

FLUCTUATIONS IN THE BURROW INTENSITY OF SYMPATRIC MURIDS IN RELATION TO DIFFERENT CROPS AT VILLAGE KAKROD JIND (HARYANA)

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ABSTRACT

Data analysis revealed relationship between the burrow intensity fluctuations and the advancement of crop growth. At the seedling stage of cotton, Jowar, bajra and guar 7 to 13.6 burrows of different murids were recorded. The number gradually increased to 25.2 - 42 by the time crops attained their maturity. At seedling stage most of burrows were concentrated on the periphery while at maturity stage majority of the burrows were shifted to inside crop fields. Like kharif crops, in rabi crops too a low burrow intensity of 7 to 9 burrows was recorded at the seedling stage of wheat and gram. The burrow intensity increased with the advancement in crop growth and reached its peak (average 35 to 46 burrows) at the maturity stage.

INTRODUCTION

The ability of rodents to adapt all situations is a challenge for the successful control measures. So for their management it is necessary to have information about their population fluctuations under various environmental conditions. Till date only a little attempt has been made to correlate the population density of murids with various biotic and abiotic factors prevailing in the fields. A study of the burrowing habits of rodents is an essential pre-requisite in formulating any effective control strategy. The present study has, therefore, been carried out to investigate such burrow intensity fluctuations of sympatric murids in relation to different crop (cotton, jowar, bajra, guar, wheat and gram) stages at Village kakrod-Jind (Haryana).

MATERIAL AND METHODS

The study of burrow intensity fluctuations of sympatric murids was carried out in relation to the crops and crop stages. To account for the living burrows, the cultivated fields, bunds, water channels and pathways surrounding the crop were surveyed at each of its developmental stage. Since most of rodents being nocturnal, the burrows were plugged with soil late in the evening and all freshly opened burrows were counted early in the morning. The tentative identification of the burrows of different rodent species was carried out on the basis of external appearance as

described by Sagar and Bindra (1970) and Barnett and Prakash (1975). The burrow of *Bandicota bengalensis* had a fresh mound of earth over it.

RESULTS AND DISCUSSION

Burrow intensity fluctuations in relation to biotic factors :

a) Kharif crops :

Survey of 0.34 ha plots of cotton, jowar, bajra and guar has revealed the occurrence of 7, 13.65, 12 and 10 burrows of different murids at seedling stage respectively (Fig. 1). Most of the burrows were concentrated along water channels/bunds and the permanent pathways while only a few burrows were observed inside the crop. However, at growth stage of these crops the number of burrows increased to 16, 32, 28 and 23 respectively. In all except cotton crop more burrows were found located inside the fields. However, in cotton crop the burrow were still concentrated in the peripheral areas probably because of irrigation and weeding at regular intervals.

At maturity stage of cotton, jowar, bajra and guar crops 35, 38, 30 and 42 burrows were encountered respectively. At this stage of cotton crop majority of the burrows were located inside the crop fields. The flowers were observed lying near the burrow openings from which the seeds were found eaten up by rats. A huge quantity of stored cotton flowers was present in side the burrows when dug out after the harvest. Further, the population was recorded to be the highest during the later period of maturity stage of cotton crop. The possible reason for this might be attributed to the post harvest period of kharif crops and a consequent immigration of the animals in the best sheltered cotton. Since damage to mature crops of jowar and bajra was not that expected, most of the burrows were located in the peripheral areas. Of the total number of 38 and 30 burrows respectively in these crops 27 and 21.5 burrows were found located in the peripheral areas. In mature guar crop 23 out of 42 burrows counted were encountered inside the crop. Pods of guar with eaten up seeds were observed lying near the burrow openings and the stored legumes inside the burrows were also dug out after the harvests.

These observations, hence, indicate a low level of infestation to the crop at the seedling stage and a comparatively higher degree of infestation at the maturity stage (Sood and Ubi 1975; Sood and Dilber 1977; Chopra and Seed 1982). Analysis of the data collected on burrow intensity fluctuations has further revealed that there exists a linear trend of murid infestation inside the field. As the crop growth advances more and more rodents start moving inside the crop field which could obviously be related to the availability of shelter and food. This is in very much confirmity with the reportings made by Malhi and Sheikhar (1984).

