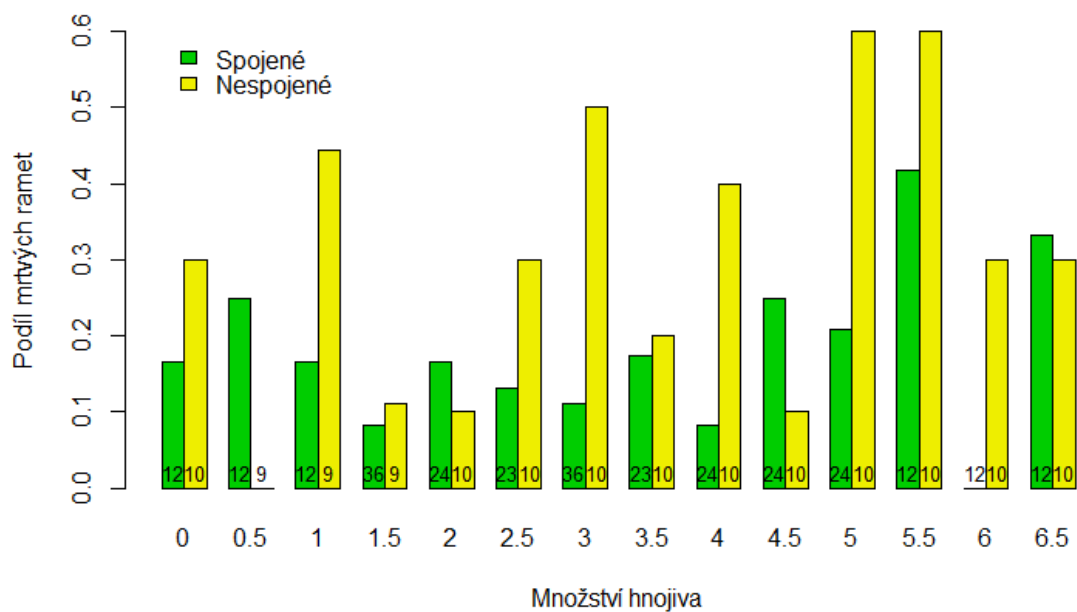


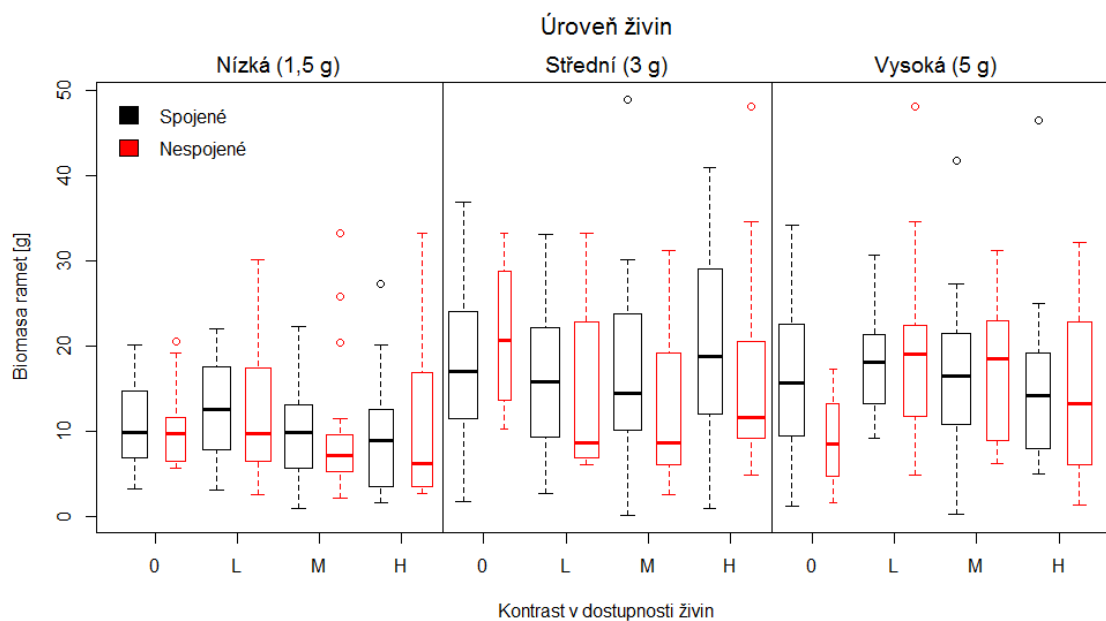
## Příloha č.1 – doplňující obrázky



Obrázek 1: Pokus č. 1- pohled do experimentálního foliového tunelu těsně před sklizením pokusu.



Obrázek 2: Podíly mrtvých ramet v různých množstvích hnojiva pro spojené (zeleně) a nespojené (žlutě) ramety. Na bázi sloupečků je celkový počet ramet v dané kategorii.



**Obrázek 3: Biomasy spojených ramet v jednotlivých treatmentech a nespojených ramet s odpovídajícím množstvím hnojiva.** Šířka boxplotů proporčně odpovídá počtu pozorování v kategorii. Průměrná biomasa a medián biomasy nespojených ramet mohou být vychýlené kvůli nerovnoměrnému přežívání méně a víc hnojených ramet v dané kategorii.



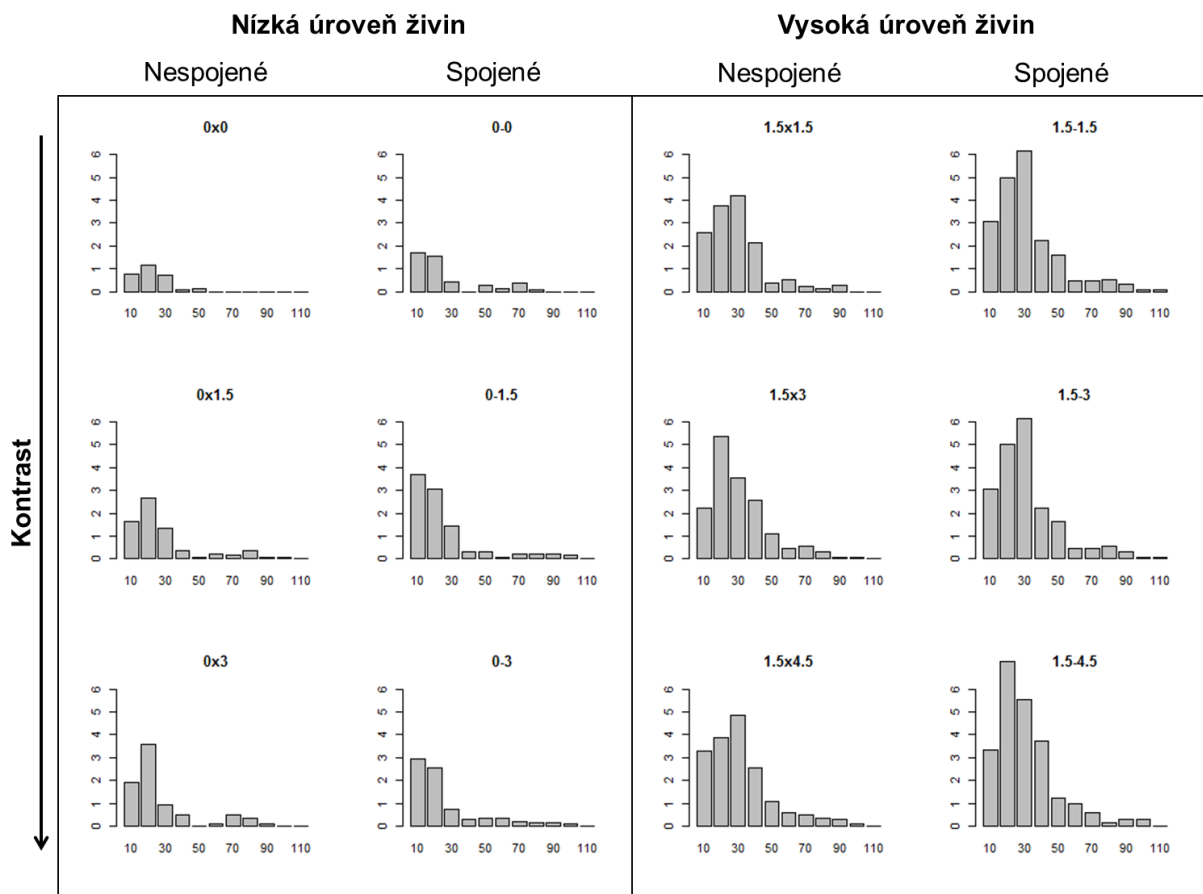
**Obrázek 4: Klonální fragment před zasazením do experimentálních podmínek na začátku pokusu č.2.**



Obrázek 5: Pokus č.3 – pohled do experimentálního foliového tunelu.



Obrázek 6: Dvojice mateřské (vpravo) a dceřiné (vlevo) ramety v nehnojených podmínkách v pokusu č.3.



Obrázek 7: Zastoupení různých délek šlahounů u dceřiných ramet v jednotlivých treatmentech v pokusu č.3.

## Příloha č.2 – detaily modelů

### Pokus č.1

#### Význam jmen proměnných v modelech

**biomasa** – biomasa ramet v gramech

**biomasa.dv** – biomasa dvojice ramet v gramech

**doba\_kor** – počet dní od doby sklizení nadzemní biomasy po promytí kořenů

**hnojivo** – množství hnojiva dané ramety v gramech

**klon** – příslušnost ke klonu, faktor se třemi hladinami: A (klon A), B (klon B) a C (klon C)

**klon2** – příslušnost ke klonu, faktor s dvěma hladinami: A (klon A), BC (klony B a C)

**kontrast** – rozdíl v hnojení dvojice ramet, faktor se čtyřmi hladinami: 0 (rozdíl 0 g), L (rozdíl 1 g), M (rozdíl 2 g) a H (rozdíl 4 g)

**level** – průměrné množství hnojiva dvojice ramet v gramech

**mort** – podíl mrtvých ramet z dvojice ramet, nabývá hodnot 0 (obě živé), 0,5 (jedna mrtvá) a 1 (obě mrtvé)

**od.rohu** – vzdálenost od rohu skleníku s úživnější půdou

**orientace** – umístění ramety na původním šlahounu, faktor se dvěma hladinami: A (apikální rameta) a B (bazální rameta)

**poc.dv** – součet počátečních velikostí (počtu listů) dvojice ramet

**pocatek** – počáteční velikost ramety (jako počet listů)

**smrt** – údaj o smrti ramety, faktor se dvěma hladinami: 0 (živá rameta) a 1 (mrtvá rameta)

**spojeni** – údaj o spojení mezi rametami, faktor se dvěma hladinami: ano (spojené ramety) a ne (nespojené ramety)

**treat** – kombinace úrovně živin a kontrastu mezi rametami, faktor s dvanácti hladinami, první dvě písmena v názvu hladiny kódují úroveň živin (ll – nízká úroveň, ml – střední úroveň, hl – vysoká úroveň), poslední dvě písmena kódují kontrast mezi rametami (nc – bez kontrastu, lc – nízký kontrast, mc – střední kontrast, hc – vysoký kontrast)

