

ONeal

## 2008 VARIETAL RECOMMENDATION

### ONeal

(exp. # BZ999-592)

WestBred, LLC request that 'ONeal' hard red spring wheat be considered for "Variety Recommendation in the State of Montana".

A motion that ONeal be recommended as a hard red spring wheat for dryland in districts 3, 4, 5, and 6.

ONeal is a hard red spring wheat developed by WestBred, LLC from the cross, McNeal/WestBred 906R. Application for PVP will be submitted.

ONeal is being released as a high quality hard red spring wheat that will compete for the McNeal acres, and be more adapted to areas infested by the wheat stem sawfly. For the 3 year period 2005 - 2007, (29 locations), the average per acre yield of ONeal in the MSU Intrastate Trials is 55.2 bushels, compared to McNeal at 50.4 bushels and Choteau at 53.9 bushels. The average test weight has been 58.8 lbs, which is .9 pounds heavier than McNeal and .5 lbs lighter than Choteau. Protein levels have averaged 14.2%, which is .1 percentage points lower than McNeal or Choteau. The average plant height of ONeal is 33 inches, which is similar to McNeal and 2 inches taller than Choteau. The average heading date of ONeal is similar to McNeal and 1 day later than Choteau. See Table 1 for a summary of combined location/years averages, and Tables 2 through 11 for individual location/years averages.

Milling and baking quality data from the 2005-2006 crops indicate that ONeal has quality comparable to McNeal (Tables 14 and 15).

Disease/sawfly ratings for ONeal show it to be susceptible to stripe rust (Table 13.). ONeal is a hollow stemmed variety, but has shown tolerance to cutting by the wheat stem sawfly (Table 12.).

O'Neal

**Table 1 . 2005-2007 Spring Wheat Combined Locations Yield, Test Weight and Protein**

29 location years

Cultivar/Line	Yield bu/ac 2005-2007			TW lbs/bu	Protein %	Heading Date	Plant Ht.
	Irrigated	Dryland	All Locations	2005-2007	2005-2007	2005-2007	2005-2007
location-years	11	18	29	29	29	29	29
MCNEAL	59.6	44.9	50.4	57.9	14.3	175	33
REEDER	69.8	47.9	56.2	59.9	14.5	173	33
HANK	70.2	47.5	56.1	57.1	14.2	172	31
CHOTEAU	65.7	46.7	53.9	59.3	14.3	174	31
<b>VOLT</b>	<b>76.0</b>	<b>47.1</b>	<b>58.1</b>	<b>60.6</b>	<b>13.7</b>	<b>176</b>	<b>31</b>
<b>ONEAL (BZ999-592)</b>	<b>67.6</b>	<b>47.7</b>	<b>55.2</b>	<b>58.8</b>	<b>14.2</b>	<b>175</b>	<b>33</b>
<b>JEDD</b>	<b>68.6</b>	<b>48.3</b>	<b>56.0</b>	<b>60.1</b>	<b>13.9</b>	<b>172</b>	<b>28</b>
AVG	66.2	46.2	55.1	59.1	14.2	174	31

**Table 2 . 2005-2007 Bozeman Irrigated Spring Wheat: Yield, Test Weight, Protein, Heading Date and Plt.Ht**

3 location years

Cultivar/Line	Yield bu/ac	TW lbs/bu	Protein %	Heading Date	Plant Ht.
	2005-2007	2005-2007	2005-2007	2005-2007	2005-2007
location-years					
MCNEAL	52.3	58.1	15.0	182	35
REEDER	65.6	60.5	15.2	180	35
HANK	69.6	56.7	14.9	179	32
CHOTEAU	65.4	58.8	15.3	180	33
<b>VOLT</b>	<b>76.3</b>	<b>61.3</b>	<b>14.2</b>	<b>183</b>	<b>33</b>
<b>ONEAL (BZ999-592)</b>	<b>64.9</b>	<b>58.6</b>	<b>14.8</b>	<b>182</b>	<b>35</b>
<b>JEDD</b>	<b>69.9</b>	<b>60.8</b>	<b>14.4</b>	<b>179</b>	<b>29</b>
AVG	66.3	59.3	14.8	181	33

