The Role of Light and Managing Light for Peach Production

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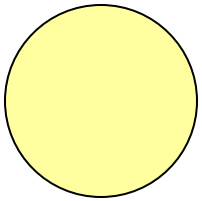
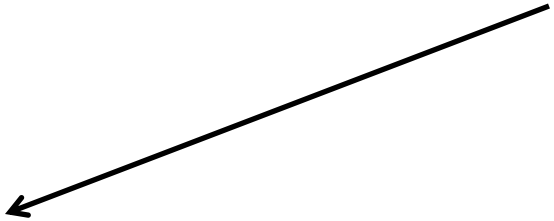
Light Interception = Productivity





Why is Light Important

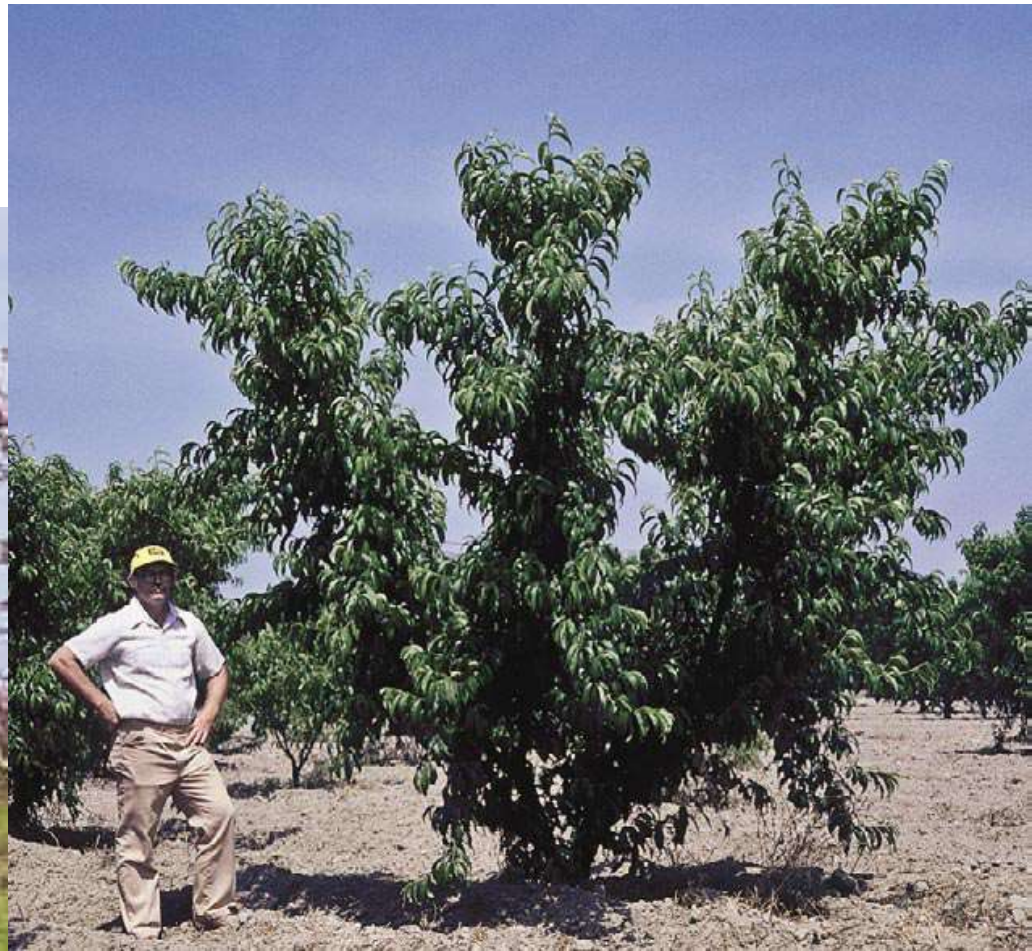
- Photosynthesis
- Flower Bud formation
- Maintain live fruiting shoots
- High Quality fruit (size, color, sugar)