## Model 1.0: Porovnání variability vysvětlené faktorem klon před a po sloučení klonů B a C

### Biomasa apikálních ramet:

#### Analysis of Variance Table

Model 1:  $\log_{10}(\text{biomasa}) \sim \text{doba\_kor} + \text{od.rohu} + \text{I}(\text{od.rohu}^2) + \text{pocatek} + \text{hnojivo} + \text{spojeni} + \text{klon}$

Model 2:  $\log_{10}(\text{biomasa}) \sim \text{doba\_kor} + \text{od.rohu} + \text{I}(\text{od.rohu}^2) + \text{pocatek} + \text{hnojivo} + \text{spojeni} + \text{klon2}$

	Res.Df	RSS	Df	Sum of Sq	F	Pr(>F)
1	155	16.118				
2	156	16.374	-1	-0.2556	2.458	0.119

### Biomasa bazálních ramet:

#### Analysis of Variance Table

Model 1:  $\log_{10}(\text{biomasa}) \sim \text{doba\_kor} + \text{od.rohu} + \text{I}(\text{od.rohu}^2) + \text{pocatek} + \text{hnojivo} + \text{spojeni} + \text{klon}$

Model 2:  $\log_{10}(\text{biomasa}) \sim \text{doba\_kor} + \text{od.rohu} + \text{I}(\text{od.rohu}^2) + \text{pocatek} + \text{hnojivo} + \text{spojeni} + \text{klon2}$

	Res.Df	RSS	Df	Sum of Sq	F	Pr(>F)
1	145	15.736				
2	146	15.741	-1	-0.0047719	0.044	0.8342

### Poměr podzemní a nadzemní biomasy u apikálních r.:

#### Analysis of Variance Table

Model 1:  $\log_{10}(\text{RS}) \sim \text{doba\_kor} + \text{od.rohu} + \text{I}(\text{od.rohu}^2) + \text{pocatek} + \text{hnojivo} + \text{spojeni} + \text{klon}$

Model 2:  $\log_{10}(\text{RS}) \sim \text{doba\_kor} + \text{od.rohu} + \text{I}(\text{od.rohu}^2) + \text{pocatek} + \text{hnojivo} + \text{spojeni} + \text{klon2}$

	Res.Df	RSS	Df	Sum of Sq	F	Pr(>F)
1	155	8.0474				
2	156	8.0489	-1	-0.0015847	0.0305	0.8615

### Poměr podzemní a nadzemní biomasy u bazálních r.:

#### Analysis of Variance Table

Model 1:  $\log_{10}(\text{RS}) \sim \text{doba\_kor} + \text{od.rohu} + \text{I}(\text{od.rohu}^2) + \text{pocatek} + \text{hnojivo} + \text{spojeni} + \text{klon}$

Model 2:  $\log_{10}(\text{RS}) \sim \text{doba\_kor} + \text{od.rohu} + \text{I}(\text{od.rohu}^2) + \text{pocatek} + \text{hnojivo} + \text{spojeni} + \text{klon2}$

	Res.Df	RSS	Df	Sum of Sq	F	Pr(>F)
1	145	5.6894				
2	146	5.7073	-1	-0.017929	0.4569	0.5001

### Model 1.1: Vliv hnojiva na úmrtnost nespojených ramet

Call: glm(formula = smrt ~ pocatek + klon \* hnojivo, family = binomial,  
data = rozpojABC)

Deviance Residuals:

Min	1Q	Median	3Q	Max
-1.6895	-0.7994	-0.5625	1.0052	2.3014

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )
(Intercept)	-1.62237	0.70188	-2.311	0.0208 *
pocatek	-0.26217	0.14933	-1.756	0.0791 .
klonB	1.41331	0.90272	1.566	0.1174
klonC	-0.31748	1.27892	-0.248	0.8039
hnojivo	0.14340	0.15837	0.905	0.3652
klonB:hnojivo	0.06611	0.23315	0.284	0.7768
klonC:hnojivo	0.23414	0.29284	0.800	0.4240

---  
(Dispersion parameter for binomial family taken to be 1)

Null deviance: 168.87 on 136 degrees of freedom  
Residual deviance: 148.09 on 130 degrees of freedom  
AIC: 162.09

Number of Fisher Scoring iterations: 4

#### Analysis of Deviance Table

Model: binomial, link: logit

Response: smrt

Terms added sequentially (first to last)

	Df	Deviance	Resid. Df	Resid. Dev	Pr(>Chi)
NULL			136	168.87	
pocatek	1	4.0236	135	164.85	0.044869 *
klon	2	11.5995	133	153.25	0.003028 **
hnojivo	1	4.4978	132	148.75	0.033938 *
klon:hnojivo	2	0.6620	130	148.09	0.718214

#### Analysis of Deviance Table

Model 1: smrt ~ 1

Model 2: smrt ~ pocatek + klon \* hnojivo

	Resid. Df	Resid. Dev	Df	Deviance	Pr(>Chi)
1	136	168.87			
2	130	148.09	6	20.783	0.002007 **

## Model 1.2: Vliv hnojiva na biomasu nespojených ramet

```
Call: lm(formula = log10(biomasa) ~ doba_kor + od.rohu + I(od.rohu^2) +
      pocatek + klon2 * I(hnojivo + 1) + I(log10(hnojivo + 1)),
      data = rozpoj.zive)
```

### Residuals:

Min	1Q	Median	3Q	Max
-0.98190	-0.09271	0.03651	0.15670	0.60738

### Coefficients:

	Estimate	Std. Error	t value	Pr(> t )	
(Intercept)	8.985e-01	1.369e-01	6.564	3.94e-09	***
doba_kor	-1.062e-02	6.618e-03	-1.604	0.112402	
od.rohu	-3.861e-03	1.283e-02	-0.301	0.764268	
I(od.rohu^2)	4.155e-06	3.193e-04	0.013	0.989649	
pocatek	3.987e-02	1.742e-02	2.289	0.024532	*
klon2BC	-1.251e-01	1.312e-01	-0.953	0.343155	
I(hnojivo + 1)	-1.391e-01	5.601e-02	-2.483	0.014997	*
I(log10(hnojivo + 1))	1.650e+00	4.323e-01	3.817	0.000256	***
klon2BC:I(hnojivo + 1)	-2.713e-02	2.859e-02	-0.949	0.345266	

---

Residual standard error: 0.2618 on 85 degrees of freedom  
(1 observation deleted due to missingness)

Multiple R-squared: 0.4162, Adjusted R-squared: 0.3612

F-statistic: 7.573 on 8 and 85 DF, p-value: 1.364e-07

### Analysis of Variance Table

Response: log10(biomasa)

	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
doba_kor	1	0.2455	0.24549	3.5812	0.0618397	.
od.rohu	1	0.0399	0.03986	0.5814	0.4478711	
I(od.rohu^2)	1	0.6534	0.65339	9.5317	0.0027271	**
pocatek	1	0.3939	0.39392	5.7465	0.0187127	*
klon2	1	1.1246	1.12460	16.4057	0.0001125	***
I(hnojivo + 1)	1	0.5724	0.57244	8.3507	0.0048913	**
I(log10(hnojivo + 1))	1	1.0617	1.06171	15.4883	0.0001692	***
klon2:I(hnojivo + 1)	1	0.0617	0.06175	0.9008	0.3452664	
Residuals	85	5.8267	0.06855			



### Model 1.3: Vliv hnojiva na poměr podzemní a nadzemní biomasy nespojených ramet

Call: `lm(formula = log10(RS) ~ klon2 + I(hnojivo + 1) + I(log10(hnojivo + 1))), data = rozpoj.zive)`

Residuals:

Min	1Q	Median	3Q	Max
-0.53986	-0.12332	-0.01094	0.12210	0.81696

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )	
(Intercept)	-0.67254	0.05241	-12.833	< 2e-16	***
klon2BC	0.02226	0.04217	0.528	0.59887	
I(hnojivo + 1)	0.11520	0.03952	2.915	0.00447	**
I(log10(hnojivo + 1))	-1.32593	0.31120	-4.261	4.96e-05	***

---

Residual standard error: 0.2029 on 91 degrees of freedom

Multiple R-squared: 0.301, Adjusted R-squared: 0.2779

F-statistic: 13.06 on 3 and 91 DF, p-value: 3.622e-07

#### Analysis of Variance Table

Response: log10(RS)

	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
klon2	1	0.0175	0.01755	0.4264	0.5154	
I(hnojivo + 1)	1	0.8479	0.84792	20.6026	1.724e-05	***
I(log10(hnojivo + 1))	1	0.7471	0.74714	18.1538	4.960e-05	***
Residuals	91	3.7452	0.04116			

### Model 1.4a: Celkový vliv spojení na úmrtnost apikálních ramet

Call: glm(formula = smrt ~ scale(pocatek) + klon + scale(hnojivo) \*  
spojeni, family = binomial, data = apik)

Deviance Residuals:

Min	1Q	Median	3Q	Max
-1.5740	-0.6403	-0.3218	-0.1774	2.8605

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )	
(Intercept)	-2.6536	0.4295	-6.178	6.48e-10	***
scale(pocatek)	-0.9020	0.2413	-3.739	0.000185	***
klonB	1.3426	0.4958	2.708	0.006770	**
klonC	0.7534	0.5240	1.438	0.150514	
scale(hnojivo)	0.1150	0.2603	0.442	0.658604	
spojenine	0.4838	0.4389	1.102	0.270358	
scale(hnojivo):spojenine	0.7245	0.4235	1.711	0.087162	.

---

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 208.23 on 211 degrees of freedom  
Residual deviance: 162.19 on 205 degrees of freedom  
AIC: 176.19

Number of Fisher Scoring iterations: 5

#### Analysis of Deviance Table

Model: binomial, link: logit

Response: smrt

Terms added sequentially (first to last)

	Df	Deviance	Resid. Df	Resid. Dev	Pr(>Chi)	
NULL			211	208.23		
scale(pocatek)	1	27.9403	210	180.29	1.251e-07	***
klon	2	7.2140	208	173.08	0.02713	*
scale(hnojivo)	1	4.8396	207	168.24	0.02781	*
spojeni	1	2.9626	206	165.27	0.08521	.
scale(hnojivo):spojeni	1	3.0814	205	162.19	0.07919	.

