

Utility Rights-of-Way Brush Control

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 **BASF**
We create chemistry

Agenda

- Objectives
- Benefits of Herbicides
- Application Techniques
- Tank-mixes



Rights-of-Way Vegetation Management Objectives

- Provide reliable energy
- Safe work conditions
- Access for maintenance
- Improve wildlife habitat



Why Spray?



Mowing with No Herbicides



Brush Resprouting 6 Months Later

Early Successional Habitat Provides

- Food
- Water
- Cover
- Nesting sites



Early Successional Habitat Loss

- USFWS estimated grasslands loss in U.S.
 - 1982 to 1997 97,000 sq. Kilometers, 24M/Ac
 - Area larger than Indiana

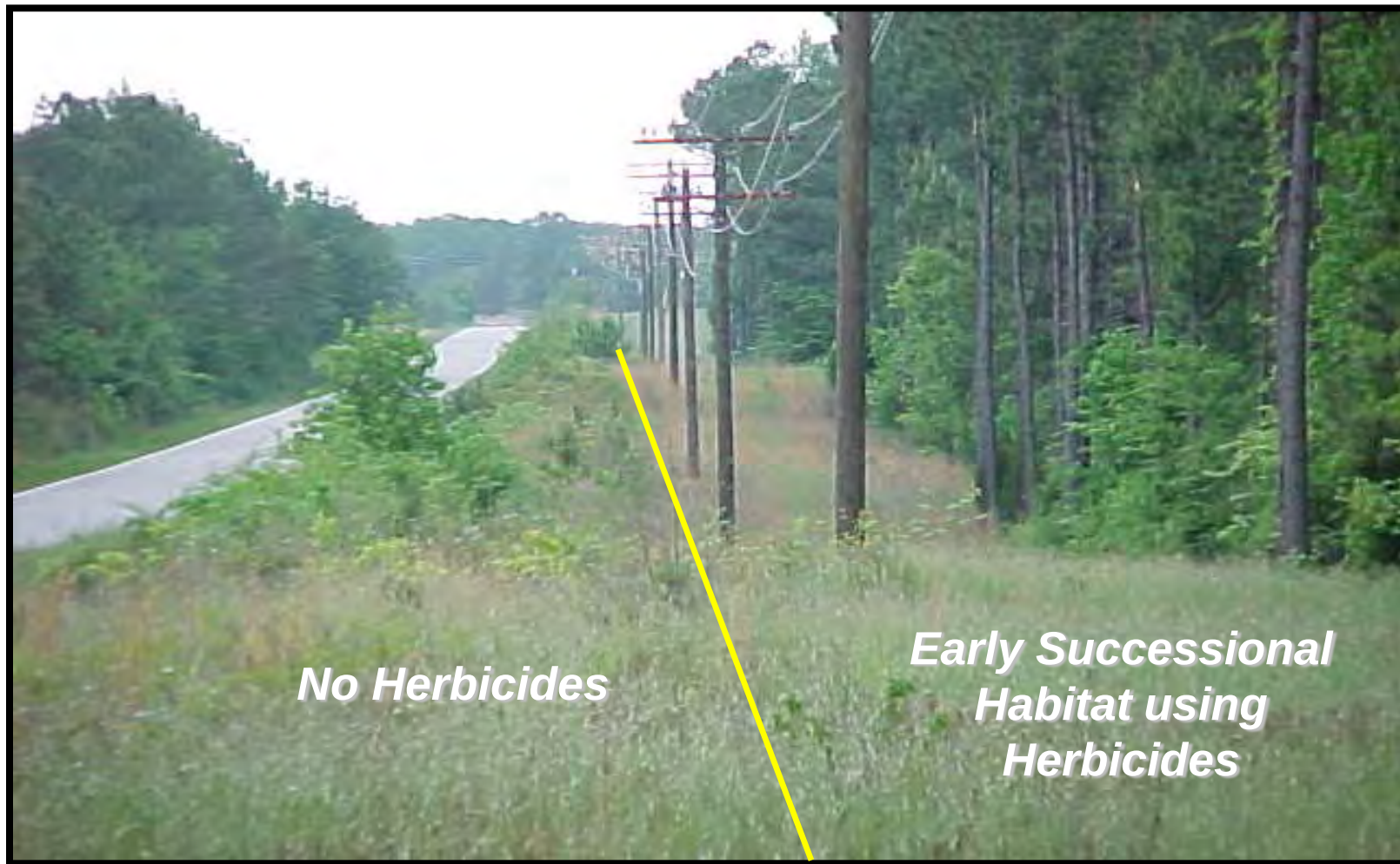


Herbicides Create Early Successional Habitat

- Release forbs (flowering plants)
 - Increase in pollinators
- Release legumes
 - Nitrogen fixers
- Increase high quality food
 - Beautyberry
 - Rubus
- Provide Cover
 - Release grasses
 - Cover for Turkey, quail and pheasant



