

SOIL EXCAVATION BY SHORT-TAILED BANDICOOT RAT, *NESOKIA INDICA* GRAY

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The short-tailed bandicoot rat, *Nesokia indica* Gray inhabits field bunds, banks of water channels and flat fields. This fossorial rat causes the erosion of stable soil by extensive excavation. The present study was undertaken to investigate the amount of soil excavated/day/burrow/hectare, and the relation between the burrow temperature, soil moisture and the amount of soil excavated by *N. indica* Gray.

Live rat burrows on the bunds of irrigation channels at the Indian Agricultural Research Institute Farm, New Delhi were examined during April, 1977. Ten burrows in an area of 40x5m were selected for conducting the studies. The temperature of burrows was recorded twice daily (between 12.0-13.0 h and 18.0-19.0 h) by inserting a soil thermometer 40 ± 0.5 cm inside the burrows. On the first day, the soil excavated and lying at the base of burrow openings was removed. The next morning (between 6.0-7.0 h) the soil excavated from each burrow was collected, weighed and the temperature of each burrow was recorded. The moisture contents of the collected soils were determined on dry weight basis by keeping soil samples in an oven at $100 \pm 2^\circ$ C for 24 hours. The studies were carried as long as the excavated soil continued to be obtained near the selected burrows. The data were analysed to determine the relationships between burrow temperature, moisture content of soil and the amount of soil excavated (Table 1).

Table 1 : Correlation coefficients of different factors influencing soil excavation by *Nesokia indica* G.

| Factors | Correlation coefficients |
|--|--------------------------|
| 1. Noon temperature and soil excavation | + 0.19 NS |
| 2. Evening temperature and soil excavation | + 0.18 NS |
| 3. Noon temperature and moisture content of soil | + 0.18** |
| 4. Evening temperature and moisture content of soil | + 0.65** |
| 5. Moisture content of excavated soil and quantity of soil excavated | + 0.25** |

NS — Non significant ** Significant at 1 per cent level * Significant at 5 per cent level

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A high degree of correlation ($r = +0.84$ for $df\ 63$) existed between noon burrow temperature and moisture content of excavated soil. Similarly there was also a positive and significant correlation ($r = +0.65$ for $df\ 63$) between the evening temperature and moisture content of the soil. This suggests that as the burrow temperature increased and the inner soil of the burrow dried up, the rats started excavating more soil in an attempt to live in moist pockets of the burrows. This appears to be a thermo-regulatory adaptation similar to the phenomenon reported by Sharma and Joshi (1975) in case of *M. hurrianae*.

Burrow temperatures ranged from 23.0-32.5° C during noon and 23.5-32.° C during evening. The moisture of excavated soil varied from 2.5 - 13.5% and the quantity of soil excavated in the course of one day ranged from 140.99 - 9299.82g (dry weight). There was no significant correlation between noon and evening burrow temperatures and the quantity of soil excavated.

Estimates of the extent of soil excavation showed that the excavation of soil by *N. indica* was on an average 1.24 ± 0.18 kg/day, 8.07 ± 1.66 kg/burrow and 4133.6 kg/ha.

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REFERENCES

- Sharma, V.N. and Joshi, M.C. 1975. Soil excavated by desert gerbil, *Meriones hurrianae* (Jerdon) in the Shekhawate region of Rajasthan. *Ann. Arid Zone* 14 (3) : 268-73.