



Richard N. Arnold
College Professor
Weed Science

NMSU Ag Science Center

P.O. Box 1018

Farmington, NM 87499



Hungry Planet

- **U.S. farmers provide 18% of world's food using 10% of its farmland.**
- **1950-2000 average corn yields increase from 39-153 bu/A.**
- **1961-2005 cereal yields increase 155%.**
- **1987-2007 grew 40% more corn, 30% more soybeans, 19% more wheat all on the same amount of land.**

Hungry Planet

- 1940- 1 farmer feeds 19 people.
- 1970- 1 farmer feeds 73 people.
- 2010- 1 farmer feeds 155 people.
- Soil erosion has decreased 43% in 20 years.
- 1970-2010 grew 70% more corn per pound of fertilizer.
- Saved 50-80% more water depending on crop.

Hungry Planet

- **6.8 billion people today.**
- **9.3 billion people in 2050.**
- **Appetite will double in next 20 years.**
- **By 2050 will have to grow as much food as produced since farming began in 10,000 B.C.**
- **So when you get a chance tell a grower thanks.**



Alfalfa History

- ◆ **The name alfalfa comes from the Arabic language, meaning best fodder**
- ◆ **Most authorities believe that alfalfa originated in southwestern Asia**
- ◆ **First attempt to grow alfalfa in the U.S. was in Georgia in 1736**
- ◆ **Introductions into California from Peru in 1841**



Alfalfa Adaptation

- ◆ Alfalfa makes its best growth in relatively dry climates where irrigation is available
- ◆ Has survived temperatures of -84 degrees F.
- ◆ Alfalfa is best adapted to deep loam soils with porous subsoil's. Good soil drainage is essential
- ◆ Does not do well in soils with high alkalinity or those that have a shallow water table

Alfalfa Plant

- ◆ Varies in height from 2 to 3 ft
- ◆ 5-20 or more stems arising from a crown
- ◆ Leaves arranged alternately on stem and are trifoliate
- ◆ 48% or more of the weight of the plant may consist of leaves
- ◆ Has taproot that can penetrate 25 to 30 ft
- ◆ Flowers purple, has spiral shaped pod with 1-8 small kidney shaped seeds





Alfalfa Pollination

- ◆ **The plants of commercial varieties are slightly to completely self-sterile (incapable of self pollination)**
- ◆ **Wild bees, (leaf-cutter) and alkali bees are the most effective pollinators**
- ◆ **Lack of tripping by beneficial insects (bees) probably is the chief cause of poor seed yields**



Cultural Practices

- ◆ **The first decision is to decide if the field is suitable for growing the crop**
- ◆ **Conditions that make a field unsuitable for growing alfalfa include, weed infestations, history of alfalfa diseases, drainage problems, compacted soils, and vertebrates (gophers and prairie dogs)**



Planting

- ◆ **Planting time influences first year yields as well as the nature of the weed, disease and insect problems encountered during establishment**
- ◆ **To assure rapid emergence, plant seeds $\frac{1}{4}$ to $\frac{1}{2}$ inch deep (May 1 to May 25 and August 1 to August 30). Competes best with weeds during August planting**
- ◆ **15 to 20 lbs/A is recommended**



Shown at <http://www.sportbikes.dhs.org>

Fertilizer

- ◆ A healthy nourished plant resists pest damage better than those lacking an essential nutrient
- ◆ Some may apply all the phosphorus requirement at planting and plow down
- ◆ Zinc should be added in western soils for phosphorus availability also some sulfur should be added (20 lb/A per year as zinc sulfate)



Fertilizer Cont.

- ◆ P test from Sodium Bicarbonate Test (ppm) P recommended (lb P_2O_5) for seedling alfalfa

Test	ppm	lbs/ P_2O_5
Sodi Bicarb	21	0
AB-DTPA	11	0
Bray 1	36	0

Fertilizer Cont.

- ◆ Potassium requirements for seedling alfalfa from soil tests

ppm	lbs/K ₂ O
190	0



Fertilizer Cont.

- ◆ Zinc requirement for seedling alfalfa

ppm DTPA-Zn	lbs/Zn
pH <7.3 (0.6 ppm)	0
pH >7.3 (0.6 ppm)	1



Fertilizer Cont.

- ◆ Same nutrient requirements for seedling alfalfa are the same for established alfalfa
- ◆ Always take a soils test
- ◆ Soil test can be used to make fertilizer and herbicide recommendations and it can also be helpful in deciding which crop to grow in a field
- ◆ Depth of sample 6 to 12 in.
- ◆ 1 per 40 acres or by soil type



Fertilizer Cont.

