

YIELD AND FRUIT QUALITY RESULTS FROM DEFICIT IRRIGATION STUDY ON NECTARINE 'SEPTEMBER BRIGHT'

Tables 1 – 5 present production results (yield, fruit quality) for nectarine 'September Bright' in response to irrigation treatments under an Open Tatura canopy system for seasons 2016/17, 2017/18, 2018/19, 2019/20 and 2020/21, respectively at Tatura, Victoria, Australia.

Table 1. Yield and fruit quality performance statistics in response to deficit irrigation treatments of nectarine 'September Bright' under a vase canopy system during 2016/17 season.

Treatment	Fruit number (#/tree)	Yield (kg/tree)	Fruit weight (g)	Fruit sweetness (°Brix)	Fruit maturity (LAD)	Fruit firmness (kgf)	Fruit colour (% red)
0_I	115 abcde	12.6 bc	113 b	15.7 c	0.8 bcd	3.9 bc	53 a
0_II	95 ab	12.6 bc	136 d	15.2 ab	0.7 bc	3.9 bc	66 d
0_IIIa	121 bcde	12.9 bc	111 b	15.1 ab	0.7 bc	3.6 ab	60 c
0_IIIb	122 cde	10.0 a	84 a	18.1 e	1.0 f	5.6 d	74 e
20_I	89 a	12.0 abc	135 d	15.5 bc	0.7 ab	3.8 abc	57 bc
20_II	100 abc	13.2 c	135 d	15.1 a	0.6 a	3.2 a	66 d
20_IIIa	127 de	14.2 cd	113 b	15.3 ab	0.7 bc	3.6 ab	59 bc
20_IIIb	117 bcde	10.4 ab	90 a	17.3 d	1.2 g	5.8 d	69 d
40_I	137 e	16.1 d	119 bc	15.4 abc	0.9 ef	4.4 c	52 a
40_II	106 abcd	13.3 c	128 cd	15.3 ab	0.8 cde	4.2 bc	59 bc
40_IIIa	113 abcde	13.8 cd	124 c	15.3 ab	0.9 de	4.1 bc	57 b
Control	113 abcde	14.3 cd	129 cd	15.3 ab	0.9 cde	4.2 bc	57 bc
ANOVA	*	***	***	***	***	***	***

ns, *, ** and *** indicate not determined, non-significant or significant differences at $P < 0.05$, 0.01 or 0.001, respectively, for the two-way interaction irrigation treatments. Significant differences ($P < 0.05$) between irrigation treatments are denoted with different lower-case letters. Treatment values 0, 20 and 40 depict deficit (0, 20, 40% ETc) irrigation treatments and the period of fruit growth when deficit regime was applied (Stage I, III, IIIa, IIIb) compared to the control (100% ETc), respectively.

Table 2. Yield and fruit quality performance statistics in response to deficit irrigation treatments of nectarine 'September Bright' under a vase canopy system during 2017/18 season.

Treatment	Fruit number (#/tree)	Yield (kg/tree)	Fruit weight (g)	Fruit sweetness (°Brix)	Fruit maturity (I _{AD})	Fruit firmness (kgf)	Fruit colour (% red)
0_I	142 abc	11.3 bc	80 c	17.2 e	1.0 ef	5.8 d	64 a
0_II	163 cd	16.6 def	104 fg	15.5 a	0.7 ab	5.2 a	75 cd
0_IIIa	126 a	11.1 bc	90 de	16.2 cd	0.8 bc	5.3 ab	73 bcd
0_IIIb	158 bcd	8.4 a	54 a	18.8 g	1.1 g	6.8 e	80 e
20_I	149 abcd	12.9 c	88 cd	17.1 e	0.9 de	5.8 d	60 a
20_II	155 bcd	16.3 de	106 gh	15.8 ab	0.7 a	5.2 a	77 de
20_IIIa	134 ab	11.9 bc	91 de	16.3 d	0.7 ab	5.1 a	72 bc
20_IIIb	151 abcd	9.6 ab	66 b	17.8 f	1.3 h	6.7 e	77 de
40_I	173 d	16.7 def	98 ef	16.4 d	1.0 f	5.9 d	62 a
40_II	166 cd	18.7 f	112 h	15.7 ab	0.8 cd	5.5 bc	70 b
40_IIIa	163 cd	15.5 d	97 ef	16.0 bc	0.9 cde	5.5 b	71 bc
Control	172 d	18.3 ef	109 gh	16.1 cd	0.9 de	5.7 cd	71 bc
ANOVA	*	***	***	***	***	***	***

