



**Total and selective contact herbicides:
Review of products and their role in winter weed
control strategies
Selchuk Kurtev, Zest Sustainable ICM**

What I will cover

➤ **Total contact herbicides**

- Glyphosate
- Pelargonic acid
- Carfentrazone-ethyl

➤ **Selective contact herbicides**

- Clopyralid
- Fluroxypyr
- Phenmedipham
- Clethodim

➤ **Use of contact herbicides in winter**

GLYPHOSATE

HRAC: G

- Systemic herbicide, translocated to roots and shoots; kills the entire plant
- Effective on both annual and perennial weeds
- Contact with foliage of ornamental crops results in injury or total plant death
- Glyphosate activity is increased in low water volumes
- Often takes 7 or more days after application for control
- Avoid drift
- pH and alkalinity sensitive
- Water conditioners and adjuvant may be required
- EAMUs available on Clinic Up, Roundup ProActive



GLYPHOSATE

Dormant crops of:

- ✓ Peonies (not on Itoh or tree peonies)
- ✓ Sedum
- ✓ Rhubarb and *Rheum* genera
- ✓ Well waxed conifers will take half dose
- ✓ Second year woody deciduous crops –
 - ✓ Sambucus
 - ✓ Viburnum

Do not apply on:

- ✗ Evergreen crops
- ✗ Roses and rosaceous generally unless lignified
- ✗ Any green stem crops
- ✗ Any grass crops (dormant or not)

PELARGONIC ACID

HRAC: Z

- Two products available both unique
- Both require specific environmental conditions and coverage
- Good on broadleaf weeds, grasses require adjuvant and early stage
- Poor on range of perennial weeds
- Avoid rain or high humidity after application
- Good for herbaceous perennial crops indoors in dormant season (Katoun Gold only)
- Some formulation difficulties, can become like a gel



PELARGONIC ACID

Dormant crops of:

✓ ALL DORMANT CROPS

Do not apply on:

✗ Any green stem crops

✗ Evergreen crops

CARFENTRAZONE-ETHYL

HRAC: E

- Can be used around the perimeter of nursery
- Controls young annual weeds but not grasses, absorbed by leaves
- OK to use over fully dormant crops
- On-label approval for all non-edible crops
- EAMU available for protected and outdoor ornamentals (21 day handling interval)
- Volatile and require adjuvant 'Silwet L77'
- Best applied on dry sunny days
- Good in tank mix with glyphosate if looking for speed of kill and grass control
- Use with some residuals in dormant season
- Some formulation challenges when mixing with residuals
- DOES HAVE RESIDUAL ACTIVITY ON SEED GERMINATION



CARFENTRAZONE-ETHYL

Dormant crops of:

- ✓ Well lignified deciduous crops
- ✓ Good on most herbaceous when overwintered
- ✓ Peonies (not on Itoh or tree peonies)
- ✓ Sedum
- ✓ *Salvia nemorosa*
- ✓ Verbena 'Brampton'
- ✓ Amsonia

Do not apply on:

- ✗ Any green stem crops
- ✗ Evergreen crops
- ✗ Any crops breaking bud



CLOPYRALID



HRAC: O

- Controls creeping thistle, spear thistle, corn marigold, mayweeds, groundsel, clover and dandelion
- Treat creeping thistle at rosette stage
- Avoid rain for 6 hours, absorbed **by roots** and leaves
- Not on Eryngium, Brachyglottis, Laburnum, Genista or Cytisus
- On-label approval for ornamentals for range of products
- EAMU available for ornamentals
- Good for weed wiping
- Avoid drift at all costs!
- DO NOT use in protected structures on production beds
- Slow to work but it's very effective
- Needs actively growing weeds
- Effects reduced by temperature



CLOPYRALID

Dormant crops of:

- ✓ Some woody crops will tolerate it – tree peonies and some tree subjects
- ✓ Sedum
- ✓ 3-year-old maiden trees when applied to the base
- ✓ Grasses generally unaffected

Do not apply on:

- ✗ Any crops in the asteraceae family
- ✗ Do not apply on production beds or soil to be planted in same year
- ✗ Any crops breaking bud



FLUROXYPYR

HRAC: O

- Good on a range of annual and perennial broad-leaved weeds but won't control grasses
- Low volatility so no vapour drift
- Requires high temperatures of 10°C+
- Fantastic chickweed, cleaver, bindweed, groundsel, red dead-nettle control
- Poor on fat hen, bittercress and other brassica weeds
- EAMU available for outdoor ornamentals
- 0.6L/ha (18ml/10L or 15ml/10L)
- Outdoors only, good in mixes with Nirvana in summer or autumn
- Serious problems if mixed with sulfonylurea's

Starane[®] Hi-Load HL
HERBICIDE

FLUROXYPYR

Dormant crops of (not exclusively):

- ✓ Some woody crops will tolerate it
- ✓ Miscanthus strong tolerance
- ✓ Mature trees in pots and in field
- ✓ Generally, brassica crops are fine, especially if grown outdoors

Do not apply on:

- ✗ Apiaceous and umbelliferous
- ✗ Freshly potted crops
- ✗ Avoid using on capillary matting

PHENMEDIPHAM

HRAC: C₁

- Good on annual broad-leaved weeds but won't control grasses or perennial weeds
- Only effective on small seedlings
- Avoid rain after application
- Can tank mix with Venzar 500
- EAMU available on Betasana and Betanal Flow
- Betanal Flow has much more suitable approval
- Great for early spring application on herbaceous perennials or woody deciduous crops
- Could encourage more powdery mildew
- Very good tank mixer with residuals



