INDAZIFLAM FOR WEED CONTROL IN WARM-SEASON TURF

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Introduction - indaziflam

- Newly registered herbicide
- Bayer Environmental Sciences
- Alternative to photosynthesis- and mitosis-inhibiting herbicides
The World of Herbicides
According to HRAC classification on mode of action 2010
Inhibition of protoporphyrinogen oxidase

- Diphenyl ethers
- Phenylpyrazoles
- Thiadiazoles
- Oxadiazoles
- Triazolinones
- Pyrimidinediones
- Others
- N-Phenyl-phthalimides
- Oxazolidinedione
Inhibition of microtubule assembly

K₁

Benzoic acid

Phosphoroamidates

Amipros-methyl

Butamifos

Benfim = Benfluorl

Dinitramine

Pyridines

Dithiopyr

Thiazopyr

Benzamides

Dichloropyridazine (DCPA)

Butalin

Oryzalin

Trifluralin

Pendimethalin

Tebutam

Propyzamide = Pronamide
The World of Herbicides
According to HRAC classification on mode of action 2010

HERBICIDES AFFECTING: Light Processes  Call Metabolism  Growth/Cell Division
Inhibition of cellulose synthesis

Benzamide

Alkylazines

Nitriles

Triazolocarboxamide

- Chlorthiamid
- Isoxaben
- Triaziflam

- Dichlobenil
- Flupoxam
- Indaziflam
Introduction – indaziflam

• Predominantly preemergence activity
  • Common and troublesome grass and broadleaf species

• Broadleaf weeds:
  • Bittercress
  • Chickweed spp.
  • Corn speedwell
  • Doveweed
  • Henbit
  • Lawn burweed
  • Prostrate spurge
  • Swinecress
  • Vetch spp.

• Grasses and sedges:
  • Annual bluegrass
  • Crabgrass spp.
  • Goosegrass
  • Annual sedge
  • Kyllinga spp.
Objectives

1) Evaluate various timings and rates for annual weed control
2) Determine the effect on bermudagrass root mass
3) Determine the effect of March-applications on fall-seeded perennial ryegrass establishment
Materials and methods

- Randomized complete block design (4 reps)
- Bermudagrass
- $\text{CO}_2$ pressurized boom calibrated to deliver 304 L ha$^{-1}$
- ANOVA conducted, means separated according to Fisher’s Protected LSD ($P<0.05$)
Annual bluegrass control

- Indaziflam - 40 g
- Indaziflam - 60 g
- Prodiamine - 920 g

Data collected 32 WAT (early-May), rates are g ai/ha, prodiamine not evaluated in October.

LSD = 6.9
Annual bluegrass control

- **Indaziflam - 40 fb 40 g**
- **Indaziflam - 60 fb 20 g**

Data collected 32 WAIT (early-May), rates are g ai/ha.

- **Sept fb Feb**
  - Indaziflam: 90%
  - Indaziflam: 94%

- **Oct fb Feb**
  - Indaziflam: 25%
  - Indaziflam: 24%

LSD = 7.0
Conclusions

• Single or split indaziflam applications initiated late-September provided acceptable annual bluegrass control through 32 WAIT

• Single or sequential applications initiated mid-October did not provide acceptable control
Smooth crabgrass control (early-September)

Data collected 49 WAT, rates are g ai/ha, prodiamine not evaluated in October.
Smooth crabgrass control (early-September)

Data collected 49 WAIT, rates are g ai/ha.

LSD = 12.8
Indaziflam 60 g ha⁻¹ Sept

Indaziflam 60 g ha⁻¹ Feb

Prodiamine 920 g ha⁻¹ Sept

Prodiamine 920 g ha⁻¹ Feb
Indaziflam 40 fb 40 g ha⁻¹ Sept+Feb

Indaziflam 60 fb 20 g ha⁻¹ Sept+Feb
Conclusions

• Single or split indaziflam applied fall or winter provided excellent crabgrass control through early-summer

• 1 YAIT, single indaziflam applications provided 65 – 73% crabgrass control while split applications provided 76 – 98% control

• Other research evaluated early postemergence applications
  • Pre-tiller applications provided ~70% control through season
Goosegrass control

Data collected 26 WAIT (mid-September), initial applied March 14, sequential applied April 25. Single applications (48 or 64 g) provided complete goosegrass control.
Conclusions

• One or two applications (24 or 32 g ai ha⁻¹) provided ≥ 88% season-long goosegrass control
• Single applications (48 or 64 g ai ha⁻¹) provided excellent season-long goosegrass control
Effect of indaziflam or prodiamine on ‘Tifway 419’ bermudagrass root mass

Data collected Sept/Oct 2010/2011, rates are g ai/ha. Sandhills Research Station.

LSD = NS

After 1 year:
- Indaz 53 (fall) fb 35 g (l. winter): 135%
- Indaz 35 (fall) fb 53 g (l. winter): 97%
- Prod 825 (fall) fb 825 g (l. winter): 79%

After 2 years:
- Indaz 53 (fall) fb 35 g (l. winter): 122%
- Indaz 35 (fall) fb 53 g (l. winter): 103%
- Prod 825 (fall) fb 825 g (l. winter): 68%
Conclusions

• Numerical trends were observed among indaziflam treatments although no statistical separation was observed
  • One measurement each year
Tolerance of overseeded ryegrass to March-applied indaziflam

Data collected Sept 29 (11 DAOS), rates are g ai/ha, single applications applied March 11, sequential applied May 11.

LSD = NS
Tolerance of overseeded ryegrass to March-applied indaziflam

Data collected October 13 (25 DAOS), rates are g ai/ha, single applications applied March 11, sequential applied May 11. LSD = NS
Conclusions

• March-applied indaziflam did not affect perennial ryegrass establishment or quality
• Revised label will be more restrictive
Conclusions

• Indaziflam provided acceptable annual grass control and did not affect perennial ryegrass establishment
  • Sequential applications may be better
    • 35 – 45 g ha$^{-1}$
Questions?