Creating Early Successional Habitat



Utility Herbicide Applications

- Create early successional habitat
- Provide a network of enhanced habitat corridors
- Link other beneficial habitats



Utility Herbicide Applications

- Increase reliable power
- Improve safety
- Decrease costs

AND

- Improve habitat
- Increase wildlife food quality
- Increase cover
- Release native plants



Keys To Successful Herbicide Applications



- Know the site
- Use the appropriate technique
- Use the appropriate herbicides
- Calibrate equipment
- Read and follow label directions

BASF Solutions

- Arsenal
- Arsenal AC
- Arsenal PowerLine
- Detail
- Finale VU
- Stalker



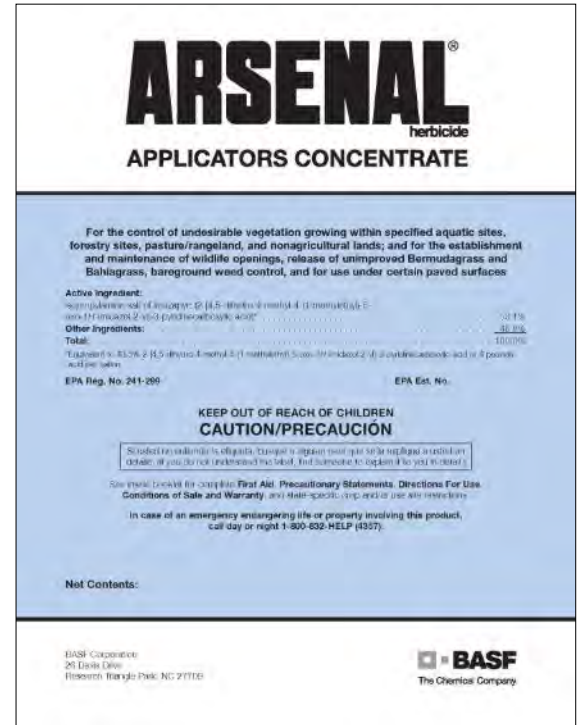
BASF Solutions

- Common Name: Arsenal
- Active Ingredient: Imazapyr 2 lbs. per gal.
- Group 2 herbicide
- Signal Word: Caution
- Mode of Action: ALS Inhibitor
- Strengths: Most hardwoods
- Weaknesses: Conifers and legumes
- Notes: The base of most brush programs.
Aquatic label and spot treatment in pasture



