Response Ln kg/ha

Actual by Predicted Plot

RMSE=0.9739 RSq=0.45
PValue=<.0001
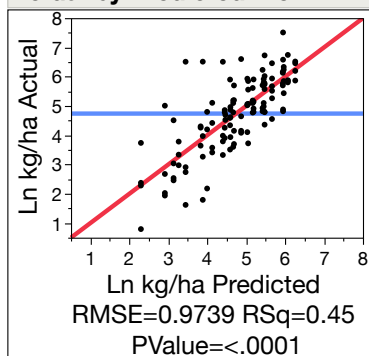
Effect Summary

Source	LogWorth		PValue
Depth	8.461		0.00000
Date	7.349		0.00000
Rotation*Date	1.831		0.01476
Year*Date	1.465		0.03425
Year*Rotation*Depth	1.236		0.05812
Year*Rotation	0.786		0.16377
Rotation	0.616		0.24190
Year*Depth	0.398		0.39974
Year*Rotation*Date	0.248		0.56507
Rotation*Depth	0.228		0.59170
Date*Depth	0.197		0.63587
Year	0.185		0.65251
Year*Rotation*Date*Depth	0.168		0.67855
Rotation*Date*Depth	0.059		0.87363
Year*Date*Depth	0.008		0.98066

Residual by Predicted Plot
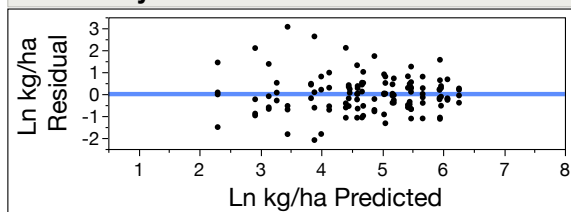
Summary of Fit

RSquare	0.452688
RSquare Adj	0.27025
Root Mean Square Error	0.973887
Mean of Response	4.738857
Observations (or Sum Wgts)	125

REML Variance Component Estimates

Random Effect	Var Ratio	Var Component	Std Error	95% Lower	95% Upper	Wald p-Value	Pct of Total
Block[Year]	-0.060887	-0.057749	0.1109709	-0.275248	0.1597502	0.6028	0.000
Block[Year,Rotation]	0.2743039	0.260165	0.1861619	-0.104706	0.6250355	0.1623	21.526
Block[Year,Rotation,Depth]	-0.243402	-0.230856	0.1343355	-0.494148	0.0324371	0.0857	0.000
Residual		0.9484554	0.2122965	0.6390874	1.5536172		78.474
Total		1.2086204	0.2826263	0.8016146	2.0298042		100.000

-2 LogLikelihood = 377.17780417
Note: Total is the sum of the positive variance components.
Total including negative estimates = 0.9200159

Fixed Effect Tests

Source	Nparm	DF	DFDen	F Ratio	Prob > F
Year	1	1	6.064	0.2241	0.6525
Rotation	1	1	6.111	1.6786	0.2419
Year*Rotation	1	1	6.111	2.5038	0.1638
Depth	3	3	28.43	31.5631	<.0001*
Year*Depth	3	3	28.43	1.0170	0.3997
Rotation*Depth	3	3	28.43	0.6463	0.5917
Year*Rotation*Depth	3	3	28.43	2.7974	0.0581
Date	1	1	41.26	44.6744	<.0001*
Year*Date	1	1	41.26	4.7951	0.0342*
Rotation*Date	1	1	41.26	6.4774	0.0148*
Year*Rotation*Date	1	1	41.26	0.3364	0.5651
Date*Depth	3	3	41.26	0.5732	0.6359
Year*Date*Depth	3	3	41.26	0.0596	0.9807
Rotation*Date*Depth	3	3	41.26	0.2319	0.8736
Year*Rotation*Date*Depth	3	3	41.26	0.5086	0.6785

