Contagious Bovine Pleuropneumonia (CBPP) is an infectious respiratory disease of cattle caused by Mycoplasma mycoides subspecies mycoides small colony variant. Though the disease is known to be important in Kenya, there are no accurate estimates of its economic importance and distribution. This makes effective control programs difficult to organise. The general objective of the study was to compare the precision of CFT and c-ELISA in diagnosis of CBPP in cattle in Loitokitok division, Kajiado district, Kenya an area that practices two livestock production systems, the pastoral and the agro pastoral. Stratified multistage random sampling, based on the livestock management systems and administrative boundaries, was applied to identify two strata, from which eight sub locations were selected, four from each. Four hundred and forty-six serum samples, from randomly selected cattle were collected and tested for CBPP, using the Complement Fixation Test (CFT) and competitive Enzyme Linked Immuno-sorbent Assay (c-ELISA). The Western Blot (WB) technique was used as the gold standard test to evaluate CFT and c-ELISA. The results of the study indicated that the prevalence of CBPP was 4.9% by CFT, 14.3% by c-ELISA and 16.59% using the two tests combined. The prevalence of CBPP was significantly different between the pastoral livestock production system and the agro pastoral production system (26.2% and 5.7% respectively; \( \chi^2=31.15, P <0.05, \text{df}=1 \)), males and females (20.3% and 15% respectively \( \chi^2=5.405, P =0.020 \text{df}=1 \)) and among the age groups (\( \chi^2=9.784, P=0.020, \text{df}=3 \)). CFT was more specific (85.7%) than c-ELISA in diagnosis of CBPP but was less sensitive. The overall observed agreement between CFT and c-ELISA was 86.1% (+/-2.7) and the Kappa index, was 0.22 (+/-0.13) within a 95% confidence interval. The concordance between CFT and c-ELISA with the WB test was 39.7% and 70.5% respectively and the Kappa values were 0.06 and 0.2 respectively. The predictive value for a negative result was 0.21 for CFT and 0.3 for c-ELISA. The predictive value for a positive result was 0.9 and 0.87 CFT and c-ELISA respectively. It was concluded that neither CFT nor c-ELISA is good for use in diagnosis of CBPP and in the absence of a better test; the two should be combined for better results. The results of this study suggest that there is need for research towards development of a more precise, rapid, sensitive and specific test to enable effective diagnosis of CB.