**Table 3 . 2005-2007 Bozeman Dry Spring Wheat:Yield, Test Weight, Protein, Heading Date and Plt. Ht.**

3 location years

Cultivar/Line	Yield bu/ac	TW lbs/bu	Protein %	Heading Date	Plant Ht.
	2005-2007	2005-2007	2005-2007	2005-2007	2005-2007
MCNEAL	48.8	57.0	15.0	182	32
REEDER	57.5	60.1	15.3	179	34
HANK	56.3	56.0	15.4	179	30
CHOTEAU	51.9	57.8	15.6	180	31
<b>VOLT</b>	<b>56.2</b>	<b>58.4</b>	<b>15.5</b>	<b>183</b>	<b>31</b>
<b>ONEAL (BZ999-592)</b>	<b>57.1</b>	<b>58.3</b>	<b>15.3</b>	<b>182</b>	<b>32</b>
<b>JEDD</b>	<b>55.3</b>	<b>59.3</b>	<b>14.6</b>	<b>178</b>	<b>27</b>
AVG	54.7	58.1	15.2	180	31

**Table 4 . 2005-2007 Sidney Dry Spring Wheat: Yield, Test Weight, Protein, Heading Date and Plt. Ht.**

3 location years

Cultivar/Line	Yield bu/ac	TW lbs/bu	Protein %	Heading Date	Plant Ht.
	2005-2007	2005-2007	2005-2007	2005-2007	2005-2007
MCNEAL	50.7	59.7	12.9	171	30
REEDER	54.0	61.5	13.1	169	30
HANK	52.2	59.7	11.8	168	27
CHOTEAU	50.2	61.4	12.8	170	28
<b>VOLT</b>	<b>51.3</b>	<b>62.1</b>	<b>11.4</b>	<b>172</b>	<b>28</b>
<b>ONEAL (BZ999-592)</b>	<b>51.6</b>	<b>60.3</b>	<b>12.1</b>	<b>171</b>	<b>29</b>
<b>JEDD</b>	<b>53.2</b>	<b>62.1</b>	<b>12.0</b>	<b>167</b>	<b>25</b>
AVG	51.9	61.0	12.3	170	28

**Table 5 . 2005-2007 Sidney Irrigated Spring Wheat: Yield, Test Weight, Protein, Heading Date and Plt. Ht.**

3 location years

Cultivar/Line	Yield bu/ac	TW lbs/bu	Protein %	Heading Date	Plant Ht.
	2005-2007	2005-2007	2005-2007	2005-2007	2005-2007
MCNEAL	61.1	59.1	13.5	174	33
REEDER	63.5	61.2	14.0	172	32
HANK	61.4	58.7	13.8	171	29
CHOTEAU	54.2	60.1	13.7	172	29
<b>VOLT</b>	<b>61.7</b>	<b>60.3</b>	<b>13.1</b>	<b>176</b>	<b>30</b>
<b>ONEAL (BZ999-592)</b>	<b>62.4</b>	<b>58.9</b>	<b>13.6</b>	<b>174</b>	<b>34</b>
<b>JEDD</b>	<b>59.6</b>	<b>60.5</b>	<b>13.5</b>	<b>171</b>	<b>26</b>
AVG	60.6	59.8	13.6	173	30

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**Table 6. 2005-2007 Kalispell Spring Wheat: Yield, Test Weight, Protein, Heading Date and Plt. Ht.**

3 location years

Cultivar/Line	Yield bu/ac	TW lbs/bu	Protein %	Heading Date	Plant Ht.
	2005-2007	2005-2007	2005-2007	2005-2007	2005-2007
MCNEAL	49.3	55.5	15.3	177	34
REEDER	76.7	58.9	15.4	174	36
HANK	67.1	55.8	15.0	174	33
CHOTEAU	64.3	59.3	15.4	175	33
<b>VOLT</b>	<b>79.8</b>	<b>61.3</b>	<b>13.6</b>	<b>178</b>	<b>33</b>
<b>ONEAL (BZ999-592)</b>	<b>59.5</b>	<b>57.9</b>	<b>15.2</b>	<b>177</b>	<b>34</b>
<b>JEDD</b>	<b>60.2</b>	<b>59.7</b>	<b>14.5</b>	<b>174</b>	<b>29</b>
AVG	65.3	58.3	14.9	176	33

