“What’s New from Industry: California Land Management Herbicide Update”

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Rescue, CA
What’s New?

• Chlorsulfuron 75
• Ballast™
• Solano ™
• Esplanade™ Sure
• TerraVue™
• Sapphire™

Disclaimer: I will attempt to discuss Land Management products outside the Corteva line in a non-partisan format, limited to the information provided by those companies. Discussion of Corteva products should be considered partisan because that’s my job!
Alligare is Expanding its Portfolio with 3 New Solutions for the California Transportation & Energy Market Segments
Chlorsulfuron 75

- 75% DF formulation
  - Chlorsulfuron - Group 2, ALS Inhibitor
- Highly Selective pre & post emergent activity
  - Recommended Markets: Transportation & Energy and Range & Pasture
  - Provides long-lasting weed control while promoting the growth of desirable grasses
  - Broadens the spectrum of control in bare-ground settings
- Low use rates of ¼ - 3 oz/A
- Precipitation is required to optimize results for preemergence control
- Fall applications can decrease populations of tough-to-control weed species the following spring

Available Now
BALLAST™

- SC formulation with two modes of action
  - Imazapyr + Flumioxazin
    - Imazapyr - Group 2, ALS Inhibitor
    - Flumioxazin - Group 14, PPO Inhibitor
- “Hard” bare-ground product
  - Not recommended for areas adjacent to desirable species
  - Do not apply within root zone of susceptible species
- Long-lasting control of 235 annual, biennial and perennial weeds and brush
- Use rates of 32 – 48 fl. oz/A
  - 48 oz/A equal to 32 oz of Imazapyr 4 + 12 oz Flumioxazin
- Glyphosate recommended to aid burn-down of existing vegetation

AVAILABLE 2023
SOLANO™

• 39.6% SC formulation of Sulfentrazone
  • Sulfentrazone - Group 14, PPO Inhibitor
• Provides extended preemergence and postemergence activity
  • 120 – 300 day half-life
  • Effective against species that have developed resistance against ALS & PSII inhibitors and synthetic auxin herbicides
• Solano will only be labeled in CA and surrounding states and will be available for non-crop use only
• Use rates of 4 – 12 fl. oz/A
• Precipitation is required to optimize results for preemergence control
Esplanade™ Sure

Envu (formerly Bayer Environmental Sciences)

• Esplanade™ Sure (indaziflam and rimsulfuron)
  - an easy-to-use premix herbicide that manages difficult-to-control weeds in bareground sites.
  - It also provides pre- and post-emergent control in non-crop areas.
  - Rate range is 3.5 to 6 oz/acre with an average rate of 4.5 oz/acre.
  - Packaged in a 90 oz bottle (4 x 90 oz bottle).
TerraVue®

- TerraVue is a combination of Rinskor® active and aminopyralid (AKA Milestone®)
- Formulated as a wettable granule (WG)
- Both actives are Reduced Risk pesticides
- Together: Pre- and Post-emergent activity on 80+ weeds
- At 5.7 oz rate, roughly equal to 13+ oz Milestone
• Woody plant activity ideally combined with triclopyr
• Weed Spectrum expanded & differentiated beyond Milestone
• Not 2,4-D, not dicamba
• Currently labeled for non-crop, ROW and range & pasture (CA pending)
Introduction to Rinskor™ Active

- A new arylpicolinate herbicide
- Common name: Florpyrauxifen-benzyl
  - The second member of the arylpicolinate group, preceded by Arylex® active
- Mode of action: synthetic auxins or growth regulator
- Unique because it binds preferentially to different auxin receptors as compared to other auxin types (e.g. 2,4-D and MCPA).
- Arylpicolinates demonstrate differentiated characteristics including use rate, spectrum, weed symptoms, environmental fate, and molecular interaction, as compared with other auxins.
Rinskor™ Active

Synthetic Auxins
- Pyridine-carboxylic acids
- Benzoic acids
- Phenoxy-carboxylic acids
- Quinolinecarboxylic acids
- Others

Arylpicolinates
- Rinskor™ active
- Arylex™ active
Rinskor™ Active Comparative Use Rates