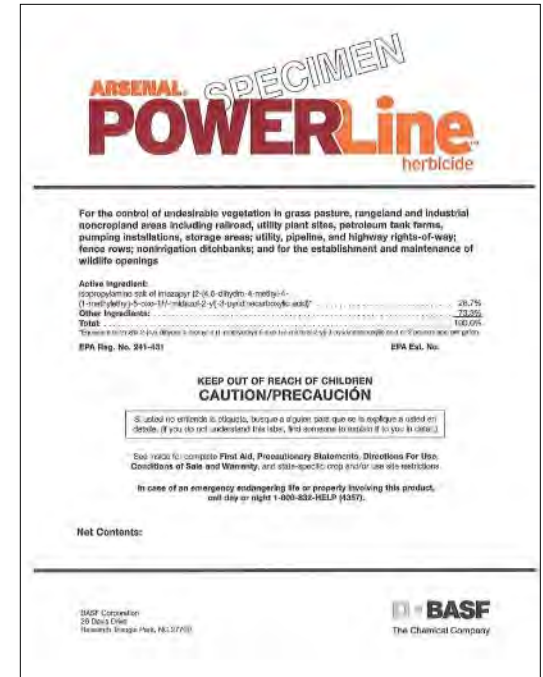
BASF Solutions

- Common Name: Arsenal AC
- Active Ingredient: Imazapyr 4 lbs. per gal.
- Group 2 herbicide
- Signal Word: Caution
- Mode of Action: ALS Inhibitor
- Strengths: Most hardwoods
- Weaknesses: Conifers and legumes
- Notes: The base of most brush programs.
Aquatic label and spot treatment in pasture

