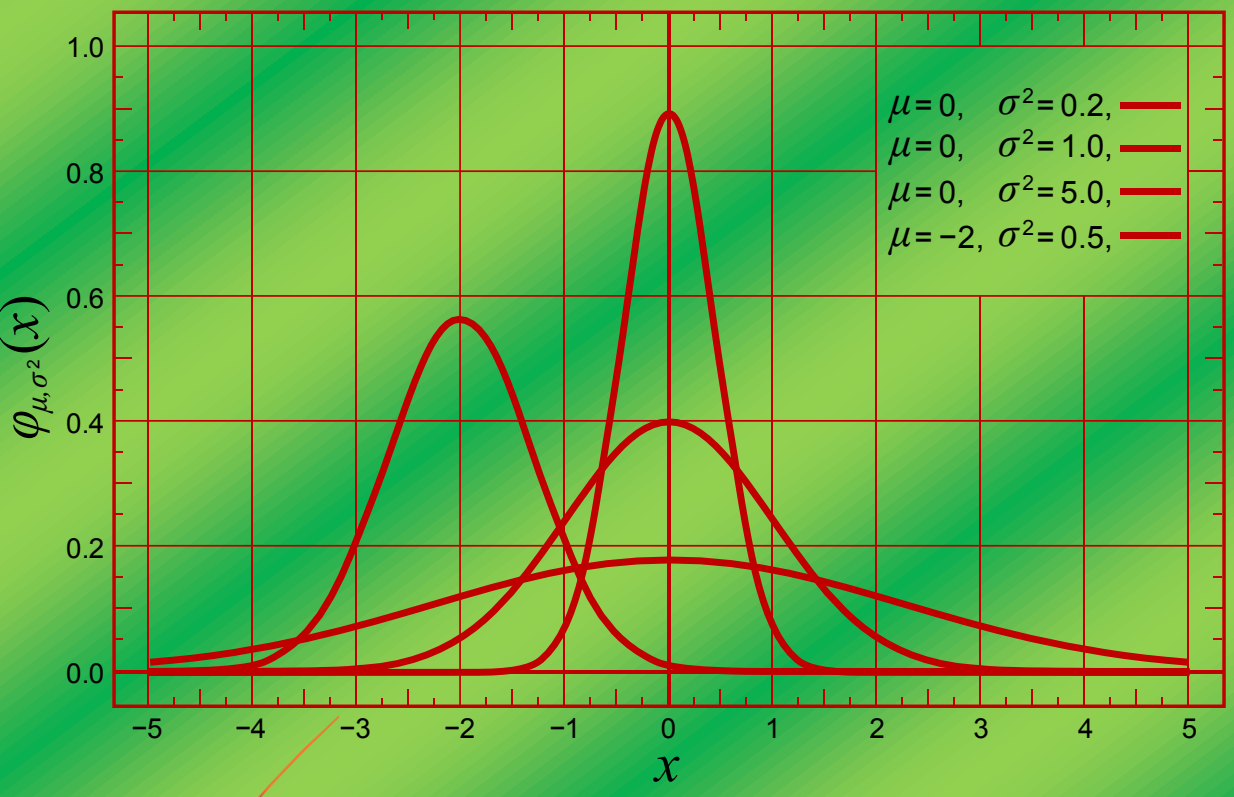
SPSS Practical Manual on Duncan's Multiple Range Test (DMRT)



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Example:

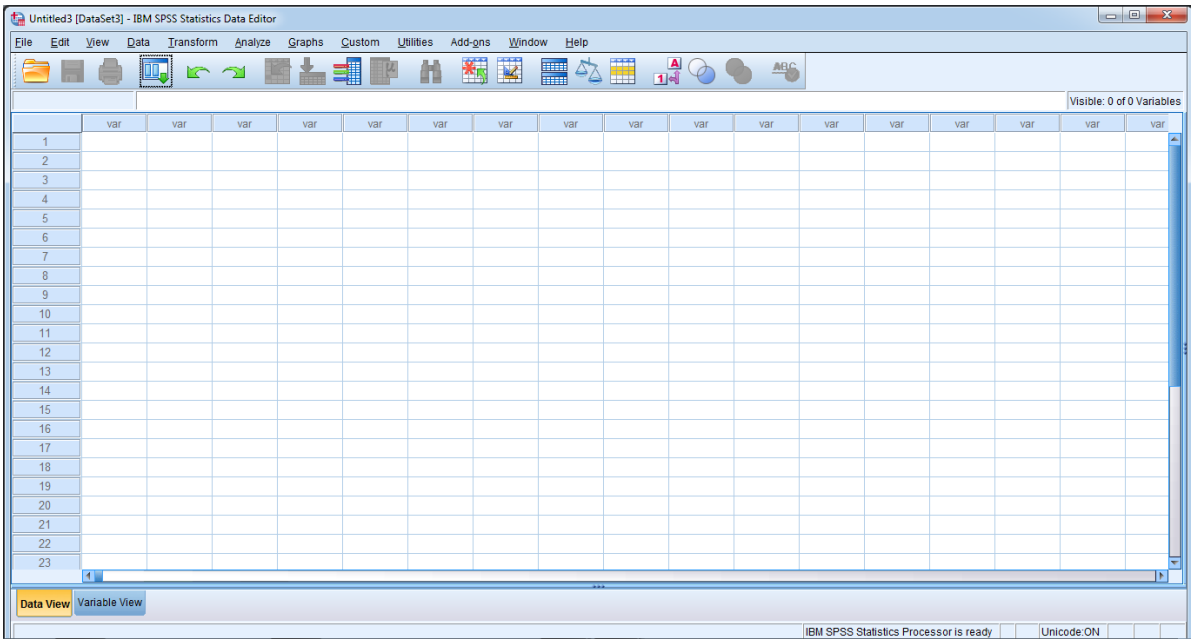
The following table gives the yields of a crop in (kg/ha) of seven varieties, tested in a completely randomized design. Carry out the completely randomized design using DMRT for the given data.

Treatment	Yields (Kg/ha)			
	Rep. I	Rep. II	Rep. III	Rep. IV
T_1	2537	2069	2104	1797
T_2	3366	2591	2211	2544
T_3	2536	2459	2827	2385
T_4	2387	2453	1556	2116
T_5	1997	1679	1649	1859
T_6	1796	1704	1904	1320
T_7	1401	1516	1270	1077

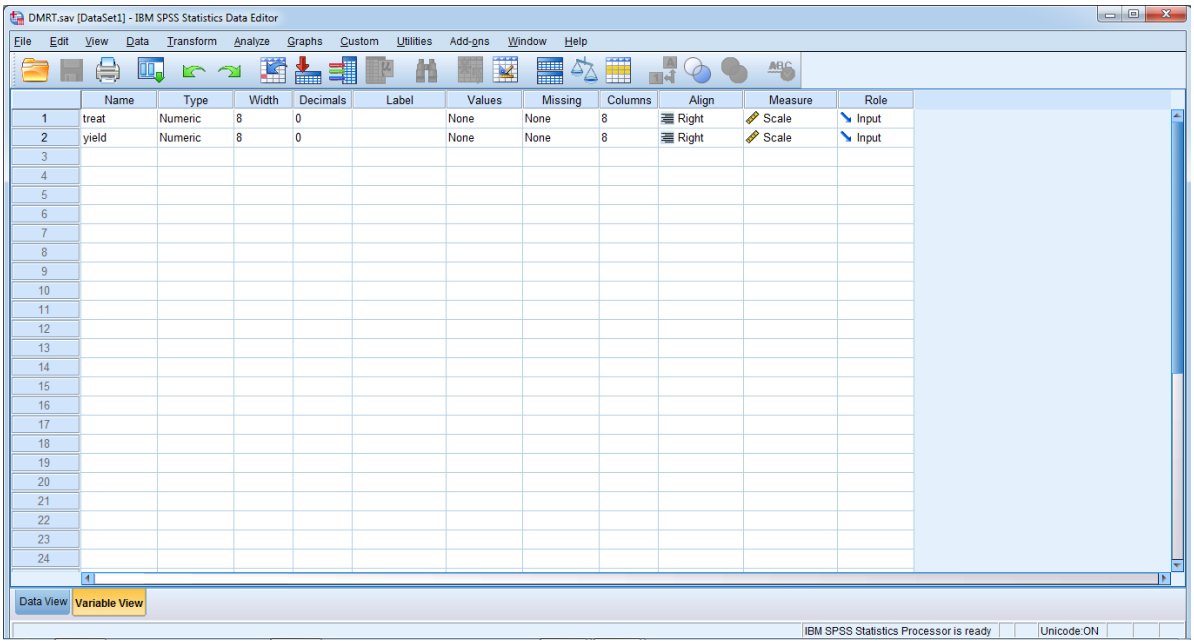
SPSS commands for DMRT Analysis:

The input data file can be created as shown below:

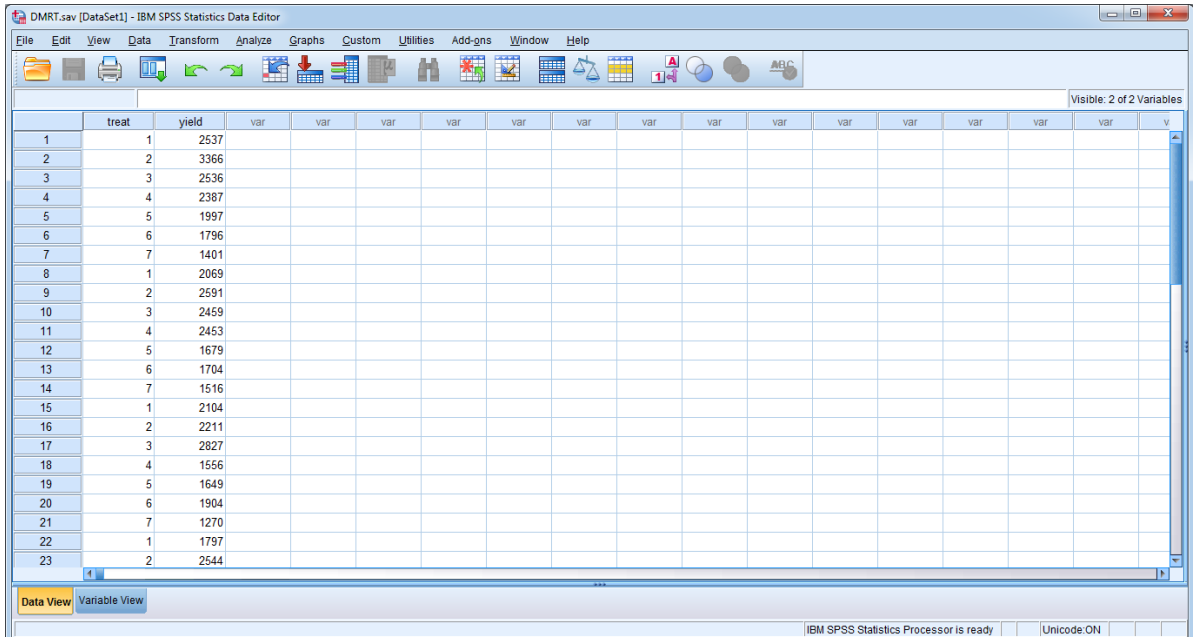
Step 1: File → New → Data →



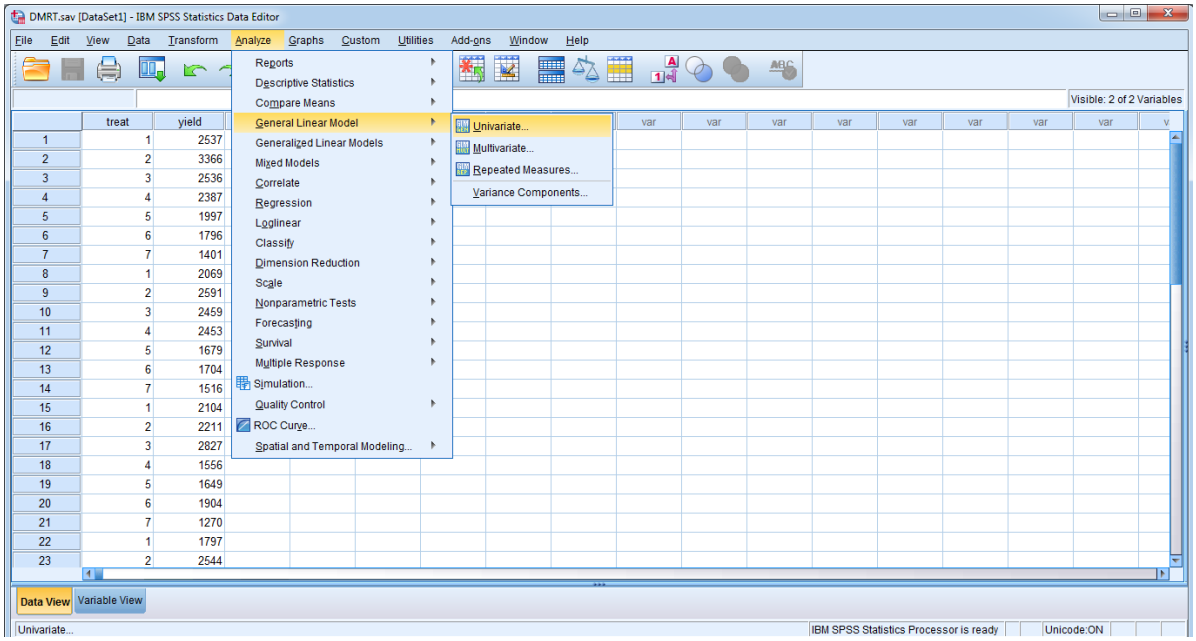
