Topics

- Common grass weeds of alfalfa - know your grasses
- Strategies to control grasses in alfalfa
- Preview new herbicides
Grass weeds in Alfalfa

- Grasses grow in winter and summer.
- Grasses can be annuals or perennials.
- Propagate by seeds, stolens, rhizomes.
- Grasses can develop viable seeds in 30 days between cuttings.
- Growing point is at the soil line.
- Grasses will adapt to fit harvest and cultural conditions.
I.D. Contest

Can you name the grasses?
Name this grass?
Yellow/Green Foxtail

Setaria Sp

Bristly Foxtail
Name the grass?
Johnson Grass  
*Sorghum halepense*

Perennial
Name the grass?
Bermuda Grass

Perennial

Cynodon dactylon
Name the Grass?

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Workgroup
Name this Grass?
Yellow Nut (grass)Sedge

Perennial Cyperus esculentus

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Yellow/Purple Nutsedge
Other Problem Grasses of Alfalfa

Hare Foxtail Barley
Hordum murinum

Bluegrass Poa

Quackgrass
Name the good grasses
Grass impacts on Alfalfa

- Grasses are especially competitive on new plantings of alfalfa.

- Alfalfa stands decline at a much faster rate when grasses are uncontrolled.

- Some grass seeds pose health issues to horses.

- Grasses can accumulate high amounts of Nitrates.
2008 Alfalfa Price Range

Supreme  >58  240.00
Good    170.00
Fair weedy/grassy  135.00

Source: USDA Market branch  11/08
grower

$105
Herbicides that control grasses in alfalfa

**Pre Emergent before germination**
1. Prowl
2. Treflan
3. Eptam
4. Diuron
5. Solicam

**Post Emergent emerged & growing**
1. Select Max
2. Poast
3. Raptor
4. Gramoxone
Weed germination and herbicide timing in Alfalfa

- **Winter Weeds**
  - Prowl
  - Gramoxone
  - Chateau
  - Karmex
  - Solicam

- **Summer Weeds**
  - Prowl
  - Eptam
  - Solicam
  - Chateau
  - Poast
  - Select
  - Raptor

Temperature F

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Post emergent herbicides to control grasses

- Barley, wild
- Barnyardgrass
- Bluegrass, Annual
- Brome, Ripgut
- Canarygrass
- Foxtail, yellow & green
- Oat, wild
- Ryegrass, Italian
- Wheat, volunteer

<table>
<thead>
<tr>
<th></th>
<th>Pursuit</th>
<th>Raptor</th>
<th>Poast</th>
<th>Select Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>80</td>
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<td>60</td>
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<td>&lt;60</td>
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</tbody>
</table>

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Soil moisture improves herbicide performance

Sprayed before irrigation
Dry soil

Sprayed after irrigation
Moist soil
Soil moisture improves herbicide performance

Select Max herbicide

Sprayed before irrigation

Sprayed after irrigation
Raptor

Controls emerged grass weeds
Control on different weed sizes

<table>
<thead>
<tr>
<th>Weed Type</th>
<th>Size/Stage</th>
<th>Control Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purslane</td>
<td>1&quot;</td>
<td>100</td>
</tr>
<tr>
<td>Wild Radish</td>
<td>3&quot;</td>
<td>100</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>6&quot;</td>
<td>100</td>
</tr>
<tr>
<td>Volunteer Wheat</td>
<td>3 leaf</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>tiller</td>
<td>100</td>
</tr>
</tbody>
</table>

Rate .030 lb/A
Treatment 8 days apart 10/01

Raptor herbicide
### Pre-emergent Herbicides for Grass Weeds

<table>
<thead>
<tr>
<th>Weed Type</th>
<th>Eptam</th>
<th>Treflan</th>
<th>Prowl</th>
<th>Solicam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barley, wild</td>
<td>6wk</td>
<td>2-4 mo</td>
<td>2-8 mo</td>
<td>1-3 mo</td>
</tr>
<tr>
<td>Barnyardgrass</td>
<td></td>
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<tr>
<td>Bluegrass, Annual</td>
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<tr>
<td>Brome, Ripgut</td>
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<tr>
<td>Canarygrass</td>
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<tr>
<td>Foxtail, yellow</td>
<td></td>
<td></td>
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<tr>
<td>Oat, wild</td>
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<tr>
<td>Ryegrass, Italian</td>
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<tr>
<td>Wheat, volunteer</td>
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</tbody>
</table>
New Herbicide Options

Prowl® pendimethalin
Chateau® flumioxazin

A broad spectrum pre emergence herbicides for control of broadleaves and grasses in alfalfa
Prowl H2O

- A long standing pre emergent herbicide with a new use in alfalfa; excellent control of grasses, some broadleaf weeds and controls dodder.

