

# Habitat Protection and Restoration Before and After Rangeland Wildfires



# Rangeland Wildfires

- Impacts
- Reducing impacts
- Invasive weed control
- Habitat restoration



# Rangeland Wildfires

- Historically every 60 to 100 years
- Small fires (hundreds of acres)
- Today every 3 to 5 years
- Large fires (hundreds of thousands of acres)
- 4 million acres burn every year (USDA- Ag Research Station)



# Invasive Weed Management

## ■ Prevention - Before wildfire

- ▶ Invasive weed control
- ▶ Greenstripping – minimize fire incidence and size

## ■ Restoration - After wildfire

- ▶ Release native plants
- ▶ Plant / seed native plants



# Cheatgrass

- More than 100 million acres infested
- Common along roadsides and in pasture and rangeland
- Seeds tolerate intense heat of fires
- Germinate in the fall, take root and grow in the winter
- Creates dry, highly flammable biomass
- Increases intensity of fires
- Outcompetes native plants
- Forms monocultures



*Managing Landscapes for Sage Grouse with an Emphasis on Fire and Greenstripping*  
Dr. Terry Messmer, Professor of Wildland Resources, Utah State University



# Greenstripping

- Long, narrow bands of fire-retardant vegetation
- Serve as firebreaks
  - ▶ Sagebrush
  - ▶ Serviceberry
  - ▶ Bitterbrush
  - ▶ Rabbitbrush
  - ▶ Perennial bunch grasses
- Hold moisture and form native vegetation green firebreaks
- Minimizes fire potential and size



# Greenstripping

- Improves fire control in high risk areas along roadsides and railroads
  - ▶ Prevent ignition
  - ▶ Slow spread
- Protects local communities – break up block of flammable non-native vegetation
  - ▶ Dramatically reduce property loss
  - ▶ Protect individual homes and neighborhoods
- Restore natural habitat
  - ▶ Improve wildlife populations – mule deer, sage grouse
  - ▶ Release native plants



# Greenstripping Tips

- Species will vary by region
- Plants are widely spaced with little fuel growing in between
- Select species that will:
  - ▶ Readily establish themselves after planting
  - ▶ Are difficult to ignite
  - ▶ Burn with low intensity
- Contact your local NRCS for recommendations





# Greenstripping Tips

- The length and width vary
  - ▶ Where it is located
  - ▶ Vegetation present
- In grasslands may be 30 ft wide
- In grassland – shrubs use 200 to 300 ft wide
- In forested areas may need to 300 ft or more wide
- Use with man made firebreaks (roads and railroads) to reduce the required greenstrip width



# Creating Greenstrips

- 3 step process
  - ▶ Remove existing vegetation
  - ▶ Prepare the seedbed
  - ▶ Seed desired native plants



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# Creating Greenstrips

## ■ Remove existing vegetation

### ▶ Mechanical

- Mow
- Chip

### ▶ Cultural

- Intensive grazing
- Mowing
- Raking
- Controlled burns

### ▶ Herbicides

- Fall application of 4 to 8 oz. Plateau
- Spring planting



Antelope on a Green Strip Planting of 'Immigrant' Forage Kochia

# Creating Greenstrips

## ■ Prepare the seedbed

- ▶ Disc
- ▶ Cultipack
- ▶ Chaining





# Creating Greenstrips

## ■ Seed native plants

- ▶ Drill – preferred method
  - No-till or rangeland drills
- ▶ Aerial Seeding – large areas or when access is difficult
  - Follow with chaining to cover seed

## ■ Planting companion crops is not recommended

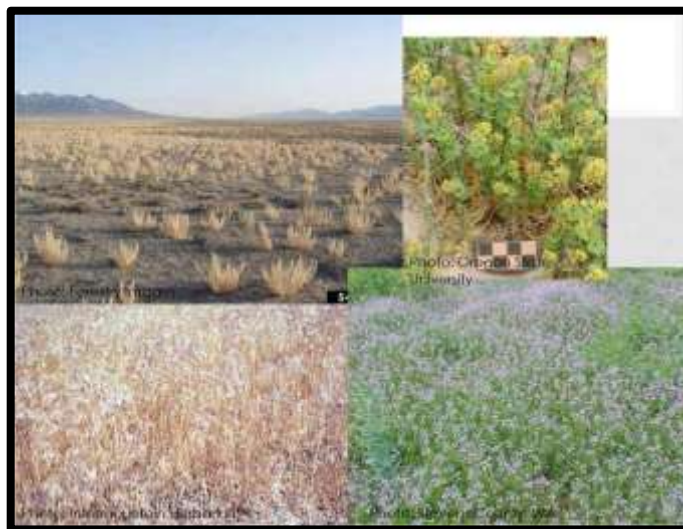




# Greenstrips Plants

## ■ Low rainfall: (less than 15 inches annual precipitation)

- ▶ Crested wheatgrass
- ▶ Siberian wheatgrass
- ▶ Russian wildrye
- ▶ Dryland alfalfa
- ▶ Blue flax
- ▶ Lewis flax



- ▶ Forage kochia In higher rainfall areas hard fescue, sheep fescue, Russian wildrye and small burnet should be considered.

