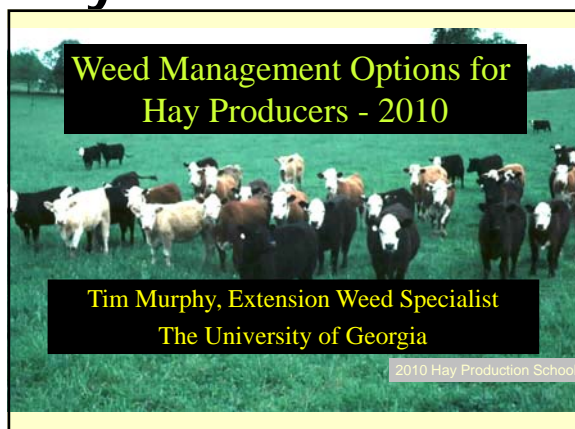


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Weed Management Options For Hay Producers



Control Measures

- ❖ **Cultural**
 - Fertility Management
- ❖ **Biological**
 - Limited options
- ❖ **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



Problem Weeds in Bermudagrass

- ❖ **Broadleaf (not a technology problem)**
 - horsenettle, Southern nettle, *Rubus* spp., hemp dogbane, tropical soda apple
- ❖ **Grasses - # 1 in Hay Fields (+ nutsedge)**
 - dallisgrass - crabgrass spp.
 - vaseygrass - sandbur spp.
 - Johnsongrass - broadleaf signalgrass
 - bahiagrass - crowfootgrass

Dr. Tim Murphy
Extension Weed Scientist

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Weed Management Options For Hay Producers



Herbicide Options

- ❖ 2,4-D
- ❖ dicamba (Vanquish, Banvel)
- ❖ 2,4-D + dicamba (WeedMaster, others)
- ❖ dicamba+ diflufenzopyr (Overdrive)
- ❖ triclopyr (Remedy)
- ❖ imazapic (Impose)
- ❖ 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)

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

- ❖ 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.

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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)

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.



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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, verbena
- ❖ Do not seed legumes year of application (additional research being conducted)
- ❖ Delay application until grasses have 4 to 5 leaves.

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	
	Grazon P+D, GunSlinger	2,4-D
GrazonNext	2,4-D	aminopyralid
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	E	G	F	G-E	E
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.



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Weed Management Options For Hay Producers



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 60DG

- ### Chaparral
- ❖ No grazing or haying restrictions.
 - ❖ Non-volatile
 - ❖ Injurious to legumes
 - ❖ Do not seed legumes year of application (additional research being conducted)

- ### For All Aminopyralid Products!!!!
- ❖ **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**

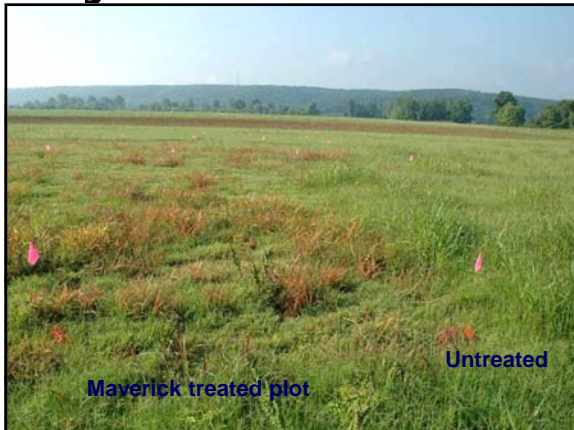
- ### OutRider - Monsanto
- ❖ Sulfosulfuron, 75WDG
 - ❖ Approved in 2008
 - ❖ New name for Maverick
 - ❖ Controls johnsongrass and sedges in bermudagrass and bahiagrass
 - ❖ Use rate – 1.33 ozs./acre
 - ❖ Add a nonionic surfactant at 0.25% v/v.

- ### 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

- ### OutRider- 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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Weed Management Options For Hay Producers



Grass Control Options - Bermudagrass

- ❖ **Dormant bermuda**
 - Glyphosate – 1.0 pt./acre (4.0 lb./gal.)
 - Gramoxone Inteon – 1.0 to 2.0 pts./acre
- ❖ **Active Growth Bermuda**
 - 'Pensacola' bahiagrass – Cimarron, Chaparral, Impose
 - Smutgrass – Velpar
 - Annual grasses
 - ❖ Roundup PowerMax, after first hay cut
 - ❖ Impose (imazapic)
 - Johnsongrass – OutRider, Impose
- ❖ **Spot treat or ropewick glyphosate**

