



Arizona / California Combined Crop Analysis

2018 Desert Durum[®] Crop Quality Report



2018 Desert Durum® Crop Quality Report

Desert Durum®

Desert Durum® is a registered certification mark owned by the Arizona Grain Research and Promotion Council and the California Wheat Commission, which authorize the use of the mark only to designate durum grain produced under irrigation in the desert valleys and lowlands of Arizona and California.

Desert Durum® can be produced and delivered “identity preserved” to domestic and export markets, which allows customers to purchase grain of varieties possessing quality traits specific to their needs. Annual production requirements can be pre-contracted with grain merchandisers ahead of the fall-winter planting season for harvest in late May-early July. Varietal identity is maintained by experienced growers planting certified seed and merchandisers who store and ship according to customers’ preferred delivery schedules.

Desert Durum® production acreage in 2018 was similar to 2017. Prices were low at planting time; however, growers still need to plant wheat for rotational purposes. Production remained similar to last year. Yields were average, and quality was uniformly good. In California, varieties Desert King accounted for ~ 20% and Desert King HP ~ 20% of all durum planted acreage in California.

Desert Durum® samples were either collected by an FGIS-licensed inspection agency or submitted by handlers to a licensed agency. In 2018, the average grade is No. 1 Hard Amber Durum (HAD). Test weight average was 62.8 lbs/bu (81.8 kg/hl). The average vitreous kernel content (HVAC) is 98.0%, a high average typical of Desert Durum®. Average damaged kernels are 0.2% and total defects are 0.6%. Desert Durum® is characterized by its kernel low moisture content, and this year’s average was 6.7%. Protein content average was 13.4% (12% M.B.)

Desert Durum® quality performance is analyzed at the California Wheat Commission Laboratory. This year durum wheat samples were milled using a modified Buhler lab mill with identical settings and equipped with Miag laboratory purifiers at North Dakota State University Durum Wheat/Pasta Quality Lab in Fargo, North Dakota. All the semolina quality testing was performed at the Commission’s lab.

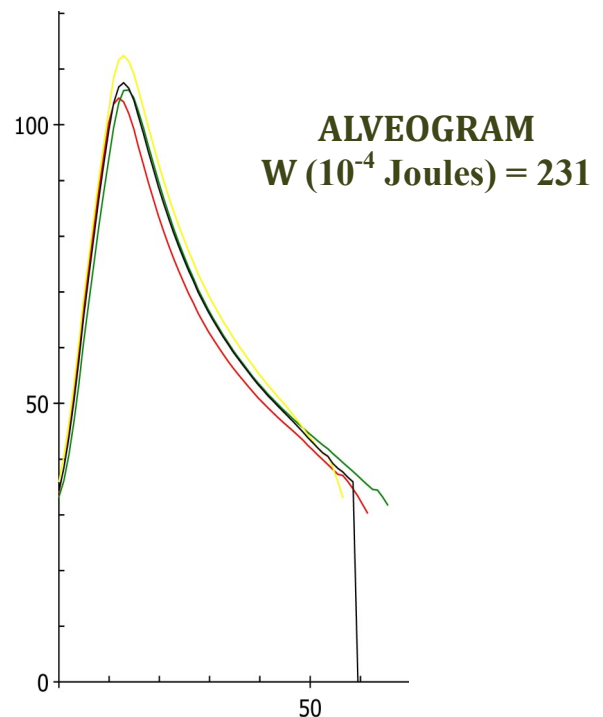
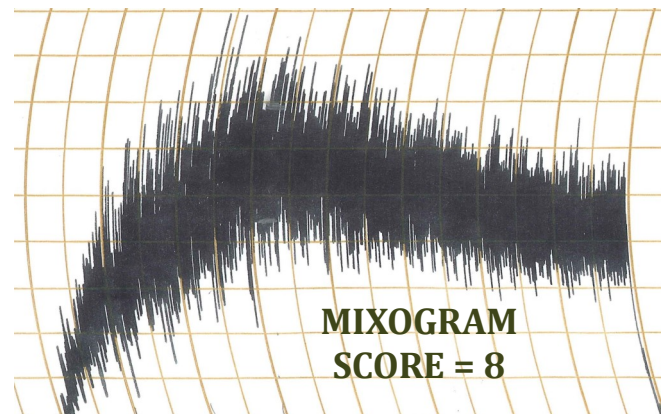
Summary

The semolina b* value was 30.5, similar to 2017 b* value of 30.9. Wet gluten of 32.3% and gluten index of 75%. Semolina Mixograph score was 8 and Alveograph W value was 231 (10⁻⁴ Joules), both of which indicates high strength. Pasta color b* value was 44 and score was 9.6. Pasta cooked firmness was 6.9 significantly higher than 2017.

