The Red locust, Nomadacris septemfasciata Serville, is an important pest for various crops in Madagascar. The species is regularly surveyed and controlled by the National Antilocust Center. Studies on some field survey archives, from 2001 to 2007, highlighted that information on the phase statuses (gregarious vs solitarious) was lacking and that the criteria used were unsuitable, in particular for hoppers.

Method

During two consecutive rainy seasons, samples of hoppers were collected in the field within populations of very diverse densities, from less than 1 to several hundreds of hoppers per square meter. 1,147 hoppers were described on the basis of their pigmentation, including the general colour of the individual and the various black spots distributed over the entire body.

Results

The precise criteria making it possible to describe the phase status of a larva and that of a population as a whole were selected. A clear typology was established and about fifteen pigmentary classes were distinguished. Within a population, the respective percentages of each class, from the more solitary to the more gregarious, evolve in relation to the population density.

From a practical point of view, 4 phase states were recognized (solitary, solitaro-transient, transient and gregarious). The threshold for phase transformation (hopper instars 4 and 5 mainly) was estimated at around 10 larvae per square meter. In lower density populations, only larvae belonging to the various solitary classes were observed. Beyond that level, the first manifestations of gregarism were noted with the appearance of larvae of the solitaro-transient and transient categories. The gregarious larvae started to appear in populations with around 60 larvae per square meter.

The more precise criteria for characterization of the phase must now make possible to reinforce significantly the quality of the observations carried out by the field observers on this key parameter.