# Greenstrips Plants

■ Higher rainfall: (more than 15 inches annual precipitation)

- ▶ Hard fescue
- ▶ Sheep fescue
- ▶ Russian wildrye
- ▶ Small burnet

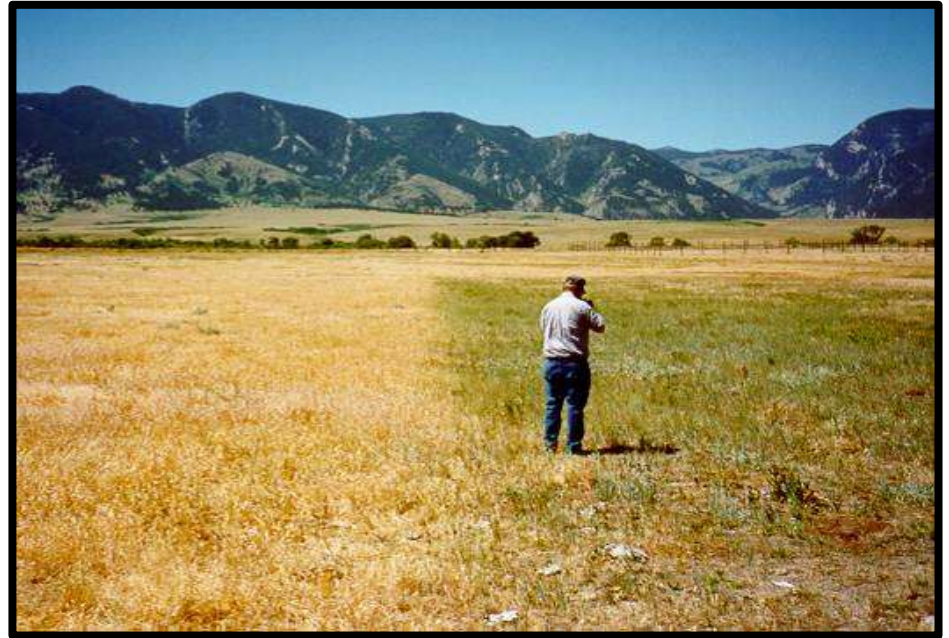


# History of Success



# Plateau

- History
- Properties
- Proper use
- Tips for success
- Comparison to Rejurva
- Benefits of Plateau





# Plateau History

- Registered in 1996
- BLM approval in 2007
- BLM rate set at 6 oz
  - ▶ Cheatgrass and Medusahead
  - ▶ Threshold rate – compromise rate to balance impacts
  - ▶ Longer lasting control at higher rates
- 20+ years of successful operational applications





# Mis-Information / Mis-Understanding

- Use in spring applications
- Spray cheatgrass and Medusahead very late into fall or early winter
- Nothing will germinate following application
- Plateau kills sagebrush and other woody native vegetation
- Cheatgrass control is poor
- Plateau only provides one year of control

# Plateau Mode of Action

- ALS Inhibitor
- Caution signal word
- Pre and early post-emergent activity
- Minimal woody species activity
- Controls cheatgrass and Medusahead pre and early post-emergent
- Late summer timing (before or just after green-up)
- Add glyphosate for burndown after cheatgrass green-up

# Plateau Mode of Action

- Best activity when applied to mineral soil following fire
- Must have rainfall to activate
- Controls many weeds pre and post-emergent
- Most legumes and warm season grasses are tolerant
- Plateau will release beneficial native and pollinator plants
- Length of control is based on rate and environmental conditions

# Plateau Review

## ■ Important Species Controlled

- ▶ Medusahead
- ▶ Cheatgrass
- ▶ Leafy Spurge
- ▶ Japanese Brome
- ▶ Russian Knapweed
- ▶ Dalmatian Toadflax
- ▶ Many others