New crop grain still exhibits consistently large kernels and low moisture traits that contribute to efficient transportation costs and high extraction rates. The 2018 Desert Durum crop will deliver the valuable milling, semolina, and pasta quality traits that customers have learned to expect and appreciate.

DESERT DURUM® PRODUCTION			
YEAR	METRIC TONS		
	Arizona	California	Total
2018	136,984	30,480	167,464*
2017	230,000	35,850	265,850
2016	313,600	66,908	380,508
2015	384,832	166,778	551,610
2014	229,593	45,260	274,853
2013	205,425	86,682	292,107
2012	268,892	280,000	548,892

*California Wheat Commission estimate; final data available December 2018 from USDA.



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2018 DESERT DURUM[®] VARIETIES¹

WHEAT	Alberto		Desert King		Miwok		Orita	
	2018	2017	2018	2017	2018	2017	2018	2017
Protein (12% MB)	14.0	13.1	12.8	12.9	12.5	13.1	13.6	13.7
Ash (14% MB)	1.64	1.70	1.72	1.82	1.53	1.72	1.70	1.73
Moisture	6.8	7.0	6.8	6.5	7.2	7.1	6.7	6.2
Falling Number (sec)	909	467	479	475	494	547	706	707
Micro Sedimentation (CC)	65	63	62	59	48	49	58	57
Test Weight								
lb/bu	61.7	63.4	63.2	61.8	63.0	62.2	61.7	61.7
kg/hl	80.3	82.6	82.3	80.4	82.0	81.0	80.3	80.3
1000 Kernel Weight (g)	44.1	52.6	44.7	45.9	49.6	52.1	49.2	51.8
Kernel Size Distribution								
Large/Medium/Small	91/9/0	94/6/0	88/12/0	84/15/1	94/6/0	88/11/1	95/5/0	93/7/0
SEMOLINA								
Lab Mill Extraction (%)	76.0	76.0	76.3	75.1	78.0	76.9	75.1	74.8
Semolina Extraction (%)	70.6	70.2	71.6	70.0	73.2	72.1	70.3	68.5
Protein (14% MB)	12.7	11.8	11.7	11.5	11.3	11.9	12.6	12.3
Ash (14% MB)	0.84	0.86	0.90	0.80	0.79	0.92	0.79	0.84
Specks (no/10 sp in)	20	23	26	40	28	27	18	29
Wet Gluten (14% MB)	31.1	31.7	29.2	30.2	32.0	34.4	33.1	34.4
Gluten Index	86.5	87.4	71.0	62.7	36.0	33.5	60.5	60.7
Color b*	32.0	32.6	28.1	26.6	26.4	26.8	28.9	29.4
MIXOGRAPH								
Absorption (%)	62.6	61.3	61.2	60.9	61.0	61.4	62.4	62.0
Peak Time (min)	3.0	3.5	3.3	3.5	3.1	2.5	2.6	3.0
Peak Height (mu)	6.5	6.4	4.6	5.0	5.4	5.2	5.6	4.8
MT Score (1-8)	8	8	7	6	7	6	7	6
ALVEOGRAPH								
P (mm)	91	98	82	82	65	76	83	81
L (mm)	92	83	65	70	69	75	64	81
P/L Ratio	1.0	1.2	1.3	1.2	0.9	1.0	1.3	1.0
W (10 ⁻⁴ Joules)	265	278	168	230	128	229	168	199
PASTA								
Color L*	56.5	57.2	57.5	58.0	57.8	56.3	57.4	58.4
Color b*	44.3	44.8	41.5	42.5	41.7	39.7	43.2	42.6
Color Score	10.0	10.0	9.5	9.5	9.5	9.0	10.0	9.8
Cooked Weight (gm)	28.9	30.5	30.1	29.8	29.9	30.8	28.7	28.3
Cooking Loss (%)	5.3	5.8	5.4	5.6	5.6	5.8	5.4	5.0
Cooked Firmness (g cm)	7.3	5.2	6.2	5.4	6.3	5.4	6.5	6.0

Pasta and semolina color - Minolta Chromameter Model CR-200. Weather, soils, and cultural practices can influence the quality of all varieties between years and of particular lots of any one variety. Wheat and semolina protein - Leco Combustion Nitrogen Analyzer Model TruSpec. ¹2017 & 2018 samples are milled using a modified Buhler lab mill with identical settings and equipped with Miag laboratory purifiers at North Dakota State University Durum Wheat/Pasta Quality Lab in Fargo, North Dakota.

