RSC | Advancing the Chemical Sciences

Time Series Analysis Calculation Example

A chemical company sells an insect pesticide to the agricultural industry. Sales figures are reported to management in periods of four months and data for three years are shown in Table 1.

Table 1

Year / period	1/1	1/2	1/3	2/1	2/2	2/3	3/1	3/2	3/3
Sales / t a^{-1}	300	900	500	450	1050	550	460	1060	750

(a)   Prepare a table of an appropriate centered moving average (CMA) for the pesticide sales data.

(b)   Calculate the *seasonality index* (I_n) for each period (n = 1, 2 and 3).

(c)   Plot an appropriate graph and, assuming a linear trend, forecast the sales figures for the three time periods of year 4.