

## 山羊の合理的飼養技術開発に向けた行動管理に関する研究：群管理ならびに放牧管理向上のための行動学的アプローチ

著者	主税 裕樹
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学 位 論 文 要 旨	
氏 名	Yuki Chikara
題 目	Studies on Behavioural Management for Development of Practical Feeding Techniques of Goats—Ethological approach to effective flock and grazing managements— (山羊の合理的飼養技術開発に向けた行動管理に関する研究—群管理ならびに放牧管理向上のための行動学的アプローチ—)
<p>The objective of this study was to obtain fundamental information on the development of rational management practices of goats, and the present status of goat feeding in Japan, the method to alleviate food competition in a flock of goats, prevention of exit from a pasture by goats, and biological weed control by grazing goats were investigated.</p> <p><b>1. The present situation of goat feeding in Japan:</b> The aims of goat feeding varied among weeding, milk production, companion animals, education and meat production, especially, the former two were majority. The size of goat keeping was small (&lt;10 goats/holder) and the animals were mainly housed. Further information on the proper stocking density and the method to prevent exit is needed.</p> <p><b>2. Behavioural problems in a flock of housed goats and the development of the problem-solving methods:</b> Social dominance of doe and buck flocks was similar to the linear unidirectional type via food competition, so that the lowest ranking animal significantly spent more time queuing than the highest and did not have enough access to feed. However, it was suggested that food competition could be alleviated by setting of 1 trough/head or more, arrangement of trough at intervals of 1.6 m, low stocking density (at least 4 m<sup>2</sup>/head) or setting of feeding platform (above goat's eyes).</p> <p><b>3. Elucidation of behavioural characteristics in loose housing goats and the solution to their problems:</b> When grazing goats using a net-fence, it was suggested that exit could be prevented by setting the head of the fence to 10 cm or more above goat's eyes and by setting it at a height of &gt;150 cm on the steep pasture. Electric-fence might be superior to net-fence for preventing goats from exiting. As for the electric-fence, conditioning a goat inexperienced at grazing to shocks by tethering on the previous day could lead to the prevention of exit, and the effect might persist for at least a year.</p> <p><b>4. Potentiality of weed control by goat grazing in agricultural, forest and abandoned lands:</b> Selectivity index based on Ivlev's electively index (SI), which was calculated for each plant species from the relative summed dominance ratio (SDR<sub>2</sub>') and grazing frequency, was applied to analyses for grazing behaviour of goats. Although the SI values for <i>Rumex obtusifolius</i> L. were negative in both cattle and goats, the latter were smaller comparing the former. No significant correlation was found between diet selection by goats and oxalate content regarded as aversive substance (acridity) in <i>R. obtusifolius</i>, suggesting tolerance of the animals to acridity. As goats preferred immature <i>Solidago altissima</i> L. to mature one, a higher weeding effect might be expected by grazing the younger plant.</p> <p>In conclusion, it was suggested that food competition in goats could be alleviated by improving stocking density or feeding methods. Electric-fence appeared to be useful for grazing goats, indicating that conditioning the animals to shocks might prevent exit. Moreover, a weeding effect was observed due to goat grazing in agricultural, forest and abandoned lands.</p>	