Light Interception & Distribution

- **Tree density**
- **Tree size**
- **Tree shape**
- **Pruning**

Eastern Open Center

California Open Vase




25

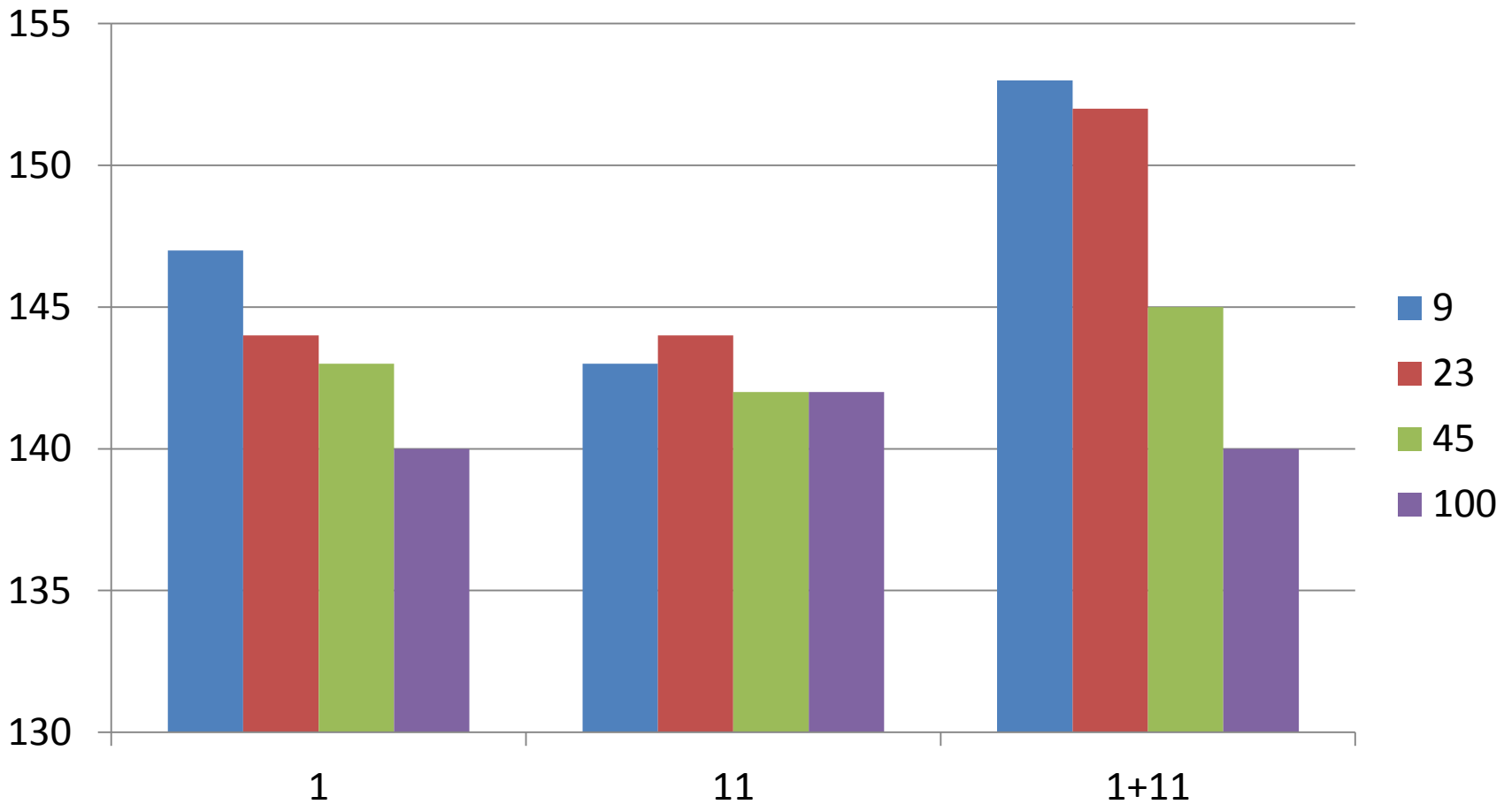
Fusetto

Other Tee shapes

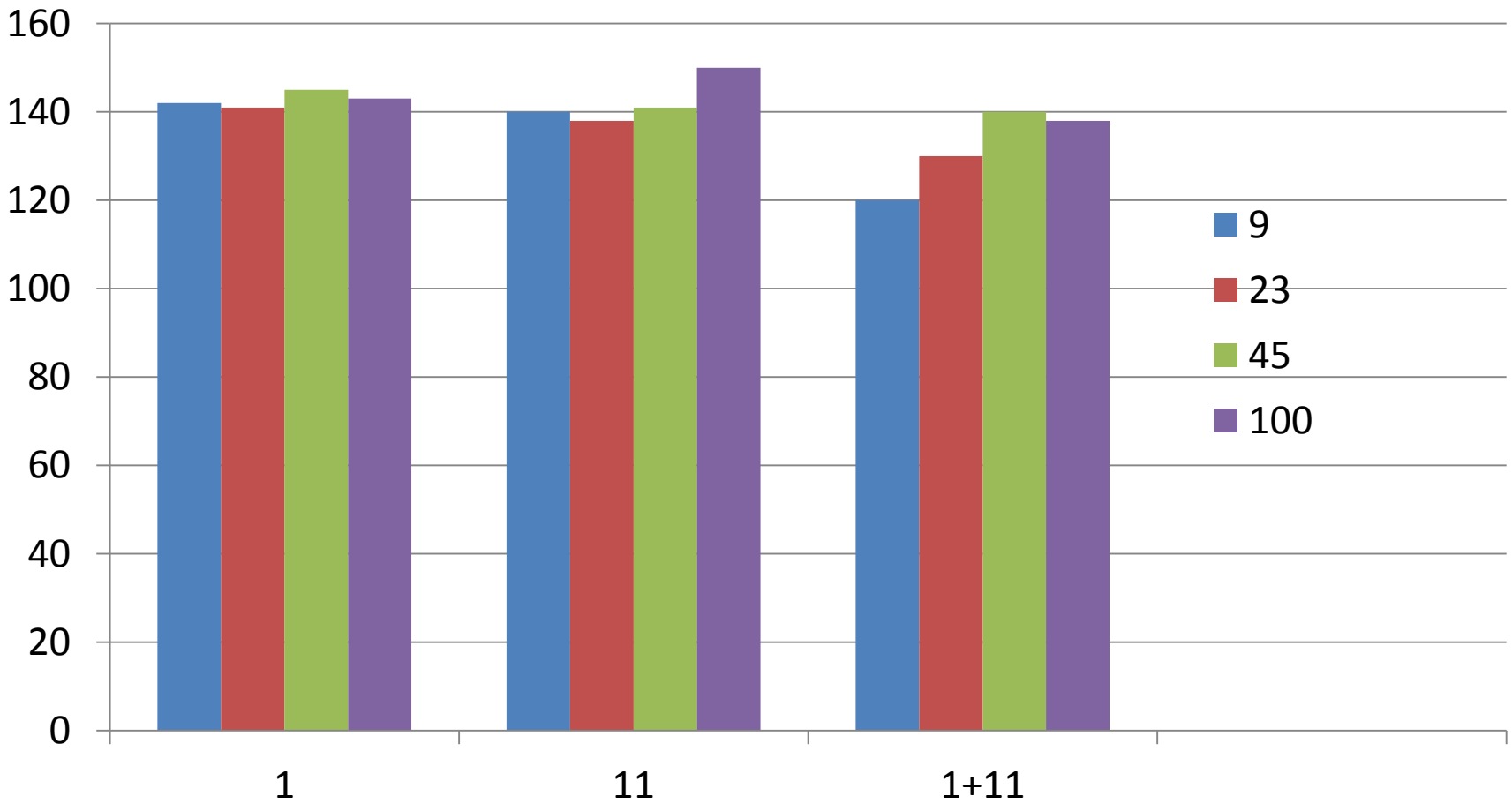
Shading of ‘Biscoe’ Scaffold Limbs

- Shade periods
  - 44 to 20 DBH (stage ll)
  - 20 to 0 DBH (stage lll)
  - 44 to 0 DBH (stage ll & lll)
- Shade levels: 9, 23, 45, 100% full sun
- At harvest measured fruit size and quality
- Girdled one sub-scaffold

