



Arizona / California Combined Crop Analysis

2015 Desert Durum® Crop Quality Report

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Desert Durum®

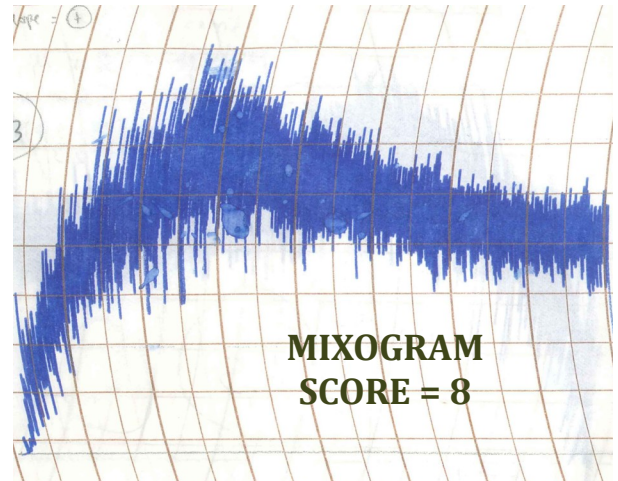
Desert Durum®, a trademark of the Arizona Grain Research and Promotion Council and the California Wheat Commission, refers to durum wheat produced under irrigation in Arizona and California.

These are regions of high temperatures (May-June temperatures average above 32 C) and low rainfall (annual precipitation averages less than 200 mm). Desert Durum® wheat is planted in November through February and harvested in May to July. Desert Durum® enters the market up to three months ahead of the spring durum crops harvested in other North American durum-producing areas.

Desert Durum® is often delivered “identity preserved” to domestic and export markets, which allows buyers to purchase varieties having intrinsic quality traits specific to their needs. Annual production requirements can be precontracted with grain merchandisers who provide certified seed of specific varieties to experienced growers. Handlers can store grain by varietal identity for season-long shipment on the buyers’ preferred delivery schedules.

Due to high prices at planting time, Desert Durum® acreage increased substantially in 2015 over the previous year. On average, yields were somewhat lower due to a weather-related shorter growing season. New crop grain still exhibited consistently large kernel size and low moisture, traits that contribute to high extraction rates. Overall, grain quality characteristics met expectations. In summary, the 2015 Desert Durum® crop will deliver the valuable milling, semolina, and pasta quality traits that customers have learned to expect and appreciate.

The milling, semolina, and pasta analyses used to produce this report were conducted at the California Wheat Commission’s wheat quality laboratory.

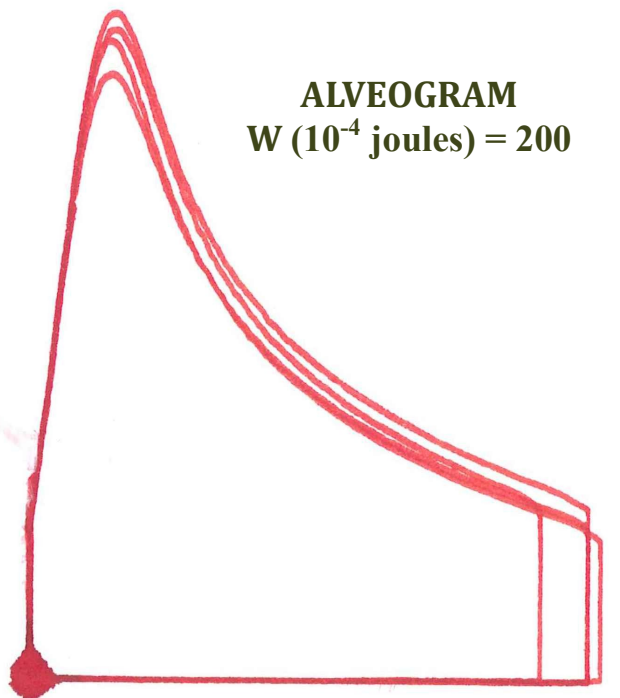


DESERT DURUM® PRODUCTION

METRIC TONS

YEAR	Arizona	California	Total
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
2011	197,913	220,448	418,361
2010	203,438	178,209	381,647
2009	310,260	258,550	568,810

*California Wheat Commission estimate; final data available December 2015 from USDA.



