Fitting models on Haddix2011SSSJA

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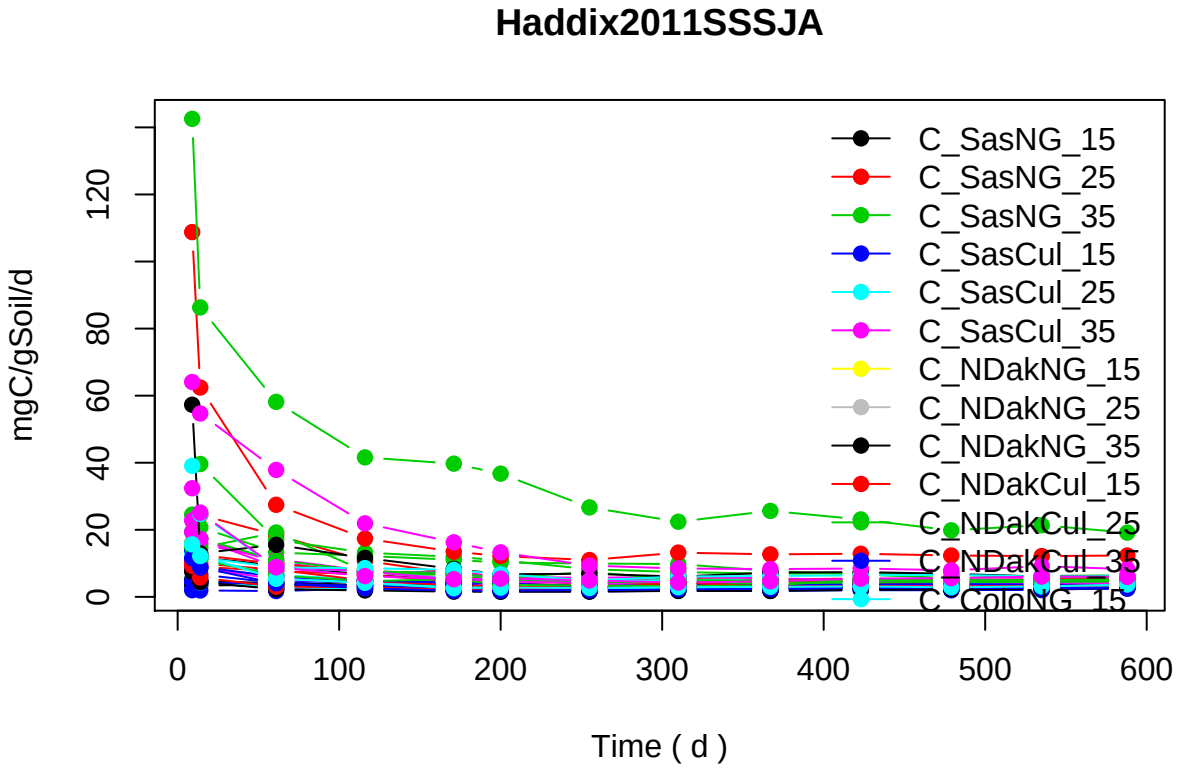
6/21/2021

Dataset Haddix2011SSSJA

A dataset with 37 variables of 6 different sites each two levels of vegetation (Native grassland and cultivated). and three levels of temperature (15, 25, 35)

** Note: ** the units of variable reported in the metadata are wrong. The CO2 measeured as microG/gsoil/day. Therefore the inicial carbon should be multiplied by 1000.

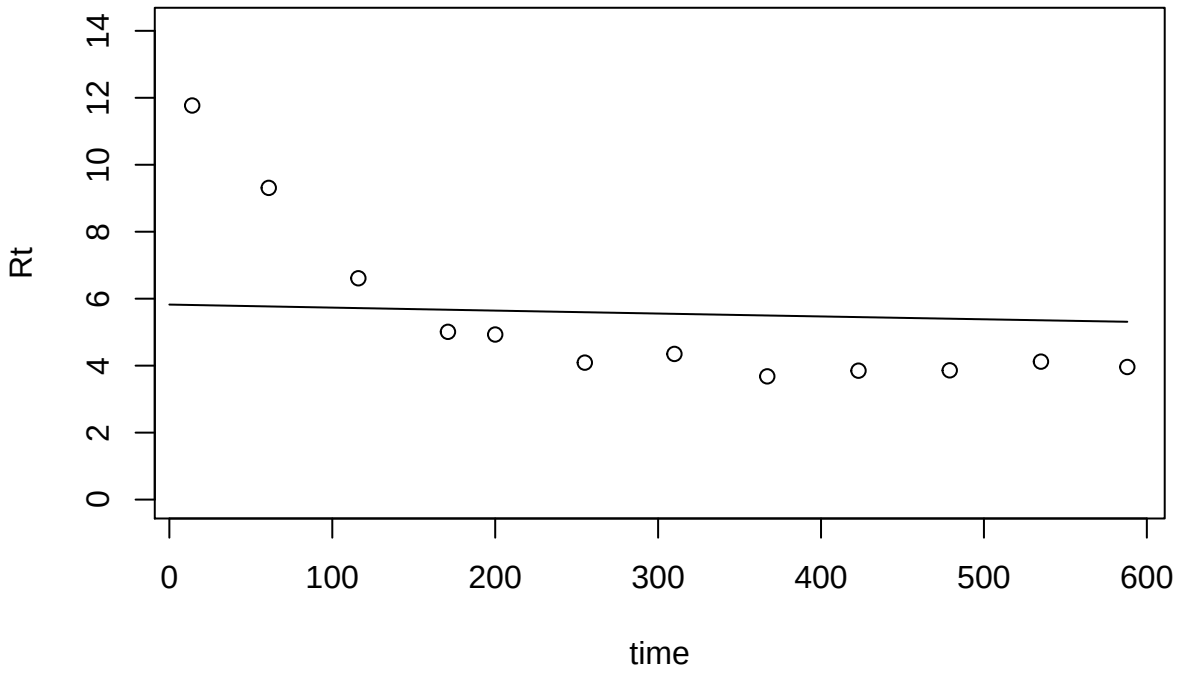


The unit of initial carbon is g/kg and the CO_2 measured as mgC/gSoil/d, Therefore there is no need to convert initial carbon units

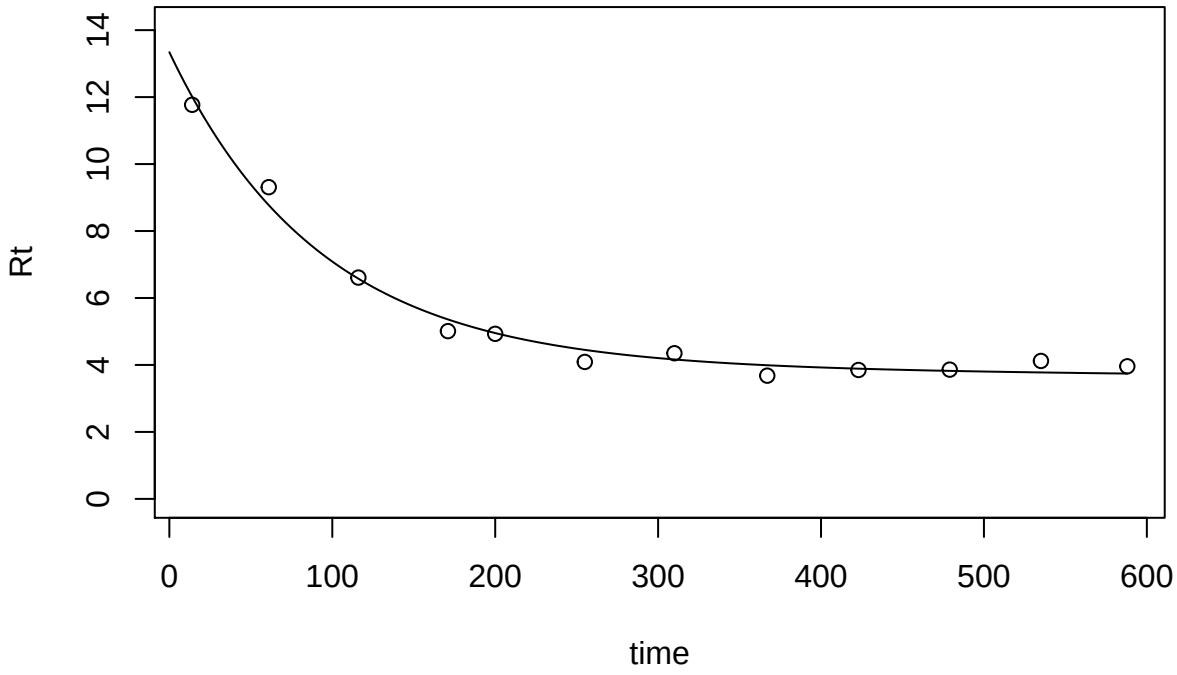
Variable C_SasNG_15:

Decomposition rates over time at 15 degrees for Saskatchewan, native grassland

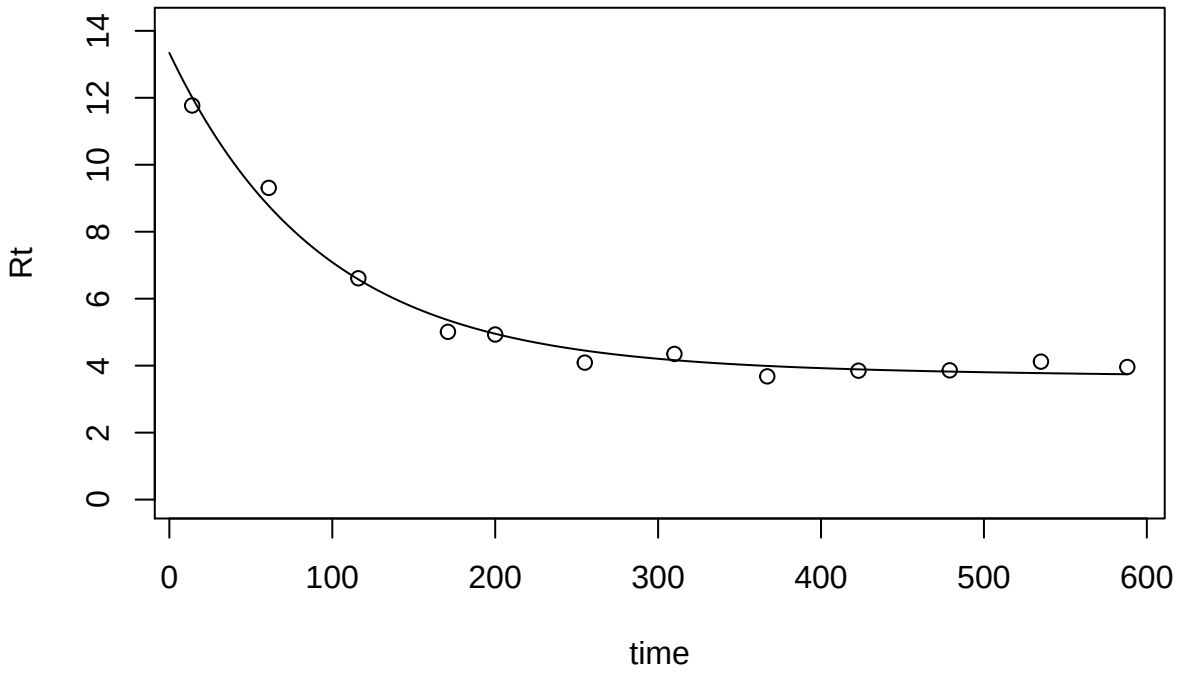
```
## [1] "Best fit parameter:  0.000156985508299531"
```



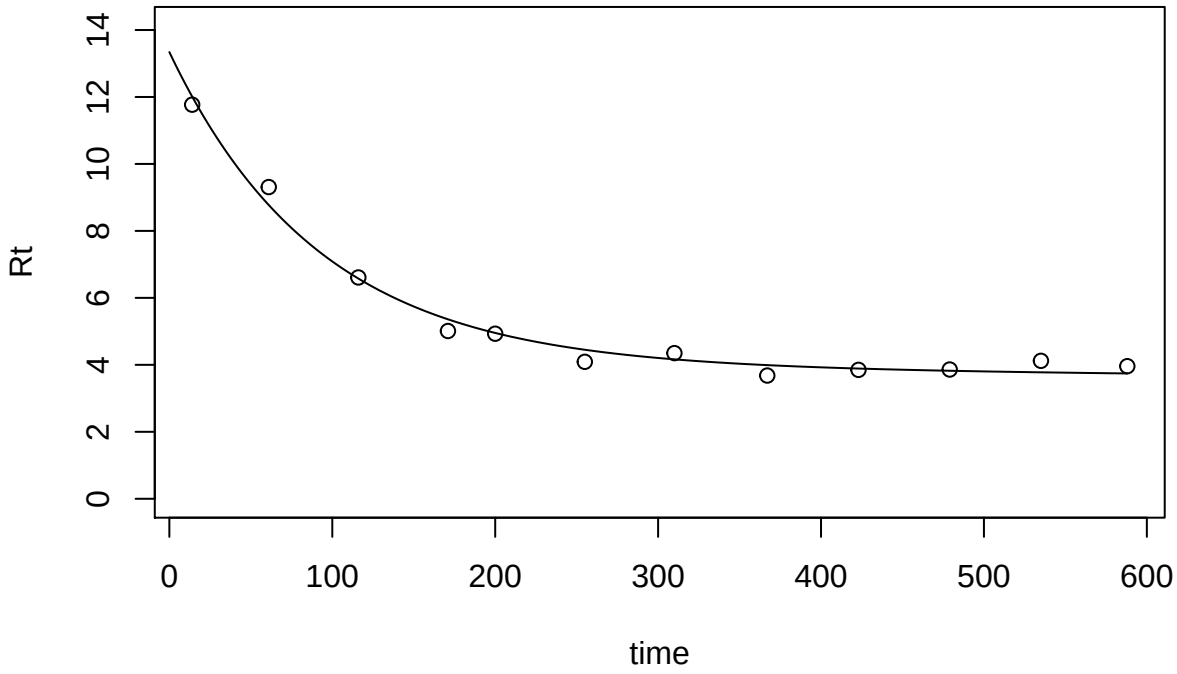

```
## [1] "AIC =  -1.38141484929936"
## [1] "k1= 0.0108759360483505"
## [2] "k2= 0.000109698978720763"
## [3] "proportion of C0 in pool 1= 0.0232110141134461"
```




```
## [1] "AIC =  11.1789851748443"
## [1] "k1= 0.0108698602612996"
## [2] "k2= 0.000115815652167372"
## [3] "a21= 0.0522807547058667"
## [4] "a12= 0.999985442972757"
## [5] "Proportion of C0 in pool 1= 0.0349065907295694"
```



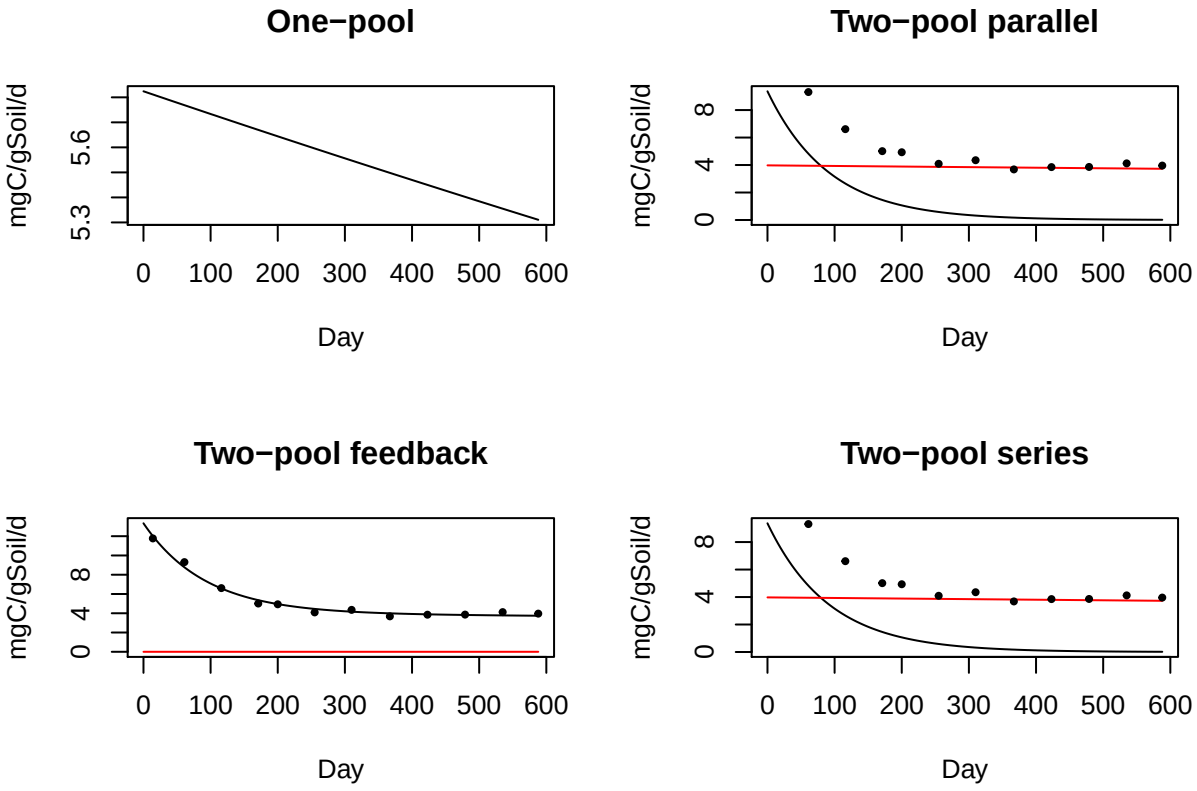

```
## [1] "AIC =  15.1789851752493"
## [1] "k1= 0.010875969534837"
## [2] "k2= 0.000109699075758487"
## [3] "a21= 0.0142122129913261"
## [4] "Proportion of C0 in pool 1= 0.0235490183605074"
```




```
## [1] "AIC =  13.1789851748568"
```

```
## Warning: `funs()` was deprecated in dplyr 0.8.0.
## Please use a list of either functions or lambdas:
##
##   # Simple named list:
```

```
##   list(mean = mean, median = median)
##
##   # Auto named with `tibble::lst()`:
##   tibble::lst(mean, median)
##
##   # Using lambdas
##   list(~ mean(., trim = .2), ~ median(., na.rm = TRUE))
```

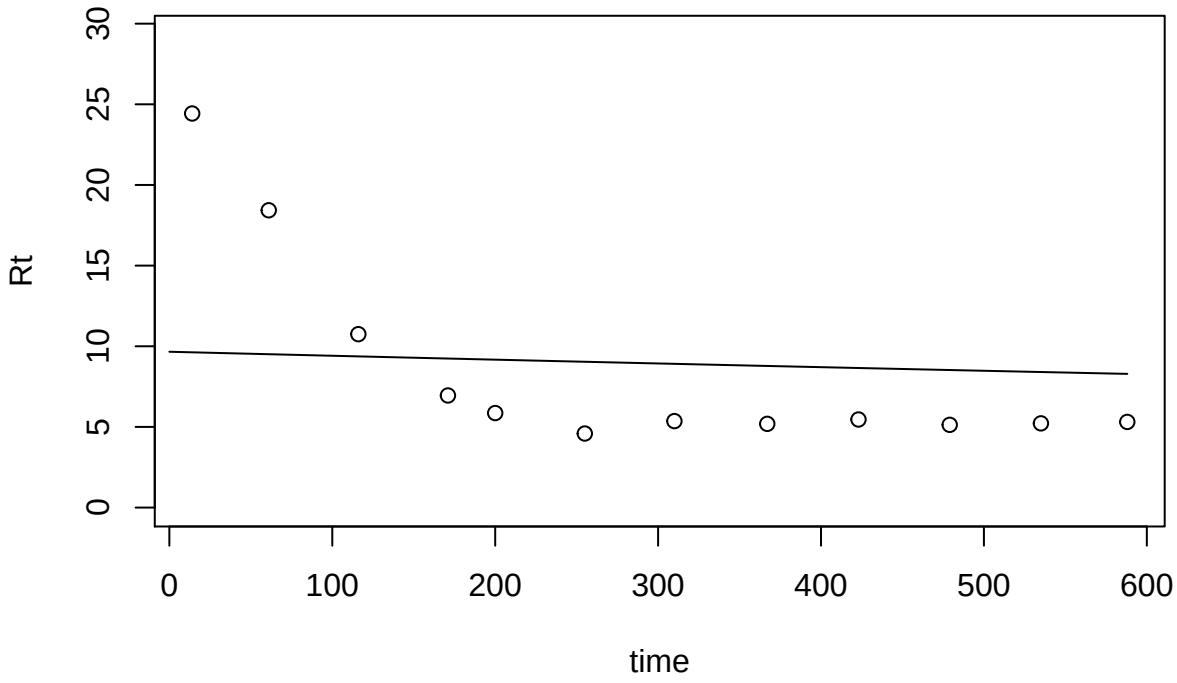


model	AIC	k1	k2	C0Inp1	a21	a12	AICc	wi	MeanTrT	q05
One-pool	-1.38	0.000157	NA	NA	NA	NA	-1.02	0.999	NA	NA
Two-pool parallel	11.2	0.0109	0.00011	0.0232	NA	NA	13.8	0.000592	2800	113
Two-pool feedback	15.2	0.0109	0.000116	0.0349	0.0523	1	23.8	4.18e-06	573	69
Two-pool series	13.2	0.0109	0.00011	0.0235	0.0142	NA	18.2	6.78e-05	573	69

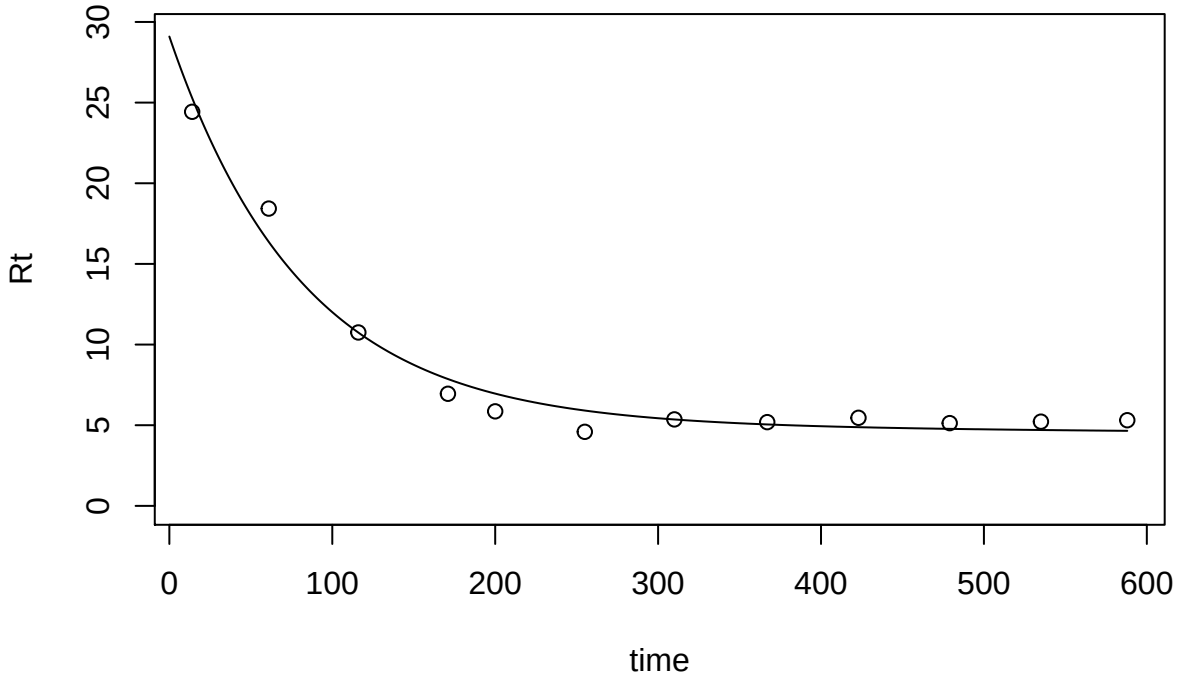
Variable C_SasNG_25:

Decomposition rates over time at 25 degrees for Saskatchewan, native grassland

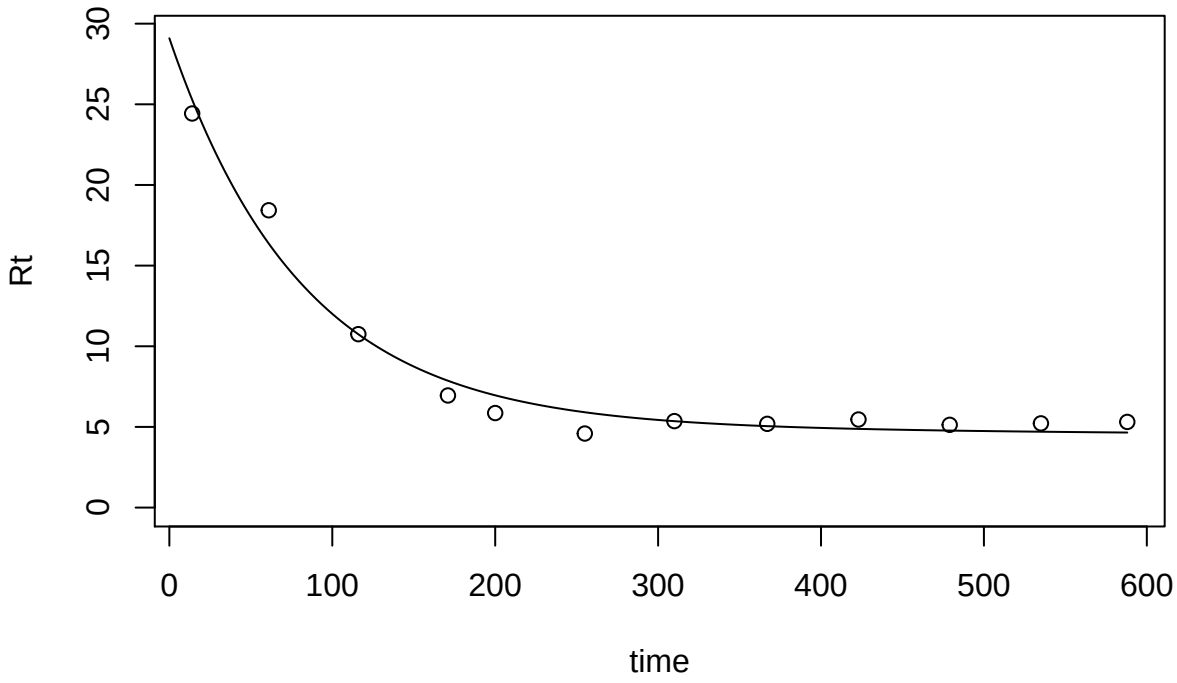
```
## [1] "Best fit parameter:  0.000260371376999679"
```



