

Supplementary 1. Code, origin and qualitative attributes of durum wheat accessions

Accessions			Qualitative attributes ^s				
No.	Code	Origin	SS	SC	GC	LT	Lg
1	Wc-378	Iran	0	1	2	1	2
2	Wc-900	Iran	0	1	3	1	2
3	Wc-908	Iran	0	1	2	1	2
4	Wc-1052	Iran	1	1	1	4	1
5	Wc-1292	Iran	0	1	2	1	2
6	Wc-1295	Iran	0	1	2	2	2
7	Wc-1871	Iran	0	1	2	1	2
8	Wc-3122	Iran	0	1	1	1	4
9	Wc-3605	Iran	0	1	1	1	2
10	Wc-3608	Iran	1	1	1	1	2
11	Wc-3611	Iran	0	1	1	4	2
12	Wc-3615	Iran	1	1	1	4	2
13	Wc-3652	Iran	0	1	1	4	1
14	Wc-3699	Iran	1	1	1	3	2
15	Wc-3709	Iran	1	2	1	1	2
16	Wc-3711	Iran	0	1	1	2	3
17	Wc-3712	Iran	0	1	1	1	2
18	Wc-3715	Iran	0	1	1	1	2
19	Wc-3721	Iran	0	2	1	1	2
20	Wc-3791	Iran	1	1	1	4	1
21	Wc-3792	Iran	0	1	2	3	2
22	Wc-3811	Iran	0	1	2	4	1
23	Wc-3818	Iran	0	1	2	1	2
24	Wc-3822	Iran	1	1	2	1	2
25	Wc-3823	Iran	0	1	2	1	2
26	Wc-3825	Iran	0	1	2	4	1
27	Wc-3826	Iran	1	2	2	2	1
28	Wc-3827	Iran	0	1	2	4	1
29	Wc-3836	Iran	0	1	1	3	2
30	Wc-4012	Iran	1	1	1	4	2
31	Wc-4004	Iran	0	1	2	3	2
32	Wc-4017	Iran	1	1	1	1	2
33	Wc-4021	Iran	0	1	2	3	4
34	Wc-4151	Iran	0	1	2	1	1
35	Wc-4232	Iran	0	1	1	4	1
36	Wc-4233	Iran	0	1	2	2	1
37	Wc-4279	Iran	0	1	2	1	2
38	Wc-4336	Iran	0	1	1	4	1
39	Wc-4337	Iran	0	1	2	3	2
40	Wc-4341	Iran	1	1	1	4	2
41	Wc-4488	Iran	1	1	2	4	2
42	Wc-4353	Iran	0	1	2	4	2
43	Wc-4363	Iran	0	1	2	2	2
44	Wc-4368	Iran	0	1	2	1	2
45	Wc-4369	Iran	1	1	2	1	1
46	Wc-4419	Iran	1	1	2	4	1

Supplementary 1. Continued

Accessions			Qualitative attributes ^{\$}				
No.	Code	Origin	SS	SC	GC	LT	Lg
47	Wc-4421	Iran	1	1	2	3	1
48	Wc-4483	Iran	1	1	2	1	1
49	Wc-4489	Iran	0	1	1	3	1
50	Wc-4490	Iran	1	1	1	4	1
51	Wc-5818	Iran	0	1	1	2	1
52	Wc-5823	Iran	0	1	2	3	2
53	Wc-5825	Iran	0	2	1	2	1
54	Wc-5828	Iran	1	1	2	2	1
55	Wc-5830	Iran	1	1	2	4	1
56	Wc-5838	Iran	0	2	1	4	1
57	Wc-46224	Austria	0	1	2	4	5
58	Wc-46183	Iran	0	1	2	1	4
59	Wc-46078	Japan	0	1	2	1	5
60	Wc-45870	Japan	1	1	1	2	3
61	Wc-45770	Iran	1	1	2	1	1
62	Wc-45751	Iran	1	1	2	3	1
63	Wc-45749	Iran	1	2	1	3	1
64	Wc-45743	Greece	0	2	1	3	2
65	Wc-45717	Iran	0	1	1	3	1
66	Wc-45716	Iran	1	1	3	1	1
67	Wc-45688	Yugoslavi	1	1	1	1	5
68	Wc-45667	Unknown	0	1	1	1	3
69	Wc-45666	Unknown	1	2	1	1	1
70	Wc-45648	Yugoslavi	0	1	1	1	1
71	Wc-45632	Afghanistan	0	2	3	1	1
72	Wc-45381	Afghanistan	1	1	1	1	3
73	Wc-45430	Pourtugal	1	1	1	1	3
74	Wc-45443	France	1	1	1	1	1
75	Wc-45505	Pourtugal	0	1	3	1	1
76	Wc-45512	Iran	0	1	1	1	1
77	Wc-45566	Afghanistan	0	1	2	1	3
78	Wc-45581	Afghanistan	0	1	1	4	3
79	Wc-47194	Bolgharia	0	1	2	3	5
80	Wc-47216	Bolgharia	0	1	2	3	2
81	Wc-47340	USA	1	1	1	1	1
82	Vee/Nac	Iran	0	1	1	4	5
83	Soissons	Iran	0	2	1	3	5
84	Dena	Iran	1	1	1	4	4
85	Zardak	Iran	0	1	2	3	2