◆ Nutrients removed by 5 t/A alfalfa

Nitrogen	265 lb/A
Phosphorus	60 lb/A
Potassium	300 lb/A
Sulfur	25 lb/A
Boron	0.3 lb/A





Irrigation

- ◆ Throughout the growing season, decisions regarding irrigation are among the most important ones you make
- ◆ Soil texture and depth, length of the irrigation run, depth of water table, temperature, rainfall, wind, and the number of cuttings all influence irrigation needs



Irrigation Cont.

- ◆ Deciding when to irrigate and how much water to apply are crucial decisions for germination and mature stands
- ◆ Too little water reduce alfalfa growth
- ◆ Too much water stimulates the development of various root diseases
- ◆ Timing of irrigations can also affect weed problems, in our area last irrigation in fall germinates winter annuals (Brote-Mustard)

Irrigation Cont.

- ◆ Amount of water needed at each irrigation varies considerably with root depth, water holding capacity of the soil, and evapotranspiration rate
- ◆ For maximum yield (8 tons/Y) requires between 45 and 50 in of water
- ◆ Alfalfa in San Juan County uses approx. 0.4 inches per day during mid summer (**Dan Smeal, NMSU ASC Farmington NM**)





Irrigation Cont.

- ◆ Major problems with the quality of irrigation water is salinity and nutrient toxicity
- ◆ Water quality is assessed by analyzing electrical conductivity (EC), and pH
- ◆ Usually an EC value of above 6 and pH of over 8.5 yields tend to decrease



Harvesting

- ◆ Alfalfa should be harvested on a 35 day harvest interval (protein and RFV are usually optimum)
- ◆ Usually this is just before bloom set
- ◆ Alfalfa is at the optimum stage for cutting when regrowth buds at crown average $\frac{3}{4}$ in tall

Recommended Stand Density

- ◆ **Stand Age** **Plts/sq ft**

< 1 year	20 +
1 year	10-20
2 years	8-12
3 plus years	6-9
Replace	3-4





Crop Rotation

- ◆ Weeds and insects can be controlled with rotation
- ◆ Insects harmful to alfalfa may not be to corn or grass crop
- ◆ Hard to kill weeds in alfalfa may be controlled in another crop
- ◆ Diseases and nematodes are also controlled by rotation
- ◆ Usually rotate to a grass crop (excess N in soil) for a least 2 yrs.

Varieties

- ◆ Yield of alfalfa varieties at NMSU (2 yr/av)

Variety	2 yr av yield T/A
Legend	6.18
Evergreen	5.89
ML 330	5.77
WL 324	5.6
Champ	5.49



Alfalfa Budget

Income

◆ $5 \text{ t/A} \times \$150.00/\text{ton} = \750.00

Expenses

◆ Operating = \$128.00

◆ Harvest = \$125.00

◆ Prop and ownership = \$97.00

Total \$350.00



Vertebrate Pests

- ◆ **Pocket Gophers are burrowing rodents, so named because they have fur-lined pouches outside of the mouth, one on each side of the face**
- ◆ **Medium sized 5 to 14 in long**
- ◆ **Fur fine and soft and vary in color from pale brown to black or white (gray)**
- ◆ **Spend most of their time underground, rarely seen on surface**



Pocket Gopher Cont.

- ◆ Have a wide habitat (sea level to 12,000 ft)
- ◆ Tunnel the soil and make mounds
- ◆ Eat underground plant structures
- ◆ Cause mounds of soil in alfalfa fields (fields uneven)
- ◆ A single burrow system may contain 200 yards of tunnels
- ◆ May make 1 to 3 mounds per day



Pocket Gopher cont.

- ◆ A healthy stand of alfalfa can tolerate some gopher feeding, large populations cause serious damage
- ◆ Damage more prevalent in sprinkler irrigated fields than flood
- ◆ Methods of control include: traps, baits, fumigating, flooding





Insects

- ◆ **A good field monitoring program is essential for good IPM strategies**
- ◆ **Use a good sampling method to estimate insect population**
- ◆ **Check each field at least once per week**
- ◆ **Also, the importance of correctly identifying pests and damage symptoms cannot be overemphasized**

Insects Cont.

- ◆ **Monitoring methods include: Sweep net, vacuum collector, visual counts, and monitoring of natural enemies**
- ◆ **When localized high densities of pests occur in parts of the field, monitor these trouble spots regularly until the problem disappears or treatments are required**









Alfalfa Weevil

- ◆ Weevils cause two kinds of damage, defoliation and damage to regrowth buds, which stunts growth and sometimes kills stems
- ◆ Studies in Artesia show losses from $\frac{1}{2}$ to $\frac{3}{4}$ tons/A



Alfalfa Weevil Cont.