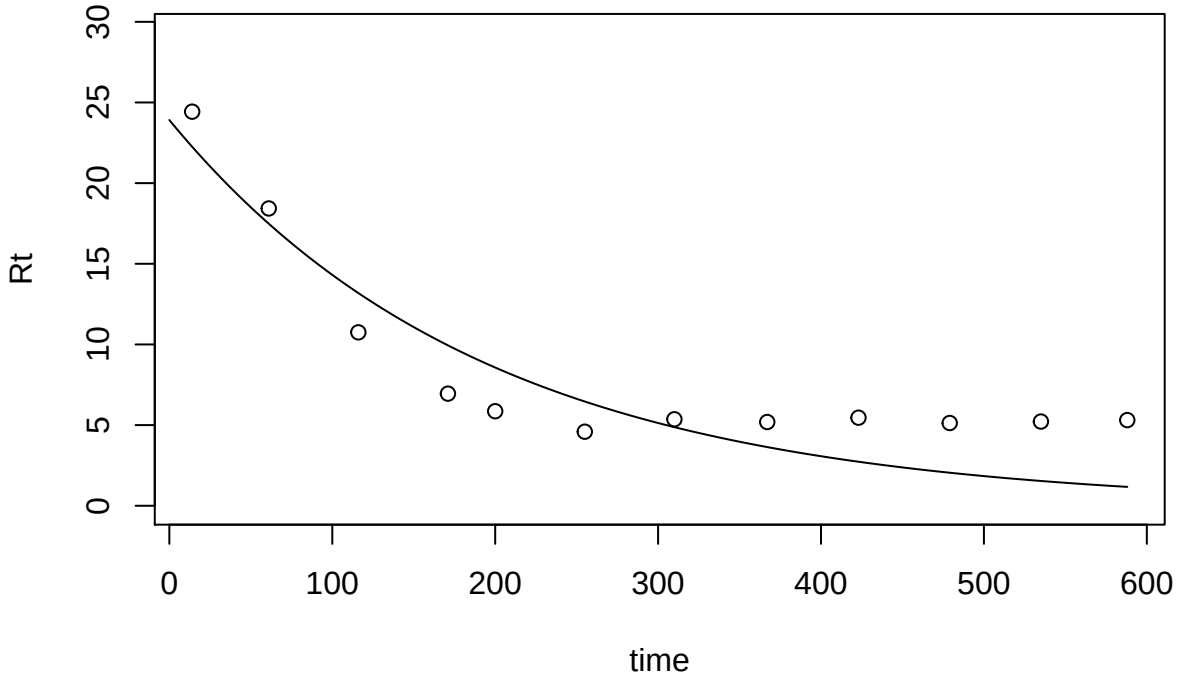

```
## [1] "AIC =  -5.02769875741199"
## [1] "k1= 0.0122851864197905"
## [2] "k2= 0.000143473723683854"
## [3] "proportion of C0 in pool 1= 0.0527734130333887"
```



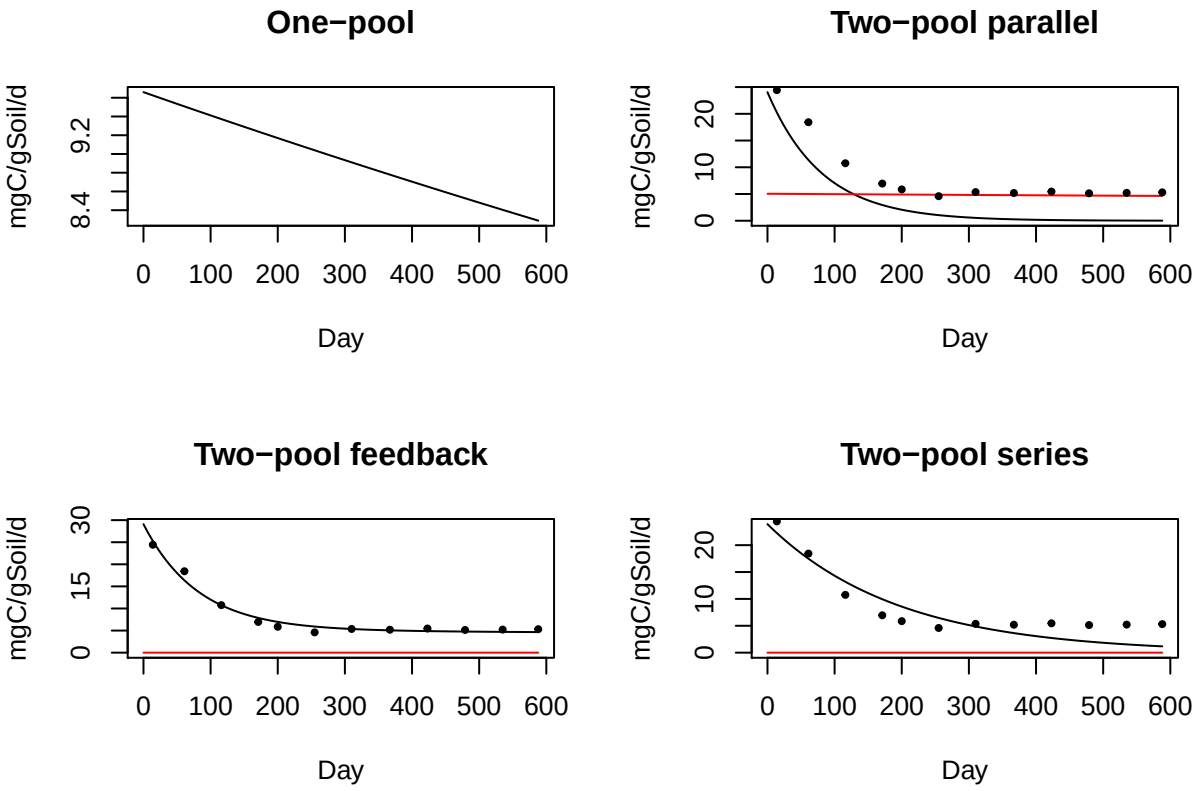

```
## [1] "AIC =  6.37307126856991"
## [1] "k1= 0.0122828567300566"
## [2] "k2= 0.000145715601722292"
## [3] "a21= 0.0152116177643759"
## [4] "a12= 0.999983120059507"
## [5] "Proportion of C0 in pool 1= 0.0648335487935973"
```




```
## [1] "AIC =  10.3730712647061"
## [1] "k1= 0.00513112780506305"
## [2] "k2= 1.65806060975542e-13"
## [3] "a21= 0.0669921258237178"
## [4] "Proportion of C0 in pool 1= 0.134629724466359"
```




```
## [1] "AIC =  4.16410606906099"
```

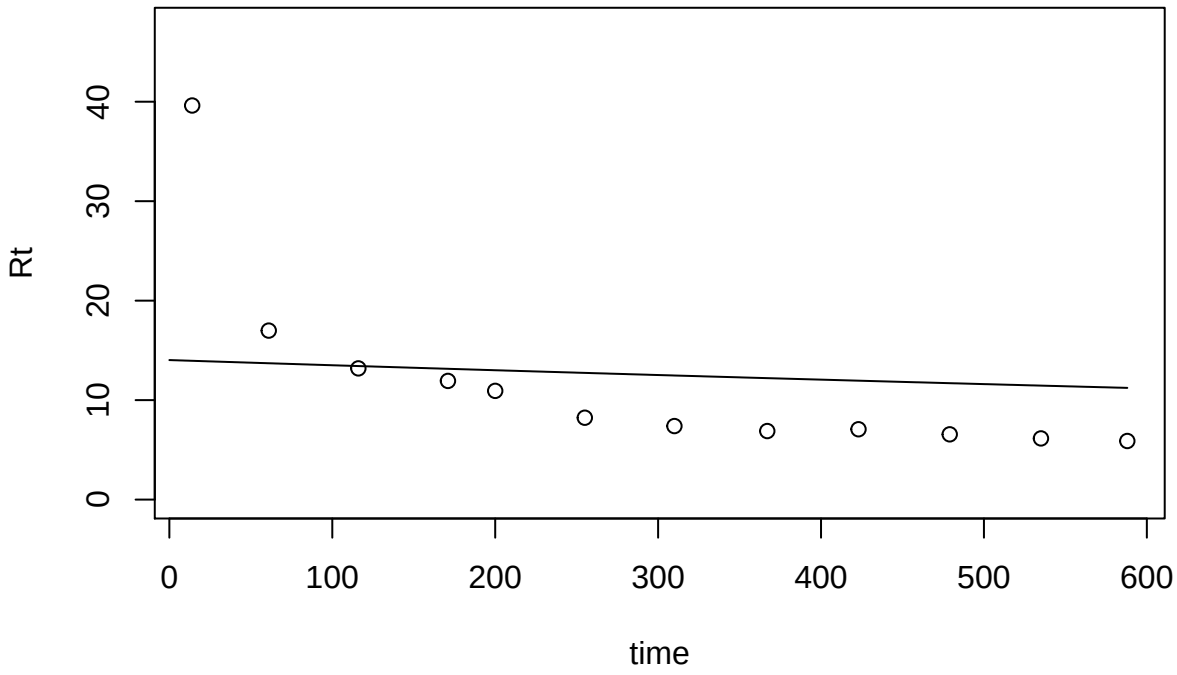


model	AIC	k1	k2	C0Inp1	a21	a12	AICc	wi	MeanTrT	q05
One-pool	-5.03	0.00026	NA	NA	NA	NA	-4.66	0.999	NA	NA
Two-pool parallel	6.37	0.0123	0.000143	0.0528	NA	NA	9.04	0.00106	2150	100
Two-pool feedback	10.4	0.0123	0.000146	0.0648	0.0152	1	18.9	7.46e-06	189	57.7
Two-pool series	4.16	0.00513	1.66e-13	0.135	0.067	NA	9.16	0.000993	189	57.7

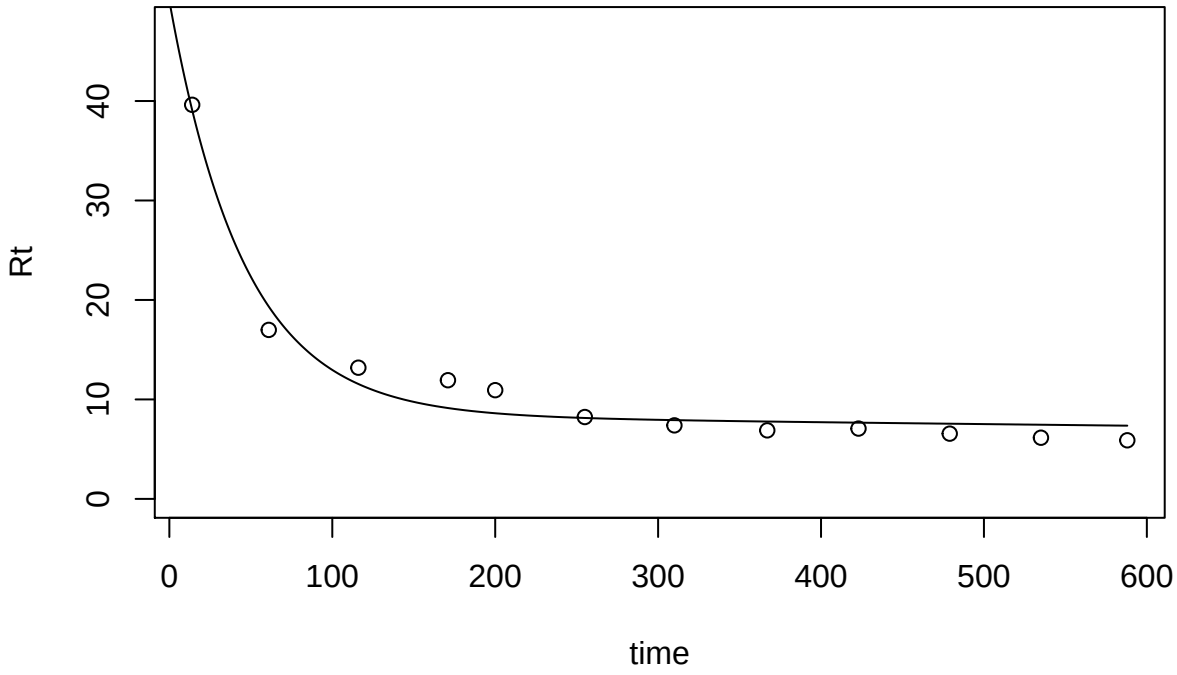
Variable C_SasNG_35:

Decomposition rates over time at 35 degrees for Saskatchewan, native grassland

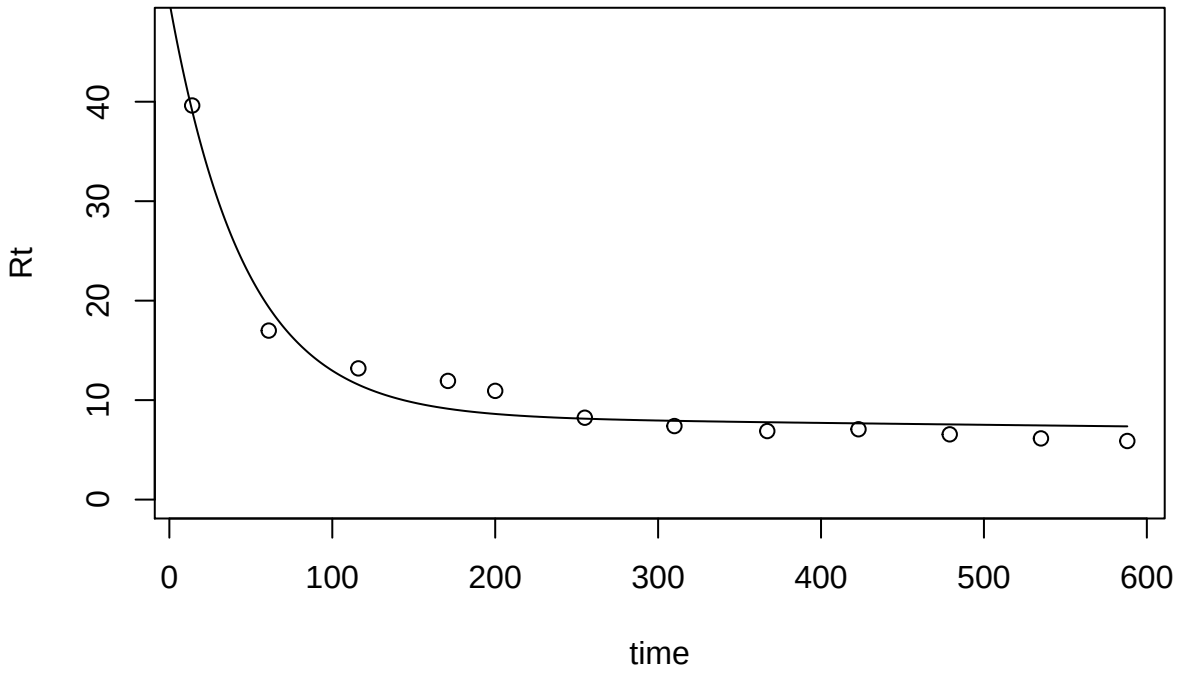
```
## [1] "Best fit parameter:  0.000378058704140272"
```



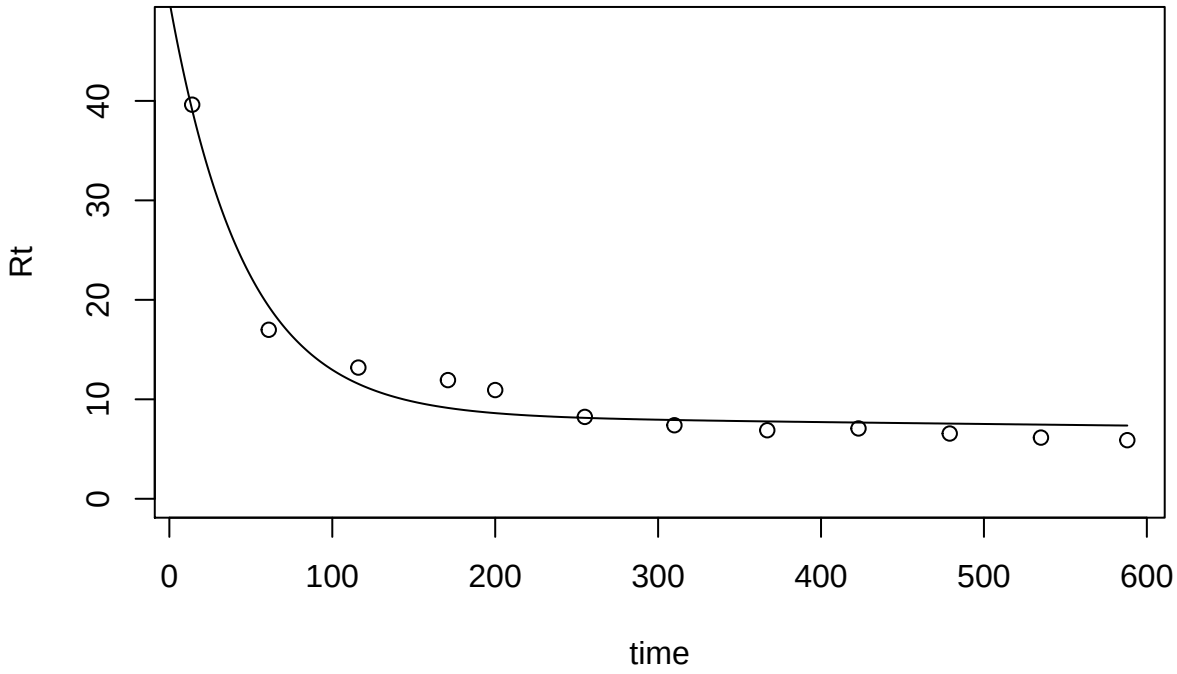

```
## [1] "AIC =  -6.53686212076624"
## [1] "k1= 0.0218307377709731"
## [2] "k2= 0.000240967071829424"
## [3] "proportion of C0 in pool 1= 0.0513494181760356"
```



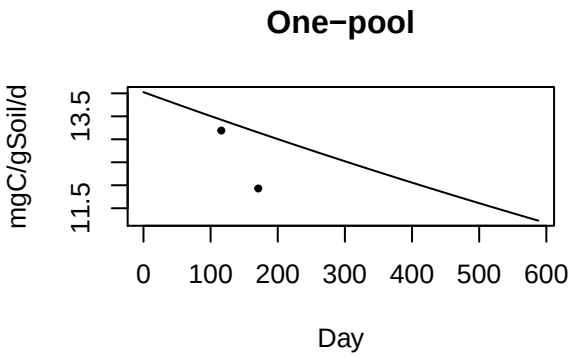

```
## [1] "AIC =  4.30752712905755"
## [1] "k1= 0.0218308989448447"
## [2] "k2= 0.000240967788952214"
## [3] "a21= 0.0481523086802677"
## [4] "a12= 2.07185149225242e-05"
## [5] "Proportion of C0 in pool 1= 0.053977388165395"
```

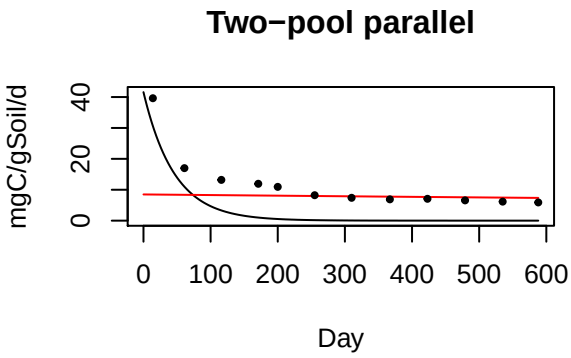


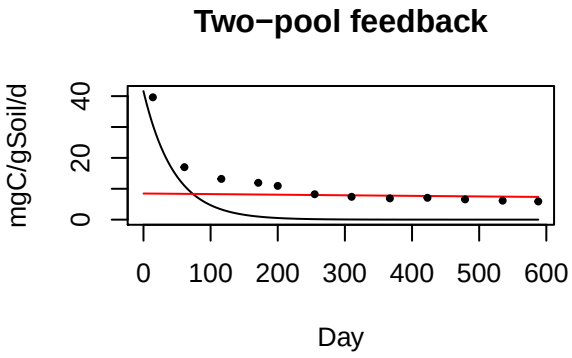

```
## [1] "AIC =  8.30752713022654"
## [1] "k1= 0.0218315945522854"
## [2] "k2= 0.000240969508044774"
## [3] "a21= 0.0185960571186744"
## [4] "Proportion of C0 in pool 1= 0.0523317484484626"
```

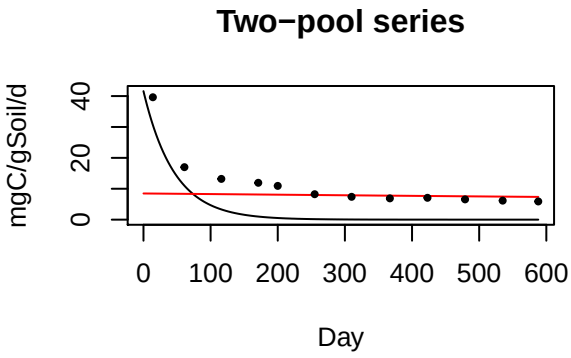



```
## [1] "AIC =  6.30752712670357"
```







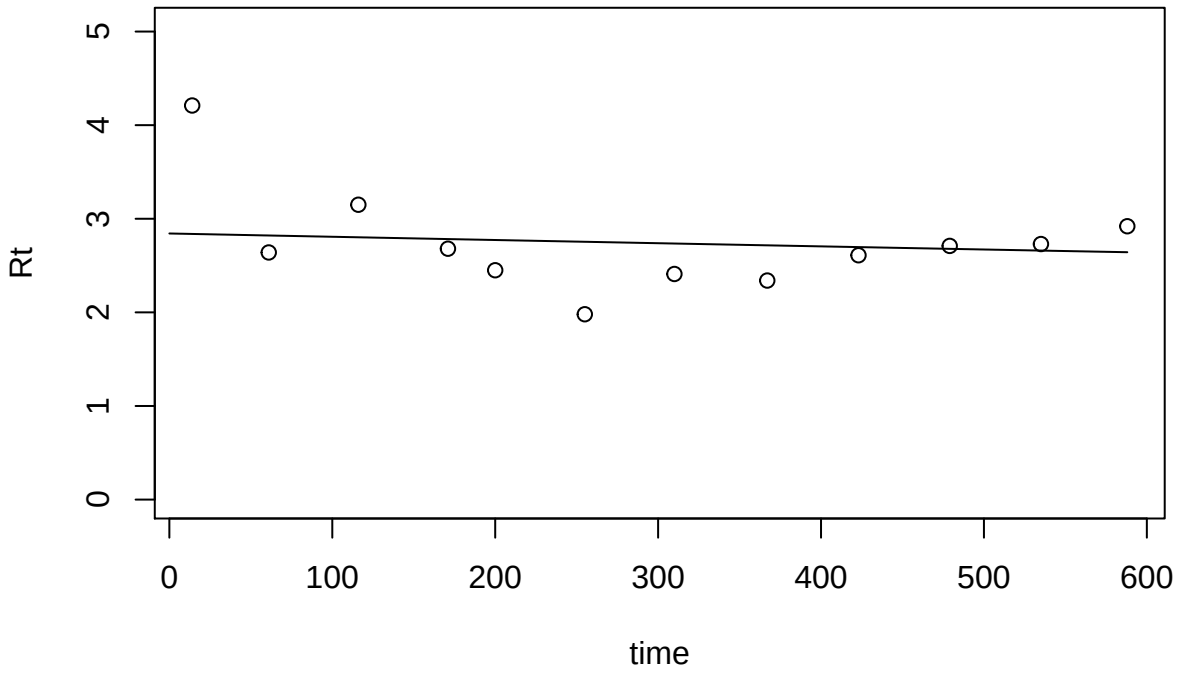


model	AIC	k1	k2	C0Inp1	a21	a12	AICc	wi	MeanTrT	q05
One-pool	-6.54	0.000378	NA	NA	NA	NA	-6.17	0.999	NA	NA
Two-pool parallel	4.31	0.0218	0.000241	0.0513	NA	NA	6.97	0.00139	1280	56.5
Two-pool feedback	8.31	0.0218	0.000241	0.054	0.0482	2.07e-05	16.9	9.86e-06	246	34.1
Two-pool series	6.31	0.0218	0.000241	0.0523	0.0186	NA	11.3	0.00016	246	34.1

