



Reality of Pesticide Use on Golf Courses

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History

Pesticide Use in Turf

Thousands of years ago

- ★ **Salting fields – directed herbicidal use**
- ★ **Tobacco smoke – nicotine as an insecticide**

Late 19th Century

- ✓ **1885 - Bordeaux Mixture a combination of copper sulfate & lime for control of downy mildew**

History

Pesticide Use in Turf

Early 20th Century

- ✓ Insect control – nicotine sulfate, zinc arsenite, calcium cyanide, selenium materials
- ✓ 1921 – 1st aerial application of insecticide
- ✓ 1931 – Thiram was 1st sulfur based fungicide (?)
- ✓ 1932 – Methyl bromide as soil fumigant
- ✓ 1938 – 1st organophosphate (TEPP)
- ✓ 1939 – DDT an organochloride

History

Pesticide Use in Turf

The War Years & Shortly After

✓ 1942 – 2,4-D 1st phenoxy herbicide

✓ 1944 – 2,4,5-T for vegetation control

Carbamate herbicides (e.g. Asulam)

Commercial use of organophosphates

✓ 1947 – FIFRA

✓ 1948 – Introduction of malathion

Captan as a fungicide

History

Pesticide Use in Turf

1950's & 1960's

- ✓ 1953 – Diazinon, DEET, Carbaryl
Triazine herbicides
Paraquat
- ✓ 1960 – 1st dinitroaniline herbicide (trifluralin)
- ✓ 1961 – Mancozeb

History

Pesticide Use in Turf

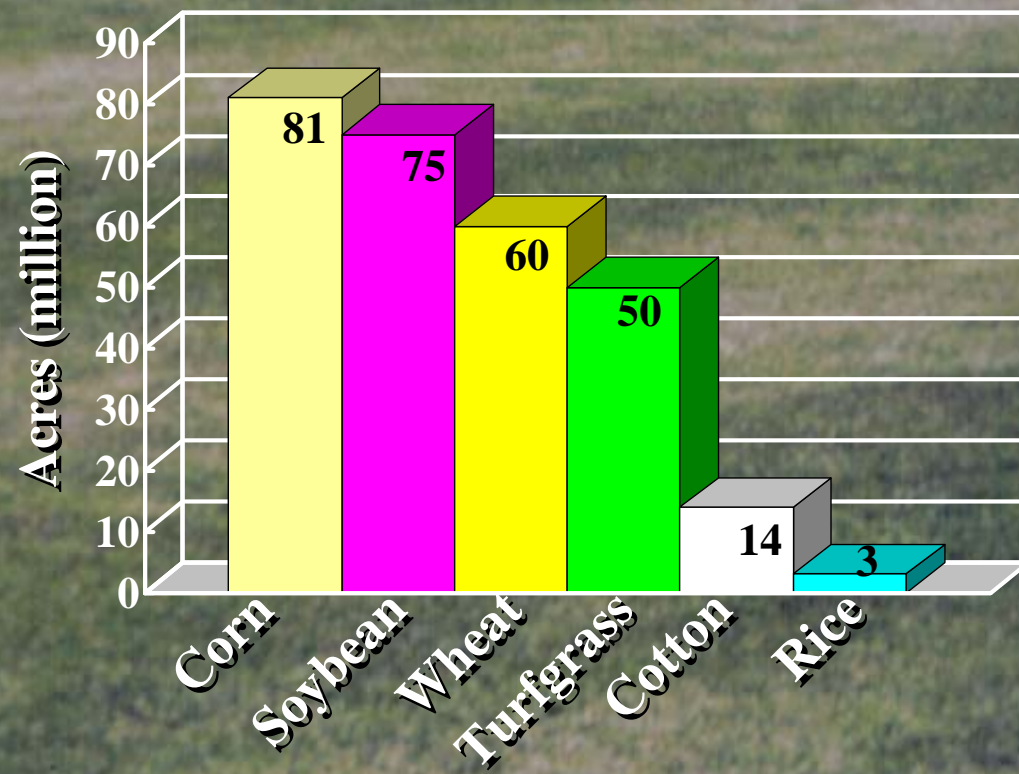
1970's

- ✓ 1970 – US EPA formed
- ✓ 1971 – Glyphosate 1st systemic & nonselective herbicide
- ✓ 1974 – EPA establishes 1st worker safety standards for reentry into treated areas
- ✓ 1978 – Training program for commercial pesticide applicators; EPA list of RUPs

Trends in Turfgrass

Pesticide Use in Turf

- ✓ About 50 million acres of managed turf exist in the U.S.
- ✓ Turf is the number one or two “crop” in FL, MD, NC, NJ, PA and VA



Sources: National Turfgrass Federation, 2003; USDA NASS, 2004.