- **2,4-D**: 560-2240 g ai/ha
- **Picloram**: 140-1120 g ae/ha
- **Triclopyr**: 560-2240 g ae/ha
- **Metsulfuron**: 10-168 g ae/ha
- **Chlorsulfuron**: 13-158 g ae/ha
- **Aminopyralid**: 52-120 g ae/ha
- **Rinskor**: 9.5-19 g ai/ha
Current Forestry Research Activity and Results

TerraVue® Herbicide site prep
- 2020 – 5 sites in CA focused on tank mix data collection
- 2021 – 7 sites in CA, OR, WA, ID focused on specific data needs for registration

Sapphire® Herbicide site prep
- 2020 – 2 sites in CA
- 2021 – 3 sites in CA, 2 sites in OR

TerraVue and Sapphire are not currently registered for use in forestry applications

Trial work managed by:

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Field Scientist
Pasture and Land Management
Western U.S.
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Box plot refresher
2020 TerraVue Forestry Trials
Deerbrush ceanothus % Control - 18 to 26 WAA
NA20TBB014H-WEW042
Mean values below box. Number of observations above box

<table>
<thead>
<tr>
<th>Treatment</th>
<th>% Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>TerraVue 2.85 oz + CleanTraxx 4.5 pt</td>
<td>94.3</td>
</tr>
<tr>
<td>TerraVue 2.85 oz + Garlon XR T 21 fl oz</td>
<td>99.3</td>
</tr>
<tr>
<td>TerraVue 2.85 oz + Velpar DF 2 lb ai</td>
<td>98.7</td>
</tr>
<tr>
<td>TerraVue 2.85 oz + Chopper 32 fl oz</td>
<td>97.7</td>
</tr>
<tr>
<td>TerraVue 2.85 oz + GXR T 21 fl oz + Chopper 32 fl oz</td>
<td>100.0</td>
</tr>
<tr>
<td>Untreated</td>
<td>0.0</td>
</tr>
</tbody>
</table>

All treatments with Accord XRT II 64 fl oz
2020 TerraVue Forestry Trials
Lemmons ceanothus % Control - 18 to 26 WAA

Mean values below box. Number of observations above box

All treatments with Accord XRT II 64 fl oz
2020 TerraVue Forestry Trials
Minerfts lettuce % Control - 15 to 17 WAA
NA20T8B014H-WEW041, NA20T8B014H-WEW042
Mean values below box. Number of observations above box

All treatments with Accord XRT II 64 fl oz
2020 TerraVue Forestry Trials
Willowherb % Control - 18 to 26 WAA

NA20TBB014H-WEW042

Mean values below box. Number of observations above box

All treatments with Accord XRT II 64 fl oz

Treatment
2020 TerraVue Forestry Trials
Prickly lettuce % Control - 27+ WAA

Mean values below box. Number of observations above box

All treatments with Accord XRT II 64 fl oz
2020 TerraVue Forestry Trials
% Bare Ground - 18 to 26 WAA
NA20T8B014H-WEW041, NA20T8B014H-WEW042

Mean values below box. Number of observations above box.
2020 TerraVue Forestry Trials
Ponderosa pine % Live Plants - 27+ WAA

NA20T8B014H-WEW041, NA20T8B014H-WEW042, NA20T8B014H-WEW043, NA20T8B014H-WLH018
NA20T8B014H-WLH078

Mean values below box. Number of observations above box.

All treatments with Accord XRT II 64 fl oz
2020 TerraVue Forestry Trials
Douglas fir % Live Plants - 27+ WAA

NA20T8B014H-WEW041, NA20T8B014H-WEW042, NA20T8B014H-WEW043, NA20T8B014H-WLH018
NA20T8B014H-WLH078

Mean values below box. Number of observations above box

All treatments with Accord XRT II 64 fl oz
Anticipated Additional Weed Spectrum Controlled by TerraVue™ Herbicide (beyond Milestone)

- Wild carrot
  *(Daucus carota)*
- Western Ironweed
  *(Vernonia baldwinii)*
- Tall ironweed
  *(Vernonia gigantea)*
- Buckhorn plantain
  *(Plantago lanceolate)*
- Common caraway
  *(Carum carvi)*
- Annual Marshelder
  *(Iva annua)*
- Poison Hemlock
  *(Conium maculatum)*
- Croton
  *(Croton capitatus)*
Sapphire® is Penoxsulam in a Suspension Concentrate

- Currently has a non-crop postemergence label
- Reduced Risk herbicide / Minimal PPE requirements
- Pre-emergence data accumulating for new label
- Past 3 years averaged 4000 acre commercial treatments/yr showing pre-emergence activity
- Pending Forestry uses on Ceanothus spp., blackberry, etc.