# Cheatgrass Control

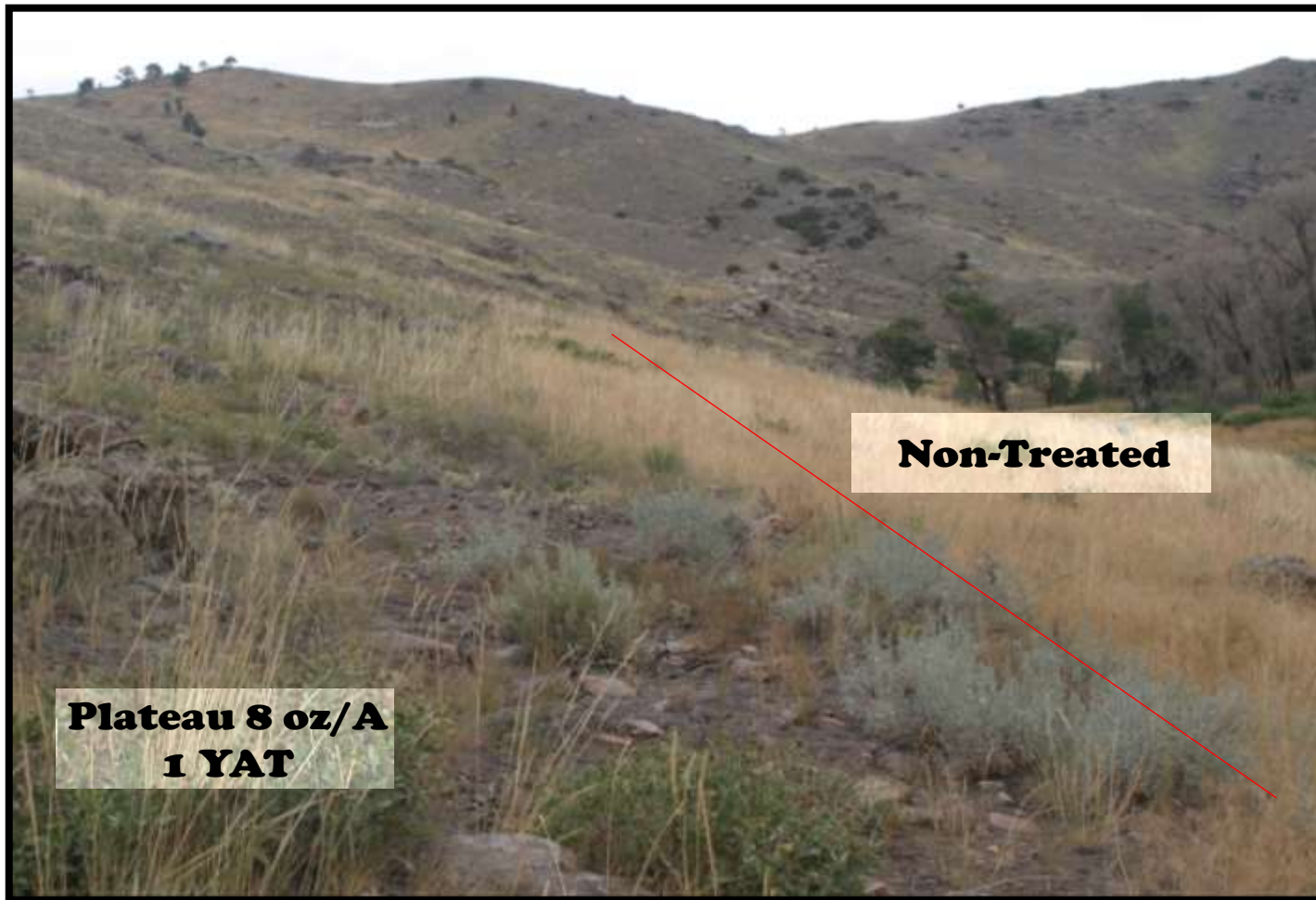
## Control Options

- 2 – 10 oz. Plateau
  - ▶ Rate varies greatly by region
  - ▶ Pre or early post-emergent
  - ▶ Late summer before green-up
  - ▶ Best results after fire
  - ▶ Some cool season grass injury can occur
- 5 oz. Rejurva





# Cheatgrass Control



# Cheatgrass Control Impact on Fire

- Study by BASF and Synergy Resource Solutions - 2002
  - ▶ Flame height reduced up to 88%
  - ▶ Rate of spread lowered by as much as 95%



# Native Vegetation Restoration

	Cheatgrass Pre-Treat	Cheatgrass Post Treat	Native Vegetation Pre-Treat	Native Vegetation Post Treat
Non-Treated	67%	75%	33%	25%
Plateau	84%	0%	16%	100%

6.12.2004

# Fresh Weight Grass Yields

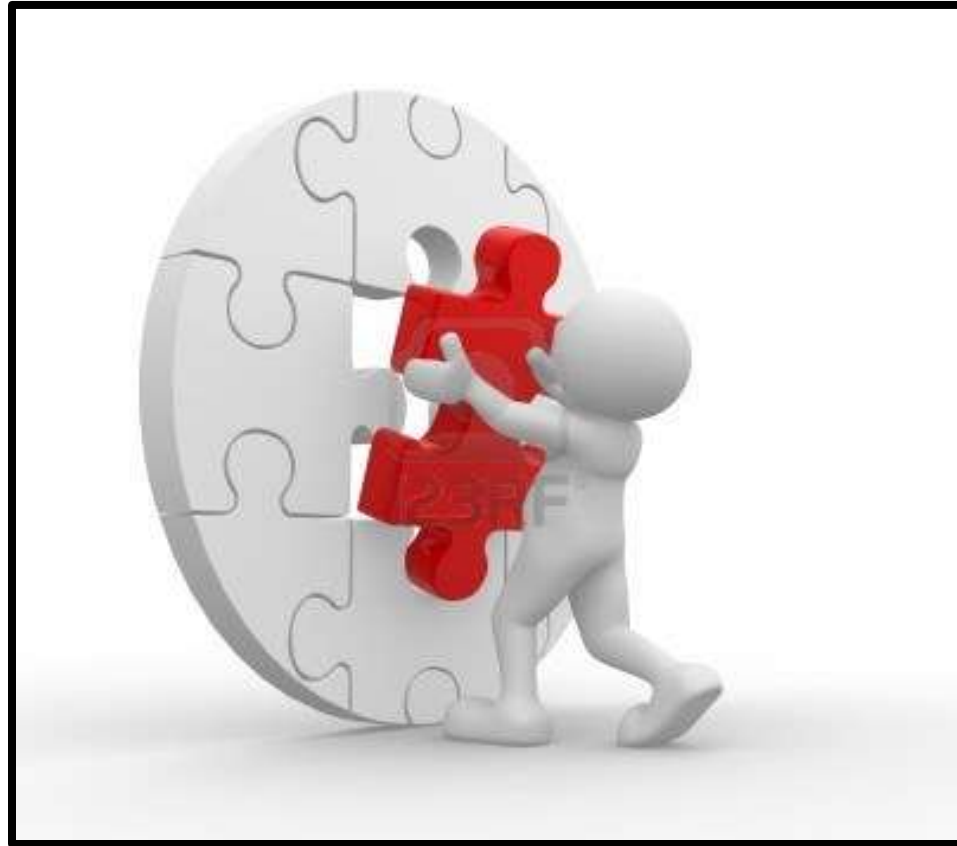
## Small Ranch, WY

	<b>Native Grass Yield Lbs/A</b>	<b>Cheatgrass Yield Lbs/A</b>
<b>Plateau 4 oz/A</b>	<b>3344</b>	<b>3</b>
<b>Non-Treated</b>	<b>408</b>	<b>2950</b>
<b>+/-</b>	<b>8.2 X increase</b>	<b>983 X decrease</b>

