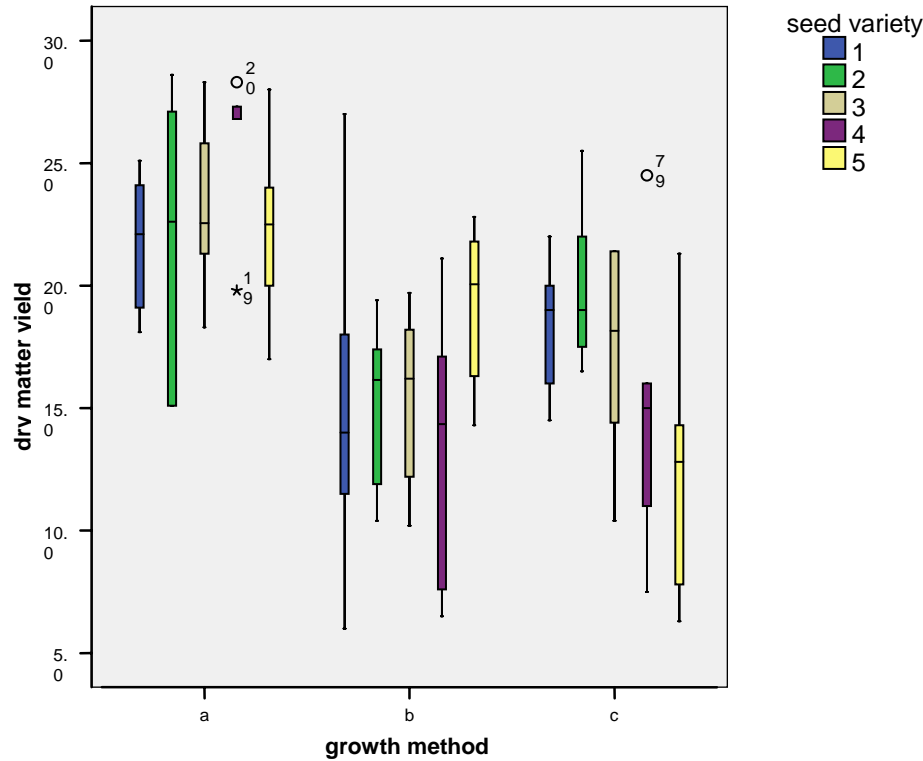


# 1. Grasses Example:

## dry matter yield



### Levene's Test of Equality of Error Variances(a)

Dependent Variable: dry matter yield

F	df1	df2	Sig.
.920	14	75	.542

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.  
a Design: Intercept+method+variety+method \* variety

