Prairie Cordgrass and Switchgrass for Biomass Production

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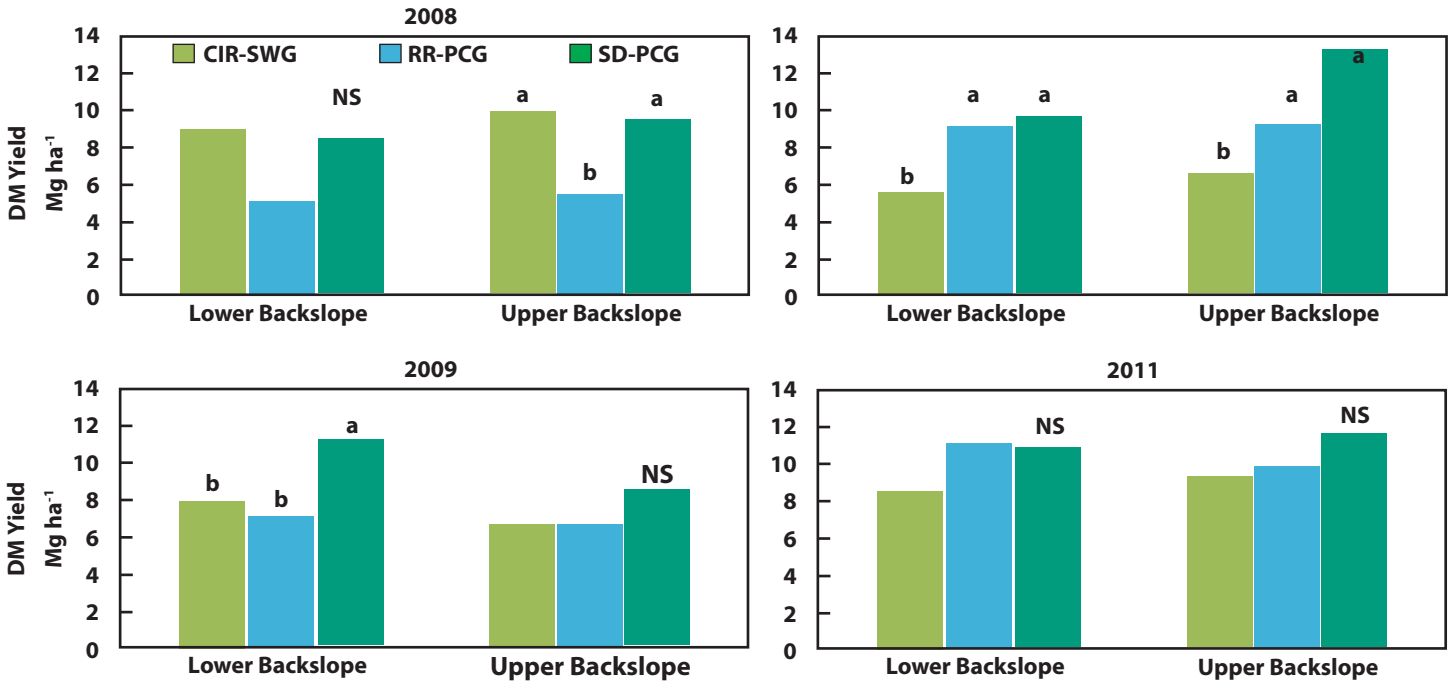
Prairie cordgrass (*Spartina pectinata* Link.) is a high yielding warm season grass that grows naturally on poorly drained, marginal land throughout the U.S. Two prairie cordgrass entries, South Dakota and Red River prairie cordgrass (SD-PCG and RR-PCG), and Cave-in-Rock and Sunburst switchgrass (CIR-SWG and SB-SWG) were harvested around killing frost early autumn in 2008 through 2011 for experiment one in South Dakota and from 2008-2010 for experiment two in North Dakota. Mean biomass production across years for experiment one ranged from 5.03-13.20 Mg ha^{-1} for lower and upper backslopes. For CIR-SWG, the pattern of biomass accumulation numerically decreased from 2009-2010 (7.95 Mg ha^{-1} and 5.77 Mg ha^{-1}) in lower backslope. However, for RR-PCG, biomass accumulation tended to increase from 2009-2010 for both lower and upper backslopes. SD-PCG yielded better in 2009 for lower backslope site and in 2010 for upper backslope.

Figure 1. DM yield (Mg ha^{-1}) of Cave-in-Rock (CIR-SWG) and two cordgrasses (RR-PCG = Red River prairie cordgrass; SD-PCG= SD prairie cordgrass), harvested once annually in SD from 2008-2011.



Interestingly, in 2011 CIR-SWG biomass production was around 8.62 Mg ha^{-1} and 9.3 Mg ha^{-1} for lower and upper backslopes. RR-PCG and SD-PCG yielded from 11.0 Mg ha^{-1} to 9.9 Mg ha^{-1} (lower and upper backslopes) and 10.8 Mg ha^{-1} to 11.5 Mg ha^{-1}, respectively. The general trend for experiment two was greater biomass production for SD-PCG in comparison with SB-SWG on lower backslopes during 2009 and SD-PCG on upper backslopes in 2010. Further investigations of biomass production for different warm-season perennial grasses are needed to understand which species can be better utilized giving higher yield production among families of cordgrass and switchgrass on lower and upper backslope sites.

Figure 2. DM yield (Mg ha^{-1}) of South Dakota prairie cordgrass (SD-PCG), and Sunburst switchgrass (SB-SWG), harvested once annually in North Dakota from 2008 -2010.