Response Ln kg/ha

Residual Normal Quantile Plot
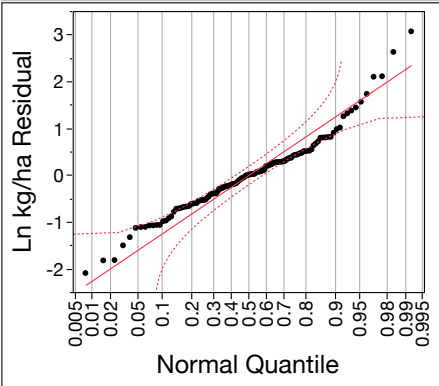
Effect Details

Year

Least Squares Means Table

Level	Least Sq Mean	Std Error
2019	4.7851149	0.16027725
2020	4.6765897	0.16392636

Rotation

Least Squares Means Table

Level	Least Sq Mean	Std Error
C2	4.5459888	0.18140396
C4	4.9157158	0.18463599

Year*Rotation

Least Squares Means Table

Level	Least Sq Mean	Std Error
2019,C2	4.3744779	0.25654395
2019,C4	5.1957519	0.25654395
2020,C2	4.7174997	0.25654395
2020,C4	4.6356796	0.26560686

Depth

Least Squares Means Table

Level	Least Sq Mean	Std Error
0-15cm	5.5224043	0.15573203
15-30cm	5.0161889	0.15928865
30-45cm	4.5166760	0.15928865
45-60cm	3.8681400	0.15928865

Least Squares Means Plot
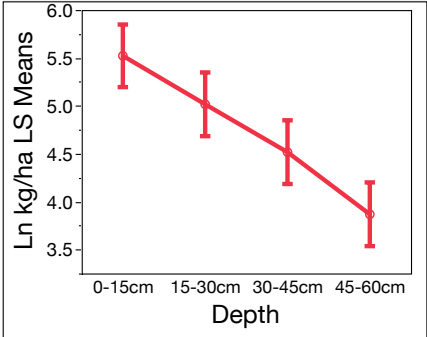
Response Ln kg/ha

Effect Details

Year*Depth

Least Squares Means Table

Level	Least Sq Mean	Std Error
2019,0-15cm	5.4545574	0.22023835
2019,15-30cm	4.9869173	0.22023835
2019,30-45cm	4.6215093	0.22023835
2019,45-60cm	4.0774758	0.22023835
2020,0-15cm	5.5902512	0.22023835
2020,15-30cm	5.0454606	0.23018810
2020,30-45cm	4.4118426	0.23018810
2020,45-60cm	3.6588042	0.23018810

Rotation*Depth

Least Squares Means Table

Level	Least Sq Mean	Std Error
C2,0-15cm	5.4471580	0.23605832
C2,15-30cm	4.6958195	0.23605832
C2,30-45cm	4.3446980	0.23605832
C2,45-60cm	3.6962798	0.23605832
C4,0-15cm	5.5976506	0.23605832
C4,15-30cm	5.3365584	0.24536740
C4,30-45cm	4.6886539	0.24536740
C4,45-60cm	4.0400002	0.24536740

Year*Rotation*Depth

Least Squares Means Table

Level	Least Sq Mean	Std Error
2019,C2,0-15cm	5.4236234	0.33383688
2019,C2,15-30cm	4.4657889	0.33383688
2019,C2,30-45cm	4.1625790	0.33383688
2019,C2,45-60cm	3.4459205	0.33383688
2019,C4,0-15cm	5.4854913	0.33383688
2019,C4,15-30cm	5.5080457	0.33383688
2019,C4,30-45cm	5.0804396	0.33383688
2019,C4,45-60cm	4.7090312	0.33383688
2020,C2,0-15cm	5.4706925	0.33383688
2020,C2,15-30cm	4.9258501	0.33383688
2020,C2,30-45cm	4.5268171	0.33383688
2020,C2,45-60cm	3.9466392	0.33383688
2020,C4,0-15cm	5.7098100	0.33383688
2020,C4,15-30cm	5.1650711	0.35968540
2020,C4,30-45cm	4.2968682	0.35968540
2020,C4,45-60cm	3.3709693	0.35968540

