PGR University

Drenches and Bulb Soaks
Brian Whipker, NCSU

PGR University

Sponsored by:

1:30 to 1:55 Eastern

APPLICATION METHODS:

DRENCHES AND BULB SOAKS

Brian Whipker
Floriculture Extension and Research
bwhipker@ncsu.edu
NC STATE UNIVERSITY

Drenches

- Application of a PGR solution to the substrate
- PGR binds to substrate and is released over time
- Suitable for PGRs absorbed by roots

PGR Drenches

Type	Chemical	Products
Anti-GA	Ancymidol	Abide, A-Rest
	Chlormequat chloride	Citadel, Cycocel
	Daminozide	B-Nine, Dazide
	Fluprimidol	Topflor
	Paclobutrazol	Bonzi, Paczol, Piccolo, Piccolo 10XC, Downsize (*drenches only*)
	Uniconazole	Concise, Sumagic
Structural	BA	Configure
	GA	Florgib, ProGibb T&O
	BA+GA	Fascination, Fresco
	Dikegulac sodium	Augeo
	Ethephon	Collate, Florel

PGR Drenches

Type	Chemical	Products
Anti-GA	Ancymidol	Abide, A-Rest
	Chlormequat chloride	Citadel, Cycocel
	Daminozide	B-Nine, Dazide
	Fluprimidol	Topflor
	Paclobutrazol	Bonzi, Paczol, Piccolo, Piccolo 10XC, Downsize (*drenches only*)
	Uniconazole	Concise, Sumagic
Structural	BA	Configure
	GA	Florgib, ProGibb T&O
	BA+GA	Fascination, Fresco
	Dikegulac sodium	Augeo
	Ethephon	Collate, Florel

Drenches

Advantages

- Increased uniformity
- Long-lasting control
- Low dose, late season drenches offer control without affecting flowering.

Disadvantages

- Increased labor
- Reduced efficacy with substrate containing bark
- Can be preventative

Drenches and Bulb Soaks
Brian Whipker, NCSU

BMP Drenches

- Identify the proper volume needed for pots
- Apply when substrate is not completely saturated
- Increase concentration by ~25% if bark is in the substrate
- Sub-irrigation use ~50% of a rate.

Drench Volume

Pot size and appropriate volumes per pot for drench applications.

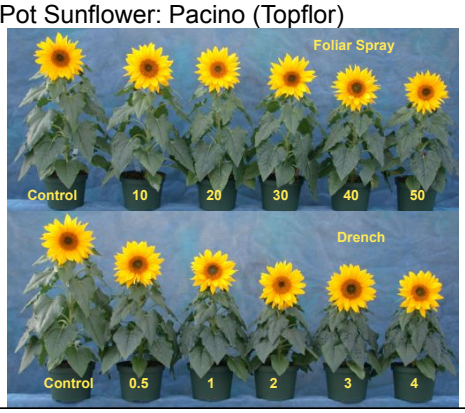
Pot Diameter (inches)	Drench Volume	
	fl. oz./pot	mL/pot
4	2	60
5	3	90
6	4	120
8	10	300
10	25	750
12	40	1,200

Adapted from J.G. Latimer (2009, Selecting and Using Plant Growth Regulators on Floricultural Crops).

Notes on PGR Volume – Soil ACTIVE PGRs

- Volume depends on application method
- It is critical to control volume
  - Uniformity of application and response
- Volume is a application tool
  - Increasing volume increases the dosage
  - Increasing volume increases root zone availability

Pot Sunflower: Pacino (Topflor)