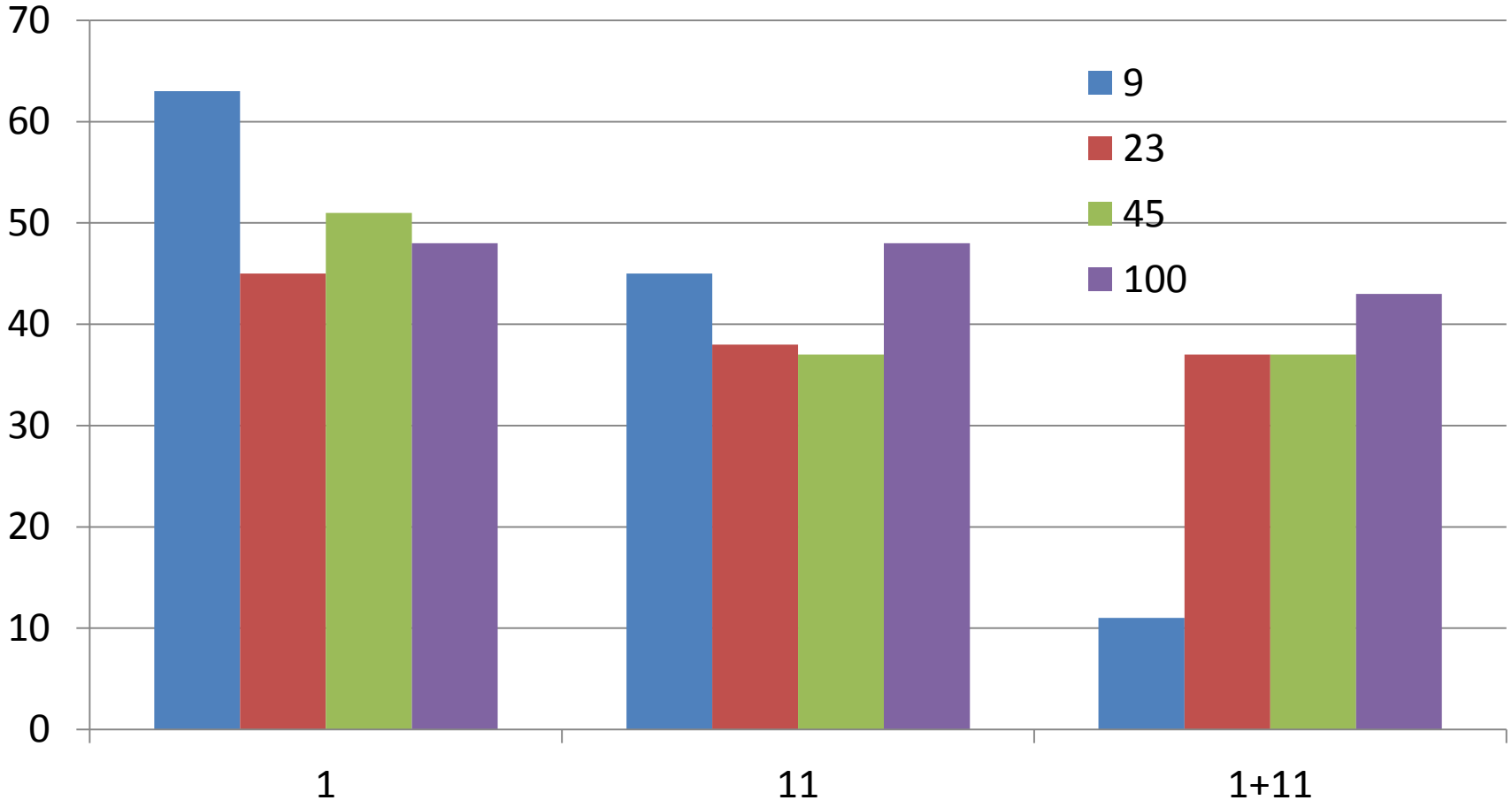
Days from bloom to 50
% Harvest was delayed by shade



