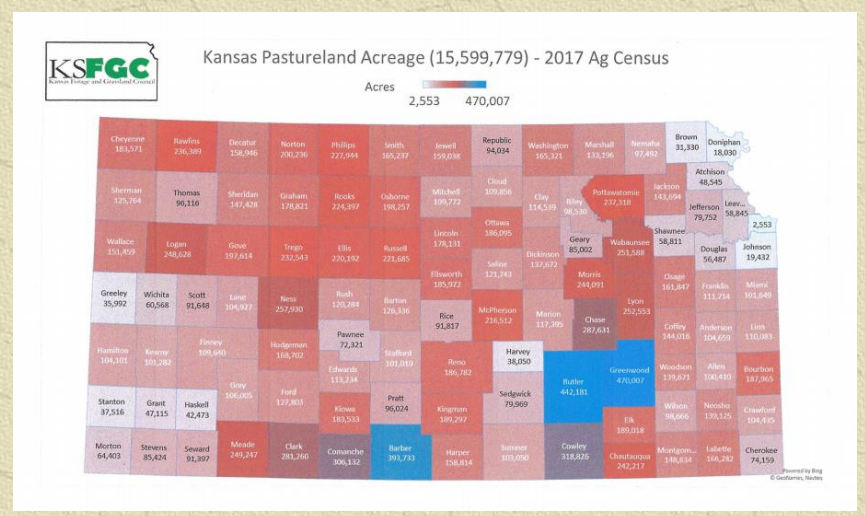
# Pasture Management and Weed Control

Walter H. Fick
Department of Agronomy
K-State Research & Extension

## Outline

- Grazing management
- Brush and weed control
- Questions

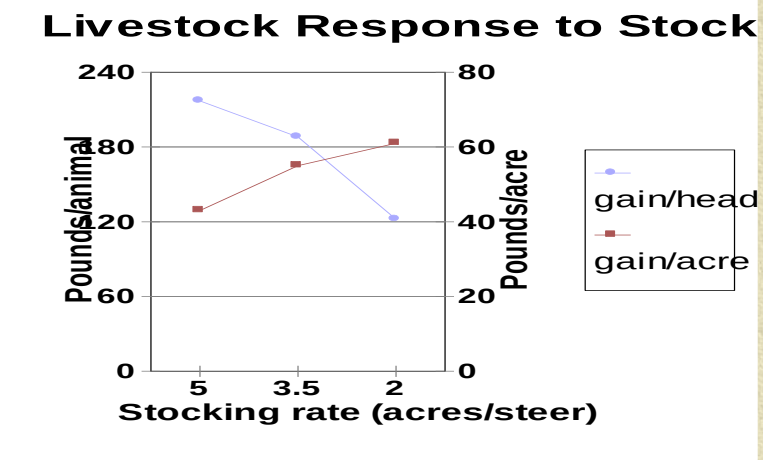
# Pastureland




# Grazing Management

- Kind of animal
- Season of use
- Distribution of grazing
- Stocking rate
- Grazing system

# Stocking Rate




## Keys to Successful Grazing Management

- Bud and TNC management
- Remaining leaf area management
- Defoliation
- Tiller management
- Animal nutritional needs
- Grazing program

## Importance of rest

- Allow time for grazed plants to recover prior to next defoliation and maintain health and vigor of plants
- Late summer rest is important for warm-season grasses to replenish their organic food reserves prior to entering winter
- Summer rest important for cool-season grasses

## Causes of brush and weed invasion

- Reduction of fire
- Climatic fluctuations
- Seed transport by animals, wind, water, etc.
- Grazing by domestic livestock
- Decreased fertility in tame pastures

## Weeds → plant growing out of place

- **Annuals**
  - Common broomweed
  - Cocklebur
  - Common ragweed
  - Daisy fleabane
  - Japanese brome
- **Biennial**
  - Musk thistle*
  - Common mullein*
- **Perennial**
  - Baldwin ironweed
  - Goldenrod
  - Western ragweed
  - Curlycup gumweed*
  - Johnsongrass
  - Old World Bluestem
  - Sericea lespedeza

## Brush → woody vegetation considered undesirable for planned use of the area

- Buckbrush*
- Smooth sumac
- Roughleaf dogwood*
- Blackberry
- Multiflora rose
- Eastern redcedar*
- Osage orange
- Common honeylocust
- Siberian elm
- Russian olive

## Control/Management Options

- **Grazing management**
- **Mechanical**
- **Prescribed burning**
- **Biological**
- **Chemical**

