

The effects of different harvest stage on nutritive value of oat (*Avena* spp.) silages ⁽¹⁾

Po-Yu Chen ⁽²⁾⁽⁴⁾ and Geng-Jen Fan ⁽³⁾

Received: Apr. 26, 2023; Accepted: Jul. 15, 2024

Abstract

3 varieties of oat (*Avena* spp.), Saia (*Avena strigosa* Schreb.), Swan and Mount one (*Avena sativa* L.), were used for field experiment by the randomized complete block design with 4 repetitions to explore the effects of different harvest periods on forage yield, changes of chemical composition, silage quality and dry matter digestibility. Oats began to be harvested in the boot growth period, and the dry matter yield increased as the harvest period got later, which were 9,130 kg ha⁻¹ at the initial harvest to 19,300 kg ha⁻¹ at soft dough stage ($P < 0.05$). The dry matter rate showed the similar tendency, which increased from 13.1% at the boot growth period to 37.8% at the soft dough period. The content of crude protein (CP) of oats decreased from 17.6% at the boot growth period to 9.6% at the soft dough period, while the content of water soluble carbohydrate (WSC) increased from 4.4% to 9.5%. The content of neutral detergent fiber (NDF) and acid detergent fiber (ADF) reached the highest in the heading stage, which were 59.6% and 36.4%, respectively. The Flieg's scores of silage quality for oats reached the best grade when harvested at the booting stage. Furthermore, the forage quality for oats harvested at the booting stage were good as their contents of CP, NDF and ADF were 13.3, 46.1 and 32.4% respectively. In addition, the *In vitro* dry matter digestibility and relative feed value performance for oats harvested at the booting stage were also much better than that were harvested after heading stage. Based on the results above, Swan and Mount one harvested at the booting stage could get better silage quality and Saia harvested at the heading stage.

Key words: Oat, Growth stage, Silage, Forage quality.

(1) Contribution No. 2780 from Taiwan Livestock Research Institute (TLRI), Ministry of Agriculture (MOA).

(2) Forage Crops Division, MOA-TLRI, HsinHua, Tainan, 71246, Taiwan, R. O. C.

(3) Livestock Management Division, MOA-TLRI, HsinHua, Tainan, 71246, Taiwan, R. O. C.

(4) Corresponding author, E-mail: muu680@mail.tlri.gov.tw.