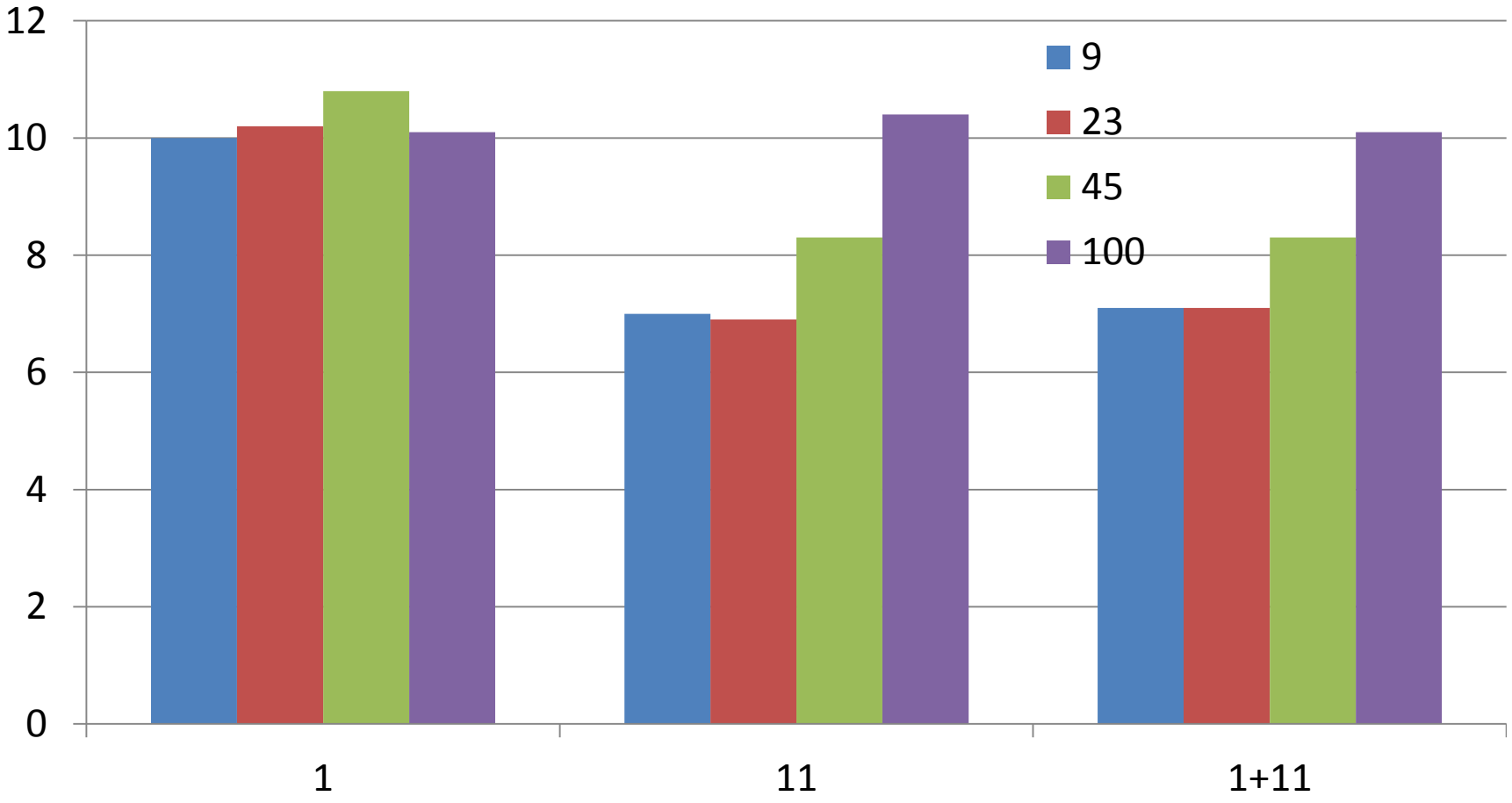
Fruit Size (g) Reduced by <45% Full Sun



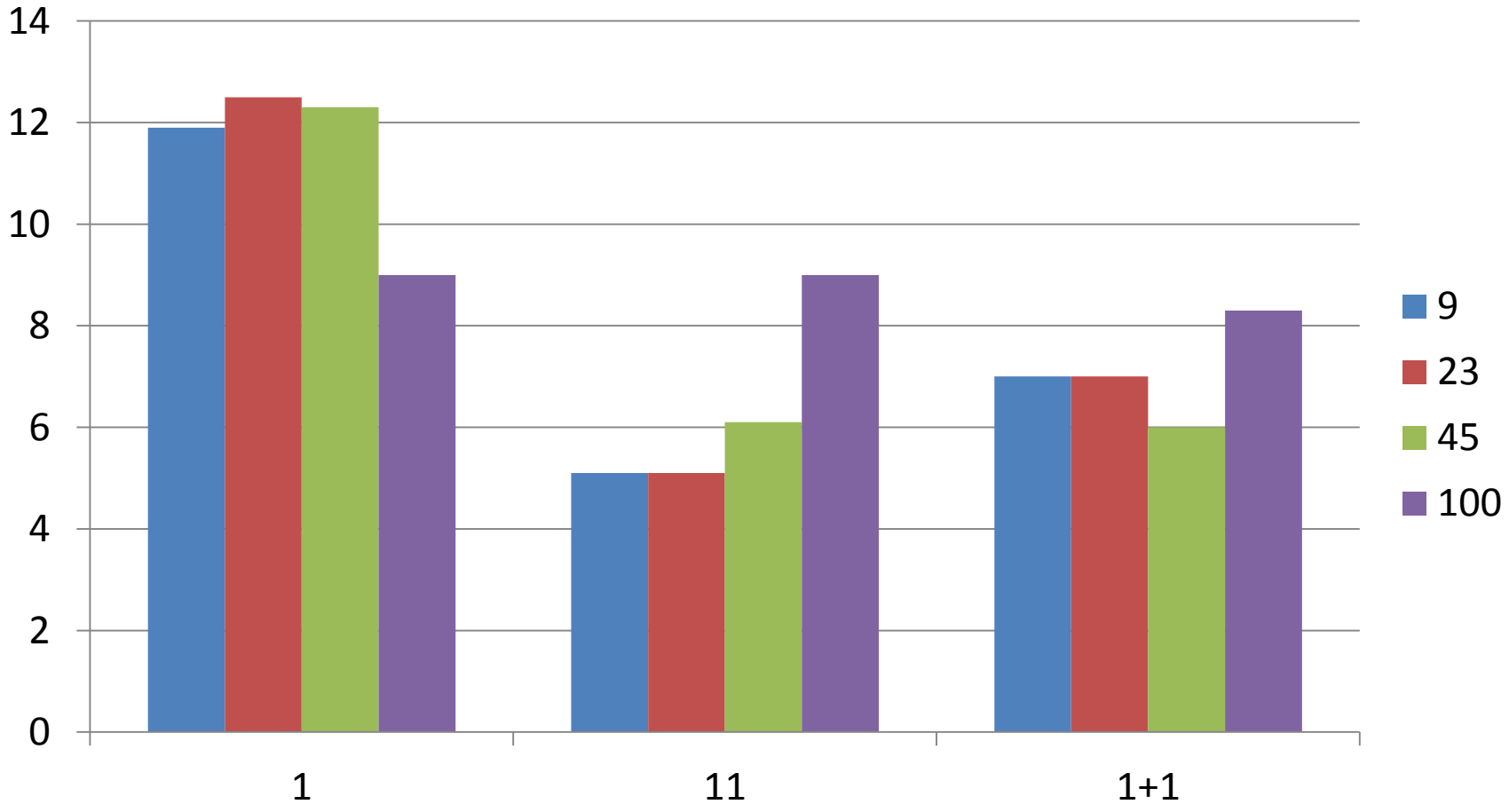
Early shade increased Red Color, late shade reduced red color



