

2009 Hay Production School

Weed management options for hay producers



Control Measures

- ❖ **Cultural**
 - Fertility Management
- ❖ **Mechanical**
 - Mowing
- ❖ **Chemical**

Do I spray or fertilize first?

- ❖ **Spray first**
- ❖ **Control existing weeds**
- ❖ **Begin soil-test based lime and fertilizer program**

When do you spray?

- ❖ **Winter annuals -**
henbit, chickweed, buttercups, thistles
 - November through March
- ❖ **Summer annuals -** spiny amaranth, bitter sneezeweed
 - April through mid-July
- ❖ **Perennials**
 - growth stage dependent

Herbicide Options

- ❖ **2,4-D**
- ❖ **dicamba (Vanquish, Banvel)**
- ❖ **2,4-D + dicamba (WeedMaster, others)**
- ❖ **dicamba+ diflufenzopyr (Overdrive)**
- ❖ **triclopyr (Remedy)**
- ❖ **imazapic (Impose, Panoramic)**
- ❖ **2,4-D + triclopyr (CrossBow)**
- ❖ **triclopyr + clopyralid (Redeem)**
- ❖ **2,4-D + picloram (Grazon P+D, GunSlinger)**
- ❖ **fluroxypyr + picloram (Surmount)**
- ❖ **fluroxypyr + triclopyr (PastureGard)**

Herbicide Options (cont.)

- ❖ **aminopyralid (Milestone)**
- ❖ **aminopyralid + 2,4-D (ForeFront)**
- ❖ **aminopyralid + metsulfuron (Chaparral)**
- ❖ **diuron (Direx, Diuron)**
- ❖ **metsulfuron (Cimarron, MSM E.Pro, others)**
- ❖ **metsulfuron + chlorsulfuron (Cimarron Plus)**
- ❖ **metsulfuron + 2,4-D + dicamba (Cimarron MAX)**
- ❖ **hexazinone (Velpar)**
- ❖ **sulfosulfuron (OutRider)**
- ❖ **tebuthiuron (Spike)**
- ❖ **paraquat (Gramoxone Inteon, Firestorm, Parazone)**
- ❖ **glyphosate (Roundup UltraMax, others)**

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Newest Herbicides

- ❖ PastureGard - fluroxypyr + triclopyr (Remedy)
- ❖ Surmount – fluroxypyr + picloram
- ❖ Milestone – aminopyralid
- ❖ ForeFront – aminopyralid + 2,4-D
- ❖ Chaparral – aminopyralid + metsulfuron
- ❖ OutRider - sulfosulfuron

PastureGard

- ❖ 1.5 lbs./gal. triclopyr ester + 0.5 lbs./gal. fluroxypyr ester
- ❖ Controls numerous brush species and broadleaf weeds.
 - Upright blackberry, sweet gums, Sericea lespedeza, dogfennel, gallberry, rose species, lantana
 - Palmetto and yucca – use 2.0% v/v solution in water
 - Fair control of horsenettle and tropical soda apple
 - Also has activity on maypop passionflower

PastureGard

- ❖ Mixes with diesel and other oil carriers
- ❖ PastureGard 50% + 50% diesel, excellent as basal application for trees < 4 inch DBH
- ❖ Injurious to clovers
- ❖ Apply to seedling grasses after tiller development

PastureGard

- ❖ Beef and other livestock grazing - 0 d
- ❖ Dairy grazing – not permitted during the growing season of application
- ❖ Hay – 14 d (all livestock types)

Reseeding Restrictions – PastureGard

- ❖ Cool-season grasses and small grains - 21 days
- ❖ Clover and other legumes – 30 days
- ❖ Other crops – 120 days
- ❖ Labeled for use on permanent grass forage systems
 - This includes permanent pastures that are overseeded with winter forages.