- ◆ **When weevil larvae average 3 or more per square foot, or 8 to 10 per sweep net, or when alfalfa shows excessive damage control measures are necessary (swath or treat)**
- ◆ **Look for shot-holes in the stems of alfalfa**



Alfalfa Weevil Cont.

- ◆ Is a serious pest and is found throughout NM wherever alfalfa is grown
- ◆ Adult weevils feed on foliage and lay eggs in the stems throughout the winter months
- ◆ When weather warms in spring (March-April) the eggs hatch and the larvae begin to feed
- ◆ Larvae is tiny and is yellowish-green
- ◆ Adults is light brown with gray marking down backs



Alfalfa Weevil Cont.

- ◆ **Because of the relatively short residual of the some recommended insecticides, and heavy infestation levels more than one application may be necessary**
- ◆ **In San Juan County usually late April to mid May weevils show up, (to late to spray) but are sporadic from year to year and usually cutting the crop early rids the alfalfa of the pest**







Aphids (Pea and Blue)

- ◆ The two species, which are similar in appearance and often occur together in the same field (can be confused with one another)
- ◆ The best way to distinguish the two aphids is to examine the antennae with a hand lens
- ◆ Pea aphid antennae is green with a narrow dark band at end of each segment
- ◆ Blue aphid antennae is uniformly dark





Pea and Blue Aphid Cont.

- ◆ Pea aphid is tolerant to higher temperatures
- ◆ Blue aphid usually appears first (do to temperature)
- ◆ When pea aphid counts average 10 to 15 per stem or 150 per plant control measures are needed
- ◆ When Blue aphid counts average 10 to 12 per stem on new growth in spring control measures are needed



Cowpea and Blue Aphid Cont.

- ◆ Blue aphid stunts growth early in season, plants have smaller leaves, shorter internodes, leaf curling, yellowing and leaf drop, plants exhibit large amounts of honeydew
- ◆ Pea aphid causes the same symptoms but in larger numbers
- ◆ Important to control in alfalfa grown for seed



Spotted alfalfa aphid

Spotted Alfalfa Aphid

- ◆ The spotted alfalfa aphid is pale yellow with four to six rows of dark spots, each with a spine running lengthwise down its back (easy to distinguish from pea and blue aphid)
- ◆ Feeds on lower portions of plant and on undersides of leaves
- ◆ Also secretes large amounts of honeydew
- ◆ Very tolerant to heat (above 80 degrees)



Spotted Alfalfa Aphid Cont.

- ◆ This aphid injects a toxin into alfalfa which causes yellowing and severe stunting of growth
- ◆ Plants can be killed when infestations are heavy and fungus may develop on the honeydew
- ◆ This causes a reduction in palatability and quality





Spotted Alfalfa Aphid Cont.

- ◆ Can reproduce year round
- ◆ As many as 20 generations can be produced each year
- ◆ Winged females may fly more than 70 miles with the aid of winds (some farther with are winds)
- ◆ Each one is a female (high biotic potential)



Alfalfa caterpillar, *Collas eurythema*
photo by P. Glogoza, NDSU Extension Entomologist



Alfalfa caterpillar, *Colias eurytheme*

Alfalfa Caterpillar

- ◆ The alfalfa caterpillar is commonly known as the alfalfa butterfly and considered to be a warm season pest (after first cutting)
- ◆ Caterpillar's are smooth green, about 1 in long with a white stripe running along each side of the body
- ◆ They consume leaves, eating large portions of entire leaves
- ◆ Potential infestations is the movement of large numbers of yellow or white butterflies into a field





Alfalfa Caterpillar Cont.

- ◆ The pest's life cycle is closely synchronized with hay cutting, a single generation takes about 1 cutting to complete (four cuttings-four generations)
- ◆ Treat when 25 to 30 worms can be collected per 100 sweeps of an insect net
- ◆ Usually not a problem in San Juan County



Armyworms

- ◆ Two types beet and army cutworm
- ◆ Army cutworm, are pale green in the early growth stage and dark green in later stages, a thin, white, broken line down the middle of the black and a wide, dark, mottled stripe halfway down the side.
- ◆ Beet armyworm, is usually light olive green, but may range in color from purplish green to almost black and a dark spot on each side of the second true leg.



Armyworms Cont.