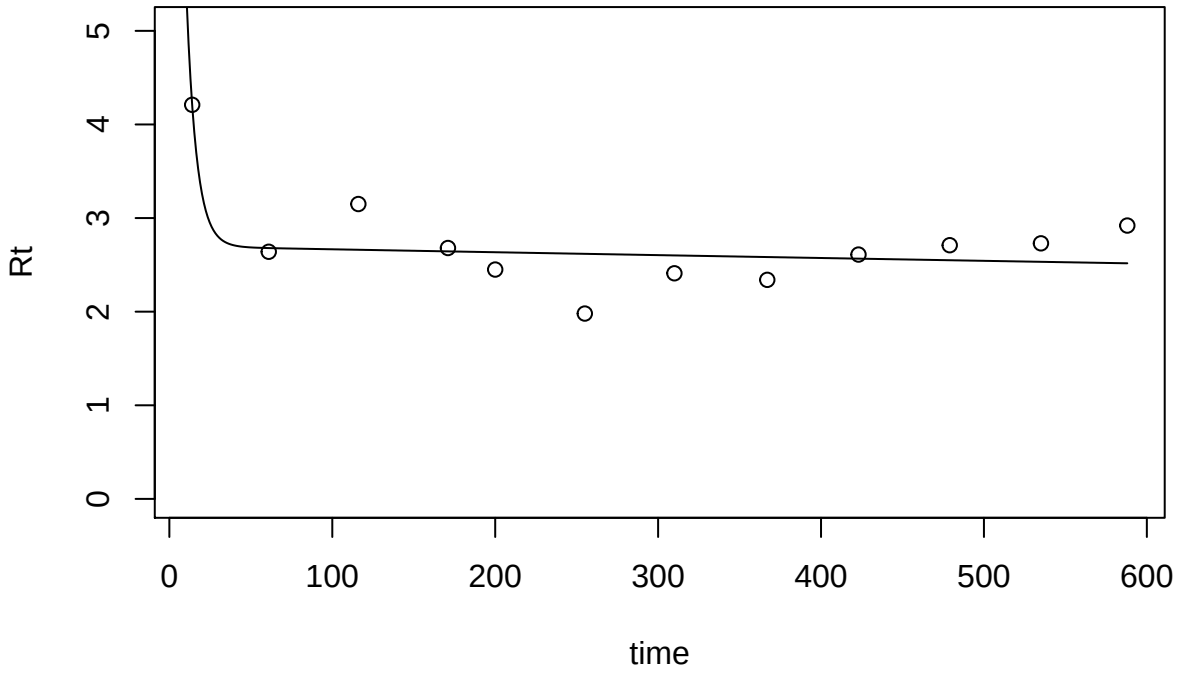
Variable C_SasCul_15:

Decomposition rates over time at 15 degrees for Saskatchewan, cultivated

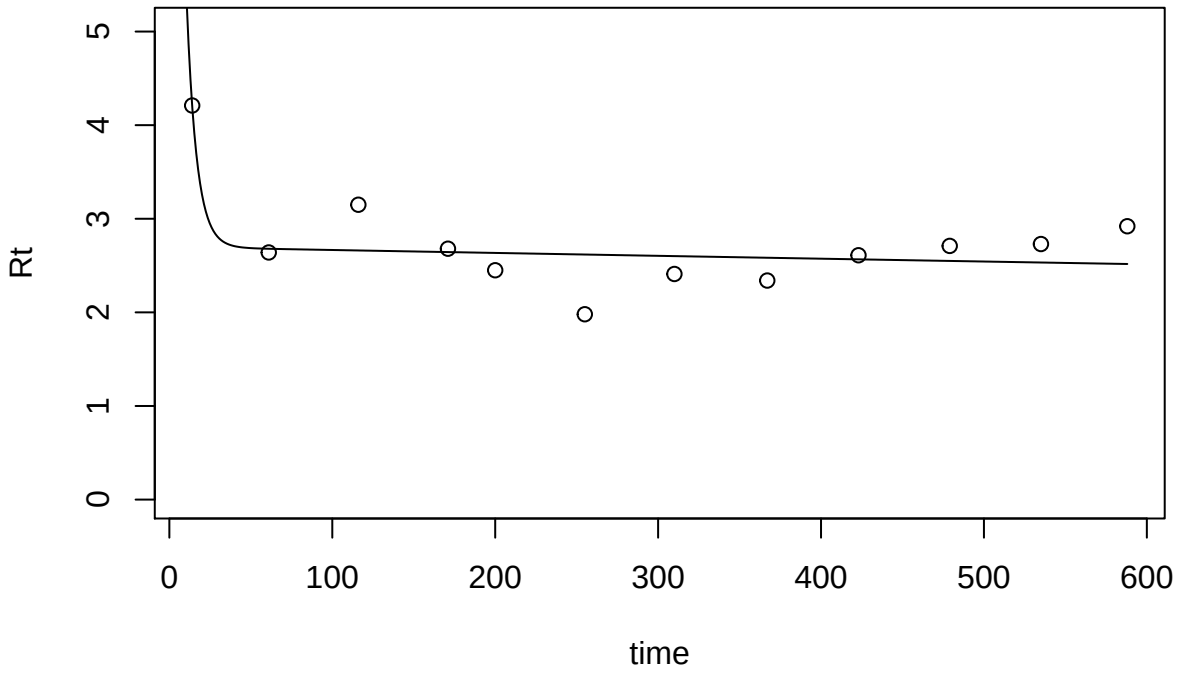
```
## [1] "Best fit parameter:  0.000124136491867248"
```



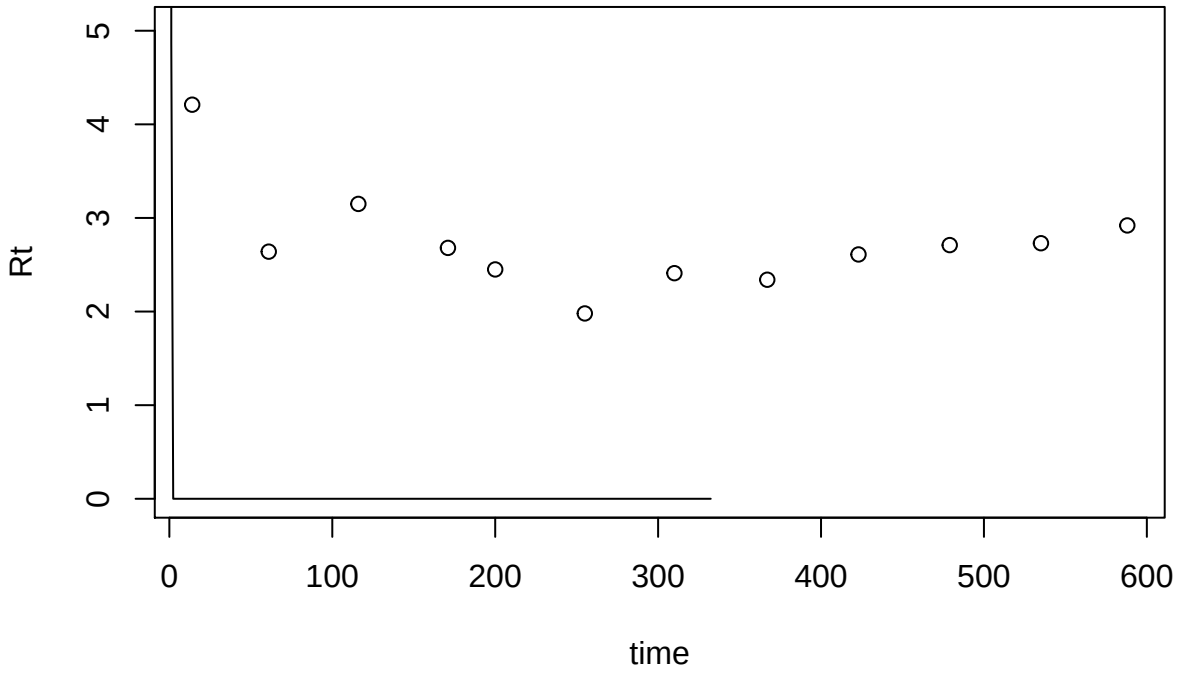

```
## [1] "AIC =  4.71416643502636"
## [1] "k1= 0.162837143289535"
## [2] "k2= 0.000118290312123012"
## [3] "proportion of C0 in pool 1= 0.00396610442608097"
```



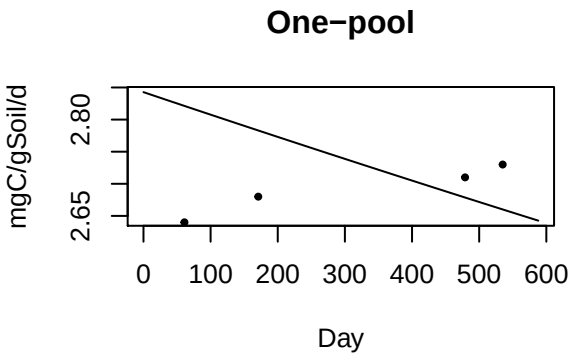

```
## [1] "AIC =  10.9543720120756"
## [1] "k1= 0.162887434772843"
## [2] "k2= 0.000118296819104117"
## [3] "a21= 0.735634613709555"
## [4] "a12= 7.21766810716784e-05"
## [5] "Proportion of C0 in pool 1= 0.0150387214156912"
```

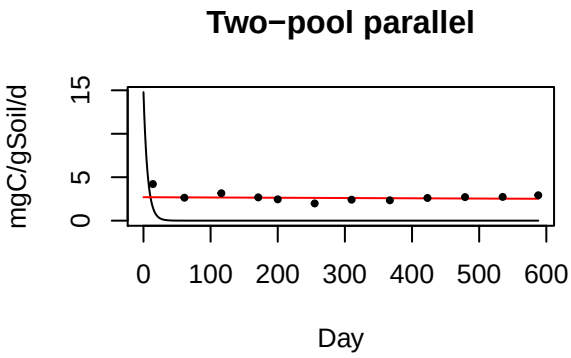


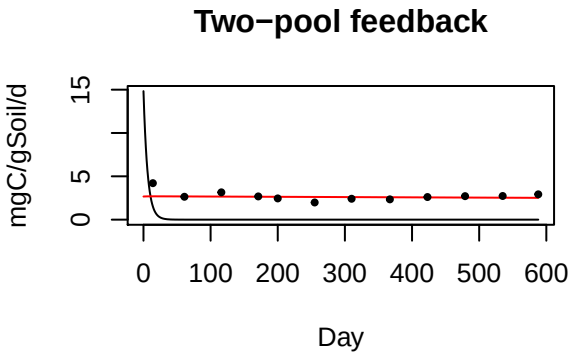

```
## [1] "AIC =  14.9543720131467"
## [1] "k1= 65.2507685731732"
## [2] "k2= 9.04374816389002"
## [3] "a21= 0.999983978862827"
## [4] "Proportion of C0 in pool 1= 0.00135424264641359"
```

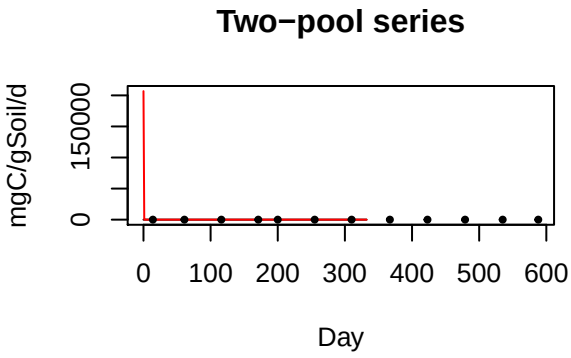



```
## [1] "AIC =  4.86521410366222"
```







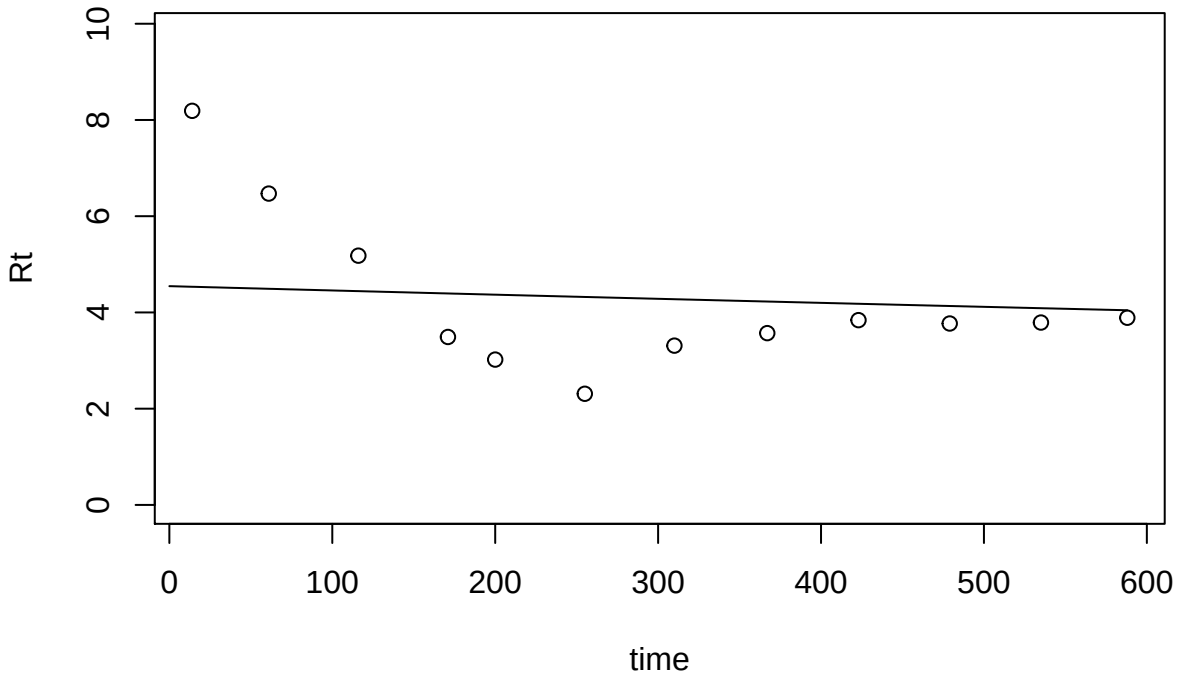


model	AIC	k1	k2	C0Inp1	a21	a12	AICc	wi	MeanTrT	q05
One-pool	4.71	0.000124	NA	NA	NA	NA	5.08	0.986	NA	NA
Two-pool parallel	11	0.163	0.000118	0.00397	NA	NA	13.6	0.0138	2540	7.68
Two-pool feedback	15	0.163	0.000118	0.015	0.736	7.22e-05	23.5	9.73e-05	6230	3270
Two-pool series	4.87	65.3	9.04	0.00135	1	NA	9.87	0.09	6230	3270

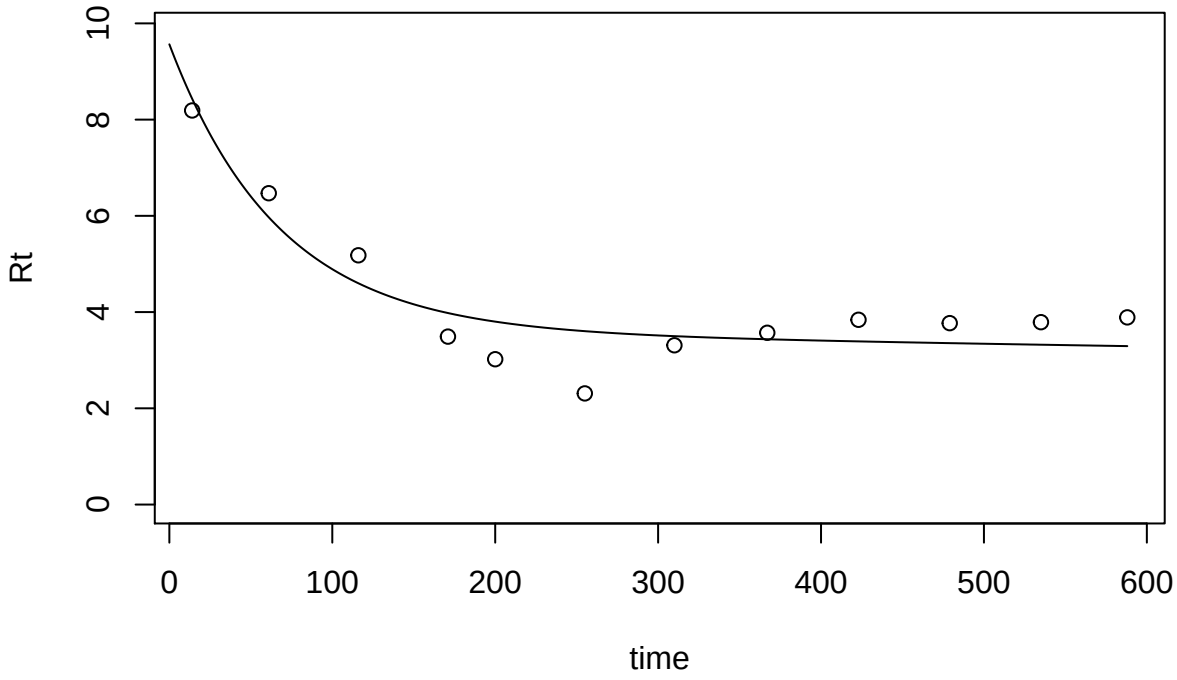
Variable C_SasCul_25:

Decomposition rates over time at 25 degrees for Saskatchewan, cultivated

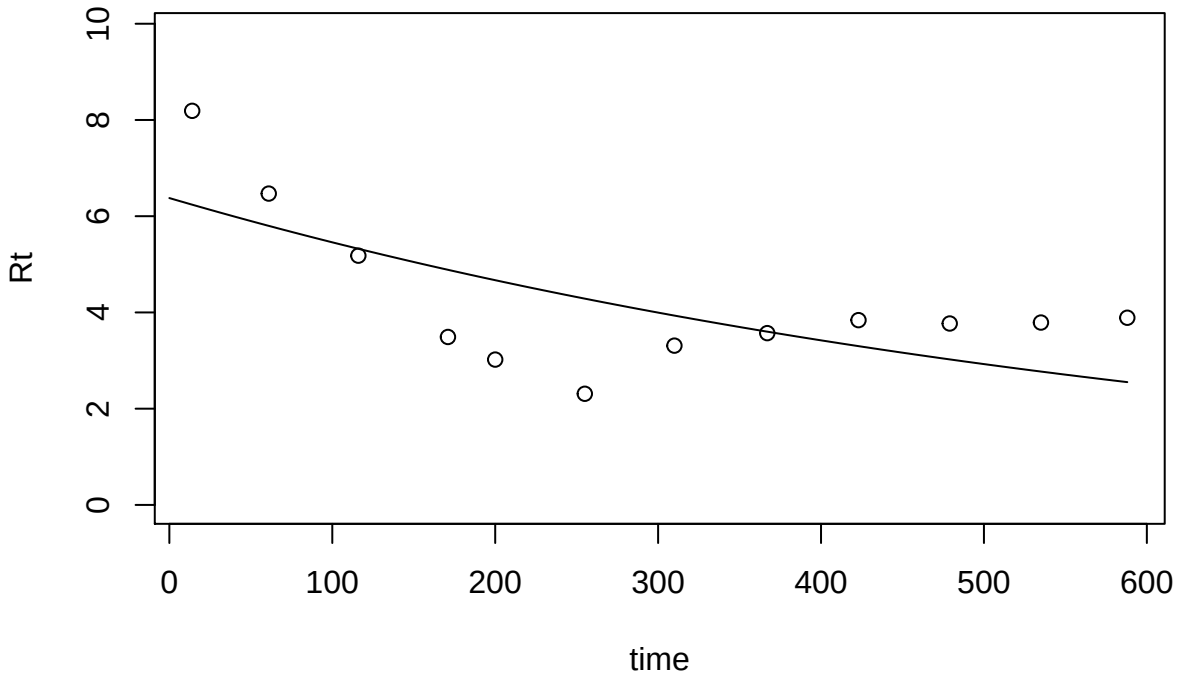
```
## [1] "Best fit parameter:  0.000198527180099488"
```



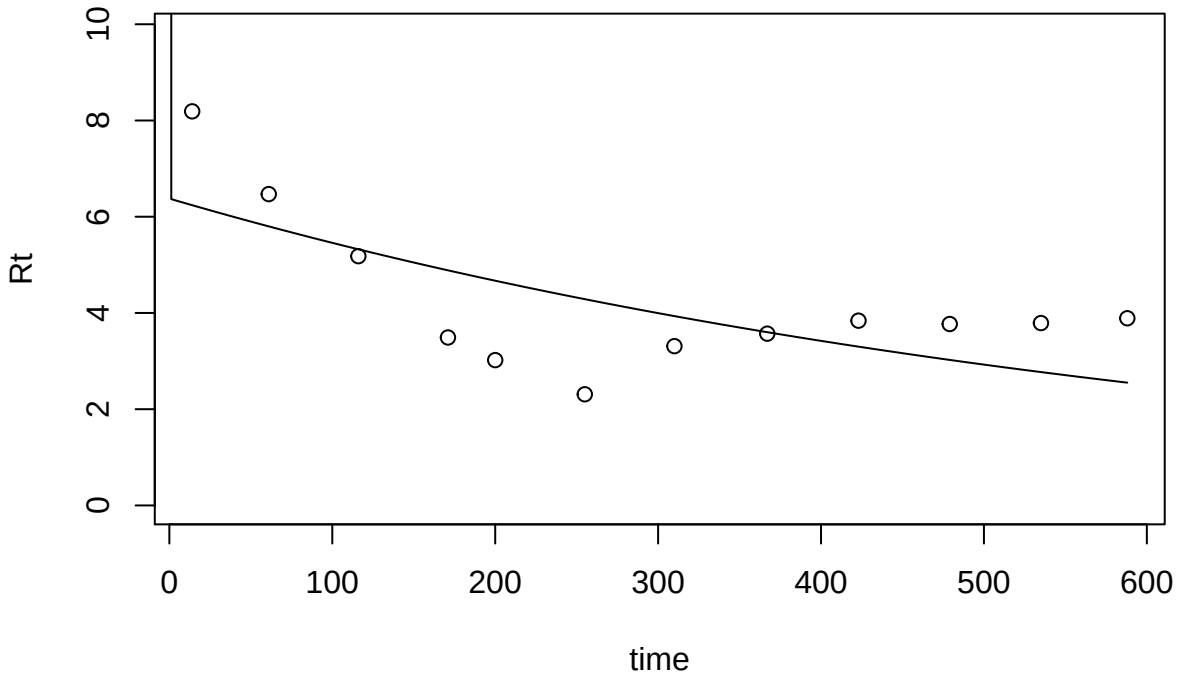

```
## [1] "AIC =  0.435509838073628"
## [1] "k1= 0.0149662374771514"
## [2] "k2= 0.000160787434306856"
## [3] "proportion of C0 in pool 1= 0.0173516632113351"
```




```
## [1] "AIC =  8.11111055662607"
## [1] "k1= 1.73090030763999e-68"
## [2] "k2= 0.00155769145885422"
## [3] "a21= 0.999513183741944"
## [4] "a12= 4.03320016273412e-08"
## [5] "Proportion of C0 in pool 1= 0.821217054681731"
```

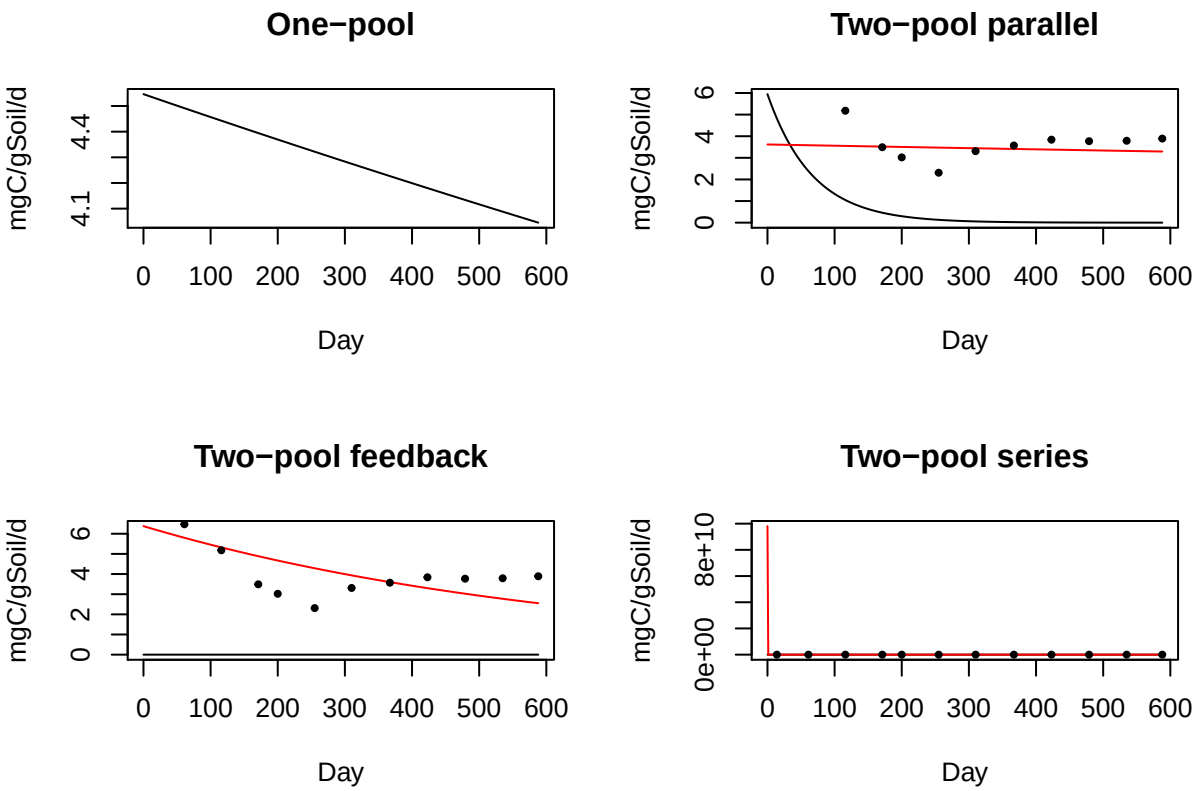



```
## [1] "AIC =  9.31266844130949"
## [1] "k1= 0.00155763682231579"
## [2] "k2= 5216876.53199468"
## [3] "a21= 0.99592538817391"
## [4] "Proportion of C0 in pool 1= 0.178787256387406"
```




```
## [1] "AIC =  7.31266844293328"
```