PHENMEDIPHAM

Dormant crops of (not exclusively):

- ✓ Most conifers
- ✓ Most grasses
- ✓ Trees in containers and in the field
- ✓ Amaranthaceae – spinach, beet

Do not apply on:

- ✗ In propagation especially seedlings
- ✗ Freshly potted crops less than 2 weeks
- ✗ Crops where powdery mildew is an issue

CLETHODIM

HRAC: A

- Controls perennial and annual grass weeds
- Can be used over deciduous nursery stock and certain bulb species from 5-10 cm tall
- Best control when weeds are small
- Do not cultivate for 14 days after application
- Death of foliage takes 3 – 4 weeks after application
- No rain for 4 hours after application
- Drought and cool conditions reduce effectiveness
- Can be used with knapsack sprayer
- Compatible with Butisan S, Dow Shield
- March to September
- 6 week handling restriction with work wear



CLETHODIM

Crops of :

- ✓ Most conifers
- ✓ Brassicas
- ✓ Trees in pots and in field
- ✓ Most herbaceous as long as wax layer developed

Do not apply on:

- ✗ Crops under drought or water-logged
- ✗ Grasses including miscanthus
- ✗ On smaller than 1L pots
- ✗ Avoid using on actively growing evergreens in spring
- ✗ Avoid using on Clematis hybrids, OK on C. montana

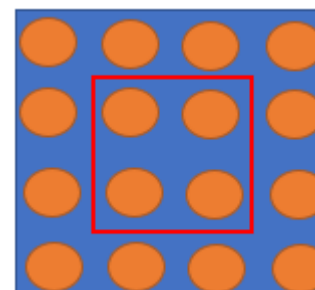
SUMMARY



Product	Active ingredient	H R A G	MoA	Dose rate, L/ha	Water volume, L	On/off label	Nº of applica tions	Herbici de type	Protec ted use	Expiry date
GLYPHOSATE (Various)	Glyphosate – 36%	G	L+R	10.0	200-400	2877/08 + label	No limit	C, Tr	✓	09/09/2099
Finalsan (MAPP13102)	Pelargonic acid – 18.67%	Z	L	170.0	1,000	✓	4	C	✓	28/02/2026
Katoun Gold (MAPP17879)	Pelargonic acid – 50%	Z	L	22.5	400	✓	4	C	✓	28/02/2026
Shark (MAPP18700)	Carfentrazone-ethyl – 50%	E	L+R	0.8	1,000	0633/19	-	C	✓	09/09/2099
Dow Shield (MAPP19874)	Clopyralid – 40%	O	L+R	0.5	200	1089/22 + ✓	-	C, Tr	✓	31/08/2026
Starane Hi- Load HL (MAPP16557)	Fluroxypyr – 50%	O	L+R	0.6	200	0942/21 1268/17	2	C, S	×	30/07/2027
Betanal Flow (MAPP13893)	Phenmedipham – 16%	C1	L	2.5	200	2824/08	-	C, S	×	31/01/2026
Centurion Max (MAPP17911)	Clethodim – 12%	A	L	1.8	200-800	2336/22	1	C, Tr	✓	30/11/2025

What we will see this afternoon

Plant species	Bed Number	Pot Size	Potting Date
<i>Potentilla</i> 'Double Punch Peach'	262	3L	04/08/2022
<i>Weigela</i> 'Wine and Roses'	248	3L	25/05/2022
<i>Spiraea</i> 'Firelight'	278	3L	18/08/2022
<i>Sambucus</i> 'Black Beauty'	231	3L	13/07/2022
<i>Deutzia</i> 'Yuki Snowflake'	501	3L	08/06/2022
<i>Cornus kesselringii</i>	509	3L	08/06/2022
<i>Physocarpus</i> 'Amber Jubilee'	511	3L	09/06/2022
<i>Berberis</i> 'Maria'	16	3L	19/05/2022
<i>Syringa</i> 'Red Pixie'	410	3L	25/03/2022
<i>Philadelphus aureus</i>	408	3L	31/03/2022
<i>Viburnum</i> 'Snowflake'	34	3L	04/03/2022
<i>Euonymus</i> 'Red Cascade'	31	3L	11/03/2022
<i>Cotinus</i> 'Ruby Glow'	19	3L	28/04/2022
<i>Caryopteris</i> 'Sterling Silver'	13	3L	26/05/2022
<i>Iris</i> 'Baby Blue'	266	2L	11/05/2022
<i>Sedum</i> 'Rose Carpet'	271	2L	27/04/2022
<i>Salvia caradonna</i>	436	2L	25/02/2022



Details:

- ☐ Applied on 2nd January 2023 (9 days ago)
- ☐ Standard Berthoud Knapsack sprayer
- ☐ FF 80 °Blue nozzle
- ☐ Used relevant water volumes!
- ☐ Sunny 9°C
- ☐ Calm




HTA

zest[®]
Sustainable ICM


What we will see this afternoon




Herbicide product	Active substance	Concentration	Formulation	Dose rate	Water volume	Dilution
Shark	Carfentrazone-ethyl	60g/l	ME	0.8L/ha	1,000L /ha	0.8ml/L
Dow Shield	Clopyralid	400g/l	SC	0.5L/ha	200L/ha	2.5ml/L
Paramount	Florasulam	50g/l	SC	0.075L/ ha	300L/ha	0.25ml/L
Starane Hi-Load	Fluroxypyr	333g/l	EC	0.6L/ha	200	*1.5ml/L

NURSERY PRODUCTION

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