Least Squares Means Plot
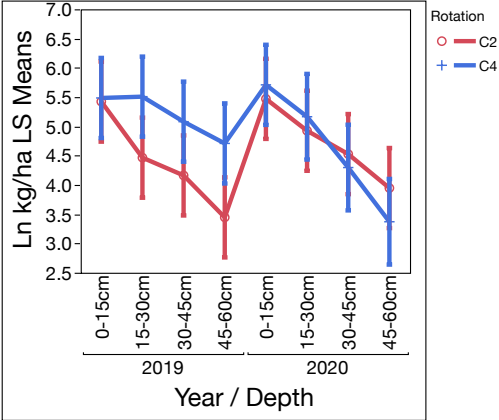
Date

Least Squares Means Table

Level	Least Sq Mean	Std Error
begin	4.1441309	0.14231728
end	5.3175737	0.14641468

Response Ln kg/ha

Effect Details

Date

Least Squares Means Plot
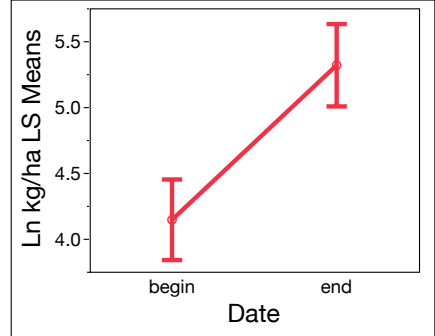
Year*Date

Least Squares Means Table

Level	Least Sq Mean	Std Error
2019,begin	4.0061719	0.20126702
2019,end	5.5640580	0.20126702
2020,begin	4.2820899	0.20126702
2020,end	5.0710894	0.21269843

Least Squares Means Plot
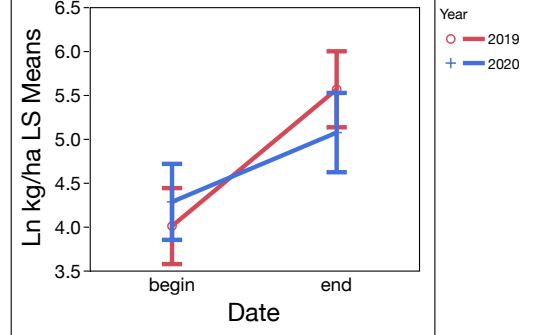
Slice Year=2019

NumDF	DenDF	F Ratio	Prob > F
1	39.92	40.9425	<.0001*

Slice Year=2020

NumDF	DenDF	F Ratio	Prob > F
1	42.56	9.7253	0.0033*

Slice Date=begin

NumDF	DenDF	F Ratio	Prob > F
1	13.66	0.9397	0.3492

Slice Date=end

NumDF	DenDF	F Ratio	Prob > F
1	14.7	2.8341	0.1134

Rotation*Date

Least Squares Means Table

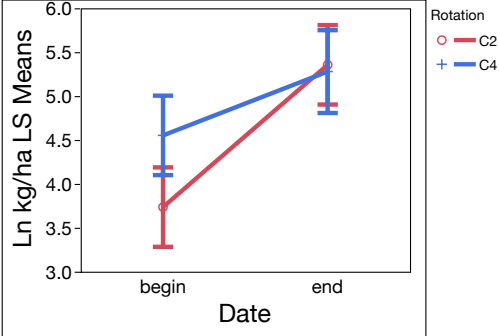| Level	Least Sq Mean	Std Error
C2,begin	3.7358581	0.21846513
C2,end	5.3561196	0.21846513
C4,begin	4.5524038	0.21846513
C4,end	5.2790278	0.22903978

C2, begin 41.92 kg/ha
C2, end 211.90 kg/ha
C4, begin 94.86 kg/ha
C4, end 196.18 kg/ha