New Grass Control Options for Bermudagrass in 2010

- ❖ Prowl H₂O
- ❖ Pastora

Prowl H₂O – BASF - 2010

- ❖ **Pendimethalin**
- ❖ **Preemergence herbicide**
 - Needs rainfall for incorporation within 30 days of application
- ❖ **Labeled on dormant forage bermudagrass hay or pasture (NOT LABELED ON TALL FESCUE)**
- ❖ **45 day hay harvest restriction**
- ❖ **60 day grazing restriction – all livestock types**
- ❖ **See supplemental label at:**
<http://www.cdms.net/LDat/ld6CT014.pdf>

Prowl H₂O – BASF - 2010

- ❖ **PRE control of crabgrass, goosegrass, sandbur, Texas and fall panicum**
- ❖ **Also controls some annual broadleaf weeds such as pigweed**
- ❖ **Apply February to early March (North GA) to dormant bermudagrass**
- ❖ **Must be applied before annual grasses germinate (crabgrass begins germination at soil temps. of 50 to 55 F.)**

Pastora – DuPont - 2010

- ❖ **Sulfonylurea**
 - Nicosulfuron 56.2% + Metsulfuron 15.0%
- ❖ **Pastora controls:**
 - ❖ Sandbur, johnsongrass, other annual grasses, annual broadleaf weeds
 - ❖ Annual grasses < 2.0 inches tall
- ❖ **Use rates: 1.0 to 1.5 oz./acre + NIS**
- ❖ **Will be used on bermudagrass only**
- ❖ **No grazing or haying restrictions**
- ❖ **Expecting label by Apr. 15, 2010**

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Weed Management Options For Hay Producers



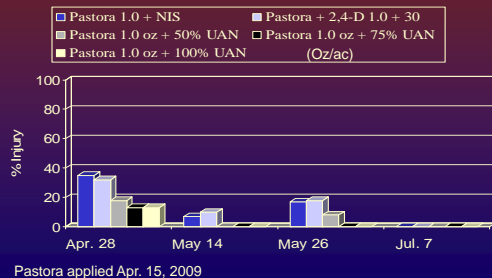
'Russell' Bermudagrass Tolerance to Pastora - 2009

- ❖ Conducted at Eatonton, GA
- ❖ Pastora 1.5 oz/ac – dormant appl. – Mar. 6
- ❖ Pastora 1.0 oz/ac – 40% green-up – Apr. 15
- ❖ Pastora 1.0 oz/ac – 18 d after 1st harvest – June 26
- ❖ Pastora 1.0 oz/ac – 5 d after 2nd harvest – July 20

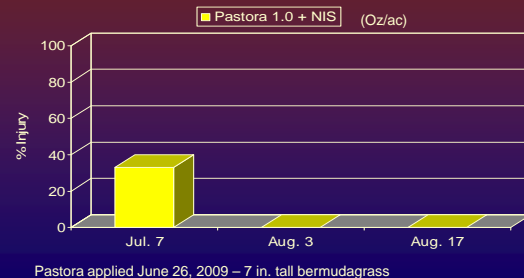
'Russell' Bermudagrass Tolerance to Pastora - 2009

Pastora at 1.5 oz/ac applied March 6 to dormant bermuda caused no injury and did not affect hay yield at any harvest.

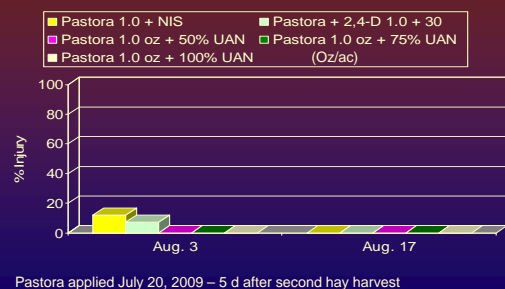
'Russell' Bermudagrass Tolerance to Pastora – 40% Green-up, 2009.



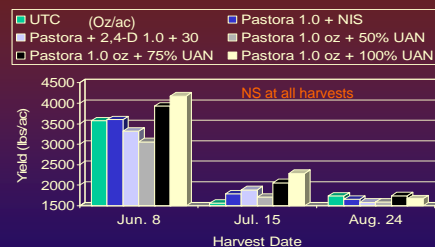
'Russell' Bermudagrass Tolerance to Pastora – 18 d after 1st harvest, 2009.



'Russell' Bermudagrass Tolerance to Pastora – 5 d after 2nd harvest, 2009.

