016 Average	1SWH	61.9	0.5	9.5	314	1.25	37.4	32	23.4
	3 Year Average	1SWH	60.5	0.5	9.1	337	1.32	34.1	29	24.2
<b>CENTRAL</b>	<8.5	1SWH	60.0	0.5	8.9	308	1.25	34.8	31	13.6
Soft White	8.5-9.4	1SWH	61.4	0.4	9.1	314	1.28	36.8	31	18.5
Wheat Estimated	9.5-10.4	1SWH	60.7	0.6	8.7	324	1.26	35.0	32	23.1
Production	10.5-12.0	2SWH	59.7	0.6	8.6	348	1.30	32.6	34	25.9
1.16 MMT	>12.0	2SWH	58.6	0.6	8.5	364	1.36	31.0	33	29.3
	<b>2017 Average</b>	<b>1SWH</b>	<b>60.4</b>	<b>0.5</b>	<b>8.8</b>	<b>325</b>	<b>1.28</b>	<b>34.7</b>	<b>32</b>	<b>20.6</b>
	2016 Average	2SWH	59.7	0.6	9.8	330	1.17	33.7	31	25.1
	3 Year Average	2SWH	59.8	0.5	9.1	343	1.26	31.5	32	25.6
<b>SOUTHEAST</b>	<8.5	1SWH	60.7	0.8	9.5	322	1.45	39.7	23	14.4
Soft White	8.5-9.4	1SWH	60.8	0.6	9.6	329	1.51	43.0	24	17.5
Wheat Estimated	9.5-10.4	1SWH	61.0	0.5	9.7	336	1.48	38.5	30	20.0
Production	10.5-12.0	1SWH	60.3	0.9	10.1	357	1.51	35.0	32	24.2
0.65 MMT	<b>2017 Average</b>	<b>1SWH</b>	<b>60.8</b>	<b>0.6</b>	<b>9.7</b>	<b>336</b>	<b>1.49</b>	<b>39.1</b>	<b>28</b>	<b>19.4</b>
	2016 Average	1SWH	61.6	0.5	9.4	322	1.41	39.5	34	18.3
	3 Year Average	1SWH	61.2	0.5	10.0	333	1.50	37.4	33	19.3
<b>SOUTHWEST</b>	<8.5	2SWH	58.9	0.8	10.6	347	1.32	37.7	20	15.1
Soft White	8.5-9.4	1SWH	60.3	0.4	10.0	361	1.33	36.7	31	17.9
Wheat Estimated	<b>2017 Average</b>	<b>2SWH</b>	<b>59.6</b>	<b>0.6</b>	<b>10.3</b>	<b>354</b>	<b>1.32</b>	<b>37.2</b>	<b>25</b>	<b>16.5</b>
Production	2016 Average	2SWH	59.7	0.7	11.2	322	1.34	37.4	23	17.6
0.36 MMT	3 Year Average	1SWH	60.2	0.7	10.9	337	1.41	37.7	28	19.5
<b>WHITE CLUB</b>	<b>2017 Average</b>	<b>1WHCB</b>	<b>60.2</b>	<b>0.5</b>	<b>8.3</b>	<b>348</b>	<b>1.27</b>	<b>32.5</b>	<b>31</b>	<b>17.1</b>
<b>WHEAT</b>	2016 Average	1WHCB	60.8	0.8	9.6	301	1.18	33.7	35	19.4
Estimated	3 Year Average	1WHCB	60.3	0.6	8.8	333	1.27	30.2	35	18.1
Production										
0.36 MMT										

# FLOUR QUALITY

Production Zone	Wheat Protein Range 12% mb %	Flour Yield %	Flour Ash 14% mb %	Flour Protein 14% mb %	Flour Color			Flour Wet Gluten 14% mb %	Flour Falling Number 14% mb seconds	Amylograph Peak Viscosity BU
					L*	a*	b*			
<b>NORTH CENTRAL</b>	<8.5	73.7	0.43	7.2	93.3	-2.3	8.5	14.6	357	478
Soft White	8.5-9.4	74.4	0.37	7.9	93.3	-2.2	8.1	16.5	343	473
Wheat Estimated	9.5-10.4	73.4	0.39	8.9	93.1	-2.2	8.5	23.7	381	526
Production	10.5-12.0	73.2	0.37	10.0	92.9	-2.0	8.1	27.2	361	540
1.50 MMT	<b>2017 Average</b>	<b>73.6</b>	<b>0.39</b>	<b>8.7</b>	<b>93.1</b>	<b>-2.1</b>	<b>8.3</b>	<b>21.6</b>	<b>362</b>	<b>510</b>
	2016 Average	75.8	0.41	9.1	93.6	-2.0	7.1	22.1	347	379
	3 Year Average	74.1	0.45	9.8	92.7	-2.2	7.5	25.9	397	498
<b>NORTHEAST</b>	<8.5	73.6	0.39	7.3	92.9	-2.1	8.1	13.8	376	544
Soft White	8.5-9.4	74.7	0.37	7.8	92.9	-2.0	7.9	14.1	350	489
Wheat Estimated	9.5-10.4	74.3	0.39	8.6	92.6	-2.0	7.9	22.7	379	534
Production	10.5-12.0	74.4	0.35	9.5	92.4	-1.9	8.0	27.9	420	568
1.60 MMT	<b>2017 Average</b>	<b>74.4</b>	<b>0.38</b>	<b>8.3</b>	<b>92.7</b>	<b>-2.0</b>	<b>7.9</b>	<b>19.7</b>	<b>373</b>	<b>524</b>
	2016 Average	76.3	0.38	9.2	92.8	-1.9	6.7	23.7	336	320
	3 Year Average	75.2	0.46	9.5	92.4	-2.1	7.4	25.3	375	492
<b>CENTRAL</b>	<8.5	74.1	0.36	6.9	92.7	-2.3	8.8	14.5	281	464
Soft White	8.5-9.4	74.4	0.36	7.7	92.9	-2.1	8.3	19.6	361	490
Wheat Estimated	9.5-10.4	74.0	0.37	8.7	92.6	-2.1	8.3	23.2	352	503
Production	10.5-12.0	73.6	0.34	9.9	92.4	-2.0	8.3	29.6	377	602
1.16 MMT	>12.0	72.0	0.44	11.4	92.9	-1.9	8.1	34.1	443	543
	<b>2017 Average</b>	<b>73.9</b>	<b>0.37</b>	<b>8.5</b>	<b>92.7</b>	<b>-2.1</b>	<b>8.4</b>	<b>22.3</b>	<b>351</b>	<b>511</b>
	2016 Average	74.5	0.37	9.6	93.3	-2.0	6.9	25.3	337	474
	3 Year Average	74.0	0.46	9.7	92.5	-2.3	7.7	27.0	377	546
<b>SOUTHEAST</b>	<8.5	74.0	0.45	7.1	93.3	-2.0	7.5	15.6	358	430
Soft White	8.5-9.4	75.5	0.46	7.6	93.0	-1.9	7.4	17.9	381	423
Wheat Estimated	9.5-10.4	74.3	0.45	8.5	92.5	-1.9	7.3	19.6	371	422
Production	10.5-12.0	73.6	0.46	9.6	92.4	-1.9	7.7	22.3	407	475
0.65 MMT	<b>2017 Average</b>	<b>74.4</b>	<b>0.45</b>	<b>8.3</b>	<b>92.7</b>	<b>-1.9</b>	<b>7.4</b>	<b>19.2</b>	<b>378</b>	<b>433</b>
	2016 Average	76.4	0.41	8.4	94.5	-2.0	6.9	20.0	352	427
	3 Year Average	76.1	0.51	8.9	92.9	-2.2	7.5	24.0	370	455
<b>SOUTHWEST</b>	<8.5	74.4	0.44	6.7	92.4	-2.0	7.6	14.4	347	478
Soft White	8.5-9.4	73.8	0.46	7.7	92.4	-2.2	9.2	19.1	406	448
Wheat Estimated	<b>2017 Average</b>	<b>74.1</b>	<b>0.45</b>	<b>7.2</b>	<b>92.4</b>	<b>-2.1</b>	<b>8.3</b>	<b>16.7</b>	<b>375</b>	<b>463</b>
Production	2016 Average	76.7	0.37	7.8	93.9	-1.9	6.6	18.2	328	473
0.36 MMT	3 Year Average	76.0	0.48	8.0	92.7	-2.2	7.4	19.8	347	505
<b>WHITE CLUB WHEAT</b>	<b>2017 Average</b>	<b>74.0</b>	<b>0.39</b>	<b>8.0</b>	<b>92.1</b>	<b>-2.0</b>	<b>7.9</b>	<b>20.8</b>	<b>388</b>	<b>546</b>
	2016 Average	77.2	0.35	8.8	91.6	-1.9	6.9	15.8	325	298
Estimated Production	3 Year Average	74.6	0.46	9.7	92.0	-2.1	7.3	24.7	370	460
0.36 MMT										