Step 2: Variable view → Name (treat, yield) →



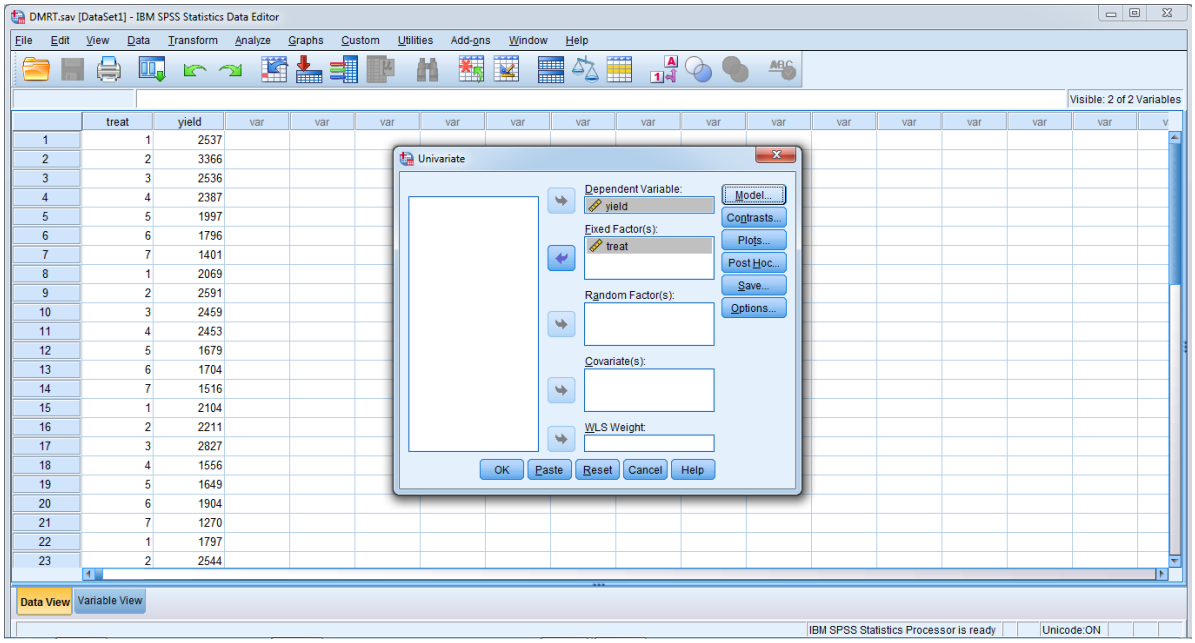
Step 3: Data View → Enter data → File → Save (with any file name)



