
THE FEED PREFERENCE OF ROE DEER (*CAPREOLUS CAPREOLUS*) ON
AGRICULTURAL HABITATS

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Abstract: *In Hungary the roe deer (*Capreolus capreolus*) is the most widespread big game, estimated population in 2012 exceeded three hundred and fifty thousand (National Game Management Database (OVA), 2012). The aim of this research is to find out what kind of differences and resemblances can be found in feeding strategies on the examined agricultural plain habitats. The feed selection habit of one of the most important big game in our homeland has not been researched yet in detail in the counties Csongrád and Békés, where the roe deer population is numerous and excellent. The detailed knowledge of the related specific feeding strategies contributes not only to the better cognition of this kind but also provides a developed opportunity for the game managers to reach better game husbandry results. Beyond the practical significance of the theme there are some other peculiarities to be cleared up in connection with the nourishment of roe deer: what kind of feeding strategies would be typical for the roe deer living on the plain at different food supply?*

Key words: *roe deer, *Capreolus capreolus*, feed preference*

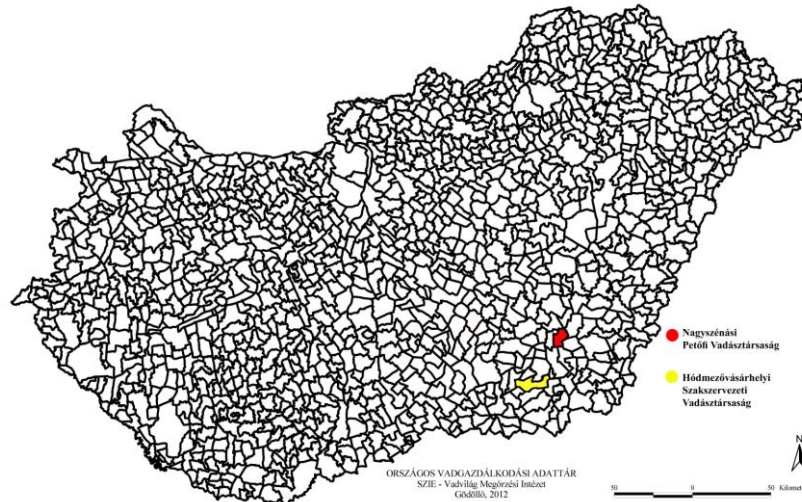
INTRODUCTION

Gallery forest, wooded steppe and the scrubland are considered to be the ancient habitat of roe deer. They prefer leafy forests, forest edges and the bordering lawn or cultivated areas. On the enormous treeless plains they not at all or only in limited numbers are found. The calmness offered by large scale field farming leads to area reservation of roe deer, this happened when they spread on the Great Hungarian Plain. It was also supported by the afforestation of the plain by forming forest belts and patches, namely the improvement of the habitat. The roe adapted to the agricultural environment very well. So in present days we separate the field and the forest roe ecotypes, which are different from each other in behavior, social contacts and dietary habits (CSÁNYI, 1992).

Roe deer (*Capreolus capreolus*) has the largest population within the big game population in Hungary. Their nourishment was examined in several countries of Europe, and the abundance of available nourishing plants was highly emphasized (MÁTRAI et al., 1986; FEHÉR et al., 1988). The key factor of feed was not the quality but the accessibility. (TIXIER and DUNCAN, 1996; DUNCAN et al., 1998; TIXIER et al., 1997; 1998).

MATERIAL AND METHOD

The examinations were carried out between 1. January 2007. and 31. December 2008. For creating the database the samples were collected and botanical data was registered from the dropped doe and roebuck in the years 2007 and 2008. Altogether 111 roe deer were examined and their data was registered. In choosing the sample areas the main aspect was to find hunting territories on the Great Hungarian Plain which have similar types of habitat, where the quality of roe deer population ranked the same and they were not too far from each other (Figure 1). The samples were taken from the hunting area Petőfi Vadásztársaság (game management unit) of Nagyszénás (7,096 hectares, forest cover less than 1%) and the Szakszervezeti Vadásztársaság (game management unit) of Hódmezővásárhely (12,727 hectares, forest cover less than 1%). The estimated roe deer population of the territories involved in the examination is 900-1,000 animals (OVA, 2009).



