

Season 2018

Plant height

Source	df	Type III SS	MS	F	P
Blocks	3	2.224090909	0.7413636	0.346309	.7921 ns
Main Effects					
iinntttraction	11	87.10424242	7.9185675	3.6989557	.0049 **
Error	21	44.95590909	2.1407576<-		
Total	35	135.31			
Model	14	90.35409091	6.4538636	3.0147569	.0110 *

No. of Crowns

Source	df	Type III SS	MS	F	P
Blocks	3	0.377234848	0.1257449	1.7808916	.1816 ns
Main Effects					
iinntttraction	11	7.448522727	0.6771384	9.5901276	.0000 ***
Error	21	1.482765152	0.0706079<-		
Total	35	9.32			
Model	14	7.837234848	0.5598025	7.9283306	.0000 ***

No. of leaves

Source	df	Type III SS	MS	F	P
Blocks	3	8.862689394	2.9542298	2.9574251	.0558 ns
Main Effects					
iinntttraction	11	165.2291288	15.02083	15.037077	.0000 ***
Error	21	20.97731061	0.9989196<-		
Total	35	193.9			
Model	14	172.9226894	12.351621	12.36498	.0000 ***

plant fresh weight

Source	df	Type III SS	MS	F	P
Blocks	3	27.2917803	9.0972601	4.8038978	.0106 *
Main Effects					
iinntttraction	11	1793.980038	163.08909	86.120802	.0000 ***
Error	21	39.7682197	1.8937247<-		
Total	35	1864.0875			
Model	14	1824.31928	130.30852	68.810697	.0000 ***

plant dry weight

Source	df	Type III SS	MS	F	P
Blocks	3	17.59555114	5.8651837	8.6576968	.0006 ***
Main Effects					
iinntttraction	11	106.2704307	9.6609482	14.260689	.0000 ***
Error	21	14.22651553	0.6774531<-		
Total	35	140.1076972			
Model	14	125.8811817	8.991513	13.272524	.0000 ***

Phosphorus%

Source	df	Type III SS	MS	F	P
Blocks	3	1.472348e-5	4.9078e-6	0.1305808	.9408 ns
Main Effects					
iinntttraction	11	0.005147186	4.6793e-4	12.44994	.0000 ***
Error	21	7.892765e-4	3.7585e-5<-		
Total	35	0.00602675			
Model	14	0.005237473	3.7411e-4	9.9536855	.0000 ***

Potassium %

Source	df	Type III SS	MS	F	P
Blocks	3	0.018245076	0.0060817	1.0754546	.3809 ns
Main Effects					
iinntttraction	11	0.967667045	0.0879697	15.556107	.0000 ***
Error	21	0.118754924	0.005655<-		
Total	35	1.108075			
Model	14	0.989320076	0.0706657	12.496156	.0000 ***

Calcium%

Source	df	Type III SS	MS	F	P
Blocks	3	0.029222727	0.0097409	0.6681067	.5810 ns
Main Effects					
iinntttraction	11	0.79829697	0.0725725	4.9775788	.0008 ***
Error	21	0.306177273	0.0145799<-		
Total	35	1.133075			
Model	14	0.826897727	0.0590641	4.0510734	.0020 **

Boron ppm	df	Type III SS	MS	F	P
Source					
Blocks	3	21.42450758	7.1415025	2.9699988	.0552 ns
Main Effects					
iinntttraction	11	2289.052159	208.09565	86.54255	.0000 ***
Error	21	50.49549242	2.4045473<-		
Total	35	2375.4475			
Model	14	2324.952008	166.068	69.064145	.0000 ***

Total Carbohydrates %	df	Type III SS	MS	F	P
Source					
Blocks	3	10.88610758	3.6287025	2.606533	.0786 ns
Main Effects					
iinntttraction	11	238.0302545	21.639114	15.54359	.0000 ***
Error	21	29.23529242	1.3921568<-		
Total	35	276.867275			
Model	14	247.6319826	17.687999	12.705465	.0000 ***

Exportable yield

Source	df	Type III SS	MS	F	P
Blocks	3	0.319360227	0.1064534	6.5435051	.0027 **
Main Effects					
iinntttraction	11	35.01684886	3.1833499	195.67496	.0000 ***
Error	21	0.341639773	0.0162686<-		
Total	35	36.912675			
Model	14	36.57103523	2.6122168	160.5684	.0000 ***