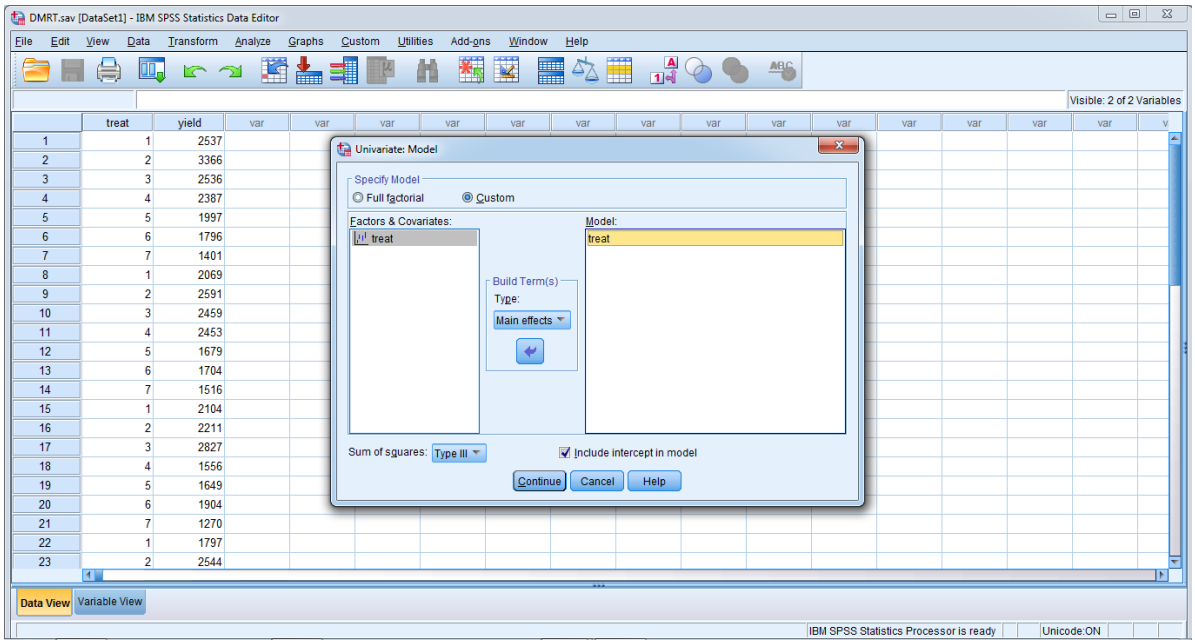
Step 4: Analyze → General Linear Model → Univariate →



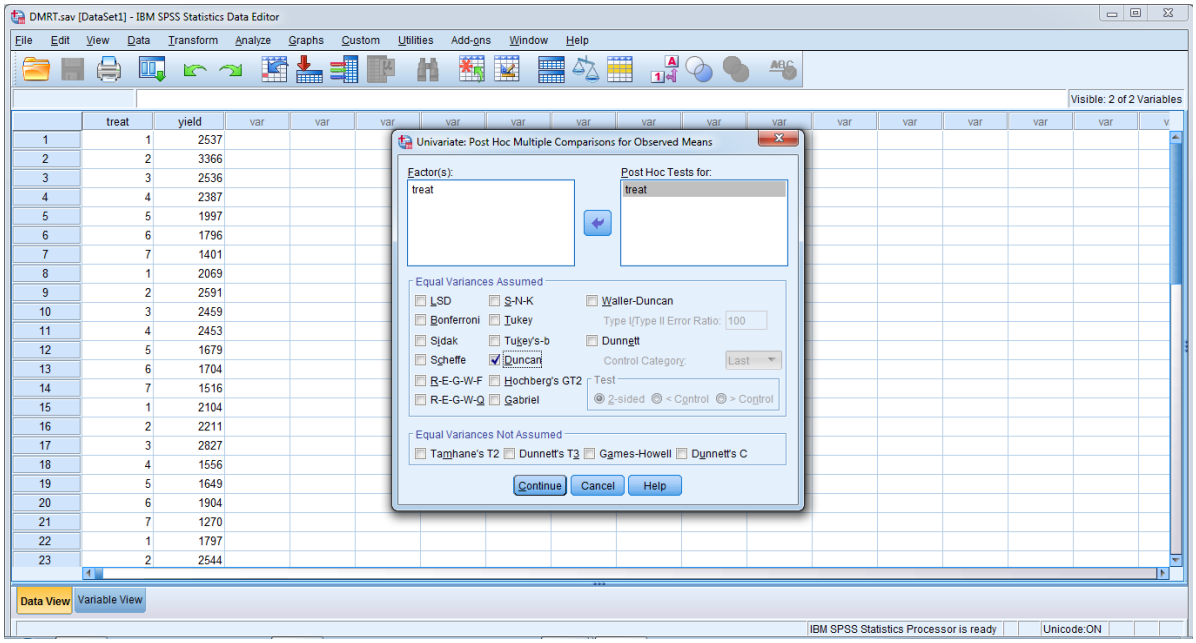
Step 5: Dependent variable (yield) → Fixed factors (treat)