Source: National Game Management Database (OVA) (2012)

Figure 1 The geographical location of the examined shoots

Evaluation of the vegetation on the sample areas

We have estimated the cover (%) of the consumed plant species near the place of drop on a 4-500 hectare territory in 4-5 10 m² sample territories on the feeding height of roe deer (120 cm height) with the method of MÁTRAI et al. (2002). To show the relation between the specific plant species found on the habitat and in the feed of roe deer we calculated a **PREFERENCIE-INDEX (PI)** (IVLEV, 1961).

$$PI = (N_2 - N_1) / (N_2 + N_1)$$

Where: **PI = IVLEV's preference index**, it's value ranges from -1-től up to +1

N₁: the percentile consumption of the specific plants

N₂: the percentile supply of the specific plants

We have defined the vegetation supply on both hunting territories every month in such a way that while entering the data we have registered the changes in the habitat (harvest, reaping, etc) This kind of sampling showed the supply of the plant species (%) on every territory in a monthly breakdown. The significance test was made with the help of Bonferroni's Z-test (BYERS et al., 1984).

RESULTS

The comparison (PI) of feed component plants' occurrence on the Nagyszénási habitat showed that during the winter months (January and February) the wild growing herbaceous mono- and dicotyledonous plants' popularity was low. The popularity of wild growing monocotyledonous plants from spring until November has not diminished. The popularity of wild growing dicotyledonous plants was observed from April till November. Among the woody plants from April till September the locust, from May till December the elder – except February – the preference of these plants exceed ($p < 0,05$) all other plant species. The cultivated monocotyledonous plants were consumed in the periods of food shortage, mostly in winter and spring time. Later, the plants sown in fall were consumed again. High preference was shown towards winter wheat in December and towards the corn in October and December. The dicotyledonous cultivated plants were preferred almost all year long – except the alfalfa in fall and winter (Figure 2 and Table 1).

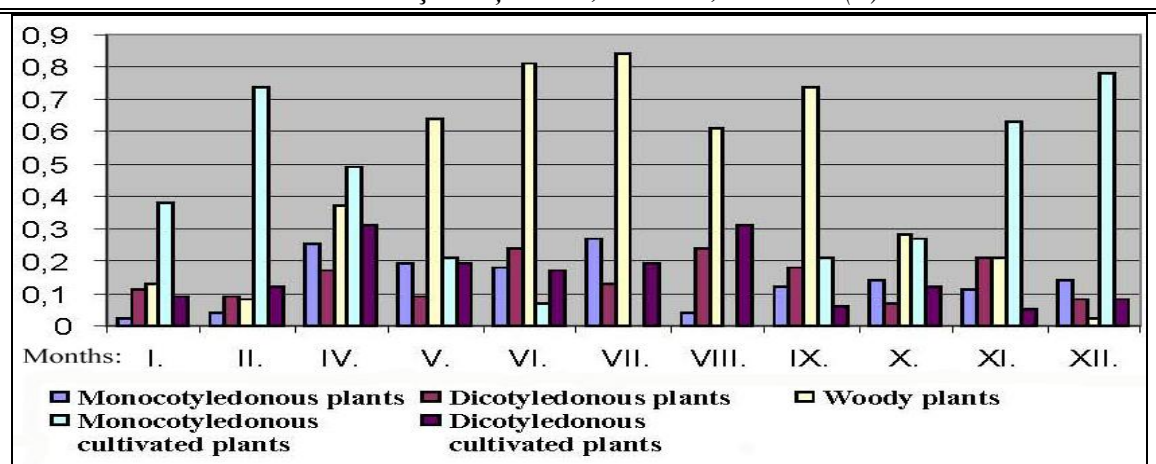


Figure 2 The preference of the main feed components (PI) on Nagyszénás in the researched years (n=56)

Table 1
The preference of the main feed component plants (PI) on Nagyszénás in 2007 and 2008 (n=56)
(*=significant preference, and avoidance $p \leq 0,05$)