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2015 DESERT DURUM® VARIETIES										
	Desert King		Havasu		Helios		Kronos		Orita	
WHEAT	2015	2014	2015	2014	2015	2014	2015	2014	2015	2014
Protein (12% MB)	13.3	12.7	13.7	13.7	13.4	13.1	14.0	13.0	14.2	13.6
Protein (Dry Basis)	15.2	14.4	15.6	15.5	15.2	14.9	15.9	14.8	16.2	15.4
Protein (As-Is)	13.9	13.5	14.4	14.6	14.1	14.0	14.7	13.8	14.9	14.4
Ash (14% MB)	1.99	1.97	1.68	1.74	1.73	1.70	1.70	1.67	1.80	1.82
Ash (Dry Basis)	2.32	2.29	1.95	2.02	2.01	1.98	1.97	1.95	2.10	2.11
Moisture	8.0	6.8	7.5	6.5	7.2	6.2	7.4	6.3	7.9	6.5
Falling Number (sec)	442	493	570	782	799	999	535	789	560	755
Test Weight										
lb/bu	61.7	63.2	62.3	63.9	61.5	61.7	62.3	63.2	61.4	62.3
kg/hl	81.1	83.0	81.9	83.9	80.9	81.2	81.9	83.1	80.8	81.9
1000 Kernel Weight (g)	46.9	47.3	51.3	49.4	49.0	46.5	53.5	51.6	55.4	51.9
Kernel Size Distribution										
Large	88	90	92	95	87	89	93	95	93	94
Medium	11	9	8	5	13	11	7	5	7	6
Small	1	1	0	0	0	0	0	0	0	0
SEMOLINA										
Lab Mill Extraction (%)	74.9	73.9	77.5	72.8	76.8	69.5	76.9	68.6	73.9	69.9
Semolina Extraction (%)*	62.6	63.8	63.5	62.7	62.3	61.1	62.0	61.2	60.8	62.2
Protein (14% MB)	12.3	11.3	12.9	12.5	12.3	11.8	13.0	12.0	13.2	12.6
Protein (Dry Basis)	14.3	13.2	15.0	14.5	14.4	13.7	15.1	14.0	15.4	14.7
Ash (14% MB)	0.92	0.92	0.91	0.86	0.79	0.73	0.87	0.79	0.88	0.82
Ash (Dry Basis)	1.08	1.07	1.06	1.00	0.92	0.85	1.01	0.92	1.02	0.96
Specks (no/10 sp in)	25	24	26	23	20	20	14	21	33	24
Wet Gluten (14% MB)	31.7	32.9	33.9	29.4	31.5	30.2	34.7	32.6	35.4	36.9
Gluten Index	62.9	58.5	90.3	89.7	91.4	93.7	73.1	71.3	62.1	52.9
Color 'b' value	24.9	24.6	24.5	26.2	26.0	25.9	24.7	26.4	24.2	25.4
ALVEOGRAPH										
P/L Ratio	1.62	1.36	2.10	2.31	2.53	1.78	2.21	2.16	1.26	1.32
W (10 ⁻⁴ joules)	148.8	147.0	333.3	340.6	324.3	238.0	175.7	249.5	167.2	179.6
PASTA										
Color Score	5.9	7.6	7.6	8.5	8.5	9.0	7.4	9.8	7.0	9.2
Cooked weight (gm)	28.2	29.4	29.3	28.5	28.5	29.3	29.5	29.7	28.8	29.2
Cooking Loss (%)	5.8	6.7	6.1	5.6	5.7	5.9	5.4	5.6	5.8	5.7
Cooked Firmness (g/cm)	7.0	7.2	6.9	7.2	7.2	5.8	7.0	6.2	6.7	6.8
Data represent weighted means calculated to characterize the Arizona/California southwestern desert crop. Weather, soil, and cultural practices can influence the quality of all varieties between years and particular lots of any one variety. Wheat and semolina protein-Leco Combustion Nitrogen Analyzer Model TruSpec. Pasta and semolina color-Minolta Chromameter Model CR-200. Falling number test performed with FOSS Alphatec.										
*The mill is not adjusted to optimize semolina extraction; results are usually lower than commercial mills and other test mills.										