## Value of forbs and woody plants

- Add to production and forage quality
- Browse for sheep, goat, deer, cattle
- Watershed protection
- Nitrogen fixation by legumes
- Provide shade, winter protection and cover
- Wildlife habitat

# Non-grass species cows eat in the Flint Hills

Dotted gayfeather

Heath aster

Leadplant

Purple prairieclover

# Mechanical Control

- **Hand tools**
- **Mowing**
- **Tree cutters**
- **Bulldozers**

## Non-Sprouting Species
## Eastern redcedar


# Prescribed Burning

- Enhance livestock gain
- Improve grazing distribution
- Brush & weed control



Photo by Norman E. Rees

*Rhinocyllus conicus*

**Musk thistle head weevil**

# Goat Grazing


# Chemical Application Methods

- **Broadcast foliar (ground or aerial)**
- **High-volume foliar**
- **Single stem non-foliar**
  - basal (conventional, thinline, etc.)
  - dormant stem
  - cut stump
- **Soil applied (pellets, liquid)**
- **Spot treatment**

## % Musk Thistle Control
## Treated: May 16-29, 2012

| Herbicide | Rate | 1 MAT | 2 MAT |
|---|---|---|---|
| Milestone | 3 fl oz | 19-48 | 72-98 |
| Milestone | 4 fl oz | 16-41 | 88-94 |
| Milestone | 5 fl oz | 15-39 | 72-97 |
| Opensight | 1.5 oz | 0-36 | 79-93 |
| Opensight | 2.0 oz | 32-67 | 84-100 |
| Tordon 22K + 2,4-D A | 10 fl oz + 2 pt | 9-61 | 84-90 |
| Escort + 2,4-D A | 0.2 oz + 0.5 lbs | 14-34 | 80-93 |



## % Musk Thistle Control
## Treated: December 6, 2012

| Herbicide | Rate | 7-5-13 |
|---|---|---|
| Milestone | 3 fl oz | 99 |
| Milestone | 4 fl oz | 100 |
| Milestone | 5 fl oz | 100 |
| Tordon 22K | 10 fl oz | 100 |
| 2,4-D LVE | 64 fl oz | 43 |
| Chaparral | 1.5 oz | 100 |
| Untreated | --- | 0 |

# Common Mullein
## (*Verbascum thapsus*)

Introduced, biennial

Densely woolly

Up to 7 feet tall

Wandlike flowering stalk with yellow flowers

## Common Mullein Control at Blue Hill, Nebraska

| Treatment | Rate/acre[1] | April 20 | October 18 |
|---|---|---|---|
| Tordon 22K | 16 oz | 100 | 98 |
| Grazon P+D | 3 pint | 100 | 77 |
| Surmount | 2 pint | 100 | 100 |
| Overdrive | 6 oz | 100 | 56 |
| Overdrive + Cimarron | 4 oz + 0.25 oz | 100 | 87 |
| Cimarron | 0.3 oz | 100 | 28 |
| Cimarron + 2,4-D ester | 0.2 oz + 2 pint | 99 | 56 |
| Clarity + 2,4-D ester | 0.5 pint + 2 pint | 97 | 90 |

[1] All treatments 0.25% NIS and 2% AMS v/v

## Common mullein control treated in the rosette stage on April 21, 2006

| | | % Control | |
|---|---|---|---|
| Treatment | Rate | 54 DAT | 101 DAT |
| Tordon 22K | 0.5 pt/A | 45 | 74 |
| Grazon P+D | 2 pt/A | 75 | 84 |
| Milestone | 5 oz/A | 76 | 93 |
| ForeFront | 2 pt/A | 92 | 99 |
| Weedmaster | 2 pt/A | 43 | 77 |
| 2,4-D LVE | 4 pt/A | 45 | 44 |
| Overdrive | 4 oz/A | 53 | 81 |
| Ally | 0.25 oz/A | 91 | 93 |
| Ally + Weedmaster | 0.25 oz + 1 pt/A | 77 | 90 |
| Surmount | 2 pt/A | 82 | 83 |
| PastureGard | 2 pt/A | 53 | 75 |
| Remedy | 1 pt/A | 56 | 76 |
| Overdrive + Ally | 4 oz + 0.25 oz/A | 10 | 5 |
| Check | -- | 14 | 19 |
| | LSD 0.10 = | 17.2 | 20.4 |