### Tests of Between-Subjects Effects

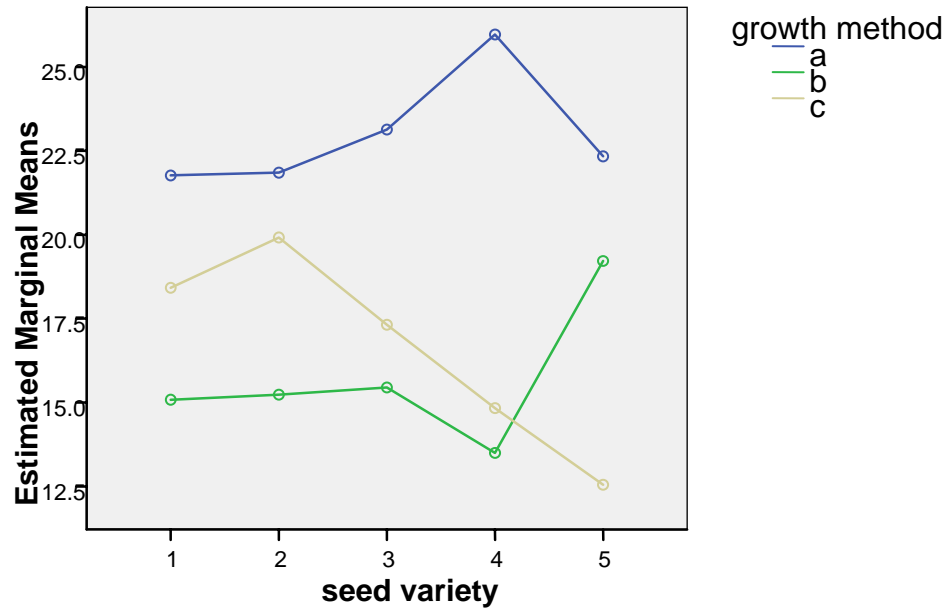
Dependent Variable: dry matter yield

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1339.025(a)	14	95.645	4.867	.000
Intercept	30595.648	1	30595.648	1557.013	.000
method	953.156	2	476.578	24.253	.000
variety	11.380	4	2.845	.145	.965
method * variety	374.488	8	46.811	2.382	.024
Error	1473.767	75	19.650		
Total	33408.440	90			
Corrected Total	2812.792	89			

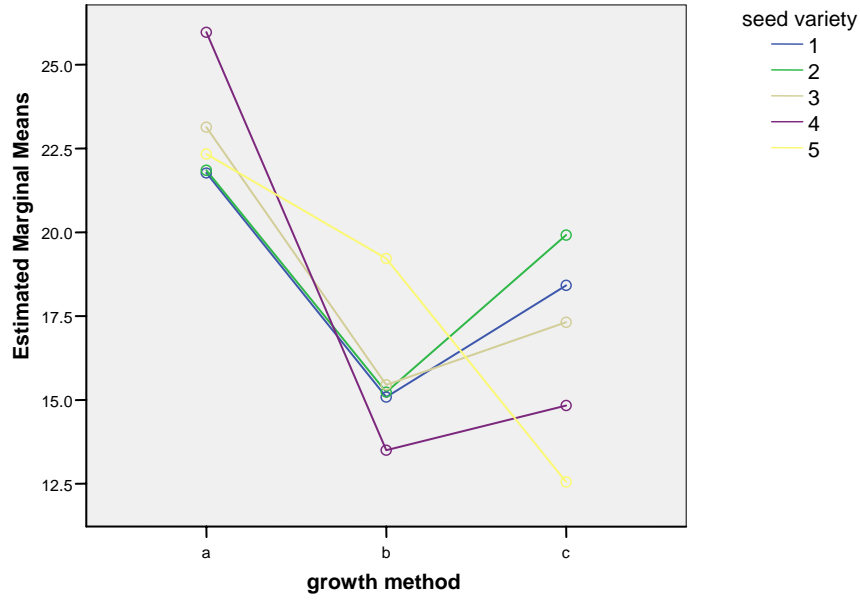
a R Squared = .476 (Adjusted R Squared = .378)

# Profile Plots

## Estimated Marginal Means of dry matter yield



## Estimated Marginal Means of dry matter yield



### Levene's Test of Equality of Error Variances(a)

Dependent Variable: dry matter yield

F	df1	df2	Sig.
.464	2	87	.630

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a Design: Intercept+method

### Tests of Between-Subjects Effects

Dependent Variable: dry matter yield

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	953.156(a)	2	476.578	22.296	.000
Intercept	30595.648	1	30595.648	1431.367	.000
method	953.156	2	476.578	22.296	.000
Error	1859.635	87	21.375		
Total	33408.440	90			
Corrected Total	2812.792	89			

a R Squared = .339 (Adjusted R Squared = .324)

### Parameter Estimates

Dependent Variable: dry matter yield

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Intercept	16.607	.844	19.674	.000	14.929	18.284
[method=1]	6.403	1.194	5.364	.000	4.031	8.776
[method=2]	-.910	1.194	-.762	.448	-3.283	1.463
[method=3]	0(a)	.	.	.	.	.

a This parameter is set to zero because it is redundant.

