YIELD AND FRUIT QUALITY RESULTS FROM ROOTSTOCK – CROP LOAD STUDY ON PEACH 'SEPTEMBER SUN'

Tables 1 – 5 present production results (yield, fruit quality) for peach 'September Sun' in response to rootstock ('Nemaguard', 'Cadaman®', 'Krymsk® 86', 'Elberta', 'Cornerstone') and crop load (high, medium, low) treatments under a vase 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 rootstock ('Nemaguard', 'Cadaman®', Krymsk® 86', 'Elberta', 'Cornerstone') and crop load (high, medium, low) treatments of peach 'September Sun' under a vase canopy system during 2016/17 season.

Treatment	Fruit number (#/tree)	Yield (kg/tree)	Fruit weight (g)	Fruit sweetness (°Brix)	Fruit maturity (I_{AD} value)	Fruit firmness (kgf)	Fruit colour (% red)
Cadaman®	38 BC	9.3 AB	257 B	22.9 BC	0.9 BC	7.6	16 A
Cornerstone	91A	18.9 C	243 AB	23.2 C	0.8 AB	7.7	16 A
Elberta	22 C	5.7 A	288 C	21.8 AB	1.0 D	7.3	16 A
Krymsk®86	34 BC	7.4 AB	226 A	21.5 A	0.8 A	7	23 B
Nemaguard	56 B	11.6 B	239 AB	21.9 AB	0.9 CD	7.3	15 A
ANOVA	**	***	***	*	***	ns	**
High	75 a	14.3 b	220 a	22.1	0.8 a	7.3	17
Medium	49 b	11.5 b	252 b	22.4	0.9 b	7.5	18
Low	21 c	5.9 a	280 c	22.3	0.9 b	7.4	17
ANOVA	**	***	***	ns	***	ns	ns
Cad - High	67	15.3	229	23.1	0.8	7.7	15
Cad - Medium	28	7.4	269	22	0.9	7.1	17
Cad - Low	19	5.2	273	23.8	0.9	8	17
Cor - High	152	26.9	190	22.3	0.7	7.4	16
Cor - Medium	85	18.8	243	23.8	0.8	8	17
Cor - Low	36	11.0	296	23.5	0.9	7.8	14
Elb -High	20	5.3	282	21.6	1	7.2	14
Elb - Medium	36	9.0	281	22.9	0.9	7.7	15
Elb - Low	10	2.9	301	20.9	1	6.9	17
K86 - High	42	7.7	193	21.9	0.6	6.9	23
K86 - Medium	42	9.4	222	21	0.8	7	22
K86 - Low	19	5.0	262	21.6	0.8	7.2	26
Nem - High	92	16.3	204	21.6	0.8	7.2	16
Nem - Medium	54	12.8	245	22.4	0.9	7.6	14
Nem - Low	21	5.6	269	21.7	1	7.3	14
ANOVA	ns	ns	ns	ns	ns	ns	ns

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 rootstock x crop load treatments. Significant differences ($P < 0.05$) between crop load treatments are denoted with different lower-case letters. Differences between rootstocks are indicated by different upper-case letters. Rootstock abbreviations: 'Nemaguard' (Nem), 'Krymsk® 86' (K86), 'Elberta' (Elb), 'Cadaman®' (Cad), 'Cornerstone' (Cor).

Table 2. Yield and fruit quality performance statistics in response to rootstock ('Nemaguard', 'Cadaman®', Krymsk® 86', 'Elberta', 'Cornerstone') and crop load (high, medium, low) treatments of peach 'September Sun' 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} value)	Fruit firmness (kgf)	Fruit colour (% red)
Cadaman®	42 B	6.4	283	15.8	0.6 AB	5.3 AB	44 B
Cornerstone	45 B	6.2	273	15.8	0.7 B	5.6 C	45 B
Elberta	46 B	6.0	258	16.1	0.5 A	5.0 A	45 B
Krymsk®86	31 A	4.4	274	15.2	0.6 B	5.3 AB	48 B
Nemaguard	39 AB	4.1	251	15.9	0.6 AB	5.4 BC	36 A
ANOVA	*	ns	ns	ns	*	**	***
High	60 b	8.6 b	240 a	15.3	0.6	5.3	46 b
Medium	33 a	3.9 a	267 b	16.0	0.7	5.4	44 ab
Low	28 a	3.7 a	297 c	16.0	0.6	5.3	41 a
ANOVA	***	***	***	ns	ns	ns	*
Cad - High	62 d	8.8	243	14.9	0.8	5.7	47
Cad - Medium	38 abc	5.6	297	16.3	0.5	5	41
Cad - Low	28 ab	4.8	310	16.3	0.6	5.2	45
Cor - High	66 de	9.8	236	15.8	0.7	5.7	46
Cor - Medium	30 ab	2.5	276	16.2	0.7	5.6	46
Cor - Low	40 bc	6.2	307	15.4	0.8	5.7	44
Elb -High	81 e	12	226	15.4	0.5	4.9	45
Elb - Medium	36 abc	4.2	248	16.7	0.6	5.2	47
Elb - Low	21 a	1.7	302	16.1	0.6	5	42
K86 - High	42 bc	6.8	271	14.5	0.6	4.9	54
K86 - Medium	26 ab	3.6	261	15.1	0.8	5.7	49
K86 - Low	24 ab	2.8	289	16.1	0.6	5.3	42
Nem - High	50 cd	5.7	222	16.2	0.6	5.4	37
Nem - Medium	37 abc	3.8	255	15.7	0.7	5.4	39
Nem - Low	29 ab	2.8	276	15.9	0.6	5.2	33
ANOVA	*	ns	ns	ns	ns	ns	ns