**Curlycup gumweed**

*Grindelia squarrosa*

Short-lived perennial or biennial

Alternate, clasping leaves with coarsely tooth margins

Yellow flowers

Sticky

# Curlycup gumweed control – 5 WAT June 14, 2004

| Treatment | Rate | % Control |
|---|---|---|
| Picloram | 32 fl oz | 85 |
| Picloram + Overdrive | 32 fl oz + 4 oz | 98 |
| Picloram + Overdrive | 16 fl oz + 4 oz | 55 |
| Picloram + Overdrive | 12 fl oz + 4 oz | 86 |
| Picloram + Overdrive | 8 fl oz + 4 oz | 82 |
| Untreated | - | 19 |
| LSD 0.10 | | 20 |

Tordon 22K – 32 fl oz = $17.88
Tordon 22K + Overdrive (8 fl oz + 4 oz) = $16.47

# Other herbicides for Curlycup gumweed control

| Herbicide | Rate | Cost |
|---|---|---|
| Chaparral | 2-2.5 oz | $12.00 - $15.00 |
| DuraCor | 12 fl oz | $9.84 |
| Grazon P+D | 2-4 pint | $7.68 - $15.35 |
| GrazonNext HL | 1.5-2.1 pint | $9.62 - $13.47 |

## Eastern Redcedar

## Redcedar (*Juniperus virginiana*)

- Burning: small trees killed by fire
- Mechanical: cut below all green branches
- Chemical: picloram, 3 to 4 ml per 3 feet of plant height (soil); hexazinone, 2-4 ml per inch of stem diameter (soil) or 1-2 pellets per inch stem diameter; metsulfuron, 1-2 oz/100 gal water (high volume); 1-2% Surmount in water.

# Buckbrush

# Western snowberry vs Buckbrush

# Buckbrush Control

| Treatment | Rate | 5/15 | 5/28 | 6/8 | 6/23 |
|---|---|---|---|---|---|
| 2,4-D LVE | 4 pint | 97 | 100 | 84 | 61 |
| Chaparral | 2 oz | - | 90 | 42 | 21 |
| Chaparral + 2,4-D | 2 oz + 2 pint | 97 | 100 | 82 | 53 |
| Grazon P+D | 2 pint | 85 | 87 | - | - |
| Cimarron Plus | 0.5 oz | - | - | 4 | 52 |

# Buckbrush

- Burning: 2-3 consecutive years in late spring
- Mechanical: repeated mowing in early to mid May
- Chemical: 2-4 pt/A 2,4-D, 2-4 pt/A Grazon P+D; Chaparral + 2,4-D (2 oz + 2 pt/A)

# Rough-leaf Dogwood

# Rough-leaf Dogwood Control

| Treatment | Rate/100 gal | % Mortality |
|---|---|---|
| Banvel + 2,4-D | 1 + 2 pint | 6 |
| Remedy | 2 pint | 10 |
| Crossbow | 1 % | 14 |
| Remedy + 2,4-D | 2 + 2 pint | 17 |
| PastureGard | 0.5% | 20 |
| Tordon 22K + 2,4-D | 1 + 2 pint | 25 |
| PastureGard | 1% | 51 |
| Surmount | 0.5% | 60 |
| Surmount | 1% | 63 |
| Grazon P+D + Remedy | 1 + 0.5% | 67 |

$LSD_{0.10} = 14.9$

**Grazing Restrictions for Range and Pasture Herbicides (days)**

| Herbicide | Before grazing | Before hay harvest | Removal before slaughter |
|---|---|---|---|
| Banvel | 0 | 7 | 30 |
| Escort XP | 0 | 0 | 0 |
| Chaparral | 0 | 14 | 0 |
| Grazon P+D | 0 | 30 | 3 |
| Milestone | 0 | 0 | 0 |
| PastureGard HL | 0 | 14 | 3 |
| Remedy Ultra | 0 | 14 | 3 |
| Surmount | 0 | 7 | 3 |
| Tordon 22K | 0 | 0-14 | 3 |
| Weedmaster | 0 | 7 | 3 |
| 2,4-D | 0 | 7-30 | 3 |

# Summary

- Treat problem woody species when they first show up. Delay will increase cost of treatment.
- Broadcast application of herbicides for control of broadleaf weed control rarely recommended unless grazing distribution affected.
- Proper grazing management, use of prescribed burning, and spot treatment with herbicides will prevent extensive tree and brush problems.

# Contact Information

Walter H. Fick

Department of Agronomy – TH

Kansas State University

Manhattan, KS 66506

Phone: (785) 532-7223

E-mail: whfick@ksu.edu