Total yield (g) /plan

Source	df	Type III SS	MS	F	P
Blocks	3	710.4204545	236.80682	2.6457743	.0756 ns
Main Effects					
iinntttraction	11	114712.9129	10428.447	116.51403	.0000 ***
Error	21	1879.579545	89.503788<-		
Total	35	126996.75			
Model	14	125117.1705	8936.9407	99.849861	.0000 ***

Total yield

Source	df	Type III SS	MS	F	P
Blocks	3	2.940721212	0.9802404	1.0581354	.3879 ns
Main Effects					
iinntttraction	11	270.9449591	24.63136	26.588695	.0000 ***
Error	21	19.45407879	0.9263847<-		
Total	35	305.2411			
Model	14	285.7870212	20.413359	22.035509	.0000 ***

Fruit length

Source	df	Type III SS	MS	F	P
Blocks	3	0.184626894	0.0615423	5.0967087	.0083 **
Main Effects					
iinntttraction	11	3.365457955	0.3059507	25.337723	.0000 ***
Error	21	0.253573106	0.0120749<-		
Total	35	3.844675			
Model	14	3.591101894	0.2565073	21.242997	.0000 ***

Fruit diameter

Source	df	Type III SS	MS	F	P
Blocks	3	0.107217803	0.0357393	9.5751925	.0003 ***
Main Effects					
iinntttraction	11	2.725700379	0.2477909	66.387649	.0000 ***
Error	21	0.078382197	0.0037325<-		
Total	35	2.9632			
Model	14	2.884817803	0.2060584	55.206754	.0000 ***

Fruit weight

Source	df	Type III SS	MS	F	P
Blocks	3	13.02666667	4.3422222	3.5435233	.0321 *
Main Effects					
iinntttraction	11	357.5740909	32.506736	26.527517	.0000 ***
Error	21	25.73333333	1.2253968<-		
Total	35	395.85			
Model	14	370.1166667	26.436905	21.574158	.0000 ***

Fruit firmness

Source	df	Type III SS	MS	F	P
Blocks	3	654.7234848	218.24116	6.9516573	.0020 **
Main Effects					
iinntttraction	11	22116.54924	2010.5954	64.043694	.0000 ***
Error	21	659.2765152	31.39412<-		
Total	35	24422.75			
Model	14	23763.47348	1697.391	54.067162	.0000 ***

TSS %

Source	df	Type III SS	MS	F	P
Blocks	3	0.513939394	0.1713131	2.2682461	.1102 ns
Main Effects					
iinntttraction	11	17.16560606	1.5605096	20.661696	.0000 ***
Error	21	1.586060606	0.0755267<-		
Total	35	18.92			
Model	14	17.33393939	1.2381385	16.393389	.0000 ***

Total Acidity%

Source	df	Type III SS	MS	F	P
Blocks	3	0.003345076	0.001115	1.3114326	.2970 ns
Main Effects					
iinntttraction	11	0.134157955	0.0121962	14.344487	.0000 ***
Error	21	0.017854924	8.5023e-4<-		
Total	35	0.1649			
Model	14	0.147045076	0.0105032	12.353321	.0000 ***

V. C (mg/100g)

Source	df	Type III SS	MS	F	P
Blocks	3	10.54603485	3.5153449	1.804417	.1773 ns
Main Effects					
iinntttraction	11	404.2431818	36.74938	18.863356	.0000 ***
Error	21	40.91196515	1.9481888<-		
Total	35	494.950475			
Model	14	454.0385098	32.431322	16.646909	.0000 ***

Total sugars%

Source	df	Type III SS	MS	F	P
Blocks	3	0.032440909	0.0108136	0.7441573	.5377 ns
Main Effects					
iinntttraction	11	5.240781818	0.4764347	32.7866	.0000 ***
Error	21	0.305159091	0.0145314<-		
Total	35	5.6397			
Model	14	5.334540909	0.3810386	26.22177	.0000 ***

Anthocyanin(mg/100g f.w

Source	df	Type III SS	MS	F	P
Blocks	3	26.8117803	8.9372601	1.9467475	.1530 ns
Main Effects					
iinntttraction	11	1307.882765	118.89843	25.898903	.0000 ***
Error	21	96.4082197	4.5908676<-		
Total	35	1426.3675			
Model	14	1329.95928	94.997091	20.692623	.0000 ***