Step 6: Model → Custom → Main Effects → Build terms (treat) → Sum of Squares (Type III) → Continue



Step 7: Post Hoc → Post Hoc Tests for (treat) → LSD → Duncan → OK



Output:

ANOVA –Treatments

Tests of Between-Subjects Effects

Dependent Variable: yield

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
treat	5587174.929	6	931195.821	9.826**	.000
Error	1990237.500	21	94773.214		
Corrected Total	7577412.429	27			

a. R Squared = .737 (Adjusted R Squared = .662)

** Significant at 1% level of significance

POSTHOC TESTS – Treatments

treat	N	Subset			
		1	2	3	4
T_7	4	1316.00(d)			
T_6	4	1681.00(cd)	1681.00(c)		
T_5	4		1796.00(c)		
T_1	4		2126.75(bc)	2126.75(b)	
T_4	4		2128.00(bc)	2128.00(b)	
T_3	4			2551.75(ab)	2551.75(a)
T_2	4				2678.00 (a)
Sig.		.108	.072	.078	.568

Treatment	Mean yield	Statistical Significance
T_1	2127	bc
T_2	2678	a
T_3	2552	ab
T_4	2128	bc
T_5	1796	c
T_6	1681	cd
T_7	1360	d

Do Yourself

The following table gives the yields in pound per plot of five varieties of wheat after being applied to each of 4 plots, tested in a completely randomized design. Carry out the completely randomized design for data.

Varieties	Repetitions			
A	8	8	6	10
B	10	12	13	9
C	18	17	13	16
D	12	10	15	11
E	8	11	9	8

Reference Books:

1. A Hand Book of Agricultural Statistics, S. R. S. Chandel, Achal Prakashan Mandir, Kanpur.
2. A Text book of Agricultural Statistics, R. Rangaswamy, New Age International (P) Limited, publishers.
3. Biometrical Methods in Quantitative Genetic Analysis, R.K. Singh and B. D. Chaudhary, Kalyani Publishers.
4. Design Resources Server: www.iasri.res.in
5. E-Manual Winter School IASRI.
6. Fundamentals of Mathematical Statistics, S.C. Gupta and V.K. Kapoor, Sultan Chand & Sons Educational Publications.
7. Fundamentals Applied Statistics, S.C. Gupta and V.K. Kapoor, Sultan Chand & Sons Educational Publications.
8. Programmed Statistics, B.L. Agarwal, New Age International (P) Limited, publishers.
9. Probability and Statistical Inference Theory and Practice, D. Bhattacharya and S. Roy Chowdhury, U. N. Dhur & Sons.
10. Statistics Theory and Practice, D. Bhattacharya and S. Roy Chowdhury, U. N. Dhur & Sons.
11. Statistical Methods, K.P. Dhamu and K. Ramamoorthy, AGROBIOS (INDIA).
12. Statistics for Agricultural Sciences, G. Nageswara Rao, Second Edition, BS Publications, Hyderabad.