Late, but not early shade reduced SSC



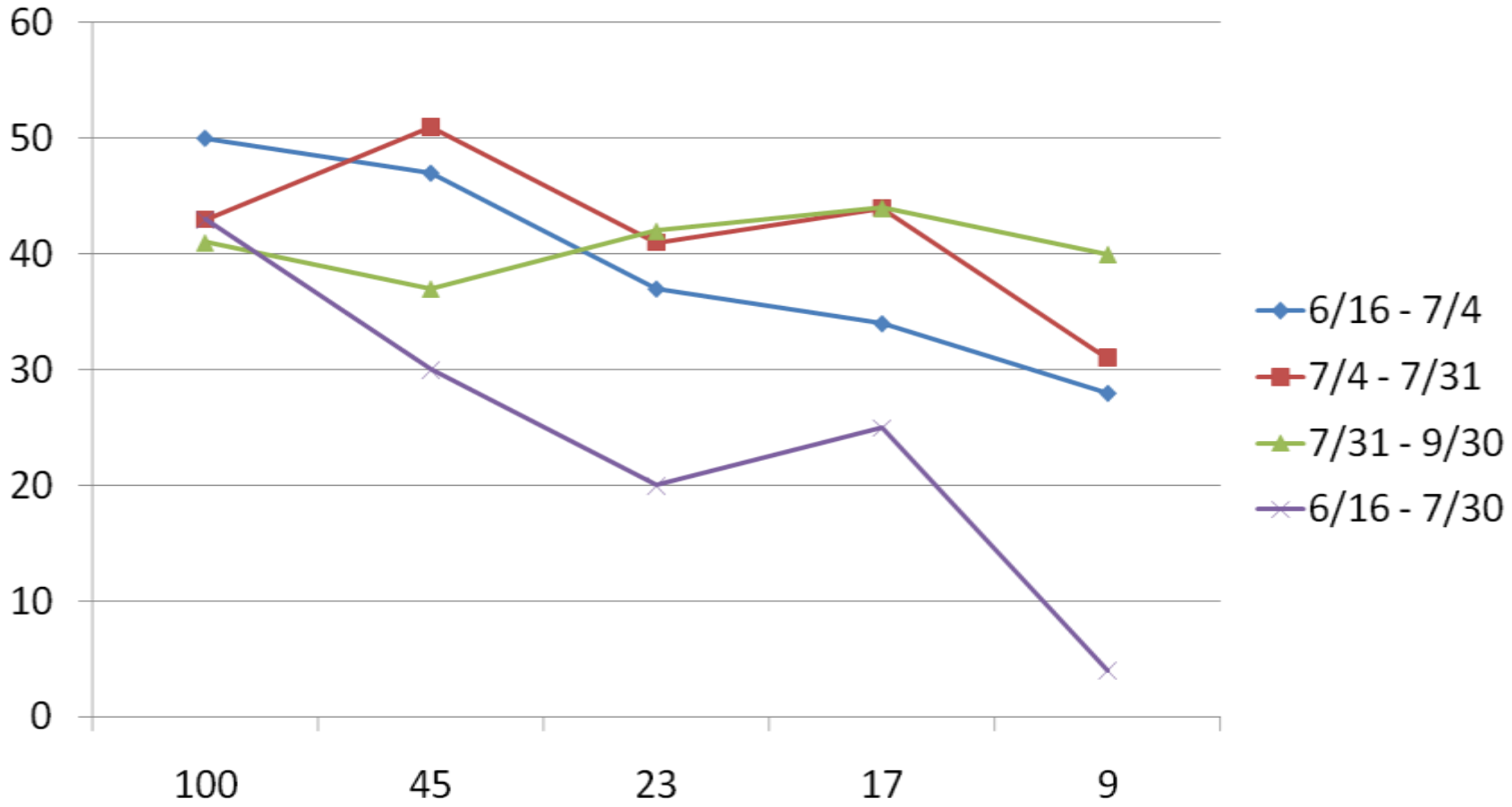
Flesh Firmness Depended on Time of Shade



Light Requirement for Fruit

- **Need about 30% full sun for adequate size, color and sugar**
- **Light during the final three weeks before harvest is most important.**

Redhaven Whole Tree shading Flower Density



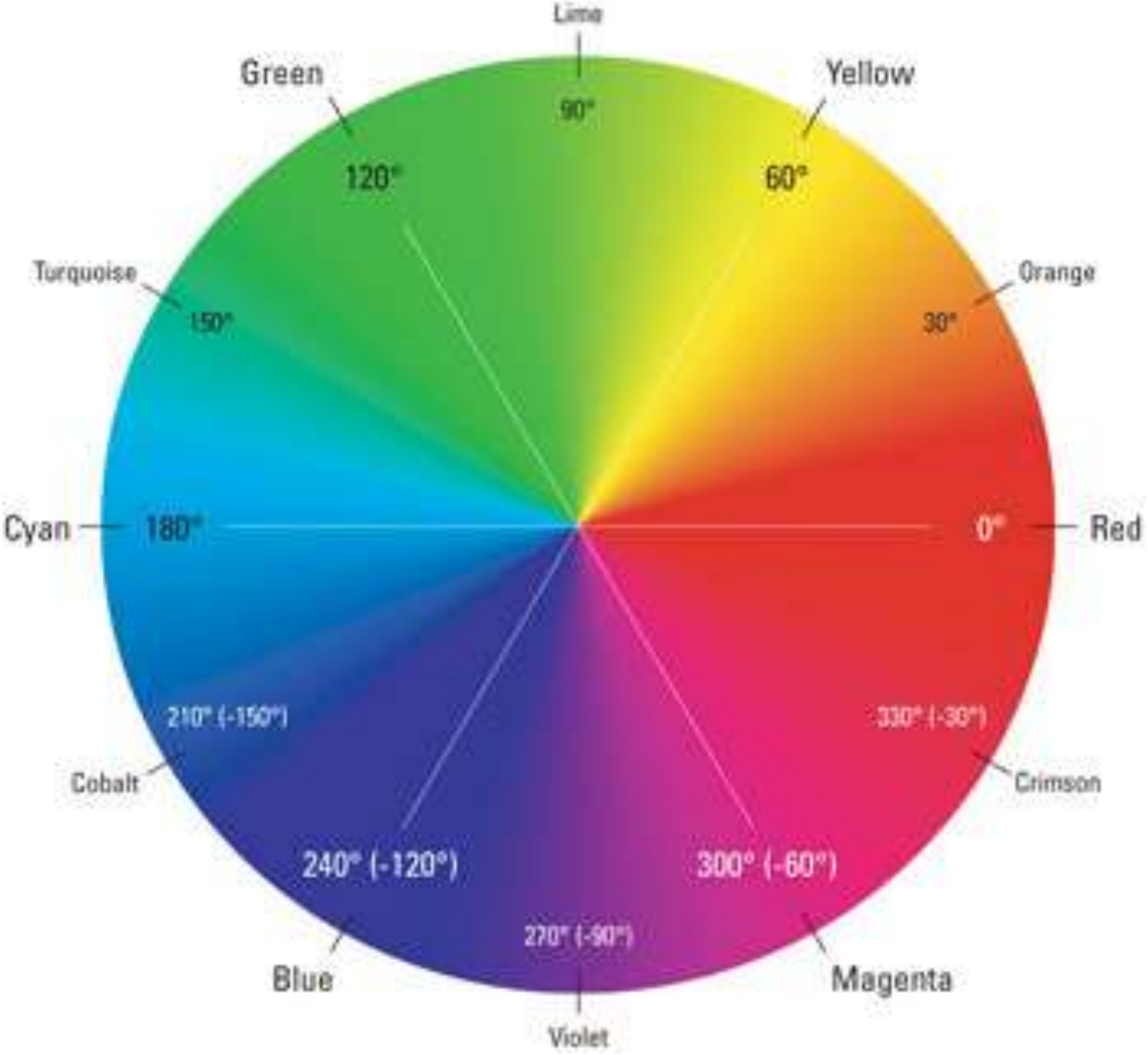
Light Requirement for Flower Buds

- Need at least 40% full sun from about 40 to 60 days after bloom
- Three weeks of shade will inhibit flower buds; less than 20% light can kill shoots
- Heavy shade from mid-August through mid-October did not affect flowering the following spring

