



PennState Extension

PENN STATE
TREE FRUIT
PRODUCTION
GUIDE
2016-2017



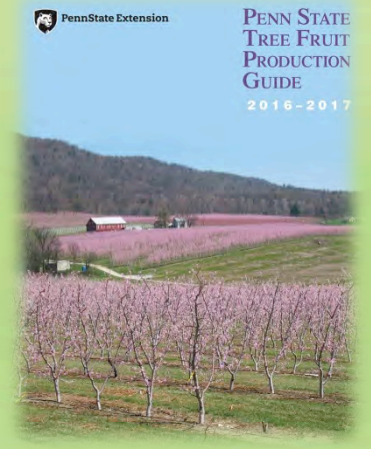
Horticulture
Update
Herbicides
Plant Growth
Regulators



Penn State **Extension**

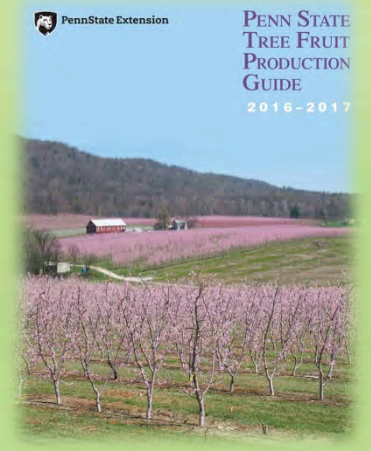
General Updates

- pdf version is available
- Updated the list of tree fruit nurseries
 - pdf version has direct hot links
 - Added some new nurseries



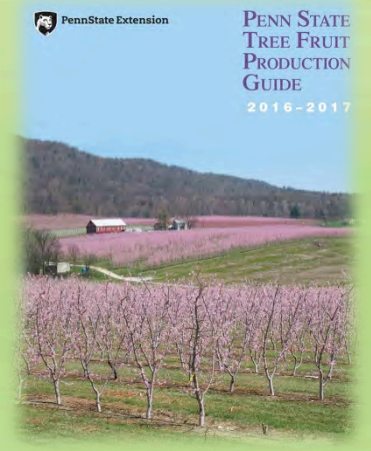
Row Middle Management

- Treat early in spring
 - 2,4-D amine formulation before flowering
- Prowl H₂O (pendimethalin) to grass row middles
 - 1-1.5 qt/A for summer grass annual grass control
- Clover, wild garlic
 - 2,4-D + nonionic surfactant
 - Split application 2 wks. apart.
 - + 4 oz clopyralid



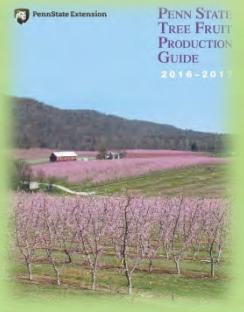
Orchard Sod Management

- Prevents the invasion of unwanted weeds
- Relationship to pollinators
- Problems with white clover
- Nutrient management to reduce clover
 - + N ► increase grass growth
 - + P and/or K ► increase clover growth
 - If P or K needed band under tree row
- Do not mow closer than 4 inches



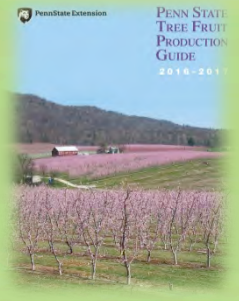
Fruit Cultivars

- Update of apple, peach, sweet cherry, Asian pear cultivars
- “Register of New Fruit and Nut Cultivars”
- “eXtension apples”
- Link to “Making sense of new apple varieties, trademarks, brands and club-marketing”



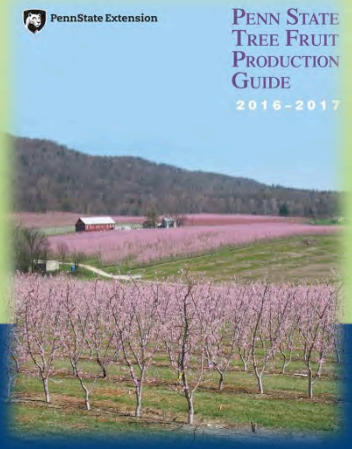
Harvest Dates of Interest

- Ambrosia – October 9
- Autumn Crisp – September 21
- EverCrisp – October 26
- Crimson Crisp – September 22
- Crimson Topaz – October 1
- Maslin Pink Lady – October 12 (little late)
- Pixie Crunch – September 17
- Wine Crisp – October 26



