In this research, gamma irradiation based mutation breeding technique was applied for improving new mutant varieties of 0900 Ziraat cherry variety. For this aim scions were irradiated 0.0, 2.0, 4.0, 6.0, 8.0, 10.0 and 12.0 Krad doses with $^{60}$Co as a source of mutagen in 2000. After irradiation scions were grafted on *Pyrus avium* rootstock. According to measurement and calculation on young trees in the field, efficient mutation dose and mutation frequency were found as 4.18 Krad and %3.44 respectively. Trees were selected and characterized according to pomological traits such as fruit weight (g), peduncle length (cm), fruit width (cm), fruit height (cm), seed weight (g), soluble solid contents (%) and cracking rate (%) was recorded and yield (g) was calculated from the beginning of June to the end of July. Tree height of some dwarf and semi-dwarf mutants are about 27.9% and 4.7% smaller in tree size than 0900 Ziraat. According to the data at second selection phase, 41 mutant for variety candidate (high yield, crackles, dwarf, and semi dwarf,) were selected in 323 living mutant type trees of 0900 Ziraat for future observations.