Effect of different harvest time on yield and forage quality of three varieties of common millet (Panicum miliaceum)

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Monitoring forage quality is one of the most important factors of essential and good management of a farm. The most important factor about plants and forage quality is growing stage which can help to identify the optimum time of harvest. As different varieties of plants have different harvest times and quality, in order to search the variety effect on forage yield and quality traits, three varieties of common millet (Panicum miliaceum), namely, KCM2, KCM7, and KCM9 in three phenological growth stages, including booting, milky, and seed maturity stages were studied. Experiments in factorial form were surveyed in Karaj district, Iran with three replications in the form of randomize complete blocks design in 2009. Except ash percentage, there were significant differences among three growth stages in other quality traits and forage yield (P < 0.01). Significant differences among varieties for dry and wet forage yield, dry matter digestibility (DMD), water soluble carbohydrates, and acid detergent fiber percentage were also observed. However, interaction effect of variety and phenological growth stage were not significantly different on acid detergent fiber, crude fiber (CF), and ash percentages. Almost in all varieties, the amount of crude protein (CP) and DMD decreased during developing growth stages, while the amount of CP increased. KCM2 variety had the highest forage quality based on measurement indices and it was chosen as the best variety with regard to the most desirable forage yield. Booting stage (first phenological stage) was the most desirable in quality traits among the three growth stages. However, considering the little difference between the first and second stages in dietary energy, the second stage (milky stage) was recommended as the most suitable time for harvesting, because of high yield and compatibility of farm to plant.

Key words: Quality traits, forage yield, dry matter digestibility, crude protein, growth stage, crude fiber.

INTRODUCTION

Food shortage and day by day increasing population especially in developing countries create serious problem about the future of food. Meanwhile, the role of forage plants in animal feeding and subsequently providing human needs in live stocks products has an important and enormous role. The amount of animal products is related highly to animal feed provided. Forage plants do not only solve the feed problems of animals, but also has important role in soil protection in regional conditions and preventing undesirable events like destructive floods. The amount of five stocks products are directly related to forage plants and their production, and it is necessary to make exact basic plan for forage production and it is possible with increasing the amount of cultivations and modern plant breeding methods (Karimi, 1988).

One of the forage plants which get more attention in recent years is common millet. Common millet is often used for forage production. In fact, common millet is one of the world's oldest cultivated crops. Its cultivation is