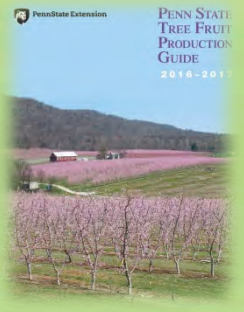
Apple Rootstocks

- Hot link to Geneva Apple Rootstocks Comparison Chart
- Budagovsky 10 (B62.369)
- Updated adjusted tree size by rootstock



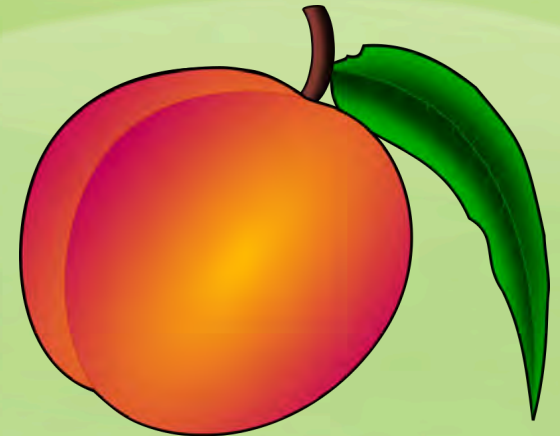
Corking and Bitter Pit Updated

- Apply 4 to 14 lbs. **Elemental** Ca/A/Year
- Especially as related to Honeycrisp management
 - Emphasis on calcium applications
 - Emphasis on calcium rates
 - Emphasis on crop load adjustment
 - Emphasis on fruit size as related to crop load



Peaches / Nectarines

- Table 1-22 Peach & Nectarine Cultivars
 - Jerry Frecon updated
- Pruning & Training Peaches by Rich Marini
 - NEW !
 - Growth habit of trees
 - Pruning to manage crop load
 - Open Center System
 - Perpendicular V System



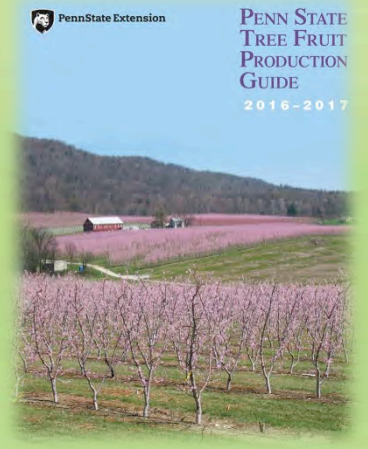


Cherries

- Updated Table 1-24 ,cherry pollination table with new cultivars
- Krymsk 5 & 6 cherry rootstocks
- Links to pruning cherries and production systems

Increasing branching of young trees

- 6-BA – MaxCel, Exilis plus or RiteWay
- BA + GA – Promalin, Perlan or Typy
 - Applied as a spray or mixed with latex paint
- Notching just above a bud



Vegetative growth suppression

- Prohexadione calcium (PCa)
 - Apogee[®]
 - Kudos[®] - NEW
- Earlier the better
- Can get response if applied later in the season but not as effective
- More vigorous longer season need higher rates and more applications



Growth suppression of Sweet Cherries

- Apogee[®] - BASF
- Kudos[®] 27.5 WDG – Fine Americas, Inc.
- Rates vary by tree vigor
 - High vigor trees – 8 to 20 oz/A
 - Medium vigor trees – 6 to 12 oz/A
 - Low vigor trees – Do Not Apply



NAA products

OLDER MATERIALS

- PoMaxa[®] – Valent BioSciences
- Fruitone[®] L – Amvac Chemical Co.

NEW MATERIAL

- Refine[™] 3.5WSG– Fine Americas
 - All same uses as before for apples & pears
 - Thinning
 - Return bloom
 - Stop drop

Chemical Thinners for Pears

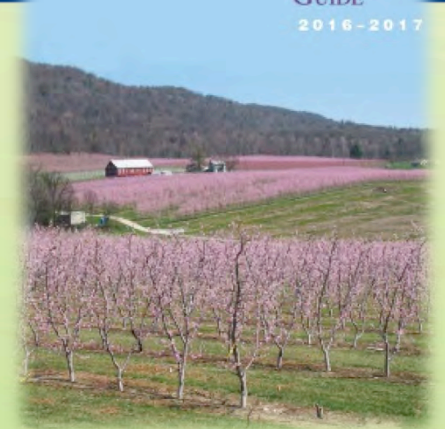
Same materials as listed for Apples

- Amid-Thin W – 25 to 40 ppm
- NAA products– 5 to 7.5 ppm
- 6-BA products – 75 to 200 ppm
 - MaxCel
 - Exilis Plus



