

Intercropping Corn and Forage Sorghum for Hay Production in North Dakota

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Abstract

Corn (*Zea mays* L.) silage and forage sorghum (*Sorghum bicolor* L. Moench) acreage has increased in the last decade in North Dakota, most in the south central part of the state. In this part of the state, in some years there is not enough moisture to grow corn and most producers do not have irrigation available. As a result, forage sorghum acreage, a more drought tolerant crop, has increased in that area. Corn silage is by far the preferred choice for dairy producers due to its high yield and quality and relatively easy-silage making qualities. The objective of this study was to compare different intercropping systems with monocultures and mixed cultures of silage corn and forage sorghum to determine the most resilient production system for different areas in North Dakota. The experimental design was a randomized complete block with three replicates. Experimental units will be 9.1 m long and 1.5 m wide with 8 rows spaced 62 cm apart for corn and 31 cm apart for sorghum. Corn silage and corn grain and two forage sorghum cultivars were grown in monoculture as well as both corn cultivars mixed with forage sorghum (corn-sorghum). Mixed cultures included row-intercropping and within-row intercropping. The treatments were a total of twelve; 4 monocultures, 4 row- intercropped corn-sorghum, and 4 within-row intercropped corn-sorghum and were planted on 7 June 2013. Crops were harvested on 26 September 2013 and samples were collected from each treatment to evaluate forage yield and quality. Results across locations indicated the highest forage yield was from corn grain or silage monoculture and corn-forage sorghum (Pampa Verde) planted in within-row intercropping. The lowest yields were from the monocultures of the two forage sorghum cultivars. In conclusion, in a year as 2013, where moisture was not a limiting factor, corn monoculture had greater forage yield potential than that of forage sorghum monoculture.