# SOLVENT RETENTION CAPACITY (SRC)

Production Zone	Wheat Protein Range 12% mb %	Water 14% mb %	50% Sucrose 14% mb %	5% Lactic Acid 14% mb %	5% Sodium Carbonate 14% mb %	Gluten Performance Index
<b>NORTH CENTRAL</b>	<8.5	52	88	100	73	0.62
Soft White	8.5-9.4	52	92	101	74	0.61
Wheat Estimated	9.5-10.4	52	95	102	74	0.60
Production	10.5-12.0	53	87	110	74	0.68
1.50 MMT	<b>2017 Average</b>	<b>52</b>	<b>91</b>	<b>104</b>	<b>74</b>	<b>0.63</b>
	2016 Average	61	83	114	104	0.61
	3 Year Average	59	105	121	91	0.62
<b>NORTHEAST</b>	<8.5	53	89	91	74	0.56
Soft White	8.5-9.4	50	84	89	74	0.56
Wheat Estimated	9.5-10.4	51	89	95	72	0.59
Production	10.5-12.0	51	89	91	72	0.56
1.60 MMT	<b>2017 Average</b>	<b>51</b>	<b>87</b>	<b>92</b>	<b>73</b>	<b>0.60</b>
	2016 Average	57	79	111	111	0.58
	3 Year Average	57	98	114	91	0.60
<b>CENTRAL</b>	<8.5	50	86	82	71	0.53
Soft White	8.5-9.4	52	87	88	70	0.56
Wheat Estimated	9.5-10.4	52	91	93	72	0.57
Production	10.5-12.0	52	92	95	74	0.57
1.16 MMT	>12.0	53	97	97	77	0.55
	<b>2017 Average</b>	<b>52</b>	<b>89</b>	<b>90</b>	<b>72</b>	<b>0.56</b>
	2016 Average	57	99	101	93	0.52
	3 Year Average	58	106	109	86	0.57
<b>SOUTHEAST</b>	<8.5	49	84	68	71	0.44
Soft White	8.5-9.4	51	85	71	72	0.45
Wheat Estimated	9.5-10.4	51	86	71	66	0.47
Production	10.5-12.0	52	92	92	70	0.57
0.65 MMT	<b>2017 Average</b>	<b>51</b>	<b>87</b>	<b>74</b>	<b>69</b>	<b>0.48</b>
	2016 Average	58	99	85	89	0.45
	3 Year Average	56	102	90	83	0.49
<b>SOUTHWEST</b>	<8.5	54	84	90	73	0.57
Soft White	8.5-9.4	55	93	102	77	0.60
Wheat Estimated	<b>2017 Average</b>	<b>54</b>	<b>89</b>	<b>96</b>	<b>75</b>	<b>0.58</b>
Production	2016 Average	57	81	107	103	0.58
0.36 MMT	3 Year Average	58	97	107	89	0.57
<b>WHITE CLUB</b>	<b>2017 Average</b>	<b>54</b>	<b>86</b>	<b>72</b>	<b>65</b>	<b>0.48</b>
<b>WHEAT</b>	2016 Average	50	96	82	73	0.49
Estimated	3 Year Average	52	98	83	74	0.48
Production						
0.36 MMT						