Sapphire is a triazolopyrimidine sulfonamide
# Sapphire® Current Specimen Label: Listed Weeds

<table>
<thead>
<tr>
<th>Weeds Controlled</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>pt/acre</td>
</tr>
<tr>
<td>English lawn daisy</td>
<td>0.25 – 1.5</td>
</tr>
<tr>
<td></td>
<td>(4 – 24 fl oz/acre)</td>
</tr>
<tr>
<td>burclover, California Cref</td>
<td>0.5 – 1.5</td>
</tr>
<tr>
<td>chickweed (common)</td>
<td>(8 – 24 fl oz/acre)</td>
</tr>
<tr>
<td>chickweed (mouseear)</td>
<td></td>
</tr>
<tr>
<td>clover, hop</td>
<td></td>
</tr>
<tr>
<td>clover, red</td>
<td></td>
</tr>
<tr>
<td>clover, white</td>
<td></td>
</tr>
<tr>
<td>oude weed, purple</td>
<td></td>
</tr>
<tr>
<td>dandelion, common</td>
<td></td>
</tr>
<tr>
<td>dollarweed</td>
<td></td>
</tr>
<tr>
<td>evening primrose, cutleaf</td>
<td></td>
</tr>
<tr>
<td>false dandelion</td>
<td></td>
</tr>
<tr>
<td>fiddleneck, coast</td>
<td></td>
</tr>
<tr>
<td>fleabane, hairy</td>
<td></td>
</tr>
<tr>
<td>fleabane, dwarf</td>
<td></td>
</tr>
<tr>
<td>groundsel, common</td>
<td></td>
</tr>
<tr>
<td>ivy, ground</td>
<td></td>
</tr>
<tr>
<td>lettuce, prickly lopesedea, common loosestrife, loose-leaf mare</td>
<td></td>
</tr>
<tr>
<td>marestail/horseweed</td>
<td></td>
</tr>
<tr>
<td>medic, black</td>
<td></td>
</tr>
<tr>
<td>mustard, black</td>
<td></td>
</tr>
<tr>
<td>mustard, Indian</td>
<td></td>
</tr>
<tr>
<td>mustard, wild nightshade, black</td>
<td></td>
</tr>
<tr>
<td>pigweed species</td>
<td></td>
</tr>
<tr>
<td>pineappleweed</td>
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</tr>
<tr>
<td>plantain, broadleaf</td>
<td></td>
</tr>
<tr>
<td>plantain, buckhorn</td>
<td></td>
</tr>
<tr>
<td>parsley-piert</td>
<td></td>
</tr>
<tr>
<td>purslane, common radiash, wild</td>
<td></td>
</tr>
<tr>
<td>redmaids</td>
<td></td>
</tr>
<tr>
<td>rocket, London shepherdspurse</td>
<td></td>
</tr>
<tr>
<td>smartweed, Pennsylvania sowthistle, annual storksbill, long thistle, Russian</td>
<td></td>
</tr>
<tr>
<td>Virginia buttonweed</td>
<td></td>
</tr>
<tr>
<td>willow herb</td>
<td></td>
</tr>
<tr>
<td>kyllinga, green (suppression only)</td>
<td>1 – 1.5</td>
</tr>
<tr>
<td>nutfedge, yellow</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weeds Suppressed</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>pt/acre</td>
</tr>
<tr>
<td>Barnyardgrass</td>
<td>0.25 – 1.5</td>
</tr>
<tr>
<td>(4 – 24 fl oz/acre)</td>
<td></td>
</tr>
<tr>
<td>tifanary, redstem</td>
<td></td>
</tr>
<tr>
<td>knotweed, prostrate</td>
<td></td>
</tr>
<tr>
<td>mallow, common</td>
<td></td>
</tr>
<tr>
<td>mallow, little</td>
<td></td>
</tr>
<tr>
<td>pepperweed, perennial</td>
<td></td>
</tr>
<tr>
<td>sowainste, perennial</td>
<td></td>
</tr>
<tr>
<td>speedwell</td>
<td></td>
</tr>
<tr>
<td>spurge, prostrate</td>
<td></td>
</tr>
<tr>
<td>spurge, spotted</td>
<td></td>
</tr>
</tbody>
</table>
Sapphire® Trials