Trends in Turfgrass

Pesticide Use in Turf

- ★ Greater urbanization and, therefore, more interaction with turfgrass and pesticides
 - ✓ Home lawns
 - ✓ Parks
 - ✓ Athletic fields
 - ✓ Golf Courses

Emerging Issues

Pesticides Use In Turfgrass

Pesticide Bans

- ★ Ontario, Canada – started in 2002
 - ✓ prevent private & public uses for “cosmetic” purposes
 - ✓ Response to public survey
 - ✓ Affects 13 million residents
 - ✓ Sports fields have a temporary exemption with approval

Emerging Issues

Pesticides Use In Turfgrass

Pesticide Bans

★ Connecticut – July 2009

- ✓ Public & private school grounds with grades K-8
- ✓ For professionals - \$5,000 & 1 year in prison
- ✓ Private applicators - \$1,000 & 30 days in jail

★ Preemption laws – preventing municipalities from more rigid pesticide restrictions than permitted by state regulatory agencies

Opportunities

Education & Research

Pests

- ★ Identification
- ★ Shifts
- ★ Resistance
- ★ Tolerable thresholds
- ★ Timing for optimal control
- ★ Pest management programs
- ★ IPM



Opportunities

Education & Research

Turfgrasses

- ★ Treated area
- ★ Species
- ★ Breeding
- ★ GMO
- ★ Tolerances
- ★ Ecosystem – soil, thatch, verdure



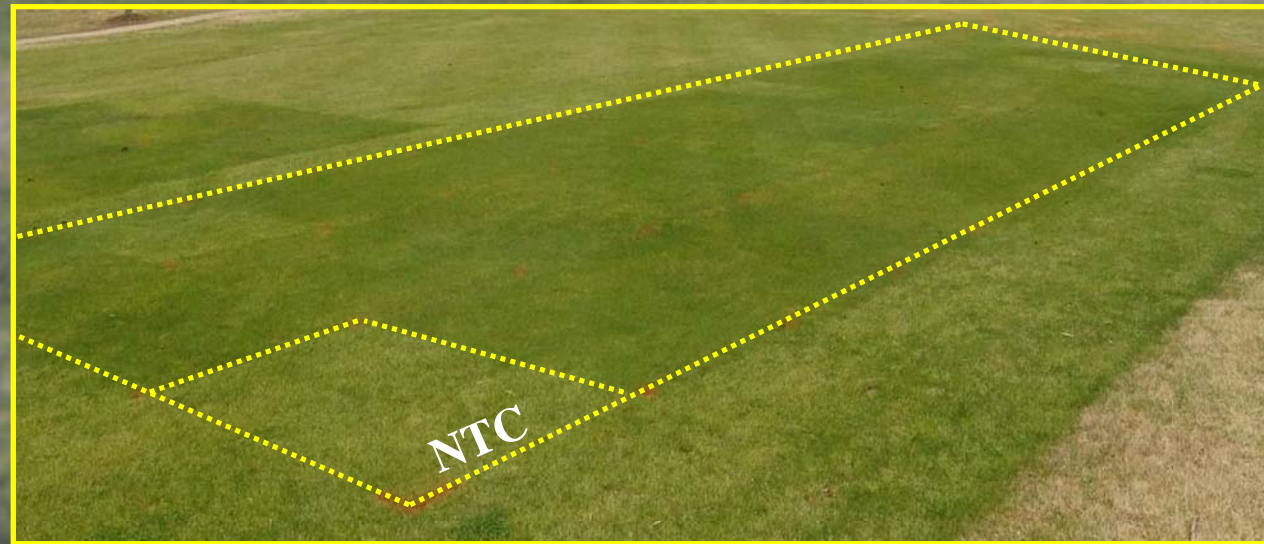
Thatch is the tightly intermingled layer of dead and living stems and roots found between the verdure and soil layers.

