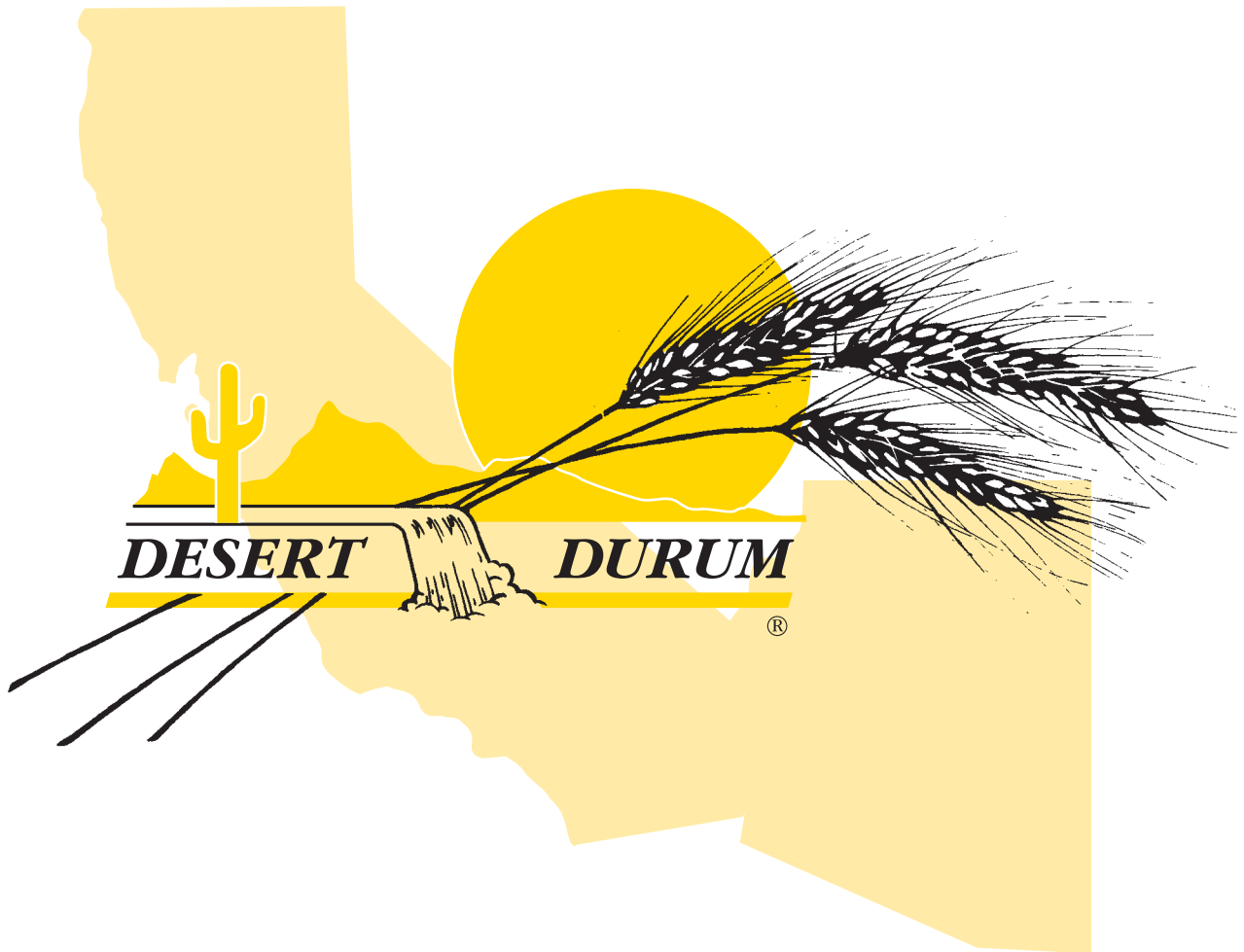

DESERT DURUM[®]

• 2001 • CROP • QUALITY •

ARIZONA / CALIFORNIA COMBINED CROP ANALYSIS



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DESERT DURUM®

The phrase "DESERT DURUM" has been trademarked with the U.S. patent office under the ownership of the Arizona Grain Research and Promotion Council and the California Wheat Commission. Only durum wheat produced in the states of Arizona and California can use the DESERT DURUM® trademark.

