Renovation-year forage quality of grass pastures sod-drilled with Kura clover

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Introduction Including legumes can enhance yield, quality, and animal performance potential of grass pastures. Kura clover is an exceptionally winter hardy forage legume with high forage quality (Taylor & Smith, 1998). However, its seedling vigor is poor. Herbicide sod suppression prior to sod drilling enabled kura clover to establish in the north central USA and eastern Canada (Cuomo *et al*., 2001; Laberge *et al*., 2005), but its percentage of renovation-year forage yield was less than for sod-seeded red or white clover. The objective of this study was to determine the influence of herbicide suppression and clover species on renovation-year forage quality of grass pastures sod-drilled with Kura clover versus red or white clover.

Materials and methods Three pasture renovation factors were imposed on grass pastures in a split-split plot restriction in five environments in 2001 and 2002; three in the north central USA (Minnesota) and two in eastern Canada (Quebec). Factors included clover species ('Cossack' Kura clover vs. 'Scarlett' red or 'Shasta' white clover), herbicide sod suppression intensity (paraquat at 0.9 kg a.i./ha or glyphosate at 0.8 or 3.3 kg a.i./ha), and renovation-year N fertilization (0 or 110 kg N/ha). Sward crude protein (CP), neutral detergent fiber (NDF), and *in vitro* true digestibility (IVTD) concentrations were determined via NIRS in autumn after spring sod drilling.

Results Forage quality was positively correlated with clover DM production. The high rate of glyphosate resulted in lower NDF concentrations than paraquat suppression in most environments. Kura clover had less impact on sward forage quality than white and red clover since its renovation-year DM production was less. In Minnesota, swards sod-seeded with Kura clover averaged 40 g/kg less IVTD than swards with red or white clover in 10 of 18 site-herbicide-N treatment combinations. Swards with kura or white clover had 35 g/kg less CP than red clover swards in 13 of 18 site-herbicide-N treatment combinations. Where renovation-year precipitation was limiting (Quebec), there was little effect of clover species on forage quality.

Table 1 Forage quality (g/kg) in autumn of the renovation year following spring sod drilling of clovers into grass pastures for selected treatments and environments (0 kg N/ha level)

Treatments		Minnesota 2001			Quebec 2002		
Clover	Herbicide	CP	NDF	IVTD	CP	NDF	IVTD
Kura	Paraquat	114	593	646	220	460	739
	Glyphosate Low	113	586	655	264	399	806
	Glyphosate High	115	518	654	265	386	794
Red	Paraquat	189	447	746	217	493	728
	Glyphosate Low	184	458	747	245	399	795
	Glyphosate High	196	429	763	282	360	839
White	Paraquat	174	483	742	209	481	722
	Glyphosate Low	172	453	760	260	412	789
	Glyphosate High	163	456	760	261	390	792
LSD(0.05)	Species	13	31	18	50	63	89
LSD(0.05)	Herbicide	12	29	17	51	64	89

Conclusions Kura clover had less influence on renovation-year forage quality than red or white clover because its DM production was less. Thus, little renovation-year forage quality improvement should be expected after spring sod drilling of Kura clover.

References

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