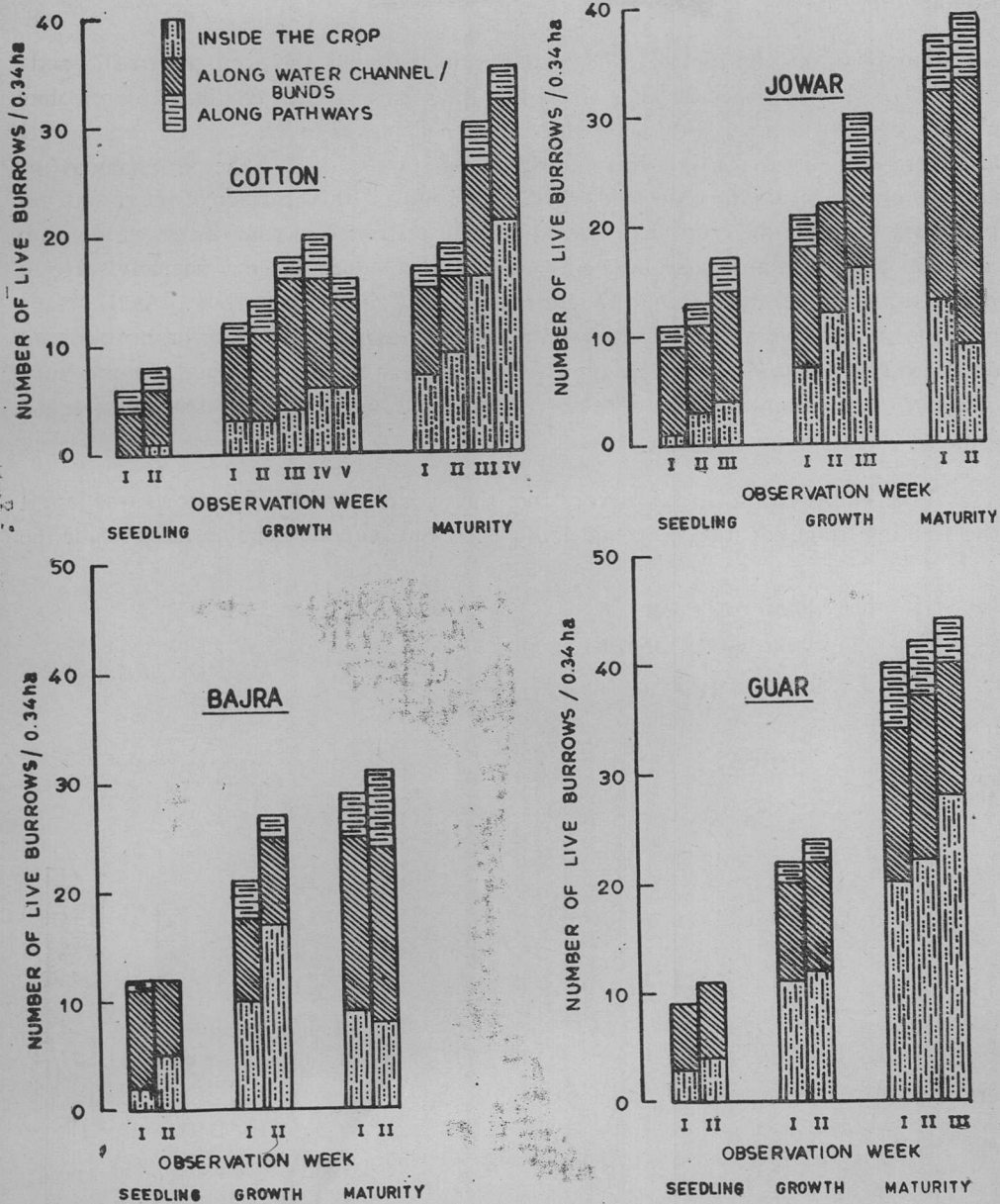


Fig. 1. Burrow intensity fluctuations of sympatric murids in relation to developmental stages of kharif crops

b) Rabi crops :

Survey of 0.67 ha plots of wheat and gram revealed the occurrence of 7 and 9 burrows of different species respectively of which majority was confined to periphery of the crop. At later growth stage the number increased to 27.5 and 32 respectively and there were comparatively less number of burrows located in the periphery as the animals moved inside the crop fields (Fig. 2). However, this transfer of burrows from periphery to inside the crop field was somewhat restricted in case of the wheat crop in wake of the regular irrigation being done at this stage. During maturity stage of wheat and gram crops 52 and 37 burrows were found respectively. At this stage majority of burrows were concentrated inside the crop fields. Shells of gram pods and damaged ear heads of wheat were observed lying near the burrow openings and huge quantity of stored grains was collected from inside burrows when dug out after the harvest.