Applied 8/24/02 - Clipped 11 MAT

# Factors That Influence Control

- Timing
- Thatch
- Rate
- Moisture
- Soil



# Timing

- Use Plateau in August/October **BEFORE** or **AS** Cheatgrass and Medusahead emerge
- Add 8 oz. glyphosate + 1% MSO after green-up
- Use Post-emergent applications later in the fall for leafy spurge, Dalmatian toadflax or when trying to release desirable woody species





# Thatch Removal

- Prescribed burn
- Heavy grazing
- Mowing/racking
- Other





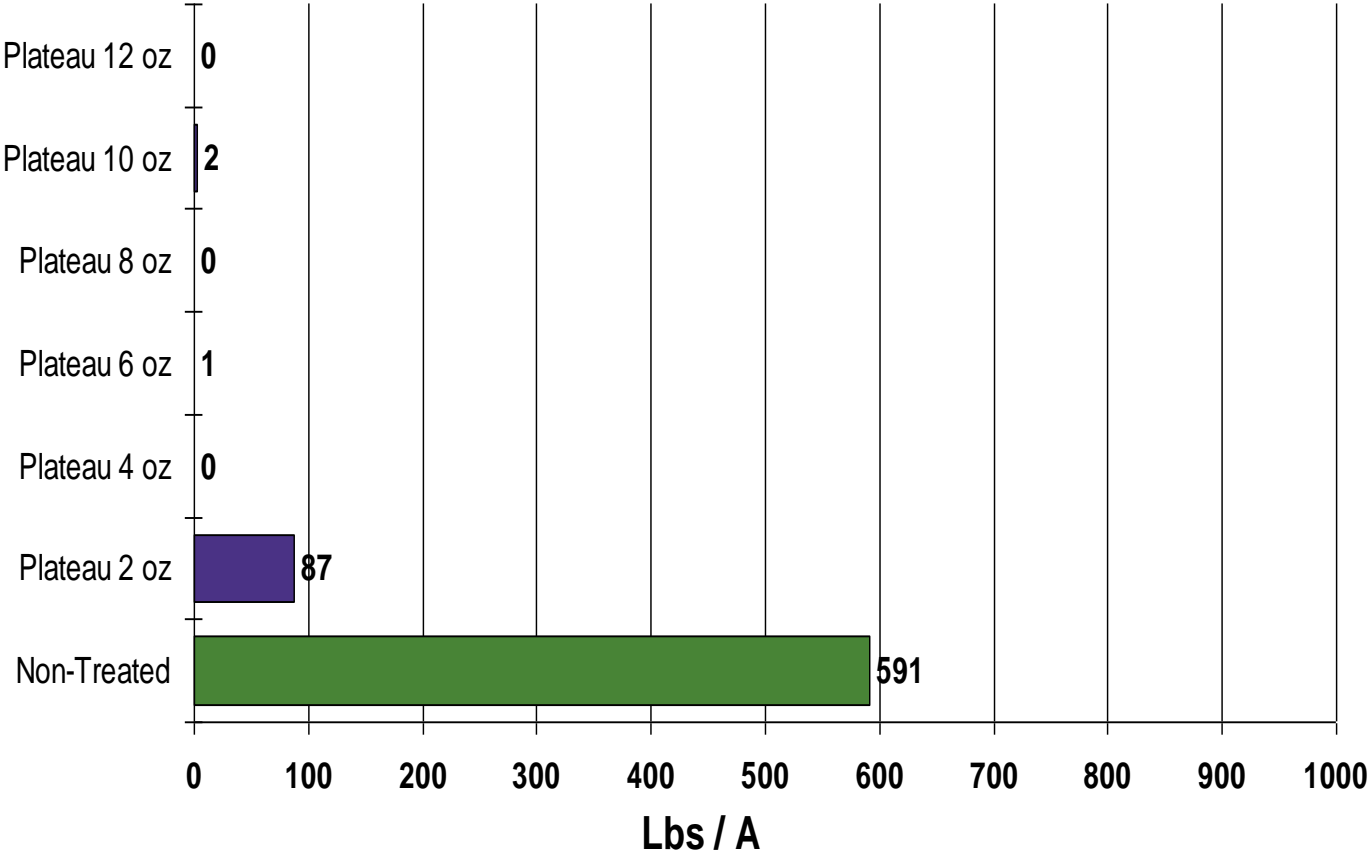
# Rates

- Length of control dictated by rate, moisture and temperatures
- In many cases, 6-10 oz. per acre is the appropriate rate
- Use lower rates on sandy soils, soils with low pH or in cool dry sites.
- Add 1% MSO for ALL post-emergent applications
- Plateau controls cheatgrass for 3 years in most cases



