Taiwan Livestock Res. 55(3)：193-199, 2022
DOI：10.6991/JTLR.202209_55(3).0005

Effects of cultivar, crop season and growth stage on soybean as forage [1]

Ming-Hung Chu [2] [3] [4] and Wen-Shin Lin [3]

Received: May 27, 2022; Accepted: Sep. 12, 2022

Abstract

Soybean (*Glycine max*) has a high nutritional value and is widely cultivated in Taiwan, making it suitable for production as legume forage. The purpose of this study was to determine the effect of cultivar, crop season and growth stage on soybean as forage. To compare plant height (PH), dry matter yield (DMY) and forage chemical composition, four cultivars of grain (Au and TN3), forage (KTS1) and manure (TN4) soybean were planted in the crop season of spring and fall, which were harvested at R3 (beginning bloom), R5 (beginning seed) and R7 (beginning maturity) growth stage, respectively. The results showed that soybean PH, DMY, crude protein yield (CPY), content of acid detergent fiber (ADF) and neutral detergent fiber (NDF) of spring were all higher than those of fall, but crude protein (CP) content of fall was higher than that of spring. When harvested in different growth stage, PH, DMY, CP and CPY were highest in R7 stage, but its ADF and NDF were both the highest among other stages. Compared with tested cultivars, DMY in spring and fall of late-maturing oilseed soybean (Au) were 6.16 and 5.51 mt/ha, respectively, which were both higher than other cultivars. Furthermore, CP (17.8%) and CPY (1.06 mt/ha) of Au were the highest, and its ADF and NDF (32.7% and 38.6%) were both the lowest among other cultivars. Among the tested cultivars, Au was most suitable as forage. According to the result, it showed that late-maturing grain-type soybean for forage use could retain both higher quantity and quality. In addition, forage soybean (KTS1) was characterized in late maturing and high yield, whose DMY could reach 6.23 mt/ha and was also an appropriate forage in fall when soybean DMY were generally low.

Key words: Crop season, Cultivar, Forage, Growth stage, Soybean.

(1) Contribution No. 2715 from Livestock Research Institute, Council of Agriculture, Executive Yuan.
(2) Hengchun Branch, COA-LRI, Pingtung 94644, Taiwan, R. O. C.
(3) Department of Plant Industry, National Pingtung University of Science and Technology, Neipu 912301, Taiwan, R. O. C.
(4) Corresponding author, E-mail: mmchu@mail.tlri.gov.tw.