

# ***Plant Growth Regulators Update***

8<sup>th</sup> Australian Table Grape Conference

Mildura

Sept 2011

Brett Ryan

Marketing Manager Biologicals and PGRs

Sumitomo Chemical Australia



**SUMITOMO CHEMICAL**

# PGR Update

*Leaders in use of PGRs in Australian hort would be apple and table grape growers. Table grapes started decades ago with GA (ProGibb).*

Also used in:

- Stone fruit
- Citrus
- Avocado
- Kiwifruit

- Cherries
- Poppies
- etc



SUMITOMO CHEMICAL

# What are PGRs?

- Anything we use to change the growth characteristics of the plant, or part of the plant.
- Often they are naturally occurring plant hormones.
- May be a chemical herbicide, insecticide or fungicide.
  - 2,4-D
  - Carbaryl



# Classes of PGRs

| Class              | Action  | Example   |
|--------------------|---|---|
| Auxins             | Plant height /shape.<br>Shoot elongation.             | 2,4-D. NAA  |
| Cytokinins         | Cell Division   | CPPU (Prestige)   |
| Ethylene           | Ripening  | Ethrel  |
| Ethylene Inhibitor | Delay maturity  | AVG (ReTain)  |
| Gibberellins       | Cell Elongation                                       | GA (ProGibb)  |
| Abscisic Acid      | Dormancy, Maturity<br>/ Colour / Stress<br>Management | ABA ProTone   |
| Others             | Various   | Cyanamide (Cyan )<br>Ammonium thiosulphate (Thin It)<br>Uniconazole – P (Sunny)<br>Chlormequat chloride<br>carbaryl |



# What can PGRs Do?

*If you look at PGR use in various crops around the world you find them used for:*

- Dormancy breaking
- Fruit Thinning
- Fruit sizing
- Fruit shaping
- Fruit retention
- Fruit Quality
  - Skin
  - Sugars
  - Firmness
- Flower thinning
- Flower retention
- Flower initiation
- Bud development
- Root development
- Vegetative production
- Vegetative control
  - Anti lodging
  - Canopy management
- Harvest management
- Prevention of fruit drop
- Colour development
- Storage characteristics



# What are the restrictions on PGRs?

- **Not as easy as killing pests and diseases!**
- **Manipulating a plant involves lots of factors, not just the application of a PGR**
- **Need to be registered as a pesticide in Aust**
  - Means the label must have specific claims
  - Must be robust in performance
- **Need to avoid unwanted repercussions**



# Understanding PGRs work is key

- **Understanding how they work is key to:**
  - identifying when they won't work.
  - **How to maximize the benefit**
    - Application
    - Timing
    - Conditions
    - etc
  - **How they fit in with your overall crop objectives**



# Sumitomo PGRs For Table Grapes



**ProGibb<sup>®</sup>**



**ProTone<sup>™</sup>**  
Plant Growth Regulator

SUMITOMO CHEMICAL

- **Cyan** – 530 g/L  
Cyanamide
- **ProGibb SG** – 400g / kg  
Gibberellic Acid
- **ProGibb GA** - 100g / L  
Gibberellic Acid
- **Prestige** – 10 g / L  
Forchlorfenuron (CPPU)
- **ProTone** – 200 g / Kg  
ABA



# ProTone™

Plant Growth Regulator

*Picture the Possibilities.™*



**SUMITOMO CHEMICAL**

SUMITOMO CHEMICAL

SUMITOMO CHEMICAL

SUMITOMO CHEMICAL

SUMITOMO CHEMICAL

SUMITOMO CHEMICAL

# What is ProTone® SG?



- Formulation:
  - 20% Soluble Granule
- Packaging:
  - 1 Kg / bottle
  - 200 g AI / bottle
- Active ingredient: S-Abscisic acid (S-ABA)
  - Naturally occurring, produced by all plants



SUMITOMO CHEMICAL

# How does ProTone® work?

- S-ABA stimulates an enzyme which enhances anthocyanin
- Red grapes produce ABA naturally for color development
- High temperatures cause poor color
- ProTone supplements the natural levels of S-ABA in the berry



SUMITOMO CHEMICAL

# Global Markets

| Country      | Registration  |
|--------------|---|
| Chile        | November 27, 2009   |
| US           | US EPA - March 1, 2010<br>California - April 9, 2010<br>OMRI - October 22, 2010 |
| South Africa | April 9, 2010   |
| Israel       | May 2010  |
| Peru         | September 30, 2010  |
| Australia    | November 3, 2010  |

Additional Countries under Development:

- **Brazil, Egypt, Mexico and the EU (Spain, Italy)**



**SUMITOMO CHEMICAL**

# Field Results – South Africa

## ProTone<sup>®</sup> - Crimson Seedless at Buffelskraal



Ethephon (200 ppm)  
Ethephon (200 ppm)



Ethephon (200 ppm)  
ProTone (400 ppm)



SUMITOMO CHEMICAL

# Field Results - USA



**Untreated**



**ABA @ 150 g AI/ac**

Crimson Seedless  
18 days after application  
Application at veraison + 7 days  
Tulare County



**Standard - Ethephon @ 1 pt/ac**



**SUMITOMO CHEMICAL**

# PGRs – Where to from here

**Dormancy breaking**

**Fruit Thinning**

**Fruit sizing**

**Fruit shaping**

**Fruit retention**

**Fruit Quality**

**Skin**

**Sugars**

**Firmness**

**Flower thinning**

**Flower retention**

**Flower initiation**

**Bud development**

**Root development**

**Vegetative production**

**Vegetative control**

**Anti lodging**

**Canopy management**

**Harvest management**

**Prevention of fruit drop**

**Colour development**

**Storage characteristics**



**SUMITOMO CHEMICAL**

# PGRs – Where to from here

**Dormancy breaking**

**Fruit Thinning**

**Fruit sizing**

**Fruit shaping**

**Fruit retention**

**Fruit Quality**

**Skin**

**Sugars**

**Firmness**

**Flower thinning**

**Flower retention**

**Flower initiation**

**Bud development**

**Root development**

**Vegetative production**

**Vegetative control**

**Anti lodging**

**Canopy management**

**Harvest management**

**Prevention of fruit drop**

**Colour development**

**Storage characteristics**

**Stress Management**



**SUMITOMO CHEMICAL**

Thank You



SUMITOMO CHEMICAL