# Dry Weight Yields of Downy Brome

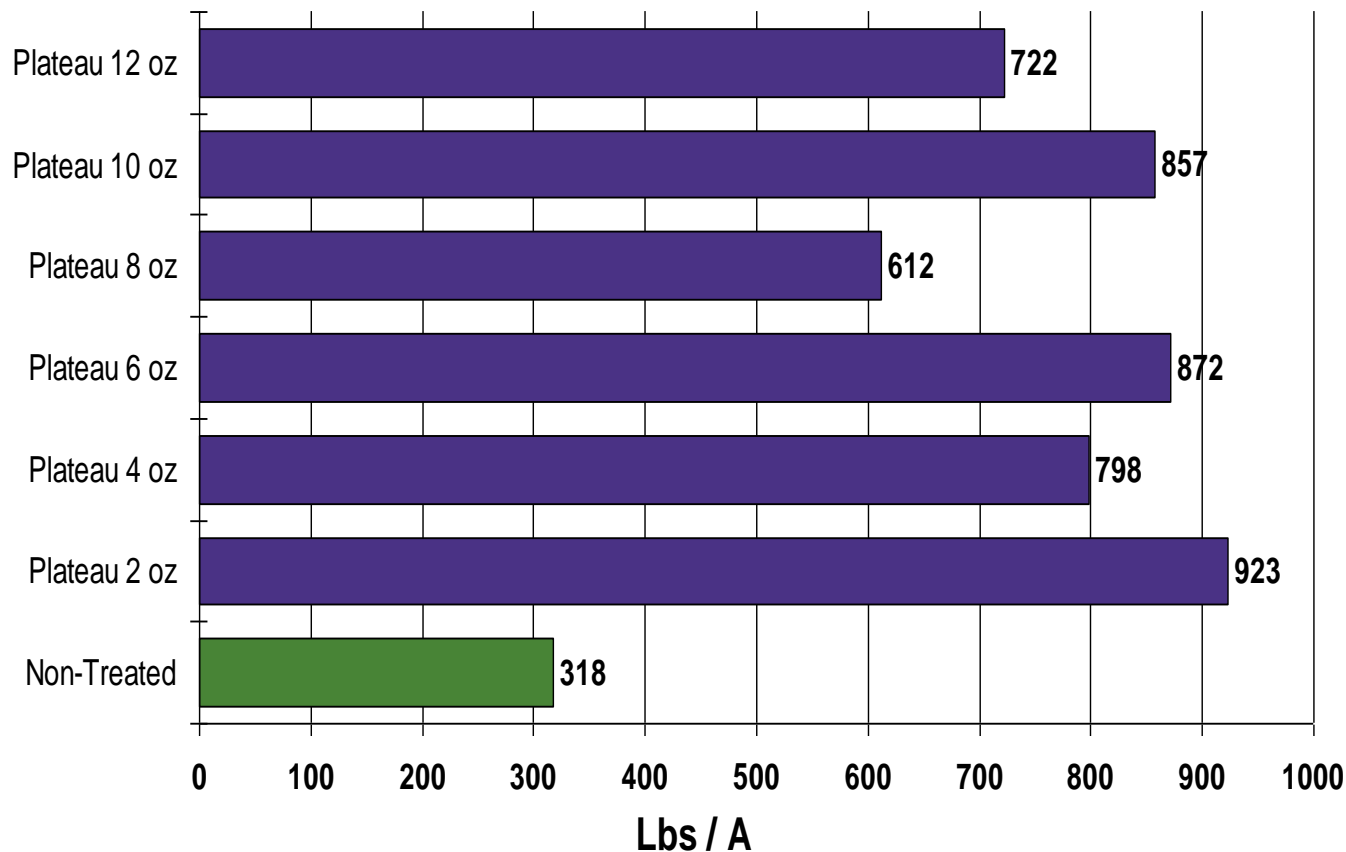
Applied 9/5/02    8/20/03    11 MAT



Data by Dr. Tom Whitson, UWY

# Dry Weight Yields of Perennial Grass

Applied 9/5/02 8/20/03 11 MAT



Data by Dr. Tom Whitson, UWY