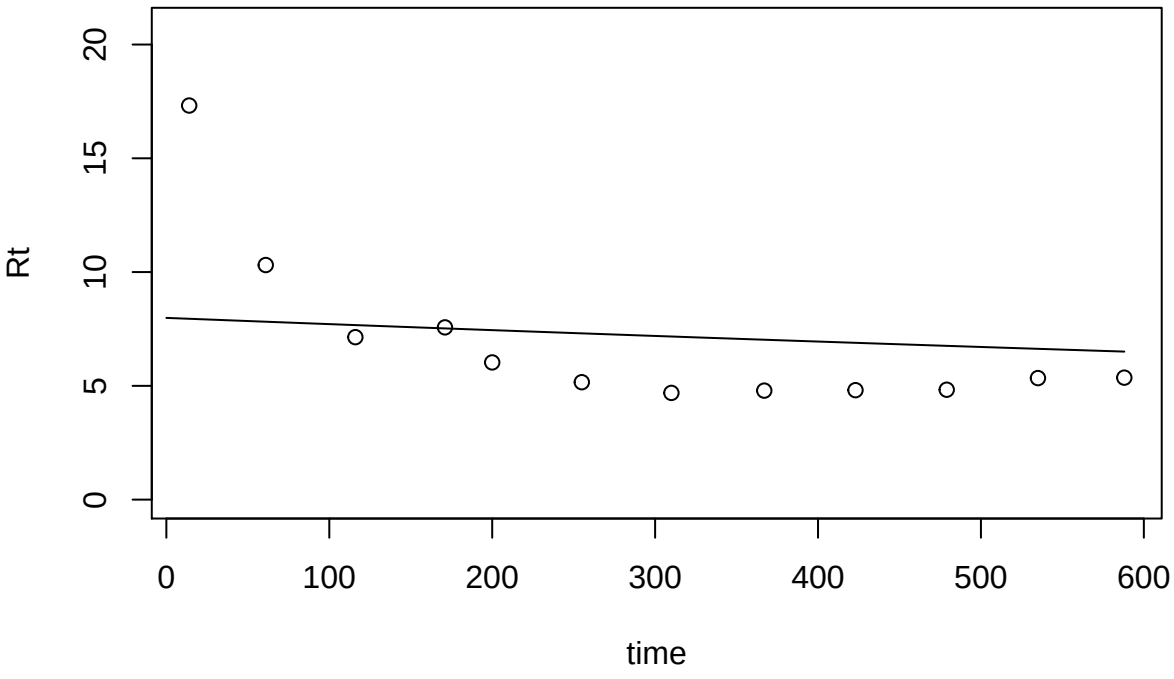
```
## Error in solve.default(A): system is computationally singular: reciprocal condition number = 1.1112e-
```



Variable C_SasCul_35:

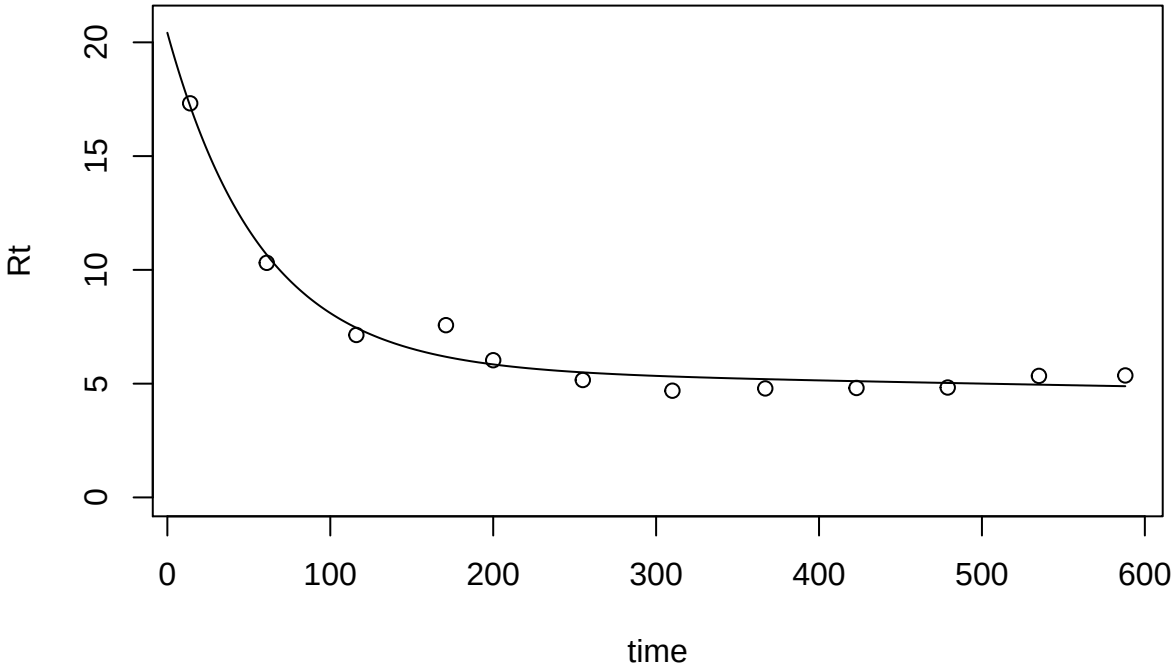
Decomposition rates over time at 35 degrees for Saskatchewan, cultivated

```
## [1] "Best fit parameter:  0.000348758785932543"
```

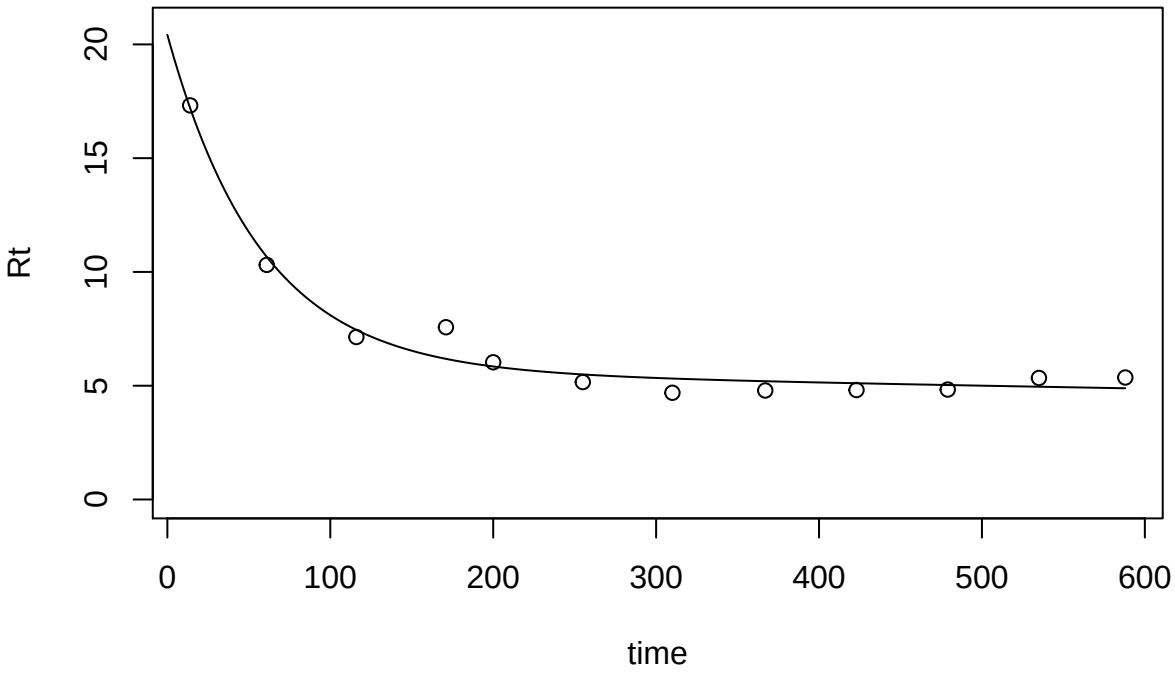



```
## [1] "AIC =  -2.65643664093591"
```

```
## [1] "k1= 0.017503615796145"
## [2] "k2= 0.000257818233480007"
## [3] "proportion of C0 in pool 1= 0.0367578831308495"
```

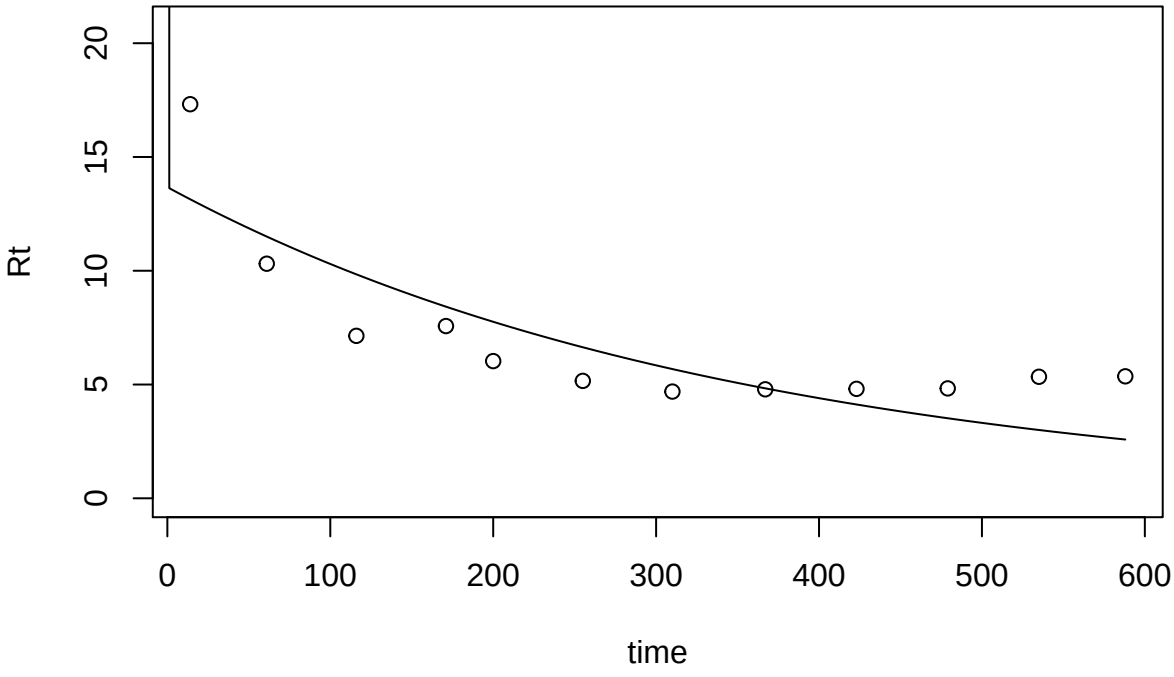



```
## [1] "AIC =  8.53865693801675"
## [1] "k1= 0.0175027126373689"
## [2] "k2= 0.000258745965653752"
## [3] "a21= 0.00353307165434685"
## [4] "a12= 0.999993874347432"
## [5] "Proportion of C0 in pool 1= 0.0511290270041705"
```

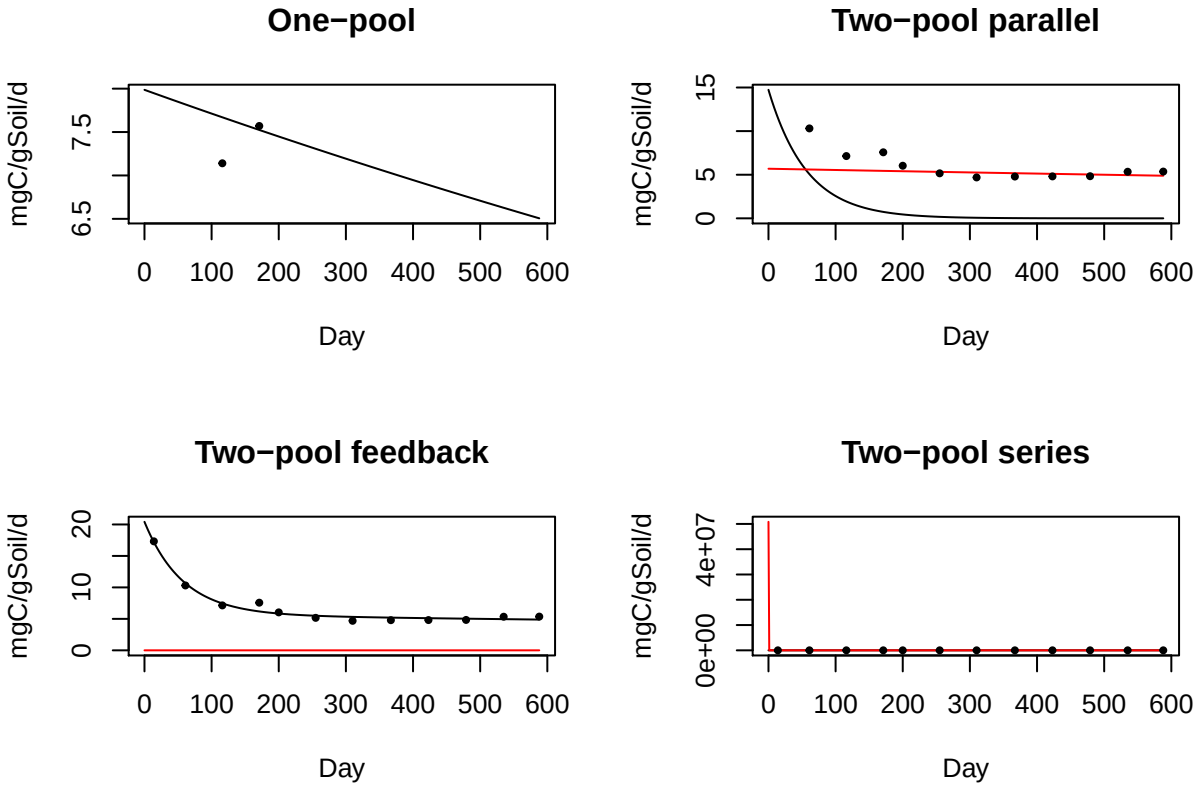



```
## [1] "AIC =  12.5386569366843"
```

```
## [1] "k1= 0.002834240451094"
## [2] "k2= 2812.35848173639"
## [3] "a21= 0.999325082187302"
## [4] "Proportion of C0 in pool 1= 0.210683767373062"
```




```
## [1] "AIC =  5.20958741655214"
```

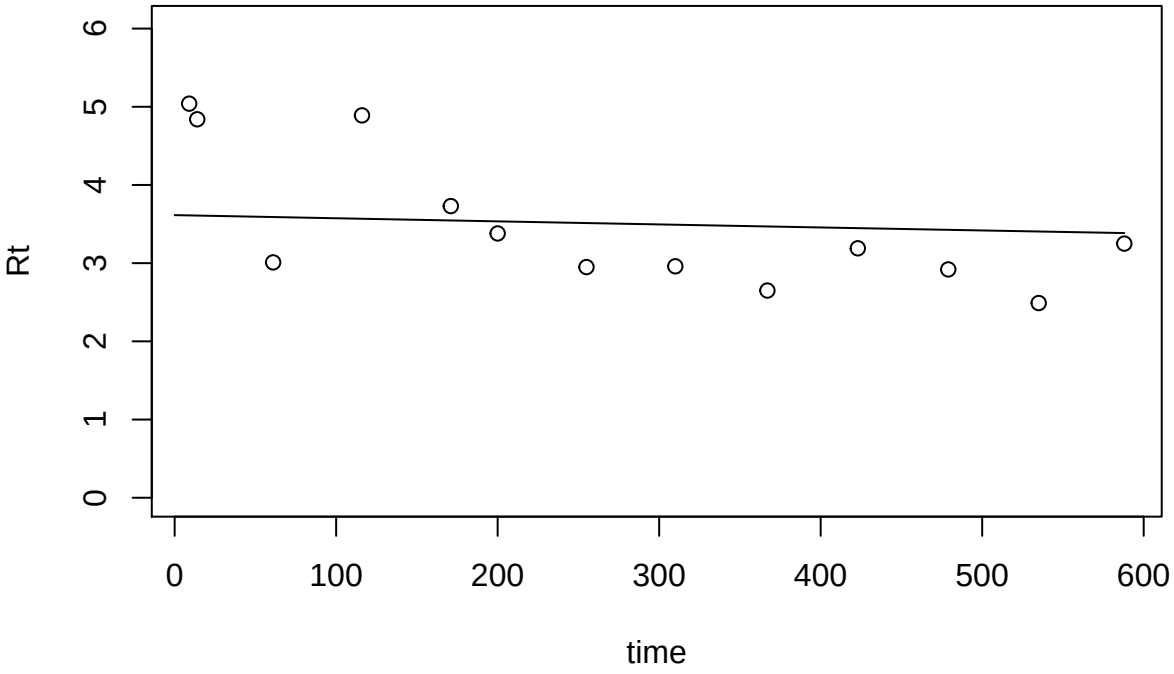


model	AIC	k1	k2	C0Inp1	a21	a12	AICc	wi	MeanTrT	q05
One-pool	-2.66	0.000349	NA	NA	NA	NA	-2.29	0.999	NA	NA
Two-pool parallel	8.54	0.0175	0.000258	0.0368	NA	NA	11.2	0.00117	1200	70.1
Two-pool feedback	12.5	0.0175	0.000259	0.0511	0.00353	1	21.1	8.27e-06	71	39.8
Two-pool series	5.21	0.00283	2810	0.211	0.999	NA	10.2	0.00193	71	39.8

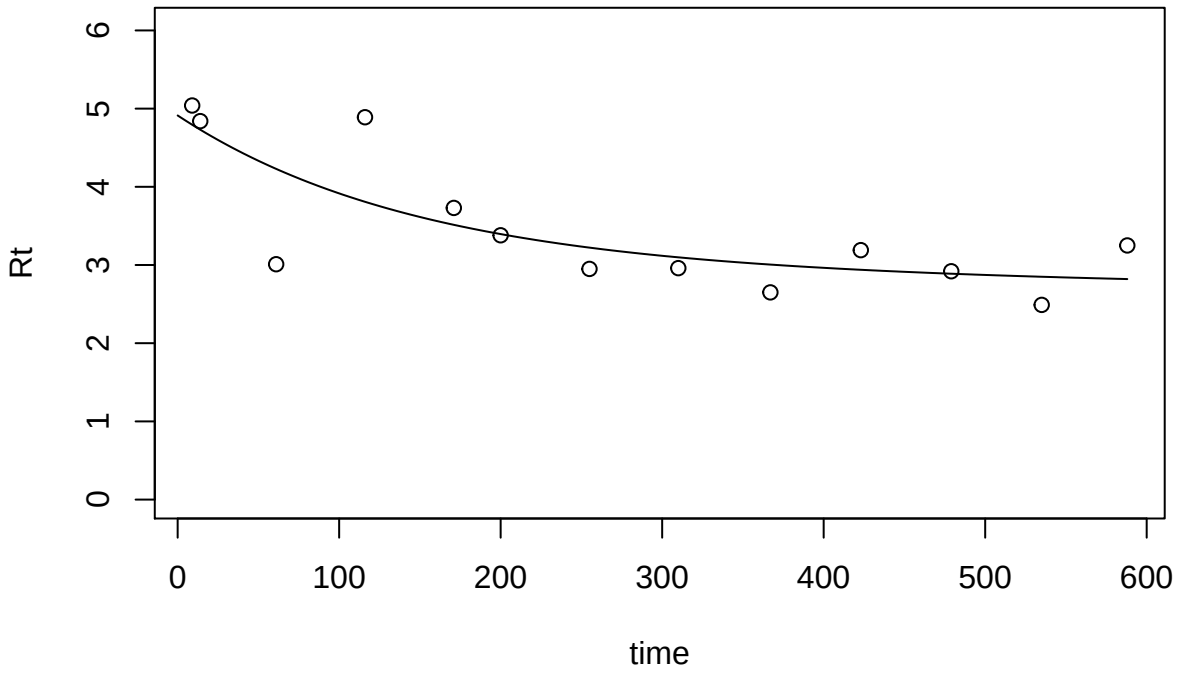
Variable C_NDakNG_15:

Decomposition rates over time at 15 degrees for North Dakota, native grassland

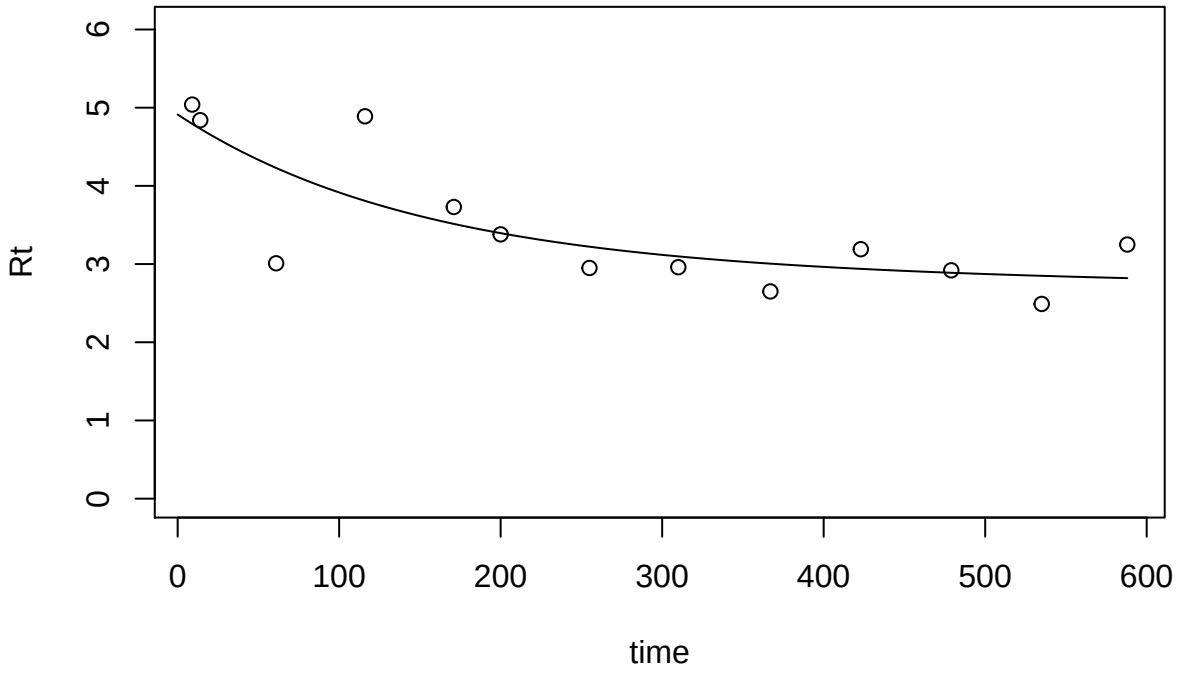
```
## [1] "Best fit parameter:  0.000111555612660654"
```




```
## [1] "AIC =  2.93392342164057"
## [1] "k1= 0.00675272733933466"
## [2] "k2= 9.1465386098949e-05"
## [3] "proportion of C0 in pool 1= 0.00903203643315326"
```

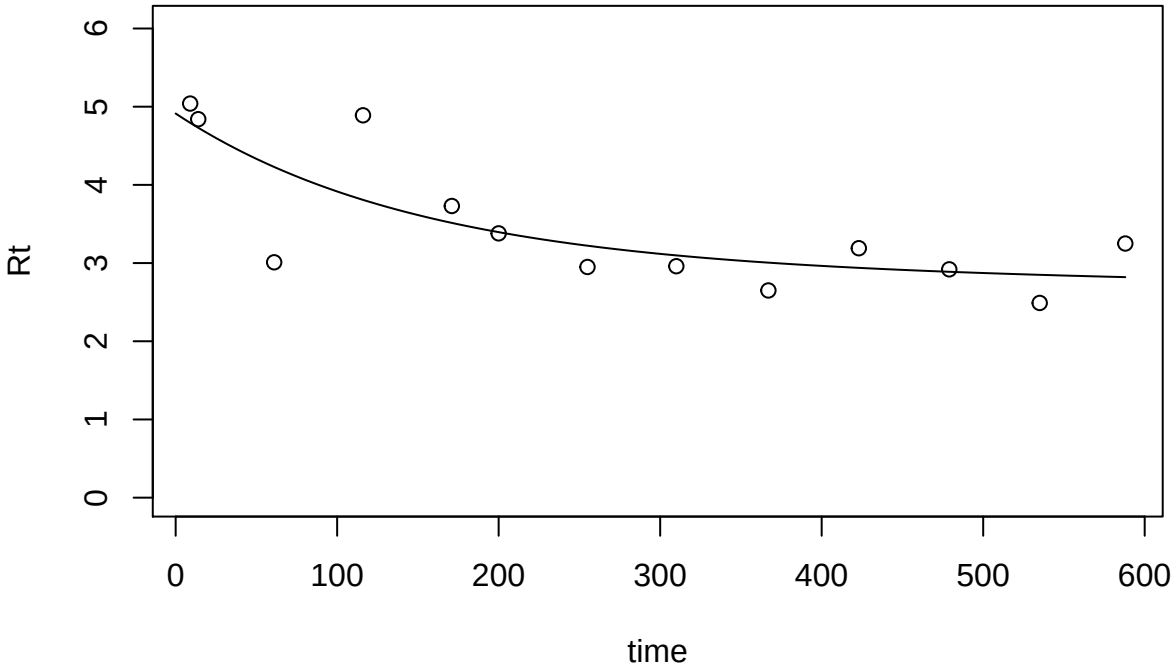



```
## [1] "AIC =  8.69803975026444"
## [1] "k1= 0.0067527323762455"
## [2] "k2= 9.14654276597295e-05"
## [3] "a21= 0.0205556267605256"
## [4] "a12= 1.63079088671969e-05"
## [5] "Proportion of C0 in pool 1= 0.00922435805279503"
```