PLANTS AND PLANT GROUPS	MONTHS	DATE OF SAMPLING (MONTHS) AND THEIR PREFERENCE (PI)											
		I.	II.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.	
MONOCOTYLEDONOUS PLANTS		0,02	0,04	0,25	0,19	0,18	0,27	0,04	0,12	0,14	0,11	0,14	
DICOTYLEDONOUS PLANTS		0,11	0,09	0,17	0,09	0,24	0,13	0,24	0,18	0,07	0,21	0,08	
Black horehound (<i>Ballota nigra</i>)		0	0	-0,14	0,07	0,31	0,09	0,21	0,38*	0,27	0,51*	0	
Vetch (<i>Vicia spp.</i>)		0	0	0,17	0,04	0,07	0,17	0,08	0,21	0,24	0	0	
WOODY PLANTS		0,13	0,08	0,37	0,64*	0,81*	0,84*	0,61*	0,74*	0,28	0,21	0,02	
Black locust (<i>Robinia pseudoacacia</i>)		0,12	0	0,47*	0,54*	0,39*	0,67*	0,54*	0,21	0,07	0,04	0,12	
Blue elderberry (<i>Sambucus nigra</i>)		0,08	0	0,27	0,37*	0,54*	0,64*	0,67*	0,54*	0,68*	0,47*	0,39*	
MONOCOTYLEDONOUS CULTIVATED PLANTS		0,38	0,74*	0,49*	0,21	0,07	0	0	0,21	0,27	0,63*	0,78*	
Winter wheat (<i>Triticum aestivum</i>)		0,74*	0,61*	0,67*	0,18	0,04	0	0	0	0,31	0,28	0,35*	
Maize (<i>Zea mays</i>)		0,27	0,47*	0	0	0,24	0,12	0	0,08	0,57*	0,39*	0,61*	
DICOTYLEDONOUS CULTIVATED PLANTS		0,09	0,12	0,31	0,19	0,17	0,19	0,31	0,06	0,12	0,05	0,08	
Alfalfa (<i>Medicago sativa</i>)		0	0	0,29	0,37*	0,47*	0,57*	0,42*	0,53*	0,04	0	0	

The comparison (PI) of the feed component availability in Hódmezővásárhely showed that in the winter period (in January and February) the herbaceous mono- and dicotyledonous plants were not popular, but their preference from spring until December did not fall. Among the woody plants from April till September the locust, from May till December the elder – except the winter months – the preference of these plants was high, it exceed ($p < 0,05$) all other plant species (Figure 3 and Table 2).

The cultivated monocotyledonous plants were consumed in the periods of food shortage, mostly in winter and spring time. The cultivated monocotyledonous plants were consumed in the periods of food shortage, mostly in winter and spring time. Later, the plants sown in fall, from October were consumed again. High preference was shown towards winter wheat in December and the corn in October and December. The dicotyledonous cultivated plants were preferred almost all year long – except the alfalfa in fall and winter. The preference of the alfalfa in the growing period, from May until September was higher than the preference of the locust (Figure 3 and Table 2).

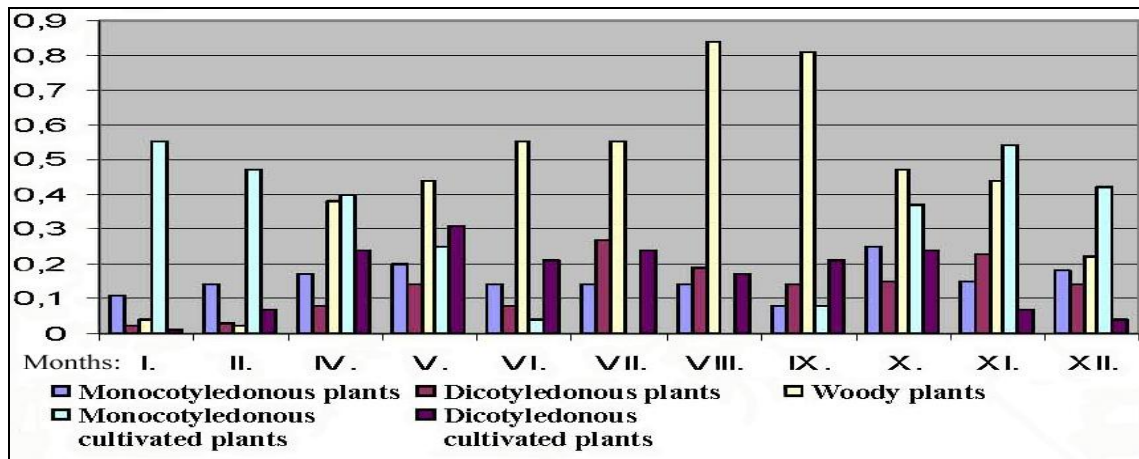


Figure 3 The preference of the main food components (PI) on Hódmezővásárhely in the researched years (n=55)