# PHYSICAL DOUGH PROPERTIES

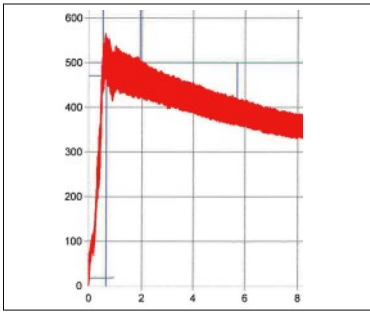
Production Zone	Wheat Protein Range 12% mb %	Farinograph			Alveograph			W 10 <sup>-4</sup> joules
		Absorption 14% mb %	Peak Time minutes	Stability minutes	P mm	L mm	P/L	
<b>NORTH CENTRAL</b>		50.2	1.7	4.2	48	61	0.79	99
Soft White	8.5-9.4	50.8	1.3	4.3	48	57	0.84	95
Wheat Estimated	9.5-10.4	51.8	3.3	4.5	50	99	0.51	136
Production	10.5-12.0	53.1	2.8	3.6	48	92	0.52	125
1.50 MMT	<b>2017 Average</b>	<b>51.7</b>	<b>2.4</b>	<b>4.1</b>	<b>49</b>	<b>81</b>	<b>0.64</b>	<b>117</b>
	2016 Average	54.6	2.8	3.6	49	106	0.51	132
	3 Year Average	54.9	3.4	4.2	48	119	0.45	142
<b>NORTHEAST</b>	<8.5	50.4	1.2	2.6	44	63	0.70	85
Soft White	8.5-9.4	50.0	1.2	2.2	35	82	0.43	75
Wheat Estimated	9.5-10.4	51.9	1.8	3.6	42	84	0.50	97
Production	10.5-12.0	53.1	2.2	2.6	45	83	0.54	99
1.60 MMT	<b>2017 Average</b>	<b>51.3</b>	<b>1.6</b>	<b>3.0</b>	<b>40</b>	<b>82</b>	<b>0.50</b>	<b>89</b>
	2016 Average	54.2	2.9	3.1	35	89	0.40	93
	3 Year Average	54.2	2.9	3.4	37	107	0.36	101
<b>CENTRAL</b>	<8.5	50.0	1.0	2.0	39	52	0.75	63
Soft White	8.5-9.4	51.3	1.0	2.5	45	64	0.70	87
Wheat Estimated	9.5-10.4	52.2	1.4	2.6	38	97	0.39	90
Production	10.5-12.0	52.6	2.5	2.1	36	112	0.32	93
1.16 MMT	>12.0	53.7	2.8	2.7	38	127	0.30	105
	<b>2017 Average</b>	<b>51.6</b>	<b>1.5</b>	<b>2.4</b>	<b>40</b>	<b>82</b>	<b>0.55</b>	<b>85</b>
	2016 Average	53.1	2.6	2.6	35	100	0.37	88
	3 Year Average	53.7	2.5	2.6	37	101	0.41	90
<b>SOUTHEAST</b>	<8.5	50.5	1.0	2.1	31	81	0.38	50
Soft White	8.5-9.4	51.7	1.2	2.1	37	49	0.76	52
Wheat Estimated	9.5-10.4	52.5	1.9	1.6	34	69	0.49	57
Production	10.5-12.0	53.8	2.4	2.1	39	93	0.42	90
0.65 MMT	<b>2017 Average</b>	<b>52.3</b>	<b>1.7</b>	<b>1.9</b>	<b>35</b>	<b>70</b>	<b>0.53</b>	<b>61</b>
	2016 Average	53.6	1.6	1.9	33	72	0.48	55
	3 Year Average	54.3	1.9	2.4	36	71	0.53	62
<b>SOUTHWEST</b>	<8.5	49.8	0.7	1.4	34	63	0.54	64
Soft White	8.5-9.4	51.4	1.7	2.9	49	66	0.74	98
Wheat Estimated	<b>2017 Average</b>	<b>50.6</b>	<b>1.2</b>	<b>2.1</b>	<b>41</b>	<b>64</b>	<b>0.64</b>	<b>80</b>
Production	2016 Average	52.0	1.9	3.1	37	87	0.44	81
0.36 MMT	3 Year Average	53.2	1.9	3.1	42	80	0.55	89
<b>WHITE CLUB</b>	<b>2017 Average</b>	<b>49.9</b>	<b>1.5</b>	<b>1.2</b>	<b>31</b>	<b>54</b>	<b>0.57</b>	<b>49</b>
<b>WHEAT</b>	2016 Average	52.8	1.6	1.5	26	80	0.33	45
Estimated	3 Year Average	53.4	1.8	1.3	28	76	0.38	49
Production								
0.36 MMT								



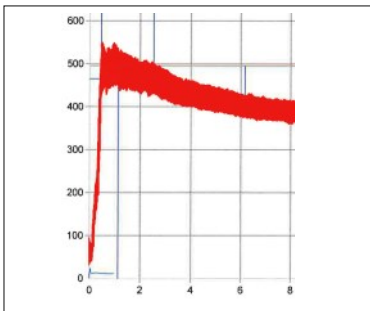
# FINISHED PRODUCTS

Production Zone	Wheat Protein Range 12% mb %	Sugar Snap Cookie			Sponge Cake		Chinese Southern Type Steamed Bread	
		Spread cm	Spread Factor width/height	Top Grain Score	Volume cc	Total Score	Specific Volume cc/g	Total Score Control is 70
<b>NORTH CENTRAL</b>	<8.5	9.4	11.7	6.0	1201	52	1.90	67
Soft White	8.5-9.4	8.9	11.1	5.0	1153	46	1.94	68
Wheat Estimated	9.5-10.4	8.8	8.8	4.5	1176	53	1.92	68
Production	10.5-12.0	8.7	10.0	4.5	1124	46	2.36	70
1.50 MMT	<b>2017 Average</b>	<b>8.9</b>	<b>10.1</b>	<b>4.8</b>	<b>1158</b>	<b>49</b>	<b>2.05</b>	<b>68</b>
	2016 Average	8.3	8.1	0.6	1176	45	1.83	68
	3 Year Average	8.5	9.0	1.6	1187	41	2.27	68
<b>NORTHEAST</b>	<8.5	9.3	11.2	6.0	1197	53	1.84	67
Soft White	8.5-9.4	8.8	10.6	4.0	1198	53	2.09	66
Wheat Estimated	9.5-10.4	9.1	10.4	5.0	1133	42	2.25	68
Production	10.5-12.0	8.8	9.0	3.5	1127	48	2.29	68
1.60 MMT	<b>2017 Average</b>	<b>9.0</b>	<b>10.4</b>	<b>4.6</b>	<b>1158</b>	<b>47</b>	<b>2.17</b>	<b>67</b>
	2016 Average	8.3	7.8	0.4	1175	47	1.97	68
	3 Year Average	8.4	8.9	2.1	1214	45	2.27	68
<b>CENTRAL</b>	<8.5	9.1	10.7	7.5	1186	53	1.93	67
Soft White	8.5-9.4	8.8	11.0	5.0	1154	50	2.09	66
Wheat Estimated	9.5-10.4	8.6	10.2	4.5	1103	48	2.17	68
Production	10.5-12.0	8.6	9.8	4.5	1097	45	2.38	73
1.16 MMT	>12.0	8.6	8.0	3.5	1072	37	2.47	68
	<b>2017 Average</b>	<b>8.8</b>	<b>10.3</b>	<b>5.3</b>	<b>1133</b>	<b>48</b>	<b>2.16</b>	<b>68</b>
	2016 Average	8.3	8.2	0.3	1195	47	2.07	68
	3 Year Average	8.4	9.1	2.1	1208	43	2.28	67
<b>SOUTHEAST</b>	<8.5	9.4	11.1	5.0	1195	54	1.90	66
Soft White	8.5-9.4	9.3	10.9	5.0	1160	54	1.89	66
Wheat Estimated	9.5-10.4	8.9	11.2	5.0	1136	50	2.04	64
Production	10.5-12.0	8.6	9.8	4.5	1142	33	2.43	68
0.65 MMT	<b>2017 Average</b>	<b>9.0</b>	<b>10.9</b>	<b>4.9</b>	<b>1150</b>	<b>48</b>	<b>2.06</b>	<b>66</b>
	2016 Average	8.6	8.9	1.3	1206	51	1.91	68
	3 Year Average	8.6	9.2	2.8	1226	49	2.15	65
<b>SOUTHWEST</b>	<8.5	9.1	10.7	5.0	1204	54	1.99	65
Soft White	8.5-9.4	8.5	9.2	5.0	1173	53	1.82	66
Wheat Estimated	<b>2017 Average</b>	<b>8.8</b>	<b>10.0</b>	<b>5.0</b>	<b>1189</b>	<b>54</b>	<b>1.91</b>	<b>65</b>
Production	2016 Average	8.5	8.2	1.8	1209	50	1.89	69
0.36 MMT	3 Year Average	8.6	8.8	3.5	1223	49	2.13	67
<b>WHITE CLUB</b>								
<b>WHEAT</b>	<b>2017 Average</b>	<b>9.5</b>	<b>12.2</b>	<b>7.5</b>	<b>1176</b>	<b>50</b>	<b>2.10</b>	<b>66</b>
Estimated	2016 Average	8.5	9.1	2.5	1233	49	2.12	65
Production	3 Year Average	8.7	10.1	3.3	1231	44	2.40	65
0.36 MMT								

