Arizona / California Combined Crop Analysis

2023 Desert Durum®
Crop Quality Report

ARIZONA
Grain Research & Promotion Council

California WHEAT COMMISSION

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 2023 was lower than 2022. According to USDA, yields were 3.10 tons/acre, and quality was uniformly good. Based on our 2023 variety survey, Desert Gold was the most widely grown variety in California. Tiburon was the second most grown durum variety in California.

Desert Durum® samples were either collected by an FGIS-licensed inspection agency or submitted by handlers to a licensed agency. In 2023, the average grade is No. 1 Hard Amber Durum (HAD). Test weight average was 63.0 lbs/bu (82.0 kg/hl). The average vitreous kernel content (HVAC) is 98%, a high average typical of Desert Durum®. Average damaged kernels are 0.1% and total defects are 0.5%. Desert Durum® is characterized by its kernel low moisture content, and this year's average was 7.3%. Protein content average was 13.9% (12% M.B.)

Desert Durum® quality performance is analyzed at the California Wheat Commission Laboratory. Extraction rates are calculated against total products on an "as is" moisture basis. A correction factor was used to adjust Lab Mill Extraction (%) and Semolina Extraction (%).

Summary

The semolina b* value was 32.9, slightly higher compared to 2022 b* value of 30.9. Wet gluten of 34.3% and gluten index of 79. Semolina Mixograph score was 8 and Alveograph W value was 271 (10-4 Joules). Mixogram score indicates high gluten strength. Pasta color b* value was 44 and score was 10. Pasta cooked firmness was 7.4, higher compared to 2022 pasta firmness value of 6.8.

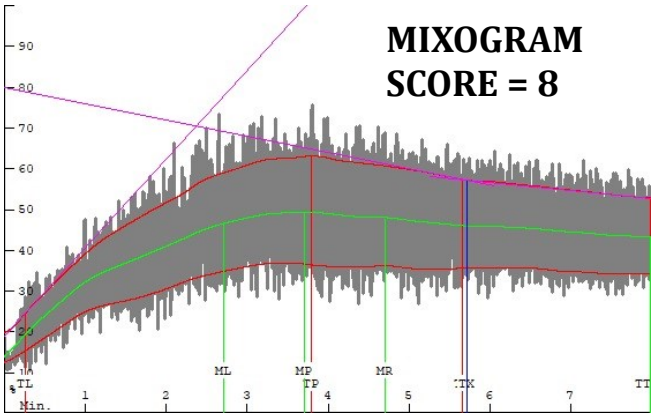
New crop grain exhibits consistently large kernels and low moisture traits that contribute to efficient transportation costs and high extraction rates. The 2023 Desert Durum crop will deliver the valuable milling, semolina, and pasta quality traits that customers have learned to expect and appreciate.

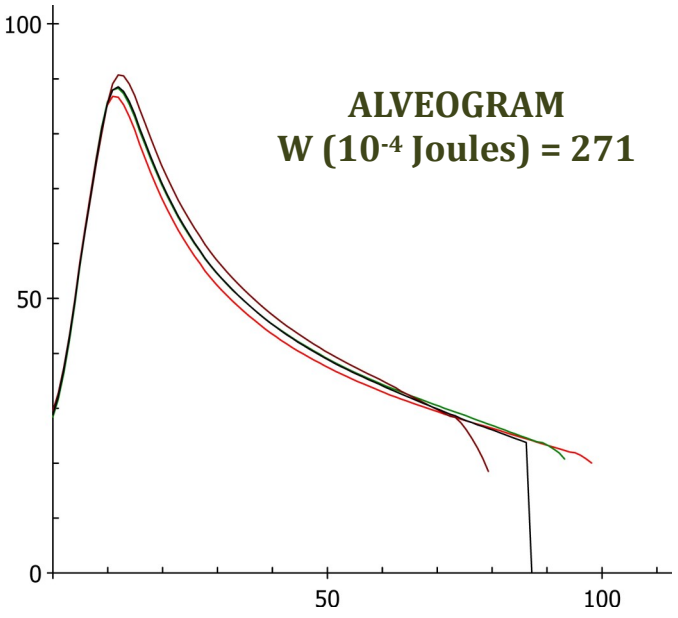
DESERT DURUM® PRODUCTION

METRIC TONS

YEAR	Arizona	California	Total
2023	141,520	62,051	203,571*
2022	245,000	106,750	351,750
2021	175,000	66,000	241,000
2020	129,500	36,898	166,398
2019	130,000	33,660	163,660
2018	136,984	43,090	180,074
2017	230,000	35,850	265,850

*California Wheat Commission estimate; final data available December 2023 from USDA.