- Applied in the winter dormant period (Dec to Feb) will successfully control many winter weeds while extending pre emergent activity into the summer months for grass control.

- Rates of 1 to 4 quarts/acre will dictate the length of grass control achieved, 2-8 months
### Alfalfa Grass Control

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Rate (lb ai acre)</th>
<th>June 15 5 months</th>
<th>August 16 7 months</th>
<th>September 13 8 months</th>
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<tbody>
<tr>
<td><strong>January 12</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Treflan 5G</td>
<td>3.0</td>
<td>92</td>
<td>77</td>
<td>75</td>
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<tr>
<td>Treflan 5G</td>
<td>4.0</td>
<td>96</td>
<td>82</td>
<td>79</td>
</tr>
<tr>
<td>Prowl 4EC</td>
<td>3.0</td>
<td>97</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td>Prowl 4Ec</td>
<td>4.0</td>
<td>97</td>
<td>90</td>
<td>95</td>
</tr>
<tr>
<td>Velpar 90WP</td>
<td>1.0</td>
<td>55</td>
<td>36</td>
<td>26</td>
</tr>
<tr>
<td>Karmex 80WP</td>
<td>1.0</td>
<td>63</td>
<td>49</td>
<td>30</td>
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<tr>
<td><strong>February 28</strong></td>
<td></td>
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<td></td>
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<tr>
<td>Treflan 5G/Late</td>
<td>1.0</td>
<td>63</td>
<td>57</td>
<td>53</td>
</tr>
<tr>
<td>Treflan 5G/Late</td>
<td>2.0</td>
<td>82</td>
<td>72</td>
<td>82</td>
</tr>
<tr>
<td>Prowl 4EC/Late</td>
<td>1.0</td>
<td>85</td>
<td>61</td>
<td>58</td>
</tr>
<tr>
<td>Prowl 4EC/Late</td>
<td>2.0</td>
<td>87</td>
<td>69</td>
<td>77</td>
</tr>
</tbody>
</table>

1/12/1986 Grass = Yellow foxtail
% Yellow Foxtail Control

**Pre-emergence Summer Grass Control**

- **Rating Dates**:
  - 18-Jun-88
  - 19-Aug-88

- **Rates**: lb ai/acre, **Sequential** = applied 2.0 lb 1/22/88 and 2 lb after first cutting 4/15/88. **Weed Control** = 0, none, 100 complete control.
A new pre-emergent herbicide for control of broadleaf weeds and some grasses applied during the winter dormant period. Control of common groundsel.

Will delay grass germination longer than Velpar but grass control less than Prowl or Treflan.

Can be used between harvest intervals for weed/grass control but data is limited.
## Chateau Weed Control Alfalfa

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Rate Lb ai/Acre</th>
<th>Necrosis 36 DAT</th>
<th>Stunting 76DAT</th>
<th>Annual Bluegrass Control 76 DAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chateau</td>
<td>0.094</td>
<td>15</td>
<td>3</td>
<td>80</td>
</tr>
<tr>
<td>Gramoxone Inteon</td>
<td>0.5</td>
<td>67</td>
<td>0</td>
<td>70</td>
</tr>
<tr>
<td>Gramoxone Inteon + Chateau</td>
<td>0.5 + 0.125</td>
<td>78</td>
<td>5</td>
<td>98</td>
</tr>
<tr>
<td>Gramoxone Inteon + Velpar</td>
<td>0.5 + 0.5</td>
<td>67</td>
<td>0</td>
<td>77</td>
</tr>
</tbody>
</table>
Chateau + surfactant burn between summer cuttings, 3 days
Strategies to control grass weeds in alfalfa

Summary

1. A healthy growing stand of alfalfa is the best weed control option you have available.

2. Avoid using nitrogen fertilizers in alfalfa especially if grass weeds are a problem.

3. A taller harvest height of alfalfa will suppress grass germination.

4. Extending the harvest interval (30-40 days) will slow grass invasions.

5. Delay irrigations until alfalfa regrowth covers the soil surface.

6. Pre and post emergent herbicides are very effective when used early, good soil moisture before grasses take hold.
Good Luck in 2009
Alfalfa winter weed control trial

- Raptor 0.047+2,4-DB 0.75+Hasten+UN 32
- Pursuit 0.094+2,4-DB 0.75+Hasten+UN 32
- Chateau 0.25+Gramoxone 0.46+NIS
- Gramoxone 0.46+Velpar 0.50+Karmex 1.0+NIS
- Chateau 0.25+Prism 0.25+NIS
- Pursuit 0.094+2,4-DB 0.75+Hasten+UN 32
- Chateau 0.25+Velpar 0.375+NIS
- Chateau 0.25+Gramoxone 0.46+NIS
- Chateau 0.25+Prism 0.25+NIS
- Gramoxone 0.46+NIS
- Gramoxone 0.46+NIS
- Chateau 0.375+NIS 6.0 oz.
- Chateau 0.25+NIS 4.0 oz.
- Chateau 0.188+NIS 3.0 oz.
- Untreated

