

Table 2: Effect of fertilization treatments on yield components, fruit weight and pulp weight at the early harvest date of Balady mandarin.

Treatment (T)	No. Fruits / Tree				Yield (Kg) /Tree				Fruit weight (g)				Pulp weight (g)			
	Year (Y)			Mean (T)	Year (Y)			Mean (T)	Year (Y)			Mean (T)	Year (Y)			Mean (T)
	2005	2006	2007		2005	2006	2007		2005	2006	2007		2005	2006	2007	
<b>T1</b>	790.0	242.6	340.6	457.7	95.0	26.6	40.2	53.9	122.2	128.6	128.2	126.3	92.0	89.8	94.0	91.9
<b>T2</b>	607.4	221.0	387.2	405.2	74.0	27.2	49.2	50.1	122.4	126.0	126.6	125.0	94.2	91.4	94.4	93.3
<b>T3</b>	753.2	218.0	381.6	450.9	82.0	27.6	48.6	52.7	120.2	125.0	126.4	123.9	88.4	91.8	94.6	91.6
<b>T4</b>	554.2	211.6	302.0	355.9	68.0	25.6	39.8	44.5	126.4	127.4	127.0	126.9	97.6	92.2	94.6	94.8
<b>T5</b>	635.2	200.4	301.6	379.1	71.2	24.6	38.6	44.8	120.4	128.4	127.0	125.3	92.2	90.0	95.2	92.5
<b>T6</b>	614.4	211.0	309.6	378.3	71.2	25.2	36.4	44.3	118.0	124.4	118.4	120.3	87.6	91.0	89.6	89.4
<b>Mean (Y)</b>	659.1	217.4	337.1		76.9	26.1	42.1		121.6	126.6	125.6		92.0	91.0	93.7	
<b>LSD 0.05 (Y)</b>	96.9				8.2				2.5				1.3			
<b>LSD 0.05 (T)</b>	54.8				5.9				3.3				2.6			
<b>LSD 0.05 (YXT)</b>	94.8				10.3				5.9				4.5			

Table 3: Effect of fertilization treatments on yield components, fruit weight and pulp weight at the late harvest date of Balady mandarin.

Treatment (T)	No. Fruits / Tree				Yield (Kg) /Tree				Fruit weight (g)				Pulp weight (g)			
	Year (Y)			Mean (T)	Year (Y)			Mean (T)	Year (Y)			Mean (T)	Year (Y)			Mean (T)
	2005	2006	2007		2005	2006	2007		2005	2006	2007		2005	2006	2007	
<b>T1</b>	580.0	134.6	291.2	335.3	69.8	14.4	34.2	39.5	117.6	122.8	124.6	121.7	80.0	85.4	85.4	83.6
<b>T2</b>	514.8	137.0	297.0	316.3	57.2	16.0	36.4	36.5	119.2	124.0	122.4	121.9	85.6	87.6	88.4	87.2
<b>T3</b>	544.4	128.0	330.8	334.4	60.2	15.4	41.2	38.9	117.4	123.0	123.0	121.4	82.2	89.4	87.0	86.2
<b>T4</b>	538.2	108.2	287.4	311.3	63.4	13.2	37.2	37.9	121.8	124.6	126.0	124.1	83.4	87.6	87.6	86.2
<b>T5</b>	576.4	96.6	282.6	318.5	62.2	12.4	35.8	36.8	117.6	126.0	124.8	122.8	82.4	86.2	89.0	85.9
<b>T6</b>	506.8	101.0	303.6	303.8	57.8	12.2	34.8	34.9	117.8	123.6	116.4	119.3	80.8	86.8	79.4	82.3
<b>Mean (Y)</b>	543.4	117.6	298.8		61.8	13.9	36.6		118.6	124.1	122.9		82.4	87.2	86.1	
<b>LSD 0.05 (Y)</b>	53.1				6.5				3.3				2.5			
<b>LSD 0.05 (T)</b>	NS				NS				NS				3.1			
<b>LSD 0.05 (YXT)</b>	74.2				8.9				6.0				5.4			

