one of a few available hard red winter wheat varieties with this resistance. Greenhouse seedling and field tests have shown that Oakley CL is resistant to multiple races of stem rust. Oakley CL is moderately susceptible to leaf rust. Therefore, a fungicide treatment will be recommended if a leaf rust epidemic occurs. Oakley CL is intermediate to barley yellow dwarf virus, tan spot, and powdery mildew. Oakley CL is susceptible to soilborne mosaic virus and Hessian fly. A summary of pest resistance for Oakley CL is presented in Table 1.

Area of Adaptation. Oakley CL has performed well on dryland fields in western Kansas, especially in northwest Kansas (Table 2). In 2 years of dryland testing in northwest Kansas, it yielded 5 percent more than Danby. Oakley CL has very competitive yield when compared to other Clearfield wheat varieties (Table 3). Its performance under irrigation has not been thoroughly tested. Oakley CL has not performed well in central and eastern Kansas because of its maturity and lack of resistance to diseases more common in these areas.

Milling and Baking Quality. Oakley CL has good milling and baking quality. Its protein content is about one point higher than Danby. In most milling tests, it yielded more flour than Danby. In the baking testing, Oakley CL has good baking absorption and mixing tolerance, and its overall baking quality is better than Danby. Oakley CL has an average test weight of about 60 pounds per bushel (Table 2).

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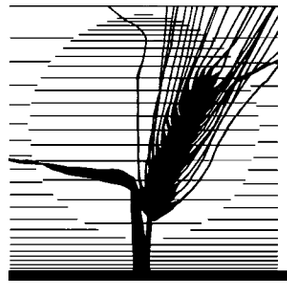

Oakley CL Hard Red Winter Wheat

Oakley CL is a new, hard red winter wheat variety developed and released by the Kansas State University Agricultural Experiment Station and Cooperative Extension Service. Oakley CL carries a single gene for resistance to Beyond herbicide. Foundation seed was distributed to seed producers in 2013. Small amounts of registered and certified seed will be available in the fall of 2014.

Origin and Development. Oakley CL is selected from the three-way cross Above/Danby//KS03HW10. The cross of Above/Danby was made in winter 2002 and its F1 was top crossed with KS03HW10 in spring 2003. Above is the first publicly released Clearfield wheat variety. Danby is a hard white winter wheat variety released by the K-State Research and Extension. KS03HW10 is a hard white experimental line developed by the wheat-breeding program at the Agricultural Research Center – Hays. Oakley CL was developed by a modified bulk breeding method. Oakley CL has been tested as KS09H19-2-3 in replicated yield trials since 2010. It was tested regionwide in the 2013 Southern Regional Performance Nursery, the 2013 Colorado State University Uniform Variety Performance Test, and the 2013 Kansas Winter Wheat Performance Test. In addition to yield trials, Oakley CL was tested for herbicide tolerance in the one-gene Clearfield qualification trials in 2011 and 2013. The development of Oakley CL was supported partially by grants from the Kansas Wheat Commission and BASF.

Kansas State University Agricultural Experiment Station and Cooperative Extension Service

Agronomic Characteristics. Oakley CL is an awned, white-chaffed, hard, red-seeded winter wheat variety. It is medium late (one day later than Danby) and medium tall (similar height as Danby) and has good straw strength. Oakley CL's coleoptile length is longer than an average semidwarf wheat variety. It has good winter-hardiness. Oakley CL is non-shattering and has very good preharvest sprouting tolerance. It is susceptible to acid soils. Ratings for agronomic characteristics of Oakley CL and other varieties are given in Table 1.