- ◆ They skeletonize foliage, leaving the veins of leaves intact
- ◆ In San Juan County they can be a serious problem (mainly western yellowstriped) after the first cutting or in fall-seeded stands
- ◆ Treat when there is an average of 2 to 3 (or more) larvae per square yard





Other Insects that Attack Alfalfa

- ◆ **Cutworms**
- ◆ **Webworms**
- ◆ **Sowbugs**
- ◆ **Leafhoppers**
- ◆ **Lygus Bug**
- ◆ **Thrips**
- ◆ **Spider Mites**
- ◆ **Clover Mites**
- ◆ **Grasshoppers**



UC Statewide IPM Project
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Beneficial Insects of Alfalfa

- ◆ **Lady beetle adult and larvae**
- ◆ **Bigeyed bugs**
- ◆ **Damsel bugs**
- ◆ **Lacewings**
- ◆ **Parasitic wasps**
- ◆ **Assassin bug**







Green Lacewing
Chrysopa sp.
Alamo, TX
May 22 2001

Adult



Copyright 2001 Joshua S. Rose

Larvae



© Biobest NV







Alfalfa Diseases

- ◆ **Phytophthora Root Rot is prevalent in wet, poorly drained fields**
- ◆ **Infects the alfalfa root system and injury symptoms are expressed in all parts of the plant**
- ◆ **Leaves on lower part, wilt, turn yellow or tan and may drop**
- ◆ **Stems and leaves grow slowly after harvest and whole plants may wilt and die**



Alfalfa Diseases Cont.

- ◆ Lesions develop usually 6 in below soil surface on lateral roots
- ◆ Lesions change from reddish brown in early stages, to yellow tan, then brown to black as the disease spreads to encompass the entire cross section of the root (slice the root to see these symptoms)
- ◆ Two means of control, resistant varieties and good water management





Phytophthora Root Rot Lesions



Phytophthora root rot in field

Alfalfa Diseases Cont.

- ◆ **Rhizoctonia Root thrives in hot temperatures and high soil moisture**
- ◆ **Affected fields contain a mixture of plants in various stages of decline**
- ◆ **Roots have circular to elliptical lesions and can be seen below soil surface**
- ◆ **Lesions are yellow to tan in color and in winter the lesions turn black**
- ◆ **No general control methods are available**



Rhizoctonia



Alfalfa Diseases Cont.

- ◆ Anthracnose a disease that thrives in high humidity and hot weather
- ◆ Causes bleached, bent, dead young shoots and stems throughout the field
- ◆ Stem lesions are diamond shaped, may girdle and kill stem
- ◆ Crown infection are characterized by dry rot in which stem bases are blue black internally



Alfalfa Diseases Cont.

- ◆ Disease requires water to wash spores off to spread to new plants or by harvesting
- ◆ More prevalent after a rain or under sprinkler irrigation
- ◆ Plant resistant varieties
- ◆ Rotating crops other than to a legume





Anthracnose



**Anthracnose
in field**

Other Diseases that Attack Alfalfa

- ◆ **Bacterial Wilt**
- ◆ **Rust**
- ◆ **Sclerotinia Rot**
- ◆ **Fusarium Wilt**
- ◆ **Alfalfa Mosaic Virus**
- ◆ **Crown Wart**
- ◆ **And environmental factors such as scald, air pollution, herbicide injury and nutrient deficiencies**









Weed Identification

- ◆ Weed problems in alfalfa can be subdivided into three different groups with a mixture of weed species involved in each
- ◆ Stand establishment weeds
- ◆ Cool season weeds (winter annuals)
- ◆ Summer weeds

Weed ID Cont.

- ◆ Weeds do not kill alfalfa plants directly
- ◆ They reduce production by competing with alfalfa for nutrients, water and light
- ◆ They lower quality by reducing feed value
- ◆ Weeds can contribute to stand loss at any time in the life of an alfalfa field, but are especially detrimental during new stand establishment