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2015 DESERT DURUM® VARIETIES

	Tiburon		WB-Mead		WB-Mohave		Westmore HP	
WHEAT	2015	2014	2015	2014	2015	2014	2015	2014
Protein (12% MB)	13.9	13.6	13.3	12.7	14.2	13.5	14.1	13.3
Protein (Dry Basis)	15.8	15.4	15.1	14.5	16.2	15.3	16.0	15.1
Protein (As-Is)	14.6	14.3	14.0	13.6	14.9	14.4	14.8	14.2
Ash (14% MB)	1.68	1.78	1.51	1.71	1.66	1.76	1.44	1.53
Ash (Dry Basis)	1.95	2.07	1.76	1.98	1.93	2.04	1.67	1.78
Moisture	7.4	7.23	7.6	5.97	7.6	6.41	7.5	6.15
Falling Number (sec)	562	656	546	665	632	872	600	695
Test Weight								
lb/bu	62.1	62.9	62.9	64.5	62.2	62.6	63.2	63.2
kg/hl	81.7	82.6	82.7	84.8	81.8	82.4	83.1	83.1
1000 Kernel Weight (g)	56.6	52.8	54.9	48.5	56.7	44.6	45.4	41.6
Kernel Size Distribution								
Large	98	96	94	91	92	88	87	84
Medium	2	4	6	9	8	12	13	16
Small	0	0	0	0	0	0	0	0
SEMOLINA								
Lab Mill Extraction (%)	78.3	67.6	74.4	68.1	75.7	72.4	77.2	66.2
Semolina Extraction (%)*	65.9	61.8	60.3	61.8	62.8	62.0	62.9	59.4
Protein (14% MB)	12.8	12.4	12.4	11.7	13.2	12.7	13.2	12.5
Protein (Dry Basis)	15.0	14.5	14.4	13.6	15.4	14.7	15.5	14.5
Ash (14% MB)	0.90	0.78	0.85	0.79	0.84	0.90	0.76	0.65
Ash (Dry Basis)	1.05	0.90	0.99	0.91	0.97	1.05	0.89	0.76
Specks (no/10 sp in)	18	21	26	17	22	19	14	20
Wet Gluten (14% MB)	34.0	33.6	33.5	31.4	34.8	33.6	36.4	33.5
Gluten Index	72.2	82.2	62.3	72.6	90.1	87.4	66.4	79.6
Color 'b' value	25.1	27.9	25.5	26.1	27.1	26.2	26.4	27.1
ALVEOGRAPH								
P/L Ratio	1.91	1.77	1.52	1.47	2.43	2.34	2.06	2.21
W (10-4 joules)	247.0	290.2	221.1	173.5	246.5	262.8	309.2	265.4
PASTA								
Color Score	7.5	9.2	7.5	8.5	8.5	9.0	8.5	9.9
Cooked weight (gm)	29.6	29.7	28.8	29.8	28.8	29.6	29.3	29.2
Cooking Loss (%)	6.4	6.2	6.2	5.4	5.5	5.5	6.2	5.7
Cooked Firmness (g/cm)	5.7	6.0	6.8	6.2	7.0	4.9	6.3	6.1
Data represent weighted means calculated to characterize the Arizona/California southwestern desert crop. Weather, soil, and cultural practices can influence the quality of all varieties between years and particular lots of any one variety. Wheat and semolina protein-Leco Combustion Nitrogen Analyzer Model TruSpec. Pasta and semolina color-Minolta Chromameter Model CR-200. Falling number test performed with FOSS Alphatec.								
*The mill is not adjusted to optimize semolina extraction; results are usually lower than commercial mills and other test mills.								

