

Summer Pruning Apples and Peaches

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History of Summer Pruning

Saunders 1863: “Summer pruning promotes fruiting while dormant pruning stimulates vegetative growth”

- This statement has been repeated for 150 years**

From about 1900 to 1920 most research was aimed at stimulated flowering

Belter & Thomas. 1900: MI

Alderman & Autcher. 1916: WV

Dickens. 1906: KS

Drinkard. 1917: Va

Gardner. 1916: USDA

Magness. 1916: USDA

Vincent. 1917: ID

Summer pruning was reviewed in textbooks

- Autcher & Knapp.1937
- Chandler. 1957
- Gardener, Bradford & Hooker. 1952
- Gourley. 1922
- Tukey. 1964

General Conclusions

**Difficult to interpret results –
methods poorly described.**

**Results were so inconsistent that
summer pruning could not be
recommended. Response was
influenced by tree vigor, timing,
severity, and environment.**

Renewed interest in 1970's and 80's

- **1977 – Uttermark spoke to IDFTA**
- **Primary interest was suppressing vegetative vigor and improve light distribution**
- **Apple research at MSU, Cornell, UMass, OSU, Va Tech**
- **Peach research at OSU, MSU, U MD, Purdue, Rutgers**

Summer Pruning Definition?

- **Ambiguous term**
- **Refers to the season of pruning, not the type of cuts or physiological stage of growth**
- **Apple - Usually involved heading cuts to 3 leaves or first fruit in mid-August**
- **Peach – Usually involved mowing tree tops a about 2 weeks before harvest**

Theory for expected results

- **Reduced whole-tree Photosynthesis**
- **Less carbohydrate stored reserves for spring growth = less vegetative growth**
- **Partial defoliation allows improved light penetration = better red color development, flower bud development & fruit set**

Methods in Virginia – 3 years

- Mature Spur Delicious, spur Golden Delicious & Stayman on MM111 rootstock
- Pruned all shoots to 3 leaves in mid-August
- The CK trees were pruned the same in March
- Measured light, shoot growth, TCA, yield, FW, red color, firmness, starch, SSC







