Harvest Interval and Residual Sward Height Effects on Meadow Fescue, Tall Fescue, and Orchardgrass

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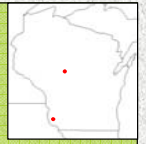
Perspective

Meadow fescue has excellent potential for temperate, grazing-based livestock systems. Unlike other typical forage grasses, it has been the subject of relatively few agronomic studies. Our objective was to compare the productivity, nutritive value, and persistence of diverse meadow fescue cultivars with that of tall fescue and orchardgrass under defoliation regimes representing severe and lax hay production and rotational grazing.

Methods

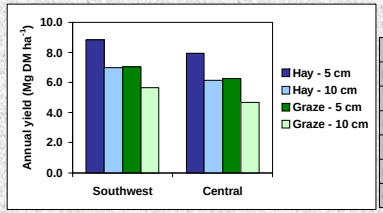


- Wisconsin locations
  - southwest (Rozetta silt loam; mesic Typic Hapludalf).
  - central (Withee silt loam; frigid Aquic Glossudalf).
- Grass cultivars
  - Azov (strain cross of 11 plant introductions), Bartura (commercial cv.), and Hidden Valley (naturalized population) meadow fescue.
  - Barolex tall fescue (commercial cv.; fine-leaf, endophyte-free).
  - Bronc orchardgrass (commercial cv.).
- Harvest management combinations
  - interval: hay (40- to 65-d) and graze (25- to 30- cm sward height).
  - residual sward height (RSH): 5- and 10-cm.
- Fertilization
  - 67.2 kg N ha^{-1} as NH_4NO_3 applied in spring, summer, and fall.

Plots harvested by rotary mower from May to October.

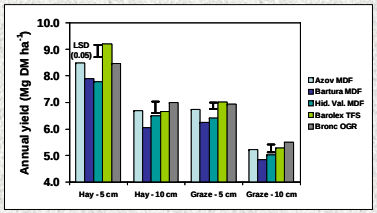
Grass persistence estimated by point intercept method.

Results

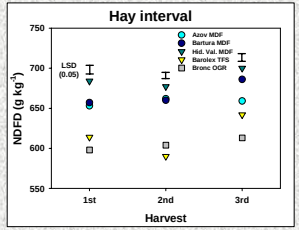


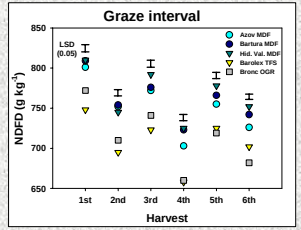
Harvest management contrast	Location	
	Southwest	Central
	P > F	
Hay – 5 cm vs. Graze – 5 cm	<0.001	<0.001
Hay – 10 cm vs. Graze – 10 cm	<0.001	<0.001
Hay – 5 cm vs. Hay – 10 cm	<0.001	<0.001
Graze – 5 cm vs. Graze – 10 cm	<0.001	<0.001

Greater annual yield was obtained by harvesting all grasses on a hay vs. graze interval at the same RSH, and by harvesting at a 5-cm vs. 10-cm RSH within the same interval.



With the exception of Azov, tall fescue and orchardgrass had greater annual yield than meadow fescue cultivars at a 5-cm RSH at both locations.





Meadow fescue cultivars had lower neutral detergent fiber (NDF; data not shown) and greater NDF digestibility (NDFD) than tall fescue and orchardgrass throughout the growing season for either harvest interval or RSH at both locations.

Harvest combination	Azov MDF	Bartura MDF	Hid. Val. MDF	Barolex TFS	Bronc OGR	LSD (0.05)
	% cover					
Hay – 5 cm	52	72	67	81	61	6
Hay – 10 cm	75	79	86	94	69	8
Graze – 5 cm	75	82	81	100	79	6
Graze – 10 cm	84	87	91	99	88	5

After two years, tall fescue had greater persistence than meadow fescue cultivars and orchardgrass at both locations.

Conclusions

1) These grasses will likely produce the least annual DM when managed according to recommended grazing guidelines (25- to 30-cm sward height at harvest and 10-cm RSH), but differences in annual productivity and persistence will be relatively small.
2) The major advantage that meadow fescue has over tall fescue and orchardgrass that favors its use in grazing-based systems is reduced NDF and superior NDF digestibility.