DESERT DURUM® wheat is produced under irrigation in the desert valleys and lowlands of Arizona and California. These are regions of high temperatures (May-June temperatures average 32C) and low rainfall (annual precipitation averages less than 200 mm). DESERT DURUM® wheat is planted December through February and harvested in May and June. It enters the market up to three months ahead of the spring durum crops harvested in other North America durum-producing areas.

DESERT DURUM® wheat is usually delivered "Identity Preserved" to U.S. domestic and export markets. The identity preservation system allows buyers to purchase grain of varieties having intrinsic quality parameters specific to their needs. Annual production requirements can be contracted ahead to experienced growers using Certified seed and then "Identity" stored for season-long shipment at the buyers' schedule.

The data presented in this crop quality report are from samples that were traceable to known quantities of grain of each variety. Sampling techniques have been approved by an agricultural statistician and at least 80% of the crop was sampled. Thus, these data are intended to characterize the 2001 DESERT DURUM® crop by both variety and as an entire crop.

The milling, semolina and pasta analyses used to produce these data were conducted at the California Wheat Commission wheat quality laboratory. The laboratory staff works closely with breeding companies and buyers to provide an accurate assessment of current crop quality and breeding material.

Desert Durum® Production

(Metric Tons)

Year	Arizona	California	Total
2001	215,468	231,471	446,939
2000	219,541	250,839	470,380
1999	194,139	231,334	425,473
1998	411,503	428,649	840,152
1997	225,259	336,115	561,374
1996	411,095	375,578	786,673
1995	231,716	179,516	411,231
1994	232,804	152,545	385,349

Milling, Semolina, and Pasta Characteristics of Desert Durum® Varieties

	NEW VARIETIES					
	Alamo ¹	Crown ¹	Matt	Platinum ¹	Sky ¹	YU895 ¹
WHEAT						
Protein	'01	'01	'01	'01	'01	'01
Dry (%)	17.2	16.4	15.9	15.4	15.2	17.0
As Is (%)	16.1	15.4	14.7	14.4	14.2	15.8
(12% mb)	15.1	14.4	14.0	13.6	13.4	15.0
Moisture (%)	6.6	6.3	7.5	6.4	6.4	7.3
1000 Kernel						
Weight (gr)	49.3	37.3	36.7	43.7	44.6	42.9
Kernel Size Distribution						
Large (%)	91	82	91	72	86	92
Medium (%)	9	18	9	27	14	8
Small (%)	0	0	0	1	0	0
MILLING AND SEMOLINA						
Total Extraction (%)	75.6	79.3	74.4	73.7	73.3	71.3
Semolina Extraction (%)	63.8	61.0	62.0	62.9	61.1	60.0
Wheat Ash (%)	1.83	1.94	1.79	2.06	1.74	1.69
Semolina Ash (%)	0.91	0.84	0.80	0.95	0.89	0.74
Protein (As-Is % mb)	14.1	13.2	12.5	12.0	12.0	13.8
Falling Number (sec)	765	588	643	619	727	551
Specks (no/10 sq. in.)	32.8	40.3	32.1	36.0	24.0	10.0
Wet Gluten (%)	35.2	36.4	33.8	31.8	31.3	34.4
Dry Gluten (%)	13.2	13.5	12.2	11.3	11.4	12.6
Alveograph						
W	304.8	143.0	192.2	188.4	238.2	151.7
P/L	1.50	0.54	1.10	1.10	1.31	0.90
Color 'b' value	27.0	26.6	27.4	30.9	28.6	26.5
PASTA						
Color²						
Score	8.3	8.6	9.9	9.5	9.4	9.0
'b' value	40.0	39.7	45.2	44.2	43.0	41.1
Cooked Weight (g)	29.1	30.3	29.6	30.3	30.3	30.2
Cooking Loss (%)	6.9	7.1	6.4	7.3	7.0	6.4
Firmness (gcm)	8.1	8.0	8.2	7.4	7.5	7.7

¹ Limited samples available for analysis; please contact the California Wheat Commission for more information. ² Pasta and semolina color - Minolta Chromameter Model CR-200. Note: Data represents weighted means calculated to characterize the entire crop of each variety. 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 FP428.