Like kharif crops, in rabi crops too the overall number of burrows was less at the seedling stage of the crop and only a few burrows were encountered inside the

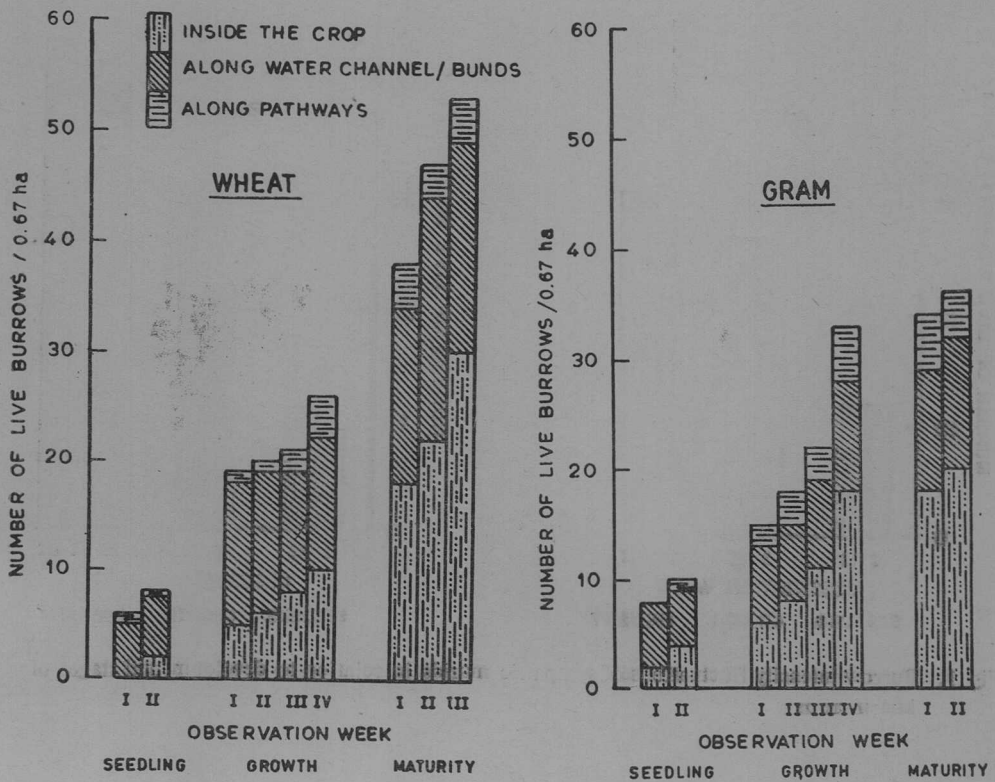


Fig. 2. Burrow intensity fluctuations of sympatric murids in relation to developmental stages of rabi crops.

fields. But with the advancement in growth of the crop, the number became gradually increased and reached to its maximum at the maturity stage. Spontaneously more and more of burrows were shifted from periphery to inside the crop fields. A similar trend was noticed by Chopra and Sood (1982) and Malhi and Sheikhar (1984). Correlated with the harvesting of gram crop during the month of March, there was an abrupt spurt in the burrow intensity of different murid species in wheat crop towards the beginning of the month of April. The evident reason for this immigration being the availability of shelter and food inside the wheat crop at maturity stage (Malhi and Sheikhar 1984).

REFERENCES

- Barnett, S.A. and Prakash, I. 1975. Rodents of Economic Importance in India. Arnold Heinemann Publ. (India) PVT. Ltd. New Delhi.
- Chopra, G. and Sood M.L. 1982. Activity of rodents in relation to crops and crop stages. Indian Journal of Plant Protection 10 : 81-82.
- Malhi, C.S. and Sheikhar, Chander. 1984. Burrow intensity fluctuations of rodents in barley crop at Srinagar (Garhwal). Indian Journal of Ecology 11 : 321-322.
- Sagar, P. and Bindra, O.S. 1970. A note on the burrowing pattern of field rat, *Rattus maltoda* and Indian gerbil, *Tatera indica* (Hardwicke) in the Punjab. Plant Protection Bulletin 20 : 11-21.