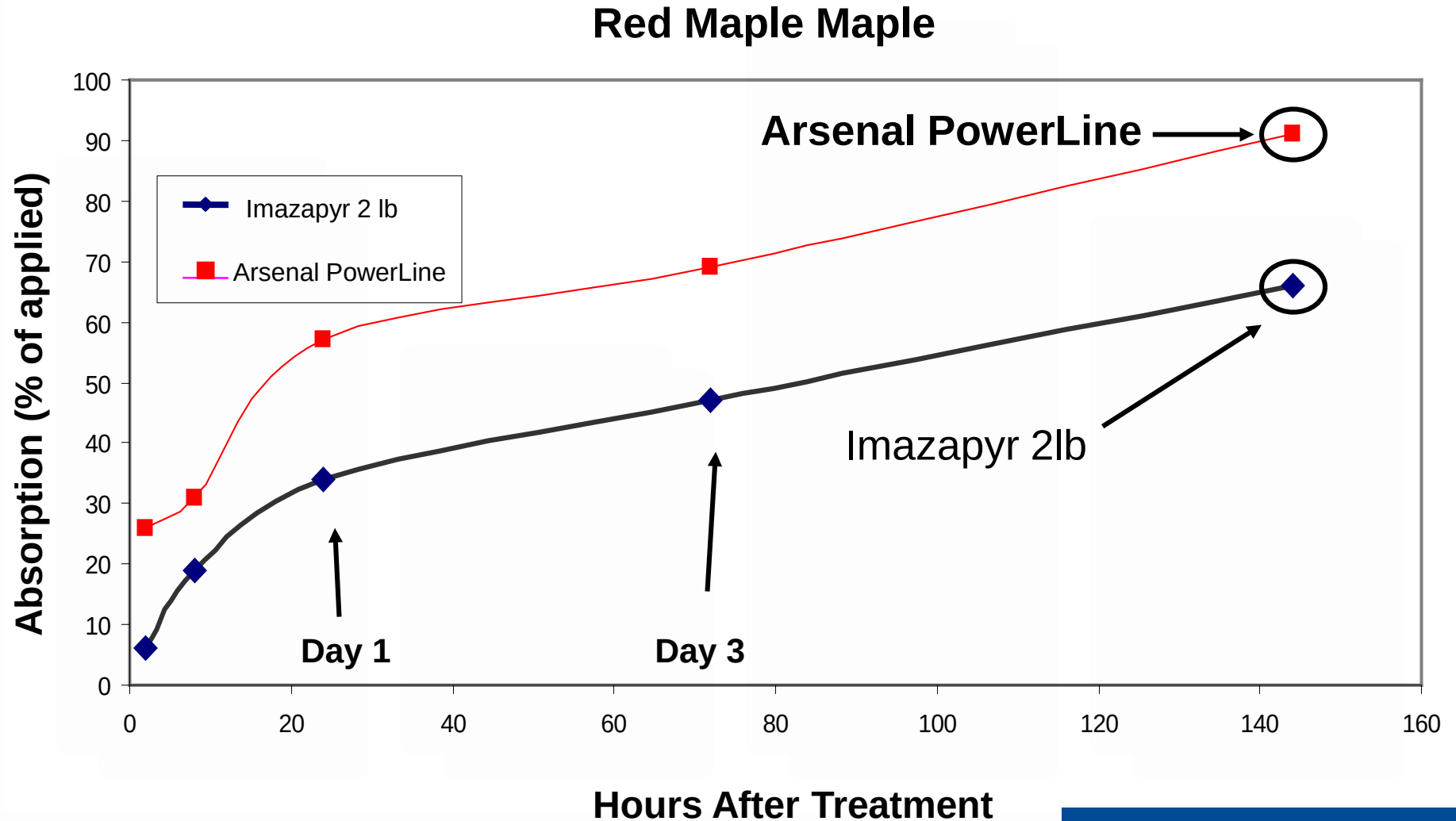


ProVM Product Review

- Common Name: Arsenal PowerLine
- Active Ingredient: Imazapyr 2 lbs. per gal.
- Group 2 herbicide
- Signal Word: Caution
- Mode of Action: ALS Inhibitor
- Strengths: Most hardwoods
- Weaknesses: Conifers and legumes
- Notes: **Transport Technology**™ improves control during drought and into late season up to full leaf color change. No aquatic language.



Impact of Transport Technology



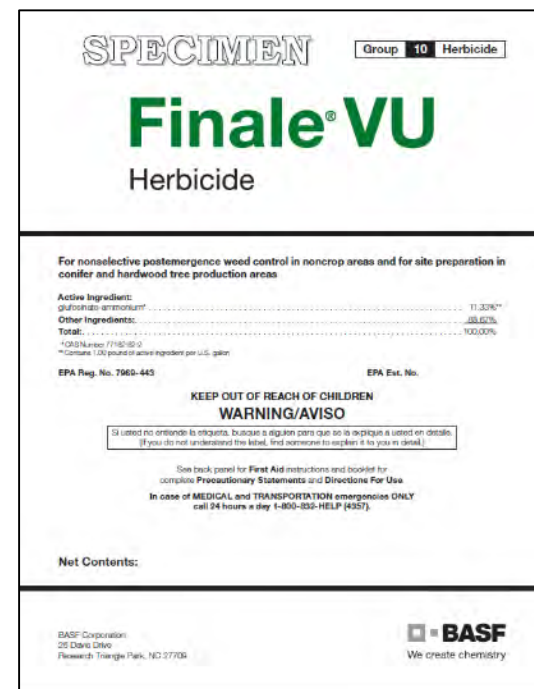
BASF Solutions

- Common Name: Detail
- Active Ingredient: Saflufenacil
- Group 14 herbicide
- Signal Word: Caution
- Mode of Action: PPO Inhibitor
- Strengths: Conifers
- Weaknesses: Hardwoods
- Notes: Coverage is critical. Great addition for conifer control, especially pine and eastern red cedar. Allows for lower rates of Method or Milestone. Pasture and rangeland uses



BASF Solutions

- Common name: Finale VU
- Active ingredient: Glufosinate
- Group 10 herbicide
- Signal Word: Warning (temporary eye irritation)
- Mode of Action: Glutamine Synthetase Inhibitor
- Strengths: Conifer control, especially pines
- Weaknesses: Lack of translocation
- Notes: Coverage is critical. Works best in high light and humidity. Add AMS if you have hard water or drought conditions.



