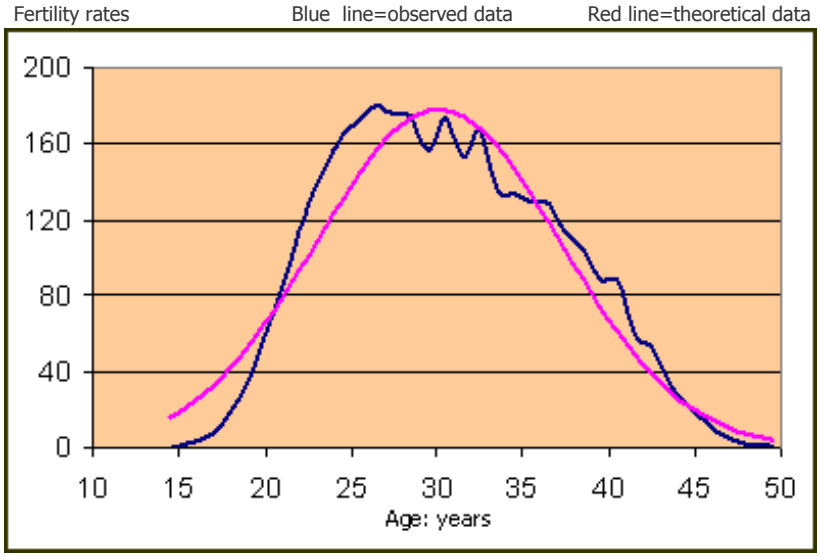
FERTILITY FUNCTION

(Source:Petrioli Luciano,"*PRODEMOG 3.0-Demographic software for Windows*", EMMECI-SIENA-ITALY,(2000).

G A M M A



Age-specific fertility rates: Italy, year 1932

The density function for Gamma is:

$$f(X)=\frac{C}{\Gamma(B)}\cdot A^{B}\cdot X^{B-1}\cdot e^{-AX} \qquad [1]$$

The parameters are A, B, and C, where C represents the total fertility rate.

The approximate value of Γ(B) is calculated by using the formula indicated for the Beta function. Moreover, we have:

$$MED=B/A; \qquad DS=B/A^{2} \qquad [2]$$

from which we have: $A=MED/DS;$ $B=MED^{2}/DS$

Also for the Gamma function we can calculate the values of the reproduction rate from the beginning of the fertile period until age x by cumulating the theoretic fertility rates, verifying how these may be very close to the values obtained by looking for the integral of the density function (2), setting that limit under 12 years of age.