Table 4: Effect of fertilization treatments on TSS%, acidity% and TSS/acid ratio at the early harvest date of Balady mandarin

Treatment (T)	TSS %				Acidity %				TSS/acid ratio			
	Year (Y)			Mean (T)	Year (Y)			Mean (T)	Year (Y)			Mean (T)
	2005	2006	2007		2005	2006	2007		2005	2006	2007	
<b>T1</b>	12.2	12.2	12.4	12.3	1.138	1.164	1.037	1.113	10.8	10.6	12.2	11.2
<b>T2</b>	12.5	12.9	11.6	12.3	1.048	1.076	1.139	1.088	12.0	12.0	10.3	11.4
<b>T3</b>	12.5	12.6	11.7	12.3	1.088	1.104	1.165	1.119	11.5	11.5	10.1	11.1
<b>T4</b>	12.8	12.7	12.1	12.6	1.140	1.138	1.254	1.177	11.4	11.3	9.7	10.8
<b>T5</b>	12.8	12.6	12.8	12.7	1.140	1.112	1.190	1.147	11.7	11.4	10.9	11.3
<b>T6</b>	12.6	12.2	12.2	12.3	1.190	1.126	1.203	1.173	10.7	10.5	10.3	10.5
<b>Mean (Y)</b>	12.6	12.5	12.2		1.124	1.120	1.165		11.4	11.2	10.6	
<b>LSD 0.05 (Y)</b>	0.2				NS				NS			
<b>LSD 0.05 (T)</b>	0.3				NS				NS			
<b>LSD 0.05 (YXT)</b>	0.5				NS				NS			

Table 5: Effect of fertilization treatments on TSS%, acidity% and TSS/acid ratio at the late harvest date of Balady mandarin.

Treatment (T)	TSS %				Acidity %				TSS/acid ratio			
	Year (Y)			Mean (T)	Year (Y)			Mean (T)	Year (Y)			Mean (T)
	2005	2006	2007		2005	2006	2007		2005	2006	2007	
<b>T1</b>	14.7	13.8	13.9	14.1	0.986	1.048	1.062	1.032	15.1	13.2	13.1	13.8
<b>T2</b>	15.1	14.0	14.8	14.6	1.050	0.988	1.075	1.038	14.5	14.6	13.9	14.3
<b>T3</b>	14.4	13.6	14.5	14.2	1.088	1.050	0.973	1.037	13.5	13.1	15.1	13.9
<b>T4</b>	14.2	13.9	14.3	14.2	1.024	1.088	0.947	1.020	14.0	13.1	14.9	14.0
<b>T5</b>	15.2	14.5	14.4	14.7	1.124	1.100	1.037	1.087	13.7	13.4	14.0	13.7
<b>T6</b>	15.0	14.2	14.8	14.7	1.124	1.100	1.062	1.095	13.5	13.0	14.0	13.5
<b>Mean (Y)</b>	14.8	14.0	14.5		1.066	1.062	1.026		14.0	13.4	14.2	
<b>LSD 0.05 (Y)</b>	0.3				NS				NS			
<b>LSD 0.05 (T)</b>	0.2				NS				NS			
<b>LSD 0.05 (YXT)</b>	0.5				NS				NS			

Table 6: Effect of fertilization treatments on Nitrogen concentrations of Balady mandarin leaves.

