Weed Management in Alfalfa: Where We've Been and Where We're Going

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Continual challenge for alfalfa producers

• Typically more money spent on weed control than insect or disease management
• Weeds can reduce the vigor and stand density in seedling alfalfa
• In established alfalfa, weeds reduce the forage quality and marketability of alfalfa.
• Weed control issues are regional
Many Markets Have Near Zero Tolerance for Weeds

Export

Dairy

Horse

ALFALFA
The High Quality Hay for Horses
Herbicides key component of most weed management systems

- No one has a crystal ball to predict where we are headed when it comes to weed control and herbicide development in alfalfa
- Often useful to look at where we have been
Before 1960

Non-chemical practices same as those used today:
Weed-free seed, planting date, leveled fields, timing of cuttings, sheep grazing, etc.

Some non-selective chemicals used to control weeds around fields and within fields where particularly undesirable weeds such as dodder were present.

**Salts** (such as sodium chlorate and ammonium salts), **oils** and **acids** (like boric, sulfuric and carbolic acids). **Arsenicals** (sodium arsenic trichloride and arsenic acids)
Herbicide Registration Timeline in California

**Pre 1970**
- Eptam
- Butryrac
- Gramoxone
- Sencor
- Karmex
- Kerb
- Roundup
- Treflan
• **Eptam** (EPTC) and **Chem Hoe** (chlorpropham) were the first preemergent herbicides
• **Eptam** first herbicide applied by chemigation
• Used both preplant and on established alfalfa.
• **2,4-DB** and **dinoeb** were the first postemergent herbicides.
• **Dinoseb** used widely from 1962 to 1987 when registrations were cancelled due to long term health effects.
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**1977-78**
- Balan ('77)
- Buctril ('78)
**Balan** (benefin) one of the first preemergent herbicides

- Introduced shortly after Eptam and could only be used preplant incorporated
- First dinitroaniline herbicide registered on alfalfa

**Buctril** (bromoxynil) use limited due to lack of crop safety in some areas (especially when applied under high temperature and sunlight intensity conditions)
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**1980-84**
- Velpar ('82)
- Poast ('83)
- Treflan TR-10 ('84)
Early 80’s exciting period for alfalfa herbicides
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  - Treflan TR-10 ('84)

- **1992-96**
  - Prowl ('92)
  - Pursuit ('93)
  - Select Max ('94)
  - Solicam ('96)
Solicam/Zorial nutsedge
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- Solicam ('96)

**2000-04**
- Sandea ('02)
- Raptor ('02)
- Chateau (03')
- Prowl H₂O ('04)
Raptor

Check

AC299263 - 0.032 LB/A - 4/16/97

CAFFESE - CHECK - 4/16/97
Low Desert

Velpar applied when 6-10” of crop growth

Velpar applied after sheepinig

2007
Roundup Ready Alfalfa

Developed in late 1997
Commercially available in the fall of 2005
Returned in 2011
Herbicide Registration Timeline in California

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Butyric
Gramoxone
Sencor
Karmex
Kerb
Roundup
Treflan


Balan
Butyric
Post
Treflan TR-10

Prowl
Select Max

Prowl W


Sharpen? Aim?
Lack of New Alfalfa Registrations

- Advent of RR alfalfa
  - Long term adoption not known
  - Acreage increasing in most areas where permitted
  - Concerns over export market (primarily China)

- Cost of bringing new products to market
  - 8-10 years
  - 120 to 250 million dollars
  - Estimated that only 1 in 139,000 products ever make it successfully through the process
Industry and university collaborations, effective weed management programs have been developed to adequately control most of the weed problems encountered in alfalfa.
Herbicide Use Imperial County 2002 Versus 2012

![Herbicide Use Imperial County 2002 Versus 2012](chart.png)
Herbicide Use San Joaquin County 2002 Versus 2012

![Bar chart showing herbicide use in San Joaquin County from 2002 to 2012. The x-axis represents various herbicides, and the y-axis represents acres treated. Different colors represent 2002 (green) and 2012 (yellow).](image-url)
Herbicide Use Siskiyou County 2002 Versus 2012

![Herbicide Use Siskiyou County 2002 Versus 2012 chart]

- **Acres Treated**
- **2002**
- **2012**

- **Herbicides**
  - Balan
  - Buctril
  - 2,4-D
  - Pursuit
  - Raptor
  - Karmex
  - Velpar
  - Sencor
  - Sandea
  - Zoria
  - Chateau
  - Eptam
  - Treflan
  - Prowl
  - Poast
  - Select
  - Paraquat
  - Roundup
Herbicide Use in California 2002 Versus 2012

![Graph showing herbicide use in California 2002 versus 2012.](image-url)
Summary

• Significant advances over the past 50 years
  – Largely due to the development of new and improved selective herbicides
  – Industry and university collaborations resulted in effective weed management programs
• Weed control challenges continue to arise
• The herbicide development pipeline has slowed substantially
• Moving forward likely need to continue finding techniques to fine-tune use of time-honored standard alfalfa herbicides, as it appears we have entered into an era of slower paced herbicide development.
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Roundup

Treflan TR-10
Pursuit
Solicam


Treflan  Buctril  Poast  Prowl TR-10  Prowl H2O  Raptor  Sandea  Chateau


Select Max
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**2015...?**
- Sharpen?
- Aim?
Multiple weed emergence
Soils crack