ns, *, ** and *** indicate not determined, non-significant or significant differences at $P < 0.05$, 0.01 or 0.001 , respectively, for the two-way interaction irrigation treatments. Significant differences ($P < 0.05$) between irrigation treatments are denoted with different lower-case letters. Treatment values 0, 20 and 40 depict deficit (0, 20, 40% ETc) irrigation treatments and the period of fruit growth when deficit regime was applied (Stage I, III, IIIa, IIIb) compared to the control (100% ETc), respectively.

Table 3. Yield and fruit quality performance statistics in response to deficit irrigation treatments of nectarine 'September Bright' under a vase canopy system during 2018/19 season.

Treatment	Fruit number (#/tree)	Yield (kg/tree)	Fruit weight (g)	Fruit sweetness (°Brix)	Fruit maturity (I _{AD})	Fruit firmness (kgf)	Fruit colour (% red)
0_I	140 abcd	7.7 ab	57 ab	19.2 g	1.3 cd	6.7 cd	48 ab
0_II	122 ab	11.9 de	102 g	18.1 bc	1.1 a	5.9 a	55 c
0_IIIa	137 abcd	11.1 cd	82 d	17.5 a	1.0 a	5.9 a	56 c
0_IIIb	121 ab	5.7 a	49 a	20.0 h	1.3 de	6.9 de	63 d
20_I	133 abcd	9.1 bc	70 c	19.3 g	1.2 c	6.5 c	48 ab
20_II	112 a	10.9 cd	100 g	18.8 ef	1.0 ab	6.0 ab	56 c
20_IIIa	124 abc	10.6 cd	85 de	18.6 de	1.0 ab	6.1 ab	54 c
20_IIIb	123 abc	7.2 ab	60 b	19.0 fg	1.5 e	7.1 e	64 d
40_I	156 bcd	10.9 cd	70 c	19.3 g	1.4 d	6.8 d	47 a
40_II	157 cd	14.2 ef	91 ef	17.8 ab	1.2 b	6.1 b	57 c
40_IIIa	162 d	14.1 ef	88 def	17.9 abc	1.2 b	6.2 b	54 c
Control	163 d	14.8 f	94 fg	18.2 cd	1.2 b	6.2 b	52 bc
ANOVA	*	***	***	***	***	***	***

ns, *, ** and *** indicate not determined, non-significant or significant differences at $P < 0.05$, 0.01 or 0.001 , respectively, for the two-way interaction irrigation treatments. Significant differences ($P < 0.05$) between irrigation treatments are denoted with different lower-case letters. Treatment values 0, 20 and 40 depict deficit (0, 20, 40% ETc) irrigation treatments and the period of fruit growth when deficit regime was applied (Stage I, III, IIIa, IIIb) compared to the control (100% ETc), respectively.

Table 4. Yield and fruit quality performance statistics in response to deficit irrigation treatments of nectarine ‘September Bright’ under a vase canopy system during 2019/20 season.