\$SS: Shriveled Seed (0= No, 1= yes); SC: Seed color (1=White , 2=Red); Glume color(1=White , 2= creme, 3= Purple to black); LT: Leaf type (1= dropped , 4=Erect); Lg: lodging (1=0-20% , 2=20-40% , 3=40-60% , 4=60-80% , 5=80-100%)

Supplementary 2. Characterization of durum wheat accessions based on agronomic, phonologic and physiological attributes data

Accessions No.	TKW ^s	WSS	NSS	NSPS	SSPN	SL	DH	NN	ST	PH	PL	NET	Chl	YLD
1	50.9	1.2	23.2	15.6	2.0	81.2	194	3.7	2.1	147	28.7	44	54.2	242.3
2	49.7	1.4	29.0	16.6	2.2	76.4	194	4.0	2.2	144	30.7	52	47.4	205.8
3	39.1	1.4	35.8	19.8	2.2	88.0	195	4.0	3.4	134	37.5	53	51.5	139.3
4	30.2	0.7	23.2	15.6	2.0	61.4	185	4.0	2.5	120	34.5	48	50.1	90.8
5	55.4	1.5	27.8	17.4	2.8	71.6	195	3.0	3.4	138	28.8	46	51.9	201.0
6	43.6	1.5	34.4	16.0	1.4	64.8	191	4.0	2.3	116	26.0	73	54.1	228.2
7	51.9	1.7	32.4	18.4	1.8	75.2	194	4.3	3.1	140	30.3	81	51.6	238.3
8	56.1	1.6	27.8	18.4	2.4	79.2	199	4.3	2.8	140	26.3	32	50.4	265.4
9	49.4	1.6	32.8	16.8	1.4	65.4	191	4.0	3.6	133	35.0	36	50.6	309.4
10	56.9	2.2	39.4	17.2	0.8	70.4	192	4.0	3.0	134	37.3	52	50.7	271.5
11	40.0	1.2	31.0	17.6	1.4	73.8	185	4.0	2.6	124	32.0	56	49.0	282.1
12	48.6	1.7	35.4	17.8	1.2	71.6	189	4.0	2.9	102	33.7	46	48.2	205.6
13	43.6	1.5	34.4	18.0	2.4	54.4	180	4.0	3.1	116	35.3	43	50.1	265.6
14	47.1	1.8	38.2	17.6	1.6	63.0	189	4.0	3.2	103	34.3	54	49.5	315.0
15	45.6	1.4	31.6	19.0	4.2	75.6	198	4.0	2.8	138	29.3	27	49.0	231.8
16	49.6	2.4	48.4	19.8	1.0	87.4	196	4.0	3.0	135	33.3	38	47.7	233.0
17	43.4	1.6	36.4	16.0	1.6	58.4	197	4.0	2.6	143	28.0	30	44.0	257.0
18	55.8	1.7	30.8	17.0	1.6	81.0	195	4.0	2.8	159	39.0	39	46.0	67.3
19	44.0	1.4	31.8	17.8	2.8	68.6	197	4.0	2.5	146	34.7	41	52.8	157.0
20	42.9	1.4	32.6	14.4	1.0	64.4	187	4.0	2.7	110	35.0	43	42.5	154.3
21	49.6	1.3	26.6	16.4	2.8	65.6	190	3.7	2.4	120	33.0	51	49.5	288.1
22	50.0	1.4	28.8	16.2	1.8	71.0	187	4.0	2.3	104	29.7	42	50.9	265.1
23	48.9	1.7	35.6	15.6	1.0	67.6	192	4.0	2.5	114	29.7	66	44.1	162.1
24	40.5	1.1	26.2	14.2	2.0	60.0	195	4.0	2.7	133	27.7	30	50.3	248.9
25	41.5	1.0	23.6	15.0	2.4	60.2	196	4.0	2.0	137	28.7	40	46.1	228.4
26	54.2	1.5	28.4	15.0	1.0	70.4	191	4.0	2.5	136	24.7	64	51.4	256.7
27	35.1	0.7	18.8	13.6	1.6	64.6	190	4.0	2.7	115	37.3	32	47.9	89.7
28	36.7	0.9	24.0	14.4	1.6	49.6	176	4.0	2.8	104	39.0	47	55.1	135.0
29	58.5	1.8	30.4	16.6	2.0	77.2	190	5.0	2.7	136	30.0	61	50.8	184.1
30	25.0	1.1	44.8	18.2	1.6	66.8	189	4.0	2.6	121	29.3	43	49.3	205.1
31	43.1	1.9	43.2	17.2	1.0	74.0	189	4.0	3.1	133	34.3	44	52.2	255.2
32	43.1	1.1	24.6	16.0	2.4	72.4	195	4.0	2.5	126	22.3	69	47.4	258.1
33	50.5	1.8	36.4	17.0	0.2	62.8	191	4.0	3.0	106	26.7	49	48.7	157.5
34	56.3	1.3	23.8	16.0	2.0	66.6	200	4.0	2.7	130	30.0	46	52.5	219.1
35	51.6	1.6	30.6	17.0	1.2	61.4	193	4.0	2.5	126	36.0	58	50.9	149.7
36	45.6	1.1	25.0	13.0	1.8	54.4	192	4.0	2.2	111	27.7	70	46.9	187.4
37	68.0	1.7	24.4	15.6	2.6	65.4	197	4.0	2.6	134	29.0	62	47.6	135.5
38	44.2	1.4	31.2	16.4	2.0	52.0	189	4.0	2.8	108	35.0	50	51.9	203.9
39	45.3	1.1	23.4	13.8	2.2	63.0	189	5.0	3.1	123	33.0	42	53.7	157.4
40	31.7	1.3	40.4	16.8	1.4	78.2	189	4.0	2.8	83	17.3	57	52.0	180.1
41	37.9	1.0	26.4	14.2	0.8	70.2	187	4.0	3.2	101	32.3	80	47.1	109.3
42	50.0	1.5	30.0	17.4	1.8	64.2	194	4.0	3.0	121	21.7	41	54.0	264.0
43	47.5	1.7	35.4	18.6	1.8	78.6	188	4.0	3.1	120	22.7	46	45.6	96.9
44	38.2	1.2	31.4	17.8	1.8	68.4	194	3.0	2.9	124	26.0	52	52.1	101.5
45	51.1	1.9	37.6	18.0	0.8	75.2	195	4.0	3.8	133	27.3	73	44.9	143.8
46	61.3	1.7	28.4	18.0	1.6	67.4	193	5.0	2.5	124	19.3	45	55.4	163.4

