Weed control in container and field grown ornamentals

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The Problem(s)

- 30,000 species of weeds compete with crops
- Average crop competes with 10 - 15 weed species
- Significant global population growth predicted
- Pressure on productive land
- Land degradation major problem – reduced tillage, more weed control challenges

Agrochemicals

- Decrease in the number of agrochemical companies
- Costs associated with developing a new A.I. extremely high
- Global herbicide A.I. launches reflect downward trend since 2005
- Over 60% of existing herbicide MOA have some level of resistance
- Herbicide resistant weeds reported in 86 crops in a total of 66 countries

Outline

- Tips for contact herbicides
- Chemical weed control in:

1. tree production
2. rose production
3. general field-grown nursery stock
4. seedbeds
5. field-grown herbaceous
6. Container production

Contact herbicides

- Chikara (non cropped areas)
- Glyphosate
- Spotlight plus (Willowherb)
- Katoun Gold (pelargonic acid)
- Starane XL
- Dow Shield (avoid drift / crop contact)

Herbicides for grass weeds

- Kerb Flo
- Glyphosate
- Katoun Gold (pelargonic acid)
- Stratos Ultra

Residual herbicides (post planting dormant tree stocks)

Product (name)	Active ingredient	Rate (L/ha or kg/ha)	Percentage mean weed cover at 12 WAT
Sencorex Flow + Stomp Aqua + Venzar 500 SC + Sunfire *	metribuzin + pendimethalin + lenacil + flufenacet	1L/ha + 2.9L/ha + 0.4 L/ha + 0.48 L/ha	2.3

* Adding Dual Gold / Effica 96 should improve weed control further

- Sencorex Flow + Stomp Aqua + Venzar 500 SC + Emerger (aclonifen) at 1.75 L/Ha resulted in 1.7% weed cover – some yellowing
- Sencorex Flow + Stomp Aqua + Venzar 500 SC + Proman (metobromuron) at higher rates than on the label resulted in 0.3 % weed cover.

Residual herbicides (post heading back dormant tree stocks)

Flexidor 500 tank mixed with Butisan S

- Post budding
- When foliage has hardened

Residual herbicides (post heading back trees when dormant)

Product (name)	Active ingredient	Rate (L/ha or kg/ha)	Percentage mean weed cover at 12 WAT
Sencorex Flow + Stomp Aqua + Venzar 500 SC +Sunfire	metribuzin + pendimethalin + lenacil + flufenacet	1L/ha + 2.9L/ha + 0.4 L/ha + 0.48 L/ha	2.8

* Adding Dual Gold / Effica 96 should improve weed control further

- Sencorex Flow + Stomp Aqua + Venzar 500 SC + Emerger (aclonifen) at 1.5 L/Ha resulted in 2.5% weed cover – some yellowing
- Sencorex Flow + Stomp Aqua + Venzar 500 SC + Proman (metobromuron) at higher rates than on the label resulted in 0.75 % weed cover.

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Weed control in field grown Roses

Residual herbicides Roses

Dormant rose stocks

- Sencorex Flow (metribuzin - lower rates for roses)
- Stomp Aqua (pendimethalin)
- Sunfire (flufenacet)
- Venzar 500 SC (lenacil)
- Dual Gold / Efffica 96 (s-metolachlor)

Post budding

- Flexidor 500 + Butisan S

Residual herbicides Roses

Post-heading back - roses

- Sencorex Flow (metribuzin - lower rate in maiden year)
- Stomp Aqua (pendimethalin - lower rate in maiden year)
- Sunfire (flufenacet)

Container production - Herbicides

- Only one application of Flexidor (500g/l) per crop
- Dual Gold
- Sunfire (grass and pearlwort)
- Butisan S restricted annual rate
- Defy (HRAC N) + Venzar 500 SC dormant season
- Sencorex Flow has potential as a dormant treatment

Container production – Moss and liverwort control

- Mosskade
- Sodium bicarbonate at 122 KG/Ha

Weed control seedbeds

Pre-emergence residual herbicides seedbeds

- Stomp Aqua (pendimethalin)
- Sirtaki (clomazone – some transient yellowing)
- Mitron 700
- Some gaps in spectrum so; Stomp Aqua + one of the above gives improved weed control safe for some species

Post emergence herbicides in seedbeds

- Sirtaki (clomazone – some transient yellowing)
- Mitron 700
- Beetup Flo (phenmediphan) for small seedlings, can get some transient yellowing.

Field grown herbacous

- Venzar 500 SC (lenacil)
- Dual Gold (s-metolachlor)
- Stalwart (metazachlor)
- Flexidor (isoxaben)

Electric weeding one hour post treatment

Four weeks post treatment

Untreated control

Treated:
Complete kill

Treated: Re-growth

Untreated control

Traditional methods have an important role to play in the future

- Soil sterilisation with steam to kill weed seeds and pathogens
- Steam sterilisation is expensive but ensures that high quality land can be kept in production
- Inter row flaming
- Cultivations between plants in the row and good results with inter row flaming
- Flaming used in no till systems to tackle glyphosate resistant weed

Bio herbicides

- *Phoma macrostoma* – phytotoxic bleaching Creeping Thistle + Dandlion
- Inhibits photosynthesis, gradually weakening susceptible weeds.
- Some weeds semi – resistant
- Crop safe in some crops e.g. Pumpkins
- Working on potancy to get sensible application rates per hectare.

Bioherbicide – a plant virus

- *Tobacco mild green mosaic tobamovirus* (TMGM)
- Weed; Tropical Soda Apple *(Solanum viarum)*
- Weed of pasture, cattle eat fruit and spread seed
- Spiky so is not grazed, outcompetes
- Delayed systemic necrosis, contant and predictable kill
- 15 years from discovery to commercial product

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New directions – No silver bullets; many little hammers

- Allopathic compounds to inhibit germination
- Plant associated bacteria to reduce germination of certain species
- Species specific biocontrols
- Various essential oils inhibit growth of seedlings
- Novel herbicides on the horizon

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Questions?