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 rootstock x crop load treatments. Significant differences ($P < 0.05$) between crop load treatments are denoted with different lower-case letters. Differences between rootstocks are indicated by different upper-case letters. Rootstock abbreviations: 'Nemaguard' (Nem), 'Krymsk® 86' (K86), 'Elberta' (Elb), 'Cadaman®' (Cad), 'Cornerstone' (Cor).

Table 3. Yield and fruit quality performance statistics in response to rootstock ('Nemaguard', 'Cadaman®', Krymsk® 86', 'Elberta', 'Cornerstone') and crop load (high, medium, low) treatments of peach 'September Sun' 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} value)	Fruit firmness (kgf)	Fruit colour (% red)
Cadaman®	132	22.7	198 BC	16.4	1.2 A	7.3 AB	36 AB
Cornerstone	110	19.0	206 C	16.2	1.3 B	7.9 B	39 B
Elberta	118	23.1	203 C	15.9	1.2 A	7.1 A	37 AB
Krymsk®86	137	19.8	170 A	15.7	1.1 A	7.1 A	42 C
Nemaguard	119	19.4	184 AB	16.4	1.2 A	7.4 AB	35 A
ANOVA	ns	ns	***	ns	*	ns	***
High	217 c	29.6 c	143 a	15.1 a	1.2	7.4	41 c
Medium	96 b	19.7 b	205 b	16.3 b	1.2	7.4	37 b
Low	57 a	13.2 a	228 c	17.0 b	1.2	7.3	34 a
ANOVA	***	***	***	***	ns	ns	***
Cad - High	247 h	33.4 f	136 ab	14.9	1.3	7.7	40
Cad - Medium	96 bc	22.5 bcd	229 g	16.9	1.2	7.4	37
Cad - Low	53 ab	12.3 a	229 g	17.4	1.1	7.0	31
Cor - High	223 gh	31.3 ef	146 bc	15.1	1.2	7.7	45
Cor - Medium	56 ab	13.5 a	236 g	16.3	1.3	8.0	35
Cor - Low	51 a	12.2 a	236 g	17.1	1.3	8.0	36
Elb -High	166 ef	29.7 ef	181 de	15.6	1.2	7.3	41
Elb - Medium	143 de	28.5 def	198 ef	15.0	1.2	7.1	34
Elb - Low	45 a	11.1 a	231 g	17.1	1.1	6.9	35
K86 - High	252 h	28.7 def	118 a	14.6	1.2	7.1	43
K86 - Medium	84 abc	13.4 a	164 cd	16.4	1.0	6.9	45
K86 - Low	76 abc	17.4 ab	227 g	16.1	1.1	7.3	38
Nem - High	195 fg	25.0 cde	136 ab	15.3	1.2	7.5	38
Nem - Medium	103 cd	20.5 bc	199 ef	16.9	1.2	7.6	35
Nem - Low	60 abc	12.7 a	215 fg	17.1	1.1	7.2	31
ANOVA	***	ns	***	ns	ns	ns	ns

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 rootstock x crop load treatments. Significant differences ($P < 0.05$) between crop load treatments are denoted with different lower-case letters. Differences between rootstocks are indicated by different upper-case letters. Rootstock abbreviations: 'Nemaguard' (Nem), 'Krymsk® 86' (K86), 'Elberta' (Elb), 'Cadaman®' (Cad), 'Cornerstone' (Cor).