# Western Wheatgrass Release



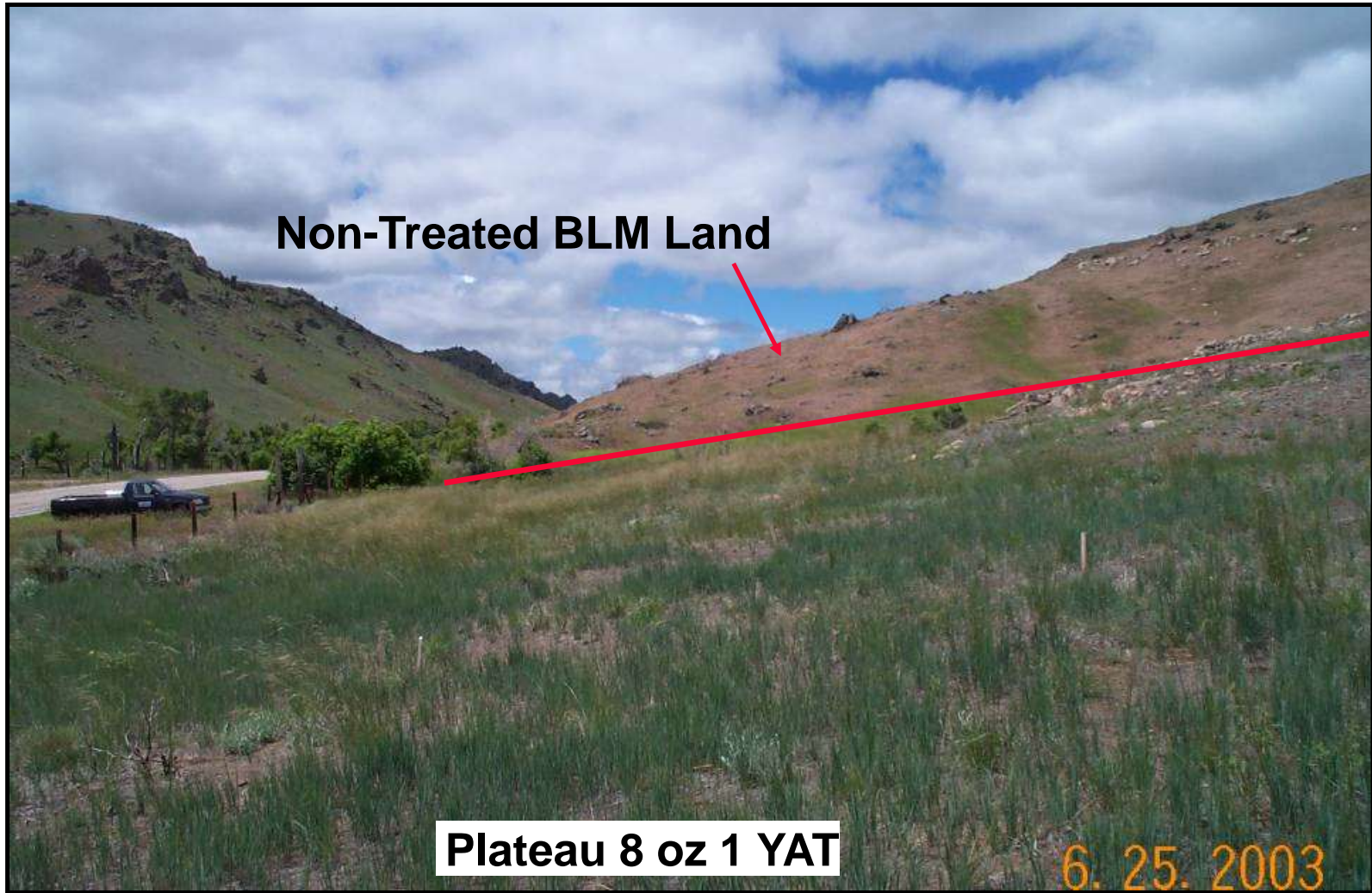


# Western Wheatgrass Release





# Plateau Cheatgrass Control 1 YAT



# Plateau Cheatgrass Control 3 YAT

## 8 oz. Plateau



8 oz. Plateau - WY



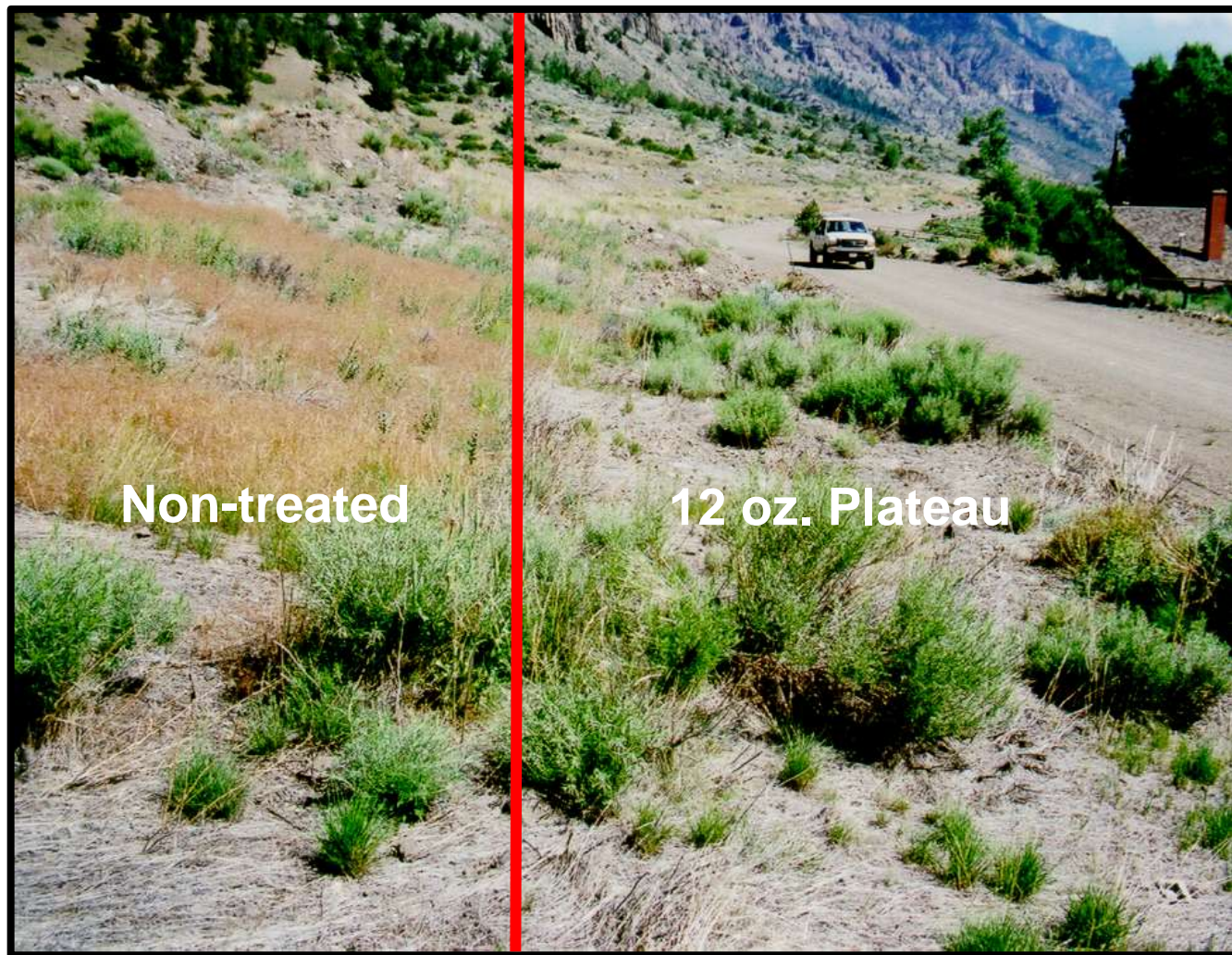
# Dalmatian Toadflax & Downy Brome Control 3 YAT