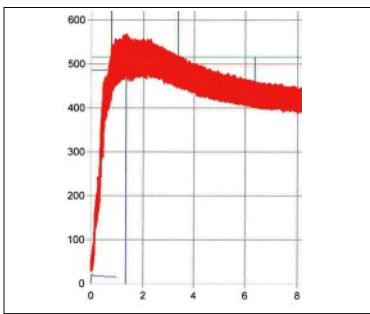
# FARINOGRAPH



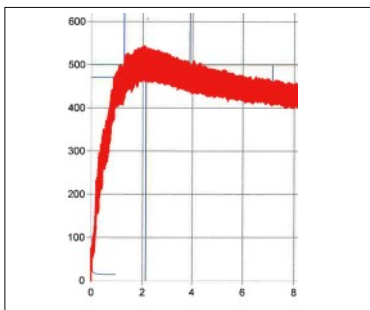
<8.5% Wheat Protein Range



8.5-9.4% Wheat Protein Range



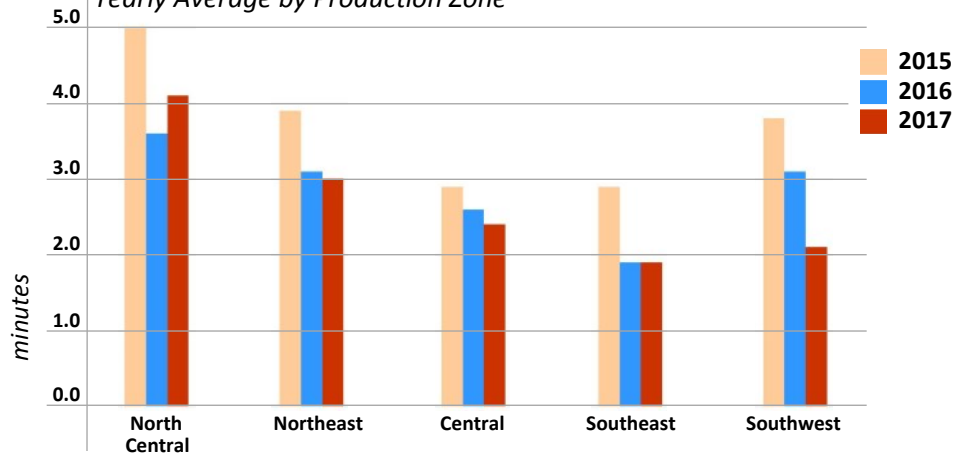
9.5-10.4% Wheat Protein Range



10.5-12.0% Wheat Protein Range

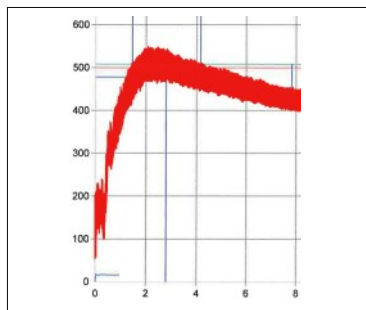
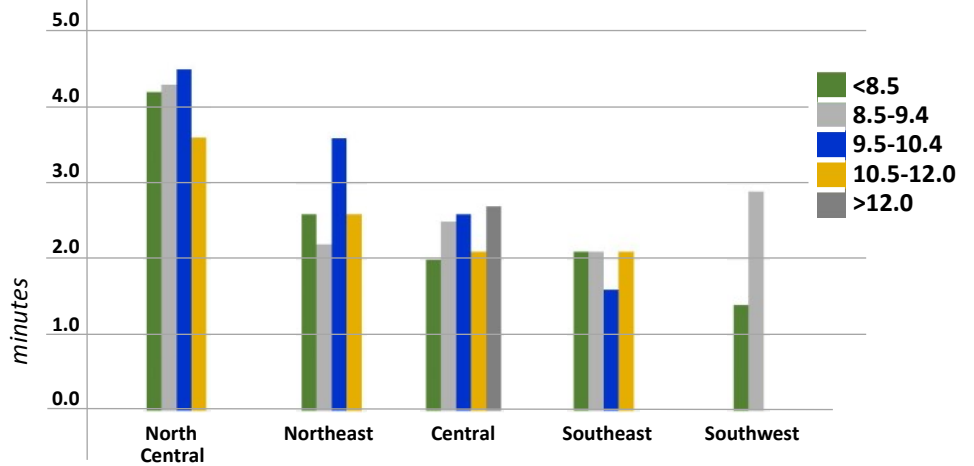
## PNW Soft White Wheat Farinograph Stability