Lodi, Ca 2003
Alfalfa & Weed Yield in Dormant Alfalfa

Weeds (lbs/acre)

Alfalfa Yield

Weeds Yield

UCD Alfalfa Workgroup
<table>
<thead>
<tr>
<th>Grass Weeds</th>
<th>Poast (0.375)</th>
<th>Poast (0.5)</th>
<th>Prism (0.1)</th>
<th>Prism (0.25)</th>
<th>Pursuit (0.03)</th>
<th>Pursuit (0.094)</th>
<th>Raptor (0.032)</th>
<th>Raptor (0.047)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barley, wild (Hordeum leporinum)</td>
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<tr>
<td>Barnyardgrass (Echinochloa crus-galli)</td>
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<tr>
<td>Bluegrass, annual (Poa annua)</td>
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<tr>
<td>Brome, ripgut (Bromus rigidus)</td>
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<tr>
<td>Canarygrass, hood (Phalaris minor)</td>
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<td>Crabgrass, large (Digitaria sanguinalis)</td>
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<tr>
<td>Foxtail, yellow (Setaria glauca)</td>
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<td>Goosegrass (Eleusine indica)</td>
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<tr>
<td>Lovegrass, tufted (Eragrostis pectinacea)</td>
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<td>Oat, wild (Avena fatua)</td>
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<tr>
<td>Punagrass (Achnatherum brachychaetum)</td>
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<tr>
<td>Ryegrass, Italian (Lolium multiflorum)</td>
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<tr>
<td>Wheat, volunteer (Triticum aestivum)</td>
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Chateau .125

Check
Winter Dormant Applications

Alfalfa Yield

- Lbs/Acre
- TDN

0.25% NIS

\(^1\) Weeds removed Alfalfa 90% DM
Yellow Foxtail
Experiment: June 2001

Poast, Prism, Pursuit & Raptor herbicides

Treatment timing
#1. after bale removal (dry soil)
#2. 3 days after irrigation.
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Winter annual weed control in alfalfa/orchardgrass

Problematic because:

- Herbicides must be safe to both species
- Few herbicides are labeled for mixed alfalfa/grass stands
Herbicide Trials in Alfalfa/Orchardgrass

- Three sites in Lassen and Siskiyou counties
- Herbicides were applied at two times:
  - **Fall Dormancy (November)**
    - after killing frost
  - **Spring green-up (late February)**
    - alfalfa: 0.5 - 1.0 inch re-growth
    - orchardgrass: 2.0 - 4.0 inch re-growth
The Effect of Herbicides Applied in Fall or Early Spring on 1st Cutting Forage Height in Alfalfa/Orchardgrass (averaged across sites)

NIS = non-ionic surfactant at 0.25% v/v
MSO = methylated seed oil at 2 pt/A
Herbicide Rates = product rate/acre

reduction in height (inches) compared to untreated plots
Fall Sencor at 0.6 lb
Spring Gramoxone at 1.3 pt
Yellow Foxtail Control

<table>
<thead>
<tr>
<th>Treatment</th>
<th>June 10, 1985</th>
<th>August 7, 1985</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pqt + Treflan 2</td>
<td>95%</td>
<td>78%</td>
</tr>
<tr>
<td>Pqt + Prowl + .25+ 3</td>
<td>96%</td>
<td>95%</td>
</tr>
<tr>
<td>Pqt + Sol .5+ 3</td>
<td>95%</td>
<td>61%</td>
</tr>
<tr>
<td>Vel + Sol .5+ 3</td>
<td>98%</td>
<td>68%</td>
</tr>
</tbody>
</table>

COC = Agridex 1 qt/A. All Treatments
Trf = Treflan 5G, Pqt = Paraquat 4E, Sol = Solicam 10G, Vel = Velpar 2E
Spring Sencor DF at 0.6 lb + Gramoxone

Fall Sencor DF at 1 lb
The Effect of Herbicides Applied in Fall or Early Spring on Weed Control in Alfalfa/Orchardgrass (averaged across sites)

- Sencor 1.0 lb + NIS (Fall)
- Yelpar 0.67 lb + NIS (Fall)
- Raptor 5 oz + MSQ
- Sencor 0.6 lb + Gramoxone Max 1.3 pt + NIS
- Sencor 0.6 lb + NIS
- Gramoxone Max 1.3 pt + NIS
- Untreated

% Control

NIS = non-ionic surfactant of 0.25% v/v
MSQ = methylated seed oil at 2 pt/A
Herbicidal Rates = product rate/acre
Error bars: 95% confidence interval