Topic: 2.8 – LATIN SQUARE DESIGN

~~Latin~~ In latin square the data are classified in 3 different criteria that is column, row, treatment. which are arranged in a square, the square called as latin square.

Latin square is one way ~~of~~ of reducing sample size. this design is very popularly used in agricultural research. where it is not possible to have large number of subjects.

merits or advantages:

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* Latin square design controls variability in two directions of the experimental material.
* The analysis of the design is simple and straight forward and it is a 3 way classification of analysis.

Demerits:

* The process of randomization is not as simple as RBD.
* The number of treatments should be equal to the number of rows & column. 2×2 matrix is not possible.

working procedure.

H_0: There is no significant difference between rows or columns or treatments.

H_1: there is significant difference between rows or columns or treatments

Find N:

find T:

$C.F = \dfrac{T^2}{N}$

$T.S.S = (\Sigma x_1^2) \times \Sigma x_2^2 + \Sigma x_3^2 + \dots - \dfrac{T^2}{N}$

$SSC : \dfrac{(\Sigma x_1)^2}{N_1} + \dfrac{(\Sigma x_2)^2}{N_1} + \dfrac{(\Sigma x_3)^2}{N_1} + \dots - \dfrac{T^2}{N}$

$SSR : \dfrac{(\Sigma y_1)^2}{N_2} + \dfrac{(\Sigma y_2)^2}{N_2} + \dfrac{(\Sigma y_3)^2}{N_2} + \dots - \dfrac{T^2}{N}$

$SSE : TSS - SSC - SSR - SST$

$SST : \dfrac{\Sigma A^2}{N_3} + \dfrac{\Sigma B^2}{N_3} + \dfrac{\Sigma C^2}{N_3} + \dfrac{\Sigma D^2}{N_3} - \dfrac{T^2}{N}$

$MSC : \dfrac{SSC}{K-1}$

$MSR : \dfrac{SSR}{K-1}$

$MST : \dfrac{SST}{K-1}$

$$MSE = \frac{SSE}{(K-1)(K-2)}$$

ANOVA Table

Source of variation	Sum of squares	D.O.f	Mean sum of squares	Variance Ratio (F.V)	Table Value
B/w C	SSC	K-1	MSC	$MSC > MSE$ $F_C = \frac{MSC}{MSE}$	$F_C($
B/w R	SSR	K-1	MSR	$MSR > MSE$ $F_R = \frac{MSR}{MSE}$	$F_R($
B/w T	SST	K-1	MST	$MST < MSE$ $F_T = \frac{MST}{MSE}$	$F_T($
Error	SSE	(K-1)(K-2)	MSE	[illegible]	