---

#### Analysis of Deviance Table

Model 1: smrt ~ 1

Model 2: smrt ~ scale(pocatek) + klon + scale(hnojivo) \* spojeni

	Resid. Df	Resid. Dev	Df	Deviance	Pr(>Chi)	
1	211	208.23				
2	205	162.19	6	46.038	2.909e-08	***

---

## Model 1.4b: Celkový vliv spojení na úmrtnost bazálních ramet

Call: glm(formula = smrt ~ scale(pocatek) + klon + scale(hnojivo) \*  
spojeni, family = binomial, data = bazal)

Deviance Residuals:

Min	1Q	Median	3Q	Max
-1.1667	-0.7496	-0.5689	-0.4451	2.2416

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )	
(Intercept)	-1.9899	0.3086	-6.449	1.13e-10	***
scale(pocatek)	0.1285	0.1538	0.835	0.4035	
klonB	0.8856	0.3973	2.229	0.0258	*
klonC	0.6544	0.4361	1.501	0.1334	
scale(hnojivo)	0.2196	0.2422	0.907	0.3646	
spojeni	0.8996	0.3459	2.601	0.0093	**
scale(hnojivo):spojeni	-0.1549	0.3384	-0.458	0.6471	

---

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 226.29 on 210 degrees of freedom  
Residual deviance: 212.73 on 204 degrees of freedom  
AIC: 226.73

Number of Fisher Scoring iterations: 4

### Analysis of Deviance Table

Model: binomial, link: logit

Response: smrt

Terms added sequentially (first to last)

	Df	Deviance	Resid. Df	Resid. Dev	Pr(>Chi)
NULL			210	226.29	
scale(pocatek)	1	0.6955	209	225.59	0.40430
klon	2	5.3240	207	220.27	0.06981 .
scale(hnojivo)	1	0.7238	206	219.54	0.39490
spojeni	1	6.5994	205	212.94	0.01020 *
scale(hnojivo):spojeni	1	0.2095	204	212.73	0.64714

---

### Analysis of Deviance Table

Model 1: smrt ~ 1

Model 2: smrt ~ scale(pocatek) + klon + scale(hnojivo) \* spojeni

	Resid. Df	Resid. Dev	Df	Deviance	Pr(>Chi)
1	210	226.29			
2	204	212.73	6	13.552	0.03506 *

---

## Model 1.5a: Vliv spojení na úmrtnost apikálních ramet v homogenních podmínkách

Call: glm(formula = smrt ~ scale(pocatek) + klon + scale(hnojivo) \*  
spojeni, family = binomial, data = kontroly.ap)

Deviance Residuals:

Min	1Q	Median	3Q	Max
-1.62133	-0.33849	-0.19589	-0.07994	1.91222

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )
(Intercept)	-4.2087	1.5835	-2.658	0.00787 **
scale(pocatek)	-1.1439	0.7020	-1.629	0.10322
klonB	0.6384	1.3993	0.456	0.64821
klonC	1.3317	1.4927	0.892	0.37233
scale(hnojivo)	0.6041	0.9208	0.656	0.51179
spojeni	2.7041	1.2963	2.086	0.03697 *
scale(hnojivo):spojeni	0.6030	1.2734	0.473	0.63586

---

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 44.312 on 50 degrees of freedom  
Residual deviance: 23.405 on 44 degrees of freedom  
AIC: 37.405

Number of Fisher Scoring iterations: 7

### Analysis of Deviance Table

Model: binomial, link: logit

Response: smrt

Terms added sequentially (first to last)

	Df	Deviance	Resid.	Df	Resid. Dev	Pr(>Chi)
NULL				50	44.312	
scale(pocatek)	1	9.9606		49	34.351	0.001599 **
klon	2	0.2647		47	34.087	0.876015
scale(hnojivo)	1	2.4183		46	31.668	0.119925
spojeni	1	8.0420		45	23.626	0.004571 **
scale(hnojivo):spojeni	1	0.2215		44	23.405	0.637908

---

### Analysis of Deviance Table

Model 1: smrt ~ 1

Model 2: smrt ~ scale(pocatek) + klon + scale(hnojivo) \* spojeni

	Resid.	Df	Resid. Dev	Df	Deviance	Pr(>Chi)
1	50	44.312				
2	44	23.405	6	20.907	0.001906	**

---

## Model 1.5b: Vliv spojení na úmrtnost bazálních ramet v homogenních podmínkách

Call: glm(formula = smrt ~ scale(pocatek) + klon + scale(hnojivo) \*  
spojeni, family = binomial, data = kontroly.baz)

Deviance Residuals:

Min	1Q	Median	3Q	Max
-1.1978	-0.6698	-0.3788	-0.2114	2.5055

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )
(Intercept)	-2.6072	0.8017	-3.252	0.00114 **
scale(pocatek)	0.5628	0.4999	1.126	0.26023
klonB	1.0926	0.9241	1.182	0.23710
klonC	1.3977	1.0319	1.354	0.17559
scale(hnojivo)	0.8223	0.5676	1.449	0.14739
spojenine	1.8351	0.8393	2.187	0.02878 *
scale(hnojivo):spojenine	-0.5293	0.8362	-0.633	0.52671

---

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 55.108 on 49 degrees of freedom  
Residual deviance: 42.837 on 43 degrees of freedom  
AIC: 56.837

Number of Fisher Scoring iterations: 5

### Analysis of Deviance Table

Model: binomial, link: logit

Response: smrt

Terms added sequentially (first to last)

	Df	Deviance	Resid. Df	Resid. Dev	Pr(>Chi)
NULL			49	55.108	
scale(pocatek)	1	3.4112	48	51.697	0.06475 .
klon	2	1.6970	46	50.000	0.42805
scale(hnojivo)	1	1.8661	45	48.134	0.17192
spojeni	1	4.8900	44	43.244	0.02701 *
scale(hnojivo):spojeni	1	0.4069	43	42.837	0.52356

---

### Analysis of Deviance Table

Model 1: smrt ~ 1

Model 2: smrt ~ scale(pocatek) + klon + scale(hnojivo) \* spojeni

	Resid. Df	Resid. Dev	Df	Deviance	Pr(>Chi)
1	49	55.108			
2	43	42.837	6	12.271	0.05618 .

---

### Analysis of Deviance Table

Model 1: smrt ~ 1

Model 2: smrt ~ scale(pocatek) + klon + scale(hnojivo) + spojeni

	Resid. Df	Resid. Dev	Df	Deviance	Pr(>Chi)
1	49	55.108			
2	44	43.244	5	11.864	0.03669 *

### Model 1.7: Vliv treatmentu na biomasu dvojic spojených ramet

Call: `lm(formula = log10(biomasa.dv) ~ od.rohu + poc.dv + level * kontrast, data = dv.obezive)`

Residuals:

Min	1Q	Median	3Q	Max
-0.72751	-0.09689	0.00613	0.11998	0.45532

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )	
(Intercept)	1.322040	0.116592	11.339	< 2e-16	***
od.rohu	-0.006022	0.002254	-2.672	0.00893	**
poc.dv	0.028094	0.014767	1.903	0.06026	.
level	0.042691	0.028686	1.488	0.14014	
kontrastH	-0.073443	0.147232	-0.499	0.61911	
kontrastL	0.045437	0.139650	0.325	0.74565	
kontrastM	-0.095257	0.135785	-0.702	0.48476	
level:kontrastH	0.022299	0.042292	0.527	0.59930	
level:kontrastL	-0.002660	0.041806	-0.064	0.94940	
level:kontrastM	0.025458	0.039077	0.651	0.51637	

Residual standard error: 0.2015 on 91 degrees of freedom  
Multiple R-squared: 0.219, Adjusted R-squared: 0.1417  
F-statistic: 2.835 on 9 and 91 DF, p-value: 0.005498

#### Analysis of Variance Table

Response: `log10(biomasa.dv)`

	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
od.rohu	1	0.3219	0.32187	7.9259	0.0059739	**
poc.dv	1	0.0858	0.08582	2.1133	0.1494679	
level	1	0.5534	0.55344	13.6280	0.0003795	***
kontrast	3	0.0435	0.01450	0.3569	0.7842320	
level:kontrast	3	0.0315	0.01049	0.2584	0.8551566	
Residuals	91	3.6955	0.04061			

## Model 1.9: Vliv spojení a treatmentu na biomasu méně hnojených ramet

```
Call: lm(formula = log10(biomasa) ~ od.rohu + I(od.rohu^2) + doba_kor +
      pocatek + klon2 + orientace + treat * spojeni + orientace:spojeni,
      data = mensi)
```

Residuals:

Min	1Q	Median	3Q	Max
-0.87131	-0.10131	0.02821	0.14311	0.52023

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )	
(Intercept)	1.0866193	0.1371151	7.925	1.37e-12	***
od.rohu	0.0022255	0.0103706	0.215	0.8304	
I(od.rohu^2)	-0.0001650	0.0002524	-0.654	0.5146	
doba_kor	-0.0137160	0.0050845	-2.698	0.0080	**
pocatek	0.0440865	0.0197479	2.232	0.0275	*
klon2BC	-0.1730519	0.0422332	-4.098	7.66e-05	***
orientaceB	0.1432276	0.0802981	1.784	0.0770	.
treathl.hc	0.2118548	0.1201302	1.764	0.0804	.
treathl.lc	0.1862338	0.1226349	1.519	0.1315	
treathl.mc	0.2065125	0.1112097	1.857	0.0658	.
treatll.hc	-0.2729088	0.1175705	-2.321	0.0220	*
treatll.mc	-0.0960353	0.1111293	-0.864	0.3892	
treatml.hc	0.1821809	0.1184408	1.538	0.1267	
treatml.lc	0.2112808	0.1079063	1.958	0.0526	.
treatml.mc	0.0956110	0.1074260	0.890	0.3753	
spojenine	0.2045395	0.1260429	1.623	0.1073	
treathl.hc:spojenine	-0.2165313	0.1755164	-1.234	0.2198	
treathl.lc:spojenine	-0.1171515	0.1740945	-0.673	0.5023	
treathl.mc:spojenine	-0.2039629	0.1775547	-1.149	0.2530	
treatll.hc:spojenine	-0.2672175	0.1814242	-1.473	0.1434	
treatll.mc:spojenine	-0.2282453	0.1666564	-1.370	0.1734	
treatml.hc:spojenine	-0.2575145	0.1710862	-1.505	0.1349	
treatml.lc:spojenine	-0.1707595	0.1721911	-0.992	0.3234	
treatml.mc:spojenine	-0.3050397	0.1632544	-1.868	0.0642	.
orientaceB:spojenine	-0.1577206	0.0824284	-1.913	0.0581	.

---

Residual standard error: 0.2322 on 119 degrees of freedom

(1 observation deleted due to missingness)

Multiple R-squared: 0.545, Adjusted R-squared: 0.4533

F-statistic: 5.94 on 24 and 119 DF, p-value: 1.556e-11

### Analysis of Variance Table

Response: log10(biomasa)

	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
od.rohu	1	0.7366	0.73656	13.6626	0.0003321	***
I(od.rohu^2)	1	0.6864	0.68638	12.7317	0.0005192	***
doba_kor	1	0.6057	0.60575	11.2361	0.0010759	**
pocatek	1	0.3343	0.33429	6.2008	0.0141493	*
klon2	1	0.9719	0.97193	18.0284	4.339e-05	***
orientace	1	0.0614	0.06141	1.1392	0.2879842	
treat	8	3.6003	0.45004	8.3479	6.073e-09	***
spojeni	1	0.1860	0.18601	3.4504	0.0657087	.
treat:spojeni	8	0.3056	0.03820	0.7086	0.6834458	
orientace:spojeni	1	0.1974	0.19738	3.6612	0.0580959	.
Residuals	119	6.4154	0.05391			

---

### Model 1.10n: Vliv spojení na poměr podzemní a nadzemní biomasy méně hnojených ramet z nízké úrovně živin

```
Call: lm(formula = log10(RS) ~ scale(doba_kor) + scale(od.rohu) +
  scale(pocatek) + klon2 + orientace + scale(hnojivo) * spojeni, data =
  ll.min)
```

Residuals:

Min	1Q	Median	3Q	Max
-0.278001	-0.104602	-0.001103	0.092373	0.286547

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )	
(Intercept)	-0.795370	0.051296	-15.506	< 2e-16	***
scale(doba_kor)	-0.093154	0.024145	-3.858	0.000429	***
scale(od.rohu)	0.111010	0.025956	4.277	0.000123	***
scale(pocatek)	-0.091194	0.037006	-2.464	0.018364	*
klon2BC	0.057784	0.053491	1.080	0.286837	
orientaceB	-0.162394	0.069664	-2.331	0.025153	*
scale(hnojivo)	0.002223	0.030301	0.073	0.941897	
spojenine	0.126241	0.044916	2.811	0.007775	**
scale(hnojivo):spojenine	-0.136334	0.046236	-2.949	0.005434	**

---

Residual standard error: 0.1527 on 38 degrees of freedom

Multiple R-squared: 0.5926, Adjusted R-squared: 0.5068

F-statistic: 6.908 on 8 and 38 DF, p-value: 1.388e-05

### Analysis of Variance Table

Response: log10(RS)

	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
scale(doba_kor)	1	0.25986	0.259857	11.1384	0.001901	**
scale(od.rohu)	1	0.27282	0.272817	11.6940	0.001511	**
scale(pocatek)	1	0.07490	0.074903	3.2106	0.081129	.
klon2	1	0.04260	0.042599	1.8259	0.184599	
orientace	1	0.08586	0.085856	3.6801	0.062602	.
scale(hnojivo)	1	0.16484	0.164845	7.0659	0.011431	*
spojeni	1	0.18559	0.185592	7.9551	0.007580	**
scale(hnojivo):spojeni	1	0.20284	0.202842	8.6946	0.005434	**
Residuals	38	0.88653	0.023330			

---



### Model 1.10s: Vliv spojení na poměr podzemní a nadzemní biomasy méně hnojených ramet ze střední úrovně živin

```
Call: lm(formula = log10(RS) ~ scale(doba_kor) + scale(od.rohu) +
  scale(pocatek) + klon2 + orientace + scale(hnojivo) * spojeni, data =
  ml.min)
```

Residuals:

Min	1Q	Median	3Q	Max
-0.25488	-0.09835	-0.01028	0.05318	0.32265

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )	
(Intercept)	-0.901035	0.060975	-14.777	< 2e-16	***
scale(doba_kor)	0.081623	0.026005	3.139	0.00306	**
scale(od.rohu)	-0.016243	0.025026	-0.649	0.51977	
scale(pocatek)	-0.044497	0.039912	-1.115	0.27109	
klon2BC	0.056690	0.041814	1.356	0.18225	
orientaceB	0.007058	0.078179	0.090	0.92849	
scale(hnojivo)	-0.058893	0.028363	-2.076	0.04387	*
spojenine	-0.128972	0.046350	-2.783	0.00798	**
scale(hnojivo):spojenine	0.023305	0.041102	0.567	0.57367	

---

Residual standard error: 0.1422 on 43 degrees of freedom

Multiple R-squared: 0.4324, Adjusted R-squared: 0.3268

F-statistic: 4.095 on 8 and 43 DF, p-value: 0.001074

#### Analysis of Variance Table

Response: log10(RS)

	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
scale(doba_kor)	1	0.23062	0.230621	11.3995	0.001568	**
scale(od.rohu)	1	0.00427	0.004270	0.2111	0.648238	
scale(pocatek)	1	0.09989	0.099895	4.9377	0.031589	*
klon2	1	0.04116	0.041165	2.0347	0.160961	
orientace	1	0.03399	0.033995	1.6803	0.201794	
scale(hnojivo)	1	0.08011	0.080111	3.9598	0.052981	.
spojeni	1	0.16621	0.166214	8.2159	0.006404	**
scale(hnojivo):spojeni	1	0.00650	0.006504	0.3215	0.573669	
Residuals	43	0.86993	0.020231			

## Pokus č.2

### Význam jmen proměnných v modelech

**biomasa** – biomasa ramet v gramech

**biomasa.baz** – biomasa bazální ramety z dvojice v gramech

**biomasa.dv** – součet biomas ramet ve dvojici v gramech

**hnoj.ap** – množství hnojiva apikální ramety z dvojice v gramech

**hnojivo** – množství hnojiva v gramech

**orientace** – umístění ramety na původním šlahounu, apikální nebo bazální

**poc.baz** – počáteční velikost bazální ramety z dvojice (jako celková délka šlahounů)

**poc.dv** – součet počátečních velikostí dvojice ramet

**pocatek** – počáteční velikost ramet měřená jako celková délka všech šlahounů

**RS.baz** – poměr podzemní a nadzemní biomasy bazální ramety ze dvojice

**rutysuty** – poměr podzemní a nadzemní biomasy ramet

**spojeni** – údaj o spojení mezi rametami, faktor se dvěma hladinami: „ano“ (spojené ramety) a „ne“ (nespojené ramety)

**treatment4** – údaj o treatmentu, faktor se 3 hladinami: „0-3“, „0 a“ a „0-0“, u faktoru jsou upravené kontrasty (viz modely 2.4 a 2.5)

## Model 2.1: Vliv hnojiva na biomasu nespojených ramet

Call: `lm(formula = log10(biomasa) ~ pocatek + orientace + as.factor(hnojivo), data = nespoj)`

Residuals:

Min	1Q	Median	3Q	Max
-0.51871	-0.15421	0.00161	0.20720	0.46135

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )	
(Intercept)	-1.215135	0.115514	-10.519	1.58e-12	***
pocatek	0.002909	0.001333	2.182	0.0357	*
orientaceb	-0.195162	0.114448	-1.705	0.0968	.
as.factor(hnojivo)1.5	0.251904	0.114599	2.198	0.0345	*
as.factor(hnojivo)3	-0.040488	0.164519	-0.246	0.8070	

---

Residual standard error: 0.2592 on 36 degrees of freedom

Multiple R-squared: 0.366, Adjusted R-squared: 0.2955

F-statistic: 5.195 on 4 and 36 DF, p-value: 0.002081

### Analysis of Variance Table

Response: `log10(biomasa)`

	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
pocatek	1	0.37135	0.37135	5.5261	0.024331	*
orientace	1	0.29546	0.29546	4.3967	0.043096	*
as.factor(hnojivo)	2	0.72947	0.36473	5.4276	0.008706	**
Residuals	36	2.41918	0.06720			

---

### Tukey multiple comparisons of means

95% family-wise confidence level

Fit: `aov(formula = log10(biomasa) ~ pocatek + orientace + as.factor(hnojivo), data = nespoj)`

`$`as.factor(hnojivo)``

	diff	lwr	upr	p adj
1.5-0	0.23407143	0.004776839	0.46336603	0.0445762
3-0	-0.06699472	-0.356206841	0.22221741	0.8388131
3-1.5	-0.30106615	-0.564324085	-0.03780821	0.0219789

## Model 2.2: Vliv hnojiva na poměr podzemní a nadzemní biomasy nespojených ramet

Call: `lm(formula = log10(rutysuty) ~ pocatek + orientace + as.factor(hnojivo), data = nespoj)`

Residuals:

Min	1Q	Median	3Q	Max
-0.34016	-0.04632	0.00906	0.02963	0.26307

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )	
(Intercept)	-0.3997904	0.0454353	-8.799	1.69e-10	***
pocatek	-0.0002195	0.0005244	-0.419	0.678	
orientaceb	0.0207439	0.0450160	0.461	0.648	
as.factor(hnojivo)1.5	-0.3771029	0.0450755	-8.366	5.81e-10	***
as.factor(hnojivo)3	-0.4244959	0.0647106	-6.560	1.25e-07	***

---

Residual standard error: 0.102 on 36 degrees of freedom  
Multiple R-squared: 0.7654, Adjusted R-squared: 0.7394  
F-statistic: 29.37 on 4 and 36 DF, p-value: 6.823e-11

### Analysis of Variance Table

Response: `log10(rutysuty)`

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
pocatek	1	0.02392	0.02392	2.3012	0.138
orientace	1	0.45821	0.45821	44.0739	9.820e-08 ***
as.factor(hnojivo)	2	0.73928	0.36964	35.5542	2.997e-09 ***
Residuals	36	0.37427	0.01040		

---

### Tukey multiple comparisons of means

95% family-wise confidence level

Fit: `aov(formula = log10(rutysuty) ~ pocatek + orientace + as.factor(hnojivo), data = nespoj)`

`$`as.factor(hnojivo)``

	diff	lwr	upr	p adj
1.5-0	-0.24162125	-0.3318102	-0.15143228	0.0000004
3-0	-0.19035371	-0.3041102	-0.07659725	0.0006632
3-1.5	0.05126754	-0.0522803	0.15481538	0.4549789

### Model 2.3: Vliv spojení na biomasu dvojic

Call: `lm(formula = log10(biomasa.dv) ~ poc.dv + as.factor(hnoj.ap) * spojeni, data = dv.zaklad)`

Residuals:

Min	1Q	Median	3Q	Max
-0.50831	-0.06489	-0.01054	0.10181	0.35138

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )	
(Intercept)	-0.9027738	0.1225361	-7.367	1.09e-08	***
poc.dv	0.0020978	0.0007769	2.700	0.0105	*
as.factor(hnoj.ap)1.5	0.1641645	0.0739504	2.220	0.0328	*
spojenine	-0.1679775	0.0827623	-2.030	0.0498	*
as.factor(hnoj.ap)1.5:spojenine	0.0979941	0.1154248	0.849	0.4015	

---

Residual standard error: 0.181 on 36 degrees of freedom

Multiple R-squared: 0.4178, Adjusted R-squared: 0.3531

F-statistic: 6.457 on 4 and 36 DF, p-value: 0.0005039

### Analysis of Variance Table

Response: `log10(biomasa.dv)`

	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
poc.dv	1	0.27101	0.27101	8.2729	0.006722	**
as.factor(hnoj.ap)	1	0.41460	0.41460	12.6560	0.001072	**
spojeni	1	0.13692	0.13692	4.1798	0.048275	*
as.factor(hnoj.ap):spojeni	1	0.02361	0.02361	0.7208	0.401499	
Residuals	36	1.17932	0.03276			

---

## Model 2.4: Vliv spojení na biomasu nehnojených ramet

Call: `lm(formula = log10(biomasa) ~ pocatek + treatment4, data = nuly.a)`

Residuals:

	Min	1Q	Median	3Q	Max
	-0.27436	-0.09963	-0.01501	0.09576	0.22897

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	-1.334867	0.074961	-17.808	< 2e-16 ***
pocatek	0.004765	0.001048	4.547	7.37e-05 ***
treatment4 <sup>1</sup> 1	-0.002726	0.034203	-0.080	0.9370
treatment4 2	-0.069514	0.034404	-2.021	0.0518 .