Effect of Canopy Position and Treatments on 'Norman' Fruit

- Sampled fruit from interior, middle and exterior positions
- Treatments: CK, reflective mulch, 73% shade cloth applied 9 DBH

Hue Angle


Lime
90°
Green
120°
Yellow
60°
Turquoise
150°
Orange
30°
Cyan
180°
0°
Red
210° (-150°)
Cobalt
330° (-30°)
Crimson
240° (-120°)
300° (-60°)
270° (-90°)
Blue
Magenta
Violet

Shade and canopy positon on ‘Norman’ fruit size and color

Treatment	% FS	Avg. FW (g)	Hue Angle
CK	12.1	114	78.9 Y-G
Ref. Mulch	14.2	121	73.3 G-Y
73% Shade	8.2	110	87.6 G
Position			
Inside	6.5	104	86.9 G
Middle	7.9	112	82.4 G
Outside	20.1	128	70.6 G-Y

60=Yellow, 90=lime

Light (%FS) & SLW next to 'Norman' fruit

Treatment	Avg.	Top	Bottom	SLW
CK	12a	29	3 b	6.9a
Ref. Mulch	14a	33	8 a	6.7a
73% Shade	8b	25	3 b	6.2b
Position				
Interior	6b	15b	3b	6.0b
Middle	8b	18b	6a	6.2b
Exterior	20a	54a	4b	7.4a

Light Effects Ground Color and Flesh firmness Relationship

Hue	Angle	Interior	Middle	Exterior
60	Y	3.1	3.6	1.8
80	Y-G	6.7	6.7	4.5
100	G	11.9	13.0	11.7
110	Dark G	15.0	15.3	17.1

Fruit Quality of ‘Cresthaven’

Position	Tape	FW (g)	Red color	Firm (lbs)	Hue Angle
Exterior	No	181	75	10.6	53.1 Y-O
	Yes	- - -	- - -	- - -	86.3 Y-G
Interior	No	165	41	11.3	72.4 G-Y
	Yes	- - -	- - -	- - -	87.9 Y-G

Summary

- Relationship between ground color and firmness is fairly poor (R^2 = .45 to .7)
- Relationship varied with year and cultivar and maturity
- Usually exterior fruit harvested with yellow to orange-yellow color were <u>softer</u> than interior fruit

Summer Pruning to Light

- 10 to 20 days before harvest for enhanced fruit color (60 to 68% red)
- 40 to 60 days after bloom to develop good fruiting wood.
- Only remove vigorous upright shoots that shade the tree interior

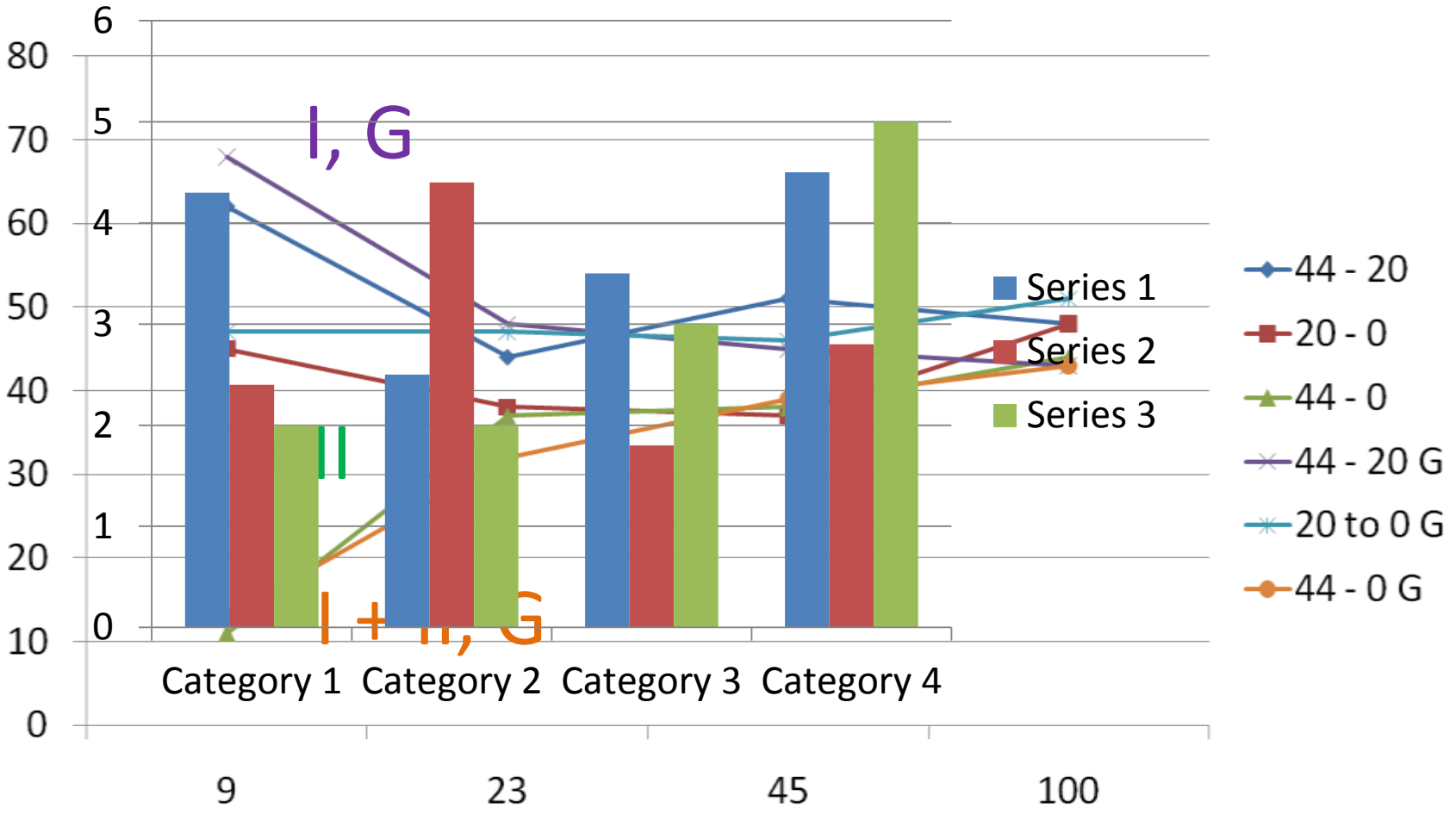

QUESTIONS?