Response Ln kg/ha

Effect Details

Rotation*Date

Least Squares Means Plot

Year*Rotation*Date

Least Squares Means Table

Level	Least Sq Mean	Std Error
2019,C2,begin	3.3212125	0.30895635
2019,C2,end	5.4277434	0.30895635
2019,C4,begin	4.6911313	0.30895635
2019,C4,end	5.7003726	0.30895635
2020,C2,begin	4.1505036	0.30895635
2020,C2,end	5.2844958	0.30895635
2020,C4,begin	4.4136763	0.30895635
2020,C4,end	4.8576830	0.33820535

Date*Depth

Least Squares Means Table

Level	Least Sq Mean	Std Error
begin,0-15cm	5.1086843	0.23214585
begin,15-30cm	4.3464523	0.23214585
begin,30-45cm	3.9590156	0.23214585
begin,45-60cm	3.1623715	0.23214585
end,0-15cm	5.9361243	0.23214585
end,15-30cm	5.6859255	0.24160573
end,30-45cm	5.0743363	0.24160573
end,45-60cm	4.5739085	0.24160573

Year*Date*Depth

Rotation*Date*Depth

Least Squares Means Table

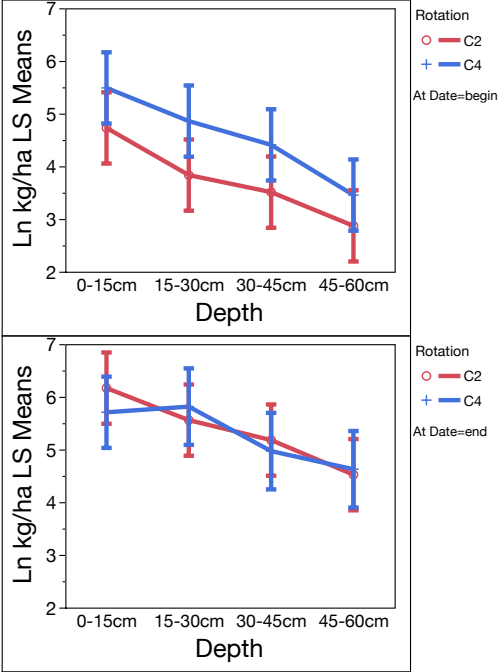| Level	Least Sq Mean	Std Error
C2,begin,0-15cm	4.7286570	0.33911944
C2,begin,15-30cm	3.8340098	0.33911944
C2,begin,30-45cm	3.5104167	0.33911944
C2,begin,45-60cm	2.8703488	0.33911944
C2,end,0-15cm	6.1656590	0.33911944
C2,end,15-30cm	5.5576291	0.33911944
C2,end,30-45cm	5.1789794	0.33911944
C2,end,45-60cm	4.5222108	0.33911944
C4,begin,0-15cm	5.4887116	0.33911944
C4,begin,15-30cm	4.8588949	0.33911944
C4,begin,30-45cm	4.4076144	0.33911944
C4,begin,45-60cm	3.4543942	0.33911944
C4,end,0-15cm	5.7065897	0.33911944
C4,end,15-30cm	5.8142219	0.36459363
C4,end,30-45cm	4.9696933	0.36459363
C4,end,45-60cm	4.6256062	0.36459363

C2 begin 210.50 kg/ha to 60 cm
C2 end 1004.86 kg/ha to 60 cm
C4 begin 484.54 kg/ha to 60 cm
C4 end 881.92 kg/ha to 60 cm

Response Ln kg/ha

Effect Details

Rotation*Date*Depth

Least Squares Means Plot

Block[Year]

Least Squares Means Table

Level	Least Sq Mean	Std Error
[2019]1	4.6653460	.
[2019]2	4.6148754	.
[2019]3	4.9754696	.
[2019]4	4.8847686	.
[2020]1	4.4013538	.
[2020]2	4.7817268	.
[2020]3	4.7529415	.
[2020]4	4.7703366	.

Block[Year,Rotation]

Block[Year,Rotation,Depth]