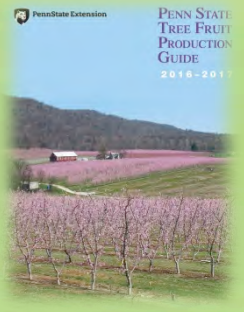
Late Chemical Thinning

- Fruit size 18 – 21 mm
- Carbaryl and/or ethephon
- Mild thinning
 - Carbaryl @ 1 pt – 1qt/100 gallons
- Moderately strong thinning
 - Add 1 qt of spray oil to above
- Strong thinning
 - Add Ethephon @ 1.5 pts./100 gallons to above



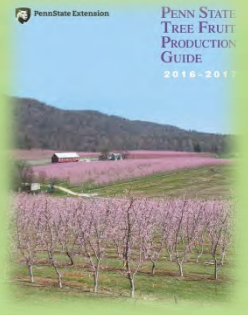
Increasing return bloom on apples

- Fruitone L, PoMaxa or Refine
 - 5 ppm concentration
 - 3 to 4 applications 7 – 10 days apart
- Ethephon products
 - 0.5 to 3.0 pts/A
 - Do not apply when temperatures exceed 85F
 - Do not apply to cultivars maturing before McIntosh



Preharvest Fruit Drop in Apple

- 1-MPC (Harvista)
 - Blocks C_2H_2 receptors preventing climacteric
- NAA (Fruitone L, PoMaxa, Refine)
 - Reduces stem abscission can advance maturity
- AVG (ReTain)
 - Delays maturity by inhibiting C_2H_2 production



Harvista (1-methylcyclopropene)

- 1-MCP sprayable product for preharvest application
 - Blocks ripening effect of ethylene
 - Slows starch disappearance, fruit softening, red color development, preharvest drop and delay onset of watercore, increase storage life

Application up to within 3 days of harvest



1-Methylcyclopropene

- SmartFreshSM
 - Postharvest fumigation
 - Blocks ethylene receptors in the fruit
 - Reduces scald, senescent breakdown, greasiness of peel
- HarvistaTM
 - Preharvest spray
 - Blocks ethylene receptors in fruit
 - Reduces fruit drop, extends harvest window, allows extra time for growth & color development
 - Response varies by cultivar

Postharvest Response of Harvista

- Provides firmness benefit but varies by:
 - Cultivar
 - Fruit maturity
 - Days after application & harvest
 - CA vs Air storage



ReTain for Increased Fruit Set

- Aminoethoxyvinylglycine (AVG)
- Ethylene inhibitor
- Slows ovule degeneration
- Extends flower longevity
- Label for cherry, apple*, European pears, pecan & walnut



ReTain Rate & Timing on Apples

- One pouch / acre in single application
- Pink to full bloom
- Applications prior to pink or after full bloom reduces efficacy
- Do not apply after petal fall

ReTain[®]

PLANT GROWTH REGULATOR

SOLUBLE POWDER

ReTain Rate & Timing Pears

- For increased fruit set
 - One pouch / acre in single application
 - White bud to full bloom
 - Applications made prior to white bud or after full bloom will reduce efficacy
 - Do not apply after petal fall
- **Reduce June drop**
 - One pouch/A @ 10 mm



ReTain to Increase Fruit Set in Cherry

- Apply 1 – 2 pouches / A in 100 – 200 GPA
- Single application of up to 2 pouches

OR

- Sequential application 1 pouch per application
- Popcorn (balloon) to first bloom
- Do not apply after petal fall



ReTain[®]
PLANT GROWTH REGULATOR
SOLUBLE POWDER

The image shows a white rectangular box for ReTain plant growth regulator. The top half of the box is maroon with the word 'ReTain' in white, bold, sans-serif font, followed by a registered trademark symbol. Below this, the words 'PLANT GROWTH REGULATOR' are printed in a smaller, white, sans-serif font. At the bottom, a white horizontal band contains the words 'SOLUBLE POWDER' in maroon, sans-serif font. The bottom edge of the box is slightly irregular, suggesting a tear-off or a specific shape for the product.