---

Residual standard error: 0.1449 on 32 degrees of freedom

Multiple R-squared: 0.4325, Adjusted R-squared: 0.3793

F-statistic: 8.129 on 3 and 32 DF, p-value: 0.0003648

### Analysis of Variance Table

Response: `log10(biomasa)`

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
pocatek	1	0.39274	0.39274	18.7035	0.0001395 ***
treatment4	2	0.11933	0.05966	2.8413	0.0731356 .
Residuals	32	0.67194	0.02100		

## Model 2.5: Vliv spojení na poměr podzemní a nadzemní biomasy nehnojených ramet

Call: `lm(formula = log10(rutysuty) ~ pocatek + treatment4, data = nuly.a[-36,])`

Residuals:

	Min	1Q	Median	3Q	Max
	-0.28612	-0.05684	0.01631	0.06380	0.18901

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	-0.5173210	0.0552956	-9.356	1.53e-10 ***
pocatek	0.0017952	0.0007645	2.348	0.02543 *
treatment4 1	-0.0154412	0.0245093	-0.630	0.53330
treatment4 2	-0.0740207	0.0253573	-2.919	0.00648 **

---

Residual standard error: 0.1029 on 31 degrees of freedom

Multiple R-squared: 0.3691, Adjusted R-squared: 0.3081

F-statistic: 6.046 on 3 and 31 DF, p-value: 0.002299

### Analysis of Variance Table

Response: `log10(rutysuty)`

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
pocatek	1	0.03596	0.03596	3.3998	0.074781 .
treatment4	2	0.15592	0.077959	7.3696	0.002408 **
Residuals	31	0.32793	0.010578		

---

<sup>1</sup> **treatment4** – kontrasty faktorů treatment jsou upravené tak, aby model nejprve porovnával treatment „0-3“ a s treatmentem „0 a“ (řádek „treatment4 1“ v shrnutí modelu výše) a potom treatment „0-3“ s treatmentem „0-0“ (řádek „treatment4 2“ v shrnutí modelu).

### Model 2.6b: Vliv spojení na biomasu hnojených ramet

Call: `lm(formula = sqrt(biomasa.baz) ~ poc.baz + spojeni, data = hetero)`

Residuals:

Min	1Q	Median	3Q	Max
-0.14207	-0.07647	-0.01857	0.06126	0.25302

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	0.161197	0.090896	1.773	0.0941 .
poc.baz	0.002591	0.001110	2.334	0.0321 *
spojenine	-0.084890	0.048770	-1.741	0.0998 .

---

Residual standard error: 0.1055 on 17 degrees of freedom

Multiple R-squared: 0.3713, Adjusted R-squared: 0.2973

F-statistic: 5.019 on 2 and 17 DF, p-value: 0.01936

#### Analysis of Variance Table

Response: `sqrt(biomasa.baz)`

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
poc.baz	1	0.077970	0.077970	7.0092	0.01693 *
spojeni	1	0.033702	0.033702	3.0297	0.09982 .
Residuals	17	0.189106	0.011124		

### Model 2.6p: Vliv spojení na poměr podzemní a nadzemní biomasy hnojených ramet

Call: `lm(formula = log10(RS.baz) ~ poc.baz + spojeni, data = hetero)`

Residuals:

Min	1Q	Median	3Q	Max
-0.95734	-0.09663	0.08014	0.19037	0.32769

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	-1.0431851	0.2792759	-3.735	0.00165 **
poc.baz	0.0001205	0.0034101	0.035	0.97223
spojenine	0.2157995	0.1498466	1.440	0.16799

---

Residual standard error: 0.3241 on 17 degrees of freedom

Multiple R-squared: 0.1106, Adjusted R-squared: 0.005922

F-statistic: 1.057 on 2 and 17 DF, p-value: 0.3694

#### Analysis of Variance Table

Response: `log10(RS.baz)`

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
poc.baz	1	0.00412	0.004117	0.0392	0.8454
spojeni	1	0.21779	0.217793	2.0740	0.1680
Residuals	17	1.78520	0.105012		

## Pokus č.3

### Význam jmen proměnných v modelech

**biomasa** – biomasa ramet v gramech

**hnojivo** – množství hnojiva v gramech

**hnojivo\_druha** – množství hnojiva druhé ramety z dvojice v gramech

**kontrast** – velikost kontrastu v množství hnojiva mezi mateřskou a dceřinou rametou, uspořádaný faktor se 3 hladinami: „0“, „1.5“ a „3“

**level** – úroveň živin dceřiné ramety, faktor se dvěma hladinami: „0“ a „1.5“

**matky\_pocatek** – počáteční velikost mateřských ramet jako celková délka šlahounů

**RS** – poměr podzemní a nadzemní biomasy ramet

**spojeni** – údaj o spojení mezi rametami, faktor se dvěma hladinami: „ano“ (spojené ramety) a „ne“ (nespojené ramety)

**zahaj\_celkem** – celková délka šlahounů mateřské ramety v okamžiku přerušení spojení mezi mateřskými a dceřinými rametami u nespojených ramet

**zahaj\_max** – délka šlahounu, ze kterého vznikla dceřiná rameta v den zakořeňování dceřiných ramet



### Model 3.1: Vliv hnojiva na biomasu nespojených mateřských ramet

Call: `lm(formula = log10(biomasa) ~ matky_pocatek + I(hnojivo + 1) + I(log10(hnojivo + 1)), data = matky.n)`

Residuals:  
Min 1Q Median 3Q Max  
-1.31029 -0.10062 0.03567 0.13084 0.39018

Coefficients:  
Estimate Std. Error t value Pr(>|t|)  
(Intercept) 0.1301772 0.0764811 1.702 0.0911 .  
matky\_pocatek 0.0011199 0.0007428 1.508 0.1340  
I(hnojivo + 1) -0.3064605 0.0421674 -7.268 2.72e-11 \*\*\*  
I(log10(hnojivo + 1)) 2.9561273 0.2634267 11.222 < 2e-16 \*\*\*  
---

Residual standard error: 0.2133 on 134 degrees of freedom  
Multiple R-squared: 0.7073, Adjusted R-squared: 0.7008  
F-statistic: 108 on 3 and 134 DF, p-value: < 2.2e-16

#### Analysis of Variance Table

Response: log10(biomasa)

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
matky_pocatek	1	0.4277	0.4277	9.4027	0.002621 **
I(hnojivo + 1)	1	8.5757	8.5757	188.5191	< 2.2e-16 ***
I(log10(hnojivo + 1))	1	5.7285	5.7285	125.9292	< 2.2e-16 ***
Residuals	134	6.0957	0.0455		

---

### Model 3.2: Vliv hnojiva na poměr podzemní a nadzemní biomasy u nespojených mateřských ramet

Call: `lm(formula = log10(RS) ~ matky_pocatek + I(hnojivo + 1) + I(log10(hnojivo + 1)), data = matky.n)`

Residuals:  
Min 1Q Median 3Q Max  
-0.216370 -0.062756 0.001343 0.059413 0.274286

Coefficients:  
Estimate Std. Error t value Pr(>|t|)  
(Intercept) -0.4014545 0.0344696 -11.647 < 2e-16 \*\*\*  
matky\_pocatek -0.0001253 0.0003348 -0.374 0.708755  
I(hnojivo + 1) 0.0698049 0.0190046 3.673 0.000345 \*\*\*  
I(log10(hnojivo + 1)) -0.9574622 0.1187249 -8.065 3.64e-13 \*\*\*  
---

Residual standard error: 0.09613 on 134 degrees of freedom  
Multiple R-squared: 0.7038, Adjusted R-squared: 0.6972  
F-statistic: 106.1 on 3 and 134 DF, p-value: < 2.2e-16

#### Analysis of Variance Table

Response: log10(RS)

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
matky_pocatek	1	0.02591	0.02591	2.8036	0.09639 .
I(hnojivo + 1)	1	2.31566	2.31566	250.6076	< 2.2e-16 ***
I(log10(hnojivo + 1))	1	0.60095	0.60095	65.0369	3.644e-13 ***
Residuals	134	1.23818	0.00924		

### Model 3.3: Vliv hnojiva na biomasu dceřiných ramet

Call: `lm(formula = log10(biomasa) ~ zahaj_max + hnojivo_druha + hnojivo * spojeni, data = hnoj)`

Residuals:

	Min	1Q	Median	3Q	Max
	-1.08245	-0.05926	0.02167	0.12679	0.34631

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )	
(Intercept)	-0.585797	0.101212	-5.788	7.47e-08	***
zahaj_max	0.002099	0.000312	6.728	9.31e-10	***
hnojivo_druha	-0.010280	0.025594	-0.402	0.6887	
hnojivo	0.248853	0.036209	6.873	4.64e-10	***
spojenine	-0.106277	0.053804	-1.975	0.0509	.
hnojivo:spojenine	-0.108617	0.051058	-2.127	0.0357	*

---  
Residual standard error: 0.201 on 105 degrees of freedom  
Multiple R-squared: 0.5516, Adjusted R-squared: 0.5302  
F-statistic: 25.83 on 5 and 105 DF, p-value: < 2.2e-16

### Analysis of Variance Table

Response: `log10(biomasa)`

	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
zahaj_max	1	1.7376	1.73765	43.0308	2.080e-09	***
hnojivo_druha	1	0.0024	0.00245	0.0606	0.80598	
hnojivo	1	2.3225	2.32254	57.5150	1.410e-11	***
spojeni	1	0.9700	0.96999	24.0208	3.483e-06	***
hnojivo:spojeni	1	0.1827	0.18274	4.5255	0.03574	*
Residuals	105	4.2401	0.04038			

### Model 3.4: Vliv hnojiva na poměr podzemní a nadzemní biomasy u dceřiných ramet

Call: `lm(formula = log10(RS) ~ zahaj_max + hnojivo_druha + hnojivo * spojeni, data = hnoj)`

Residuals:

Min	1Q	Median	3Q	Max
-0.58131	-0.06198	0.00315	0.07777	0.31578

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )	
(Intercept)	-0.3619834	0.0615451	-5.882	4.88e-08	***
zahaj_max	-0.0008185	0.0001898	-4.314	3.64e-05	***
hnojivo_druha	-0.0050820	0.0155634	-0.327	0.7447	
hnojivo	-0.1752431	0.0220183	-7.959	2.15e-12	***
spojenine	-0.0106242	0.0327175	-0.325	0.7460	
hnojivo:spojenine	-0.0569342	0.0310477	-1.834	0.0695	.

