Determining of the population fluctuations of pest species is very important in plant protection and have significant role in order to provide pest control decisions. Herewith in this study, population fluctuation of Macrosiphum rosae (L.) which is one of the most important pest on Oil-bearing rose (Rosa damascena Miller) was investigated. To achieve the goal, fuzzy logic modeling is used to obtain information for untested data and fitted function method which is a global optimization method is employed for the first time in these kinds of problems to reach extremes of population.