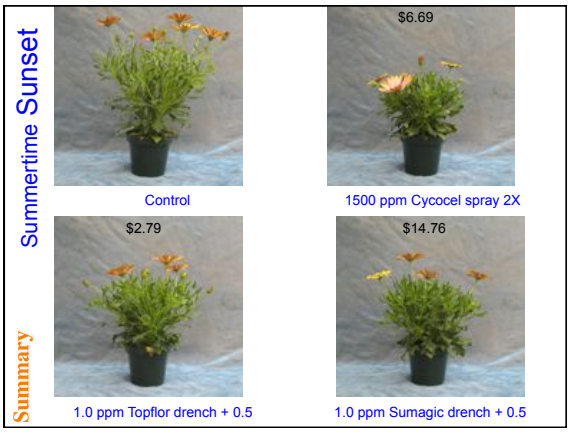


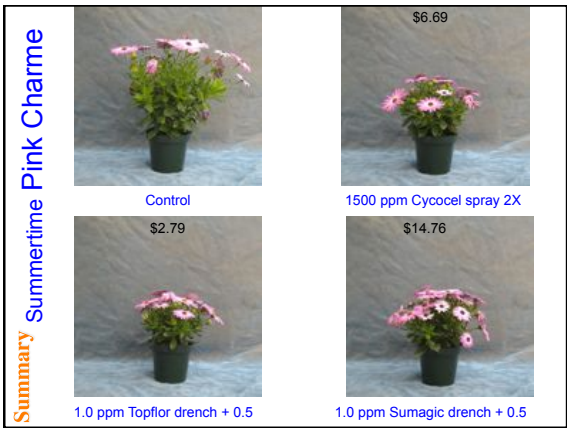
Monarda 'Jacob Cline' – 3 WAT

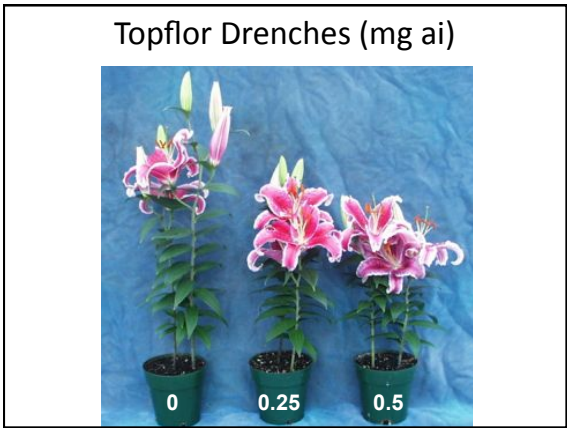
Monarda 'Jacob Cline' – 6 WAT

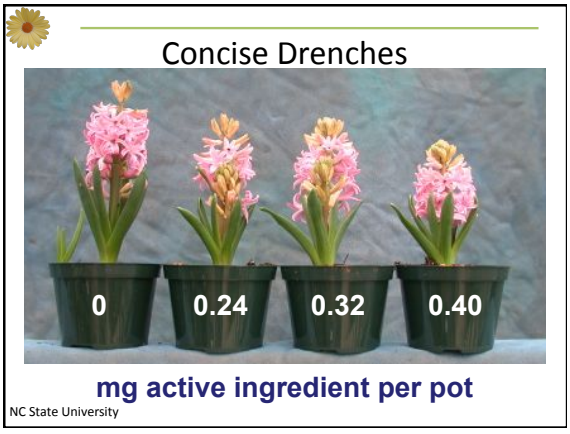
PGR University

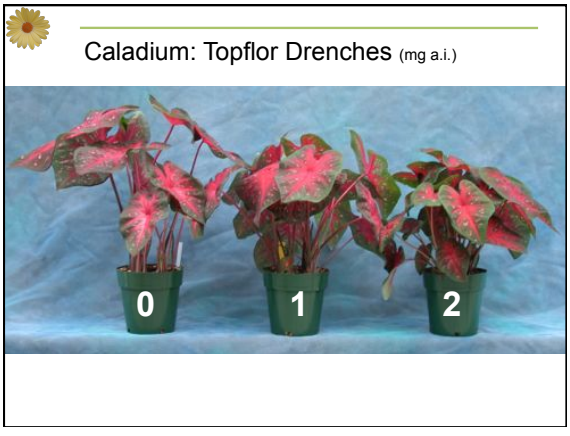
Drenches and Bulb Soaks
Brian Whipker, NCSU