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2018 DESERT DURUM [®] VARIETIES ¹						
	Pegasus	Phoenix	Powell	Tiburon		
WHEAT	2018	2018	2018	2018	2017	
Protein (12% MB)	12.1	13.5	13.1	13.6	13.4	
Ash (14% MB)	1.58	1.85	1.58	1.75	1.58	
Moisture	6.7	5.3	5.7	6.8	5.8	
Falling Number (sec)	768	896	924	604	556	
Micro Sedimentation (CC)	47	55	58	59	60	
Test Weight						
lb/bu	63.8	57.2	63.6	62.6	61.6	
kg/hl	83.1	74.5	82.8	81.5	80.2	
1000 Kernel Weight (g)	47.2	37.0	54.6	52.6	54.1	
Kernel Size Distribution						
Large/Medium/Small	93/7/0	83/17/0	97/3/0	97/3/0	95/5/0	
SEMOLINA						
Lab Mill Extraction (%)	76.9	74.3	75.4	77.1	75.2	
Semolina Extraction (%)	72.1	69.6	70.3	72.2	70.5	
Protein (14% MB)	11.0	12.3	11.9	12.4	12.1	
Ash (14% MB)	0.73	0.85	0.77	0.73	0.84	
Specks (no/10 sp in)	23	29	19	23	30	
Wet Gluten (14% MB)	28.7	29.6	32.3	31.4	31.1	
Gluten Index	57.4	86.1	55.9	75.9	92.3	
Color b*	26.2	30.3	31.3	30.7	31.0	
MIXOGRAPH						
Absorption (%)	60.1	62.0	61.4	62.1	61.7	
Peak Time (min)	3.0	3.5	2.8	3.5	3.3	
Peak Height (mu)	4.3	5.3	5.8	5.4	5.1	
MT Score (1-8)	6	8	6	8	7	
ALVEOGRAPH						
P (mm)	67	130	91	104	97	
L (mm)	57	39	71	69	72	
P/L Ratio	1.2	3.3	1.3	1.5	1.4	
W (10 ⁻⁴ Joules)	122	209	195	237	238	
PASTA						
Color L*	57.9	55.0	56.6	54.7	58.0	
Color b*	38.8	40.1	43.0	42.2	44.4	
Color Score	8.5	9.0	10.0	9.0	10.0	
Cooked Weight (gm)	30.5	30.6	29.9	30.1	28.4	
Cooking Loss (%)	5.5	5.6	5.1	5.1	5.1	
Cooked Firmness (g cm)	5.7	6.5	6.9	6.4	5.3	

Pasta and semolina color - Minolta Chromameter Model CR-200. Weather, soils, and cultural practices can influence the quality of all varieties between years and of particular lots of any one variety. Wheat and semolina protein - Leco Combustion Nitrogen Analyzer Model TruSpec. ¹2017 & 2018 samples are milled using a modified Buhler lab mill with identical settings and equipped with Miag laboratory purifiers at North Dakota State University Durum Wheat/Pasta Quality Lab in Fargo, North Dakota.

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2018 DESERT DURUM® VARIETIES¹