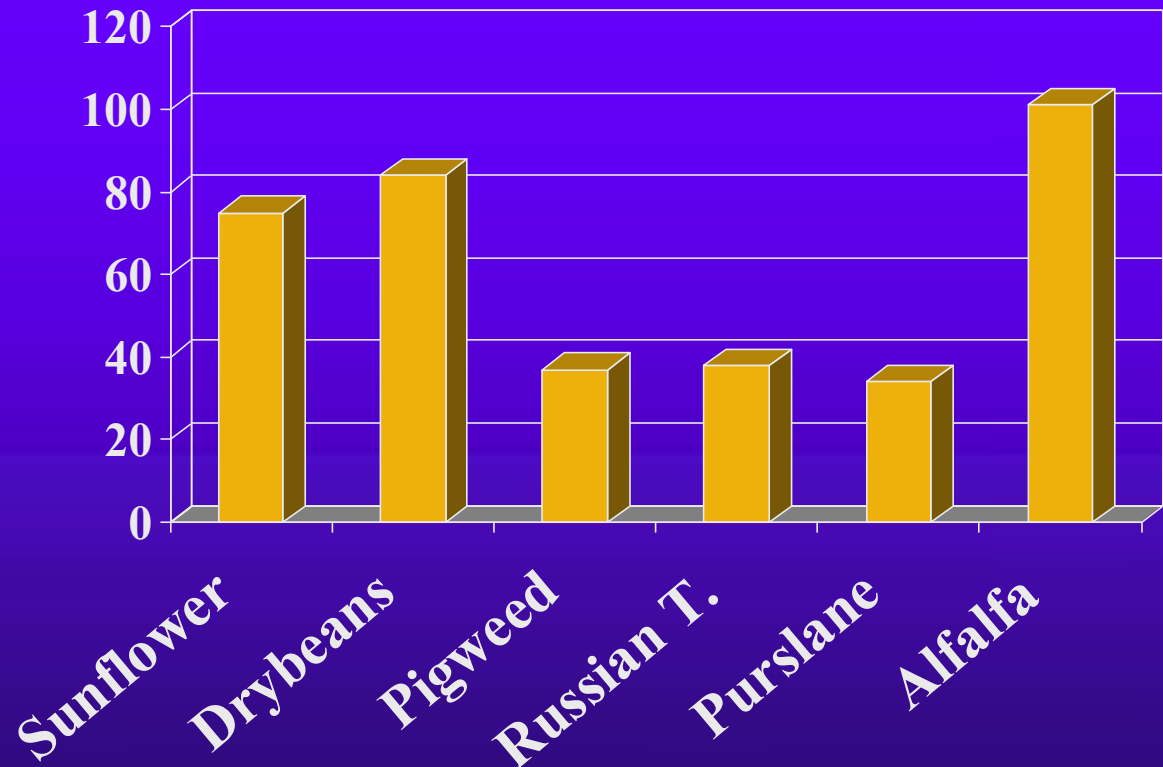


Weed ID Cont.

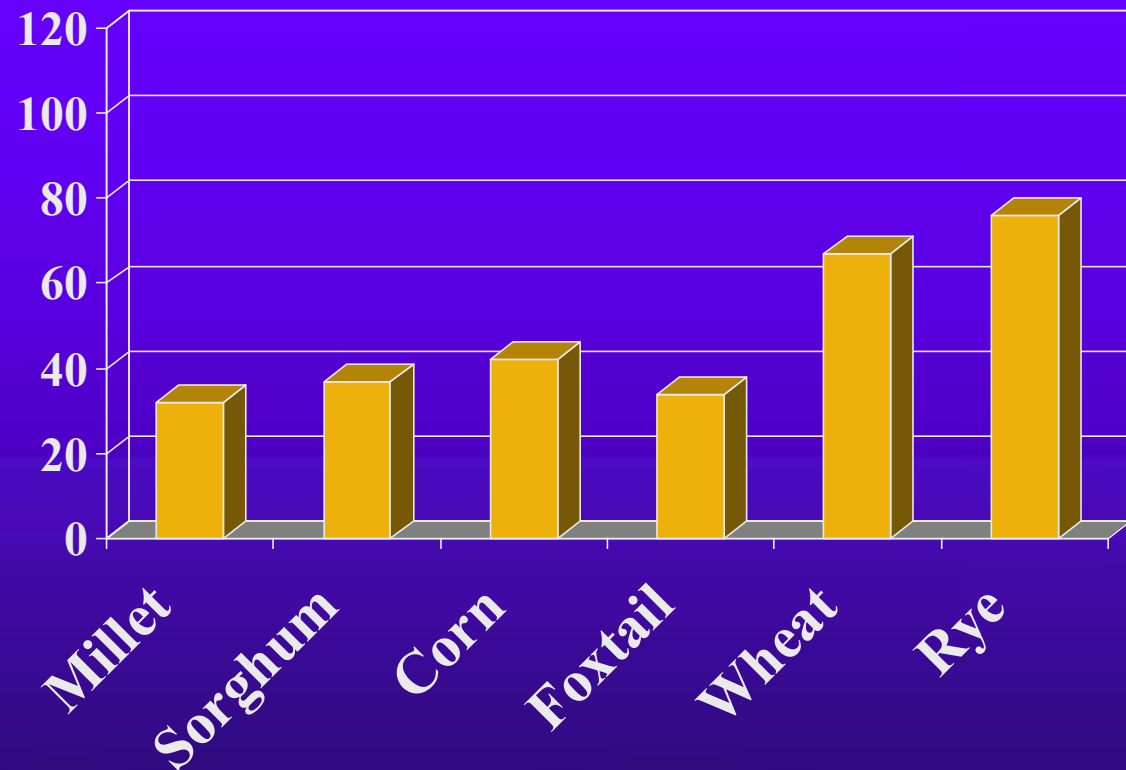
- ◆ In established stands in San Juan County weeds like downy brome, flixweed, shepherdspurse, foxtail barley, and dandelion cause yield and quality losses
- ◆ When stands begin to thin many annuals like Russian thistle, pigweeds, foxtails (green and yellow) lambsquarters, barnyardgrass, and kochia can be problems during the summer months



Gallons of Water Needed to Produce 1 pound of Dry Matter (Phil Westra CSU)



Gallons of Water Needed to Produce 1 pound of Dry Matter (Phil Westra CSU)



Weed ID Cont.