**Table 7 . 2005-2007 Moccasin Spring Wheat: Yield, Test Weight, Protein, Heading Date and Plt. Ht.**

3 location years

Cultivar/Line	Yield bu/ac	TW lbs/bu	Protein %	Heading Date	Plant Ht.
	2005-2007	2005-2007	2005-2007	2005-2007	2005-2007
MCNEAL	33.8	56.6	14.9	179	34
REEDER	34.6	58.2	14.7	177	34
HANK	36.2	54.1	14.1	176	32
CHOTEAU	34.6	58.6	13.6	177	33
<b>VOLT</b>	<b>34.7</b>	<b>60.1</b>	<b>13.0</b>	<b>179</b>	<b>32</b>
<b>ONEAL (BZ999-592)</b>	<b>32.9</b>	<b>57.6</b>	<b>14.8</b>	<b>178</b>	<b>34</b>
<b>JEDD</b>	<b>37.4</b>	<b>58.0</b>	<b>14.8</b>	<b>176</b>	<b>29</b>
AVG	34.9	57.6	14.3	177	33

**Table 8. 2005-2007 Huntley Dry Spring Wheat: Yield, Test Weight, Protein, Heading Date and Plt. Ht.**

3 location years

Cultivar/Line	Yield bu/ac	TW lbs/bu	Protein %	Heading Date	Plant Ht.
	2005-2007	2005-2007	2005-2007	2005-2007	2005-2007
MCNEAL	50.7	59.2	13.1	164	36
REEDER	52.4	60.5	13.2	162	35
HANK	51.0	58.7	12.5	162	32
CHOTEAU	50.1	59.7	13.2	163	33
<b>VOLT</b>	<b>53.9</b>	<b>60.7</b>	<b>12.7</b>	<b>164</b>	<b>33</b>
<b>ONEAL (BZ999-592)</b>	<b>51.9</b>	<b>59.9</b>	<b>12.4</b>	<b>164</b>	<b>35</b>
<b>JEDD</b>	<b>50.0</b>	<b>60.2</b>	<b>12.6</b>	<b>163</b>	<b>30</b>
AVG	51.4	59.8	12.8	163	33

**Table 9. 2005-2007 Huntley Irrigated Spring Wheat : Yield, Test Weight, Protein, Heading Date and Plt. Ht.**

3 location years

Cultivar/Line	Yield bu/ac	TW lbs/bu	Protein %	Heading Date	Plant Ht.
	2005-2007	2005-2007	2005-2007	2005-2007	2005-2007
MCNEAL	83.6	62.9	11.8	164	41
REEDER	75.0	63.0	12.4	162	43
HANK	89.0	61.2	12.2	163	37
CHOTEAU	85.4	62.4	12.1	164	38
<b>VOLT</b>	<b>91.2</b>	<b>63.6</b>	<b>12.1</b>	<b>164</b>	<b>36</b>
<b>ONEAL (BZ999-592)</b>	<b>91.4</b>	<b>63.1</b>	<b>11.7</b>	<b>164</b>	<b>41</b>
<b>JEDD</b>	<b>92.7</b>	<b>63.2</b>	<b>12.1</b>	<b>163</b>	<b>34</b>
AVG	86.9	62.8	12.1	163	39

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**Table 10. 2005-2007 Conrad Spring Wheat: Yield, Test Weight, Protein, Heading Date and Plt. Ht.**

3 location years

Cultivar/Line	Yield bu/ac	TW lbs/bu	Protein %	Heading Date	Plant Ht.
	2005-2007	2005-2007	2005-2007	2005-2007	2005-2007
MCNEAL	47.4	58.3	14.4	180	31
REEDER	50.1	59.4	14.8	179	32
HANK	47.9	56.9	15.1	178	31
CHOTEAU	51.9	59.5	14.7	180	30
<b>VOLT</b>	<b>48.1</b>	<b>61.2</b>	<b>14.6</b>	<b>182</b>	<b>30</b>
<b>ONEAL (BZ999-592)</b>	<b>51.4</b>	<b>58.6</b>	<b>15.1</b>	<b>181</b>	<b>32</b>
<b>JEDD</b>	<b>51.6</b>	<b>60.4</b>	<b>14.1</b>	<b>179</b>	<b>27</b>
AVG	49.8	59.2	14.7	180	30

