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Effect of plant patches on the foraging location of beef cattle

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Key words: beef cattle, plant individual, plant patch, foraging location, foraging strategies

Introduction Researchers have made rapid progress in the study of foraging strategies of grazing herbivores at different ecological levels (regional-landscape-patch-individual plant) home and abroad (e.g. O'Regan 2001), but no study has been conducted by combining the individual plant (I) and patch (P). Therefore, the foraging location (I or P) was studied with beef cattle as experimental animals when I and P were present in experimental plots in different proportions. Moreover, determining the foraging strategies of cattle was expected to provide a theoretical basis for improved management.

Materials and methods The experiment used 5 plots in *Phragmites communis* community of the Songnen meadow (123°42'E, 44°43'N). Namely, I ($S_p=50m^2$), II ($S_{p1}=5m^2, S_{p2}=4m^2$), III ($S_{p1}=50m^2, S_{p2}=30m^2, S_{p3}=10m^2$), IV ($S_{p1}=70m^2, S_{p2}=20m^2, S_{p3}=7m^2, S_{p4}=5m^2$), V ($S_{p1}=100m^2, S_{p2}=30m^2, S_{p3}=20m^2, S_{p4}=10m^2, S_{p5}=10m^2$) (note: S: Square; P: patch). Plots were grazed from 5:00 to 8:00am everyday and from June 6 to 30, 2004. Three cows were chosen (300kg each, 4 years old). Cattle were not fed before foraging. The experiment was repeated 4 times (each for 10min). During each bout, we recorded the foraging time and foraging location in the experimental plot.

Results and discussion Foraging time was short in the individual and long in the patches of I, III, IV, V, but it was different in II, because the small patch could not meet the demand, so the cattle foraged on the same patch repeatedly. The cattle tended to forage on the patch at the beginning, which verified Sibbald and Hooper's conclusion (Sibbald and Hooper 2003).

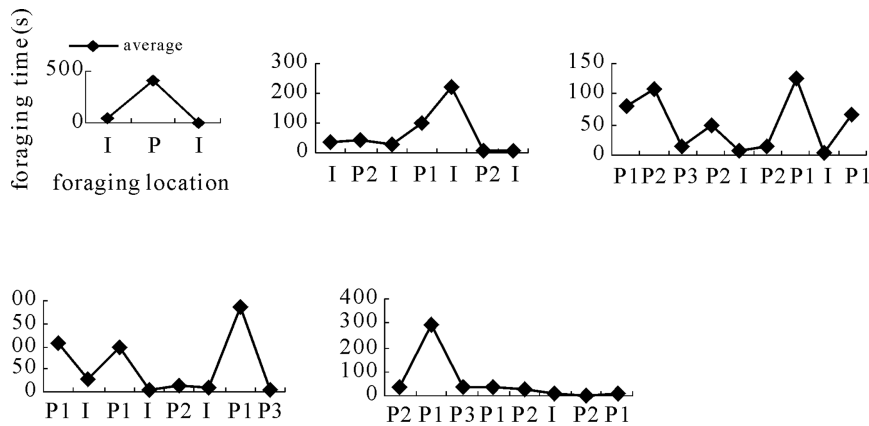


Figure 1-5 Foraging time of beef cattle in individual and patch from I to V.

Beef cattle spent a lot of time foraging in the patch, especially the larger patch when they first entered the experimental plots. Furthermore, beef cattle did not forage on the smaller patch when the number of patches was more than three and the grazing period was short.

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