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Topic: 2.5 – One-way classifications - Completely randomized design

2). A completely randomized design experiment with 10 plots and 3 treatments gave the following results.

Plot no.:	1	2	3	4	5	6	7	8	9	10
Treatment:	A	B	C	A	C	C	A	B	A	B
Yield:	5	4	3	7	5	1	3	4	1	7

H_0 : There is no significant difference
 H_1 : There is significant difference.

X_1	X_2	X_3	T	X_1^2	X_2^2	X_3^2
5	4	3	12	25	16	9
7	4	5	16	49	16	25
3	7	1	11	9	49	1
1			1	1		
16	15	9	40		81	35



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$$\begin{aligned} N &= 10 \\ T &= 40 \\ \frac{T^2}{N} &= \frac{(40)^2}{10} = 160 \\ TSS &= \sum x_1^2 + \sum x_2^2 + \sum x_3^2 - \frac{T^2}{N} \\ &= 84 + 81 + 35 - 160 = 40 \\ SSC &= \frac{(\sum x_1)^2}{n_1} + \frac{(\sum x_2)^2}{n_2} + \frac{(\sum x_3)^2}{n_3} - \frac{T^2}{N} \\ &= \frac{(16)^2}{4} + \frac{(15)^2}{3} + \frac{(9)^2}{3} - 160 \\ &= 6 \\ SSE &= TSS - SSC \\ &= 34 \end{aligned}$$

Source of Variation	Sum of Squares	df	Mean Sum of Squares	Variation Ratio
Bt columns	$SSC = 6$	$C - 1 = 2$	$MSC = \frac{SSC}{C - 1} = 3$	$F_C = \frac{MSC}{MSE}$
Error	$SSE = 34$	$N - C = 7$	$MSE = \frac{SSE}{N - C} = 4.86$	$= 1.62$



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Table value | $F(7,2) = 19.35$
C.V < T.V
 H_0 accepted.