

Evaluation of the advantages of mixed planting of forage corn with forage sorghum ⁽¹⁾

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Abstract

Forage corn is an important forage crop in Taiwan. The production of forage corn was short due to climatic factors in the summer. The objectives of this study were mainly to explore the advantages of mixed planting of forage corn with the different growth types of forage sorghums, which can improve the forage production and supplement the shortage of forage corn production in the summer. Forage corn Kenting No.1 (KT 1), forage sorghum (FSH 01) with high stem and forage sorghum (FSM 02) with tillering type selected by the Hengchun Branch, Livestock Research Institute, Council of Agriculture were used. There were 5 different treatments, including forage corn with pure stand, high-stem forage sorghum with pure stand, tillering type forage sorghum with pure stand, forage corn mixed with high-stem forage sorghum, and forage corn mixed with tillering type forage sorghum. The field experiment design was a Randomized Complete Block Design (RCBD) with 3 replications per treatment, with the cultivation management in compliance with the general cultivation practice. The results showed that significant growth differences were observed between crop species and among entry variety and lines in middle and late growth stage in spring crop. The growth competition was also observed in mixed planting, especially with the visible fresh weight of the plant. When forage corn was the mixed planting with forage sorghum, forage corn exhibited better growth and influence on the growth of forage sorghum. The fresh yield of tillering type forage sorghum mixed planting with forage corn was 62.0 mt/ha, which was significantly higher than that of high-stem forage sorghum mixed planting with forage corn (41.5 mt/ha) in spring crop. No lodging was observed in mixed planting between forage corn and forage sorghum. The two crop species could protect each other in mixed planting. In terms of the quality of forage silage of pure stand and mixed planting in spring crop, all silage quality scores reached the grade of excellence (93.0-98.0). For the regrowth of forage sorghum in summer, it showed that both fresh and dry weights per plant, stem/leaf ratio and dry matter percentage were significantly different between the lines. The fresh weight of forage sorghum with high-stem was 78.4 mt/ha, significantly higher than those of the others. The total fresh yield combined two harvests for forage corn mixed planting with tillering type forage sorghum, which was 124.8 mt/ha and the highest among all the treatments. It was suggested that forage corn mixed planting with tillering type forage sorghum might provide an alternative cultivation system that will increase forage production and supplement in the summer.

Key words: Forage corn, Forage sorghum, Climate change, Mixed planting, Pure stand.

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