Season 2019

Plant height

Source	df	Type III SS	MS	F	P
Blocks	3	5.629090909	1.8763636	1.1159055	.3650 ns
Main Effects					
iinntttraction	11	89.44787879	8.1316253	4.8360163	.0010 ***
Error	21	35.31090909	1.6814719<-		
Total	35	128.5675			
Model	14	93.25659091	6.6611851	3.9615204	.0023 **

No. of Crowns Broken

Source	df	Type III SS	MS	F	P
Blocks	3	0.440871212	0.1469571	2.9698903	.0552 ns
Main Effects					
iinntttraction	11	9.710037879	0.8827307	17.839314	.0000 ***
Error	21	1.039128788	0.0494823<-		
Total	35	11.19			
Model	14	10.15087121	0.7250622	14.652954	.0000 ***

No. of leaves

Source	df	Type III SS	MS	F	P
Blocks	3	9.197234848	3.0657449	2.0320399	.1402 ns
Main Effects					
iinntttraction	11	168.7036742	15.336698	10.165484	.0000 ***
Error	21	31.68276515	1.5087031<-		
Total	35	210.1075			
Model	14	178.4247348	12.744624	8.4474035	.0000 ***

$R^2 = SS_{\text{model}}/SS_{\text{total}} = 0.84920688147$

Root MSerror = $\sqrt{MS_{\text{error}}} = 1.22829275926$

plant fresh weight

Source	df	Type III SS	MS	F	P
Blocks	3	31.27875	10.42625	11.332147	.0001 ***
Main Effects					
iinntttraction	11	2797.170341	254.28821	276.38235	.0000 ***
Error	21	19.32125	0.9200595<-		
Total	35	2860.3675			
Model	14	2841.04625	202.93188	220.56385	.0000 ***

plant dry weight

Source	df	Type III SS	MS	F	P
Blocks	3	12.51245455	4.1708182	4.177274	.0182 *
Main Effects					
iinntttraction	11	139.6657091	12.696883	12.716535	.0000 ***
Error	21	20.96754545	0.9984545<-		
Total	35	169.5998			
Model	14	148.6322545	10.61659	10.633022	.0000 ***

Nitrogen %

Source	df	Type III SS	MS	F	P
Blocks	3	0.030651136	0.010217	2.1553029	.1236 ns
Main Effects					
iinntttraction	11	0.92990947	0.0845372	17.83327	.0000 ***
Error	21	0.099548864	0.0047404<-		
Total	35	1.0538			
Model	14	0.954251136	0.0681608	14.378634	.0000 ***

Phosphorus%

Source	df	Type III SS	MS	F	P
Blocks	3	2.327235e-4	7.7574e-5	2.9337895	.0571 ns
Main Effects					
iinntttraction	11	0.005861549	5.3287e-4	20.152537	.0000 ***
Error	21	5.552765e-4	2.6442e-5<-		
Total	35	0.006614			
Model	14	0.006058723	4.3277e-4	16.366774	.0000 ***

Potassium %

Source	df	Type III SS	MS	F	P
Blocks	3	0.032708712	0.0109029	1.9520715	.1522 ns
Main Effects					
iinntttraction	11	1.072039773	0.0974582	17.449049	.0000 ***
Error	21	0.117291288	0.0055853<-		
Total	35	1.2405			
Model	14	1.123208712	0.0802292	14.36435	.0000 ***

Calcium%

Source	df	Type III SS	MS	F	P
Blocks	3	0.035826894	0.0119423	1.5238714	.2376 ns
Main Effects					
iinntttraction	11	1.09380947	0.0994372	12.688475	.0000 ***
Error	21	0.164573106	0.0078368<-		
Total	35	1.2869			
Model	14	1.122326894	0.0801662	10.229438	.0000 ***

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Boron ppm

Source	df	Type III SS	MS	F	P
Blocks	3	34.49681818	11.498939	6.0104199	.0040 **
Main Effects					
iinntttraction	11	2102.663636	191.15124	99.913495	.0000 ***
Error	21	40.17651515	1.9131674<-		
Total	35	2201.196389			
Model	14	2161.019874	154.35856	80.682204	.0000 ***

Total Carbohydrates %

Source	df	Type III SS	MS	F	P
Blocks	3	19.87902273	6.6263409	7.2238656	.0016 **
Main Effects					
iinntttraction	11	263.241347	23.931032	26.088992	.0000 ***
Error	21	19.26297727	0.9172846<-		
Total	35	301.426875			
Model	14	282.1638977	20.154564	21.971985	.0000 ***