Surmount

- ❖ 1.19 lbs./gal. picloram amine + 0.96 lbs. gal. fluroxypyr amine
- ❖ Controls broadleaf weeds, horsenettle, tropical soda apple, and pricklypear cactus.
- ❖ Apply 3 to 4.0 pts./acre for prickly pear cactus in fall months, control is very slow, about 2 yrs.
- ❖ About 30 d residual control
- ❖ Excellent control of upright-growing blackberry (3 to 4 pts./acre)



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Surmount

- ❖ Injurious to clovers
- ❖ Apply to seedling grasses or overseeded small grains at tiller growth stage
- ❖ Newly-sprigged bermuda –delay until stolons are 6 inches long
- ❖ Beef grazing - 0 d; slaughter 3 d
- ❖ Lactating Dairy Animals – grazing 14 d; silage 14 d.
- ❖ Hay – 7 d (all livestock types)

Reseeding Restrictions – Surmount

- ❖ Cool-season grasses - 21 days
- ❖ Clovers – 12 months
- ❖ Other legumes – 12 months

Surmount- It's Good - BUT!!!!

- ❖ **Do not**
 - use hay from treated areas for compost or mulch
 - transfer livestock to untreated areas without 7 d cleanout
 - use manure for fertilizing broadleaf crops
 - use in any temporary forage system involving broadleaf crops
- ❖ **USE ONLY ON PERMANENT GRASS FORAGE SYSTEMS**

Milestone

- ❖ 2.0 lbs./gal. aminopyralid
- ❖ Use rate: 4.0 to 7.0 fl. ozs./acre
- ❖ Numerous broadleaf weeds – thistles, horsenettle, tropical soda apple, buttercup
- ❖ Do not seed legumes year of application (additional research being conducted)
- ❖ Delay application until grasses have 4 to 5 leaves.

Milestone

- ❖ Non-volatile
- ❖ Injurious to legumes
- ❖ No grazing or hay restriction for any type of livestock
- ❖ Weak on sida species, dogfennel, plantains, blackberry, wild radish, other mustards.
- ❖ Add 2,4-D or Remedy for weeds above.

ForeFront

- ❖ 0.33 lbs./gal. aminopyralid + 2.67 lbs./gal 2,4-D
- ❖ Use rate: 1.5 to 2.6 pts./acre
- ❖ Numerous broadleaf weeds – thistles, horsenettle, buttercup, henbit, plantains, vrbena
- ❖ Do not seed legumes year of application (additional research being conducted)
- ❖ Delay application until grasses have 4 to 5 leaves.



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ForeFront

- ❖ Injurious to legumes
- ❖ No grazing restriction for any type of livestock.
- ❖ 7 day hay harvest restriction
- ❖ Better control of plantains and common pokeweed than Milestone

Comparison of Grazon P+D, Surmount, PastureGard, Milestone and Forefront

Herbicide	Active Ingredient		
	2,4-D	picloram	
Grazon P+D, GunSlinger	2,4-D	picloram	
Surmount	fluroxypyr	picloram	
PastureGard	fluroxypyr		triclopyr
Milestone	aminopyralid		
Forefront	aminopyralid	2,4-D	

Comparison of Grazon P+D, Surmount and PastureGard, Milestone and ForeFront

Weed	Grazon P+D	Surmount	PastureGard	Milestone	Fore-Front
Buttercup	F	G	F	G-F	F
Blackberry	P-F	E	E	P	P
Dogfennel	G-E	E	E	F	F-G
Horsenettle	G	G-E	F	E	E
Horseweed	E	E	G	E	E
Pricklypear	F-G	E	F	P	P

Chaparral

- ❖ Premix of:
- ❖ Aminopyralid - 62.13% (0.525 lb. ae/lb.)
and
Metsulfuron - 9.45% (0.0945 lb./lb.)
- ❖ Use rate -1.5 to 3.3 oz. product/a
- ❖ X rate = 2.0 oz./a
- ❖ 'Pensacola' bahiagrass, horsenettle, trop. soda apple, plus 135 more broadleaf weeds, wild garlic and 14 brush sp.

Chaparral

- ❖ Bermuda, orchardgrass, tall fescue, up to 2.0 oz/a
- ❖ Native grasses – wheatgrass, bluestems, grama
- ❖ Apply to fully tillered or established
- ❖ Same tall fescue precautions as metsulfuron products, except no 24 mo. establishment restriction.

