Great Lakes Fruit, Vegetable & Farm Market EXPO
Michigan Greenhouse Growers EXPO

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DeVos Place Convention Center, Grand Rapids, MI

The PGR Toolbox 2 – Using PGRs to Enhance Growth and Quality of Herbaceous Perennials (OH 6D, 0.5 hrs)

Moderator: Garrett Owen, Michigan State University
Sponsored by: Fine Americas, Inc

2:00 pm	• Joyce Latimer, Virginia Tech University

The PGR Toolbox Part 2

Using PGRs to Enhance Growth and Quality of Herbaceous Perennials

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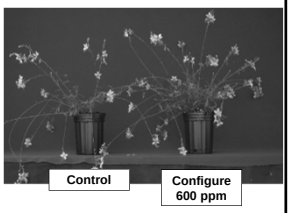
Virginia Tech, Blacksburg VA

VIRGINIA TECH. Virginia Cooperative Extension Virginia Tech • Virginia State University e-GRO

Chemical growth regulation

- Plant growth regulators (PGRs) "manage" growth and development
- Designed to affect plant growth and/or development
- Applied for specific purposes to affect specific plant responses
- Still more ART than Science!



Expanding PGR Toolbox

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

B.Whipker

Chemical Approach to Branching

Goal is to improve plant architecture

- Substitute for pinching
  - Pinching labor intensive
  - Pinching delays growth and bloom
- Release apical dominance
- Lateral or basal buds break
- Increase branching and improve quality
- Finish plants more quickly

Three branching chemistries

- **Atrimmec** (PBI Gordon, Inc.)
  - Active ingredient 18.5% dikegulac-sodium

pbi/gordon corporation Employee-Owned

- Ethephon
  - **Florel Brand Pistill**
    - (Monterey Chemical)
    - 3.9% active ingredient

MONTEREY

  - **Collate** (Fine Americas, Inc.)
    - 21.7% active ingredient

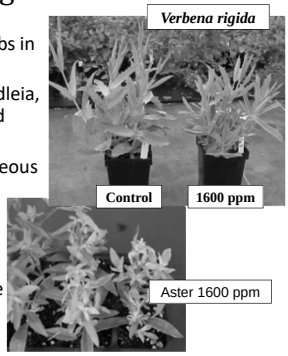
collate™

- **Configure** (Fine Americas, Inc.)
  - Active ingredient 2% BA (benzyladenine)

configure™

Atrimmec – dikegulac sodium

- Primarily labeled on shrubs in containers or landscape
- Effective on lantana, buddleia, bougainvillea, Hedera and other vining crops
- Effective on many herbaceous perennials
  - Verbena
  - Veronica
- Issues with significant phytotoxicity and variable rate responses to rates

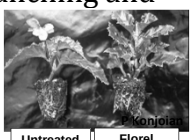


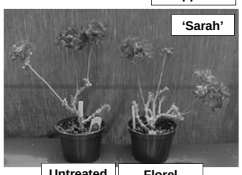
Atrimmec – Keys for Use

- Apply early in the crop cycle to stimulate branching and allow ample time for new leaf growth to cover any yellowing or leaf necrosis that may occur
- Beware of growth retardation
- Trial starting point: 400 to 800 ppm foliar spray. Apply sufficient volume to wet the foliage (2 qts /100 sq ft)
- Plants should be stress-free at time of application

Ethephon to Affect Branching and Flowering

- Ethephon
  - Florel Brand Pistill
  - Collate
- Enhances branching
- Removes flowers
- Growth regulation



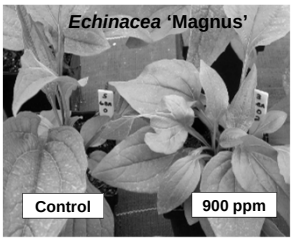


Ethephon – Keys to Use

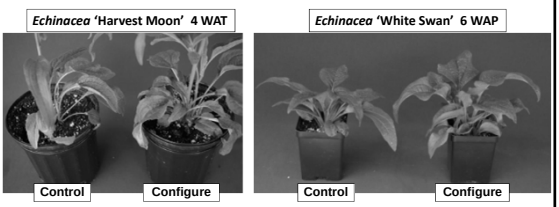
- A cost effective method of controlling growth and increasing branching
- Acidify the solution to final solution pH of 4 to 5
- Allow the solution to dry slowly over 4 hours to enhance uptake
- Must manage timing to avoid flower delay
- Species and cultivars vary in response – conduct your own rate trials!

Configure on *Echinacea*

- Wide range of cultivars found responsive
  - 300 to 600 ppm
  - One to three treatments at least 14 days apart
- 2 to 6 times the number of basal branches as untreated plants



Configure Improves Branching and Pot Fill



- Basal branching perennials exhibit much earlier pot fill after treatment
- Be aware that root growth may not keep up with shoot growth, but can get to market earlier

Configure on Perennials (600 ppm x1)

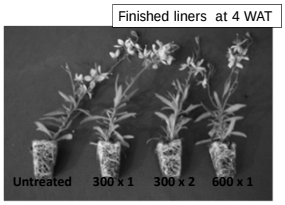
Crop	Untreated	BA	WAT
Gaura 'Siskiyou Pink'	29.8	39.4	4
Euphorbia 'Chameleon'	13.5	20.0	6
Gaillardia 'Dazzler'	23	153	4
Heuchera x 'Raspberry Ice'	11.8	18.1	4
Lobelia cardinalis	7.3	12.9	4
Penstemon 'Husker Red'	6.2	7.7	4
Lychnis 'Vesuvius'	3.1	5.3	4
Veronica 'Icicle'	2.5	3.6	2
Coreopsis 'Zagreb'	43.2	98.8	2
Leucanthemum x 'Alaska'	9.5	14.9	2