Non-Crop and Forestry

Sapphire Specialty herbicide
Sapphire Non-Crop
Mustard spp. (shortpod, tansy, blue, tumble) % Control - 9 to 10 WAA

Mean values below box. Number of observations above box

% Control

Sapphire 16  
95.0

CleanTraxx 64  
99.2

Sapphire 18  
97.6

Sapphire 24  
19

Treatment (all with Accord XRTII 64 oz)
2021 Sapphire Forestry - Western U.S.
Green-leaf manzanita % Control - 19 to 22 WAA

Mean values below box. Number of observations above box

All with Accord XRT II 4 pts. pr/a
2020 Sapphire Forestry Trials
Deerbrush ceanothus % Control - 12 to 14 WAA

Mean values below box. Number of observations above box
2021 Sapphire Forestry - Western U.S.
Squawcarpet ceanothus % Control - 19 to 22 WAA

Mean values below box. Number of observations above box

All with Accord XRT II 4 pts. pr/a
2020 Sapphire Forestry Trials
Antelopebush % Control - 12 to 14 WAA

NA20E9A002H-WEW008
Mean values below box. Number of observations above box

* Purshia plicata (Antelope Bush, Buckbrush)
2021 Sapphire Forestry - Western U.S.
Blackberry, Himalaya % Control - 11 to 13 WAA

NA21E9A002H-WEW037

Mean values below box. Number of observations above box

All with Accord XRT II 4 pts. pr/a
2020 Sapphire Forestry Trials
Willowherb % Control - 12 to 14 WAA
NA20E9A002H-WEW008

Mean values below box. Number of observations above box

Treatment

Willowherb % Control - 12 to 14 WAA

100.0 95.8 96.2 100.0 97.5 98.8
4 4 4 4 4 4

Sapphire 16 + XRTII 64
Sapphire 24 + XRTII 64
Sapphire 16 + Transline 10 + XRTII 64
Sapphire 16 + Esp15 + XRTII 64
Sapphire 16 + Esp17 + XRTII 64
Sapphire 16 + Transline 10 + Esp5 + XRTII 64
2021 Sapphire Forestry - Western U.S.
Tropical brackenfern % Control - 19 to 22 WAA

Tropical brackenfern % Control - 19 to 22 WAA

All with Accord XRT II 4 pts. pr/a
2020 Sapphire Forestry Trials
Prickly lettuce % Control - 12 to 14 WAA
NA20E9A002H-WEW007

Mean values below box. Number of observations above box

Sapphire 16 + XRTII 64
Sapphire 24 + XRTII 64
Sapphire 16 + Transline 10 + XRTII 64
Sapphire 16 + Espl 5 + XRTII 64
Sapphire 16 + Espl 7 + XRTII 64
Sapphire 16 + Transline 10 + Espl 5 + XRTII 64
2021 Sapphire Forestry - Western U.S.
Bull thistle % Control - 19 to 22 WAA
NA21E9A002H-WEW037
Mean values below box. Number of observations above box

All with Accord XRT II 4 pts. pr/a
2021 Sapphire Forestry - Western U.S.
Bare ground - 19 to 22 WAA

NA21E9A002H-WEW037, NA21E9A002H-WEW038

Mean values below box. Number of observations above box

All with Accord XRT II 4 pts. pr/a
Thank You! I’ll answer any Q&A as soon as possible!

Legal Disclaimer

TerraVue™ has not yet received CA state registration; registrations are pending. Sapphire™ has not yet received a label update for forestry use sites. The information presented here is not an offer for sale.

Some states require an individual be licensed if involved in the recommendation, handling or application of any pesticide. Consult your local extension office for information regarding licensing requirements.

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Western District Portfolio

https://corteva.showpad.com/share/fBbOhWWzIF6XW9GndKhjk