EVALUATION OF WARM SEASON GRASSES FOR ANNUAL PASTURES

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INTRODUCTION

- Motivation for research
  - Organic dairy grazing requirements (7 CFR 205.237.2010)
- Why warm-season annual grasses?
  - Cool-season pasture summer slump
  - Slow establishment and lower quality of perennial warm-season grasses
  - Warm-season annual grasses rapidly establish and have good quality

PENNSTATE

OBJECTIVES

1. Compare yield & quality of annual warm-season pastures
2. Determine affects on yield of corn silage following annual warm-season pastures in rotation
3. Compare yield & quality of annual warm-season pasture rotated to corn silage with 2 years of established cool season perennial pasture

TREATMENTS: WARM-SEASON PASTURES

MONOCULTURES

Teff (T)

Sorghum-sudangrass (SSG)

TREATMENTS: WARM-SEASON PASTURES

MIXES

T + RC

T + SSG

SSG + RC

T + SSG + RC

T= teff

SS = sorghum-G sudangrass

RC = red clover

TREATMENTS: COOL-SEASON PASTURES

Red clover (RC)

Orchardgrass + RC

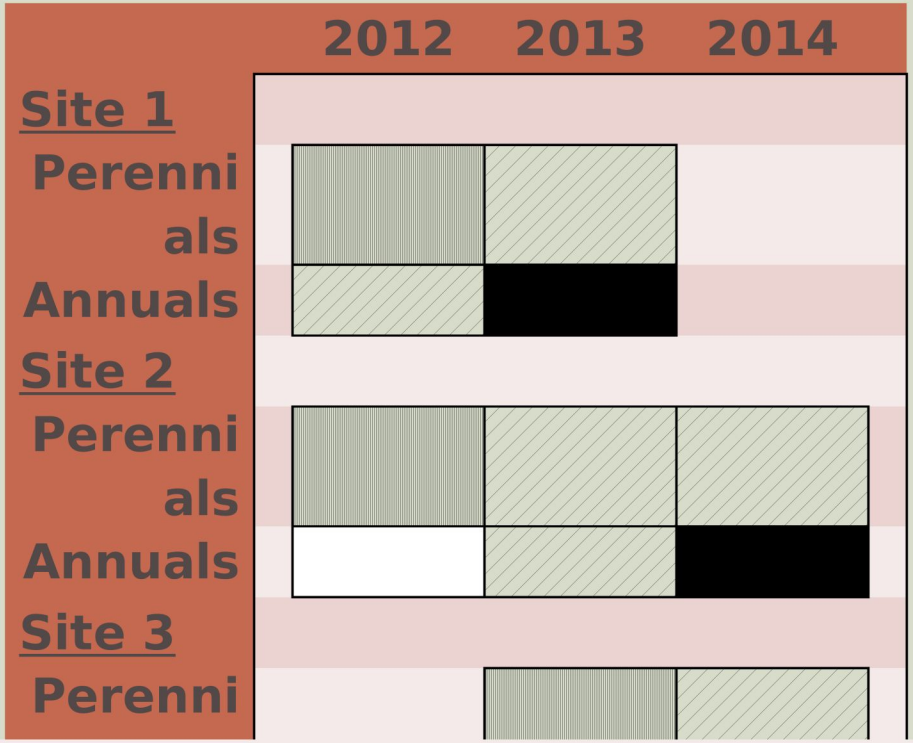
METHODS

- Rotation
  - Warm-season pastures and est. red clover monoculture rotated to corn silage
  - Cool-season pasture (OG + RC)

- Simulated grazing events
  - Initiated based on plant maturity and weed pressure
  - Subsequent grazing events at 30 day intervals

- Nutrient management
  - 50 lb/acre N applied as manure after 2nd simulated grazing event
  - 50 lb/acre N applied as manure prior to planting corn