### Estimated Marginal Means

#### growth method

Dependent Variable: dry matter yield

growth method	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
a	23.010	.844	21.332	24.688
b	15.697	.844	14.019	17.374
c	16.607	.844	14.929	18.284

## 2. Twill Analysis: Univariate Analysis of Variance

### Levene's Test of Equality of Error Variances(a)

Dependent Variable: Tensile Strength

F	df1	df2	Sig.
.733	11	84	.704

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.  
a Design: Intercept+operator+machine+operator \* machine

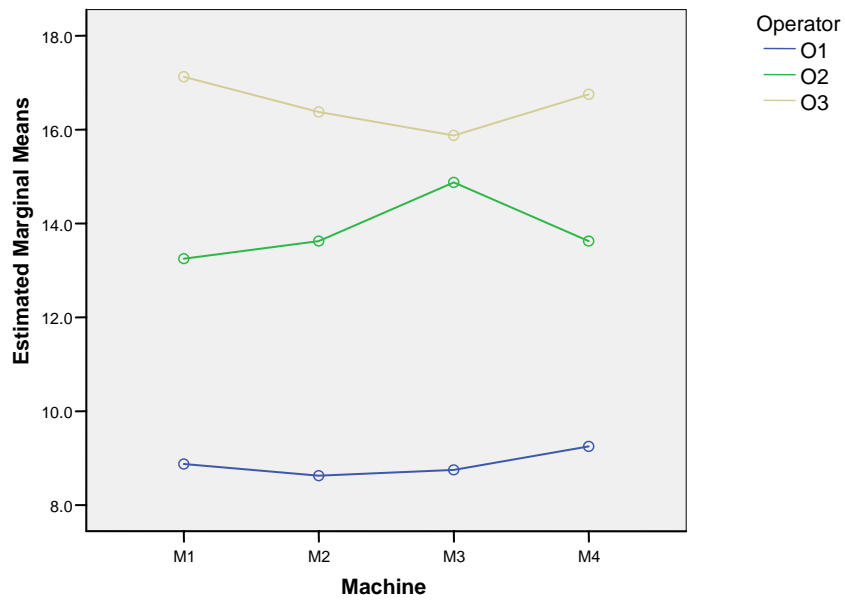
### Tests of Between-Subjects Effects

Dependent Variable: Tensile Strength

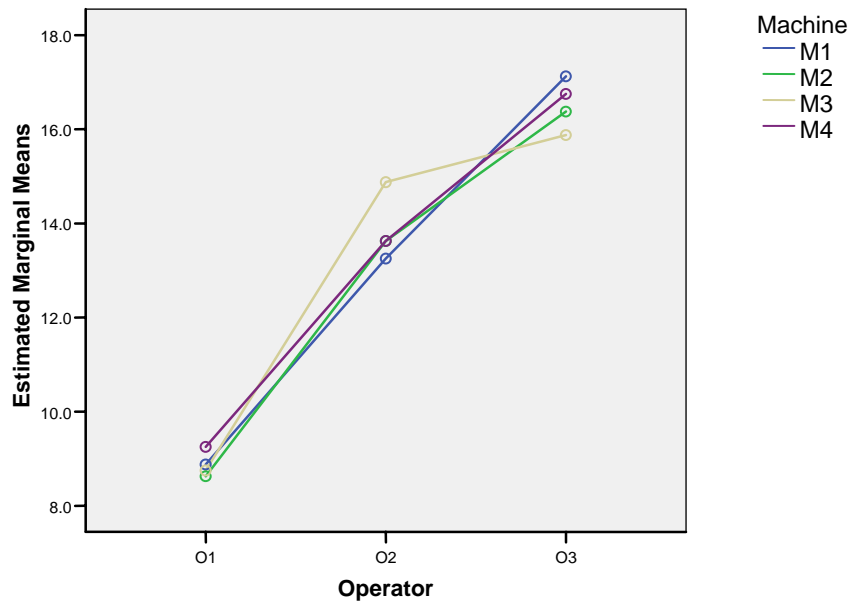
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	986.333(a)	11	89.667	4.412	.000
Intercept	16432.667	1	16432.667	808.637	.000
operator	965.646	2	482.823	23.759	.000
machine	1.583	3	.528	.026	.994
operator * machine	19.104	6	3.184	.157	.987
Error	1707.000	84	20.321		
Total	19126.000	96			
Corrected Total	2693.333	95			

a R Squared = .366 (Adjusted R Squared = .283)

