

SOUTH DAKOTA - Forage Yield, Quality, and Digestibility When Intercropping Vining Soybean with MasterGraze Seed Corn at Different Seeding Rates

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During the past couple of years we have been working on the development of intercropping a new variety of vining soybeans with corn for forage production. The production of forage resulting from the intercropping of corn and soybeans at planting has the potential to yield greater quantities of digestible nutrients to meet the nutrient requirements of lactating dairy cows. This study was a field plot experiment conducted to measure forage yield, nutrient concentrations, and digestibility when intercropping MasterGraze (MG) seed corn and vining (V) soybean hybrids at different seeding rates. A randomized complete block design (RCBD) with five different seeding rates (100:0 (T1); 67:33 (T2); 50:50 (T3); 33:67 (T4), and 0:100 (T5) of V and MG) with three replicates was used to determine the optimal intercropping seeding rates. Forage was hand-harvested 97 days after planting during the 2014 growing season, inoculated, packed into plastic buckets, weighed, and ensiled for 60 or 90 days. Buckets were then re-weighed, opened, and samples of forage collected. Fresh 60- and 90-day forage samples were submitted to a commercial laboratory (Analab, Inc., Fulton, IL). Fresh forage yield was greatest ($P < 0.05$) for T5 (all MG) compared to other ratios of MG and V (17.9, 34.4, 33.3, 33.3, and 35.7 tons/ac for T1, T2, T3, T4, and T5, respectively). Fresh DM yield (7.36, 9.81, 9.41, 9.01, and 8.34 tons/ac) and digestible DM (5.49, 6.78, 6.56, 6.29, and 16.10 tons/ac) were similar ($P > 0.05$) across all V:MG ratios. Fresh CP yield (1.67, 1.02, 0.95, 0.88, and 0.53 tons/ac) was greatest ($P < 0.05$) for T1 compared to other treatments and T2 greater ($P < 0.05$) than T5 with remaining ratios being intermediate and similar. Fresh digestible fiber yield was similar ($P > 0.10$) for all V:MG ratios (1.69, 2.48, 2.68, 2.33, and 2.88 tons/ac). The 60-day DM ensiling loss (5.23, 1.34, 1.22, 1.71 and 1.97%) was greatest ($P < 0.05$) for T1 compared to the other V:MG ratios. The 60-day ensiling digestible DM yield (5.49, 6.96, 6.65, 6.25, and 5.75 tons/ac) was greatest ($P < 0.05$) for T2 and lowest for T1 with other ratios being intermediate. The intercropping of V and MG at a ratio of 67:33 holds great potential for increasing the production of forages to meet the nutrient requirements of lactating dairy cows.