Residual standard error: 0.1222 on 105 degrees of freedom

Multiple R-squared: 0.6598, Adjusted R-squared: 0.6436

F-statistic: 40.73 on 5 and 105 DF, p-value: < 2.2e-16

#### Analysis of Variance Table

Response: log10(RS)

	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
zahaj_max	1	0.30485	0.30485	20.4166	1.639e-05	***
hnojivo_druha	1	0.00233	0.00233	0.1562	0.69346	
hnojivo	1	2.60572	2.60572	174.5102	< 2.2e-16	***
spojeni	1	0.07772	0.07772	5.2052	0.02454	*
hnojivo:spojeni	1	0.05021	0.05021	3.3627	0.06952	.
Residuals	105	1.56782	0.01493			

### Model 3.5d: Vliv spojení na biomasu dceřiných ramet – obě úrovně živin

Call: `lm(formula = log10(biomasa) ~ scale(zahaj_max) + kontrast + level + spojeni + scale(zahaj_max):kontrast + kontrast * level * spojeni, data = zaklad.d)`

Residuals:

Min	1Q	Median	3Q	Max
-1.09707	-0.07703	0.03225	0.13886	0.50360

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )	
(Intercept)	-0.20446	0.03982	-5.135	8.53e-07	***
scale(zahaj_max)	0.16680	0.02385	6.995	7.88e-11	***
kontrast.L	0.19800	0.07244	2.733	0.00701	**
kontrast.Q	-0.13264	0.06531	-2.031	0.04400	*
level1.5	0.46471	0.05321	8.734	4.17e-15	***
spojenine	-0.19736	0.04998	-3.949	0.00012	***
scale(zahaj_max):kontrast.L	-0.03339	0.04290	-0.778	0.43758	
scale(zahaj_max):kontrast.Q	0.02561	0.03964	0.646	0.51919	
kontrast.L:level1.5	-0.23795	0.09531	-2.497	0.01361	*
kontrast.Q:level1.5	0.16472	0.08890	1.853	0.06584	.
kontrast.L:spojenine	0.20359	0.08668	2.349	0.02012	*
kontrast.Q:spojenine	-0.08998	0.08645	-1.041	0.29961	
level1.5:spojenine	-0.01842	0.07131	-0.258	0.79653	
kontrast.L:level1.5:spojenine	-0.04535	0.12430	-0.365	0.71573	
kontrast.Q:level1.5:spojenine	0.10726	0.12271	0.874	0.38345	

---  
Residual standard error: 0.2262 on 152 degrees of freedom  
Multiple R-squared: 0.7865, Adjusted R-squared: 0.7668  
F-statistic: 39.99 on 14 and 152 DF, p-value: < 2.2e-16

### Analysis of Variance Table

Response: log10(biomasa)

	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
scale(zahaj_max)	1	16.8249	16.8249	328.6980	< 2.2e-16	***
kontrast	2	0.5419	0.2710	5.2937	0.0059910	**
level	1	7.2089	7.2089	140.8357	< 2.2e-16	***
spojeni	1	1.6147	1.6147	31.5451	9.030e-08	***
scale(zahaj_max):kontrast	2	1.1507	0.5754	11.2405	2.801e-05	***
kontrast:level	2	0.7987	0.3993	7.8014	0.0005953	***
kontrast:spojeni	2	0.4653	0.2326	4.5447	0.0121066	*
level:spojeni	1	0.0041	0.0041	0.0794	0.7784756	
kontrast:level:spojeni	2	0.0454	0.0227	0.4439	0.6423847	
Residuals	152	7.7803	0.0512			

### Model 3.5n: Vliv spojení na biomasu dceřiných ramet – nízká úroveň živin

Call: `lm(formula = log10(biomasa) ~ scale(zahaj_max) * kontrast + kontrast * spojeni, data = dcery.low)`

Residuals:  
Min 1Q Median 3Q Max  
-0.57345 -0.09949 0.00664 0.13093 0.49697

Coefficients:  
Estimate Std. Error t value Pr(>|t|)  
(Intercept) -0.19146 0.04020 -4.763 9.11e-06 \*\*\*  
scale(zahaj\_max) 0.32500 0.03719 8.739 4.67e-13 \*\*\*  
kontrast.L 0.02032 0.07295 0.279 0.781392  
kontrast.Q -0.02405 0.06615 -0.364 0.717191  
spojenine -0.15216 0.04627 -3.288 0.001536 \*\*  
scale(zahaj\_max):kontrast.L -0.23538 0.06816 -3.453 0.000914 \*\*\*  
scale(zahaj\_max):kontrast.Q 0.12915 0.06044 2.137 0.035868 \*  
kontrast.L:spojenine 0.11895 0.08065 1.475 0.144443  
kontrast.Q:spojenine -0.05655 0.07964 -0.710 0.479820  
---

Residual standard error: 0.2049 on 75 degrees of freedom  
Multiple R-squared: 0.8242, Adjusted R-squared: 0.8055  
F-statistic: 43.97 on 8 and 75 DF, p-value: < 2.2e-16

#### Analysis of Variance Table

Response: log10(biomasa)

	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
scale(zahaj_max)	1	12.0034	12.0034	286.0427	< 2.2e-16	***
kontrast	2	1.2038	0.6019	14.3438	5.309e-06	***
spojeni	1	0.6898	0.6898	16.4388	0.0001217	***
scale(zahaj_max):kontrast	2	0.7538	0.3769	8.9821	0.0003184	***
kontrast:spojeni	2	0.1086	0.0543	1.2945	0.2800920	
Residuals	75	3.1473	0.0420			

### Model 3.5v: Vliv spojení na biomasu dceřiných ramet – vysoká úroveň živin

Call: `lm(formula = log10(biomasa) ~ scale(zahaj_max) * kontrast + kontrast * spojeni, data = dcery.high)`

Residuals:  
Min 1Q Median 3Q Max  
-1.10545 -0.08240 0.02487 0.12703 0.32153

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )	
(Intercept)	0.307179	0.035798	8.581	1.03e-12	***
scale(zahaj_max)	0.062477	0.025658	2.435	0.0173	*
kontrast.L	0.010640	0.063754	0.167	0.8679	
kontrast.Q	0.038149	0.060202	0.634	0.5282	
spojenine	-0.220896	0.049376	-4.474	2.73e-05	***
scale(zahaj_max):kontrast.L	0.008622	0.046634	0.185	0.8538	
scale(zahaj_max):kontrast.Q	-0.024867	0.042132	-0.590	0.5568	
kontrast.L:spojenine	0.101905	0.086942	1.172	0.2449	
kontrast.Q:spojenine	0.006092	0.084079	0.072	0.9424	

---  
Residual standard error: 0.2183 on 74 degrees of freedom  
Multiple R-squared: 0.3212, Adjusted R-squared: 0.2478  
F-statistic: 4.376 on 8 and 74 DF, p-value: 0.0002315

#### Analysis of Variance Table

Response: `log10(biomasa)`

	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
scale(zahaj_max)	1	0.4273	0.42727	8.9699	0.003731	**
kontrast	2	0.1439	0.07197	1.5108	0.227456	
spojeni	1	1.0009	1.00092	21.0127	1.815e-05	***
scale(zahaj_max):kontrast	2	0.0300	0.01498	0.3144	0.731195	
kontrast:spojeni	2	0.0655	0.03276	0.6878	0.505880	
Residuals	74	3.5249	0.04763			

### Model 3.6d: Vliv spojení na poměr podzemní a nadzemní biomasy dceřiných ražet – obě úrovně živin

Call: `lm(formula = log10(RS) ~ scale(zahaj_max) + hnojivo * kontrast * spojeni, data = zaklad.d)`

Residuals:

Min	1Q	Median	3Q	Max
-0.81338	-0.05489	0.00720	0.07592	0.28448

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )	
(Intercept)	-0.543657	0.022895	-23.745	< 2e-16	***
scale(zahaj_max)	-0.054508	0.014547	-3.747	0.000252	***
hnojivo	-0.178661	0.022168	-8.060	1.98e-13	***
kontrast.L	-0.082481	0.041819	-1.972	0.050361	.
kontrast.Q	-0.013718	0.040264	-0.341	0.733789	.
spojenine	-0.055029	0.032340	-1.702	0.090855	.
hnojivo:kontrast.L	0.097581	0.037698	2.588	0.010564	*
hnojivo:kontrast.Q	0.006233	0.037812	0.165	0.869281	.
hnojivo:spojenine	-0.035989	0.030452	-1.182	0.239099	.
kontrast.L:spojenine	0.125227	0.055885	2.241	0.026470	*
kontrast.Q:spojenine	-0.003559	0.055742	-0.064	0.949179	.
hnojivo:kontrast.L:spojenine	-0.118195	0.053456	-2.211	0.028505	*
hnojivo:kontrast.Q:spojenine	0.018499	0.052722	0.351	0.726158	.

---  
 Residual standard error: 0.1474 on 154 degrees of freedom  
 Multiple R-squared: 0.6144, Adjusted R-squared: 0.5844  
 F-statistic: 20.45 on 12 and 154 DF, p-value: < 2.2e-16

#### Analysis of Variance Table

Response: log10(RS)

	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
scale(zahaj_max)	1	1.4419	1.4419	66.3457	1.208e-13	***
hnojivo	1	3.3909	3.3909	156.0241	< 2.2e-16	***
kontrast	2	0.0025	0.0012	0.0570	0.9446142	.
spojeni	1	0.2818	0.2818	12.9669	0.0004271	***
hnojivo:kontrast	2	0.0546	0.0273	1.2562	0.2876371	.
hnojivo:spojeni	1	0.0316	0.0316	1.4531	0.2298846	.
kontrast:spojeni	2	0.0216	0.0108	0.4970	0.6093134	.
hnojivo:kontrast:spojeni	2	0.1091	0.0545	2.5095	0.0846308	.
Residuals	154	3.3469	0.0217			

### Model 3.6n: Vliv spojení na poměr podzemní a nadzemní biomasy dceřiných ramet – nízká úroveň živin

Call: `lm(formula = log10(RS) ~ scale(zahaj_max) + kontrast * spojeni, data = dcery.low)`

Residuals:

Min	1Q	Median	3Q	Max
-0.81393	-0.06120	0.00067	0.08973	0.27459

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )	
(Intercept)	-0.52587	0.02656	-19.798	< 2e-16	***
scale(zahaj_max)	-0.07665	0.02537	-3.021	0.00342	**
kontrast.L	-0.06675	0.05104	-1.308	0.19487	
kontrast.Q	-0.02303	0.04768	-0.483	0.63053	
spojenine	-0.05875	0.03775	-1.556	0.12377	
kontrast.L:spojenine	0.13004	0.06510	1.998	0.04930	*
kontrast.Q:spojenine	-0.00183	0.06478	-0.028	0.97754	

---  
Residual standard error: 0.1713 on 77 degrees of freedom  
Multiple R-squared: 0.2031, Adjusted R-squared: 0.141  
F-statistic: 3.27 on 6 and 77 DF, p-value: 0.006437

#### Analysis of Variance Table

Response: log10(RS)

	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
scale(zahaj_max)	1	0.37575	0.37575	12.8106	0.0006005	***
kontrast	2	0.01430	0.00715	0.2438	0.7842272	
spojeni	1	0.06835	0.06835	2.3303	0.1309750	
kontrast:spojeni	2	0.11708	0.05854	1.9958	0.1428744	
Residuals	77	2.25851	0.02933			



### Model 3.6v: Vliv spojení na poměr podzemní a nadzemní biomasy dceřiných ramet – vysoká úroveň živin

Call: `lm(formula = log10(RS) ~ scale(zahaj_max) + kontrast * spojeni, data = dcery.high)`

Residuals:

Min	1Q	Median	3Q	Max
-0.57340	-0.06774	0.00823	0.06551	0.26160

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	-0.828600	0.018462	-44.882	< 2e-16 ***
scale(zahaj_max)	-0.030014	0.013684	-2.193	0.0313 *
kontrast.L	0.053869	0.033531	1.607	0.1123
kontrast.Q	-0.005959	0.031783	-0.187	0.8518
spojenine	-0.107221	0.025977	-4.127	9.31e-05 ***
kontrast.L:spojenine	-0.041907	0.046065	-0.910	0.3658
kontrast.Q:spojenine	0.028347	0.044930	0.631	0.5300

---  
Residual standard error: 0.118 on 76 degrees of freedom  
Multiple R-squared: 0.2324, Adjusted R-squared: 0.1718  
F-statistic: 3.835 on 6 and 76 DF, p-value: 0.002152

#### Analysis of Variance Table

Response: log10(RS)

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
scale(zahaj_max)	1	0.03594	0.035936	2.5794	0.1124
kontrast	2	0.02882	0.014411	1.0344	0.3604
spojeni	1	0.23861	0.238608	17.1269	8.951e-05 ***
kontrast:spojeni	2	0.01720	0.008601	0.6174	0.5421
Residuals	76	1.05881	0.013932		