Finale VU

- Rainfast in as little as 30 minutes but may take up to 4 hours depending on environmental conditions
- Use rates: 2 to 6 qts. based on weed height
- Use as a glyphosate alternative
- No soil residual – seed immediately
- One lb of active ingredient per gallon
- Packaging: 2 X 2.5 gallon and 30 gallons drums



BASF Solutions

- Common Name: Stalker
- Active Ingredient: Imazapyr 2 lbs. per gal.
- Group 2 herbicide
- Signal Word: Caution
- Mode of Action: ALS Inhibitor
- Strengths: Hardwoods
- Weaknesses: Conifer and legumes
- Notes: Only imazapyr formulation designed to mix with basal oil carriers for cut stump and basal treatments. No aquatic language.



Applications Techniques

- Aerial
- Ground
- Broadcast
- Selective
- Foliar
- Cut stubble
- Dormant stem
- Basal
- Cut stump

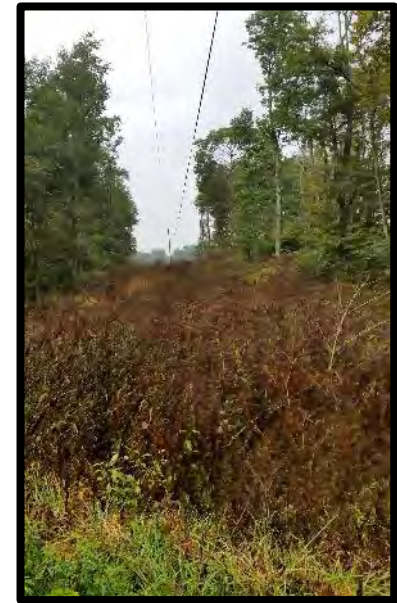


Factors for Selecting Applications Techniques

- Terrain
- Access
- Visibility
- Brush height
- Brush density
- Time of year
- Control
- Efficiency
- Cost

Selectivity

- Achieved by selective placement or tank-mix
- Non-selective products can leave bareground halos around treated brush
- Non-selective products applied as individual plant treatments can be selective across the R/W in light density brush at low water volumes.
- Grass friendly products require more coverage and will control plants favored by pollinator species the first year when applied as broadcast treatments
- Rights-of-way recover faster following grass friendly product applications
- Bareground halos nor grass monocultures provide biodiversity
- Use the correct technique to achieve you goal



Visibility

- Application technique drives visibility
- Time of year changes visibility
- Products with odor increases visibility
- Rapid brownout increases visibility

Brush Mixes

- Great diversity across the country
- Provide versatility to meet local situations
- Polled many Distributor Sales Reps for input
- Not every mix is covered in this presentation

Aerial Broadcast



- Any terrain
- Inaccessible areas
- High visibility
- Medium to tall brush
- Medium to dense brush
- Efficient
- Low cost
- 95%+ control
- Non-selective placement

Brush Mixes

Aerial Broadcast Foliar – Mixed in 15 to 25 gallons water per acre

- 24 oz. Arsenal + 4 qts. Accord XRTII + 2 oz. Escort XP + 2 oz. Detail
 - ▶ Reduce rate to 12 oz. if using Arsenal AC
 - ▶ Substitute 4 qts. Finale VU as a glyphosate alternative
- 24 oz. Arsenal + 8 oz. Method + 2 oz. Escort XP + 2 oz. Detail
- 6 qts. Vastlan + 2 qts. Tordon 22K + 7 oz. Milestone + 2 oz. Escort XP
- 24 oz. Arsenal + 4 qts. Rodeo (Aquatic)

Aerial Broadcast



Aerial Broadcast



6 qts. Garlon 3A + 17 oz.
Method + 7 oz. Milestone VM
+ .75 oz. Escort XP

Ground Broadcast



- Drivable terrain
- Good access
- Medium visibility
- Medium height brush
- Medium to dense brush
- Medium efficiency
- Medium cost
- 95%+ control
- Non-selective placement