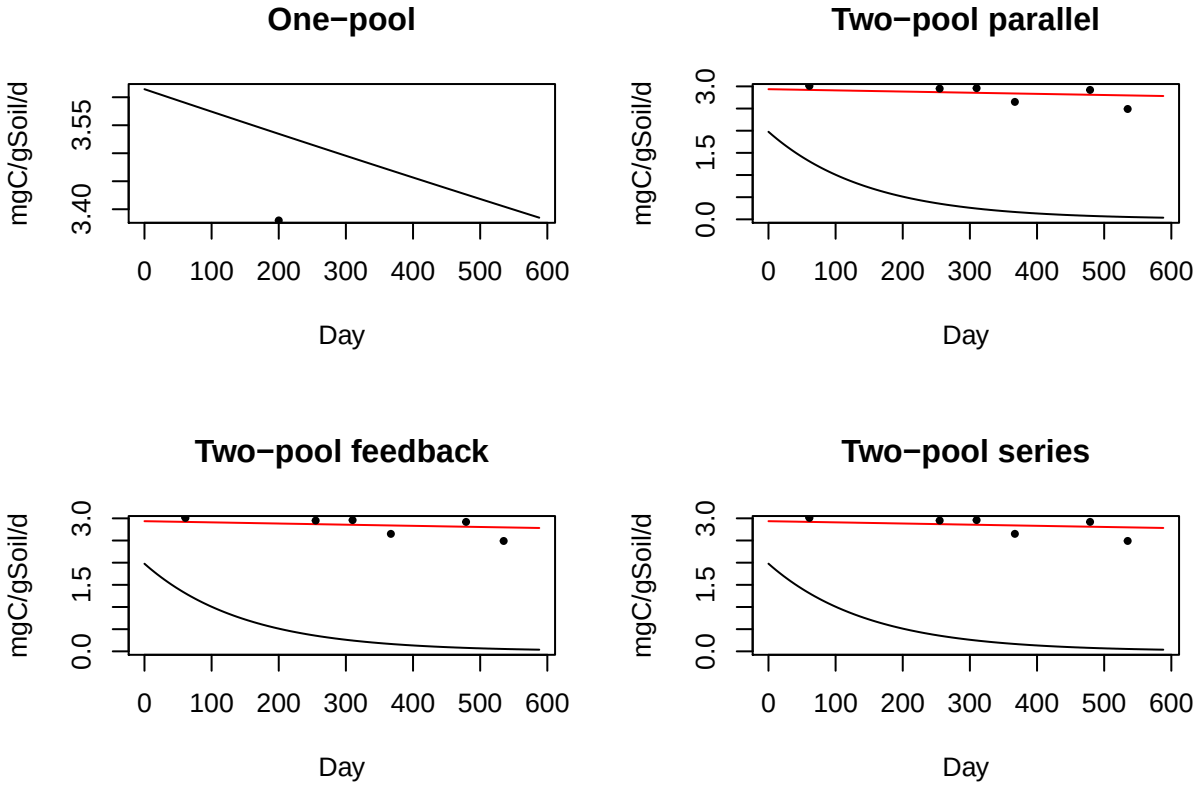



```
## [1] "AIC =  12.698039749497"
## [1] "k1= 0.00675274589707736"
## [2] "k2= 9.14654247682503e-05"
## [3] "a21= 0.0414550124295443"
```

```
## [4] "Proportion of C0 in pool 1= 0.00942813835748502"
```




```
## [1] "AIC =  10.6980397497904"
```



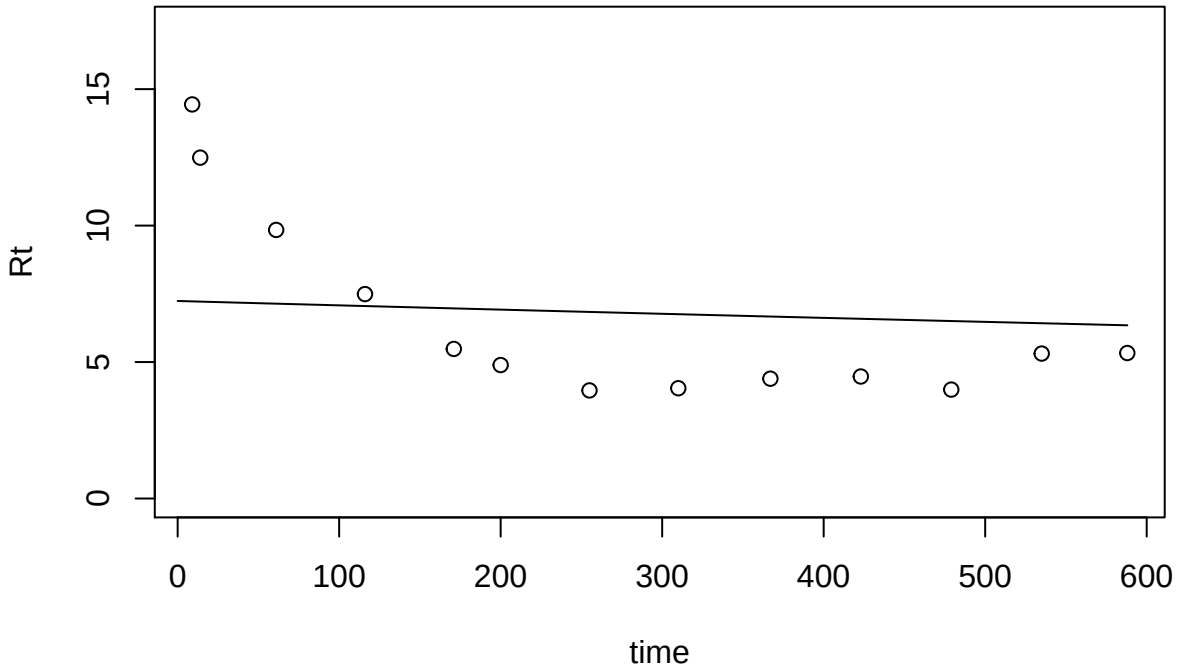
model	AIC	k1	k2	C0Inp1	a21	a12	AICc	wi	MeanTrT	q05
One-pool	2.93	0.000112	NA	NA	NA	NA	3.3	0.982	NA	NA

model	AIC	k1	k2	C0Inp1	a21	a12	AICc	wi	MeanTrT	q05
Two-pool parallel	8.7	0.00675	9.15e-05	0.00903	NA	NA	11.4	0.0174	3380	182
Two-pool feedback	12.7	0.00675	9.15e-05	0.00922	0.0206	1.63e-05	21.3	0.000123	373	106
Two-pool series	10.7	0.00675	9.15e-05	0.00943	0.0415	NA	15.7	0.00199	373	106

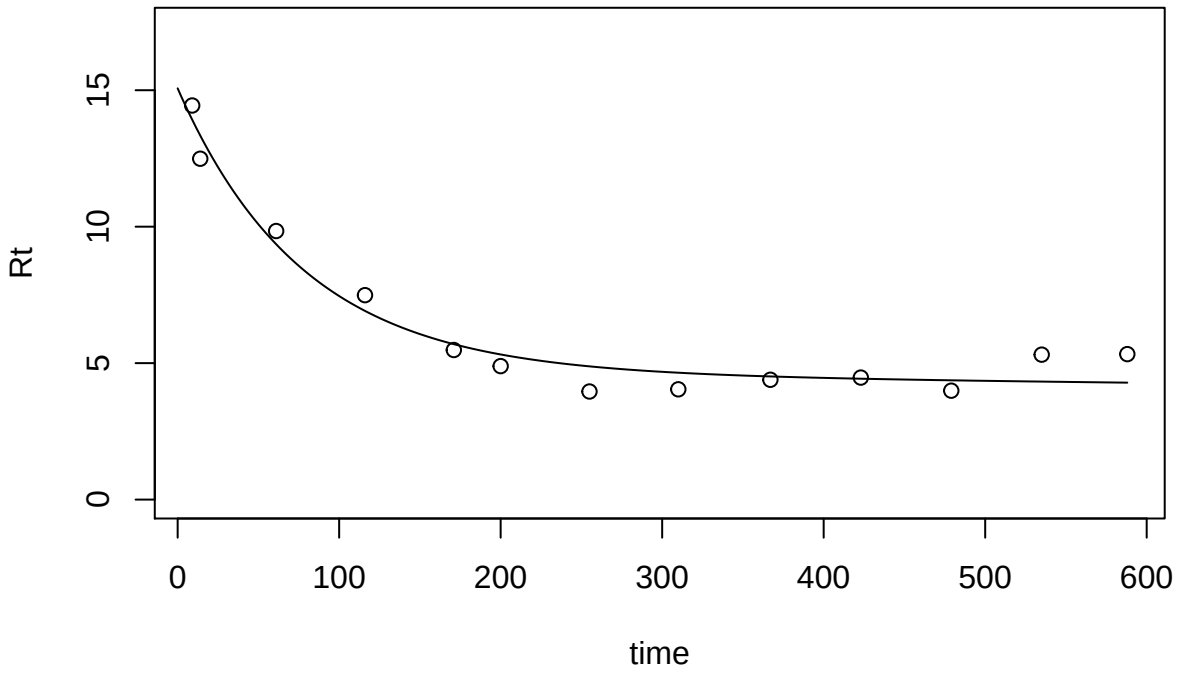
Variable C_NDakNG_25:

Decomposition rates over time at 25 degrees for North Dakota, native grassland

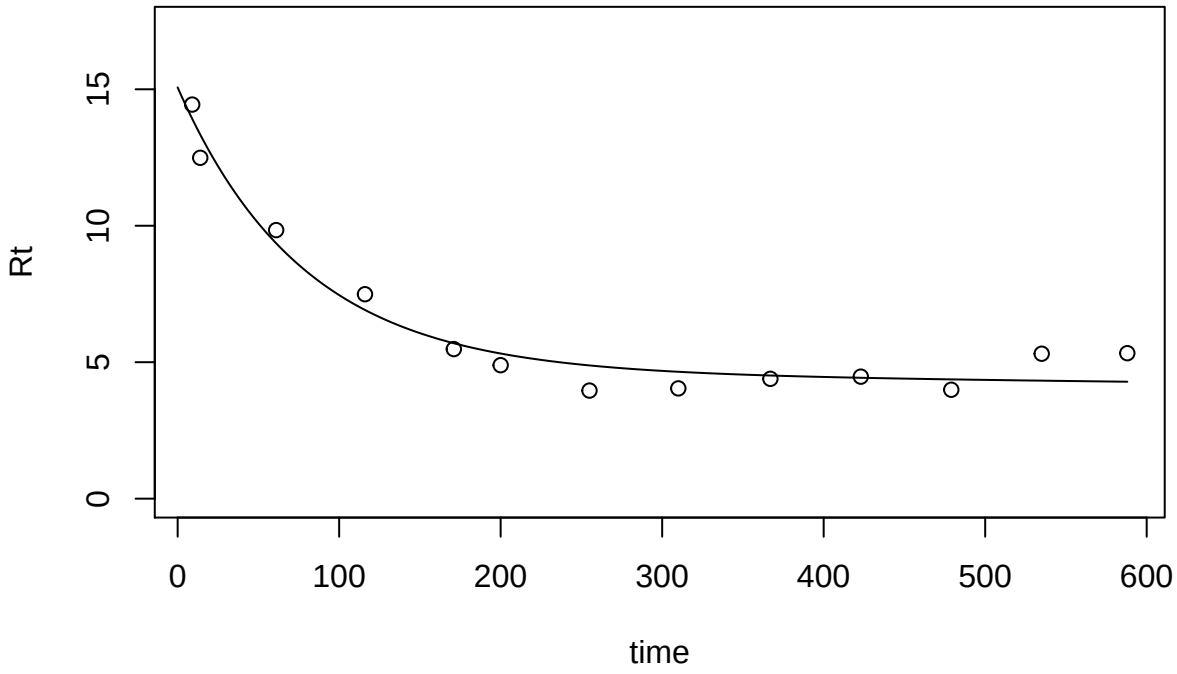
```
## [1] "Best fit parameter:  0.000223359795028319"
```




```
## [1] "AIC =  -2.56816407382005"
## [1] "k1= 0.0129129868583919"
## [2] "k2= 0.000147735453369449"
## [3] "proportion of C0 in pool 1= 0.0248592763848007"
```

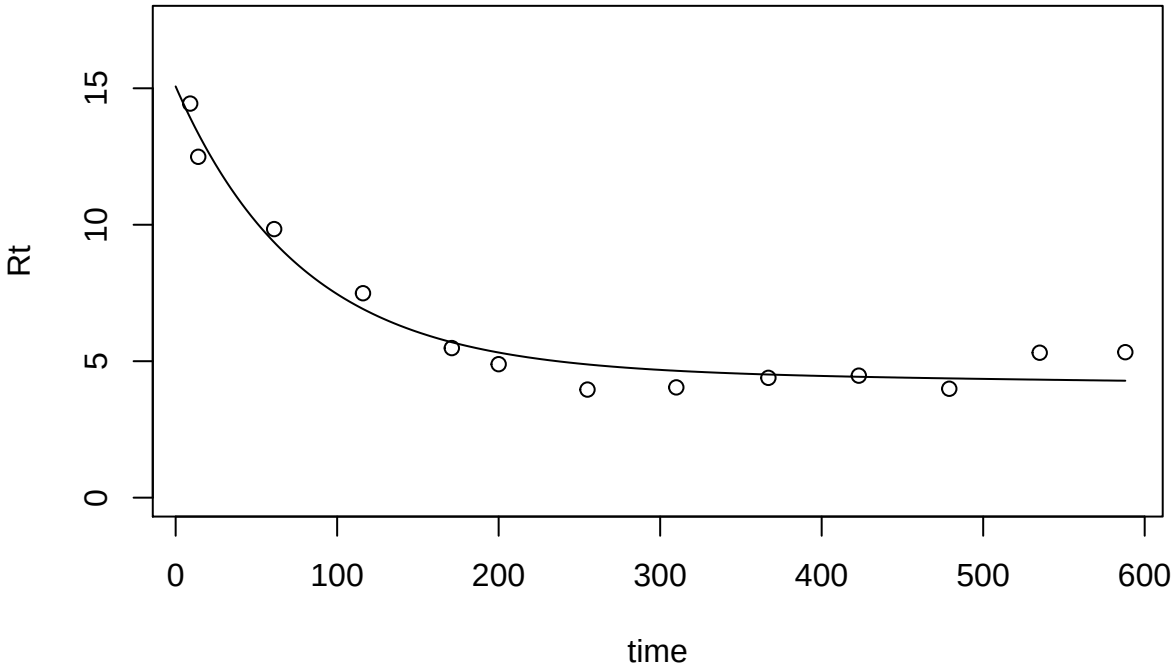



```
## [1] "AIC =  7.82083419510115"
## [1] "k1= 0.0129127020673429"
## [2] "k2= 0.000147735183585136"
## [3] "a21= 0.0396067964792716"
## [4] "a12= 8.84803053673999e-05"
## [5] "Proportion of C0 in pool 1= 0.0258982889999507"
```

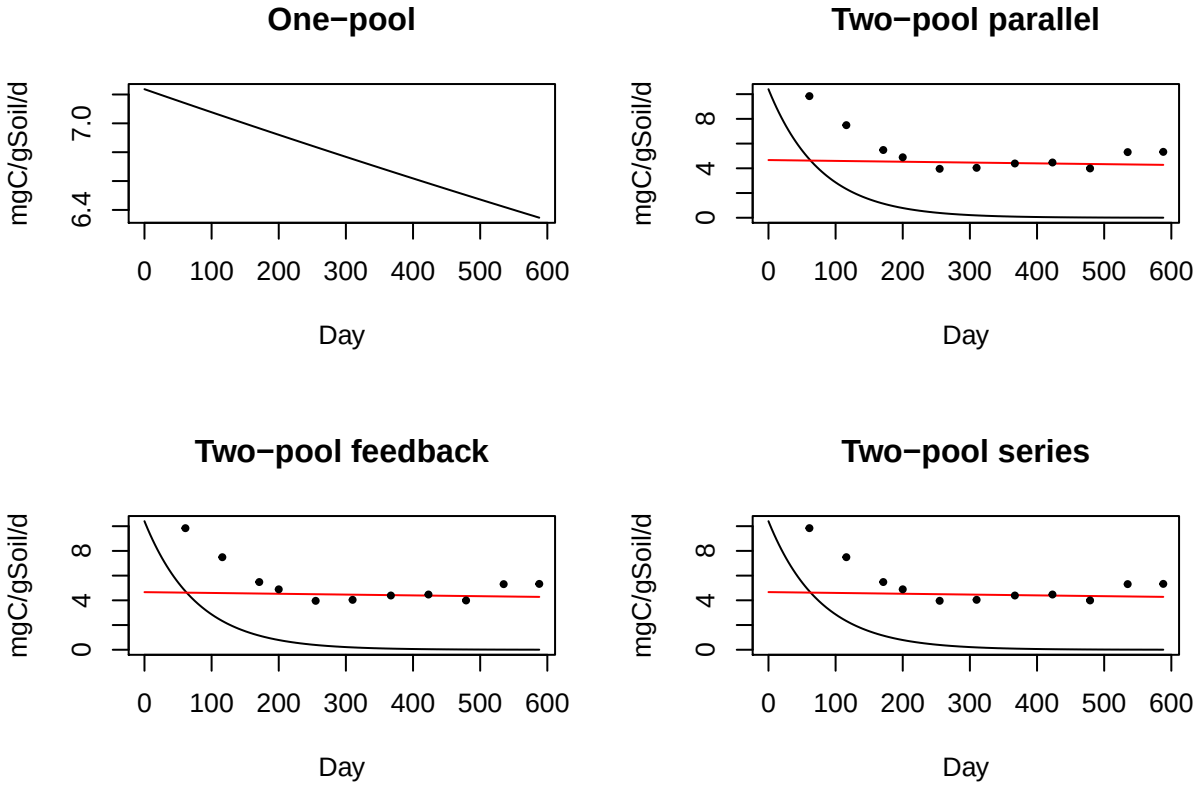



```
## [1] "AIC =  11.8208341961776"
## [1] "k1= 0.0129127364555614"
## [2] "k2= 0.000147734760568466"
## [3] "a21= 0.0204218621010851"
```

```
## [4] "Proportion of C0 in pool 1= 0.0253840084884139"
```




```
## [1] "AIC =  9.82083419591209"
```



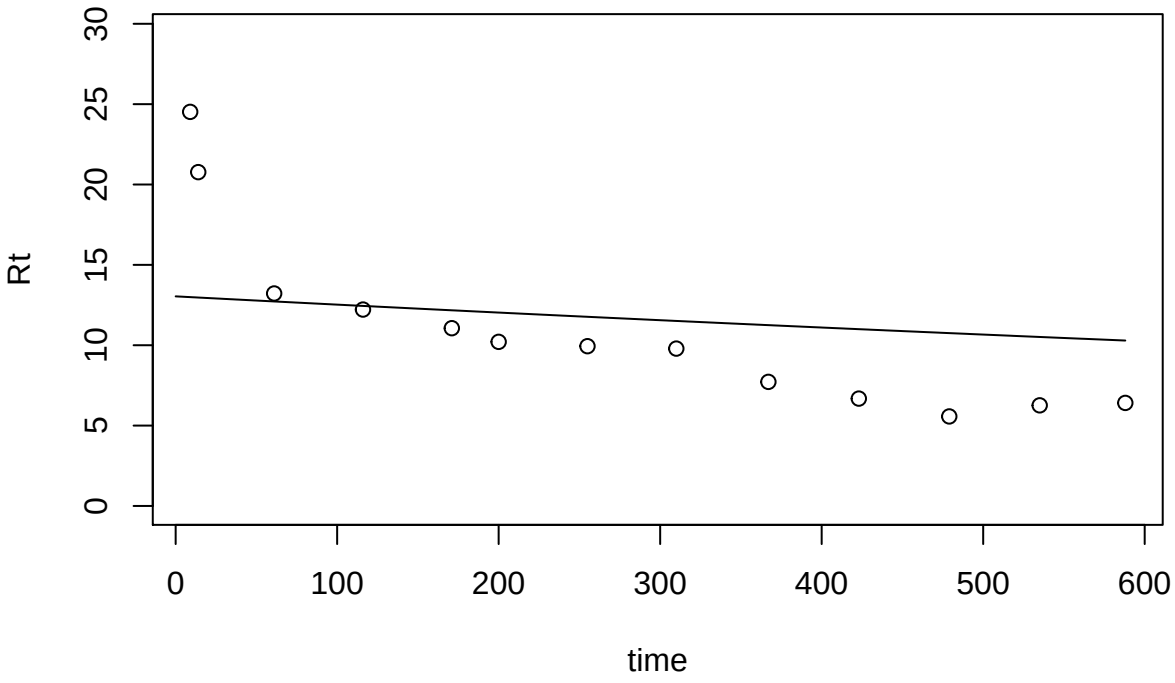
model	AIC	k1	k2	C0Inp1	a21	a12	AICc	wi	MeanTrT	q05
One-pool	-2.57	0.000223	NA	NA	NA	NA	-2.2	0.998	NA	NA

model	AIC	k1	k2	C0Inp1	a21	a12	AICc	wi	MeanTrT	q05
Two-pool parallel	7.82	0.0129	0.000148	0.0249	NA	NA	10.5	0.00175	2080	95.4
Two-pool feedback	11.8	0.0129	0.000148	0.0259	0.0396	8.85e-05	20.4	1.24e-05	346	56.9
Two-pool series	9.82	0.0129	0.000148	0.0254	0.0204	NA	14.8	0.000201	346	56.9

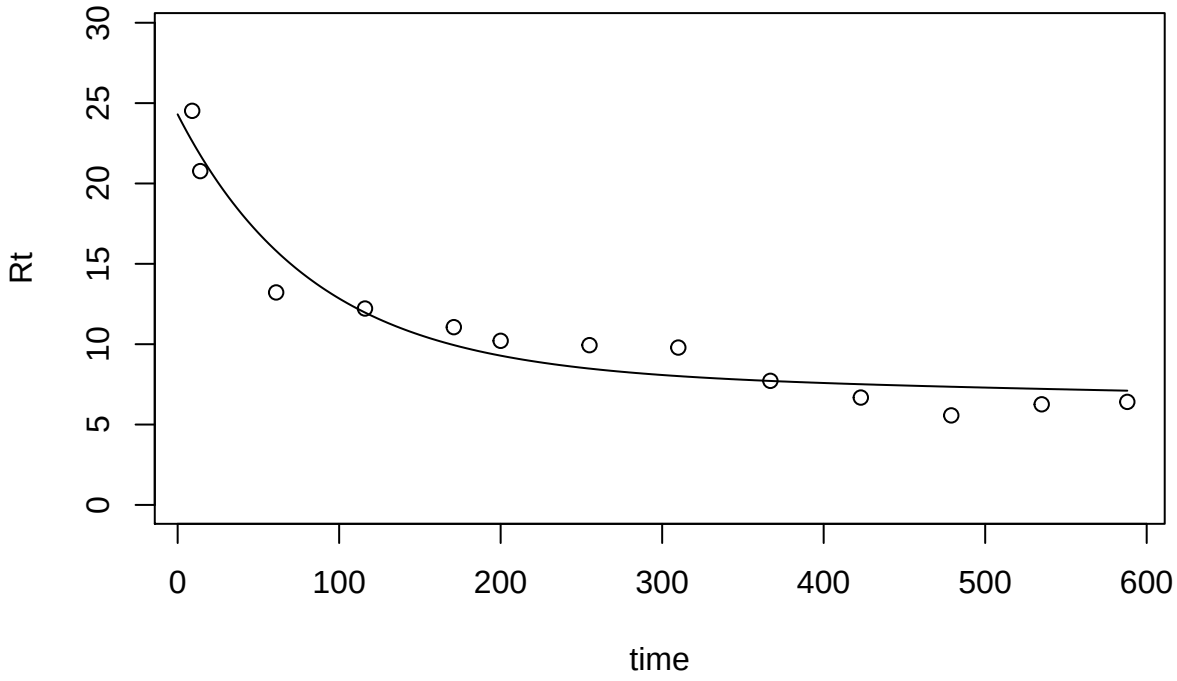
Variable C_NDakNG_35:

Decomposition rates over time at 35 degrees for North Dakota, native grassland

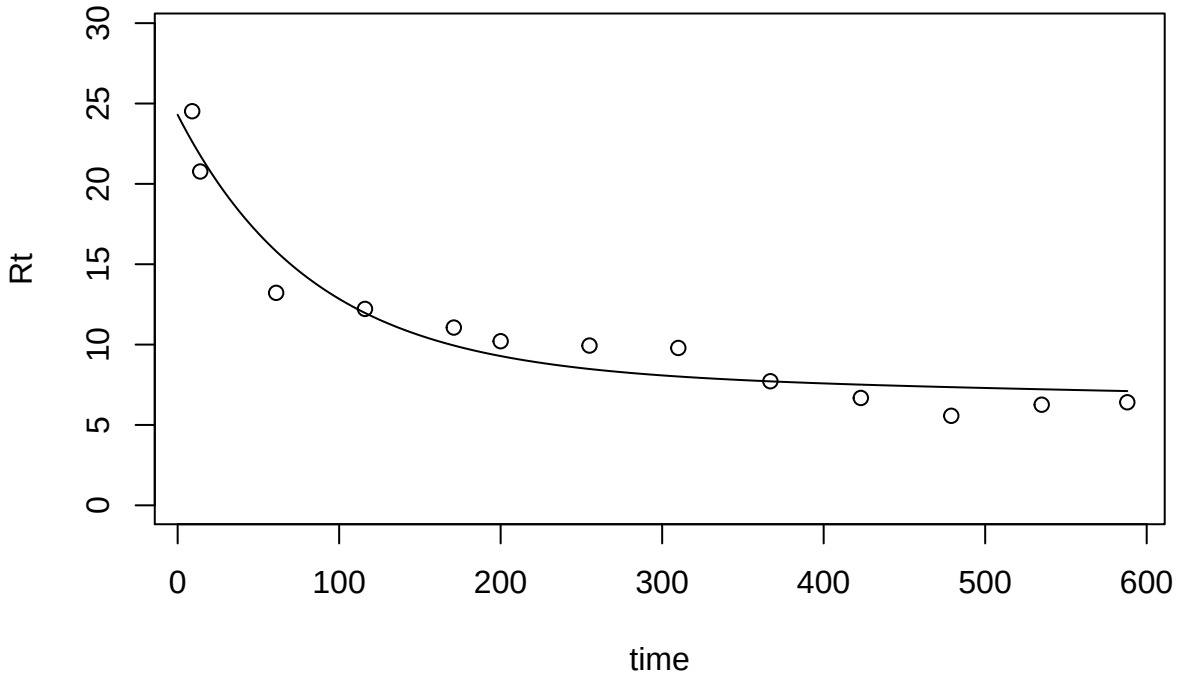
```
## [1] "Best fit parameter:  0.000402494172857553"
```




```
## [1] "AIC =  -4.25125581202022"
## [1] "k1= 0.0121191191996962"
## [2] "k2= 0.000267081563849643"
## [3] "proportion of C0 in pool 1= 0.0407459126701971"
```

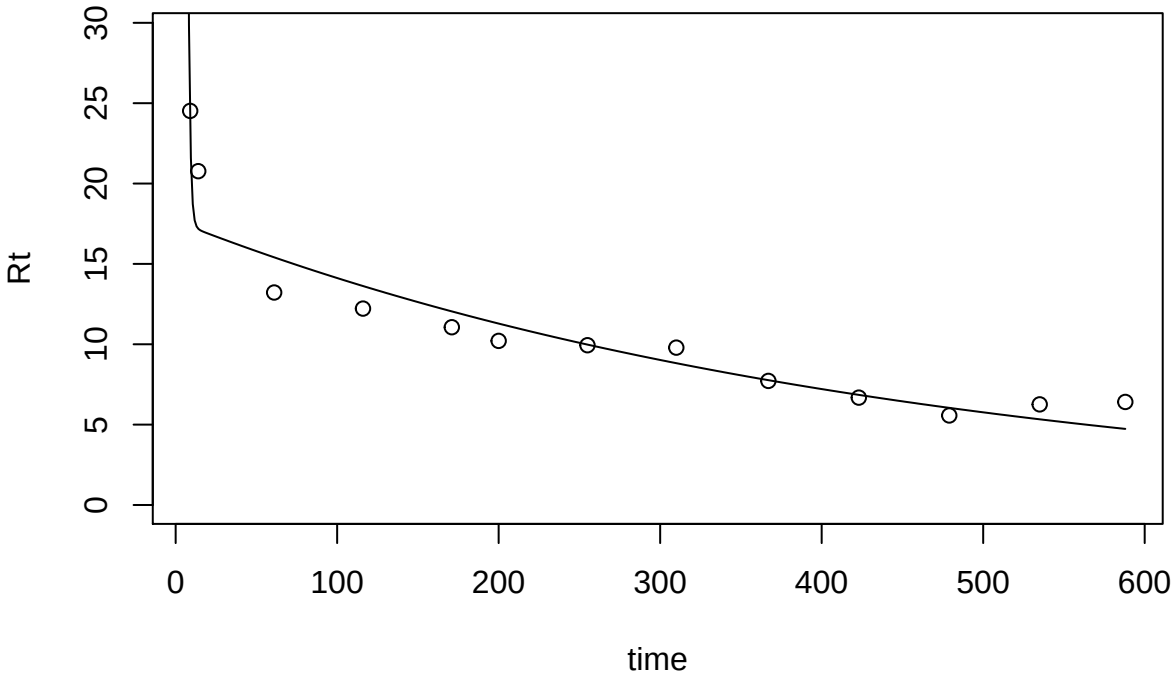



```
## [1] "AIC =  4.77523146231234"
## [1] "k1= 0.0121194651646375"
## [2] "k2= 0.00026708346354229"
## [3] "a21= 0.0237666644817987"
## [4] "a12= 1.27583926729513e-05"
## [5] "Proportion of C0 in pool 1= 0.0417599642352562"
```

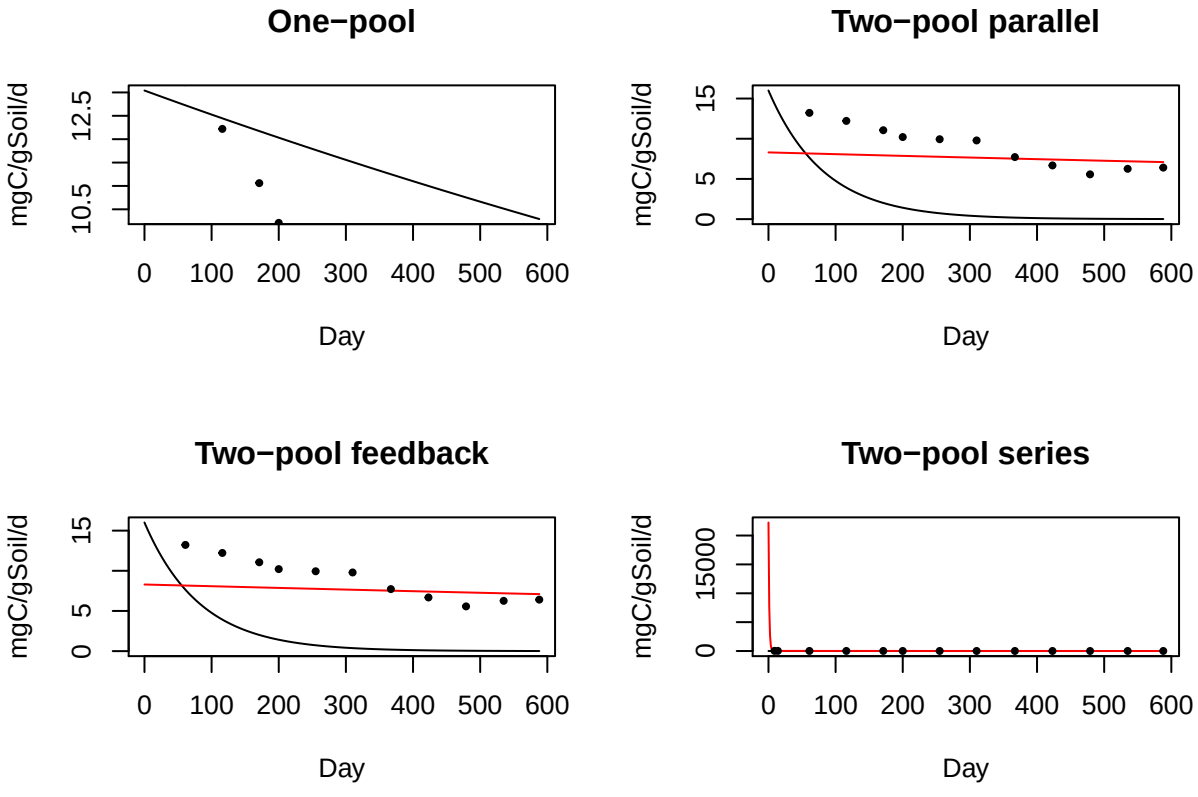



```
## [1] "AIC =  8.77523146901393"
## [1] "k1= 0.00223938693489029"
## [2] "k2= 0.90725126908986"
## [3] "a21= 0.969897013418476"
```

```
## [4] "Proportion of C0 in pool 1= 0.242882529775299"
```




```
## [1] "AIC =  6.57128572238861"
```



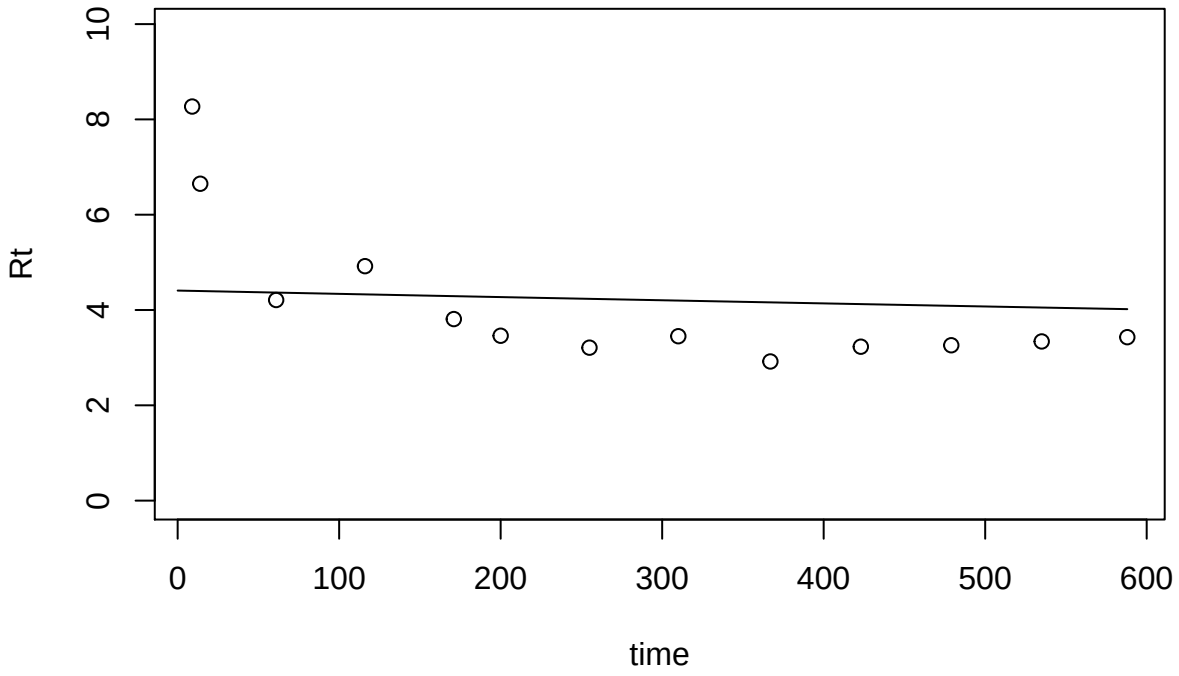
model	AIC	k1	k2	C0Inp1	a21	a12	AICc	wi	MeanTrT	q05
One-pool	-4.25	0.000402	NA	NA	NA	NA	-3.89	0.997	NA	NA

model	AIC	k1	k2	C0Inp1	a21	a12	AICc	wi	MeanTrT	q05
Two-pool parallel	4.78	0.0121	0.000267	0.0407	NA	NA	7.44	0.00345	1180	100
Two-pool feedback	8.78	0.0121	0.000267	0.0418	0.0238	1.28e-05	17.3	2.44e-05	171	59.2
Two-pool series	6.57	0.00224	0.907	0.243	0.97	NA	11.6	0.000438	171	59.2

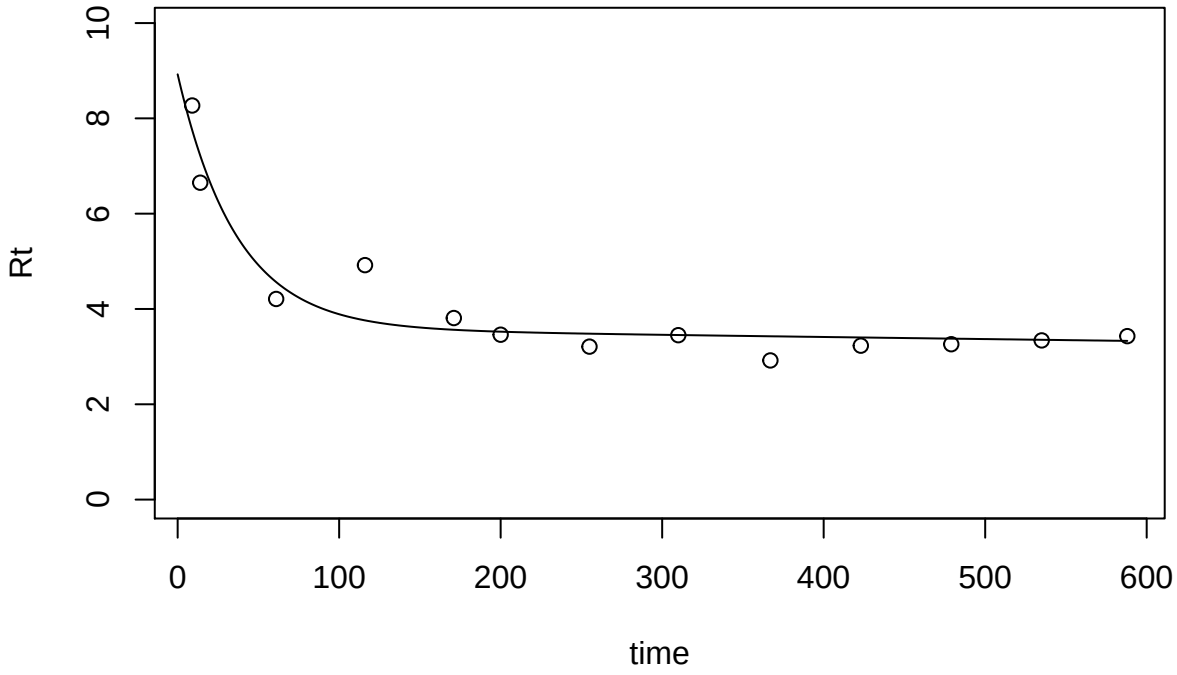
Variable C_NDakCul_15:

Decomposition rates over time at 15 degrees for North Dakota, cultivated

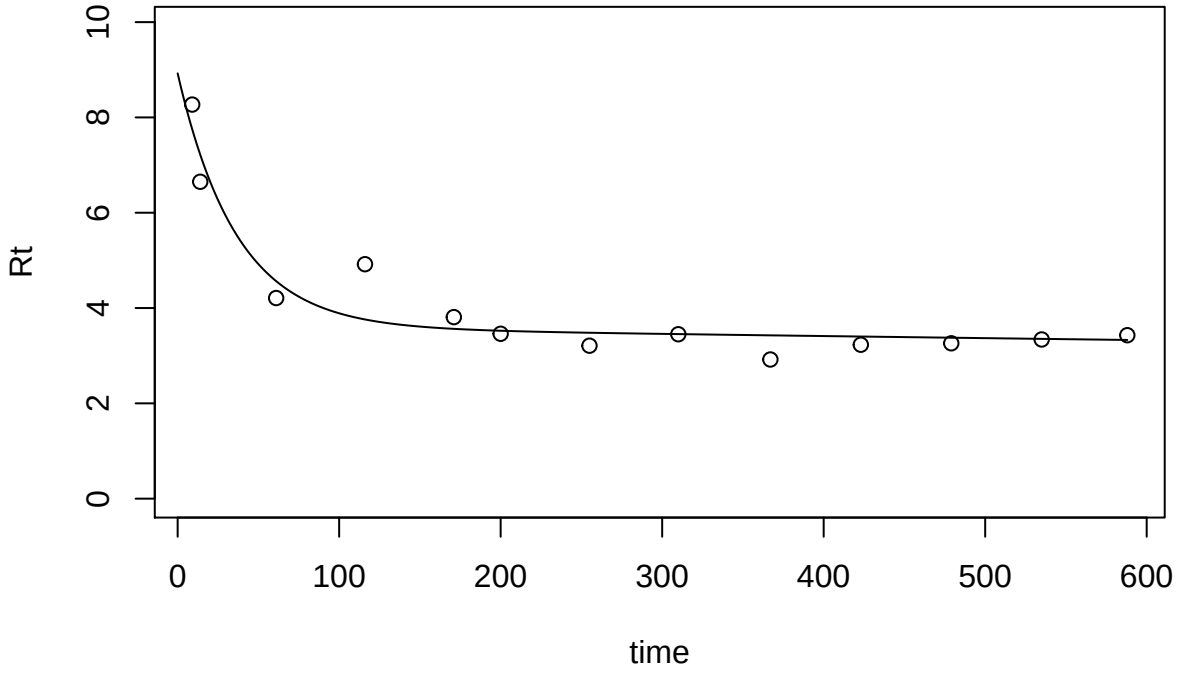
```
## [1] "Best fit parameter:  0.000157420450302529"
```




```
## [1] "AIC =  0.554344492961572"
## [1] "k1= 0.0274378507509077"
## [2] "k2= 0.000129220460705702"
## [3] "proportion of C0 in pool 1= 0.00693922246776335"
```

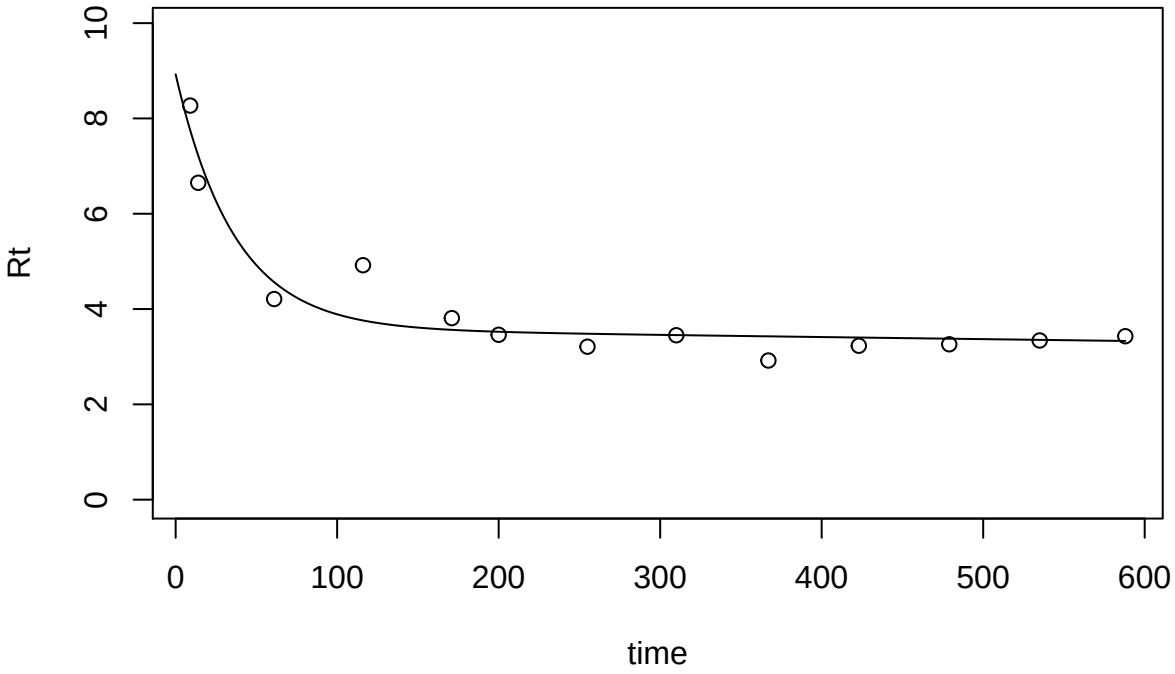



```
## [1] "AIC =  9.29165703575109"
## [1] "k1= 0.0274412348835136"
## [2] "k2= 0.000129601177570295"
## [3] "a21= 0.52741854064206"
## [4] "a12= 0.00553288435091509"
## [5] "Proportion of C0 in pool 1= 0.014786223309002"
```

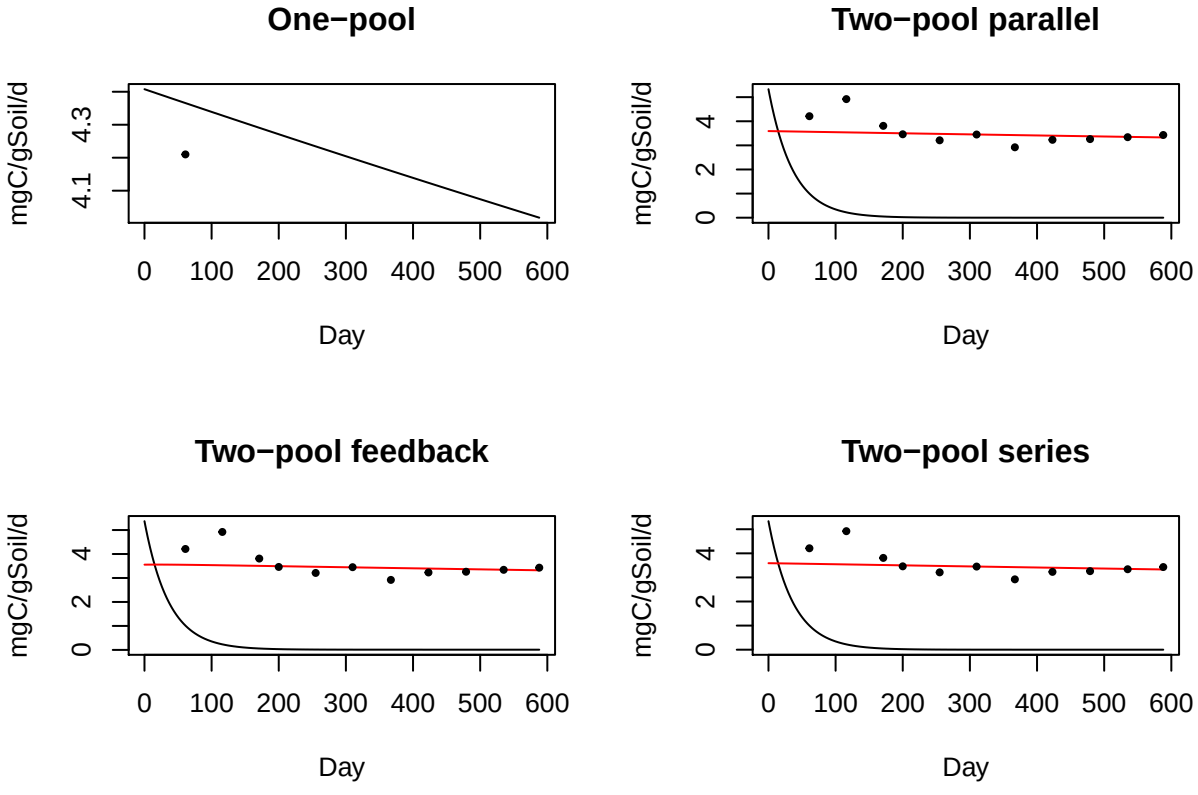



```
## [1] "AIC =  13.2916570601596"
## [1] "k1= 0.0274560997631157"
## [2] "k2= 0.000129225270129127"
## [3] "a21= 0.0885983226214762"
```

```
## [4] "Proportion of C0 in pool 1= 0.00761365420873417"
```




```
## [1] "AIC =  11.2916570420593"
```



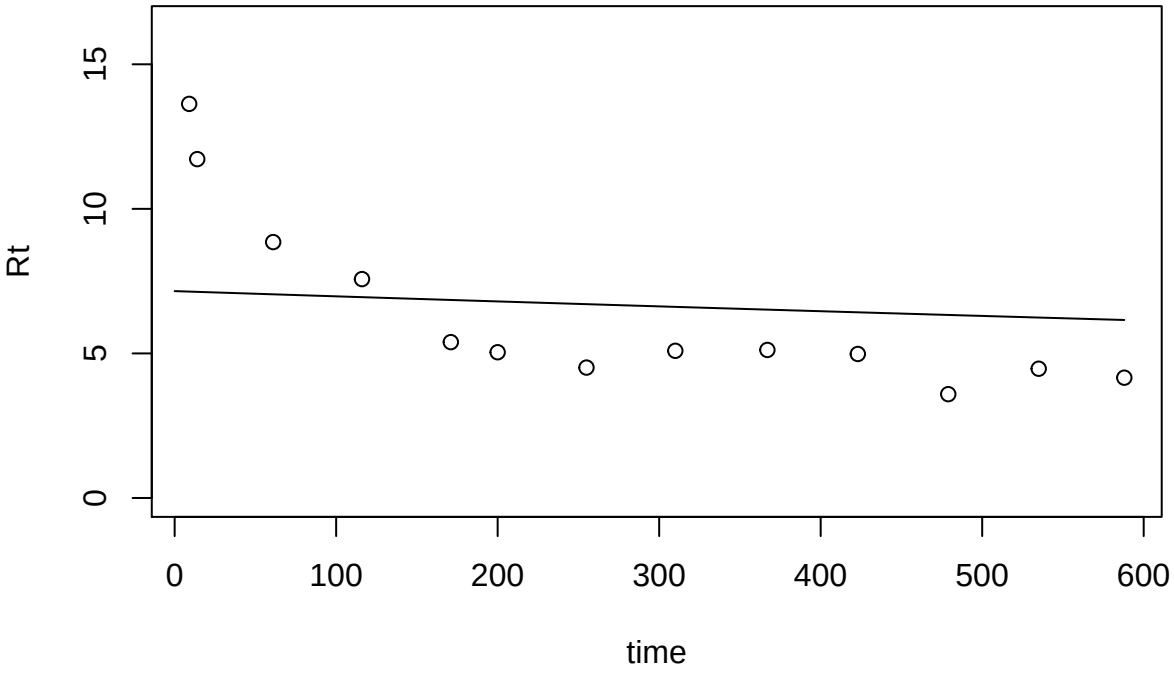
model	AIC	k1	k2	C0Inp1	a21	a12	AICc	wi	MeanTrT	q05
One-pool	0.554	0.000157	NA	NA	NA	NA	0.918	0.996	NA	NA
Two-pool parallel	9.29	0.0274	0.000129	0.00694	NA	NA	12	0.00399	2350	45.3

model	AIC	k1	k2	C0Inp1	a21	a12	AICc	wi	MeanTrT	q05
Two-pool feedback	13.3	0.0274	0.00013	0.0148	0.527	0.00553	21.9	2.82e-05	4120	450
Two-pool series	11.3	0.0275	0.000129	0.00761	0.0886	NA	16.3	0.000457	4120	450