Resistance to Pests. Oakley CL has very good resistance to stripe rust, both the 2010 and 2012 races. Greenhouse tests have indicated that Oakley CL is resistant to wheat streak mosaic virus, which makes it

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Table 3. *Yield (bu/a) comparison among Clearfield wheat varieties.*

	Class	2011 QT* Hays	2012 CO KIN** three locations	2013 QT*** Hays	2013 CSU UVPT† seven locations	2013 KWPT‡ six locations
Oakley CL	HRW	69.4	49.9	66.7	25.8	39.0
Brawl CL Plus	HRW	--	48.9	--	26.0	39.9
Above	HRW	62.3	45.5	--	24.7	--
Thunder CL	HRW	--	--	--	--	35.0
Clara CL	HWW	--	48.2	74.9	24.8	44.0
Settler CL	HRW	--	--	--	25.9	--
Bond CL	HRW	--	--	--	22.3	--
WB-Deuce Plus	HRW	--	--	--	--	23.6

*2011 QT: 2011 one-gene Clearfield qualification trial.
**2012 CO KIN: 2012 Kansas Intrastate Nursery at three locations in eastern Colorado.
***2013 QT: 2013 one-gene Clearfield qualification trial.
†2013 CSU UVPT: 2013 Colorado State University Uniform Variety Performance Test at seven locations across eastern Colorado.
‡2013 KWPT: 2013 Kansas Winter Wheat Performance Test at six locations across western Kansas.
--: not included in the test.

Table 1. *Agronomic and pest resistance characteristics for Oakley CL and other varieties.*

Variety	Class[1]	Coleoptile[2]	Winter hardiness[3]	Maturity	Lodging resistance	Shatter resistance	Sprouting tolerance	Test weight	SBMV[4]	WSMV[5]	BYDV[6]	Stripe[7] rust	Leaf rust	Stem rust	Speckled leaf blotch	Tan spot	Powdery mildew	Hessian fly
Oakley CL	HRW	2	3	4	4	2	2	5	8	2	5	2	7	3	--	5	5	9
Danby	HWW	5	3	3	4	2	3	3	7	5	8	8	8	2	6	8	7	9
RonL	HWW	5	3	3	4	2	9	3	4	2	7	--	7	6	6	7	5	9
Tiger	HWW	5	3	3	4	3	9	4	2	6	7	9	2	3	7	7	5	2
Armour	HRW	3	5	1	3	1	3	4	1	6	6	7	5	3	6	5	2	6
Bill Brown	HRW	4	5	2	4	3	3	4	8	7	7	8	2	8	6	8	4	7
Hatcher	HRW	6	6	3	6	2	3	4	7	8	7	5	7	3	5	5	5	6

[1]HRW: hard red winter; HWW: hard white winter.
[2]Coleoptile ratings are based on a 1-9 scale, where 1=longest and 9=shortest.
[3]Ratings are based on 1-9 scale, where 1=resistance or the best and 9=susceptible or poorest, except for maturity where 0=earliest and 9=latest.
[4]SBMV – Soilborne mosaic virus.
[5]WSMV – Wheat streak mosaic virus.
[6]BYDV – Barley yellow dwarf mosaic virus.
[7]Stripe rust ratings are based on reactions to the 2010 and 2012 races.
-- not rated.

Table 2. *Yield (bu/a) and test weight (TW, lb/bu) of Oakley CL and checks in western Kansas dryland tests.*

	2011						2012					
Variety	**Ford***	**Ellis**	**Ness**	**Osborne**	**Ave-Yield**	**Ave-TW**	**Ford**	**Ellis**	**Osborne**	**Colby**	**Ave-Yield**	**Ave-TW**
Oakley CL	61.3	62.6	61.1	54.2	63.2	60.1	28.7	74.2	86.1	71.2	65.1	59.6
Danby	69.0	58.6	54.4	51.9	63.4	62.1	34.4	68.0	82.8	69.6	63.7	62.0
Bill Brown	71.9	54.7	57.0	50.7	61.1	60.8	25.8	60.0	74.5	73.7	58.5	59.4
Armour	63.5	53.6	46.1	59.6	58.9	59.3	21.4	56.4	65.8	38.1	45.4	58.8
Tiger	55.5	53.5	49.6	48.0	55.2	59.7	21.7	36.3	69.7	54.0	45.4	59.6
LSD (0.05)**	5.7	6.2	7.4	8.2			6.4	6.6	10.0	11.2		

*Ford County is located in southwest Kansas and the others are located in northwest Kansas.
**Least significant difference. If the difference between two varieties is greater than the LSD value for that county, then the results are statistically different.