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DESERT DURUM® AVERAGE GRADE RESULTS

	Harvest data			Export Cargo data		
	2015	2014	2013	14/15	13/14	12/13
Protein (12% MB)	13.8	13.3	13.4	13.2	13.4	13.2
Graded No. 1 (%)	Over 90% of samples graded No. 1			100	100	100
HVAC (%)	92.3	97.0	97.1	94.9	96.5	95.9
Test Weight: lb/bu	61.7	63.2	62.5	62.8	62.1	62
kg/hl	80.3	82.2	81.3	81.8	80.9	80.7
Moisture (%)	8.0	7.0	6.8	7.0	6.9	6.5
Damage (%)	0.4	0.2	0.2	0.4	0.4	0.4
Foreign Material* (%)	0.1	0.0	0.1	0.1	0.1	0.1
Shrunken/Broken* (%)	0.7	0.4	0.6	0.6	0.9	1
Total Defects (%)	1.1	0.6	0.8	1.2	1.4	1.5
Dockage* (%)	0.5	0.3	0.5	0.4	0.6	0.5
Total Screenings (%)	1.3	1.3	1.2	1.1	1.6	1.6
Net Wheat (%)	90.8	92.3	92.1	92.0	91.6	91.9
CTW (%)	108.1	109.9	109.7	109.5	109.1	109.4
MWVI (%)	92.5	91	91.2	91.3	91.7	91.4

*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, $(1.292 \times \text{lb/bu}) + 0.630$. Net Wheat = $(100\% - (\text{FM} + \text{SHBN} + \text{Dockage})) \times (100\% - \text{Moisture}) / 100\%$. Clean, Tempered Wheat (CTW%) = $(100\% - (\text{FM} + \text{SHBN} + \text{Dockage})) \times (100\% - \text{Moisture}) / (100\% - 16\% \text{ (temper moisture)})$. Millable Wheat Value Index (MWVI) = $100\% / \text{CTW}$.

2015 DESERT DURUM® AVERAGE GRADE RESULTS BY VARIETY

WHEAT	Desert King	Havasu	Helios	Kronos	Orita	Tiburion	WB-Mead	WB-Mohave	Westmore-HP
Protein (12%mb)	13.0	13.7	13.6	13.7	14.0	13.8	13.3	14.2	14.2
Graded No. 1 (%)	Over 90% of samples graded No. 1								
HVAC (%)	93.1	89.0	88.9	95.1	91.1	95.2	87.0	93.5	96.3
Moisture (%)	8.2	7.7	7.6	7.89	8.2	7.7	8.0	8.1	8.1
Test Weight: lb/bu	61.6	62.5	61.8	62.0	61.2	62.2	62.9	61.8	62.8
kg/hl	80.2	81.4	80.5	80.7	79.7	81.0	81.9	80.5	81.8
Damage (%)	0.1	0.7	0.9	0.4	0.6	0.2	0.7	0.4	0.0
Foreign Material (%)	0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Shrunken/Broken (%)	0.8	0.9	0.4	0.3	0.9	0.3	0.7	0.7	0.3
Total Defects (%)	1.1	1.7	1.4	0.7	1.6	0.5	1.4	1.2	0.3
Dockage (%)	1.0	0.5	0.1	0.3	0.5	0.2	0.6	0.5	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, $(1.292 \times \text{lb/bu}) + 0.630$.

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Technical and Laboratory Services



CWC Laboratory Director Claudia Carter and Laboratory Assistant 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. California Wheat Commission's Lab Test Order Form of laboratory services 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 Assistant Teng Vang
Photo credit: Matt Salvo, California Farm Bureau Federation



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