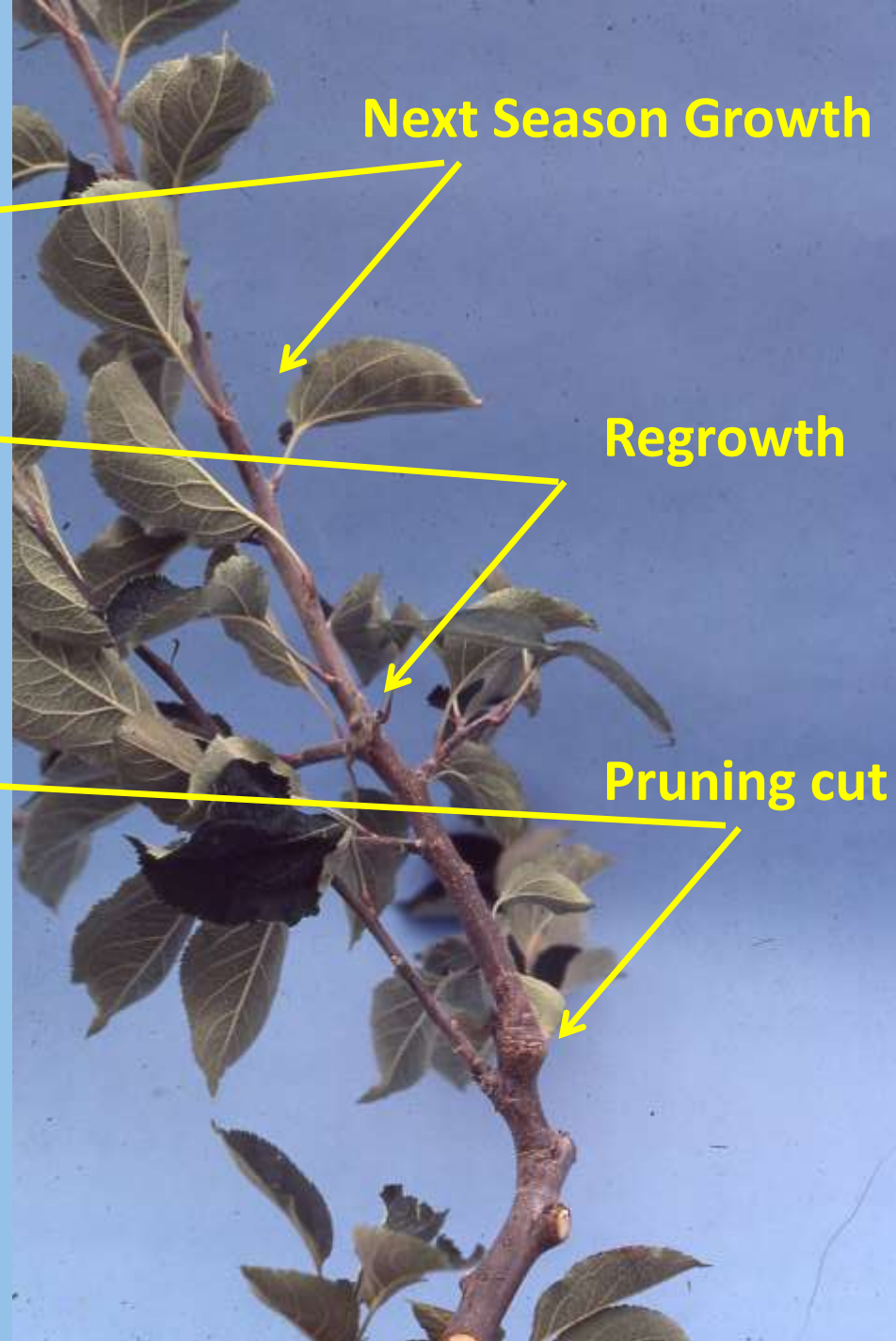


Results – season of pruning

- On non-headed shoots axillary buds usually remain dormant until spring due to apical dominance
- Summer heading removes apical dominance and some buds below the heading cut develop into short shoots in August (regrowth)

Growth the year after Summer Pruning





Next Season Growth

Regrowth

Pruning cut

2 years of summer pruning



July 1980

July 1979

July 1980

Sept. Light Distribution



Vegetative results next season (cm)