Table 2
The preference of the main feed component plants (PI) on Hódmezővásárhely in 2007 and 2008 (n=55)
(*=significant preference, and avoidance $p \leq 0,05$)

PLANTS AND PLANT GROUPS	MONTHS	DATE OF SAMPLING (MONTHS) AND THEIR PREFERENCE (PI)											
		I.	II.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.	
MONOCOTYLEDONOUS PLANTS		0,11	0,14	0,17	0,20	0,14	0,14	0,14	0,08	0,25	0,15	0,18	
DICOTYLEDONOUS PLANTS		0,02	0,03	0,08	0,14	0,08	0,27	0,19	0,14	0,15	0,23	0,14	
Black horehound (<i>Ballota nigra</i>)		0	0	-0,14	0,18	0,09	0,47*	0,29	0,48*	0,46*	0,44*	0	
Vetch (<i>Vicia spp.</i>)		0	0	0,18	0,08	0,15	0,24	0,16	0,07	0,31*	0,04	0	
WOODY PLANTS		0,04	0,02	0,38*	0,44*	0,55*	0,55*	0,84*	0,81*	0,47*	0,44*	0,22	
Black locust (<i>Robinia pseudoacacia</i>)		0,01	0	0,44*	0,38*	0,74*	0,87*	0,77*	0,08	0,11	0,06	0,02	
Blue elderberry (<i>Sambucus nigra</i>)		0,14	0,02	0,37	0,41*	0,63*	0,97*	0,87*	0,67*	0,71*	0,57*	0,45*	
MONOCOTYLEDONOUS CULTIVATED PLANTS		0,55*	0,47*	0,40*	0,25	0,04	0	0	0,08	0,43*	0,62*	0,72*	
Winter wheat (<i>Triticum aestivum</i>)		0,48*	0,69*	0,39*	0,09	0,03	0	0	0	0,24	0,33	0,65*	
Maize (<i>Zea mays</i>)		0,25	0,24	0	-0,25	-0,31	-0,25	0	0,17	0,44*	0,41*	0,39*	
DICOTYLEDONOUS CULTIVATED PLANTS		0,01	0,07	0,24	0,31	0,21	0,24	0,17	0,21	0,24	0,07	0,04	
Alfalfa (<i>Medicago sativa</i>)		0	0	0,25	0,39*	0,41*	0,67*	0,39*	0,76*	0,07	0	0	

CONCLUSIONS

The comparison of occurrence of feed component plants on the examined habitats, showed that in winter months the preference of mono- and dicotyledonous herbaceous plants was low, but in May and July their popularity rose. In the later studied months their popularity did not exceed the popularity of other plant groups. On the studied habitats, regardless to the forest cover, the popularity of the locust from April till August, and the elder from May till December exceed the popularity of all other plant groups. The monocotyledonous cultivated plants were preferred in the food tight winter months and also in spring. Later on the monocotyledonous cultivated plants sown in fall were favored and consumed from October on the examined territories. In particular, the preference of winter wheat in December, and the grain yield of maize from October was considerable. The dicotyledonous cultivated plants were popular almost all year round. The preference of alfalfa in the growing period from April till September was reached the preference rate of woody plants. On each territory there were 1-3 preferred woody plants (acacia, elder, narrow-leaved willow) which is partly similar to the reported results of DUNCAN et al. (1998), where the authors raise our attention to the fact, that there is great diversity in the feeding of roe deer on identical habitats. In their opinion, the plants offered by the habitat influence the feed selection of roe deer significantly even within the particular habitat.

According to their results roe deer consumed 305 types of plants in the growing season the most preferred plants were the leaves and sprouts of woody plants. According to our observations on plain habitats we think that the statement of TIXIER et al. (1997) can be justified, that the dominant plant species consumed by the roe deer on a given habitat are the same. It can be also stated, that the main feed components of roe deer are the plants which can be found near the place of drop. The same conclusions were drawn by MÁTRAI (2000, 2006) after examining roe deer on three different habitats. She thinks that the diverse plant composition on the different habitats is not reflected in the diversity and uniformity of feed selection. This also proves the feed selection of roe deer, namely they consume 1-3 plant species independently of the vegetation.

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