Many past studies have shown that the peak height of equatorial F layer in post sunset hours varies with solar flux and seasons. However, day to day variability in the post sunset evolution of equatorial F region is not well understood. In the present study, the role of solar flux in controlling the rate of vertical upward (Vz_{max}) and downward (Vz_{min}) movement of equatorial F region in the post sunset hours for different seasons is investigated by using ionosonde data recorded at dip equatorial station Trivandrum (77° E, 8.5°N, dip 0.5°N) for the period of 1990-2003. Local time variation of virtual height of equatorial F region (h'F) is obtained by scaling these ionograms. Monthly quiet time pattern of h'F is obtained by taking 15 minute average of h'F for all quiet days (Ap<18) in a month. Monthly average quiet time <h'F> between 17-00LT is fitted with 6th order polynomial for each month and the rate of increase (decrease) of h'F is estimated from maximum (minimum) value of first order derivative of this fitted h'F. It is found that peak value of monthly average h'F increases with monthly average 10.7 cm solar flux, which agrees with past results. Secondly, it is found that the maximum rate of upward and downward movement of h'F is solar flux and season dependent.