Yearly Average by Production Zone

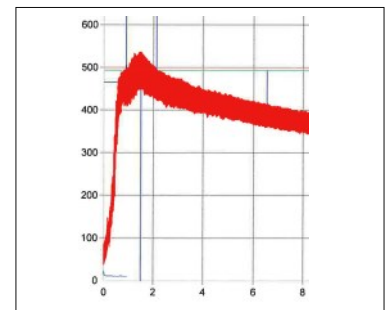


## PNW Soft White Wheat Farinograph Stability

by Protein Content and Production Zone, 2017

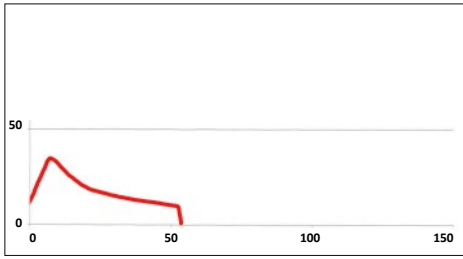


>12.0% Wheat Protein Range

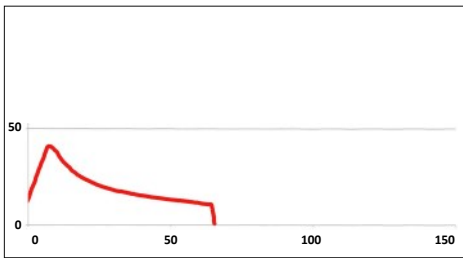


White Club Wheat

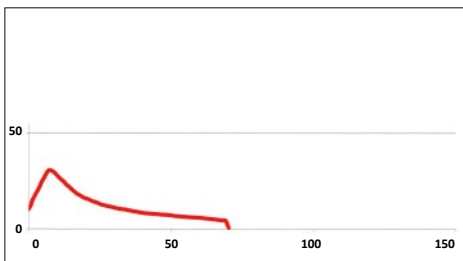
# ALVEOGRAPH



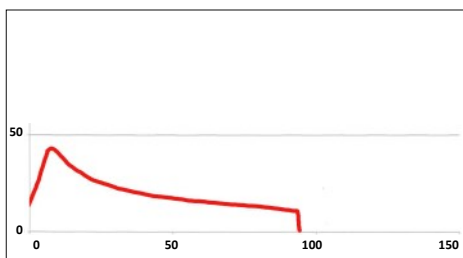
<8.5% Wheat Protein Range



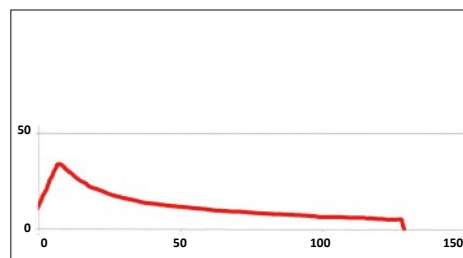
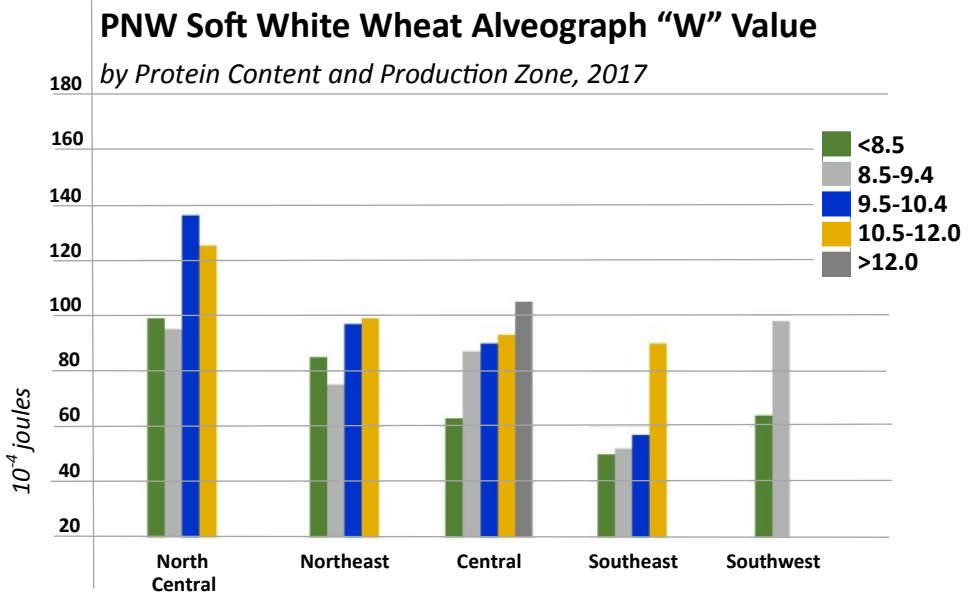
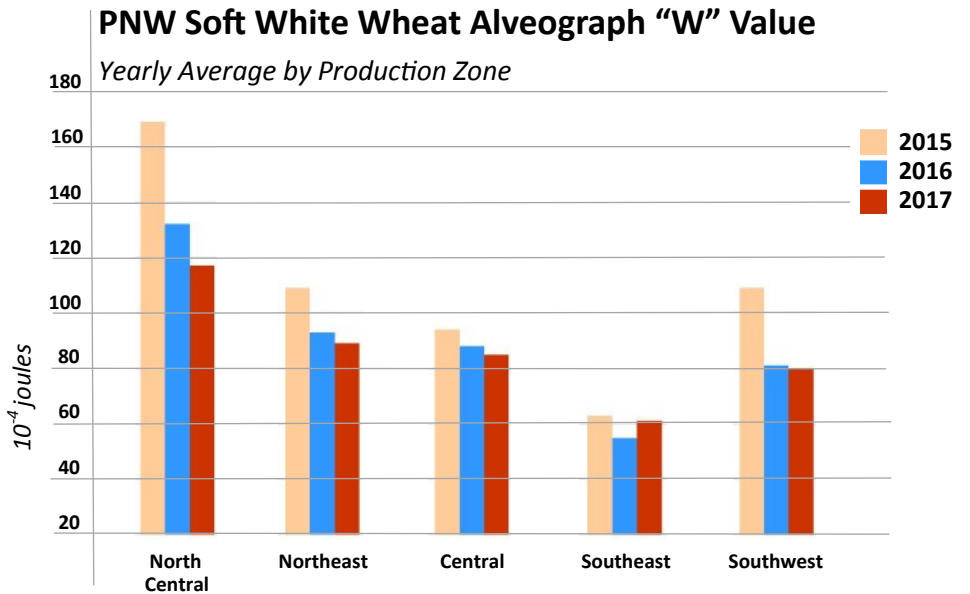
8.5-9.4% Wheat Protein Range