Milling, Semolina, and Pasta Characteristics of Desert Durum® Varieties

	ESTABLISHED VARIETIES													
	Duraking		Kofa		Kronos		Mohawk ¹		Ocotillo		Ria ¹		WestBred 881	
	'01	'00	'01	'00	'01	'00	'01	'00	'01	'00	'01	'00	'01	'00
WHEAT														
Protein														
Dry (%)	15.9	14.3	16.1	16.0	15.0	15.2	17.2	15.7	15.8	14.9	15.2	14.7	16.2	15.6
As Is (%)	14.8	13.3	15.0	14.9	13.9	14.1	16.1	14.6	14.8	13.8	14.2	13.7	15.1	14.5
(12% mb)	14.0	12.6	14.2	14.1	13.2	13.4	15.1	13.8	13.9	13.1	13.4	12.9	14.3	13.7
Moisture (%)	6.7	6.7	6.6	6.8	7.0	7.0	6.4	6.9	6.6	7.1	6.9	6.9	7.0	7.0
1000 Kernel														
Weight (gr)	40.0	41.4	46.3	52.9	51.9	52.8	50.5	49.2	39.7	47.7	44.9	45.5	46.6	51.3
Kernel Size Distribution														
Large (%)	86	77	91	94	95	94	89	88	86	89	87	86	94	95
Medium (%)	14	22	9	6	5	6	11	12	14	11	13	14	6	5
Small (%)	0	1	0	0	0	0	0	0	0	0	0	0	0	0
MILLING AND SEMOLINA														
Total Extraction (%)	77.2	71.8	76.6	76.6	73.6	74.7	70.8	76.4	74.9	75.1	75.1	75.8	75.0	75.1
Semolina Extraction (%)	62.7	61.8	63.0	63.2	61.5	62.3	59.2	61.7	62.9	63.1	63.6	63.2	61.9	62.4
Wheat Ash (%)	1.82	1.82	1.95	1.87	1.96	1.87	1.99	1.81	1.90	1.93	1.80	1.77	2.03	1.85
Semolina Ash (%)	0.81	0.82	0.89	0.82	0.77	0.84	0.89	0.88	0.86	0.75	0.72	0.76	0.84	0.78
Protein (As-Is % mb)	12.7	11.0	13.0	12.9	12.0	12.1	13.5	12.9	13.3	11.8	12.4	11.9	13.0	12.3
Falling Number (sec)	520	464	797	768	577	643	1337	841	604	562	572	561	646	641
Specks (no/10 sq. in.)	27.2	28.7	29.1	29.8	24.9	21.4	15.5	26.6	32.4	26.2	22.8	41.1	30.0	31.2
Wet Gluten (%)	33.0	31.0	33.4	35.2	29.2	32.8	36.1	35.2	35.2	33.4	31.0	33.2	33.5	36.5
Dry Gluten (%)	12.0	11.6	12.1	13.1	10.7	12.2	13.0	13.1	12.9	12.4	11.3	12.2	12.1	13.5
Alveograph														
W	119.2	165.7	251.1	290.0	180.9	185.3	204.1	223.5	117.0	133.9	161.7	140.0	208.1	176.2
P/L	0.79	1.26	1.28	1.47	1.64	1.41	1.43	1.24	0.58	0.72	1.39	1.14	1.24	0.97
Color 'b' value	26.2	26.0	26.8	26.8	26.8	26.4	27.2	29.7	24.4	25.8	28.3	27.4	25.9	26.1
PASTA														
Color ²														
Score	8.1	8.2	9.2	9.0	9.2	8.9	10.0	9.1	9.1	9.2	9.2	9.1	8.8	8.9
'b' value	38.5	38.5	44.2	42.0	42.4	41.4	47.6	42.6	41.1	41.1	42.5	41.0	41.1	41.0
Cooked Weight (g)	29.8	30.0	29.5	29.6	29.4	29.4	29.0	29.8	29.7	29.6	30.0	29.6	29.3	29.3
Cooking Loss (%)	7.1	7.5	7.0	7.1	7.4	7.1	7.1	7.2	7.0	7.7	6.9	7.8	7.0	6.9
Firmness (gcm)	7.7	7.1	6.9	8.4	7.3	7.7	8.0	7.9	7.6	7.6	7.4	7.1	8.0	8.4

¹Limited samples available for analysis; please contact the California Wheat Commission for more information. ²Pasta and semolina color - Minolta Chromameter Model CR-200. Note: Data represents weighted means calculated to characterize the entire crop of each variety. 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 FP428.