Effect of shade during the final swell on peach fruit weight (g/fruit

	Time of shade (days before harvest)		
% Full Sun	44 - 20	20 - 0	44 - 0
100	148	153	160
45	150	140	130
23	142	138	135
9	145	159	143

130g = 21/2” diameter

Early shade increased Red Color, late shade reduced red color



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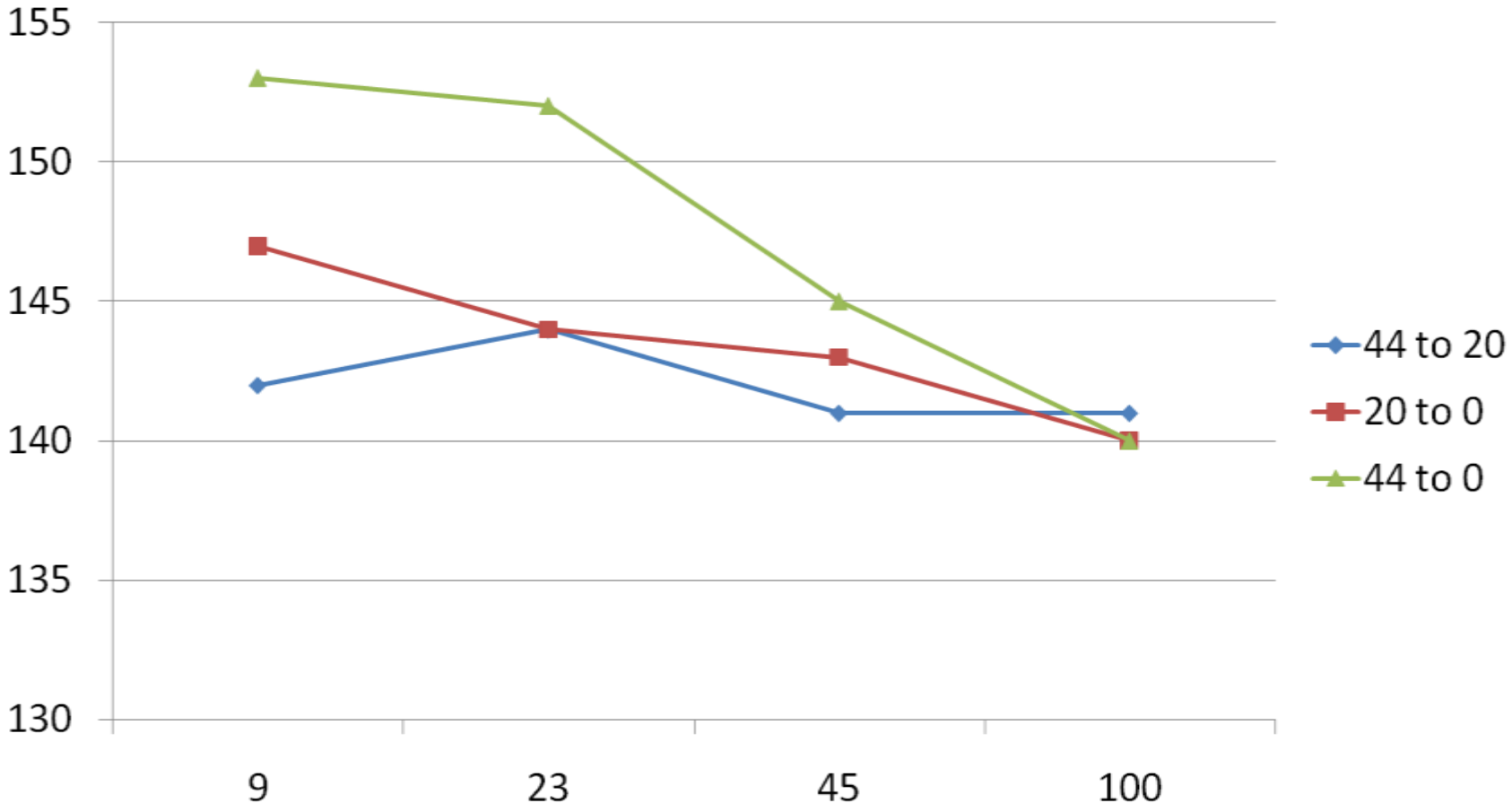