Western Wheatgrass Release



# Dalmatian Toadflax and Cheatgrass Control



# Moisture

- Time applications when rainfall is likely within a few days
- Minimum of ½ inch rainfall required to activate in soil
- Results will diminish if no rainfall within 30 days of application

✧ Sept 2-Sept 12, 2010 - Spray Plateau herbicide

✧ 5 oz Plateau/acre

1 qt MSO/acre

Applied in 10 gal water/acre





# Behavior in Soil

- Half-life is 31 to 410 days depending on rate, moisture and temperature (120 days typical)
- Plateau is broken down by soil microbes. Product breaks down the fastest when it is warm and moist
- Plateau is more effective at lower soil pH; No effect for increasing pH above 6.5.
- Applications to bare mineral soil, after fire are the most effective. Wait 2 weeks after fire before treatment

# Requires Uniform Application

- Most applications are by fixed wing and helicopter
- Note green streaks where applicator missed.



Diamond, OR

# Medusahead



# Medusahead

- Eastern OR, WA and western ID
- Common along roadsides, in pastures and rangeland
- Thrives with fire
- Highly flammable
- Spreads by seed
- Forms monocultures
- BASF and BLM developed protocols for rehab efforts over the last 10 years



# Medusahead Control

## Control Options

- 6 - 8 oz. Plateau
  - ▶ Pre or early post-emergent
  - ▶ Late summer before green-up
  - ▶ Best results after fire
  - ▶ Some cool season grass injury can occur
- 5 oz. Rejurva





# Successful Rehab of BLM

- 30,000 near Burns, OR
- Sprayed 2016
- Medusahead controlled
- Desirable native vegetation released
- BLM has documented shifting of plant population toward desirable native vegetation



# Native Plant Release Following Wildfire

7 oz. Plateau for Medusahead



Treated



Untreated



# Native Plant Release Following Wildfire

7 oz. Plateau + MSO for Medusahead



# After Fire Restoration

**The best time to apply Plateau is immediately after a fire!**

- PLATEAU

- Wildfire May-August

- ▶ Allow carbon residue to dissipate (~2wks)
- ▶ Apply after late July up to germination of brome
- ▶ Seed at the desired time

- PLATEAU + Glyphosate

- Wildfire May-August

- ▶ Allow carbon residue to dissipate (~2wks)
- ▶ Apply after brome germinate, up to early tiller
- ▶ Seed after herbicide application

# Restoration - Revegetation

## ■ Prepare seed bed

- ▶ Thatch removal
  - Prescribed burn
  - Heavy grazing
  - Mowing/racking
  - Other

## ■ Apply Plateau in fall

## ■ Seed area next spring



# Native Woody Vegetation Restoration

- Spray during leaf color change or after leaf drop
- No surfactant
- See label for tolerance information