Brush Mixes

Ground Broadcast Foliar – Mixed in 30 to 50 gallons water per acre

- 16 oz. Arsenal + 4 qts. Accord XRTII + 2 oz. Escort XP + 2 oz. Detail
 - ▶ Reduce rate to 8 oz. if using Arsenal AC
 - ▶ Substitute 4 qts. Finale VU as a glyphosate alternative
- 16 oz. Arsenal + 8 oz. Method + 2 oz. Escort XP + 2 oz. Detail
- 6 qts. Vastlan + 2 qts. Tordon 22K + 7 oz. Milestone + 2 oz. Escort XP
- 7 oz. Milestone + 4.5 pts Vastlan + 24 oz. Tordon 22K + 2 oz. Escort XP
- 1 qt. Vastlan + 8 oz. Method + 2 oz. Escort XP
- 16 oz. Arsenal + 4 qts. Rodeo (Aquatic)

Ground Broadcast



High Volume Foliar



- All terrain
- Good access
- Medium visibility
- Medium to tall height brush
- Medium to dense brush
- Medium efficiency
- Medium cost
- 95%+ control
- Selective placement

Brush Mixes

High Volume Foliar – Mixed per 100 gallons water

- 8 oz. Arsenal + 7 oz. Milestone + 2 oz. Escort XP
 - ▶ Reduce rate to 4 oz. if using Arsenal AC
- 12 oz. Arsenal + 4 qts. Rodeo (Aquatic)
- 7 oz. Milestone + 4.5 pts Vastlan + 24 oz. Tordon 22K + 2 oz. Escort XP
- 12 oz. Arsenal + 8 oz. Method + 2 oz. Escort XP + 2 oz. Detail
- 2 qts. Vastlan + 8 oz. Method + 2 oz. Escort XP

High Volume Foliar Finale[®] VU for Control of Red Cedar

June Application



20 DAT



High Volume Foliar – 2 MAT

8 qts. Garlon 3A + 4 oz Detail + 2 oz. Escort



Low Volume Foliar



- All terrain
- All access
- Low visibility
- Small to medium height brush
- Low density brush
- High efficiency
- Low cost
- 95%+ control
- Selective placement



Brush Mixes

Low Volume Foliar - Mixed in 100 gallons water

- 0.5% Arsenal + 0.5% Method + 6 oz. Escort XP + 4 oz. Detail
 - ▶ Use 0.25% rate if using Arsenal AC
- 0.5% Arsenal + 2% Rodeo + 40 oz. Milestone + 6 oz. Escort XP
- 0.5% Arsenal + 2% Accord XRTII + 4 oz. Detail + 6 oz. Escort XP
 - ▶ Substitute 2% Finale VU as a glyphosate alternative
- 2 gal. Vastlan + 25 oz. Milestone + 4 oz. Escort XP
- 0.5% Arsenal + 2% Rodeo (Aquatic)

Low Volume Foliar

10 DAT



9 MAT



3.75 YAT



$\frac{1}{4}\%$ Detail + $\frac{1}{2}\%$ Arsenal PowerLine + 3% Accord XRT + 1 oz. per acre Escort

Low Volume Foliar

1 MAT



8 MAT



.125% Detail + .5% Arsenal + 3% Accord XRT

Low Volume Foliar

1 MAT

8 MAT



.125% Detail + .5% Arsenal + 3% Accord XRT

Low Volume Foliar

1 MAT



11 MAT



.375% Arsenal AC + .5% Method + 6 oz. Escort XP per 100 gallon

Dormant Stem



- All terrain
- Good access
- Medium visibility
- Low to medium height brush
- Medium to high density brush
- Medium efficiency
- Medium cost
- Extends season
- 70%+ control
- Selective Placement

Brush Mixes

Dormant Stem – Mixed in 100 gallon water

- 16 oz. Stalker + 1.5 gal. Garlon 4 Ultra + 7 oz. Milestone + 2 gal. Basal Oil
- 16 oz. Stalker + 24 oz. Tordon 22K + 2 gal. Basal Oil
- 16 oz. Stalker + 10 oz. Method + 2 gal. Basal Oil