### Model 3.7: Vliv spojení na biomasu mateřských ramet

```
Call: lm(formula = log10(biomasa) ~ zahaj_celkem + I(hnojivo + 1) +  
I(log10(hnojivo + 1)) + I(hnojivo + 1) * level * spojeni,  
data = matky)
```

Residuals:

Min	1Q	Median	3Q	Max
-1.14195	-0.07871	0.00554	0.10605	0.33636

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )	
(Intercept)	6.652e-02	7.368e-02	0.903	0.3678	
zahaj_celkem	4.125e-04	4.243e-05	9.722	< 2e-16	***
I(hnojivo + 1)	-2.981e-01	4.798e-02	-6.214	3.31e-09	***
I(log10(hnojivo + 1))	2.274e+00	2.221e-01	10.237	< 2e-16	***
level1.5	-5.033e-02	8.075e-02	-0.623	0.5338	
spojenine	-1.424e-02	8.596e-02	-0.166	0.8686	
I(hnojivo + 1):level1.5	4.629e-02	2.710e-02	1.708	0.0893	.
I(hnojivo + 1):spojenine	2.425e-02	3.086e-02	0.786	0.4330	
level1.5:spojenine	-1.327e-02	1.120e-01	-0.118	0.9058	
I(hnojivo + 1):level1.5:spojenine	-1.591e-02	3.665e-02	-0.434	0.6648	

Residual standard error: 0.1728 on 186 degrees of freedom  
Multiple R-squared: 0.8346, Adjusted R-squared: 0.8266  
F-statistic: 104.3 on 9 and 186 DF, p-value: < 2.2e-16

#### Analysis of Variance Table

Response: log10(biomasa)

	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
zahaj_celkem	1	21.2022	21.2022	710.0493	< 2e-16	***
I(hnojivo + 1)	1	3.4593	3.4593	115.8495	< 2e-16	***
I(log10(hnojivo + 1))	1	3.1027	3.1027	103.9073	< 2e-16	***
level	1	0.0776	0.0776	2.5978	0.10871	
spojeni	1	0.0189	0.0189	0.6319	0.42768	
I(hnojivo + 1):level	1	0.1098	0.1098	3.6786	0.05665	.
I(hnojivo + 1):spojeni	1	0.0086	0.0086	0.2880	0.59215	
level:spojeni	1	0.0360	0.0360	1.2064	0.27346	
I(hnojivo + 1):level:spojeni	1	0.0056	0.0056	0.1884	0.66477	
Residuals	186	5.5540	0.0299			

### Model 3.8: Vliv spojení na poměr podzemní a nadzemní biomasy mateřských ramet

Call: `lm(formula = log10(RS) ~ zahaj_celkem + I(hnojivo + 1) + I(log10(hnojivo + 1)) + I(hnojivo + 1) * level * spojeni, data = matky)`

Residuals:

Min	1Q	Median	3Q	Max
-0.22500	-0.07695	0.00810	0.05497	0.36169

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )	
(Intercept)	-3.491e-01	4.551e-02	-7.671	9.26e-13	***
zahaj_celkem	-7.466e-05	2.621e-05	-2.849	0.00488	**
I(hnojivo + 1)	4.474e-02	2.963e-02	1.510	0.13278	
I(log10(hnojivo + 1))	-7.690e-01	1.372e-01	-5.606	7.38e-08	***
level1.5	-6.356e-02	4.988e-02	-1.274	0.20411	
spojenine	-1.193e-02	5.309e-02	-0.225	0.82246	
I(hnojivo + 1):level1.5	1.775e-02	1.674e-02	1.060	0.29047	
I(hnojivo + 1):spojenine	-3.053e-04	1.906e-02	-0.016	0.98724	
level1.5:spojenine	4.683e-02	6.916e-02	0.677	0.49918	
I(hnojivo + 1):level1.5:spojenine	-1.212e-02	2.264e-02	-0.535	0.59315	

Residual standard error: 0.1067 on 186 degrees of freedom  
 Multiple R-squared: 0.6902, Adjusted R-squared: 0.6752  
 F-statistic: 46.05 on 9 and 186 DF, p-value: < 2.2e-16

#### Analysis of Variance Table

Response: log10(RS)

	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
zahaj_celkem	1	2.79527	2.79527	245.3877	< 2.2e-16	***
I(hnojivo + 1)	1	1.41004	1.41004	123.7832	< 2.2e-16	***
I(log10(hnojivo + 1))	1	0.48523	0.48523	42.5972	6.209e-10	***
level	1	0.00409	0.00409	0.3590	0.5498	
spojeni	1	0.00352	0.00352	0.3087	0.5792	
I(hnojivo + 1):level	1	0.01023	0.01023	0.8982	0.3445	
I(hnojivo + 1):spojeni	1	0.00721	0.00721	0.6331	0.4272	
level:spojeni	1	0.00220	0.00220	0.1930	0.6610	
I(hnojivo + 1):level:spojeni	1	0.00326	0.00326	0.2864	0.5932	
Residuals	186	2.11877	0.01139			

### Model 3.9: Zpětný treatment – vliv spojení na biomasu dceřiných ramet

Call: `lm(formula = sqrt(biomasa) ~ zahaj_max + hnojivo * spojeni, data = revers.d)`

Residuals:

	Min	1Q	Median	3Q	Max
	-0.40390	-0.12687	0.00593	0.08221	0.42537

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )	
(Intercept)	0.1305205	0.0988127	1.321	0.192801	
zahaj_max	0.0024393	0.0005357	4.554	3.62e-05	***
hnojivo	0.1713007	0.0458585	3.735	0.000498	***
spojenine	-0.1374915	0.0704098	-1.953	0.056696	.
hnojivo:spojenine	-0.1091513	0.0674293	-1.619	0.112054	

---  
Residual standard error: 0.182 on 48 degrees of freedom  
Multiple R-squared: 0.5893, Adjusted R-squared: 0.5551  
F-statistic: 17.22 on 4 and 48 DF, p-value: 8.01e-09

#### Analysis of Variance Table

Response: `sqrt(biomasa)`

	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
zahaj_max	1	1.14150	1.14150	34.4741	3.938e-07	***
hnojivo	1	0.46188	0.46188	13.9491	0.0004985	***
spojeni	1	0.59085	0.59085	17.8440	0.0001064	***
hnojivo:spojeni	1	0.08676	0.08676	2.6204	0.1120536	
Residuals	48	1.58937	0.03311			

### Model 3.10: Zpětný treatment – vliv spojení na poměr podzemní a nadzemní biomasy dceřiných ramet

Call: `lm(formula = log10(RS) ~ zahaj_max + hnojivo * spojeni, data = revers.d)`

Residuals:

	Min	1Q	Median	3Q	Max
	-0.81418	-0.05992	0.03384	0.12154	0.37702

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )	
(Intercept)	-0.2561859	0.1304589	-1.964	0.055368	.
zahaj_max	-0.0010911	0.0007073	-1.543	0.129451	
hnojivo	-0.2223786	0.0605454	-3.673	0.000603	***
spojenine	-0.1543165	0.0929596	-1.660	0.103427	
hnojivo:spojenine	0.0529950	0.0890245	0.595	0.554449	

---  
Residual standard error: 0.2402 on 48 degrees of freedom  
Multiple R-squared: 0.3497, Adjusted R-squared: 0.2955  
F-statistic: 6.453 on 4 and 48 DF, p-value: 0.0003073

#### Analysis of Variance Table

Response: `log10(RS)`

	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
zahaj_max	1	0.18516	0.18516	3.2080	0.07959	.
hnojivo	1	1.11286	1.11286	19.2813	6.184e-05	***
spojeni	1	0.17132	0.17132	2.9683	0.09135	.
hnojivo:spojeni	1	0.02045	0.02045	0.3544	0.55445	
Residuals	48	2.77043	0.05772			

### Model 3.11: Zpětný treatment – vliv spojení na biomasu mateřských ramet

Call: `lm(formula = log10(biomasa) ~ zahaj_celkem + hnojivo_druha * spojeni, data = revers.m)`

Residuals:  
Min 1Q Median 3Q Max  
-0.32995 -0.07888 -0.00417 0.06795 0.32956

Coefficients:  
Estimate Std. Error t value Pr(>|t|)  
(Intercept) -0.3792290 0.0631309 -6.007 2.00e-07 \*\*\*  
zahaj\_celkem 0.0007390 0.0001506 4.907 9.88e-06 \*\*\*  
hnojivo\_druha 0.0256209 0.0331848 0.772 0.444  
spojenine 0.0694054 0.0507765 1.367 0.178  
hnojivo\_druha:spojenine -0.0562909 0.0471649 -1.193 0.238  
---

Residual standard error: 0.1316 on 51 degrees of freedom  
Multiple R-squared: 0.3248, Adjusted R-squared: 0.2718  
F-statistic: 6.133 on 4 and 51 DF, p-value: 0.0004151

#### Analysis of Variance Table

Response: log10(biomasa)

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
zahaj_celkem	1	0.39035	0.39035	22.5559	1.699e-05 ***
hnojivo_druha	1	0.00016	0.00016	0.0092	0.9238
spojeni	1	0.00941	0.00941	0.5437	0.4643
hnojivo_druha:spojeni	1	0.02465	0.02465	1.4244	0.2382
Residuals	51	0.88260	0.01731		

---

### Model 3.12: Zpětný treatment – vliv spojení na poměr podzemní a nadzemní biomasy mateřských ramet

Call: `lm(formula = log10(RS) ~ zahaj_celkem + hnojivo_druha * spojeni, data = revers.m)`

Residuals:  
Min 1Q Median 3Q Max  
-0.22925 -0.08518 -0.00255 0.05861 0.35771

Coefficients:  
Estimate Std. Error t value Pr(>|t|)  
(Intercept) -3.081e-01 5.798e-02 -5.313 2.39e-06 \*\*\*  
zahaj\_celkem -4.027e-05 1.383e-04 -0.291 0.7721  
hnojivo\_druha -5.188e-02 3.048e-02 -1.702 0.0948 .  
spojenine -3.409e-03 4.664e-02 -0.073 0.9420  
hnojivo\_druha:spojenine 3.841e-02 4.332e-02 0.887 0.3794  
---

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.1208 on 51 degrees of freedom  
Multiple R-squared: 0.07056, Adjusted R-squared: -0.002334  
F-statistic: 0.968 on 4 and 51 DF, p-value: 0.4332

#### Analysis of Variance Table

Response: log10(RS)

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
zahaj_celkem	1	0.00241	0.002414	0.1654	0.6860
hnojivo_druha	1	0.03349	0.033492	2.2941	0.1360
spojeni	1	0.00914	0.009144	0.6264	0.4324
hnojivo_druha:spojeni	1	0.01148	0.011477	0.7861	0.3794
Residuals	51	0.74457	0.014599		

### Model 3.13: Poměr biomas dceřiných a mateřských ramet

Call: `lm(formula = log10(DM) ~ zahaj_max + zahaj_celkem + level * kontrast * spojeni, data = dcery)`

Residuals:  
Min 1Q Median 3Q Max  
-1.18859 -0.11702 0.01326 0.11952 0.78992

Coefficients: (2 not defined because of singularities)