Average Grade Results

	HARVEST DATA			EXPORT CARGO DATA		
	1999	2000	2001	98/99	99/00	00/01
Protein (%) (12% MB)	13.3	13.8	13.8	----	----	----
Graded No. 1 (%)	Over 90% of samples graded No.1			99	N/A	100
HVAC (%)	95.1	96.0	93.0	91.0	95.2	95.0
Moisture (%)	7.4	6.7	7.2	8.2	7.5	7.1
Test Weight						
lb/bu	62.9	62.3	63.8	62.9	62.8	62.4
kg/hl	81.9	81.1	83.1	81.9	81.8	81.2
Damage (%)	0.2	0.6	0.1	1.0	1.1	1.1
*Foreign Material (%)	0.2	0.2	0.2	0.2	0.2	0.2
*Shrunken/Broken (%)	0.6	0.6	0.5	0.5	0.6	0.6
Total Defects (%)	0.9	1.0	0.8	1.7	1.9	1.9
*Dockage (%)	0.5	0.5	0.8	0.6	0.5	0.5
*Total Screenings (%)	1.3	1.3	1.5	1.3	1.3	1.3
Moisture (%)	7.4	6.7	7.2	8.2	7.5	7.1
Net Wheat (%) ¹	91.4	92.1	91.4	90.6	91.3	91.7
CTW (%) ²	108.8	109.6	108.8	107.9	108.7	109.2
MWVI ³	91.9	91.2	91.9	92.7	92.0	91.6

*Total Screenings are those factors represented on the grade certificate that are cleaned out in the flour mill. Note: Samples for the harvest data were collected through the California Department of Food and Agriculture Grain and Commodity Inspection stations in Imperial and Corcoran, California, and from the official grading stations at Yuma and Casa Grande, Arizona. Desert Durum® cargo data represents information obtained from official export inspection certificates. Test weight conversions from lb/bu to kg/hl is according to FGIS-PN-97-5, $\{(1.292 \times \text{lb/bu}) + 0.630\}$. ¹Net Wheat = $[\text{100\%} - (\text{FM} + \text{SHBN} + \text{Dockage}) \times (\text{100\%} - \text{Moisture})] / \text{100\%}$. ² Clean, Tempered Wheat (CTW%) = $[\text{100\%} - (\text{FM} + \text{SHBN} + \text{Dockage}) \times (\text{100\%} - \text{Moisture})] / (\text{100\%} - 16\%(\text{temper moisture}))$. ³ Millable Wheat Value Index (MWVI) = $\text{100\%} / \text{CTW}$.

2001 Desert Durum® : Average Grade Results by Variety

	Alamo	Crown	Duraking	Kofa	Kronos	Matt	Mohawk	Ocotillo	Platinum	Ria	Sky	Westbred 881	YU895
Protein (%) (12% mb)	14.7	14.3	13.5	14.1	13.0	13.5	14.3	14.5	13.2	13.6	12.8	14.5	14.3
Graded No.1 (%)	1/	1/	1/	1/	1/	1/	1/	1/	1/	1/	1/	1/	1/
HVAC (%)	99	97	97	98	96	97	99	97	98	97	98	98	98
Moisture (%)	6.0	5.5	6.5	5.8	7.0	7.0	5.0	6.2	6.2	6.6	6.4	6.3	6.0
Test Weight													
lb/bu	61.4	59.6	62.6	57.6	60.4	62.8	60.5	62.0	62.0	62.2	61.6	61.2	61.6
kg/hl	80.0	77.6	81.5	75.0	78.7	81.8	78.8	80.7	80.7	81.0	80.2	79.7	80.2
Damage (%)	0	0	0	0	0.1	0	0	0	0	0	0	0.1	0
Foreign Material (%)	0	0.1	0.1	0.1	0.1	0.1	0	0.1	0.1	0.1	0	0.1	0.2
Shrunken/Broken (%)	0.3	0.8	0.9	0.4	0.6	0.2	0.1	0.5	0.9	0.5	0.4	0.3	0.3
Total Defects (%)	0.3	0.9	1.0	0.5	0.8	0.3	0.1	0.6	1.0	0.6	0.5	0.5	0.5
Dockage	0.3	0.2	0.3	0.5	0.5	0.3	0.7	0.2	0.2	0.5	0.3	0.7	0.6

Note: All samples were collected through and graded by authorized Federal Grain Inspection sites. Test Weight Conversions from lb/bu to kg/hl according to FGIS-PN-97-5, $\{(1.292 \times \text{lb/bu}) + 0.630\}$. Graded No. 1 (%) reflects composite sample data. 1/. Over 90% of all samples collected through this program graded No. 1.