	Topper	WB-Mead		WB-Mohave		Westmore HP	
WHEAT	2018	2018	2017	2018	2017	2018	2017
Protein (12% MB)	12.6	12.7	13.3	14.0	13.7	14.3	14.1
Ash (14% MB)	1.44	1.53	1.76	1.76	1.74	1.69	1.47
Moisture	6.2	6.3	5.2	6.3	5.4	5.9	5.2
Falling Number (sec)	687	703	653	988	874	809	746
Micro Sedimentation (CC)	47	51	56	68	66	66	65
Test Weight							
lb/bu	64.1	62.0	62.4	62.4	61.5	60.8	62.9
kg/hl	83.5	80.7	81.3	81.3	80.0	79.2	81.9
1000 Kernel Weight (g)	43.1	46.7	51.0	47.9	45.8	42.2	44.2
Kernel Size Distribution							
Large/Medium/Small	87/13/0	90/10/0	94/6/0	91/9/0	87/13/0	80/20/0	82/18/0
SEMOLINA							
Lab Mill Extraction (%)	77.7	76.3	74.4	76.9	75.8	75.4	74.1
Semolina Extraction (%)	72.2	71.4	69.7	71.1	70.4	69.5	68.6
Protein (14% MB)	11.7	11.8	12.4	13.1	12.6	12.9	12.8
Ash (14% MB)	0.62	0.70	0.83	0.84	0.77	0.81	0.66
Specks (no/10 sp in)	35	29	23	20	24	17	23
Wet Gluten (14% MB)	30.9	30.1	34.3	33.1	33.2	34.6	34.5
Gluten Index	42.0	57.2	55.7	84.6	86.2	64.4	67.1
Color b*	24.9	29.7	29.4	31.0	32.8	31.1	32.4
MIXOGRAPH							
Absorption (%)	61.1	61.3	62.2	63.2	62.6	63.6	62.8
Peak Time (min)	3.3	3.5	2.5	4.0	3.6	3.0	3.0
Peak Height (mu)	4.0	4.9	4.7	5.9	5.4	5.5	5.3
MT Score (1-8)	5	6	6	8	8	7	7
ALVEOGRAPH							
P (mm)	73	88	87	138	121	126	112
L (mm)	48	46	70	48	80	42	67
P/L Ratio	1.5	1.9	1.2	2.9	1.5	3.0	1.7
W (10 ⁻⁴ Joules)	119	146	207	260	345	208	259
PASTA							
Color L*	55.5	57.9	55.9	56.2	57.3	55.3	55.5
Color b*	38.9	41.7	42.5	44.9	45.0	43.9	45.1
Color Score	8.0	9.5	9.5	10.0	10.0	9.5	9.5
Cooked Weight (gm)	30.0	30.1	30.5	29.9	29.0	29.1	29.5
Cooking Loss (%)	5.3	5.9	5.0	5.3	4.9	5.3	5.0
Cooked Firmness (g cm)	5.9	6.6	5.5	7.3	5.3	7.5	5.8

Pasta and semolina color - Minolta Chromameter Model CR-200. Weather, soils, and cultural practices can influence the quality of all varieties between years and of particular lots of any one variety. Wheat and semolina protein - Leco Combustion Nitrogen Analyzer Model TruSpec. ¹2017 & 2018 samples are milled using a modified Buhler lab mill with identical settings and equipped with Miag laboratory purifiers at North Dakota State University Durum Wheat/Pasta Quality Lab in Fargo, North Dakota.

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DESERT DURUM® AVERAGE GRADE RESULTS

	Harvest data			Export Cargo data		
	2018	2017	2016	17/18	16/17	15/16
Protein (12% MB)	13.5	13.5	13.7	13.5	13.3	13.9
Graded No. 1 (%)	Over 90% of samples graded No.1			100	100	100
HVAC (%)	98.0	97.6	97.4	95.9	94.2	91.4
Test Weight: lb/bu	62.8	62.2	62.6	62.4	62.2	61.7
kg/hl	81.8	81	81.5	82.3	81.0	80.3
Moisture (%)	6.7	6.6	6.9	6.8	7.1	7.8
Damage (%)	0.2	0.2	0.2	0.8	1.0	0.6
Foreign Material* (%)	0.0	0.1	0.0	0.1	0.1	0.1
Shrunken/Broken* (%)	0.4	0.7	0.4	0.5	0.7	0.6
Total Defects (%)	0.6	1.0	0.6	1.4	1.8	1.3
Dockage* (%)	0.3	0.5	0.5	0.4	0.5	0.4
Total Screenings (%)	1.3	1.3	0.9	1.0	1.2	1.1
Net Wheat (%)	92.6	92.2	92.3	92.3	91.7	91.2
CTW (%)	110.3	109.7	109.8	109.8	109.2	108.5
MWVI (%)	90.7	91.2	91.1	91.1	91.6	92.2

*Total Screenings are those factors represented on the grade certificate that are cleaned out in the flour mill. Samples were either official samples collected by a licensee of FGIS or submitted by handlers to a licensee for grading. Desert Durum® cargo data represents information obtained from official export inspection certificates. Test weight conversion from lb/bu to kg/hl according to FGIS-PN-97-5, (1.292 x lb/bu) + 0.630. Net Wheat = (100%-(FM+SHBN+Dockage)) x (100%-Moisture)/100%. Clean, Tempered Wheat (CTW%) = (100% - (FM +SHBN+Dockage)) x (100%-Moisture)/(100%-16% (temper moisture)). Millable Wheat Value Index (MWVI) = 100%/CTW.

