

This work was carried out at the Kenyatta University, Zoology Department, Nairobi, Kenya from February 1991. The objectives of this study were to find out;

1. If the age of the plant food material influences its palatability and preference by the desert locust *Schistocerca gregaria*.

2. If the age of the locust *S. gregaria* influences its feeding activity in terms of food palatability and preference.

3. If the above relationships influence performance of *S. gregaria* in terms of increases in body weight, fecundity and survival.

4. How the C:N ratio of the plant food materials influences food palatability and preference, hence performance in the locust *S. gregaria*.

Different ages of the desert locust (*Schistocerca gregaria* Forsk.) were used. The main stages of development of *S. gregaria* used included the hatchlings, the hoppers, the fledglings and the mature adults. Their feeding activity was studied in terms of food preference, palatability and performance of five agricultural crops: maize (*Zea mays* Linnaeus, Katumani variety), broad bean (*Vicia faba* Linnaeus, 'mwezi moja' variety), sorghum (*Sorghum bicolor* Persoon, Serena variety), wheat (*Triticum vulgare*, Villars) and green grams (*Phaseolus mungo* Linnaeus). The seeds of the five crops were obtained from the Kenya Seed Company situated near Globe Cinema in Nairobi, Kenya.

Through preference studies, it was shown that *S. gregaria* shows food selection when presented with various plant food materials. Preference was shown to differ significantly ($P < 0.001$) between species, with sorghum at the age of seven weeks being more preferred, followed by wheat, maize, bean and green grams respectively. The age of the plant food material was shown to influence its being chosen for food by *S. gregaria*. At the age of one week, bean and green grams were preferred to maize, sorghum and wheat, but at the ages of three and seven weeks, the three graminoids became more preferred, with sorghum being the most preferred. The age of the locust was shown to influence the choice of food, for instance 'old' nymphs fed on all the five plants but more significantly on the graminoids when fed with three-week-old seedlings. Food preference was clearly marked when seven-week-old plants were fed to the three age groups of locusts (*S. gregaria* used in this study). It was observed that during egg-laying and moulting *S. gregaria* showed increased preference for bean leaves. Food preference was also observed to be influenced by the C:N ratio of the plant food material, with *S. gregaria* showing more preference for plants with lower C:N ratios.

Palatability of the five experimental plants was also shown to differ significantly ($P < 0.001$) between species, with sorghum being the most palatable at the age of seven weeks. The age of the plant and that of the locusts also influenced the amount of food eaten by the locusts. The young graminoids were unpalatable but became palatable with their increase in age. The lower the C:N ratio of the plant food material, the more palatable it was.

The performance by *S. gregaria* on the five food plants was observed to be influenced by the ability of the locust to utilize the various food materials offered. Performance was expressed in form of survival rates, body weight increases and fecundity. Sorghum gave the highest survival rates, the highest increases in body weights and also the highest number of eggs developing in the ovarioles. Performance was observed to be related to palatability and preference. The most palatable and the most preferred food (e.g. Sorghum) gave the best performance in terms of survival, body weight increases and the number of eggs developing in the ovarioles of young females of *S. gregaria*.