Treatment (T)	N%											
	Summer				Spring				Mean			
	Year (Y)			Mean (T)	Year (Y)			Mean (T)	Year (Y)			Mean (T)
	2005	2006	2007		2005	2006	2007		2005	2006	2007	
T1	2.30	1.99	2.01	2.10	2.57	2.34	2.50	2.47	2.43	2.17	2.25	2.28
T2	2.05	2.09	2.10	2.08	2.40	2.48	2.61	2.50	2.23	2.29	2.35	2.29
T3	2.17	2.03	2.13	2.11	2.57	2.45	2.61	2.54	2.37	2.24	2.37	2.33
T4	2.01	1.96	2.04	2.00	2.37	2.30	2.61	2.43	2.19	2.13	2.32	2.21
T5	2.14	1.84	1.96	1.98	2.46	2.20	2.50	2.39	2.30	2.02	2.23	2.18
T6	1.82	1.86	1.96	1.88	2.21	2.23	2.43	2.29	2.02	2.05	2.19	2.09
Mean (Y)	2.08	1.96	2.03		2.43	2.33	2.54		2.26	2.15	2.29	
LSD 0.05 (Y)	NS				0.10				NS			
LSD 0.05 (T)	0.05				0.06				0.05			
LSD 0.05	0.08				0.10				0.09			

Table 7: Effect of fertilization treatments on Phosphorus concentrations of Balady mandarin leaves.

Treatment (T)	P%											
	Summer				Spring				Mean			
	Year (Y)			Mean(T)	Year (Y)			Mean(T)	Year (Y)			Mean(T)
	2005	2006	2007		2005	2006	2007		2005	2006	2007	
T1	0.170	0.150	0.140	0.153	0.230	0.200	0.210	0.213	0.200	0.177	0.177	0.185
T2	0.140	0.160	0.150	0.150	0.190	0.210	0.220	0.207	0.163	0.183	0.183	0.176
T3	0.170	0.160	0.160	0.163	0.220	0.197	0.230	0.216	0.197	0.180	0.197	0.191
T4	0.140	0.150	0.150	0.147	0.190	0.200	0.220	0.203	0.167	0.177	0.183	0.176
T5	0.150	0.130	0.140	0.140	0.200	0.190	0.180	0.190	0.173	0.160	0.160	0.164
T6	0.133	0.140	0.123	0.132	0.187	0.187	0.150	0.175	0.160	0.167	0.133	0.153
Mean (Y)	0.151	0.148	0.144		0.203	0.197	0.202		0.177	0.174	0.172	
LSD 0.05	NS				NS				NS			
LSD 0.05 (T)	0.004				0.004				0.005			
LSD 0.05	0.007				0.007				0.009			

Table 8: Effect of fertilization treatments on Potassium concentrations of Balady mandarin leaves.

Treatment (T)	K%											
	Summer				Spring				Mean			
	Year (Y)			Mean (T)	Year (Y)			Mean (T)	Year (Y)			Mean (T)
	2005	2006	2007		2005	2006	2007		2005	2006	2007	
T1	1.45	0.81	1.03	1.10	1.80	1.06	1.64	1.50	1.63	0.93	1.33	1.30
T2	0.89	1.05	1.46	1.13	1.49	1.58	2.04	1.70	1.19	1.32	1.75	1.42
T3	1.02	0.85	1.65	1.17	1.54	1.37	2.11	1.67	1.28	1.11	1.88	1.42
T4	0.88	0.72	1.09	0.90	1.15	1.03	1.83	1.34	1.01	0.88	1.46	1.12
T5	0.93	0.65	0.89	0.82	1.52	0.80	1.29	1.20	1.22	0.72	1.09	1.01
T6	0.77	0.69	0.81	0.76	1.08	0.90	1.20	1.06	0.93	0.79	1.01	0.91
Mean (Y)	0.99	0.80	1.15		1.43	1.12	1.69		1.21	0.96	1.42	
LSD 0.05 (Y)	0.04				0.05				0.05			
LSD 0.05 (T)	0.02				0.03				0.03			
LSD 0.05 (YXT)	0.04				0.06				0.05			

Table 9: Effect of fertilization treatments on Fe concentrations of Balady mandarin leaves.