^s TKW: 1000- kernel weight; WSS: Weight of seeds per spike; NSS: Number of seeds per spike; NSPS: Number of spikelet per spike; SSPN: Sterile spikelet number; SL: Spike length; DH: Days to heading; NN: Number of nodes; ST: Stem thickness; PH: Plant height; PL: Peduncle length; NET: Number of effective tillers; Chl: Chlorophyll rate, YLD: Yield

Supplementary 2. Continued

Accessions No.	TKW ^s	WSS	NSS	NSPS	SSPN	SL	DH	NN	ST	PH	PL	NET	Chl	YLD
47	63.4	1.8	28.4	18.4	2.0	68.4	193	4.0	2.9	145	23.7	66	52.6	242.7
48	44.8	1.5	33.0	16.0	1.2	74.6	187	4.0	2.4	118	34.7	73	49.0	225.5
49	48.0	1.2	25.0	15.0	2.2	56.4	190	4.0	2.4	107	30.0	88	53.2	253.5
50	58.0	1.7	28.6	16.4	2.6	68.4	188	4.0	2.9	128	26.0	50	47.7	284.5
51	43.4	1.5	35.0	15.2	1.4	71.4	189	4.0	2.4	112	33.3	54	47.4	134.9
52	37.0	1.4	37.8	20.4	2.6	85.6	192	4.0	2.8	140	42.7	71	47.1	144.1
53	37.2	1.1	29.6	15.4	1.0	65.0	189	4.0	2.7	122	37.0	71	49.7	139.1
54	47.9	1.4	28.4	14.6	1.2	76.4	184	4.0	2.5	114	32.0	58	45.7	274.9
55	43.6	1.2	28.0	15.2	1.4	72.0	187	4.0	2.7	111	30.3	53	49.9	225.1
56	35.8	1.0	26.8	15.8	2.4	59.6	185	4.0	2.6	109	34.7	108	51.0	156.5
57	55.7	1.8	31.6	17.0	1.0	64.2	199	4.0	2.6	142	29.0	48	48.1	245.2
58	47.5	1.7	35.4	19.0	1.4	81.6	198	4.0	3.7	142	28.3	30	45.8	235.2
59	54.6	2.3	41.4	17.6	0.6	80.4	197	4.0	3.0	86	21.0	49	46.7	504.0
60	42.0	1.5	36.2	16.6	1.0	68.4	187	4.0	2.8	102	18.3	48	54.5	85.5
61	40.8	0.6	14.2	15.4	2.8	57.6	194	4.0	2.9	136	22.3	49	52.4	53.3
62	55.9	1.5	27.2	19.4	1.2	90.8	189	4.0	3.0	105	22.3	59	49.8	53.2
63	37.2	1.3	34.4	14.8	0.8	62.8	189	4.0	2.5	106	18.7	37	41.4	221.1
64	61.3	2.2	36.2	18.0	1.4	72.0	192	4.0	2.9	117	22.7	38	43.1	258.2
65	49.3	1.4	27.6	14.8	1.8	56.2	189	4.0	2.7	107	30.0	56	50.8	193.8
66	57.6	1.7	30.2	16.8	2.4	77.6	189	4.0	2.7	116	23.7	34	49.6	208.0
67	48.2	1.3	27.8	16.2	1.0	70.0	194	5.0	3.5	144	33.3	32	51.2	300.3
68	39.1	1.1	27.6	16.4	1.6	66.0	192	4.0	3.4	139	38.0	44	48.9	280.7
