

Growth rate Calculation / Estimation Formula and its used:

$$P_n = P_o (1+G)^n$$

Where:

P_n = Production/Sales of the n^{th} (final) year

P_o = Production/Sales of the base year (year 0)

G = Growth rate

n = Final year minus the base year (number)

However:

$$P_n = P_o (1+G)^n$$

$$\text{Or, } \frac{P_n}{P_o} = (1+G)^n$$

$$\text{Or, } \sqrt[n]{\frac{P_n}{P_o}} = 1 + G$$

$$\therefore G = \sqrt[n]{\frac{P_n}{P_o}} - 1$$

Eg. 1961 World Paddy Production: 215647 × 1000 MT

1970 World Paddy Production: 316346 × 1000 MT

$$P_n = 316346$$

$$P_o = 215647$$

$$n = 1970 - 1961 = 9$$

(Final year-Base year), (10 Years-1Year = 9 years)

Growth rate analysis: "G"

✓ As compound annual growth rate analysis

$$\begin{aligned}G &= \sqrt[n]{\frac{P_n}{P_0}} - 1 \\&= \sqrt[9]{\frac{316346}{215647}} - 1 \\&= \sqrt[9]{1.466962211} - 1 \\&= 1.043496488 - 1 \\&= 0.043496488 \\&= 0.043496488 \times 100 \\&= 4.35\%\end{aligned}$$

Calculator use for the analysis:

Step 1: $\frac{P_n}{P_0} = A$

Step 2: $A \text{ [^] (1 [ab/c] 9) = B}$

Step 3: $B - 1 \times 100 = \text{---} \%$

★ Calculation Process: Simple

$$\frac{P_n}{P_0} = \text{[^]} (1 \text{ [ab/c] } 9) = B - 1 \times 100 = \text{---} \%$$