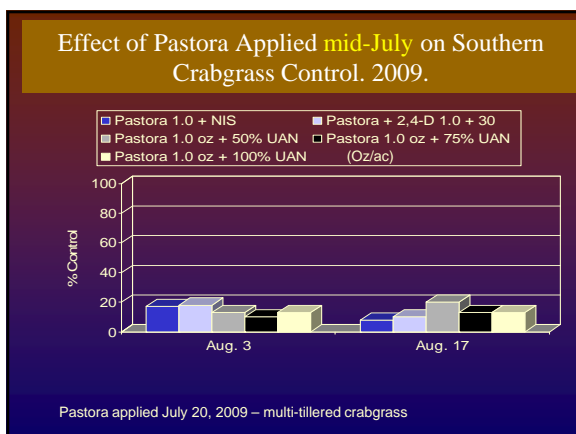
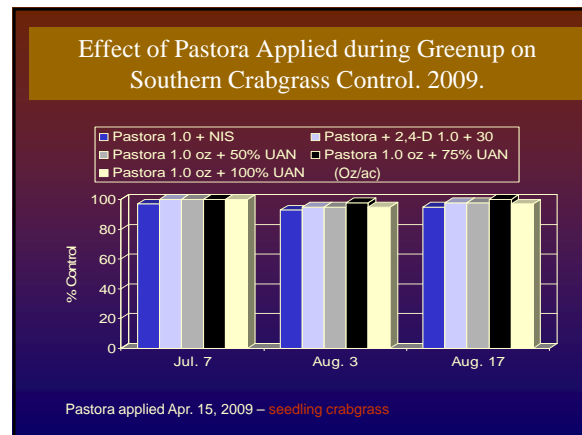
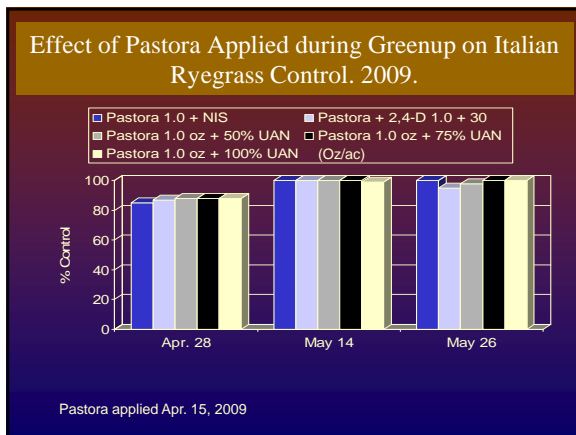
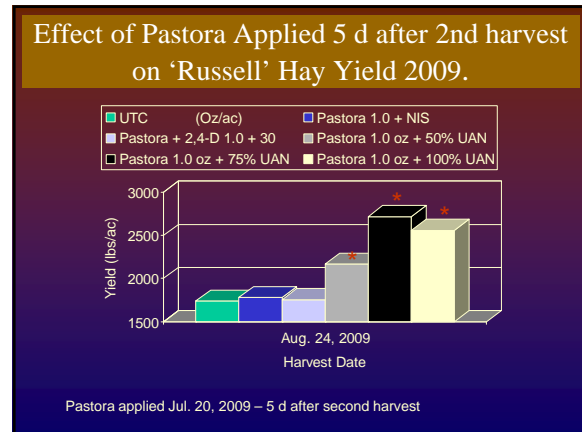
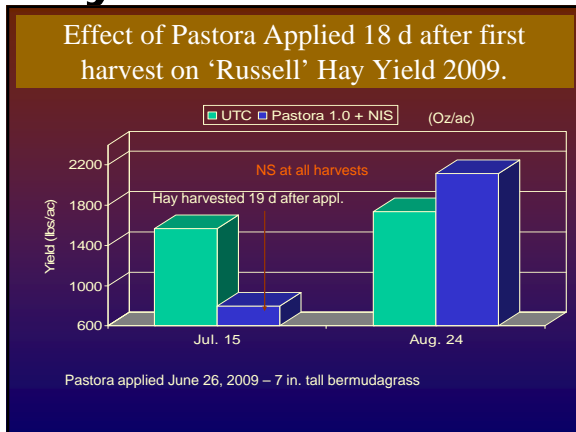


Effect of Pastora Applied during Greenup on 'Russell' Hay Yield 2009.



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- ### Conclusions - Pastora
- ❖ Will control Italian ryegrass
 - ❖ Best control of crabgrass is at seedling stage
 - ❖ Established bermudagrass (one growing season)
 - ❖ Application Timings
 - Winter – dormant bermuda
 - Spring – before 2 inches of new growth
 - Summer – within 7 days of hay cutting

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