Treatment	Fruit number (#/tree)	Yield (kg/tree)	Fruit weight (g)	Fruit sweetness (°Brix)	Fruit maturity (I _{AD})	Fruit firmness (kgf)	Fruit colour (% red)
0_I	113 ab	9.8 a	88 c	16.3 c	0.8 b	5.8 cd	78 bc
0_II	115 ab	13.0 bc	113 g	15.1 a	0.7 a	5.4 ab	82 cd
0_IIIa	143 bc	12.9 bc	90 cd	16.3 c	0.8 b	5.5 bc	82 cd
0_IIIb	160 c	9.0 a	57 a	17.6 e	1.0 d	6.5 e	85 de
20_I	99 a	9.7 a	98 de	17.1 d	0.9 bc	5.9 d	75 b
20_II	134 bc	14.9 cd	111 g	15.1 a	0.6 a	5.1 a	86 e
20_IIIa	136 bc	13.3 bc	98 de	16.0 bc	0.7 a	5.3 ab	83 de
20_IIIb	153 c	11.7 ab	76 b	16.9 d	1.0 d	6.4 e	83 de
40_I	131 bc	13.0 bc	100 ef	16.9 d	1.0 d	6.3 e	70 a
40_II	142 bc	15.5 cd	110 g	15.7 b	0.9 bc	5.9 d	75 b
40_IIIa	153 c	16.5 d	109 fg	16.2 bc	0.9 cd	6.0 d	77 b
Control	146 c	16.5 d	114 g	15.9 bc	0.8 b	5.8 cd	78 bc
ANOVA	**	***	***	***	***	***	***

ns, *, ** and *** indicate not determined, non-significant or significant differences at $P < 0.05$, 0.01 or 0.001 , respectively, for the two-way interaction irrigation treatments. Significant differences ($P < 0.05$) between irrigation treatments are denoted with different lower-case letters. Treatment values 0, 20 and 40 depict deficit (0, 20, 40% ETc) irrigation treatments and the period of fruit growth when deficit regime was applied (Stage I, III, IIIa, IIIb) compared to the control (100% ETc), respectively.

Table 5. Yield and fruit quality performance statistics in response to deficit irrigation treatments of nectarine ‘September Bright’ under a vase canopy system during 2020/21 season.

Treatment	Fruit number (#/tree)	Yield (kg/tree)	Fruit weight (g)	Fruit sweetness (°Brix)	Fruit maturity (I _{AD})	Fruit firmness (kgf)	Fruit colour (% red)
0_I	138 ab	16.8 abcd	124 cde	15.0 d	0.6 ab	5.4 b	74 bcd
0_II	157 b	19.7 de	128 def	14.0 a	0.6 ab	5.0 a	74 bcd
0_IIIa	146 ab	15.8 abc	110 ab	15.1 d	0.6 bc	5.2 ab	71 ab
0_IIIb	130 ab	13.2 a	104 a	15.9 f	0.8 de	5.8 c	83 e
20_I	139 ab	17.6 bcde	129 ef	14.8 cd	0.5 a	5.1 a	75 cd
20_II	121 a	16.1abcd	134 f	14.4 b	0.5 a	4.9 a	77 d
20_IIIa	134 ab	15.4 ab	119 bcd	14.8 cd	0.5 a	5.0 a	73 abc
20_IIIb	138 ab	15.8 abc	116 bc	15.5 e	0.8 ef	5.8 c	77 d
40_I	149 ab	19.6 de	132 ef	14.5 bc	0.9 fg	5.9 c	70 a
40_II	154 b	19.2 cde	126 def	14.4 b	0.7 cde	5.4 b	74 bcd
40_IIIa	194 c	21.2 e	110 ab	14.7 cd	0.9 g	5.7 c	70 a
Control	140 ab	18.4 bcde	134 f	14.6 bc	0.7 cd	5.4 b	74 bcd
ANOVA	**	***	***	***	***	***	***

ns, *, ** and *** indicate not determined, non-significant or significant differences at $P < 0.05$, 0.01 or 0.001 , respectively, for the two-way interaction irrigation treatments. Significant differences ($P < 0.05$) between irrigation treatments are denoted with different lower-case letters. Treatment values 0, 20 and 40 depict deficit (0, 20, 40% ETc) irrigation treatments and the period of fruit growth when deficit regime was applied (Stage I, III, IIIa, IIIb) compared to the control (100% ETc), respectively.