2018 DESERT DURUM® AVERAGE GRADE RESULTS BY VARIETY

WHEAT	Alberto	Desert King	Miwok	Orita	Powell	Tiburon	WB-Mead	WB-Mohave	Westmore HP
Protein (12%mb)	13.7	12.7	12.5	13.3	12.8	13.3	12.3	13.9	14.0
Graded No. 1 (%)	Over 90% of samples graded No.1								
HVAC (%)	96.0	98.0	96.3	97.7	99.0	97.0	99.0	99.0	99.0
Moisture (%)	7.0	7.2	7.7	6.9	6.1	6.9	6.3	6.4	5.9
Test Weight: lb/bu	62.4	62.2	63.1	61.8	64.7	62.8	63.0	63.0	63.0
kg/hl	81.3	81.0	82.2	80.5	84.2	81.8	82.0	82.0	82.0
Damage (%)	0.5	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0
Foreign Material (%)	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Shrunken/Broken (%)	0.4	1.0	0.8	0.7	0.3	0.4	0.3	0.2	0.4
Total Defects (%)	0.9	1.1	0.9	0.7	0.3	0.9	0.3	0.2	0.4
Dockage (%)	0.1	0.8	0.9	0.5	0.2	0.1	0.3	0.3	0.0

Samples were either official samples collected by a licensee of FGIS or submitted by handlers to a licensee for grading. Test weight conversions from lb/bu to kg/hl according to FGIS-PN97-5, (1.292 x lb/bu) + 0.630.

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Technical and Laboratory Services



CWC Executive Director Claudia Carter and Laboratory Manager Teng Vang
Photo credit: Matt Salvo, California Farm Bureau Federation

The California Wheat Commission laboratory has the equipment necessary for evaluation of common and durum wheat milling quality, flour chemical analysis, physical dough testing, semolina analysis, bake and noodle production tests, and pasta analysis.

The Commission's staff is available to work with customers in the area of quality assurance, product development, problem solving, quality control training, and research. The lab order test form is available on the California Wheat Commission website, please use when requesting services.

Customer Assistance and Support

The Commission is available to answer technical questions about California's wheat quality, including recommendations for blending and appropriate end-use. The Commission conducts specialized training programs in milling, baking, semolina, pasta, and quality control. These specific programs may be customized to meet the customers' needs.

Crop and Export Survey

California produces five of the six classes of U.S. wheat: Hard Red Winter (HRW), Desert Durum®, Hard White, Soft White and Hard Red Spring. While HRW, Hard White, and Durum are the predominately produced and exported classes, information and contacts for all the above classes of wheat are available by contacting the Commission office. Every effort is made to provide an accurate assessment of quality to buyers. With greater amounts of wheat being sold by variety, varietal specific information is emphasized in Commission surveys.

Varietal Development

Private and public breeding programs play an important role in the development of new varieties available to California wheat producers. The Commission analyzes hundreds of samples each year to support these programs and encourages the release of new varieties that will meet the customers' needs. New varieties are evaluated by commercial mills through the California Wheat Collaborator program.

Research

The Commission laboratory is available for flour, semolina, milling, end-product, and new-product research. Technical expertise is available in hearth breads, pasta, Asian food products, standard loaf bread, steamed bread, Asian noodles, cookies, tortillas and Middle Eastern flat breads.



CWC Laboratory Manager Teng Vang
Photo credit: Matt Salvo, California Farm Bureau Federation



California Wheat Commission
1240 Commerce Avenue, Suite A
Woodland, CA 95776-5923

Phone: 530.661.1292
Fax: 530.661.1332
Web: californiawheat.org

Arizona Grain Research and Promotion Council
Arizona Department of Agriculture
1688 West Adams Street
Phoenix, AZ 85007

Phone: 602.542.3262
Fax: 602.364.0830