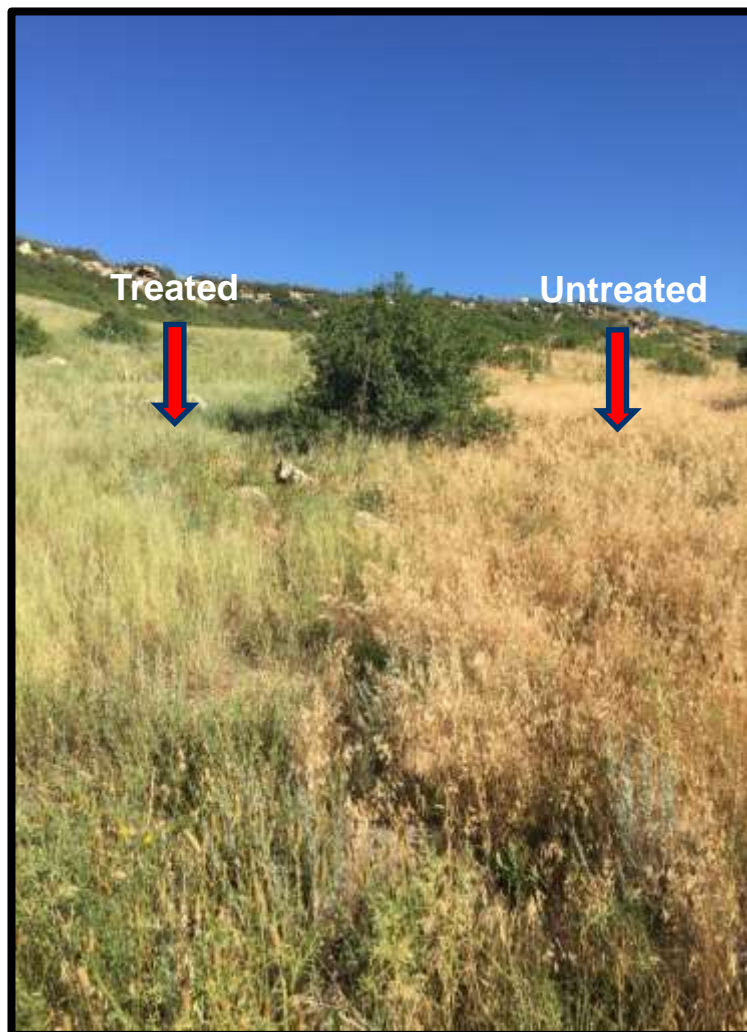


# Native Woody Vegetation Restoration

- Sagebrush:
  - ▶ Fringed, Silver, Wyoming, Sand, etc.
- Antelope Bitterbrush
- Atroplexes – Four wing, Shadscale
- Mountain Mahogany
- Rabbit brush species
- Greasewood
- And many others

# Mountain Mahogany Release - Fort Collins, CO

**Cheatgrass Control**  
**Applied 11/9/15 - 7 MAT**



**5 oz. Plateau + 1% MSO**

# Tips for Success

- Know the tolerance of the species you want to promote
- Reducing the thatch layer will greatly improve performance
- Use higher rates to extend control
- Add 1% MSO for post-emergent applications
- Uniform application is critical
- Aerial applications from 5 to 10 gpa

# Important Points for Success:

- Long-term management plan
  - ▶ Monitor results
  - ▶ Utilize competitive plant species
  - ▶ Manage to give desirable species the advantage
  - ▶ Consider thatch complications
  - ▶ Spray herbicide prior to planting!



# Plateau versus Rejurva Comparison

## ■ Better value

- ▶ Rejurva cost 6x+ more per acre

## ■ Fewer restrictions

- ▶ No grazing restrictions
- ▶ Much shorter haying interval
- ▶ No hay export restrictions
- ▶ Easier and faster reseeding
- ▶ Shorter soil persistence allows for land use changes
- ▶ No history of soil movement issues causing off-target injury to crops
- ▶ Less concern with root pruning of desirables

# Plateau versus Rejurva Comparison

## ■ Proven Success

- ▶ Operational control for 20 years

## ■ Length of Control

- ▶ 3 years vs 4 years

## ■ Simple

- ▶ One product



# Plateau versus Rejurva Comparison

## ■ Flexible

- ▶ Pre-emergent AND early post emergent control of cheatgrass and Medusahead
- ▶ Post-emergent control of many other invasive weeds
  - Leafy spurge, Dalmatian toadflax, Russian knapweed and more!

## ■ Broader Spectrum

- ▶ Undesirable grasses and many broadleaf weeds at higher rates
  - Pre-emergent and post-emergent

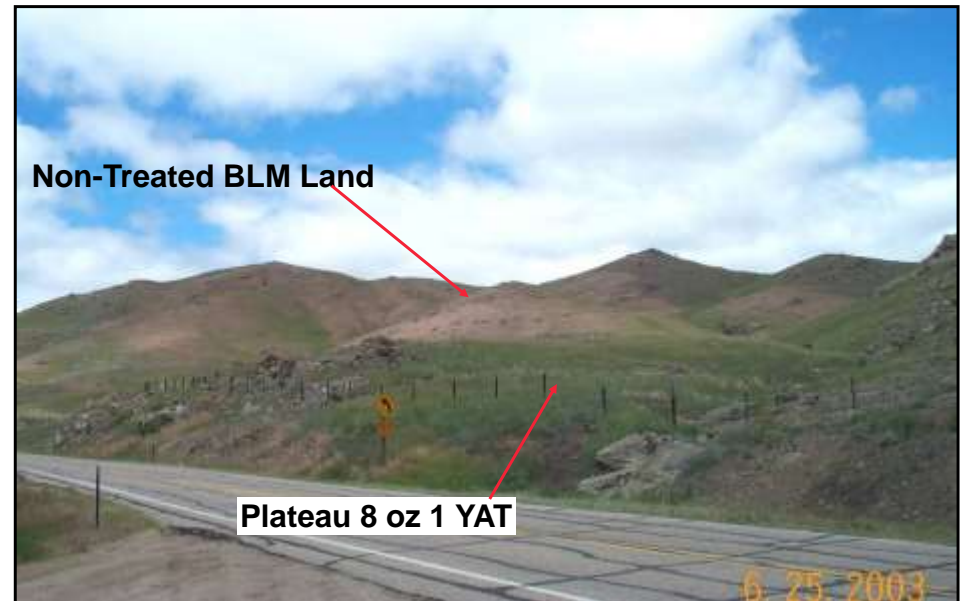
# Plateau versus Rejurva Comparison

Is one more year of control and many more restrictions worth 6x+ the cost?



# Plateau Summary

- The most economical and effective solution
- Time tested, unique and versatile
- Pre-emergent and post-emergent control
- Reduces fire hazards
- Restores native plants
- Improves grazing quality





# BASF ProVM Podcasts

- 5 - 7 Minute Podcasts
  - Posted on the ProVM website
  - Timely subjects

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# BASF ProVM Webinars

- 15 – 30 Minutes
  - Slides and Audio
  - Posted on the ProVM website
  - Timely subjects



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**Look for our roadside PGR and Pollinator webinars!**

# Questions

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