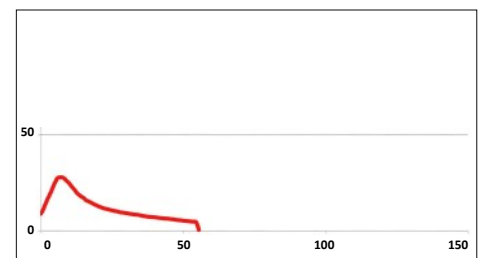
9.5-10.4% Wheat Protein Range



10.5-12.0% Wheat Protein Range



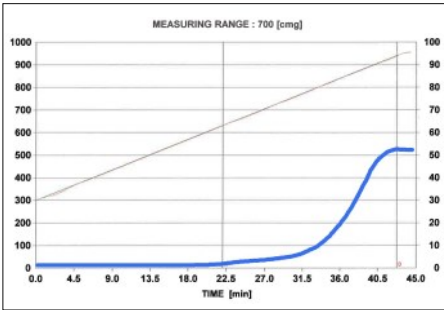
>12.0% Wheat Protein Range



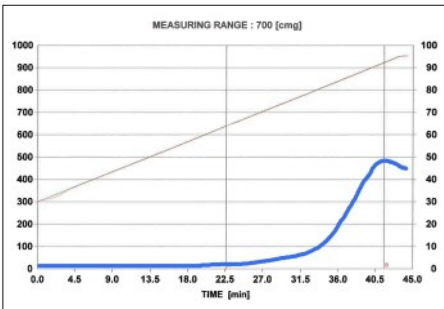
White Club Wheat



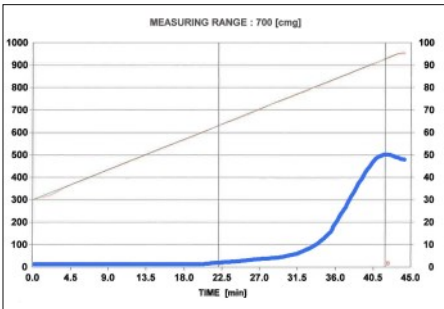
# AMYLOGRAPH



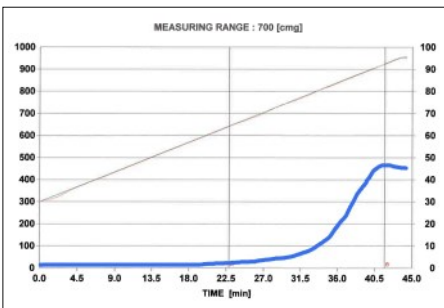
North Central Production Zone



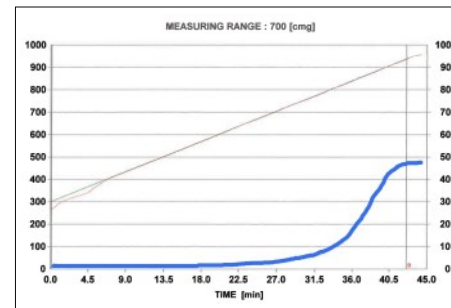
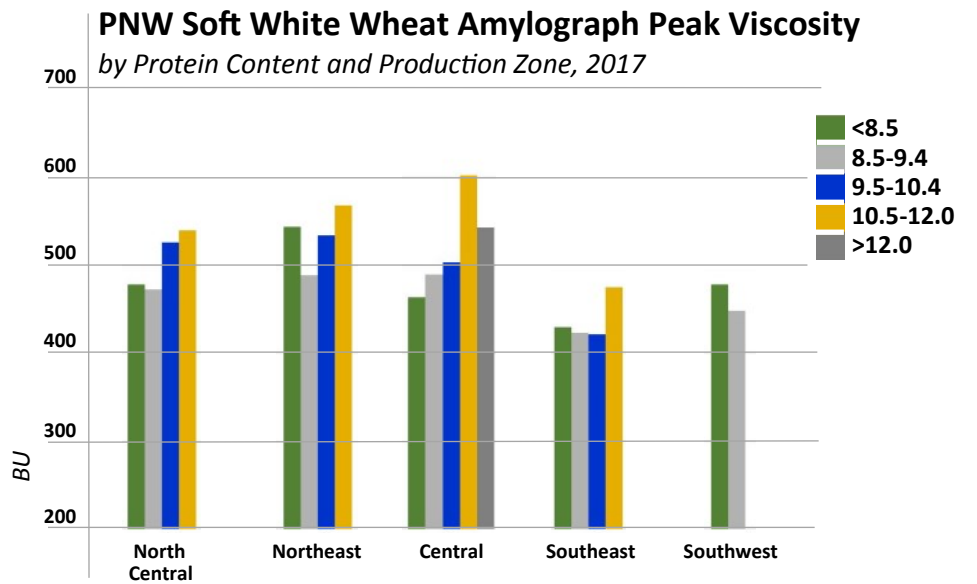
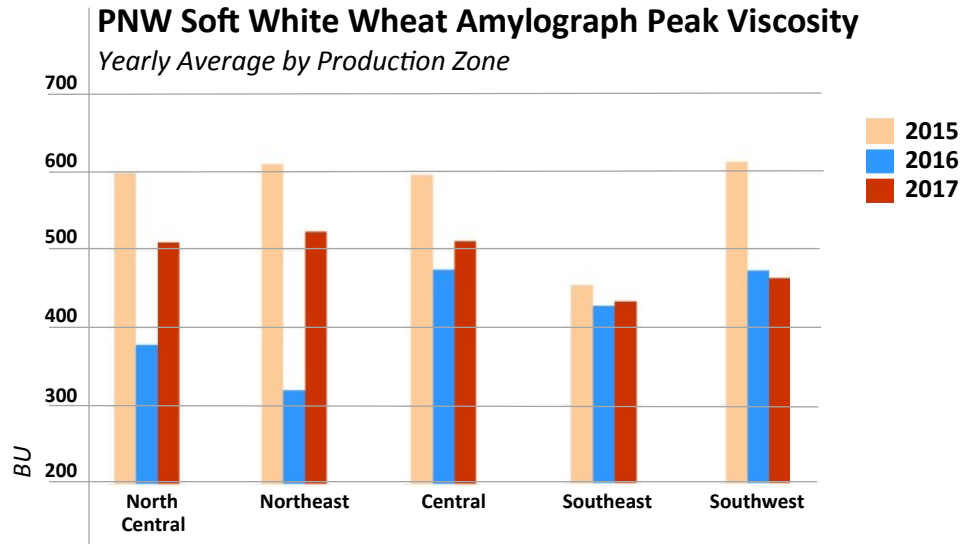
Northeast Production Zone