### Estimated Marginal Means of Tensile Strength



**Estimated Marginal Means of Tensile Strength**



**Levene's Test of Equality of Error Variances(a)**

Dependent Variable: Tensile Strength

F	df1	df2	Sig.
.143	2	93	.867

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept+operator

**Tests of Between-Subjects Effects**

Dependent Variable: Tensile Strength

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	965.646(a)	2	482.823	25.990	.000
Intercept	16432.667	1	16432.667	884.557	.000
operator	965.646	2	482.823	25.990	.000
Error	1727.688	93	18.577		
Total	19126.000	96			
Corrected Total	2693.333	95			

a. R Squared = .359 (Adjusted R Squared = .345)

**Parameter Estimates**

Dependent Variable: Tensile Strength

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Intercept	16.531	.762	21.696	.000	15.018	18.044
[operator=1]	-7.656	1.078	-7.105	.000	-9.796	-5.516
[operator=2]	-2.688	1.078	-2.494	.014	-4.827	-.548
[operator=3]	0(a)	.	.	.	.	.

a. This parameter is set to zero because it is redundant.

## Estimated Marginal Means

### Operator

Dependent Variable: Tensile Strength

Operator	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
O1	8.875	.762	7.362	10.388
O2	13.844	.762	12.331	15.357
O3	16.531	.762	15.018	18.044

### Tests of Between-Subjects Effects

Dependent Variable: Tensile Strength

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1182.563(a)	12	98.547	5.414	.000
Intercept	16432.667	1	16432.667	902.792	.000
operator	965.646	2	482.823	26.526	.000
machine	1.583	3	.528	.029	.993
strip	215.333	7	30.762	1.690	.123
Error	1510.771	83	18.202		
Total	19126.000	96			
Corrected Total	2693.333	95			

a R Squared = .439 (Adjusted R Squared = .358)

## Estimated Marginal Means

### Operator

Dependent Variable: Tensile Strength

Operator	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
O1	8.875	.754	7.375	10.375
O2	13.844	.754	12.344	15.344
O3	16.531	.754	15.031	18.031

### Levene's Test of Equality of Error Variances(a)

Dependent Variable: Tensile Strength

F	df1	df2	Sig.
.943	23	72	.545

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a Design: Intercept+operator+strip

### Tests of Between-Subjects Effects

Dependent Variable: Tensile Strength

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1180.979(a)	9	131.220	7.462	.000
Intercept	16432.667	1	16432.667	934.443	.000
operator	965.646	2	482.823	27.456	.000
strip	215.333	7	30.762	1.749	.108
Error	1512.354	86	17.586		
Total	19126.000	96			
Corrected Total	2693.333	95			

a R Squared = .438 (Adjusted R Squared = .380)

### Parameter Estimates

Dependent Variable: Tensile Strength

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Intercept	14.281	1.353	10.552	.000	11.591	16.972
[operator=1]	-7.656	1.048	-7.303	.000	-9.740	-5.572
[operator=2]	-2.688	1.048	-2.563	.012	-4.772	-.603
[operator=3]	0(a)	.	.	.	.	.
[strip=1]	2.000	1.712	1.168	.246	-1.403	5.403
[strip=2]	2.833	1.712	1.655	.102	-.570	6.237
[strip=3]	1.250	1.712	.730	.467	-2.153	4.653
[strip=4]	.583	1.712	.341	.734	-2.820	3.987
[strip=5]	3.667	1.712	2.142	.035	.263	7.070
[strip=6]	4.750	1.712	2.775	.007	1.347	8.153
[strip=7]	2.917	1.712	1.704	.092	-.487	6.320
[strip=8]	0(a)	.	.	.	.	.

a This parameter is set to zero because it is redundant.

### Operator

Dependent Variable: Tensile Strength

Operator	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
O1	8.875	.741	7.401	10.349
O2	13.844	.741	12.370	15.317
O3	16.531	.741	15.058	18.005