	Estimate	Std. Error	t value	Pr(> t )	
(Intercept)	-0.6085476	0.1331093	-4.572	9.08e-06	***
zahaj_max	0.0016126	0.0005691	2.834	0.005138	**
zahaj_celkem	-0.0002578	0.0001116	-2.309	0.022088	*
level1.5	0.0823599	0.1305129	0.631	0.528828	
kontrast.L	-0.6095905	0.3301374	-1.846	0.066503	.
kontrast.Q	0.3554141	0.2445151	1.454	0.147853	
kontrast.C	-0.0228531	0.0732089	-0.312	0.755287	
spojenine	-0.5828437	0.1692686	-3.443	0.000718	***
level1.5:kontrast.L	0.3961605	0.3297097	1.202	0.231155	
level1.5:kontrast.Q	-0.2646844	0.2525275	-1.048	0.296011	
level1.5:kontrast.C	NA	NA	NA	NA	
level1.5:spojenine	0.2628998	0.1769623	1.486	0.139167	
kontrast.L:spojenine	0.9849475	0.4448599	2.214	0.028109	*
kontrast.Q:spojenine	-0.6268780	0.3384740	-1.852	0.065691	.
kontrast.C:spojenine	0.0618903	0.1028851	0.602	0.548249	
level1.5:kontrast.L:spojenine	-0.6013881	0.4561961	-1.318	0.189127	
level1.5:kontrast.Q:spojenine	0.4917588	0.3527080	1.394	0.165003	
level1.5:kontrast.C:spojenine	NA	NA	NA	NA	

---  
Residual standard error: 0.2685 on 176 degrees of freedom  
Multiple R-squared: 0.436, Adjusted R-squared: 0.3879  
F-statistic: 9.07 on 15 and 176 DF, p-value: 1.977e-15

#### Analysis of Variance Table

Response: log10(DM)

	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
zahaj_max	1	0.2407	0.2407	3.3401	0.0693051	.
zahaj_celkem	1	0.9746	0.9746	13.5223	0.0003129	***
level	1	2.9868	2.9868	41.4427	1.116e-09	***
kontrast	3	0.1110	0.0370	0.5133	0.6736466	
spojeni	1	3.8924	3.8924	54.0076	7.201e-12	***
level:kontrast	2	0.0239	0.0119	0.1657	0.8474451	
level:spojeni	1	0.0386	0.0386	0.5354	0.4653018	
kontrast:spojeni	3	1.3938	0.4646	6.4465	0.0003636	***
level:kontrast:spojeni	2	0.1438	0.0719	0.9979	0.3707297	
Residuals	176	12.6846	0.0721			

## Morfologie

### Význam jmen proměnných v modelech

**g\_cm** – hmotnost jednotkové délky šlahounu, tj. nadzemní biomasa dělená celkovou délkou šlahounu

**hnojivo** – množství hnojiva dané ramety v gramech

**hnojivo2** – údaj o hnojení dané ramety se dvěma možnými hodnotami: „0“ (nehnojená) a „1“ (hnojená)

**ks** – počet šlahounů dané ramety

**max** – délka nejdelšího šlahounu v centimetrech

**slah\_g** – biomasa nadzemní části ramety v gramech

**spojeni** – údaj o spojení mezi rametami, faktor se dvěma hladinami: ano (spojené ramety) a ne (nespojené ramety)

### Model 4.1: Nejdelší šlahoun u mateřských ramet

```
Call: lm(formula = log10(max) ~ log10(slah_g) * hnojivo2,
data = matky[-70,])
```

Residuals:

Min	1Q	Median	3Q	Max
-0.246648	-0.032824	0.004564	0.042545	0.168116

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	1.84361	0.01607	114.734	< 2e-16 ***
log10(slah_g)	0.48765	0.05033	9.690	< 2e-16 ***
hnojivo2	-0.05453	0.02132	-2.558	0.0112 *
log10(slah_g):hnojivo2	-0.26914	0.05481	-4.911	1.72e-06 ***

Residual standard error: 0.06083 on 231 degrees of freedom

Multiple R-squared: 0.7569, Adjusted R-squared: 0.7537

F-statistic: 239.8 on 3 and 231 DF, p-value: < 2.2e-16

### Analysis of Variance Table

Response: log10(max)

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
log10(slah_g)	1	2.56906	2.56906	694.3405	< 2.2e-16 ***
hnojivo2	1	0.00294	0.00294	0.7956	0.3733
log10(slah_g):hnojivo2	1	0.08922	0.08922	24.1140	1.718e-06 ***
Residuals	231	0.85470	0.00370		

#### Model 4.2: Počet šlahounů u mateřských ramet

Call: `lm(formula = log10(ks) ~ log10(slah_g) * hnojivo, data = matky)`

Residuals:

Min	1Q	Median	3Q	Max
-0.48376	-0.05646	0.01335	0.06245	0.16848

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	1.238581	0.010232	121.048	< 2e-16 ***
log10(slah_g)	0.456137	0.023258	19.612	< 2e-16 ***
hnojivo	0.038610	0.007438	5.191	4.57e-07 ***
log10(slah_g):hnojivo	-0.033935	0.010951	-3.099	0.00218 **

Residual standard error: 0.09525 on 232 degrees of freedom

Multiple R-squared: 0.8328, Adjusted R-squared: 0.8306

F-statistic: 385.2 on 3 and 232 DF, p-value: < 2.2e-16

#### Analysis of Variance Table

Response: log10(ks)

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
log10(slah_g)	1	10.2350	10.2350	1128.1046	< 2.2e-16 ***
hnojivo	1	0.1614	0.1614	17.7929	3.533e-05 ***
log10(slah_g):hnojivo	1	0.0871	0.0871	9.6028	0.002183 **
Residuals	232	2.1049	0.0091		

#### Model 4.4: Nejdelší šlahoun u dceřiných ramet

Call: `lm(formula = log10(max) ~ (log10(slah_g) + hnojivo + spojeni)^3, data = dcery[-107, ])`

Residuals:

Min	1Q	Median	3Q	Max
-0.68906	-0.05307	0.01450	0.06615	0.18903

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	1.88614	0.02131	88.512	< 2e-16 ***
log10(slah_g)	0.35282	0.03940	8.955	3.82e-16 ***
hnojivo	-0.04318	0.01715	-2.518	0.0127 *
spojenine	0.05140	0.03205	1.604	0.1105
log10(slah_g):hnojivo	-0.08095	0.03916	-2.067	0.0401 *
log10(slah_g):spojenine	0.11495	0.04976	2.310	0.0220 *
hnojivo:spojenine	-0.04076	0.02535	-1.608	0.1097
log10(slah_g):hnojivo:spojenine	0.01865	0.04790	0.389	0.6975

Residual standard error: 0.1014 on 183 degrees of freedom

Multiple R-squared: 0.7674, Adjusted R-squared: 0.7585

F-statistic: 86.25 on 7 and 183 DF, p-value: < 2.2e-16

#### Analysis of Variance Table

Response: log10(max)

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
log10(slah_g)	1	5.7568	5.7568	559.4228	< 2.2e-16 ***
hnojivo	1	0.2419	0.2419	23.5054	2.651e-06 ***
spojeni	1	0.0001	0.0001	0.0130	0.909258
log10(slah_g):hnojivo	1	0.0807	0.0807	7.8462	0.005640 **
log10(slah_g):spojeni	1	0.0949	0.0949	9.2249	0.002736 **
hnojivo:spojeni	1	0.0369	0.0369	3.5842	0.059909 .
log10(slah_g):hnojivo:spojeni	1	0.0016	0.0016	0.1515	0.697518
Residuals	183	1.8832	0.0103		



#### Model 4.5: Počet šlahounů u dceřiných ramet

Call: `lm(formula = log10(ks) ~ log10(slah_g) * hnojivo * spojeni, data = dcery)`

Residuals:

Min	1Q	Median	3Q	Max
-0.63257	-0.07290	0.00513	0.08660	0.37620

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )	
(Intercept)	0.95253	0.03280	29.044	< 2e-16	***
log10(slah_g)	0.41868	0.06064	6.905	7.91e-11	***
hnojivo	0.12045	0.02639	4.564	9.15e-06	***
spojeni	0.06242	0.04932	1.266	0.2072	
log10(slah_g):hnojivo	0.08791	0.06027	1.459	0.1464	
log10(slah_g):spojeni	0.13602	0.07659	1.776	0.0774	.
hnojivo:spojeni	-0.03021	0.03902	-0.774	0.4397	
log10(slah_g):hnojivo:spojeni	-0.12339	0.07209	-1.712	0.0887	.

Residual standard error: 0.1561 on 184 degrees of freedom

Multiple R-squared: 0.8055, Adjusted R-squared: 0.7981

F-statistic: 108.9 on 7 and 184 DF, p-value: < 2.2e-16

#### Analysis of Variance Table

Response: log10(ks)

	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
log10(slah_g)	1	17.4994	17.4994	717.9255	< 2.2e-16	***
hnojivo	1	0.9849	0.9849	40.4053	1.583e-09	***
spojeni	1	0.0034	0.0034	0.1412	0.70748	
log10(slah_g):hnojivo	1	0.0003	0.0003	0.0107	0.91784	
log10(slah_g):spojeni	1	0.0174	0.0174	0.7130	0.39954	
hnojivo:spojeni	1	0.0004	0.0004	0.0166	0.89751	
log10(slah_g):hnojivo:spojeni	1	0.0714	0.0714	2.9293	0.08867	.
Residuals	184	4.4850	0.0244			

#### Model 4.6: Hmotnost jednotkové délky šlahounu u dceřiných ramet

Call: `lm(formula = log10(g_cm) ~ log10(slah_g) * hnojivo * spojeni, data = dcery[-107, ])`

Residuals:

Min	1Q	Median	3Q	Max
-0.20203	-0.06269	-0.01292	0.05485	0.79174

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )	
(Intercept)	-2.31539	0.02343	-98.841	< 2e-16	***
log10(slah_g)	0.45712	0.04331	10.554	< 2e-16	***
hnojivo	-0.14667	0.01885	-7.781	5.09e-13	***
spojeni	-0.09604	0.03523	-2.726	0.00703	**
log10(slah_g):hnojivo	-0.11266	0.04305	-2.617	0.00961	**
log10(slah_g):spojeni	-0.16068	0.05470	-2.937	0.00374	**
hnojivo:spojeni	0.05666	0.02787	2.033	0.04349	*
log10(slah_g):hnojivo:spojeni	0.07466	0.05266	1.418	0.15794	

---  
Residual standard error: 0.1115 on 183 degrees of freedom  
Multiple R-squared: 0.6337, Adjusted R-squared: 0.6197  
F-statistic: 45.22 on 7 and 183 DF, p-value: < 2.2e-16

#### Analysis of Variance Table

Response: log10(g\_cm)

	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
log10(slah_g)	1	2.86024	2.86024	230.0002	< 2.2e-16	***
hnojivo	1	0.83883	0.83883	67.4524	3.8e-14	***
spojeni	1	0.01144	0.01144	0.9201	0.338704	
log10(slah_g):hnojivo	1	0.10832	0.10832	8.7103	0.003578	**
log10(slah_g):spojeni	1	0.06003	0.06003	4.8276	0.029264	*
hnojivo:spojeni	1	0.03258	0.03258	2.6196	0.107275	
log10(slah_g):hnojivo:spojeni	1	0.02500	0.02500	2.0102	0.157941	
Residuals	183	2.27575	0.01244			