- ◆ Downy brome is a winter annual grass 4 to 30 in tall, reproducing by seed
- ◆ Leaf sheaths and flat blades are densely covered with soft hair
- ◆ Awns are $\frac{3}{8}$ to $\frac{5}{8}$ in long, usually purplish in color when mature





Downy brome



Weed ID Cont.

- ◆ **Flixweed is a winter annual 8 to 24 in tall**
- ◆ **Petals small yellow or greenish-yellow**
- ◆ **Seed pod partitioned with 2 to 3 longitudinal nerves**





Flixweed



Weed ID Cont.

- ◆ **Shepherdspurse is a winter annual 3 to 18 in tall with stems erect, slender, one to several from a basal rosette**
- ◆ **Leaves alternate with lower ones usually deeply lobed, upper ones are few**
- ◆ **Seed pod more or less heart shaped, and two celled**





Shepherdspurse



Weed ID Cont.

- ◆ Foxtail barley is a perennial that reproduces by seed
- ◆ Grows 1 to 2 ft tall and produces a pale green bushy type spike
- ◆ Awns are 1 to 2 ½ in long





Foxtail barley



Weed ID Cont.

- ◆ **Dandelion is a short lived perennial with milky juice from an often branched taproot**
- ◆ **Reproduces by seeds and shoots from root crowns**
- ◆ **Leaves clustered at the top of the root crown**
- ◆ **Vary in size from 2 to 12 in long**
- ◆ **Produces a yellow petal like ray flower**





Dandelion





Weeds in Alfalfa

- Downy brome
- Winter annual mustards
- Redroot and prostrate pigweed
- Common lambsquarters
- Russian thistle
- Black nightshade
- Foxtail barley
- Dandelion
- Foxtails
- Canada thistle
- Russian knapweed
- Buckhorn plantain
- Quackgrass
- Palmer Amaranth

Weed Control in Seedling RR Alfalfa

2012-2013 RR Seedling Alfalfa

- Soil pH 7.4, OM <0.3 percent, CEC 8-14.
- DK A41-18RR and DK A43-22R planted on May 14 and May 13, 2012-2013 at 20 lb/A.
- Warrant applied PRE on May 15 and May 13, 2012-2013 and incorporated with 0.75 in water.
- POST treatments applied on June 12 and June 4, 2012-2013 with either AMS and/or MSO at 48 oz/A and 38 oz/A. at the 2-3 trifoliolate leaf stage.

2012-2013 RR Seedling Alfalfa

- PRE treatments rated for injury and weed control on June 12 and June 4, 2012-2013.
- PRE/POST treatments rated for injury and weed control on July 26 and July 10, 2012-2013.
- Harvested on August 21 and August 15, 2012-2013.
- Grab samples taken for analysis of RFV and Protein.

Av. 2012-13 Seedling Alfalfa Research Results Pre Treatment

Treat	Rate oz/A	Injury	Ruth	Papw	Prpw	Blns	Clamb
Warrant	48 (Pre)	7	43	93	93	92	96
Weedy check		0	0	0	0	0	0

2012-13 Seedling Alfalfa Research Results Pre/Post Treatments

Treat	Rate oz/A	Injury	Ruth	Papw	Prpw	Blns	Clamb
RR pm	22	0	95	96	98	96	92
RR pm	44	0	97	99	99	98	99
Warrant/ RR pm	48/22	0	96	99	100	98	100
Warrant + RR pm	48+22	0	98	99	99	100	99
Pursuit + RR pm	4+22	0	100	100	100	99	100
Raptor + RR pm	5+22	0	100	99	99	100	99
Prowl H20 + RR pm	32+22	0	93	99	99	100	94

2012-13 Seedling Alfalfa Research Results Pre/Post Treatments

Treat	Rate oz/A	Injury	Ruth	Papw	Prpw	Blns	Clamb
Butyrac + RR pm	32+22	0	99	98	99	99	100
Weedy check		0	0	0	0	0	0

