This study aimed to determine the susceptibility levels of Neoseiulus californicus (McGregor) (Acari: Phytoseiidae) populations collected from the apple orchards in Isparta in 2010 to spiromesifen, spirodiclofen and hexythiazox by using bioassay methods. In additional, mechanism of resistance in populations were determined by using biochemical methods and PBO, IBP and DEM synergist. Pesticide concentrations which are prepared in certain concentration series were sprayed directly to predator mites on leaf discs by Spray Tower in order to determine the \( LC_{50} \) values of N. californicus populations. In 2010, eight N. californicus populations were collected from the apple orchards. According to \( LC_{50} \) values, compared susceptible populations, resistance of Egirdir- Boğazova, Eyüpler-1, Eyüpler-2, Gelendost-1, Gelendost-3, Gelendost-8, Gökdere and Sarıdris populations collected from the orchard in 2010 is determined to be 5.87, 5.44, 5.09, 4.87, 7.61, 6.87, 4.35 and 5.86 fold to spiromesifen; to be 5.65, 7.27, 8.01, 7.07, 7.35, 5.56, 3.75 and 7.88 fold to hexythiazox; and to be 8.48, 7.71, 8.60, 5.07, 7.09, 6.08, 5.63 and 8.29 fold, respectively. Moreover, the effect of the PBO, IBP and DEM synergists on pesticides was examined. Enzymes of S-transferase (GST), monooxygenases (MO) and acetylcholinesterase (AChE) in the populations were determined by using the kinetic method; and the enzyme of esterase was determined by using the electrophoresis and kinetic methods. The determined enzyme activity ranges of esterase glutathion S-transferaz (GST) ve asetilkolinesteraz (AChE) were between 7,748 to 10,211, from 1,23 to 1,74 and from 0,010 to 0,045 mOD/min/mg proteins, respectively.