Treatment (T)	Fe(ppm)											
	Summer				Spring				Mean			
	Year (Y)			Mean (T)	Year (Y)			Mean (T)	Year (Y)			Mean (T)
	2005	2006	2007		2005	2006	2007		2005	2006	2007	
T1	56.90	60.00	65.47	60.79	68.17	67.80	100.20	78.72	62.53	63.90	82.83	69.76
T2	66.37	75.67	103.63	81.89	88.03	117.93	145.40	117.12	77.20	96.80	124.50	99.50
T3	50.50	60.67	88.03	66.40	82.07	109.60	95.87	95.84	66.27	85.10	91.93	81.10
T4	58.50	61.20	71.33	63.68	77.00	103.90	109.83	96.91	67.77	82.53	90.60	80.30
T5	54.40	50.53	48.97	51.30	67.47	66.63	76.60	70.23	60.97	58.57	62.80	60.78
T6	43.83	45.33	48.53	45.90	66.60	64.03	66.60	65.74	55.23	54.70	57.57	55.83
Mean (Y)	55.08	58.90	70.99		74.89	88.32	99.08		64.99	73.60	85.04	
LSD 0.05	4.04				3.23				3.49			
LSD 0.05	2.32				2.04				2.00			
LSD 0.05	4.03				3.54				3.46			



Table10: Effect of fertilization treatments on Mn concentrations of Balady mandarin leaves.

Treatment (T)	Mn (ppm)											
	Summer				Spring				Mean			
	Year (Y)			Mean (T)	Year (Y)			Mean (T)	Year (Y)			Mean (T)
	2005	2006	2007		2005	2006	2007		2005	2006	2007	
T1	31.20	33.30	39.10	34.53	31.70	40.53	43.17	38.47	31.43	36.90	41.17	36.50
T2	35.10	45.70	47.70	42.83	41.60	65.80	51.37	52.92	38.37	55.73	49.57	47.89
T3	34.40	38.10	43.90	38.80	37.53	61.57	51.90	50.33	35.93	49.83	47.90	44.56
T4	31.30	36.10	39.50	35.63	34.30	38.00	55.90	42.73	32.80	37.03	47.70	39.18
T5	28.63	33.10	36.67	32.80	31.43	42.70	38.30	37.48	30.03	37.90	37.50	35.14
T6	29.80	27.10	31.90	29.60	31.70	46.10	46.90	41.57	30.77	36.60	39.40	35.59
Mean (Y)	31.74	35.57	39.79		34.71	49.12	47.92		33.22	42.33	43.87	
LSD 0.05 (Y)	1.33				1.68				1.50			
LSD 0.05 (T)	0.81				1.00				0.91			
LSD 0.05 (YXT)	1.41				1.74				1.57			

Table 11: Effect of fertilization treatments on Zn concentrations of Balady mandarin leaves.

Treatment (T)	Zn (ppm)											
	Summer				Spring				Mean			
	Year (Y)			Mean (T)	Year (Y)			Mean (T)	Year (Y)			Mean (T)
	2005	2006	2007		2005	2006	2007		2005	2006	2007	
T1	59.60	49.67	64.10	57.79	65.53	61.47	83.47	70.16	62.57	55.60	73.77	63.98
T2	72.03	66.53	84.90	74.49	85.53	112.20	99.37	99.03	78.80	89.33	92.10	86.74
T3	66.90	58.90	79.47	68.42	81.67	72.50	98.77	84.31	74.27	65.73	89.13	76.38
T4	64.03	53.23	77.17	64.81	82.73	57.07	94.60	78.13	73.43	55.17	85.83	71.48
T5	57.23	44.63	53.70	51.86	71.13	67.10	76.50	71.58	64.20	55.87	65.10	61.72
T6	55.13	41.53	36.97	44.54	62.93	68.27	62.47	64.56	59.00	54.87	49.73	54.53
Mean (Y)	62.49	52.42	66.05		74.92	73.10	85.86		68.71	62.76	75.94	
LSD 0.05 (Y)	2.27				2.86				2.55			
LSD 0.05 (T)	1.40				1.76				1.58			
LSD 0.05	2.42				3.05				2.73			

Table 12: Effect of fertilization treatments on copper concentration of Balady mandarin leaves.