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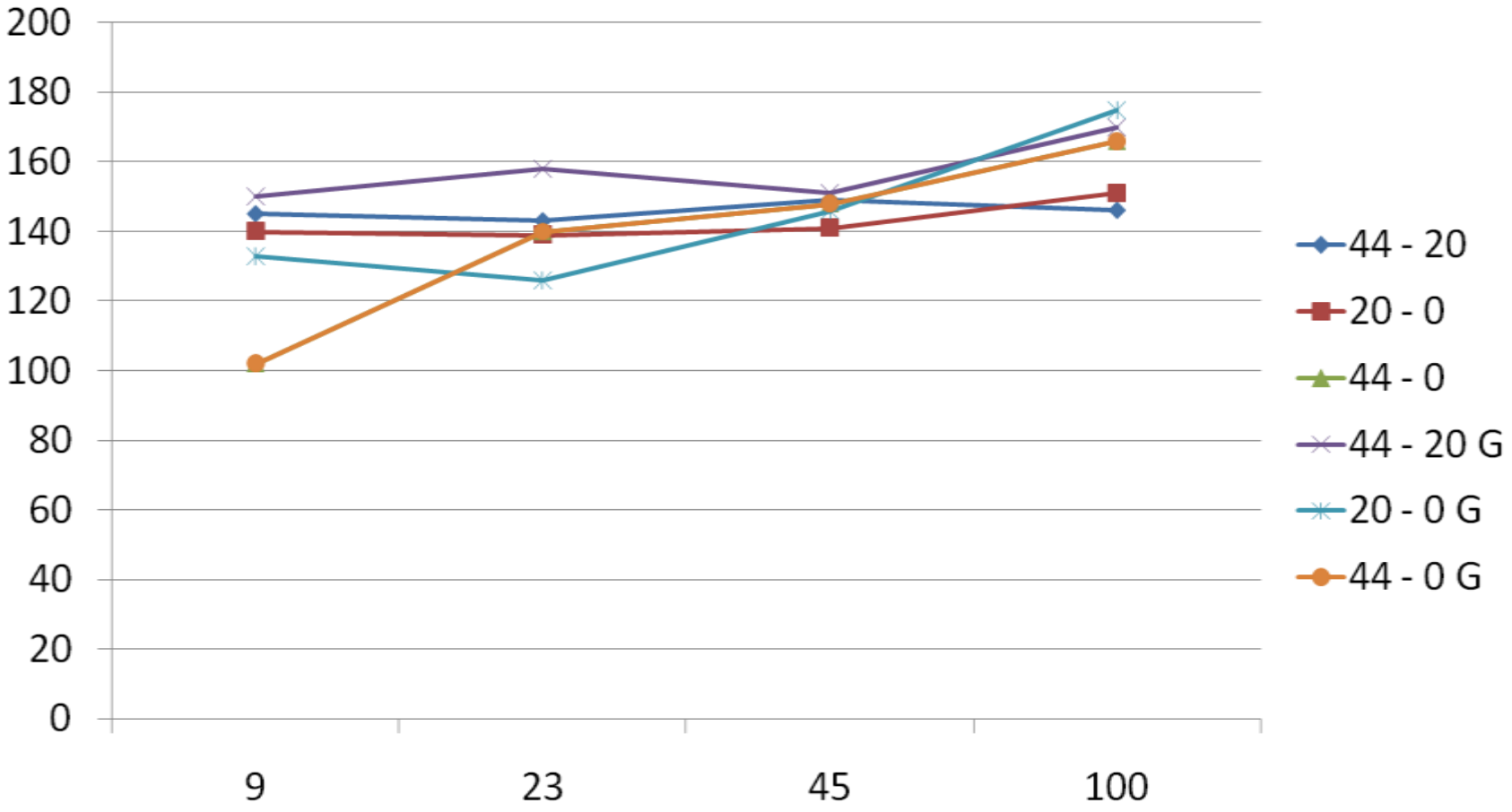

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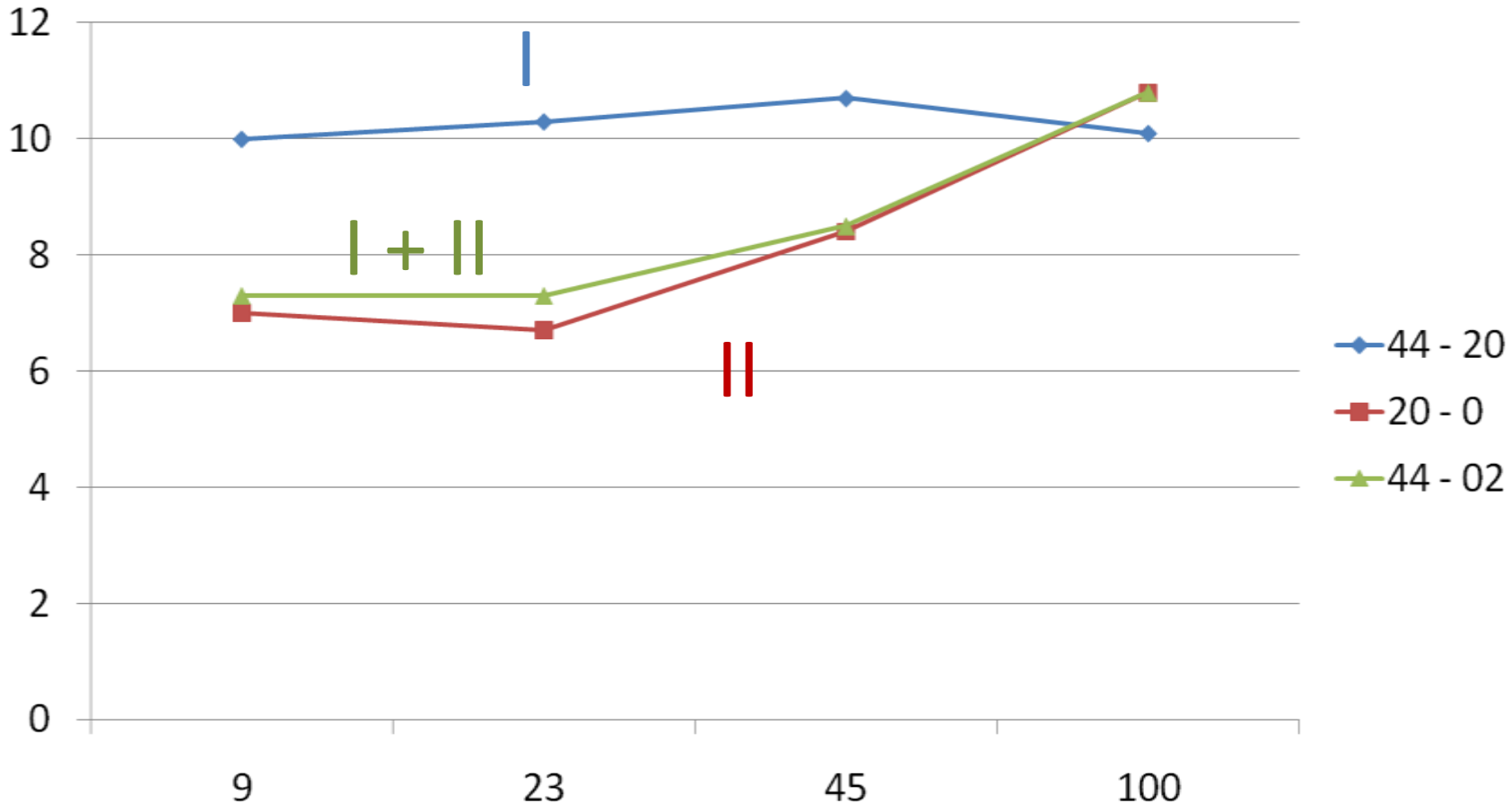

Late, but not early shade reduced Flesh Firmness