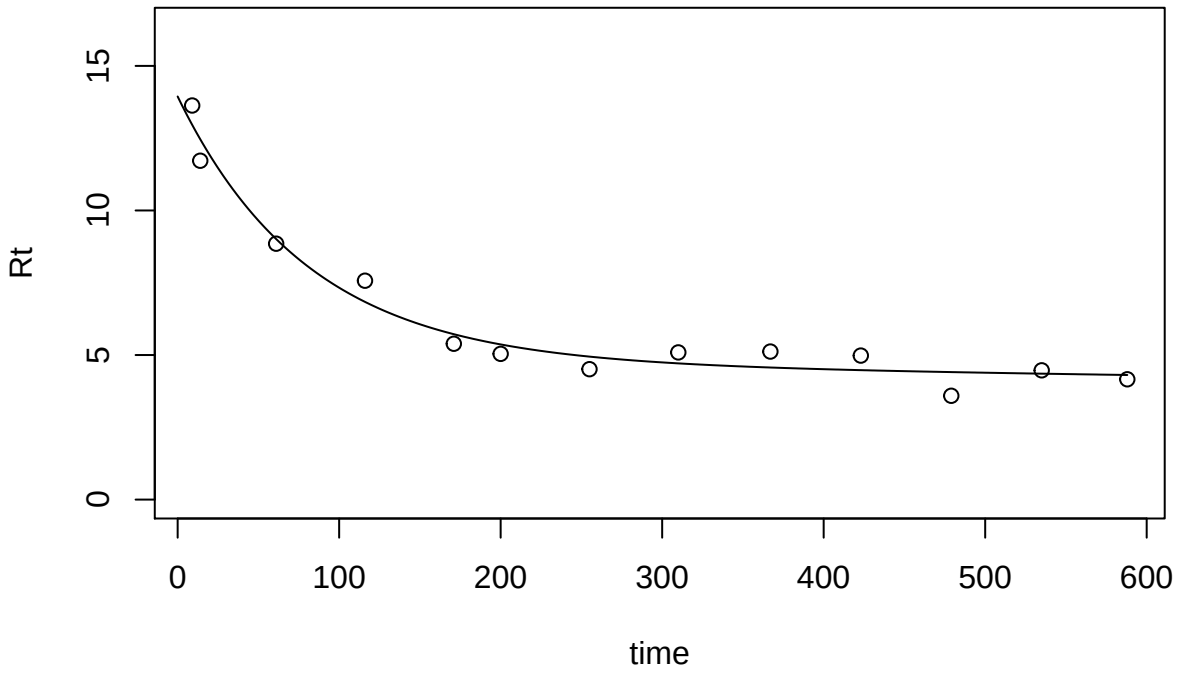
Variable C_NDakCul_25:

Decomposition rates over time at 25 degrees for North Dakota, cultivated

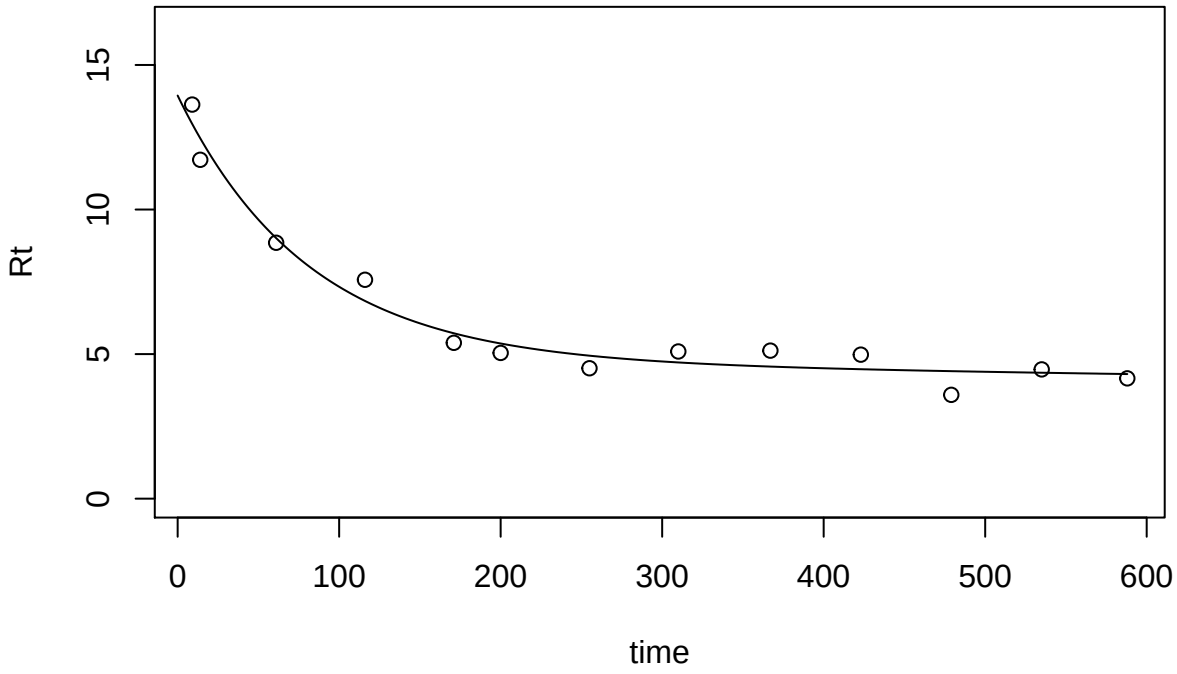
```
## [1] "Best fit parameter:  0.000255517989690426"
```




```
## [1] "AIC =  -2.03725025307528"
## [1] "k1= 0.0124480022198193"
## [2] "k2= 0.000174934540951056"
## [3] "proportion of C0 in pool 1= 0.0263160386472306"
```

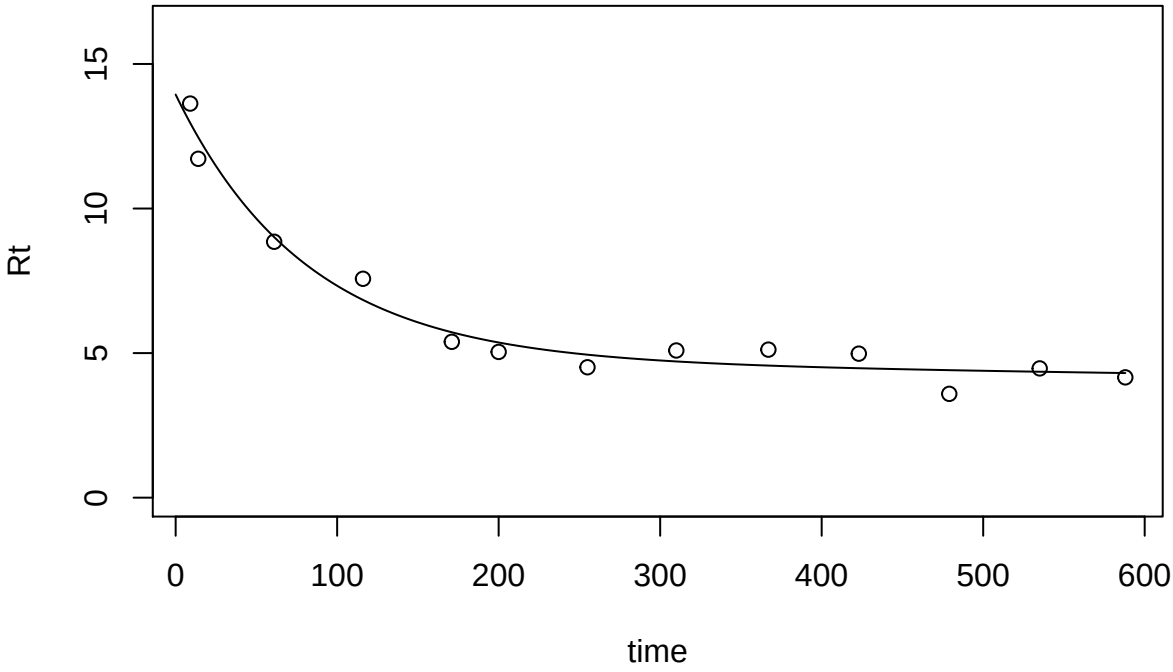



```
## [1] "AIC =  8.69801771314558"
## [1] "k1= 0.0124480049971604"
## [2] "k2= 0.000174935114525808"
## [3] "a21= 0.0456084423180795"
## [4] "a12= 6.92513269383577e-05"
## [5] "Proportion of C0 in pool 1= 0.027593346962384"
```

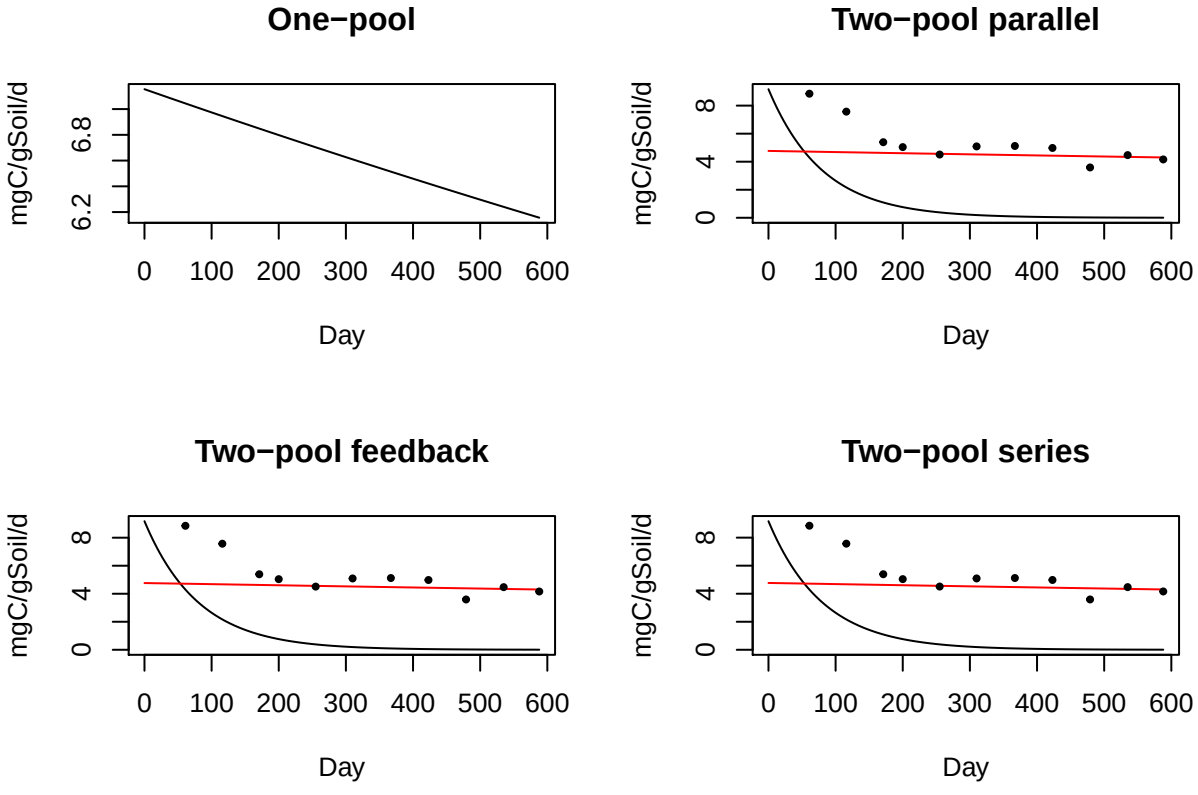



```
## [1] "AIC =  12.6980177130395"
## [1] "k1= 0.0124480024288041"
## [2] "k2= 0.000174934541709274"
## [3] "a21= 0.0138031988713757"
```

```
## [4] "Proportion of C0 in pool 1= 0.0266896736664461"
```




```
## [1] "AIC =  10.698017713103"
```



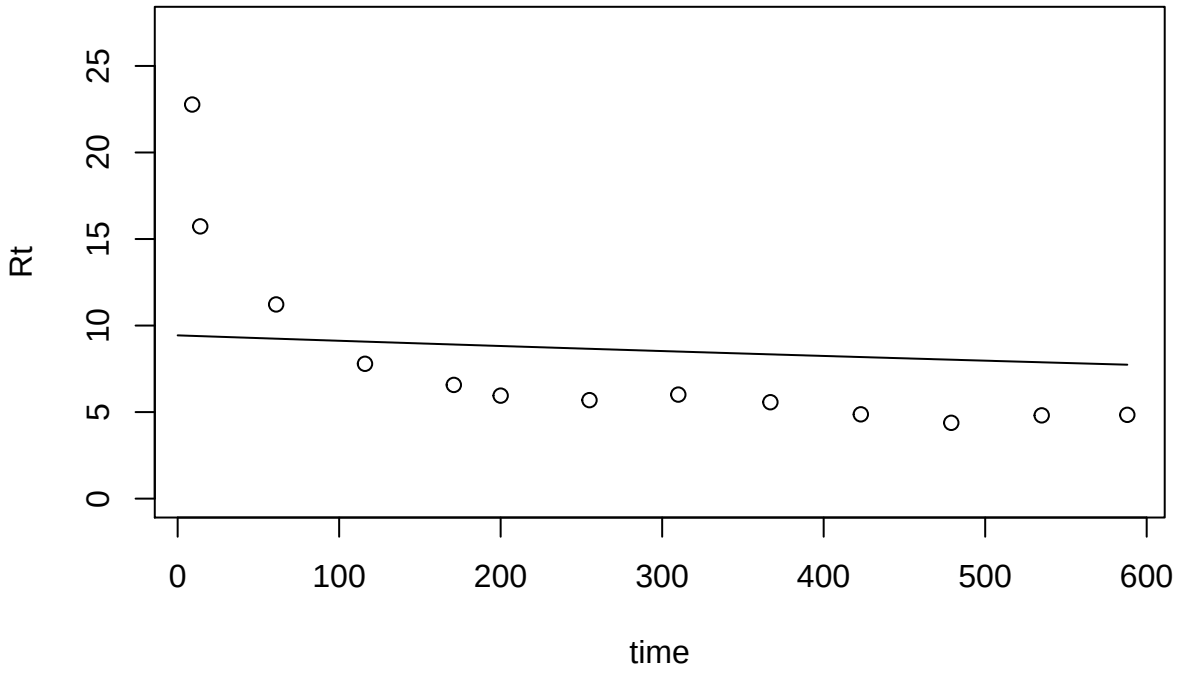
model	AIC	k1	k2	C0Inp1	a21	a12	AICc	wi	MeanTrT	q05
One-pool	-2.04	0.000256	NA	NA	NA	NA	-1.67	0.999	NA	NA

model	AIC	k1	k2	C0Inp1	a21	a12	AICc	wi	MeanTrT	q05
Two-pool parallel	8.7	0.0124	0.000175	0.0263	NA	NA	11.4	0.00147	1770	98.6
Two-pool feedback	12.7	0.0124	0.000175	0.0276	0.0456	6.93e-05	21.3	1.04e-05	341	59.6
Two-pool series	10.7	0.0124	0.000175	0.0267	0.0138	NA	15.7	0.000169	341	59.6

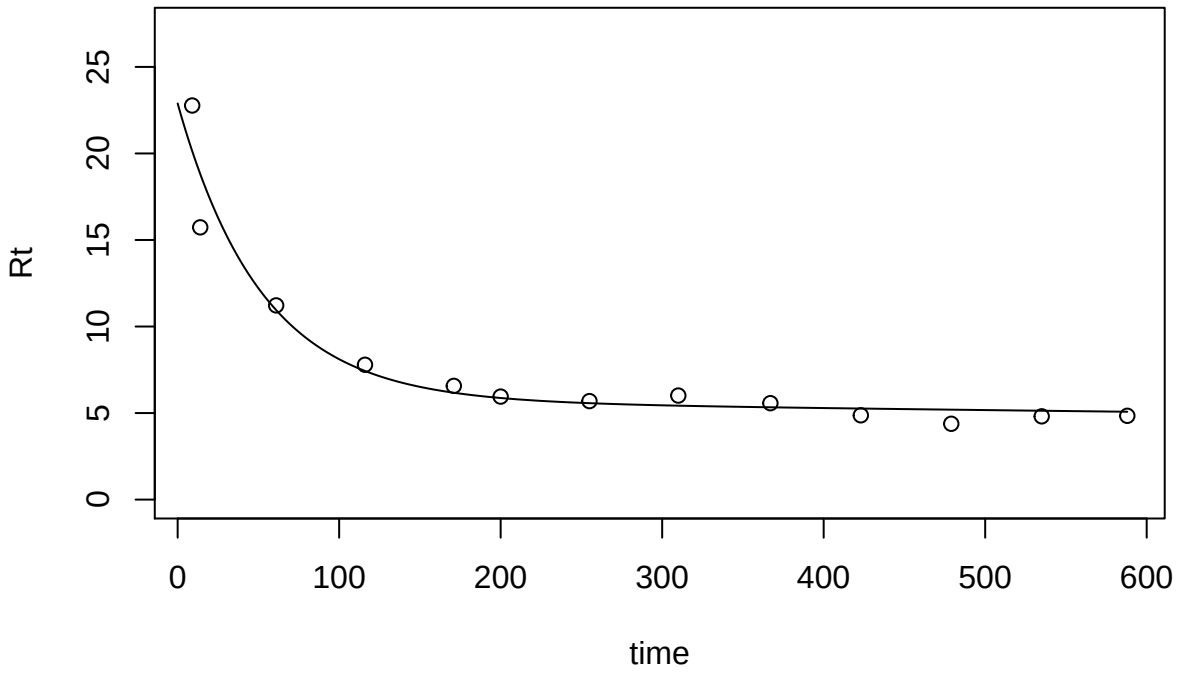
Variable C_NDakCul_35:

Decomposition rates over time at 35 degrees for North Dakota, cultivated

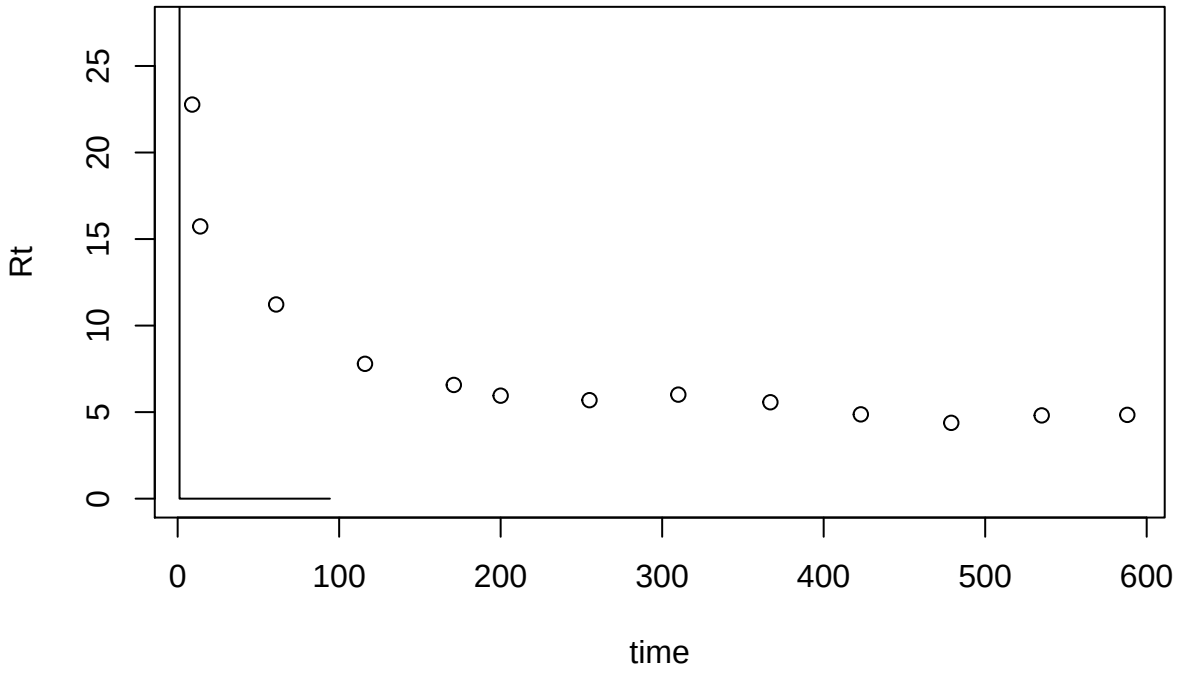
```
## [1] "Best fit parameter:  0.0003368744182555596"
```




```
## [1] "AIC =  -4.29619169816153"
## [1] "k1= 0.0193181365260118"
## [2] "k2= 0.000212027796075767"
## [3] "proportion of C0 in pool 1= 0.0316845211063979"
```

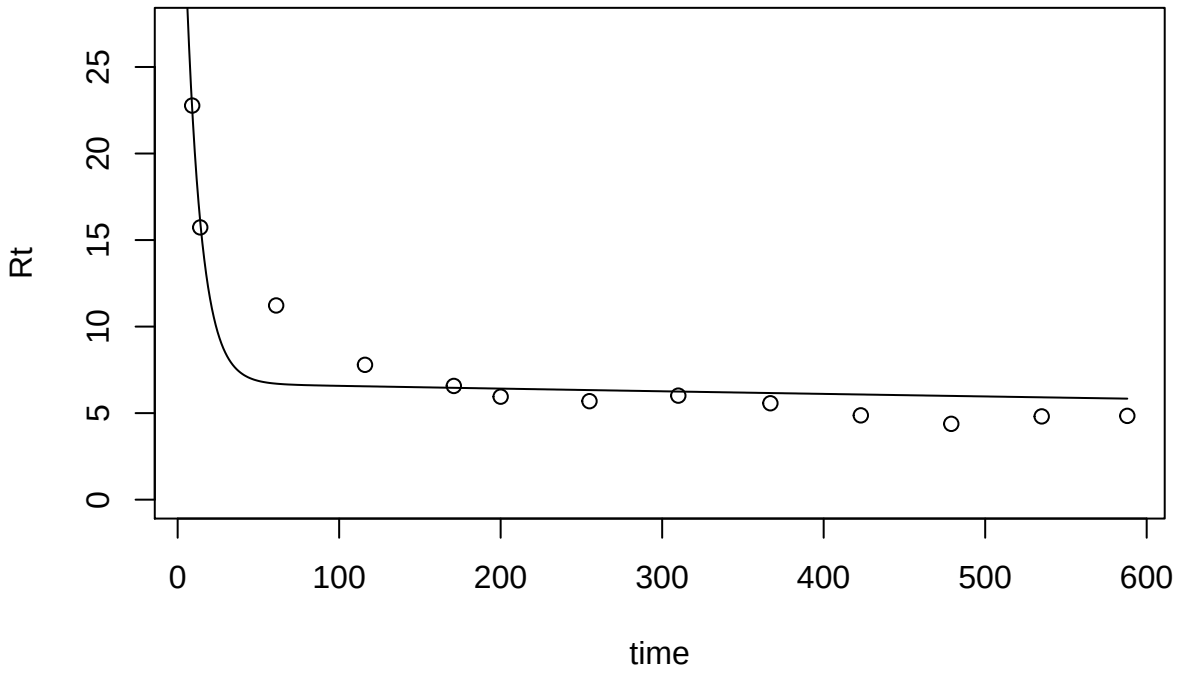



```
## [1] "AIC =  5.33358207362989"
## [1] "k1= 4327.24317715063"
## [2] "k2= 3.18555116194677e+111"
## [3] "a21= 4.32566565731762e-05"
## [4] "a12= 0.99999995879684"
## [5] "Proportion of C0 in pool 1= 0.999956074407686"
```