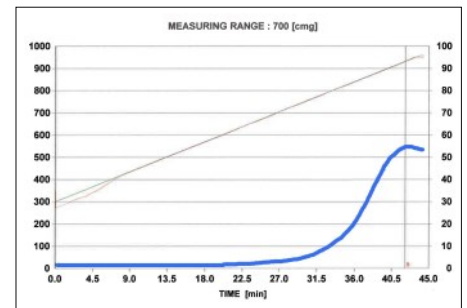
Central Production Zone



Southeast Production Zone

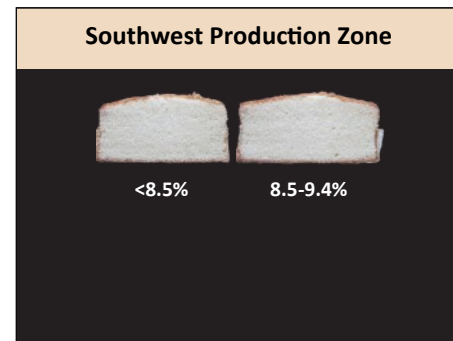
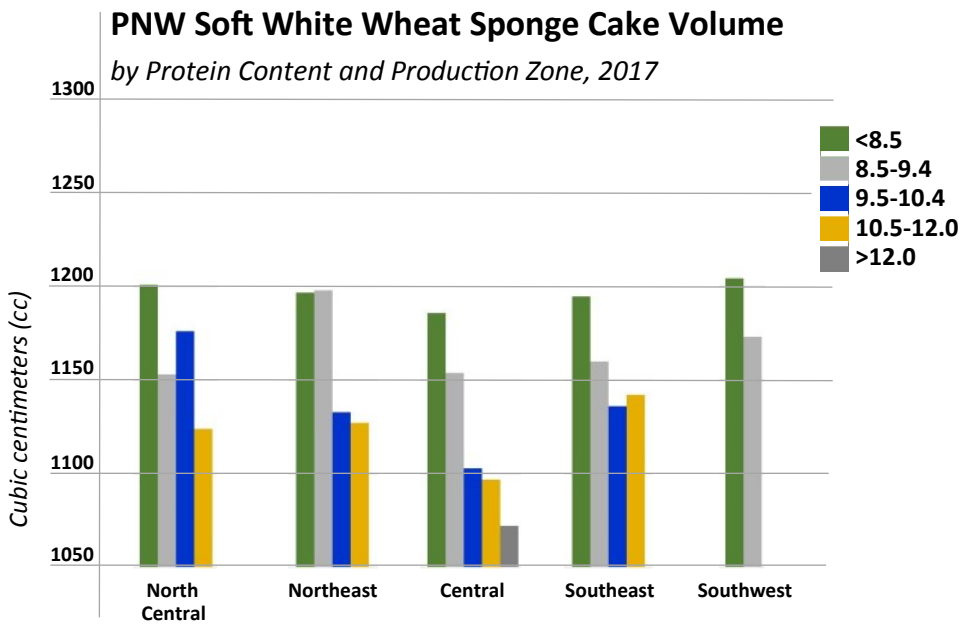
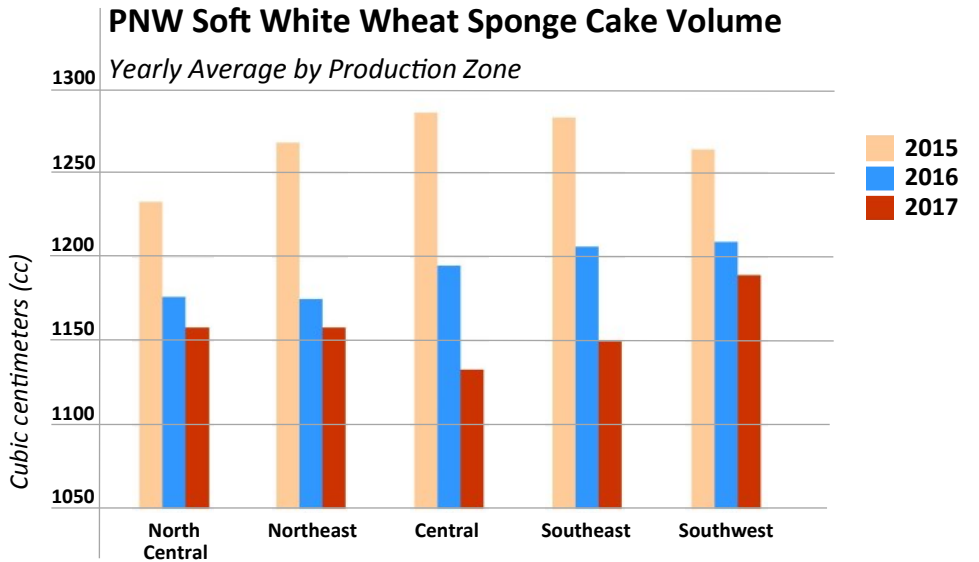
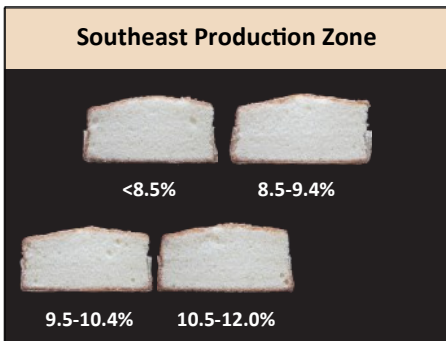
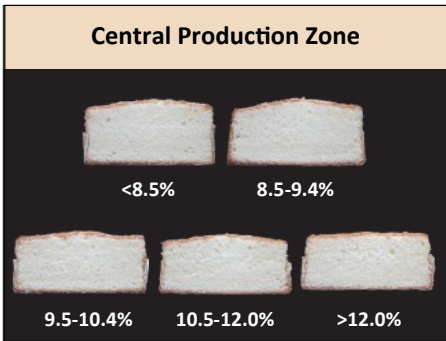
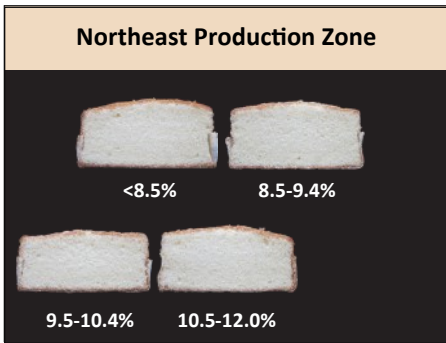
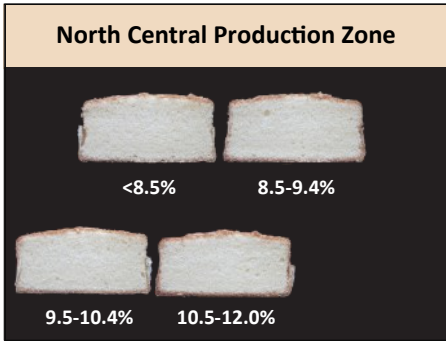


