

‘WB-Paloma’
Hard White Spring Wheat

19.a. Exhibit A. Origin and Breeding History

‘WB-Paloma’ originated from a cross made in 2001 with a pedigree of Ta/Snow Crest/Waikea. The breeding method used was a selected spike bulk modified pedigree. The F1 increase from which ‘WB-Paloma’ originated was grown in the field near Bozeman, MT in 2002. The F2 generation was grown near Yuma, AZ in the winter growing season of 2002/2003. Individual spikes were selected and bulked together to grow the F3 generation near Bozeman in the summer of 2003. Individual spikes were selected and planted as F4 spike rows near Bozeman in the summer of 2004. One row designated BZ331WP was selected and harvested in bulk. ‘WB-Paloma’ was first tested as an F4 derived F5 bulk in observation plots in 2005. ‘WB-Paloma’ was tested in replicated yield trials in 2006-2009. (Corcoran, CA; Five Points, CA; and Yuma, AZ)

Fifteen spikes were selected near Bozeman, MT in 2006 and grown as spike rows near Yuma, AZ in 2006/2007. Four spike rows were harvested and grown as spike row plots near Bozeman in the summer of 2007. Two of the spike row plots that were identical and uniform, were bulked together. The resulting seed was used to produce breeder seed near Yuma in 2007/2008.

The selection criteria used in the development of ‘WB-Paloma’ were as follows:

- F1 None, Bulk harvest
- F2 Large spikes, semidwarf growth habit, and robust plants
- F3 Same as F2
- F4 White seed, % protein and S.D.S. sedimentation
- F5 Resistance to stripe rust, % protein, S.D.S. sedimentation, Flour swelling volume, low poly phenol oxidase.
- F6 Stripe rust resistance, yield, lodging resistance, plump seed, test weight, % protein, S.D.S. sedimentation

‘WB-Paloma’ has been observed for six generations of reproduction and seed increase and is stable and uniform. A tall variant that is 12 to 25 centimeters taller plant occurs at a frequency of up to 0.5%. This tall variant occurs in most semidwarf wheat varieties and is due to aneuploidy. A red seed variant occurs at a frequency of up to 0.2%. The variants are otherwise identical to the variety in all other characteristics.

19.b. Exhibit B. Statement of Distinctness

‘WB-Paloma’ most resembles the wheat variety ‘Snow Crest’ but can be distinguished from ‘Snow Crest’ in that ‘WB-Paloma’ has white auricles while ‘Snow Crest’ has purple auricles.

The above comparison along with the complete Objective Description (Exhibit C) show ‘WB-Paloma’ to be a novel variety of common wheat.

Table 1. Agronomic Characteristics of ‘WB-Paloma’ Compared to Check Varieties in Monsanto/WestBred Trials in California and Arizona (Mean of 12 location years)

Variety Name	Yield (lbs/ac)	Plant Height (cm)	Days to Head after 3/1	Test Weight (lbs/bu)	% Protein	Stripe Rust Rating*
‘WB-Paloma’	6501	90	32	64.3	13.9	2
Blanca Grande	6766	100	33	64.9	13.7	6
Joaquin	6893	90	29	64.0	14.6	2.2

*1= none, 3 = Moderately Resistant, 5 = Moderately Susceptible, 7 = Susceptible, 9 = dead.

Table 2. Stripe Rust Rating of ‘WB-Paloma’ and Check Varieties in University of California Screening Nursery

Location	Year	WB-Paloma		Blanca Grande		Joaquin		Snow Crest	
		% C	I T	% C	I T	% C	I T	% C	I T
Davis, CA	2006	0	0	100	8	0	0	100	8
	2007	0	0	30	6	5	4	100	8
	2008	10	5	100	7	80	7		
	2009	10	2	20	3	20	3	80	6

Table 3. Milling and Baking Analysis of 'WB-Paloma' by Cargill

	WB-Paloma			Blanca Grande			Joaquin	
	2006	2007	2008	2006	2007	2008	2006	2007
% Protein	14.1	13.6	12.8	13.3	14.2	11.0	14.3	14.1
1000 KW	41	41.3	39.6	41.6	46.0	45.9	38.3	43.4
% Ash	.437	.48	.47	.447	.459	.471	.47	.486
Loaf Volume	968	968	935	968	978	833	925	915
Volume Rating	10	10	10	10	10	10	10	10
Grain Rating	10	10	10	10	10	10	5	10
Texture Rating	10	10	10	10	10	10	10	10
Color Rating	5	5	5	5	5	5	5	5
Absorption Rating	3	3	3	3	3	3	3	3
Makeup Rating	10	10	10	10	10	10	10	10
Handeling Rating	10	10	10	10	10	10	10	5
Tolerance Rating	10	5	10	15	10	5	10	5
Bake Score	68	63	68	73	68	63	63	58
Seed Score	60	60	55	60	55	55	60	55

Table 4. Milling and Baking Analysis by the California Wheat Commission

	WB-Paloma		Blanca Grande		Joaquin	
	2007	2008	2007	2008	2007	2008
% Protein	13.3	11.8	14.2	12.0	13.2	11.2
Test Weight	65.0	64.9	65.7	65.0	64.3	64.6
1000 K Weight	43.2	42.5	48.1	47.7	47.7	42.1
% Flour Yield	71.4	72.3	74.2	75.6	74.5	77.9
% Flour Ash	.40	.44	.38	.39	.40	.50
Wet Gluten	30.5	23.5	30	27.1	30.8	27.9
% Absorption	65.3	60.2	66.2	64.8	61.0	61.6
Arrival Time	6	1	5	2.5	2.5	2.3
Mixing Peak	18.5	2	6	6.3	4.3	6
Mixing Tolerance	18.3	31	9.3	25	10.5	8.3
Departure Time	24.3	32	14.3	27.5	13.0	10.6
Mixing Tolerance Index	30		60	20	30	40
Loaf Volume	915	875	940	975	870	875
Specific Volume	6.22	6.48	6.31	7.01	6.00	6.43
Bake Score	4	3	4	5	3	3