

P254

Effect of seeding dates at a hilly pasture establishment on its growth characteristics and productivity

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Abstract

In the 20th century, the average temperature of Korea has risen by 1.5°C, whereas it has risen by 0.6°C globally. Few studies have investigated the effect of seeding date in hilly pastures on their growth characteristics and productivity. The purpose of this study was to elucidate the effect of seeding dates at a hilly pasture establishment on its growth characteristics and productivity caused by increasing temperatures in Korea. The experiments were conducted from 2014 to 2016 at Pyeongchang, South Korea, at an altitude 600–700 m above sea level. The composition of grass mixture was tall fescue, orchard grass, perennial ryegrass, Kentucky bluegrass, timothy, and white clover. Treatments comprised four seeding dates (August 13 and 27, and September 10 and 24). The establishment rate was lowest on September 24, resulting in only 20% establishment over the winter, and the proportion of weeds was highest on September 24 (58%). Early seedling growth before overwintering is a critical approach to ensure successful establishment of grassland. The main components were orchard grass and tall fescue on the early seeding date (August 13), and Kentucky bluegrass on the late seeding date (September 24). Late seeding increased the proportion of bare lands invaded by weed species, especially during second and third cutting periods. Early seeding date resulted in a progressive increase in biomass. Total annual production was significantly affected by the seeding date; lowest dry matter production was on September 24 (2,441 kg ha⁻¹), whereas maximum dry matter yield was on August 27 (6,608 kg ha⁻¹). The results of the study indicate that growth condition and productivity could be increased by early seeding, and seeding of grass in the Pyeongchang area should be completed before August 27. However, further studies are needed to determine the ideal seeding date at the hilly pasture establishment in Pyeongchang.

Keywords: Establishment, Hilly pasture, Grassland, Seeding date

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