**Table 11. 2005-2007 Havre Spring Wheat: Yield, Test Weight, Protein, Heading Date and Plt. Ht.**

3 location years

Cultivar/Line	Yield bu/ac	TW lbs/bu	Protein %	Heading Date	Plant Ht.
	2005-2007	2005-2007	2005-2007	2005-2007	2005-2007
MCNEAL	37.8	54.7	16.5	175	26
REEDER	38.5	56.3	15.8	173	28
HANK	41.1	54.4	16.3	171	26
CHOTEAU	41.3	55.8	15.9	173	26
<b>VOLT</b>	<b>38.5</b>	<b>57.8</b>	<b>15.7</b>	<b>176</b>	<b>26</b>
<b>ONEAL (BZ999-592)</b>	<b>41.0</b>	<b>56.3</b>	<b>16.5</b>	<b>174</b>	<b>25</b>
<b>JEDD</b>	<b>42.1</b>	<b>57.9</b>	<b>15.6</b>	<b>171</b>	<b>23</b>
AVG	40.0	56.2	16.0	173	26

**Table 12. 2006, 2007 Bozeman Solid Stem Score and Havre Saw Fly Cutting**

Cultivar/Line	Bozeman Solid Stem Score		Havre Saw Fly Cutting%	
	2006	2007	2006	2007
MCNEAL	6.8	7.4	14.5	15.5
REEDER	6.2	7.3	7.6	13.3
HANK	7.3	8.9	9.8	9.4
CHOTEAU	20.9	24.6	0.8	2.6
<b>VOLT</b>	<b>6.9</b>	<b>8.5</b>	<b>17.3</b>	<b>12.9</b>
<b>ONEAL (BZ999-592)</b>	<b>6.5</b>	<b>7.8</b>	<b>5.3</b>	<b>4.7</b>
<b>JEDD</b>	<b>8.1</b>	<b>7.8</b>	<b>5.9</b>	<b>6.4</b>

**Table 13. 2006 Stripe rust rating Bozeman and Kalispell**

VARIETY	Stripe Rust %	
	<u>Bozeman</u>	<u>Kalispell</u>
MCNEAL	86.7	82.7
Reeder	43.3	13.6
HANK	60.0	72.3
CHOTEAU	43.3	13.2
<b>VOLT</b>	<b>0.0</b>	<b>4.8</b>
<b>ONEAL</b>	<b>43.3</b>	<b>74.2</b>
<b>JEDD</b>	<b>31.7</b>	<b>57.6</b>



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**Table 14. 2005 Advanced Spring Wheat Yield Trial Mill & Bake**  
**Location: Means Across Locations (Bozeman, Havre, Sidney dryland, Moccasin)**

Whole Grain Analysis			Flour Analysis				Mixograph Analysis			Bake Analysis							
Identity	Pedigree	Class	Wheat Protein, % (12% m.b.)	Single Kernel Hardness	Flour Protein, % (14% m.b.)	Flour Yield, %	Flour Ash, %	Wheat Ash, %	Mixograph Type	Mixing Tolerance	Mixing Time, min	Mixo Water Absorption, %	Bake Mixing Time, min	Bake Water Absorption, %	Loaf Volume	Crumb Grain Score	
PI574642	MCNEAL	HRS	15.0	90.6	65.1	13.7	0.44	1.82			6.0	6.2	64.9	10.0	77.0	1220	3.3
ND 695	Reeder	HRS	14.6	80.1	67.0	13.8	0.39	1.64			3.5	3.3	61.6	4.1	71.7	1119	3.5
BZ992322	HANK	HRS	14.1	71.2	66.7	13.3	0.43	1.80			4.8	6.2	63.3	9.5	74.7	1178	3.5
PI633974	CHOTEAU	HRS	13.7	74.3	67.0	13.0	0.37	1.60			4.5	3.6	63.2	5.6	73.2	1155	3.8
<b>ACS52610</b>	<b>VOLT</b>	<b>HRS</b>	<b>13.2</b>	<b>92.7</b>	<b>66.1</b>	<b>12.0</b>	<b>0.44</b>	<b>1.61</b>			<b>6.3</b>	<b>6.0</b>	<b>62.6</b>	<b>13.6</b>	<b>77.2</b>	<b>1065</b>	<b>3.5</b>
<b>BZ999592</b>	<b>ONEAL</b>	<b>HRS</b>	<b>14.7</b>	<b>91.9</b>	<b>66.8</b>	<b>13.3</b>	<b>0.44</b>	<b>1.74</b>			<b>5.3</b>	<b>6.7</b>	<b>64.2</b>	<b>12.1</b>	<b>78.2</b>	<b>1178</b>	<b>4.0</b>
<b>BZ9M1044</b>	<b>JEDD</b>	<b>HRS</b>	<b>14.4</b>	<b>89.5</b>	<b>67.0</b>	<b>13.4</b>	<b>0.48</b>	<b>1.75</b>			<b>5.0</b>	<b>5.0</b>	<b>64.0</b>	<b>7.8</b>	<b>74.2</b>	<b>1171</b>	<b>3.8</b>
<i>Means Across Locations MIN</i>			12.9	63.8	60.7	11.9	0.36	1.55			2.0	2.2	60.6	2.7	71.0	958	2.5
<i>Means Across Locations MAX</i>			15.0	99.8	70.7	13.9	0.51	1.85			6.5	8.1	66.8	22.3	81.7	1278	4.0
<i>Means Across Locations AVE</i>			14.1	81.2	67.7	13.1	0.42	1.68			4.4	4.6	63.3	8.1	74.2	1138	3.7