Increasing Fruit Set

Promalin, Typy, Perlan

- Use just after or before frost – apples only
- 1-2 pints/A
- Do not apply to frozen tissue
- Do not use surfactant
- Sets seedless fruit

ReTain

- Mainly meant for sweet cherries although apples and pears are listed
- Extends longevity of flower ovule

ReTain on Stone Fruit* – Harvest Management

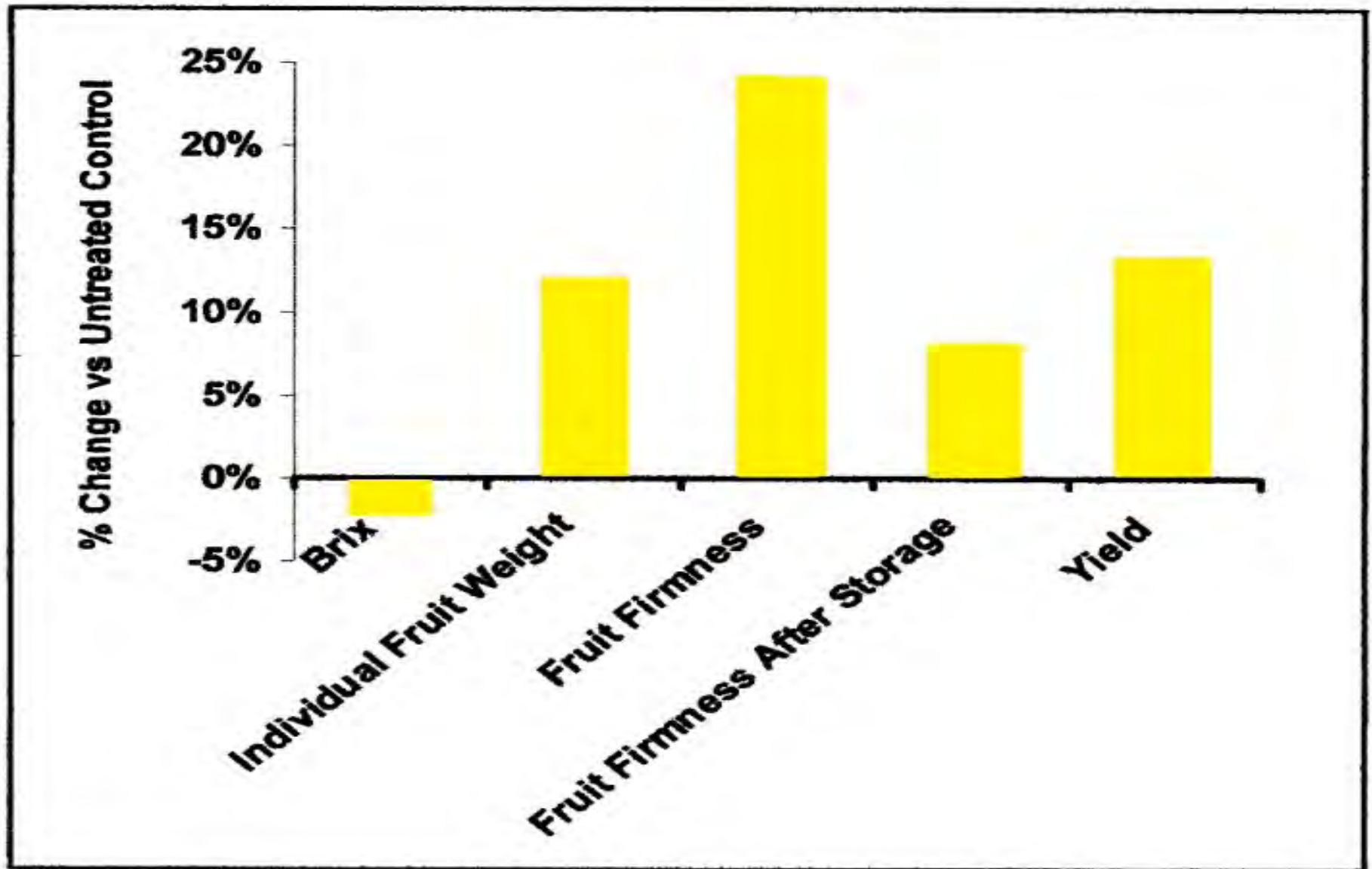
- Additional time to increase fruit size
- Maintain fruit firmness
- Reduce preharvest drop
- Enhance storage potential