Table 4. Yield and fruit quality performance statistics in response to rootstock ('Nemaguard', 'Cadaman®', Krymsk® 86', 'Elberta', 'Cornerstone') and crop load (high, medium, low) treatments of peach 'September Sun' 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} value)	Fruit firmness (kgf)	Fruit colour (% red)
Cadaman®	161	30.7	201	14.1	1.0	6.8	37 A
Cornerstone	144	31.2	219	14.3	1.0	6.8	37 A
Elberta	160	31.4	205	14.0	1.0	6.6	40 B
Krymsk®86	133	25.4	203	14.1	1.0	6.7	38 AB
Nemaguard	151	29.8	201	14.2	0.9	6.5	36 A
ANOVA	ns	ns	ns	ns	ns	ns	*
High	200 b	35.2 b	182 a	13.9 a	1.0	6.7	39
Medium	138 a	29.2 a	215 b	14.2 ab	1.0	6.7	38
Low	111 a	24.7 a	220 b	14.3 b	1.0	6.6	37
ANOVA	***	**	***	**	ns	ns	ns
Cad - High	227	38.5	177	13.9	1.0	6.9	37 abcd
Cad - Medium	145	32.8	230	14.1	1.0	6.7	38 abcd
Cad - Low	110	20.9	197	14.3	1.0	6.7	36 abcd
Cor - High	199	38.7	195	14.0	1.0	6.9	40 de
Cor - Medium	134	31.1	233	14.4	1.0	6.9	35 a
Cor - Low	97	23.7	228	14.4	0.9	6.5	37 abcd
Elb -High	227	36.8	178	13.5	0.9	6.4	42 e
Elb - Medium	134	29.2	216	14.3	1.0	6.8	37 abcd
Elb - Low	118	28.1	237	14.3	0.9	6.5	41 de
K86 - High	162	30.4	199	14.2	1.0	6.7	37 abcd
K86 - Medium	120	20.1	188	13.9	1.0	6.7	39 cde
K86 - Low	118	25.6	223	14.3	1.0	6.6	38 abcde
Nem - High	183	31.7	178	14.2	1.0	6.6	35 abc
Nem - Medium	156	32.4	209	14.1	0.9	6.3	39 bcde
Nem - Low	113	25.1	217	14.3	1.0	6.6	35 abc
ANOVA	ns	ns	ns	ns	ns	ns	*

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 rootstock x crop load treatments. Significant differences ($P < 0.05$) between crop load treatments are denoted with different lower-case letters. Differences between rootstocks are indicated by different upper-case letters. Rootstock abbreviations: 'Nemaguard' (Nem), 'Krymsk® 86' (K86), 'Elberta' (Elb), 'Cadaman®' (Cad), 'Cornerstone' (Cor).

Table 5. Yield and fruit quality performance statistics in response to rootstock ('Nemaguard', 'Cadaman®', Krymsk® 86', 'Elberta', 'Cornerstone') and crop load (high, medium, low) treatments of peach 'September Sun' 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} value)	Fruit firmness (kgf)	Fruit colour (% red)
Cadaman®	119 AB	27.7 AB	252	15.4	1.3 B	8.0 B	35 B
Cornerstone	132 B	33.2 B	266	14.9	1.5 C	8.7 C	37 BC
Elberta	79 A	19.5 A	261	15.4	1.1 A	7.4 A	39 C
Krymsk®86	81 A	19.3 A	254	15.3	1.3 B	8.0 B	36 BC
Nemaguard	128 B	29.8 B	241	15.4	1.3 B	8.0 B	31 A
ANOVA	*	**	ns	ns	***	***	***
High	129 b	27.9	239 a	15.1	1.3 a	7.9 a	36
Medium	109 ab	27.2	259 b	15.4	1.4 b	8.2 b	35
Low	86 a	22.6	266 b	15.4	1.3 b	8.0 ab	35
ANOVA	*	ns	**	ns	*	*	ns
Cad - High	167	35.2	226	15.2	1.3	7.9	35
Cad - Medium	125	30.8	264	15.5	1.3	8.1	35
Cad - Low	64	17.2	266	15.4	1.4	8.1	35
Cor - High	153	33.8	247	14.9	1.4	8.4	39
Cor - Medium	115	29.7	266	15.0	1.6	8.9	37
Cor - Low	128	36.3	284	14.9	1.6	8.8	35
Elb -High	83	20.8	268	15.3	1.1	7.1	38
Elb - Medium	87	20.8	248	15.7	1.3	7.8	36
Elb - Low	74	17.0	267	15.3	1.1	7.2	42
K86 - High	82	17.3	235	15.3	1.2	7.9	36
K86 - Medium	86	22.6	269	15.2	1.3	8.2	36
K86 - Low	74	17.9	257	15.4	1.3	8.0	38
Nem - High	160	32.7	217	15.0	1.3	8.0	31
Nem - Medium	130	32.1	247	15.4	1.3	8.1	33
Nem - Low	95	24.8	258	15.7	1.4	8.1	28
ANOVA	ns	ns	ns	ns	ns	ns	ns

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 rootstock x crop load treatments. Significant differences ($P < 0.05$) between crop load treatments are denoted with different lower-case letters. Differences between rootstocks are indicated by different upper-case letters. Rootstock abbreviations: 'Nemaguard' (Nem), 'Krymsk® 86' (K86), 'Elberta' (Elb), 'Cadaman®' (Cad), 'Cornerstone' (Cor).