Length of shoots in early August

Shoots grow the same as March-pruning

	Del. G.	Del.	Stayman
March	84	78	80
Aug.	88	99	109

Trunk growth the following season

	Del.	G. Del.	Stayman
March	3.2	4.8	2.6
Aug.	2.6	1.7	1.8

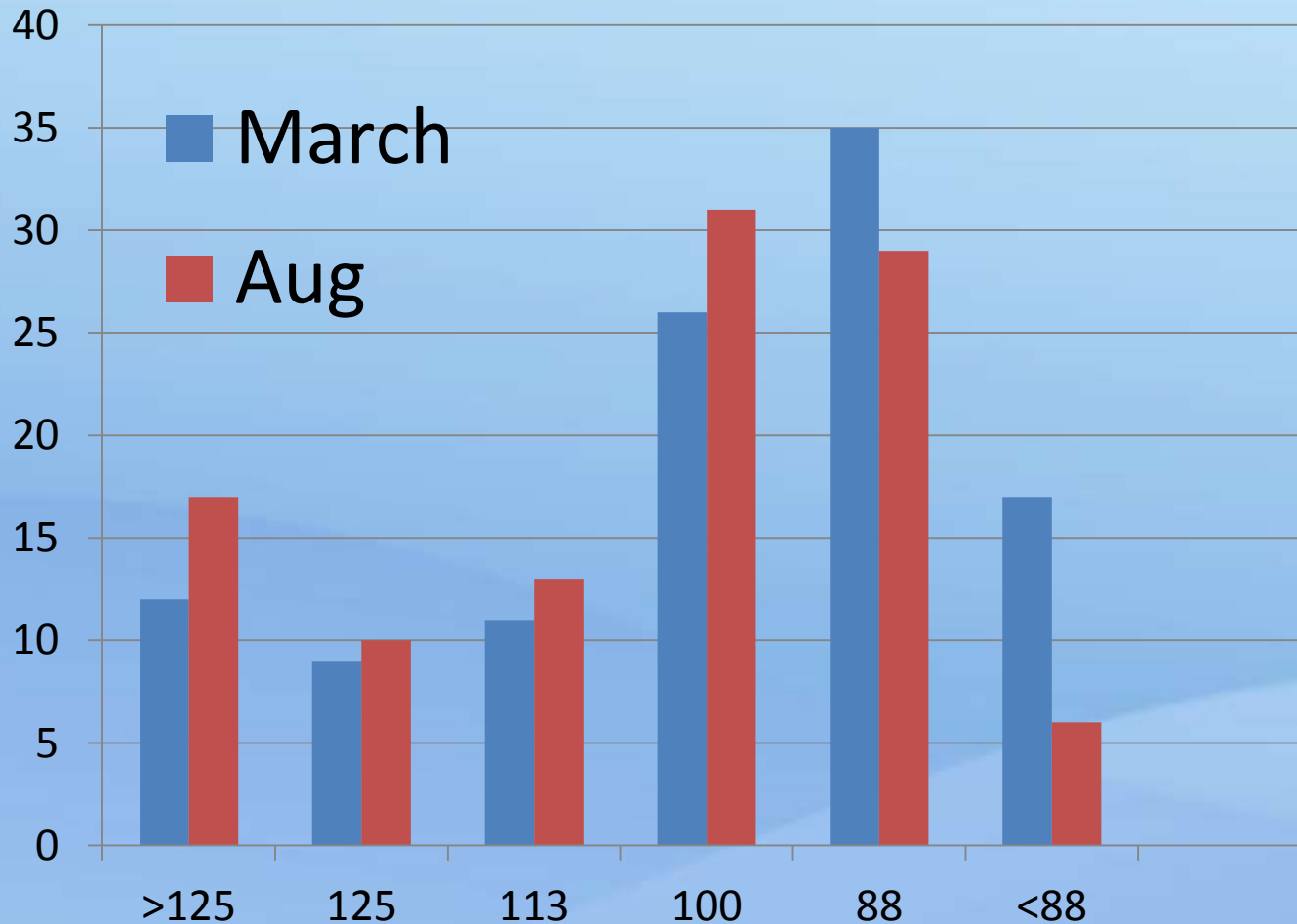
Following season flowering Del.

Year wood	March	Aug.
1	0.0	0.1
2	10.9	1.4
3	10.1	11.3
4	10.7	10.6
5	11.0	13.1
Total	42.7	36.4

Fruit Size (g)

	March	Aug.
Del.	180	170
G. Del.	190	180
Stayman	210	200

Fruit size distribution (%)



Fruit Quality - Delicious

	Outside		Inside	
	Mar.	Aug.	Mar.	Aug.
Red Color (%)	88	95	75	87
Firmness (kg)	7.1	6.9	6.8	6.8
SSC (%)	14.2	12.8	12.9	11.5
Starch (%)	65	69	53	67

Summary for vigorous trees

- Reduced trunk & root growth
- No effect on shoot growth
- Variable effect on flowering
- Increased red color
- Sometimes reduced fruit size & SSC
- **Probably not economical**



Summary for Peach (Topping)

- Reduced trunk growth but not shoot growth
- Not effect of flowering or fruit set
- Delayed defoliated and acclimation
- Improved red color
- Reduced fruit size and SSC
- Not recommended

Why Renewed Interest in Summer pruning?

- **Non-vigorous tall spindle trees**
- **Summer hedging to reduce pruning costs**
- **Dormant prune plus detailed pruning every third year**



Thin, weak shoots seem to respond differently than vigorous shoots

- Evaluating different timings
- Produce fewer vegetative shoots below heading cut
- Results are still preliminary
- May not have a true control

NY Research Began in 2012: Results in 2013

- Pruning cost and time was 5% compared to manual summer pruning.
- At each of the summer timings shearing cut an average of only 22 - 38% of the growing points on the tree
- Sidewall shearing at bloom cut off some flowers.

Results continued

- Sidewall shearing in June, July or August removed 4% to 6% of the fruits.
- The regrowth response of 4 cultivars on M.9 rootstocks was about 4-6”.
- Most of the short regrowth shoots terminated in a flower bud.
- Nonsignificant reduction in yield & crop value
- Nonsignificant improvement in fruit color from summer shearing.

Why are results different now?

- Tall spindle trees are not vigorous
- Thin short shoots seem to respond differently
 - Less regrowth in summer
 - Less shoot growth the following year
 - Better flower bud initiation

May not work if trees are vigorous – Primary objective is pruning cost reduction, not vigor suppression or improved fruit quality



Questions?