SITES



Perennial Treatments

Seeding year perennials

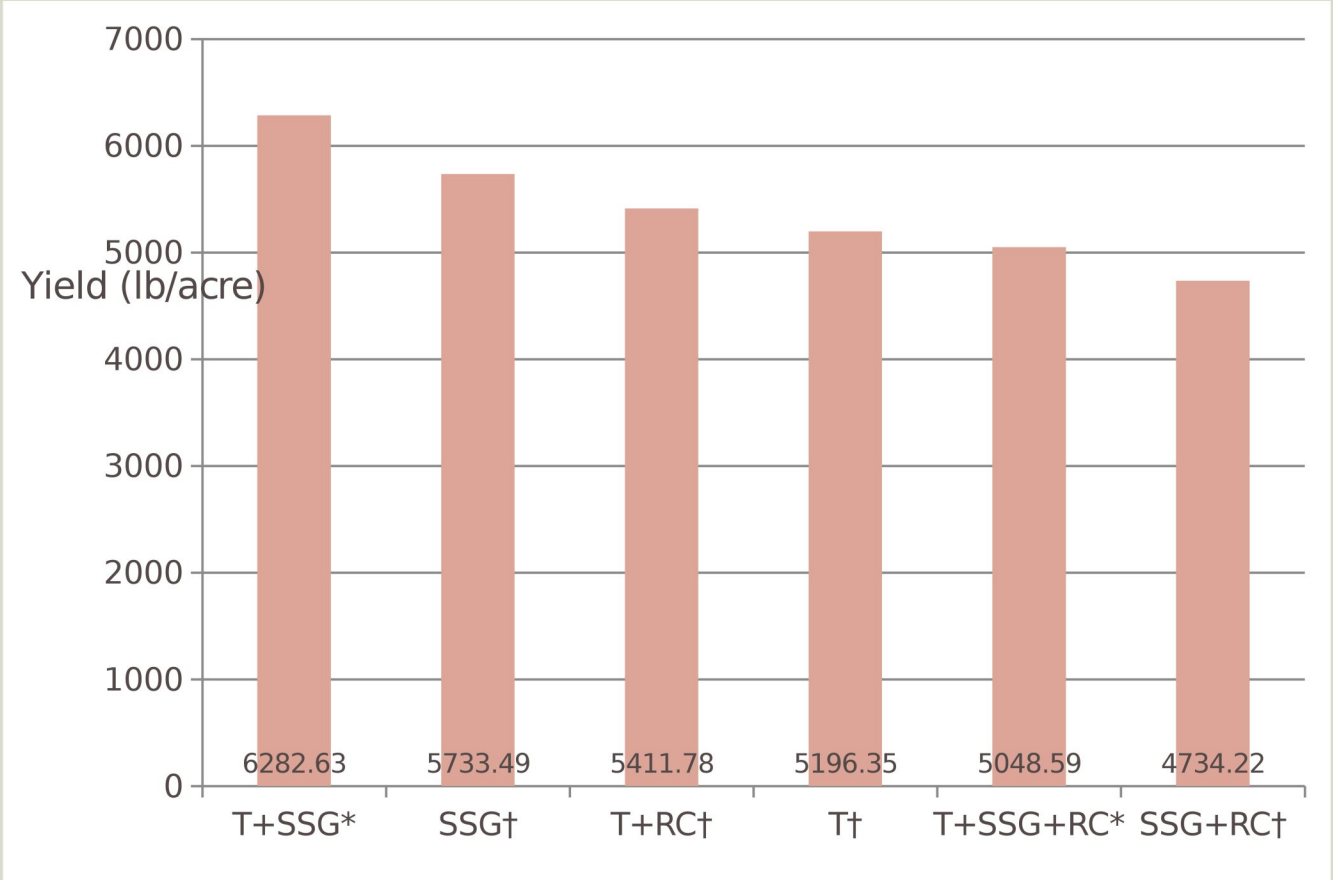
Established perennials

Annual Treatments

Annual warm-season pastures

Corn silage

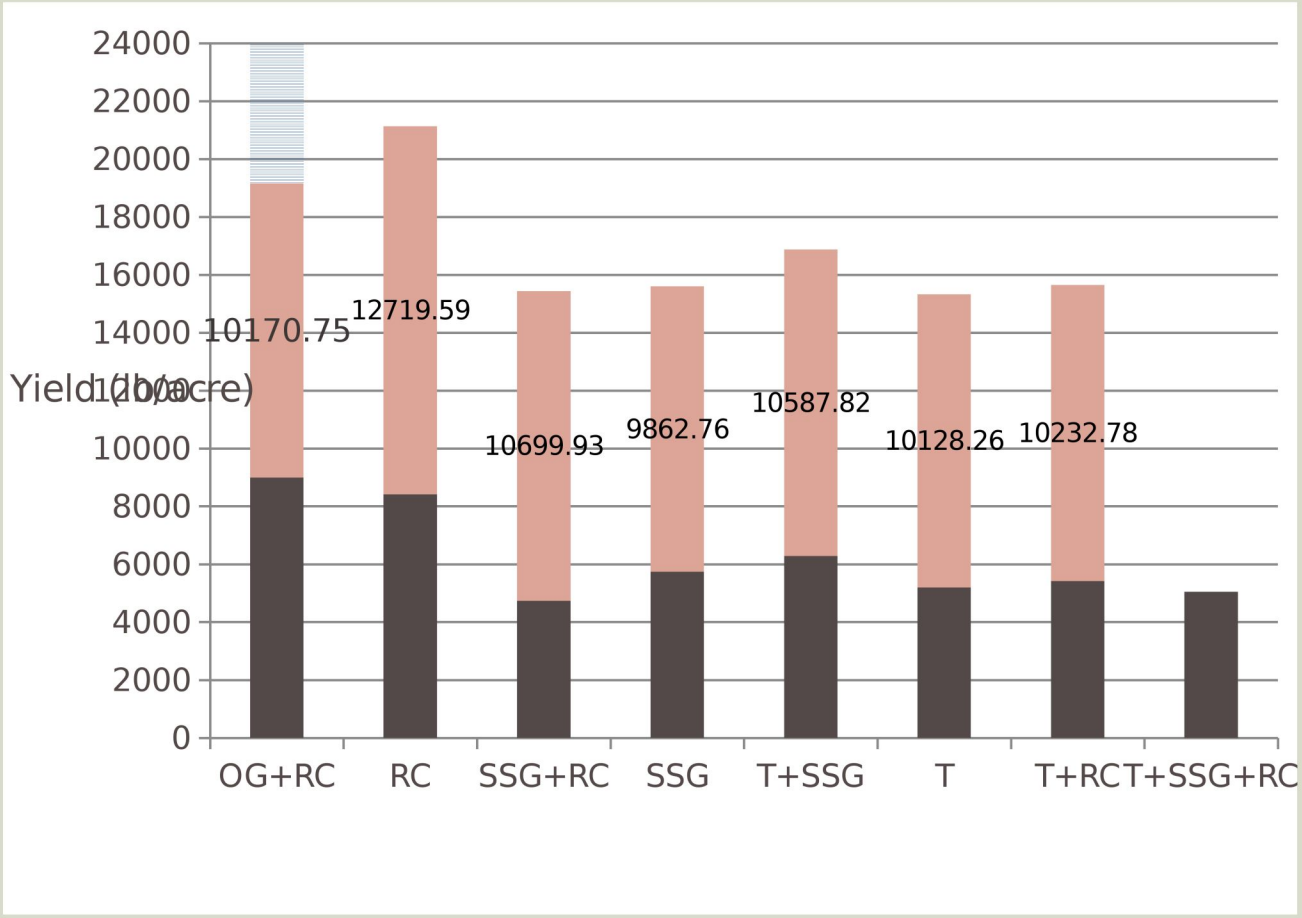
AVERAGE WARM-SEASON PASTURE YIELD



*Data from three environments.
†Data from two environments.

T= teff
SS = sorghum-sudangrass
R = red clover

TWO YEAR TOTAL YIELD



T = teff

SS = sorghum-sudangrass

G

R = red clover

C

O = orchardgrass

G

FORAGE QUALITY

	CP	NDF	IVTD	NDFD
Treatment				
OG+RC	**19.66**			
RC	**20.41**			
SSG	17.25			
T	16.94			
SSG+RC	17.72			
T+RC	17.26			
T+SSG	16.59			
T+SSG+RC	16.24			

T= teff
SSG = sorghum-sudangrass
RC = red clover
OG = orchardgrass

FORAGE QUALITY

	CP	NDF	IVTD	NDFD
Treatment				
OG+RC		**51.19**		
RC		**46.75**		
SSG		56.53		
T		**59.16**		
SSG+RC		**54.01**		
T+RC		56.97		
T+SSG		57.86		
T+SSG+RC		57.26		

T= teff
SSG = sorghum-sudangrass
RC = red clover
OG = orchardgrass

FORAGE QUALITY

	CP	NDF	IVTD	NDFD
Treatment				
OG+RC			77.21	
RC			**75.51**	
SSG			**81.53**	
T			77.53	
SSG+RC			**80.42**	
T+RC			77.57	
T+SSG			**79.67**	
T+SSG+RC			77.50	

T= teff
SSG = sorghum-sudangrass
RC = red clover
OG = orchardgrass

FORAGE QUALITY

	CP	NDF	IVTD	NDFD
Treatment				
OG+RC				**54.90**
RC				**47.33**
SSG				**67.08**
T				61.80
SSG+RC				62.94
T+RC				60.01
T+SSG				**64.72**
T+SSG+RC				60.65

T= teff SS G = sorghum-sudangrass R C = red clover O G = orchardgrass

RESULTS SUMMARY

- T + SSG had high yields
- T, SSG, and T + RC had moderate yields
- SSG, SSG + RC, and SSG + T were of similar quality
  - They had higher digestibility than the cool-season pastures
- RC and OG + RC had higher CP and lower NDF
- The warm-season pastures rotated to corn silage yielded similarly to the 2 years of cool-season pasture
- Warm-season pastures didn’t affect following corn yield

RECOMMENDATIONS

- SSG + T mixture offers best yield of warm-season pastures and had high quality

- Possible benefits of warm-season annual pastures
  - Increase available grazing land
  - Can be used in field crop rotat
  - More flexibility for farmers usi
    cover crops
  - Can be planted as a rescue cr

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