Av. Seedling Alfalfa Yield 2012-13

Treat	Rate oz/A	Yield t/A	RFV	Protein Content
RR pm	22	2.2	161	19.7
RR pm	44	2.3	166	19.6
Warrant/ RR pm	48/22	2.4	161	18.1
Warrant + RR pm	48+22	2.2	167	19.3
Pursuit + RR pm	4+22	2.1	180	20.7
Raptor + RR pm	5+22	2.2	179	19.9
Prowl H20 + RR pm	32+22	2.3	172	19.3

Av. Seedling Alfalfa Yield 2012-13

Treat	Rate oz/A	Yield	RFV	Protein Content
Butyrac + RR pm	32+22	2.4	158	19.2
Weedy check		3.4	150	15.2



RR pm 22 oz/A 2012

RR pm 22 oz/A 2013



RR pm 44 oz/A 2012

RR pm 44 oz/A 2013



Warrant/RR pm 48/22 oz/A 2012



Warrant/RR pm 48/22 oz/A 2013



Pursuit + RR pm 4+22 oz/A 2012



Pursuit + RR pm 4+22 oz/A 2013



Raptor + RR pm 5+22 oz/A 2012



Raptor + RR pm 5+22 oz/A 2013



Prowl H2O + RR pm 32+22 oz/A 2012



Prowl H2O + RR pm 32+22 oz/A 2013



Butyrac + RR pm 32 +22 oz/A 2012



Butyrac + RR pm 32+ 22 oz/A 2013



Weedy check 2012



Weedy check 2013

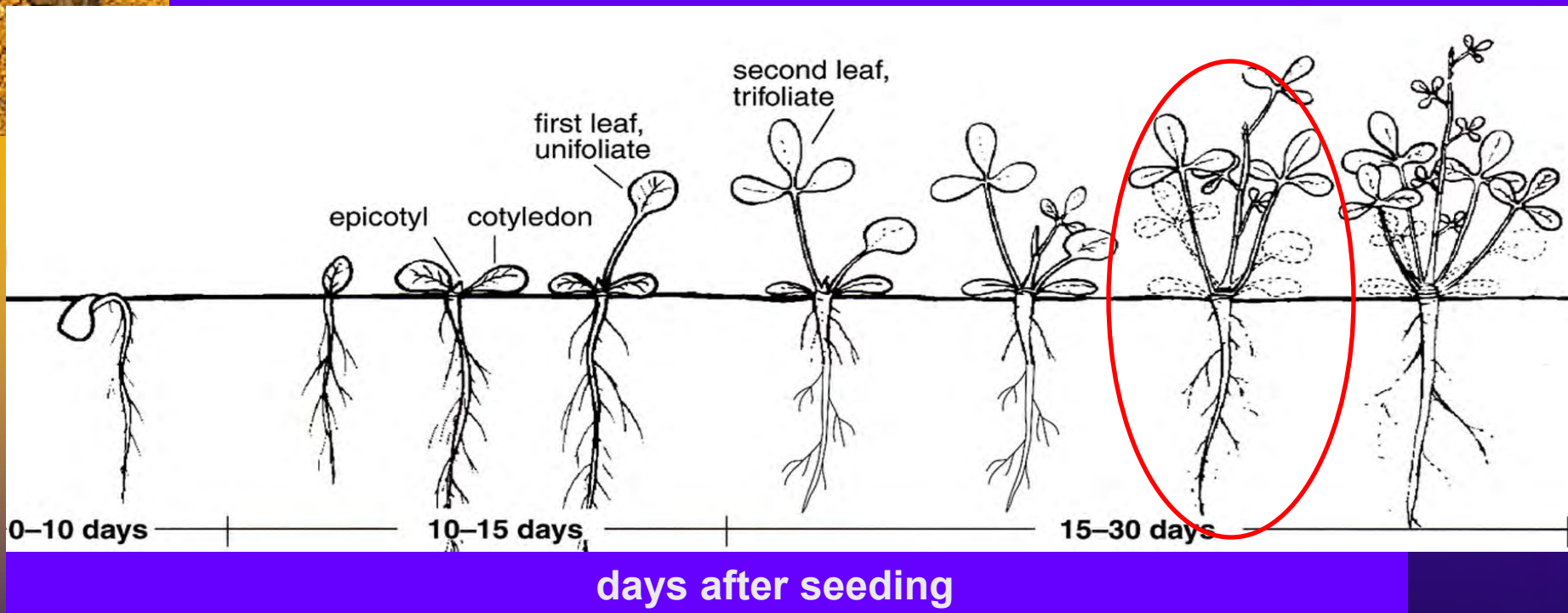
Maximum Allowable Application Rates & Timing for Glyphosate RR Alfalfa