Treatment (T)	Cu (ppm)											
	Summer				Spring				Mean			
	Year (Y)			Mean (T)	Year (Y)			Mean (T)	Year (Y)			Mean (T)
	2005	2006	2007		2005	2006	2007		2005	2006	2007	
T1	10.53	11.87	15.00	12.47	1.00	1.00	1.00	1.00	11.90	12.27	19.03	14.40
T2	16.20	14.50	22.17	17.62	2.00	2.00	2.00	2.00	16.53	15.30	26.13	19.32
T3	12.83	13.60	19.60	15.34	3.00	3.00	3.00	3.00	14.97	14.90	22.67	17.51
T4	11.00	11.97	17.87	13.61	4.00	4.00	4.00	4.00	11.10	14.93	20.87	15.63
T5	9.97	9.83	12.57	10.79	5.00	5.00	5.00	5.00	12.70	11.90	16.13	13.58
T6	9.77	7.43	10.70	9.30	6.00	6.00	6.00	6.00	11.20	9.13	12.90	11.08
Mean (Y)	11.72	11.53	16.32		3.50	3.50	3.50		13.07	13.07	19.62	
LSD 0.05 (Y)	0.48				0.65				0.56			
LSD 0.05 (T)	0.30				0.40				0.35			
LSD 0.05	0.52				0.69				0.61			

Table 13: Effect of fertilization treatments on N, P and K removed by Baldy mandarin fruits on the early harvest date.

Treatment (T)	N removal (kg/fed)				P removal (kg/fed)				K removal (kg/fed)			
	Year (Y)			Mean (T)	Year (Y)			Mean (T)	Year (Y)			Mean (T)
	2005	2006	2007		2005	2006	2007		2005	2006	2007	
T1	11.65	4.05	3.78	6.49	3.41	0.66	1.09	1.72	21.66	5.80	8.39	11.95
T2	2.58	2.40	6.60	3.86	3.11	1.02	2.18	2.10	14.73	7.08	10.02	10.61
T3	5.88	4.05	4.15	4.69	3.40	1.08	1.41	1.96	16.37	8.03	11.01	11.80
T4	3.29	1.40	2.60	2.43	2.41	0.99	1.17	1.52	17.97	5.61	8.33	10.64
T5	7.42	4.39	2.33	4.71	2.63	0.87	1.32	1.61	15.66	6.49	17.65	13.27
T6	8.73	3.34	3.99	5.35	3.13	0.84	1.14	1.70	24.31	7.11	10.06	13.82
Mean (Y)	6.59	3.27	3.91		3.02	0.91	1.38		18.45	6.69	10.91	
LSD 0.05 (Y)	0.30				0.11				0.92			
LSD 0.05 (T)	0.19				0.06				1.57			
LSD 0.05 (YXT)	0.33				0.11				1.59			

Table 14: Effect of fertilization treatments on N, P and K removed by Balady mandarin fruits on the late harvest date.

Treatment (T)	N removal (kg/fed)				P removal (kg/fed)				K removal (kg/fed)			
	Year (Y)			Mean (T)	Year (Y)			Mean (T)	Year (Y)			Mean (T)
	2005	2006	2007		2005	2006	2007		2005	2006	2007	
T1	8.21	2.07	2.93	4.40	2.27	0.43	0.82	1.17	15.90	3.14	7.13	8.72
T2	1.92	1.36	4.64	2.64	1.08	0.45	1.37	0.96	11.38	4.16	7.42	7.65
T3	4.28	2.21	3.46	3.32	1.63	0.58	1.02	1.08	12.01	4.48	9.33	8.61
T4	2.85	0.68	2.24	1.92	1.27	0.29	0.78	0.78	16.73	2.89	7.78	9.13
T5	6.27	1.94	1.98	3.40	1.90	0.46	0.78	1.05	13.68	3.27	16.37	11.11
T6	6.89	1.55	3.76	4.07	2.09	0.40	1.01	1.17	19.71	3.44	9.61	10.92
Mean (Y)	5.07	1.63	3.17		1.71	0.44	0.96		14.90	3.56	9.61	
LSD 0.05 (Y)	0.22				0.07				0.95			
LSD 0.05 (T)	0.14				0.04				0.56			
LSD 0.05 (YXT)	0.24				0.07				0.97			

Table 15: Effect of fertilization treatments on the soil N and P contents.