*Not labeled for this use on cherries

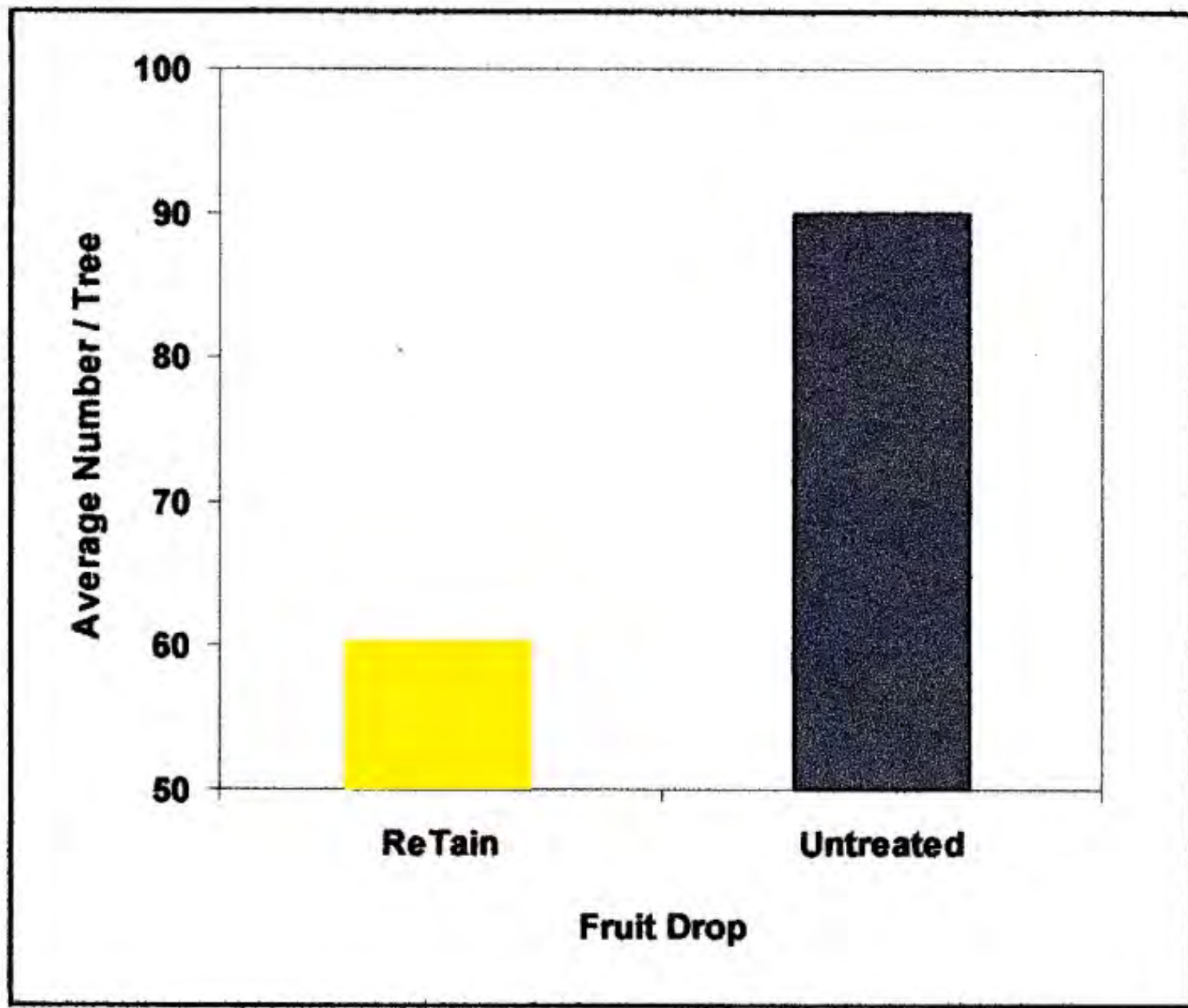
Apply one pouch + adjuvant, 1-2 weeks prior to anticipated beginning of normal harvest

7 day PHI

ReTain on Stone Fruit – Harvest Management



Penn State **Extension**



Ethephon

- Ethephon 2
 - Arysta LifeScience
 - Nufarm
- Ethephon 2SL – Makhteshim Agan
- Motivate – Fine Americas, Inc.