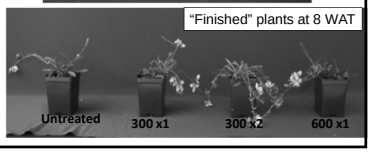
- Measured number of branches

Configure on *Gaura* 'Siskiyou Pink'

Finished liners
- ↑ branches, leaders

Finished plants
- ↑ branches, leaders

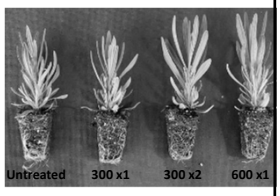


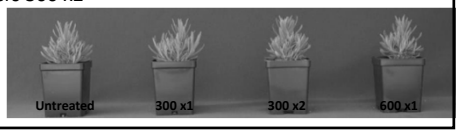


Configure on *Lavandula 'Provence'*

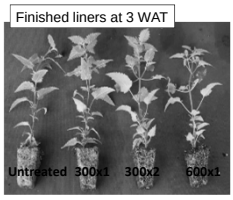
- Finished liners (4 WAT)
- ↑ branches, ↑ leaders 600 x1
- ↑ shoot dry weight all Configure treatments

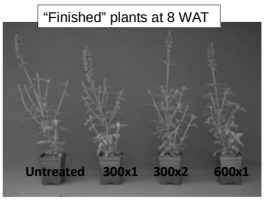
"Finished" plants (8 WAT)
- ↑ branches ↑ leaders 300 x2





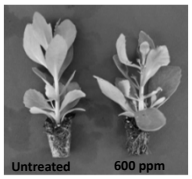
Configure on *Agastache* 'Purple Haze'

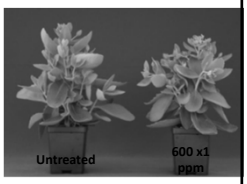


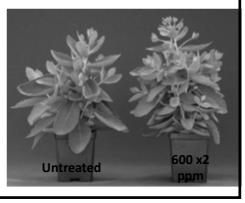


- Finished liners
  - ↑ branches 40%
  - ↓ root weight
- Finished plants
  - Reduction in root weight of liners did not affect growth

Sedum 'Autumn Joy'







- Configure increased branching of liners (6x) at 3 WAT
- Finished plants at 6 WAT
  - 600 x1 ppm NS
  - 600 x2 ppm 2.5x branches

Configure - Keys to Use

- Stimulates - but does not cause – branching or flowering
  - Windows of opportunity
  - Active growth
- Short period of activity (~ 2 wks activity)
  - Multiple applications may be beneficial
- Complete spray coverage required
  - Not actively transported throughout the plant
- Growing your own liners?
  - Apply after rooting but moderate decreases in root growth do not affect finished plant quality
  - Make second applications shortly after transplanting liners to finished containers (2 wk minimum)
- Buying liners in?
  - Apply as soon as actively growing
  - Second application ~transplant time (2 wk minimum)

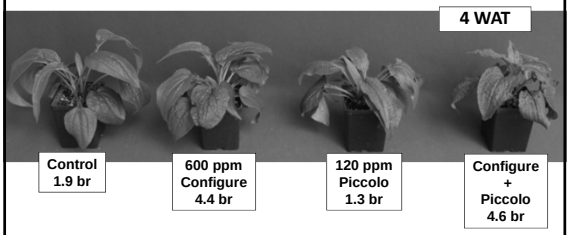
Tank Mix Results - *Agastache*

- Needed more height control for finished plants
- Tank mix of Configure + Dazide
  - Increased numbers of leaders and branches (3&8 WAT)
- Neither Configure + Dazide Carrier nor Carrier alone increased branching (3&8 WAT)
- All Configure treatments reduced liner height as well as flower stalk height of finished plants, but delayed flowering (up to 6 days)

Should you Use Configure + Dazide Tank Mixes?

- May be beneficial in some crops
- Run your own trials on multiple crops
- If applying to liners, wait until fully rooted
- Plan to make second or **follow-up applications** of Configure and/or Dazide depending on crop growth

Echinacea 'Doubledecker'



- Piccolo treatments reduced plant height at 4 WAT
- Configure treatments increased number of basal branches

Summary – Configure Tank Mixes

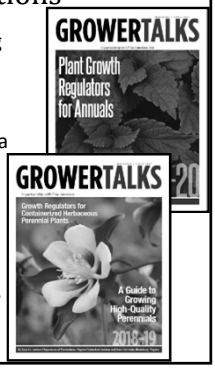
- Configure can be tank mixed with PGRs such as daminozide or paclobutrazol
- No evidence of any synergistic effect of combining the two products
- Neither PGR affects efficacy of the other
- Some cases Configure has a dominant effect on flowering
- Configure can restore some of the repressed branching with growth retardants

Should you Use Ethephon + Dazide Tank Mixes?

- May be beneficial in crops responsive to ethephon
- Run your own trials on multiple crops
- If applying to liners, wait until fully rooted
- Can make additional growth retardant applications depending on crop growth

Timing of PGR Applications

- Plants should be actively growing and healthy
- Time the PGR application to affect the plant's growth and/or development (For Configure use a minimum 2 week interval)
- Learn how your plants grow and develop so that you can anticipate interventions!
- Read the PGR label, PGR Guides and other resources for guidance



For More Information
or a pdf of the full presentation:

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