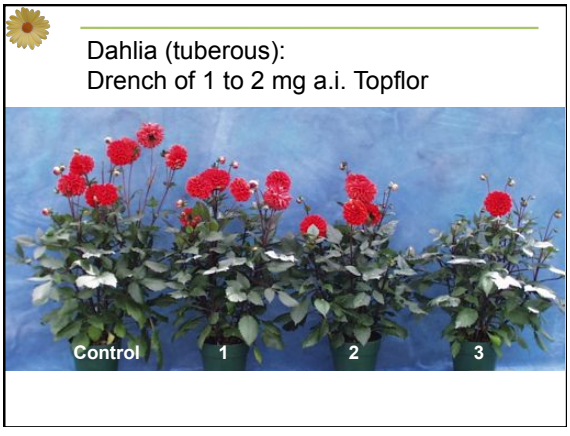










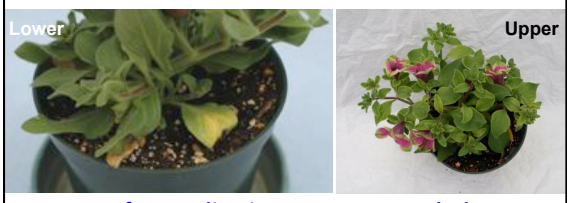


Ethephon Substrate Drenches

- Ethephon: Collate (Fine Americas) and Florel (Southern Ag)
- Optimal rates appear to be between 125 to 500 ppm.
- Apply with similar volume of water as you would any other drench
- DO NOT APPLY to plants under stress
- Currently not labeled, a label for Collate is being submitted.

Substrate Drenches (ppm)

Cultivar: Pretty Much Picasso



Just after application | Weeks later

Florel drenches at 500 ppm caused leaf yellowing

Substrate Drenches (ppm)

Cultivar: Pretty Much Picasso

0 | 500

Florel drenches controlled growth at 500 ppm

- Plants at bloom

Collate Substrate Drenches

0 | 125 | 250 | 500

'Vista Bubblegum'

- Plants at bloom

Collate Substrate Drenches

0 | 125 | 250 | 500

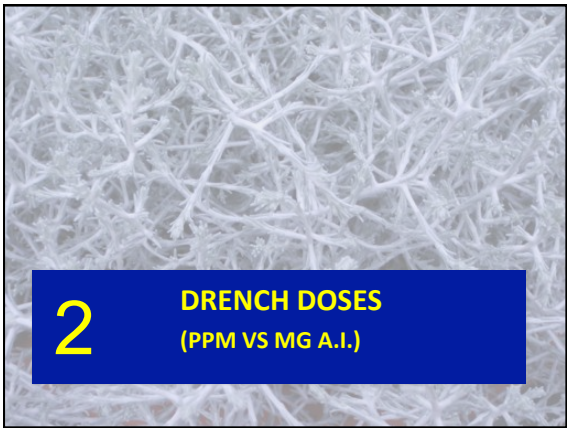
'Americana Dark Red'

Collate Substrate Drenches

'Dark Chocolate'

Ethephon Substrate Drenches

- Test to determine optimal rates
  - Species / Cultivar
  - Start with 125 to 500 ppm
  - Apply with similar volume of water as you would any other drench (ie 4 oz per 6 inch pot)
  - DO NOT APPLY to plants under stress
- Collate label change to include drenches is being submitted.



Drench Dose

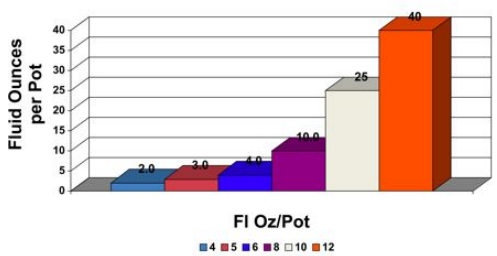
- **Dose based on:**
  - Measuring out a known amount of chemical
  - Adding it to a known volume of water
  - Applying a known volume to each pot

Concentration X Volume = DOSE

✔ *mg active ingredient / pot (mg ai/pot)*

✖ *ppm*

Drench Volume Increase with Pot Size



Drenches

- mg active ingredient per pot
  - Takes into account volume difference.
  - Example: the dose stays the same across pot sizes as the amount of water increases
- ppm
  - Does NOT take into account volume differences
  - Example: the dose increases with the pot size

Drenches and Bulb Soaks

Brian Whipker, NCSU

Drenches

- **ppm is mg per liter (mg/L)**
  - If you mix a solution at 50 ppm, then a liter (1000 ml) contains 50 mg of chemical.
  - Thus if you add:
    - 10 ml per pot, the plant receives 0.5 mg
      - *[(10 ml / 1000 ml) x 50 mg] = 0.5 mg*
    - 100 ml per pot, the plant receives 5 mg
      - *[(100 ml / 1000 ml) x 50 mg] = 5 mg*
    - 1000 ml per pot, the plant receives 50 mg
      - *[(1000 ml / 1000 ml) x 50 mg] = 50 mg*
  - So the volume matters with ppm drench recommendations!!!