2023 Desert Durum® Crop Quality Report

2023 DESERT DURUM® VARIETIES

	Alberto		Miwok	
WHEAT	**2023**	**2022**	**2023**	**2022**
Protein (12% MB)	14.1	13.6	15.7	13.0
Ash (14% MB)	1.74	1.44	1.32	1.44
Moisture	8.0	7.0	7.8	6.6
Falling Number (sec)	469	624	509	476
Micro Sedimentation (CC)	69	62	42	44
Test Weight				
lb/bu	62.9	63.3	63.2	64.3
kg/hl	81.9	82.4	82.3	83.8
1000 Kernel Weight (g)	51.0	50.0	59.9	55.1
Kernel Size Distribution				
Large/Medium/Small	96/4/0	95/5/0	99/1/0	97/3/0
SEMOLINA				
Lab Mill Extraction (%)	81.3	76.5	80.1	81.5
Semolina Extraction (%)	75.3	71.6	75.3	75.8
Protein (14% MB)	13.4	12.5	14.5	11.6
Ash (14% MB)	0.67	0.72	0.67	0.74
Specks (no/10 sp in)	38	11	26	23
Wet Gluten (14% MB)	35	34	39	32
Gluten Index	87	74	34	38
Color b*	34	35	28	27
MIXOGRAPH				
Absorption (%)	64.6	62.3	66.0	61.1
Peak Time (min)	3.0	2.6	1.5	2.1
Peak Height (mu)	5.5	6.3	4.2	4.7
MT Score (1-8)	8	8	2	4
ALVEOGRAPH				
P (mm)	85	74	49	50
L (mm)	132	133	62	59
P/L Ratio	0.64	0.56	0.79	0.86
W (10^{-4} Joules)	307	248	79	79
PASTA				
Color L*	55	55	55	58
Color b*	45	47	43	42
Color Score	10.0	10.5	9.5	9.5
Cooked Weight (gm)	29.2	29.3	28.7	30.0
Cooking Loss (%)	6.3	6.9	5.7	6.7
Cooked Firmness (g cm)	7.9	6.5	7.9	6.4

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. Extraction rates are calculated against total products on an "as is" moisture basis. A correction factor was used to adjust Lab Mill Extraction (%) and Semolina Extraction (%).

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2023 DESERT DURUM® VARIETIES

	Tiburon		WB Mohave	
WHEAT	**2023**	**2022**	**2023**	**2022**
Protein (12% MB)	13.6	13.0	13.5	13.1
Ash (14% MB)	1.75	1.53	1.68	1.65
Moisture	7.65	7.1	7.3	6.7
Falling Number (sec)	620	571	663	860
Micro Sedimentation (CC)	64	68	66	66
Test Weight				
lb/bu	63.0	63.6	65.3	63.1
kg/hl	82.0	82.8	85.1	82.2
1000 Kernel Weight (g)	53.8	56.2	44.2	46.3
Kernel Size Distribution				
Large/Medium/Small	96/4/0	98/2/0	88/12/0	90/10/0
SEMOLINA				
Lab Mill Extraction (%)	82.1	78.6	78.0	79.9
Semolina Extraction (%)	77.4	73.1	72.1	71.4
Protein (14% MB)	12.9	11.6	12.7	12.2
Ash (14% MB)	0.78	0.78	0.80	0.83
Specks (no/10 sp in)	29	14	29	14
Wet Gluten (14% MB)	33	32	34	33
Gluten Index	76	80	89	79
Color b*	30	31	34	33
MIXOGRAPH				
Absorption (%)	63.7	61.0	63.4	61.4
Peak Time (min)	2.9	3.1	3.3	3.2
Peak Height (mu)	4.6	4.8	5.1	5.4
MT Score (1-8)	8	8	8	8
ALVEOGRAPH				
P (mm)	97	86	114	110
L (mm)	87	80	81	78
P/L Ratio	1.11	1.08	1.41	1.43
W (10^{-4} Joules)	264	222	313	282
PASTA				
Color L*	56	58	55	56
Color b*	44	45	45	46
Color Score	10.0	10.5	10.0	10.5
Cooked Weight (gm)	30.3	28.7	28.7	29.4
Cooking Loss (%)	6.6	6.6	6.1	6.1
Cooked Firmness (g cm)	6.4	6.6	7.4	7.3

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. Extraction rates are calculated against total products on an "as is" moisture basis. A correction factor was used to adjust Lab Mill Extraction (%) and Semolina Extraction (%).

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2023 DESERT DURUM® AVERAGE GRADE RESULTS

	Harvest Data			Export Harvest Data		
	2023	2022	2021	22/23	21/22	20/21
Protein (12% MB)	13.9	13.2	14.0	13.4	13.9	13.9
Graded No. 1 (%)	Over 90% of samples graded No.1			100	100	100
HVAC (%)	98.1	97.5	98.7	96.0	85.7	83.4
Test Weight: lb/bu	63.0	64.1	63.9	63.2	61.5	61.3
kg/hl	82.0	83.4	83.2	82.2	80.1	79.8
Moisture (%)	7.3	7.3	7.5	6.7	7.5	7.8
Damage (%)	0.1	0	0	0.4	0.4	0.5
Foreign Material* (%)	0.1	0	0.1	0.2	0.1	0.1
Shrunken/Broken* (%)	0.3	0.4	0.5	0.7	0.7	0.7
Total Defects (%)	0.5	0.5	0.6	1.2	1.1	1.1
Dockage* (%)	0.3	0.2	0.2	0.4	0.5	0.5
Total Screenings (%)	0.7	0.6	0.8	1.2	1.3	1.3
Net Wheat (%)	92.0	92.1	91.8	92.1	91.3	91.0
CTW (%)	109.6	109.7	109.2	109.6	108.7	108.3
MWVI (%)	91.2	91.2	109.1	91.2	92.0	92.3

*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.

2023 DESERT DURUM® AVERAGE GRADE RESULTS BY VARIETY

WHEAT	Alberto	Miwok	Tiburon	WB Mohave
Protein (12%mb)	13.4	15.7	13.8	13.6
Graded No. 1 (%)	Over 90% of samples graded No.1			
HVAC (%)	97.0	98.0	99.0	98.3
Moisture (%)	7.7	8.0	7.4	7.1
Test Weight: lb/bu	62.6	62.2	62.6	63.4
kg/hl	81.5	81.0	81.5	82.5
Damage (%)	0.4	0.0	0.0	0.0
Foreign Material (%)	0.0	0.1	0.0	0.1
Shrunken/Broken (%)	0.3	0.1	0.2	0.5
Total Defects (%)	0.7	0.2	0.2	0.6
Dockage (%)	0.4	0.0	0.2	0.3

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.

Technical and Laboratory Services

CWC Executive Director Claudia Carter

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

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