69	37.4	1.4	38.0	16.2	0.8	71.4	197	4.0	2.2	121	14.7	29	49.3	111.7
70	56.8	2.6	45.4	18.2	0.8	58.2	189	4.0	2.8	126	40.0	37	51.3	238.1
71	51.7	1.5	29.8	16.4	1.0	80.0	192	4.0	3.0	137	31.3	29	46.3	383.3
72	50.5	1.9	36.8	17.2	1.2	60.0	186	4.0	3.2	136	26.3	30	47.2	60.3
73	27.7	0.8	28.2	16.0	2.2	55.0	199	4.0	3.1	130	29.3	40	45.7	276.7
74	38.7	1.1	28.4	16.8	2.8	49.0	190	4.0	3.2	115	33.0	47	47.6	258.5
75	59.4	2.0	33.0	17.2	1.2	65.6	192	4.0	2.6	125	21.0	43	54.2	238.7
76	60.7	2.1	34.6	16.4	1.8	64.0	189	4.0	2.6	126	31.7	34	50.6	284.6
77	38.2	1.0	27.2	16.8	1.8	75.2	189	4.0	3.0	138	31.0	43	44.8	186.1
78	42.2	1.5	34.6	16.0	0.8	46.8	189	3.0	3.1	116	37.0	36	47.8	308.2
79	37.4	1.1	29.4	15.6	0.8	74.6	187	4.0	3.1	126	33.7	57	49.5	255.3
80	36.5	1.4	39.4	17.6	0.8	61.4	189	4.0	2.9	124	32.3	59	48.0	261.8
81	32.1	0.9	27.4	16.6	1.0	59.2	187	4.0	2.4	106	35.0	52	42.7	199.3
82	33.6	1.3	39.0	17.7	1.9	94.7	177	4.0	2.5	83	16.1	72	51.3	441.4
83	35.7	1.6	44.2	17.1	2.0	78.1	195	4.0	2.8	88	13.7	78	50.6	482.9
84	40.5	2.0	49.6	17.1	0.0	63.2	191	4.0	3.1	89	20.9	38	55.4	345.9
85	48.3	1.4	29.5	15.3	1.6	65.1	190	4.0	2.4	119	32.1	53	47.6	268.4
Min	25	0.58	14.2	13	0	46.8	176	3	2	83.3	13.7	27	41.4	53.2
Max	68	2.58	49.6	20.4	4.2	94.7	200	5	3.8	159	42.7	108	55.4	504
Range	43	2	35.4	7.4	4.2	47.9	24	2	1.8	76	28.9	81	14	450.8
Mean	46.2	1.5	31.8	16.6	1.6	68.5	191	4.0	2.8	122	29.5	50.44	49.4	218.0
SD	8.7	0.4	6.4	1.5	0.7	9.5	4.6	0.3	0.4	16.0	6.2	15.2	3.1	86.2
CV%	18.9	26.3	20.1	8.8	42.8	13.9	2.4	7.4	12.8	13.1	20.9	30.1	6.3	39.5

^s TKW: 1000- kernel weight; WSS: Weight of seeds per spike; NSS: Number of seeds per spike; NSPS: Number of spikelet per spike; SSPN: Sterile spikelet number; SL: Spike length; DH: Days to heading; NN: Number of nodes; ST: Stem thickness; PH: Plant height; PL: Peduncle length; NET: Number of effective tillers; Chl: Chlorophyll rate, YLD: Yield