Chaparral

Act. Ingredient	Rate (oz. product/a)		
	1.5	2.0*	3.0
aminopyralid	0.049	0.066	0.098
metsulfuron	0.009	0.012	0.018

*Chaparral at 2.0 oz./a = 4.0 fl. oz/a of Milestone 2SC + 0.3 oz/a Metsulfuron 600G



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Chaparral

- ❖ Non-volatile
- ❖ Injurious to legumes
- ❖ Do not seed legumes year of application (additional research being conducted)

Aminopyralid- It's Good - BUT!!!!

- ❖ Do not
 - use hay from treated areas for compost or mulch
 - transfer livestock to untreated areas without 3 d cleanout
 - use manure for fertilizing broadleaf crops
 - use in any temporary forage system involving broadleaf crops
- ❖ USE ONLY ON PERMANENT GRASS FORAGE SYSTEMS

OutRider - Monsanto

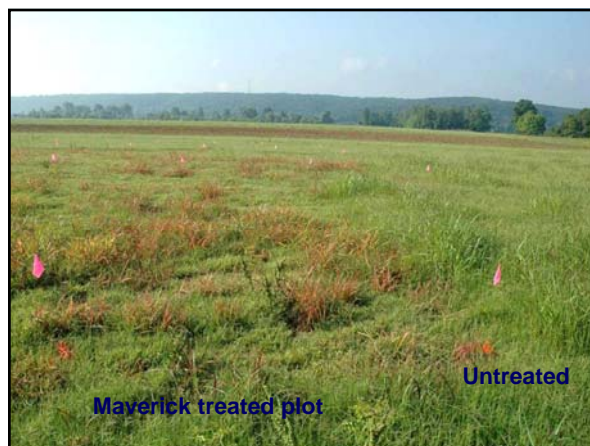
- ❖ Sulfosulfuron, 75WDG
- ❖ Approved in 2008
- ❖ New name for Maverick
- ❖ Controls johnsongrass and sedges in bermudagrass and bahiagrass
- ❖ Use rate – 1.33 ozs./acre
- ❖ Add a nonionic surfactant at 0.25% v/v.

OutRider - Monsanto

- ❖ Johnsongrass 18 to 24 inches tall, up to seedhead stage of growth
- ❖ Nutsedges – 4 to 8 inches tall
- ❖ Does not control annual grasses, dallisgrass, smutgrass, etc.
- ❖ Tank-mix with other herbicides for broadleaf weed control

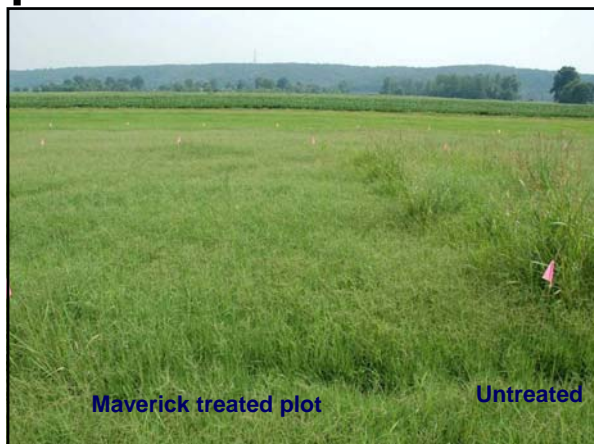
Maverick - Monsanto

- ❖ Grazing and haying restriction
 - 14 days – all livestock types
- ❖ Treated fields may be rotated only to wheat.
- ❖ Injurious to clovers.



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Imazapic – (Impose, Panoramic)

- ❖ previously marketed as Plateau
- ❖ forage bermuda, grass roadsides, wildflowers, noncropland sites
- ❖ established bermuda, don't use during grow-in
- ❖ will be sold as 2.0 lb./gal formulation
- ❖ add a nonionic surfactant at 0.25% v/v
- ❖ can be applied with liquid N (possibility of reduced grass weed control)
- ❖ non-volatile

Impose, Panoramic

- ❖ **No grazing restrictions**
 - (includes lactating dairy animals, horses, etc.)
- ❖ **Hay**
 - 7 day restriction on all types of livestock
- ❖ **Use only on actively-growing bermuda after full spring green-up**
- ❖ **Postemergence only product**
- ❖ **Do not used during spring transition – delays green-up**