Application Timing	(lbs ae/a)	WeatherMAX (oz/acre)
Combined total per year for all in-crop applications	4.5	132
From preplant to preemergence	1.5	44
From emergence to 3 to 4 trifoliate alfalfa	1.5	44
From 5 trifoliate leaves to 5 days before first cutting	1.5	44
Total in-crop application per cutting after first cutting, applied up to 5 days before next cutting	1.5	44
How many glyphosate products are out there	>50 different glyphosate products are available	




Early Alfalfa Growth Stages

3 to 4 trifoliate alfalfa growth stage



Establishment Flexibility



Pre-plant to
Pre-emergence

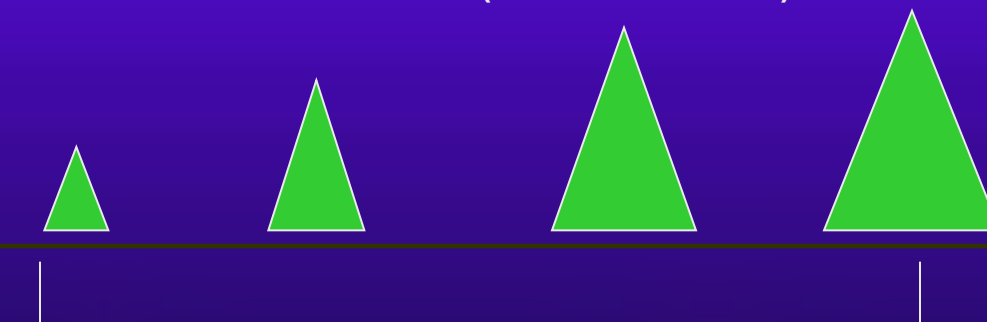
22 to 44 oz/A
(0.75-1.5 lbs ae/A)

Emergence to
3-4 Trifoliate

22 to 44 oz/A
(0.75-1.5 lbs ae/A)

5 Trifoliate to 5 Days before Cutting

22 to 44 oz/A
(0.75-1.5 lbs ae/A)



Total application from emergence to 5 days
before first cut may not exceed 88 oz/A (3.0 lbs ae/A).

*Initial establishment application recommended prior to 3-4 trifoliate leaf stage

In-Crop Flexibility

Up to 5 Days
before Cutting

22 to 44 oz/A
(0.75-1.5 lbs ae/A)

Up to 5 Days
before Cutting

22 to 44 oz/A
(0.75-1.5 lbs ae/A)

Up to 5 Days
before Cutting

22 to 44 oz/A
(0.75-1.5 lbs ae/A)



Total In-Crop applications may not exceed 132 oz/A (4.5 lbs ae/A) per year.

Confirmed Glyphosate Resistant Weeds in the U.S.



-  Horseweed (Marestail)
-  Common Ragweed
-  Giant Ragweed
-  Palmer Amaranth
-  Common Waterhemp
-  Hairy Fleabane

-  Italian Ryegrass
-  Rigid Ryegrass
-  Johnsongrass

Alfalfa Herbicides

Herbicide	Rate/A	\$/A
Velpar	1 qt	17
Velpar AlfaMax/Gold	1.5-3/2.2-3 lb/A	21-42
Karmex	2-3 lb/A	10-15
Sencor	1-2 pt/A	14-28
Treflan TR-10	20 lb/A	21
Eptam	3.5-4.5 pt/A	14-18
Poast Plus	0.8-4 pt/A	5-16
Select	8-16 fl oz/A	13-26
Raptor	4-6 fl oz/A	16-24
Pursuit	3-6 fl oz/A	16-32
Chateau	4 oz/A	30
Roundup (many names)	22-44 oz/A	4-16
Extreme (pursuit+glyphosate)	47 oz/A	?



JEPARDY!

Favorite Destinations	Rick Arnold's Fascinating Presentation	Spring Break	Famous People	RMAA Fun	The Real World and Other Myths
\$100	\$100	\$100	\$100	\$100	\$100
\$200	\$200	\$200	\$200	\$200	\$200
\$300	\$300	\$300	\$300	\$300	\$300
\$400	\$400	\$400	\$400	\$400	\$400
\$500	\$500	\$500	\$500	\$500	\$500
\$600	\$600	\$600	\$600	\$600	\$600

Thank You



More funny pictures at www.afunworld.com



**NM
STATE
UNIVERSITY**

Thank You

- ◆ **Always remember to read the pesticide label before use**
- ◆ **Contact your local County Extension Agent for any questions or**
- ◆ **NMSU Ag Science Center at 505-960-7757 cell 505-860-5713**