Exportable yield

Source	df	Type III SS	MS	F	P
Blocks	3	0.156726894	0.0522423	2.8024614	.0649 ns
Main Effects					
iinntttraction	11	31.61643674	2.8742215	154.18339	.0000 ***
Error	21	0.391473106	0.0186416<-		
Total	35	34.2744			
Model	14	33.88292689	2.4202091	129.82856	.0000 ***

Total yield (g) /plan

Source	df	Type III SS	MS	F	P
Blocks	3	530.3484848	176.78283	1.8059673	.1770 ns
Main Effects					
iinntttraction	11	96519.69697	8774.5179	89.638188	.0000 ***
Error	21	2055.651515	97.888167<-		
Total	35	105299			
Model	14	103243.3485	7374.5249	75.336224	.0000 ***

Total yield

Source	df	Type III SS	MS	F	P
Blocks	3	8.833501515	2.9445005	3.7083577	.0276 *
Main Effects					
iinntttraction	11	266.8648848	24.260444	30.554046	.0000 ***
Error	21	16.67436515	0.7940174<-		
Total	35	304.4531639			
Model	14	287.7787987	20.555628	25.888134	.0000 ***

Fruit length

Source	df	Type III SS	MS	F	P
Blocks	3	0.024208712	0.0080696	0.7647457	.5265 ns
Main Effects					
iinntttraction	11	3.056800379	0.2778909	26.335466	.0000 ***
Error	21	0.221591288	0.010552<-		
Total	35	3.343275			
Model	14	3.121683712	0.2229774	21.131361	.0000 ***

Fruit diameter

Source	df	Type III SS	MS	F	P
Blocks	3	0.132872727	0.0442909	10.297101	.0002 ***
Main Effects					
iinntttraction	11	2.409177273	0.2190161	50.918602	.0000 ***
Error	21	0.090327273	0.0043013<-		
Total	35	2.6675			
Model	14	2.577172727	0.1840838	42.797252	.0000 ***

Fruit firmness

Source	df	Type III SS	MS	F	P
Blocks	3	795.7840909	265.26136	7.1214208	.0018 **
Main Effects					
iinntttraction	11	22328.27652	2029.8433	54.494813	.0000 ***
Error	21	782.2159091	37.248377<-		
Total	35	25154.75			
Model	14	24372.53409	1740.8953	46.737481	.0000 ***
TSS %					

Source	df	Type III SS	MS	F	P
Blocks	3	607.9905682	202.66352	0.6953781	.5652 ns
Main Effects					
iinntttraction	11	3233.058523	293.91441	1.0084778	.4717 ns
Error	21	6120.316098	291.44362<-		
Total	35	9976.176389			
Model	14	3855.86029	275.41859	0.945015	.5324 ns

Total Acidity%

Source	df	Type III SS	MS	F	P
Blocks	3	0.003872727	0.0012909	0.8765432	.4690 ns
Main Effects					
iinntttraction	11	0.114763636	0.0104331	7.0841751	.0001 ***
Error	21	0.030927273	0.0014727<-		
Total	35	0.1466			
Model	14	0.115672727	0.0082623	5.6102293	.0002 ***

V. C (mg/100g

Source	df	Type III SS	MS	F	P
Blocks	3	9.195980303	3.0653268	1.6520847	.2077 ns
Main Effects					
iinntttraction	11	473.1117273	43.010157	23.180701	.0000 ***
Error	21	38.9640197	1.8554295<-		
Total	35	550.4953			
Model	14	511.5312803	36.537949	19.692448	.0000 ***

Total sugars%

Source	df	Type III SS	MS	F	P
Blocks	3	0.071137879	0.0237126	1.3317112	.2908 ns
Main Effects					
iinntttraction	11	3.766872727	0.342443	19.231743	.0000 ***

Error	21	0.373928788	0.0178061<-			

Total	35	4.247497222				
Model	14	3.873568434	0.2766835	15.538661	.0000	***

Anthocyanin(mg/100g f.w

Source	df	Type III SS	MS	F	P	

Blocks	3	18.94450758	6.3148359	1.7103335	.1955	ns
Main Effects						
iinntttraction	11	970.5554924	88.232317	23.897168	.0000	***
Error	21	77.53549242	3.6921663<-			

Total	35	1070.4275				
Model	14	992.8920076	70.920858	19.208468	.0000	***