

**EFFECT OF THE MIXED RATES OF ENDOPHYTE-FREE AND -INFECTED SEED
ON THE DRY MATTER YIELD AND FORAGE QUALITY OF TALL FESCUE.**

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Abstract

This study was carried out to investigate the effect of the mixed rates of endophyte-free and infected seed on the dry matter yield and forage quality of tall fescue in Korea. In experiment, mixed ratios of endophyte-infected and -free seed were compared under the fourth cutting. Dry matter yield and forage quality of tall fescue were not influenced by mixed rates. The weed contents of botanical composition were slightly increased with high ratios of endophyte-free seed. The results demonstrated that endophyte-free tall fescue did not seem to be greatly weak under bad conditions.

Keywords: Endophyte, tall fescue, mixed rate, dry matter yield, forage quality

Introduction

Tall fescue is a very important grass species being grown the second for pasture in Korea because of its persistence and productivity.

Also, tall fescue has a wide adaptation to the climate and the soil. However, poor animal performance and preference on this grass is associated with a fungal endophyte. Dry matter yield of tall fescue has been slightly higher on high-endophyte than on low-endophyte

pasture. Animals may overgraze fungus-free fescue, because the intake restriction is eliminated. The change of botanical composition in pasture is attributed to having the difference of preference between fungus-infected and -free fescue. And fungus-free fescue is less drought-tolerant than the fungus-infected fescue. Legumes are grown with fungus-infected fescue for the reduction of fescue toxicity. Also, it needs dilution with other forages or feeds for good botanical composition and nutritive value. Some prefer to rid fungus-infected fescue by chemicals such as glyphosate or paraquat. This increased production costs to the livestock producer.

Material and Methods

The experiment was carried out to evaluate the effect of the mixed rates of endophyte-free and -infected seed on tall fescue pasture. It was designed as a randomized block. Treatments were the mixed ratios of endophyte-infected seed: free seed (100:0, 60:40, 40:60, and 0:100). Total 35kg/ha was broadcasted using seed (>85%) infected with *N. coenophialum* and seed having a very low percent (<2%) of infection with 'Ky 31' tall fescue. Estimates of forage were determined by harvesting a strip measuring 1m² in each plot. The forage was oven dried at 75⁰C for 72h. and weighed the fourth a year. Forage quality was evaluated by crude protein, neutral detergent fiber, acid detergent fiber and *in vitro* dry matter disappearance (AOAC, 1980; Goering and Van Soest, 1970; Moore, 1970). Weed contents were estimated visually at each harvesting.

Results and Discussion

Dry matter yield of tall fescue was not different between mixed rates of endophyte-free and -infected seed. However, although there was no significant difference, total dry matter yield of tall fescue was increased with high ratio of endophyte-infected seed. Also,

crude protein yield was no different between mixed rates of endophyte-free and -infected seed. Data indicated that high crude protein yield of endophyte-free seed (0:100) was attributed to having slightly good quality on the endophyte-free fescue. Although weed contents showed no significant difference, it was increased with high ratio of endophyte-free seed.

Based on the results of this experiment, it is suggested that a slightly more forage yield could be obtained from high ratio of endophyte-infected seed.

However, results of experiment demonstrated that endophyte-free tall fescue did not seem to be greatly weak under bad conditions in Korea.

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