Opportunities

Education & Research

Pesticides

- ★ Discovery
- ★ Selection
- ★ Label
- ★ Cost
- ★ Frequency
- ★ Low use rate products



Opportunities

Education & Research

Application

- ★ Trained & educated
- ★ Calibration
- ★ PPE
- ★ Reentry intervals
- ★ Weather forecast
- ★ Storage



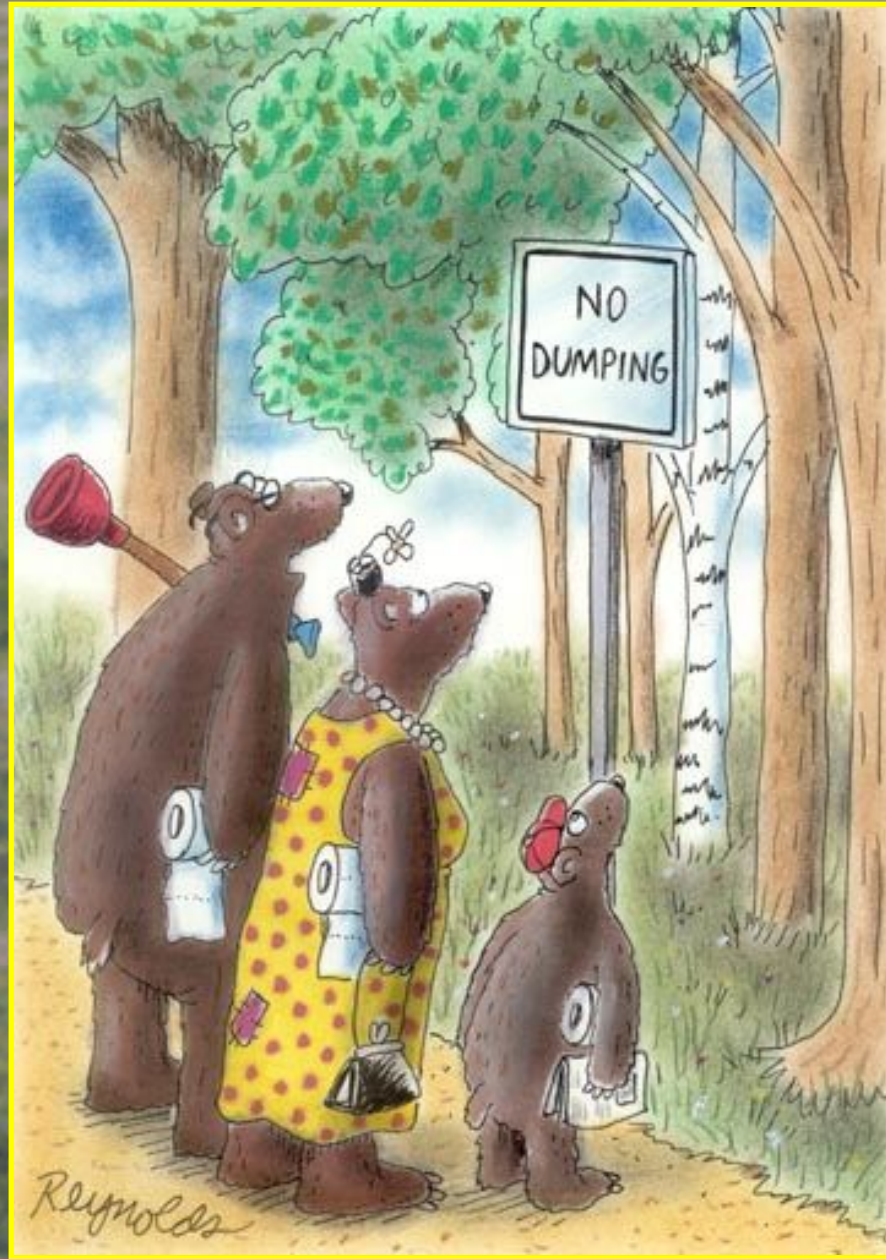
Opportunities

Education & Research

Environmental

- ★ Continued Stewardship
- ★ Awareness
- ★ Benefits
- ★ BMPs
- ★ Disposal





Where do we go from here?

Observations & Comments

Golf Course Inspections

Dept. of Ag. Field Inspector

- ★ Shift in grass selection
- ★ Record Keeping - excellent
- ★ Resistance management
- ★ Good agronomics
- ★ Storage
- ★ Labeled products
- ★ Research based information



Turfgrass Management App

For Sale Application – iTunes

Coming soon to BlackBerry

www.GeorgiaTurf.com



A sunset over a golf course. The sky is a mix of orange, pink, and blue. The sun is low on the horizon, casting a glow over the scene. In the background, there is a line of trees and a building, likely a clubhouse. The foreground is a grassy field.

Thank You

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