Dormant Stem



2MAT

6 gal Garlon 4 Ultra + 2 qts Arsenal + 56oz Milestone + 8 gallons HyGrade EC per 100 gallons water. **5.24 GPA**

Dormant Stem



16 oz. Arsenal + 16 oz. Method + 2 qts. Garlon 3A + 2% Basal Oil per 50 gallons of water

Dormant Stem (1 YAT)



Basal Bark



- All terrain
- All access
- Low visibility
- Medium to tall height brush
- Low to medium density brush
- Low efficiency
- High cost
- Extends season
- 90%+ control
- Selective placement

Brush Mixes

Basal Bark

- 1% Stalker + 15% Garlon 4 Ultra + Basal Oil
- 25% Garlon 4 Ultra + Basal Oil
- 1% Stalker + 20% Garlon 4 Ultra + 1% Milestone + Basal Oil

Basal Bark



Basal Bark (8 MAT)



Cut Stump



- All terrain
- All access
- Low visibility
- All height brush
- All density brush
- Low efficiency
- High cost
- Extends season
- 90%+ control
- Selective placement

Brush Mixes

Cut Stump (stumps cut more than 24 hours)

- 1% Stalker + 15% Garlon 4 Ultra + Basal Oil
- 25% Garlon 4 Ultra + Basal Oil
- 1% Stalker + 20% Garlon 4 Ultra + 1% Milestone + Basal Oil

Freshly Cut Stump (stumps cut less than 24 hours)

- 10% Arsenal + Water
- 50% Accord XRTII + Water

Cut Stubble



- **Driveable terrain**
- **Good access**
- **Medium visibility**
- **All height brush**
- **All density brush**
- **Medium efficiency**
- **High cost**
- **Extends season**
- **80%+ control**
- **Non-selective placement**

Brush Mixes

Cut Stubble – Mixed in 100 gallons water

- 16 oz. Arsenal + 1 qt. Tordon 22k + 7 oz. Milestone
- 16 oz. Arsenal + 16 oz. Method
- 16 oz. Arsenal + 2 qts. Tordon 22K
- 1 qt. Tordon 22k + 9 oz. Streamline
- 1 qt. Tordon 22k + 13 oz. Viewpoint

Cut Stubble



Before



2 YAT

Cut Stubble



Untreated



3 YAT

1 qt. Tordon 22k + 7 oz. Milestone + 16 oz. Arsenal

Cut Stubble



Untreated



3 YAT

1 qt. Tordon 22k + 9 oz. Streamline

Factors for Selecting Application Technique

Name	Terrain	Access	Visibility	Brush Height	Brush Density	Time of Year	Control	Efficiency
Aerial Broadcast Foliar	All Mountains Wetlands	All Focused on limited	High	Medium to High	Medium to High	Growing Season	95%+	High
Broadcast Foliar	Drivable	Good	Medium	Medium	Medium to High	Growing Season	95%+	Medium
High Volume Foliar	All	Good	Medium	Medium to High	Medium to High	Growing Season	95%+	Medium
Low Volume Foliar	All	All	Low	Low to Medium	Low	Growing Season	95%+	High
Dormant Stem	All	Good	Medium	Low to Medium	Medium to High	Dormant and Growing Seasons	70%+	Medium
Basal Bark	All	All	Low	Medium to High	Low to Medium	Growing and Dormant Seasons	90%+	Low
Cut Stump	All	All	Low	All	All	Growing and Dormant Seasons	90%+	Low
Cut Stubble	Drivable	Good	Medium	All	All	Growing and Dormant Seasons	80%+	Medium

Keys To Success

- Know the site
- Use the appropriate technique
- Use the appropriate herbicide
- Calibrate equipment
- Read and follow label directions



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 - Posted on the ProVM website
 - Timely subjects

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 - Timely subjects

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Questions?

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additional product information!**

Thank You!



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