Summary: Drenches

- Recommendations based on:
  - ppm
    - Must know the number of fluid ounces per pot to be applied.
  - mg active ingredient per pot
- Either way you will then accurately know the per pot dose.

Preplant Soaks

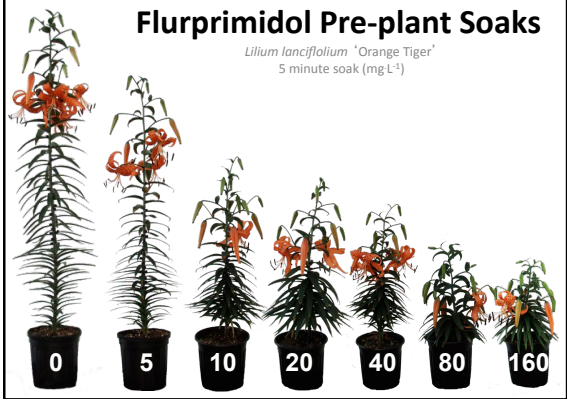
- Cost effective alternative to treat bulbs.
- Typically:
  - Mix the solution in buckets
  - Use room temperature water (not cold)
  - Soak bulbs 2 to 5 to 10 minutes
  - Let drain
  - Can pre-treat before planting (for REI)

PGR Bulb Soaks

Type	Chemical	Products
Anti-GA	Ancymidol	Abide, A-Rest
	Chlormequat chloride	Citadel, Cycocel
	Daminozide	B-Nine, Dazide
	Fluprimidol	Topflor
	Paclobutrazol	Bonzi, Paczol, Piccolo, Piccolo 10XC, Downsize (*drenches only*)
	Uniconazole	Concise, Sumagic
Structural	BA	Configure
	GA	Florgib, ProGibb T&O
	BA+GA	Fascination, Fresco
	Dikegulac sodium	Augeo
	Ethephon	Collate, Florel

Flurprimidol Pre-plant Soaks

Lilium lanciflolium 'Orange Tiger'
5 minute soak (mg·L^{-1})



Drenches and Bulb Soaks
Brian Whipker, NCSU

Topflor Pre-plant Bulb Soak

mg·L^{-1}

Topflor Pre-plant Soak (ppm)

0 25 50 100 200 400

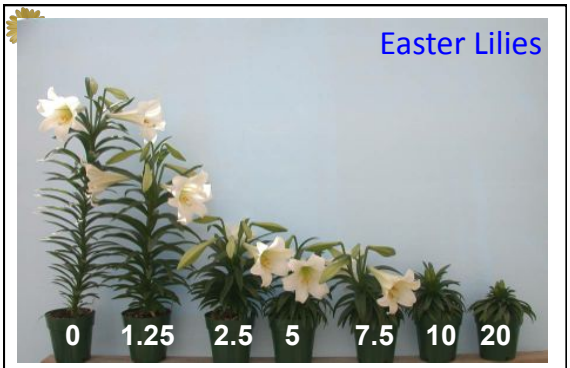
Tete a Tete

Topflor Preplant Bulb Soak

Soak treatments effective.

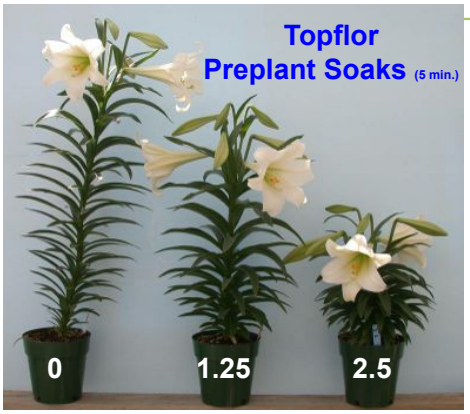
Topflor Pre-plant Soaks

Easter Lilies



Topflor Preplant Soaks (ppm [5 min.])

Topflor Preplant Soaks (5 min.)



PGR University

Drenches and Bulb Soaks
Brian Whipker, NCSU

Key Points: Preplant Soaks

- Most active options:
  - Topflor / Uniconazole / Paclobutrazol
- Topflor is VERY effective as a preplant bulb soak.
  - Activity is similar to, or greater than, Uniconazole.
  - Economically effective on a wider range of crops than Paclo.