Impose, Panoramic - POST – 4.0 fl. oz./acre

- ❖ **Application timing critical for good control**
 - Crabgrass spp., b. signalgrass - < 4 inches
 - Texas panicum, crowfootgrass - < 2 inches
 - johnsongrass – 18 to 24 inches
 - vaseygrass - < 6 inches
 - nutsedge spp. - < 4 inches
- ❖ **Needs 1 hour rain-free period**

Imazapic - POST

- ❖ **Smutgrass**
 - < 50% control at 4 to 8 fl. oz.
- ❖ **Vaseygrass**
 - needs 6 to 8 oz./acre, 4 oz./acre/yr for 3 yrs worked well in LA
- ❖ **Dallisgrass**
 - not as sensitive as vaseygrass, requires 10 to 12 oz./acre
- ❖ **Bahiagrass**
 - needs 6 to 8 oz./acre, 2.0 oz./acre will suppress seedheads

Where does Imazapic fit?

- ❖ **Established bermuda**
- ❖ **High quality bermudagrass hay producers**
 - control of annual grasses, johnsongrass
- ❖ **Sandbur and nutsedge control in pastures**
 - crabgrass is a high quality forage
- ❖ **Vaseygrass control**



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Where does Imazapic **not** fit?

- ❖ During spring transition
- ❖ On seedling bermuda
- ❖ On newly sprigged bermuda, during “grow-in”
- ❖ “No pain – no gain.”
- ❖ Persons who will not tolerate 30 to 50% bermuda yield reduction at 30 day cutting.
 - severe annual grass infestations will reduce bermuda yield as much or more than imazapic

Cimarron

- ❖ 60DF metsulfuron
- ❖ Now generic – MSM E.Pro, others
- ❖ DuPont is phasing out Cimarron and Ally brand name for pastures
- ❖ Effective for ‘Pensacola’ bahiagrass, spiny amaranth, curly dock, buttercup, wild garlic control, blackberry
- ❖ Poor horsenettle control
- ❖ Injurious to legumes & ryegrass (4 mo plant back)

Metsulfuron

- ❖ 0.1 to 0.4 oz. product per acre
- ❖ Use low rates on tall fescue and timothy
- ❖ Do not mix with liquid fert. for bahiagrass control
- ❖ 0 d grazing or haying restriction - all livestock

Cimarron Plus

- ❖ Two-way product
- ❖ 48% metsulfuron + 15% chlorsulfuron (63DF)
- ❖ Effective for ‘Pensacola’ bahiagrass, spiny amaranth, curly dock, buttercup, wild garlic control, blackberry, dewberry, honeysuckle
- ❖ Poor horsenettle control
- ❖ Injurious to legumes & ryegrass (4 mo plant back)

Cimarron Plus

- ❖ 0.125 to 1.25 oz. product per acre
- ❖ Use ≤ 0.5 oz. product/acre on fescue
- ❖ Do not mix with liquid fert. for bahiagrass control
- ❖ 0 d grazing or haying restriction - all livestock

Cimarron MAX

- ❖ Co-Pack product
- ❖ Metsulfuron 60DF + 2,4-D amine (2.87 lbs./gal.) + dicamba (1.0 lb./gal.)
- ❖ Increases number of broadleaf weeds controlled
- ❖ Use rates 0.25 oz./acre of Cimarron plus 1.0 to 2.0 pts./acre of 2,4-D + dicamba
- ❖ Add nonionic surfactant at 0.25% v/v



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Cimarron MAX

❖ Grazing Restrictions

- Lactating dairy animals – 7 days
- Other livestock species – 0 days

❖ Haying Restrictions

- All livestock – 37 days

Potential New Registration

❖ Pendimethalin – July, 2009?

- ❖ Prowl H₂O
- ❖ Complete with ongoing trials
- ❖ GA, AR, NC, SC, MS, TN, OK
- ❖ http://ir4.rutgers.edu/FoodUse/food_Use2.cfm?Prnum=08310