Southwest Production Zone

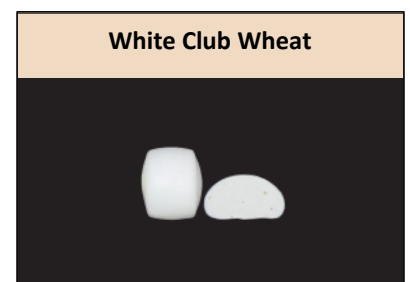
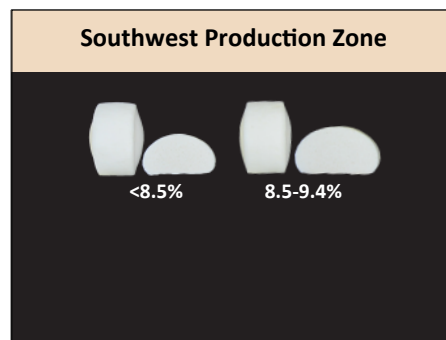
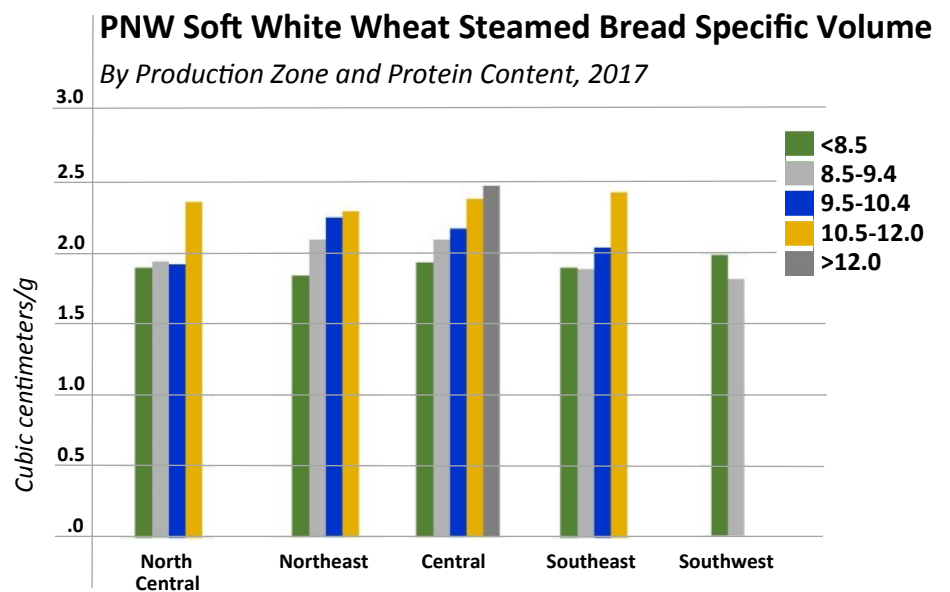
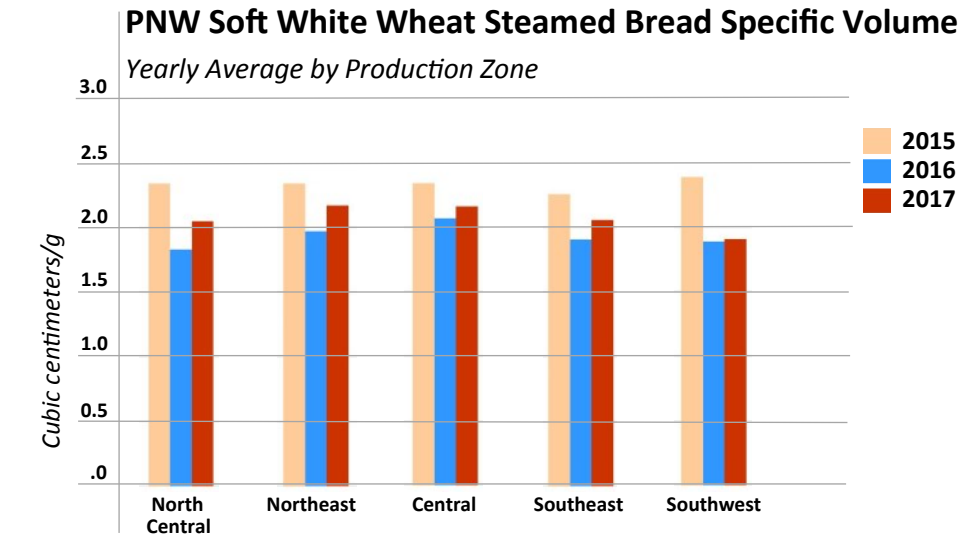
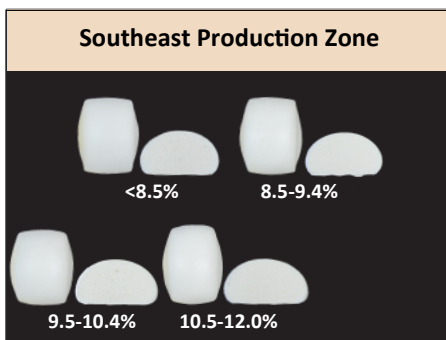
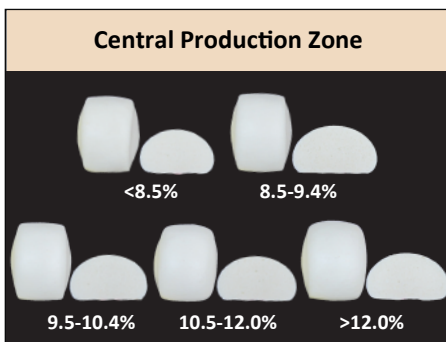
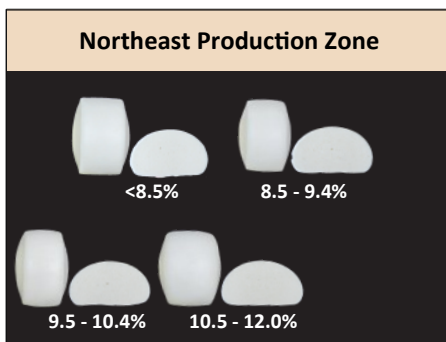
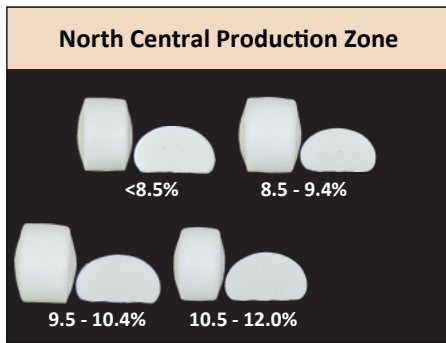


White Club Wheat

# SPONGE CAKE



# CHINESE SOUTHERN TYPE STEAMED BREAD





# SUMMARY

These results were derived from composite samples from the Pacific Northwest soft white wheat and white club wheat harvest. Soft white wheat composites were prepared by production zone and protein levels, and all white club wheat samples were made into one composite. These composite samples were analyzed for wheat quality, flour quality, solvent retention capacity, physical dough properties, and finished product characteristics. Harvest information is summarized as follows:

## Wheat Quality

Average test weights were over 60 pounds per bushel (lbs/bu) at most protein levels in most production zones. Dockage averages were similar to last year and the three-year averages in all production zones. Wheat moisture averages were less than 10 percent in the major wheat producing zones of North Central, Northeast, Central, and Southeast. Average falling number values at all protein levels in all production zones exceeded 300 seconds. Average wheat ash content was higher than last year in the major wheat producing zones. Thousand kernel weights were similar to last year in all production zones. SKCS kernel hardness index values were similar to last year and the three-year averages in all production zones. Whole meal wet gluten averages were lower than last year and the three-year averages in North Central, Northeast, Central, and Southwest production zones.

## Flour Quality

Average flour yields were lower than last year and the three-year averages in all production zones. Average flour ash contents were similar to last year and the three-year averages in all production zones. Flour color averages were slightly darker than last year, but similar to the three-year average in all production zones. Flour quality parameters indicated higher wet gluten content in samples with higher protein content. Flour falling number values were greater than 300 seconds in all production zones for all protein levels. Amylograph peak viscosity averages were higher than last year and the

three-year averages in North Central, Northeast, Central, and Southwest production zones.

## Solvent Retention Capacity (SRC)

Water SRC average values were lower than last year. In Central and Southeast, Sucrose SRC average values were lower than last year. Lactic acid and sodium carbonate SRC averages were lower than last year and the three-year averages. Gluten performance index values were similar to last year and the three-year averages in all production zones.

## Physical Dough Properties

Physical dough property tests indicated generally lower water absorption values and generally weaker gluten strength, as measured by the Farinograph, in samples with lower protein content in each production zone. Longer dough extensibility, as shown by Alveograph L value, was observed in samples with higher protein content. White club wheat had weaker gluten strength than soft white wheat samples, as indicated by much lower Alveograph W values.

## Finished Products

In general, lower protein soft white wheat samples, within each production zone, made better sugar snap cookies as measured by spread factor and top grain scores. Average sponge cake volumes were smaller than last year and the three-year averages in all production zones. However, sponge cake total score averages were either similar to or greater than last year and the three-year averages. Steamed bread-specific volumes generally increased with increasing protein content within each production zone. Steamed bread-specific volume averages were higher than last year, but lower than the three-year average in all production zones. The white club wheat composite sample followed the same trend as soft white wheat.

In summary, the overall quality of the crop can be described as average. But in the PNW, average wheat has excellent quality.

Wheat Marketing Center thanks the many individuals and organizations that provided samples for the 2017 Annual Pacific Northwest Crop Quality Survey, and recognizes with gratitude the project's funding partners:



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