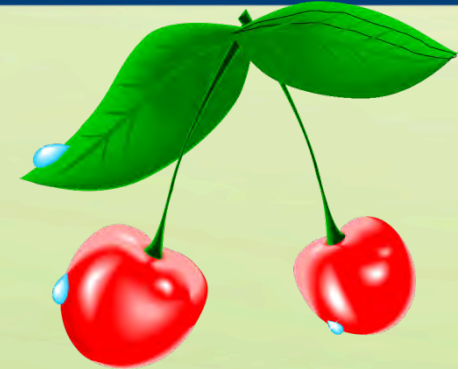


FOR COMMERCIAL USE OR
AGRICULTURAL USE ONLY

RainGard®

Valent Bioscience

- Suppresses rain induced fruit cracking
- Two types of water induced fruit cracking
 - Rain absorbed through fruit cuticle
 - Rain absorbed through root uptake
- 3 application program @ 102 oz/100 gallons each time (0.8% V/V solution) beginning 4 wks. before harvest & every 7-10 days



GA₃ Products

- GibGro 4L - NuFarm
- ProGibb 4% - Valent
- Falgro 4L – Fine Americas
- Falgro 2X LV – Fine Americas
- N-Large - Stoller

Reduce flowering next season, Increase fruit firmness,
Reduce internal fruit browning, Reduce blind nodes on
tart cherries

Blush[®]

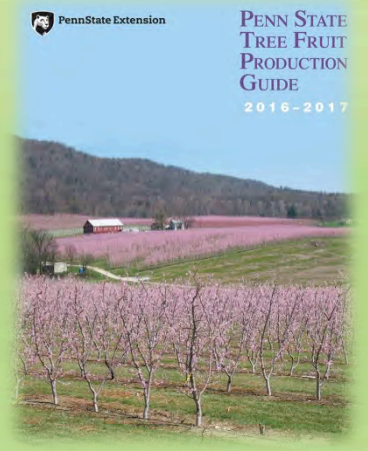
- Improve color on bi-color cultivars
 - Fuji, Gala, Honeycrisp, McIntosh, Jonagold
- Prohydrojasmon (jasmonate)
- REI of 4 hours
- 1-2x @26-52 oz/A/yr (100-200 ppm)
- 7-14 day intervals
- Beginning 7 to 42 days prior to anticipated harvest

Raynox Plus

- Sunburn protectant
- Composed of H₂O, carnauba wax, organically modified clay, emulsifiers
- Separate spray not to be mixed with other materials
- Thoroughly wash sprayer after use
- Apply 3x @ 2.5 gal. in 50 or 100 gal/A
 - 7-9 wks. AFB, 7-10 days later, 3 wks. later

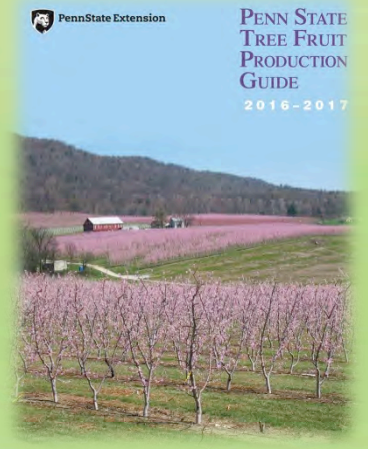
Glufosinate ammonium products

- Rely 280
- Cheetah
- Forfeit 280
- Glufosinate 280SL
- Lifeline
- Majesty
- Reckon 280SL
- Refer 280SL
- Surmise



Chlopyralid

- Stinger – Dow Agrosiences
- Spur – Albaugh, LLC
- Others for Stone fruits only
 - Clean Slate - Nufarm
 - Solix 3 – Makhteshim Agan



Zeus Prime XC - FMC

- Sulfentrazone + carfentrazone
- Class 14 Herbicide
 - PPO inhibitor that blocks production of chlorophyll, destroys chlorophyll molecules, and carotenoids and destroy cell membranes
- **Similar to Chateau, Treevix & Venue**
- Good for winter and summer broadleaf annuals and some grasses
- **Rotate with Alion**

Zeus Prime XC cont.

- 7.7 to 15.2 fl. oz. per acre
- **Like Chateau best when soil is moist**
- Need at least ½ inch rainfall for residual
- Trees must be established minimum 3 yrs.
- Avoid contact with foliage or green stems.
- Do not exceed 15.2 fl. oz. in any 12 months
- Preharvest interval of 3 days



PennState Extension

PENN STATE
TREE FRUIT
PRODUCTION
GUIDE

2016-2017



Questions
OR
Comments



Penn State **Extension**