**Table 15. 2006 Advanced Spring Wheat Yield Trial Mill & Bake**  
**Location: Means Across Locations (Bozeman, Havre, Sidney (3103), Moccasin)**

Whole Grain Analysis			Flour Analysis				Mixograph Analysis			Bake Analysis							
Identity	Pedigree	Class	Wheat Protein, % (12% m.b.)	Single Kernel Hardness	Flour Protein, % (14% m.b.)	Flour Yield, %	Flour Ash, %	Wheat Ash, %	Mixograph Type	Mixing Tolerance	Mixing Time, min	Mixo Water Absorption, %	Bake Mixing Time, min	Bake Water Absorption, %	Loaf Volume	Crumb Grain Score	
PI574642	MCNEAL	HRS	15.09	92.38	63.95	13.33	0.49	1.75			5.75	6.08	64.40	9.53	76.35	1208	4.00
ND 695	Reeder	HRS	14.77	80.68	65.33	13.20	0.42	1.59			3.50	3.80	62.95	5.05	73.03	1148	3.50
BZ992322	HANK	HRS	14.79	73.93	66.45	13.65	0.46	1.68			4.25	6.70	64.15	9.68	74.60	1174	3.75
PI633974	CHOTEAU	HRS	15.00	74.78	65.75	13.58	0.42	1.60			3.75	3.80	63.83	5.18	73.15	1191	3.50
<b>ACS52610</b>	<b>VOLT</b>	<b>HRS</b>	<b>13.93</b>	<b>89.98</b>	<b>66.30</b>	<b>12.33</b>	<b>0.48</b>	<b>1.62</b>			<b>5.00</b>	<b>5.88</b>	<b>62.78</b>	<b>10.43</b>	<b>75.73</b>	<b>995</b>	<b>4.00</b>
<b>BZ999592</b>	<b>ONEAL</b>	<b>HRS</b>	<b>14.90</b>	<b>92.03</b>	<b>65.75</b>	<b>13.30</b>	<b>0.46</b>	<b>1.74</b>			<b>5.50</b>	<b>6.40</b>	<b>64.13</b>	<b>12.38</b>	<b>77.33</b>	<b>1170</b>	<b>4.00</b>
<b>BZ9M1044</b>	<b>JEDD</b>	<b>HRS</b>	<b>14.72</b>	<b>90.05</b>	<b>66.28</b>	<b>13.23</b>	<b>0.49</b>	<b>1.67</b>			<b>4.50</b>	<b>4.98</b>	<b>64.13</b>	<b>8.00</b>	<b>74.70</b>	<b>1151</b>	<b>3.75</b>
<i>NURSERY MIN</i>			13.6	71.6	62.6	12.1	0.39	1.49			2.0	2.1	61.2	3.0	71.4	995	2.5
<i>NURSERY MAX</i>			15.7	99.3	69.1	14.0	0.51	1.80			6.0	7.0	67.6	15.6	79.6	1238	4.0
<i>NURSERY AVE</i>			14.7	83.9	66.3	13.1	0.45	1.65			4.3	4.7	63.8	7.7	74.2	1139	3.6