Treatments (T)	Total N%				Available P (ppm)			
	Year (Y)			Mean (T)	Year (Y)			Mean (T)
	2005	2006	2007		2005	2006	2007	
T1	0.132	0.109	0.095	0.112	16.50	24.00	25.50	22.00
T2	0.137	0.127	0.097	0.120	18.00	21.00	24.75	21.25
T3	0.110	0.094	0.094	0.099	18.00	21.75	21.75	20.50
T4	0.122	0.112	0.107	0.113	17.25	20.25	20.25	19.25
T5	0.125	0.137	0.100	0.121	18.00	19.50	24.00	20.50
T6	0.112	0.134	0.145	0.130	15.75	18.75	21.00	18.50
Mean (Y)	0.123	0.119	0.106		17.25	20.87	22.88	
LSD 0.05 (Y)	0.007				1.13			
LSD 0.05 (T)	0.005				0.68			
LSD 0.05 (YXT)	0.008				1.17			

Table 16: Effect of fertilization treatments on the soil K and Fe contents.

Treatments (T)	Available K (ppm)				Available Fe (ppm)			
	Year (Y)			Mean (T)	Year (Y)			Mean (T)
	2005	2006	2007		2005	2006	2007	
T1	362.25	362.25	299.25	341.25	3.60	4.80	3.60	4.00
T2	420.75	409.50	247.50	359.25	3.20	3.50	3.50	3.40
T3	432.75	351.00	259.50	347.75	2.60	3.90	3.70	3.40
T4	444.00	385.50	259.50	363.00	2.60	3.10	3.60	3.10
T5	381.75	339.00	267.00	329.25	2.50	2.80	2.10	2.47
T6	339.00	315.75	247.50	300.75	1.90	2.90	2.80	2.54
Mean (Y)	396.75	360.50	263.38		2.73	3.50	3.22	
LSD 0.05 (Y)	19.11				0.18			
LSD 0.05 (T)	11.49				0.11			
LSD 0.05 (YXT)	19.91				0.19			

Table 17: Effect of fertilization treatments on the soil Mn, Zn and Cu contents.

Treatments (T)	Available Mn (ppm)				Available Zn (ppm)				Available Cu (ppm)			
	Year (Y)			Mean (T)	Year (Y)			Mean (T)	Year (Y)			Mean (T)
	2005	2006	2007		2005	2006	2007		2005	2006	2007	
T1	1.53	2.21	1.49	1.74	1.82	1.75	1.52	1.70	0.50	0.55	0.50	0.52
T2	1.35	1.66	1.03	1.35	1.98	1.90	1.58	1.82	0.53	0.40	0.56	0.50
T3	1.49	2.16	1.49	1.71	1.90	1.80	1.52	1.74	0.46	0.41	0.52	0.46
T4	1.04	2.21	1.08	1.44	1.89	1.63	1.52	1.68	0.45	0.34	0.56	0.45
T5	1.08	1.71	0.94	1.25	1.81	1.54	1.41	1.59	0.43	0.35	0.48	0.42
T6	1.04	1.35	0.68	1.02	1.67	1.53	1.40	1.53	0.46	0.34	0.46	0.42
Mean (Y)	1.25	1.88	1.12		1.85	1.69	1.49		0.47	0.40	0.51	
LSD 0.05 (Y)	0.08				0.09				0.02			
LSD 0.05 (T)	0.05				0.05				0.02			
LSD 0.05 (YXT)	0.09				0.09				0.03			