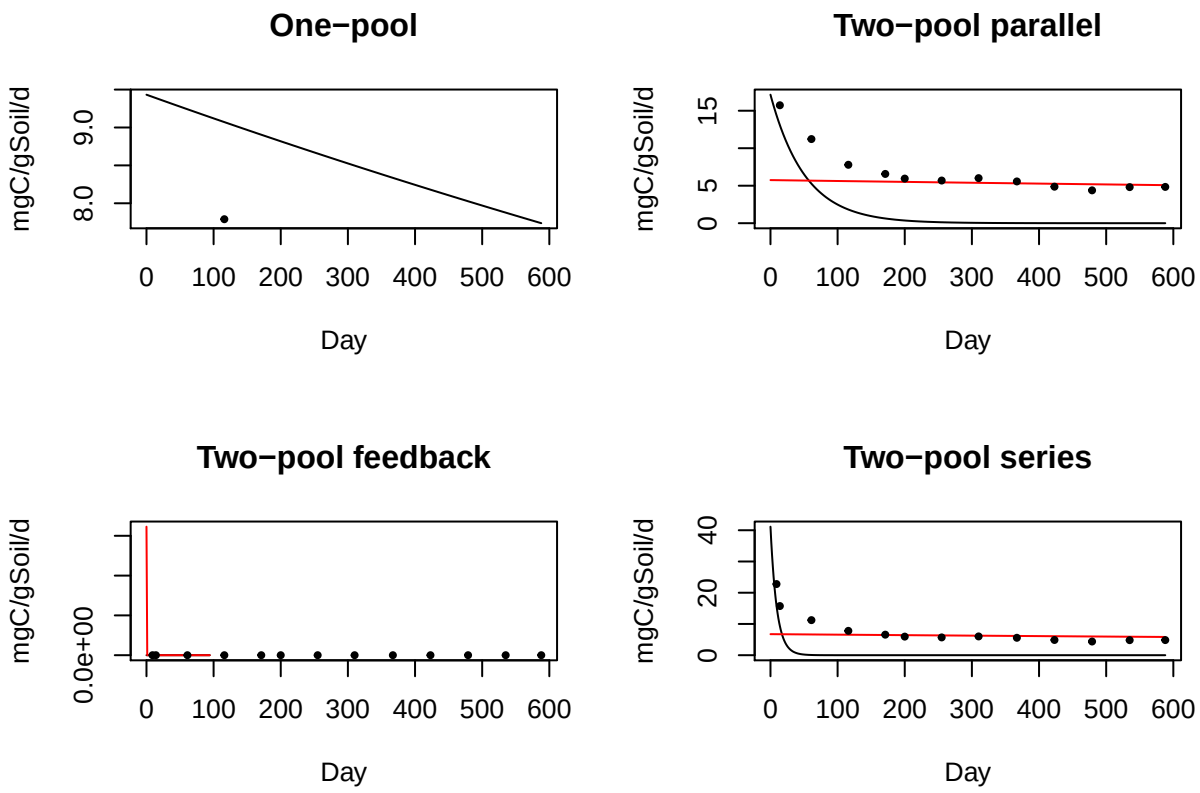



```
## [1] "AIC =  1.51890947399185"
## [1] "k1= 0.105964310440441"
## [2] "k2= 0.000243983610057107"
## [3] "a21= 0.00188851681725777"
```

```
## [4] "Proportion of C0 in pool 1= 0.0138906413567065"
```



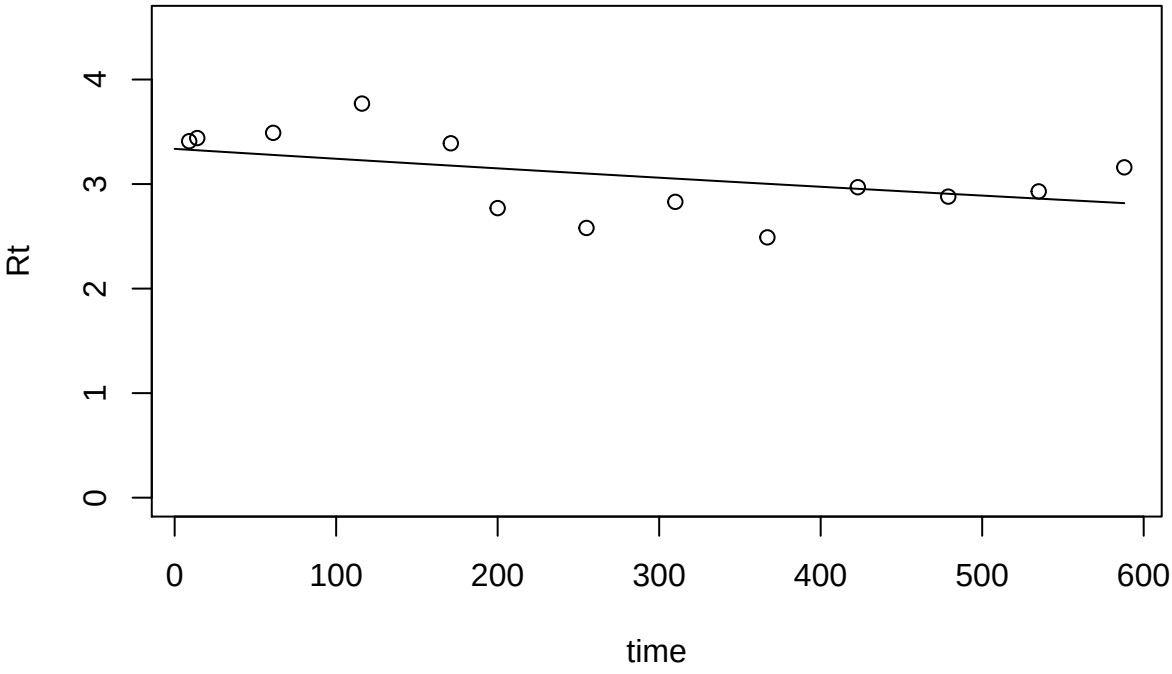

```
## [1] "AIC =  6.36792576308179"
## Error in solve.default(A): system is computationally singular: reciprocal condition number = 6.79169
```



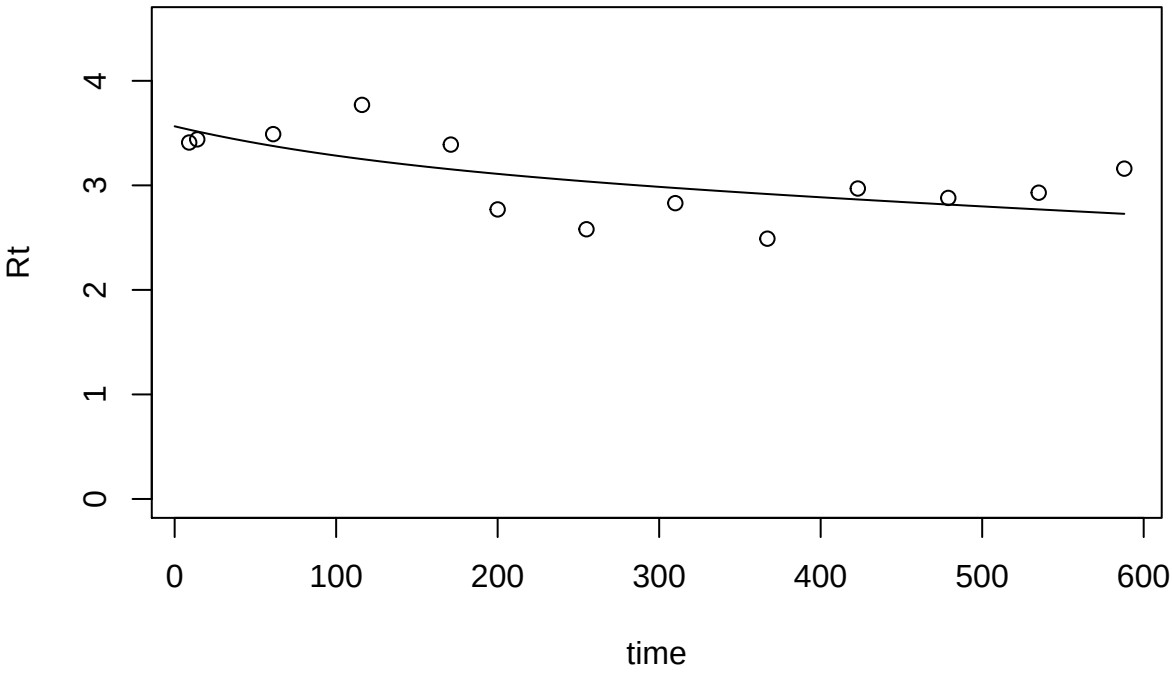
Variable C_ColoNG_15:

Decomposition rates over time at 35 degrees for Colorado, native grassland

```
## [1] "Best fit parameter:  0.000287647413769647"
```

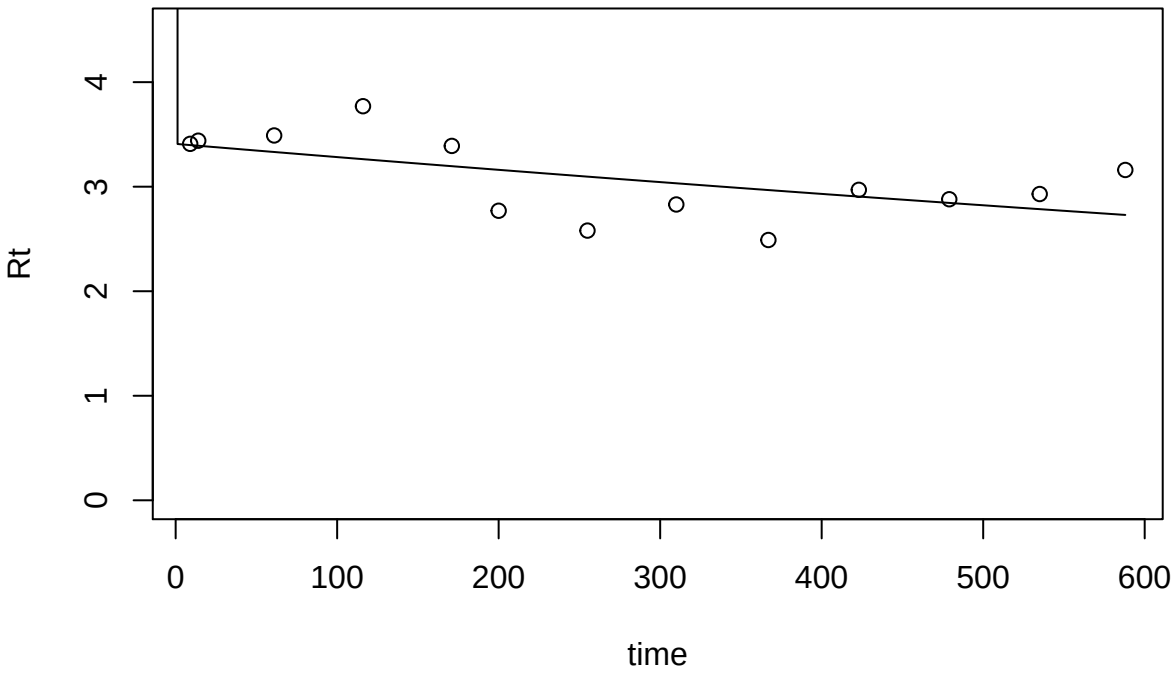



```
## [1] "AIC =  6.67433215385109"
## [1] "k1= 0.00773072008015992"
## [2] "k2= 0.000277558691865426"
## [3] "proportion of C0 in pool 1= 0.00399421381542259"
```

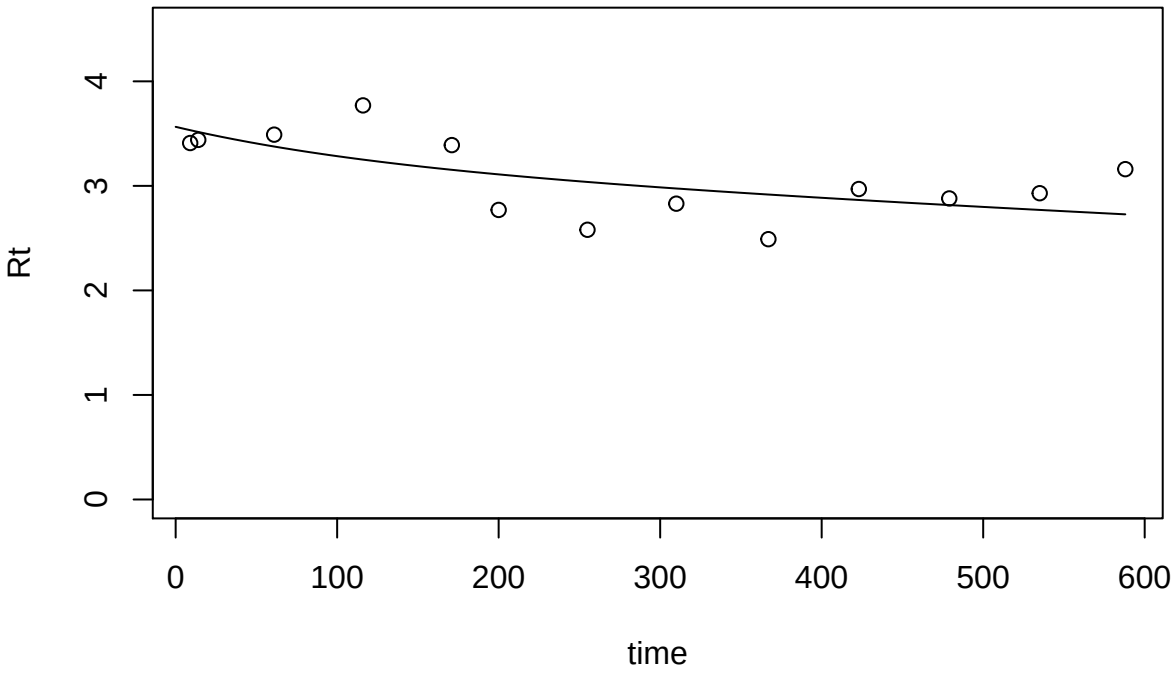



```
## [1] "AIC =  10.912846535893"
## [1] "k1= 0.000378215858342597"
```

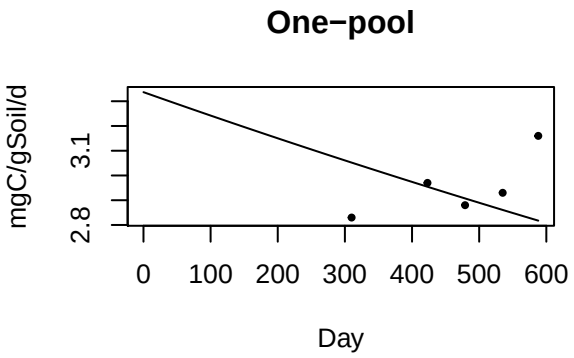
```
## [2] "k2= 16.1392960471983"
## [3] "a21= 0.00578736121765178"
## [4] "a12= 8.49051641227394e-06"
## [5] "Proportion of C0 in pool 1= 0.777184960635229"
```

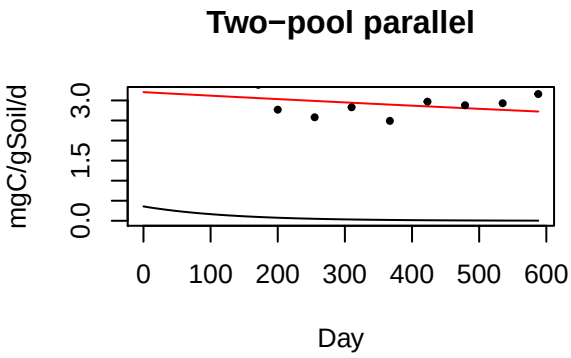


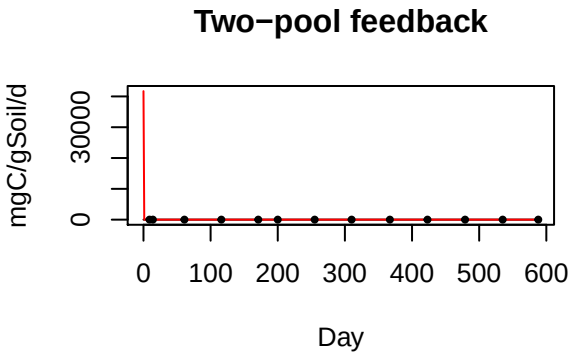

```
## [1] "AIC =  14.7288254569761"
## [1] "k1= 0.00772799959615926"
## [2] "k2= 0.000277557408323434"
## [3] "a21= 0.0202246330653506"
## [4] "Proportion of C0 in pool 1= 0.00408092803165905"
```

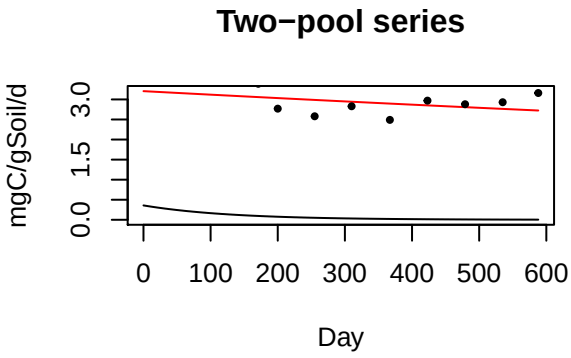



```
## [1] "AIC =  12.912846531935"
```







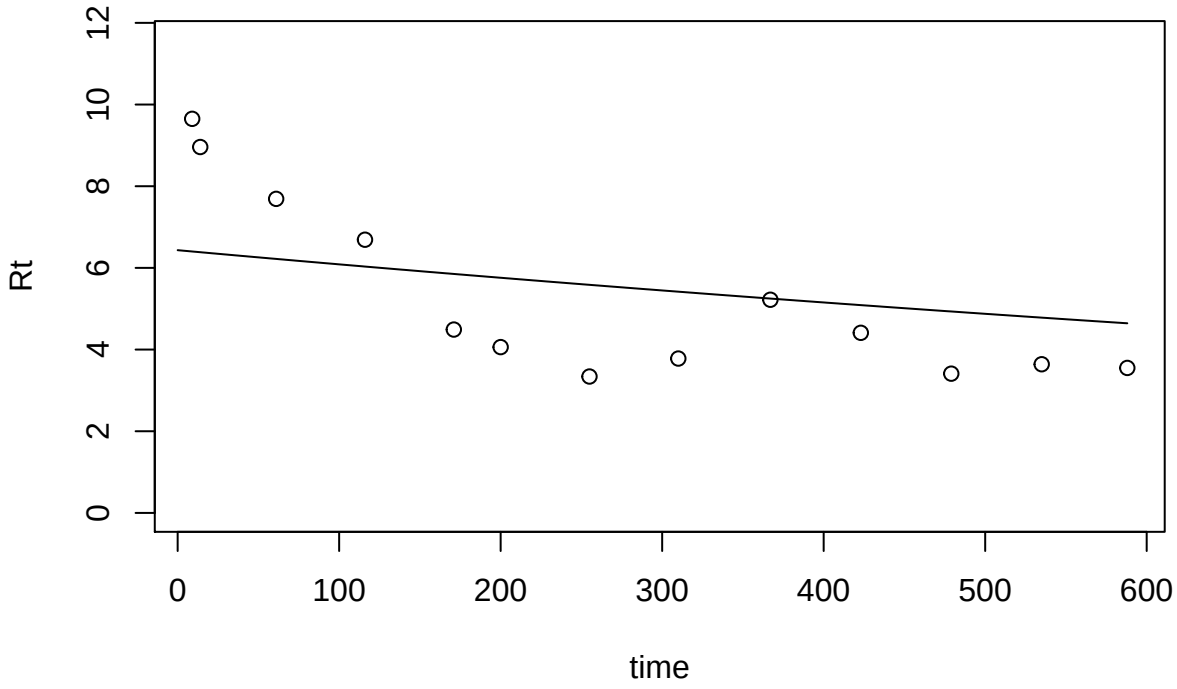


model	AIC	k1	k2	C0Inp1	a21	a12	AICc	wi	MeanTrT	q05
One-pool	6.67	0.000288	NA	NA	NA	NA	7.04	0.963	NA	NA
Two-pool parallel	10.9	0.00773	0.000278	0.00399	NA	NA	13.6	0.0366	1170	154
Two-pool feedback	14.7	0.000378	16.1	0.777	0.00579	8.49e-06	23.3	0.000283	2640	1830
Two-pool series	12.9	0.00773	0.000278	0.00408	0.0202	NA	17.9	0.00419	2640	1830

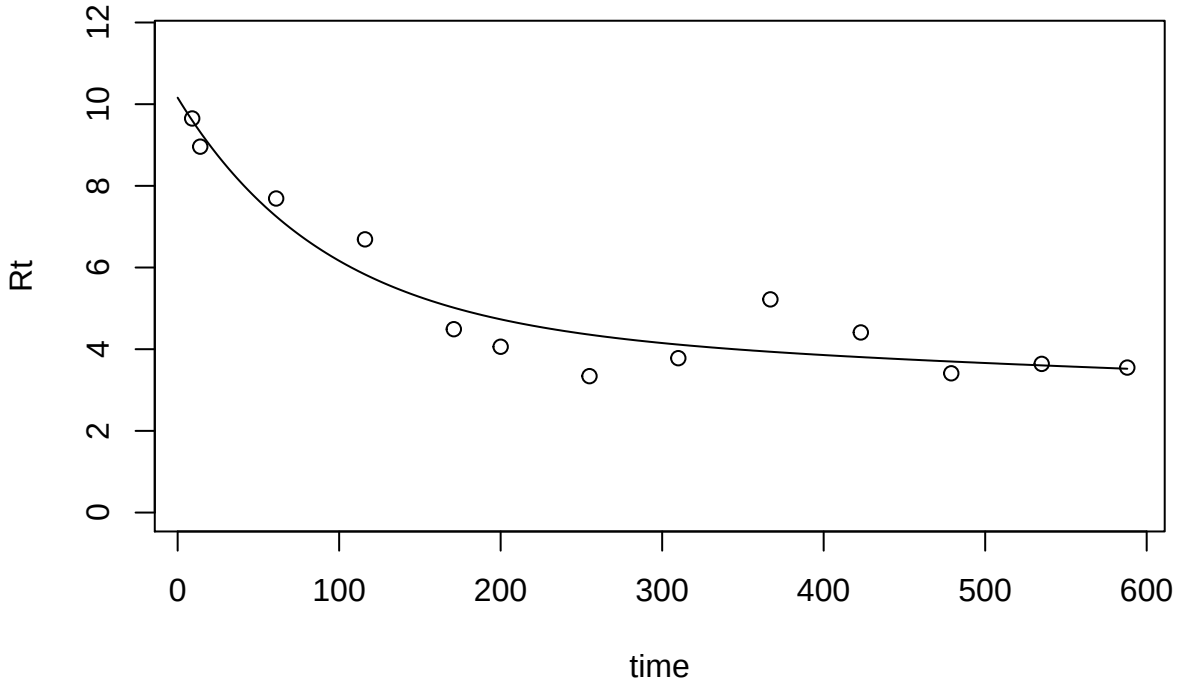
Variable C_ColoNG_25:

Decomposition rates over time at 25 degrees for Colorado, native grassland

```
## [1] "Best fit parameter:  0.000554626996600668"
```

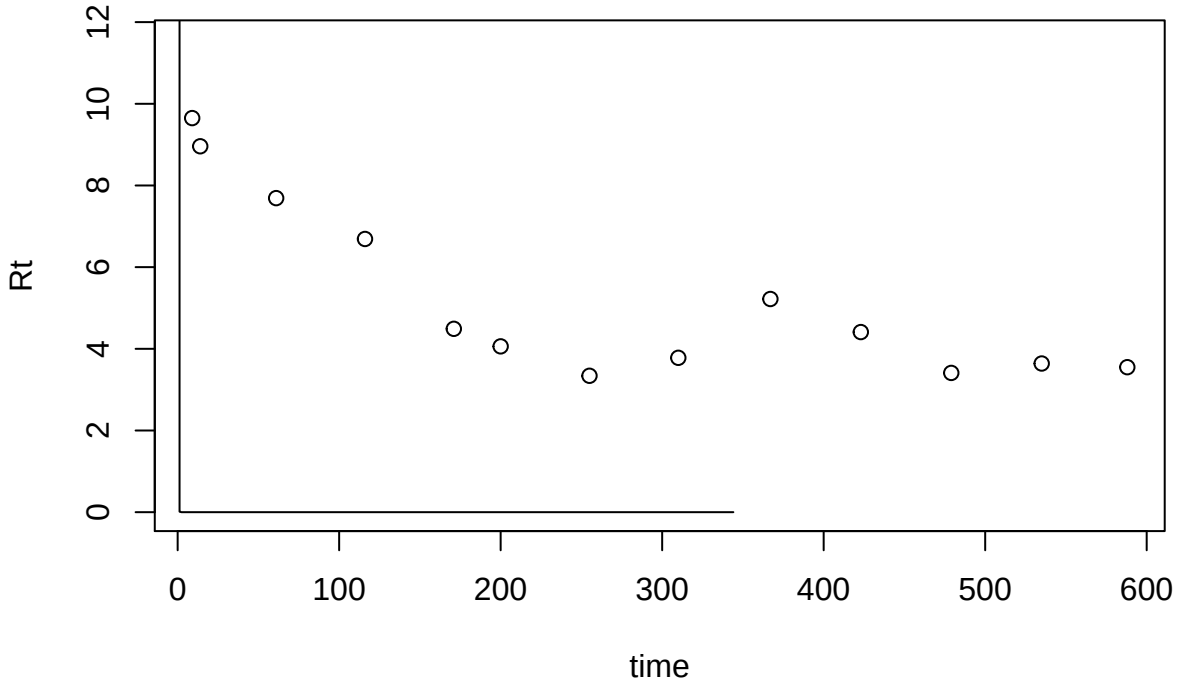



```
## [1] "AIC =  -0.119837017311081"
## [1] "k1= 0.0110484288472834"
## [2] "k2= 0.00040130494956922"
## [3] "proportion of C0 in pool 1= 0.0445655107588148"
```




```
## [1] "AIC =  7.9009436749448"
## [1] "k1= 9.81029055655835"
## [2] "k2= 1965126279.40385"
## [3] "a21= 0.0397433370311419"
## [4] "a12= 8.17436894534618e-06"
## [5] "Proportion of C0 in pool 1= 0.0112029941707028"
```

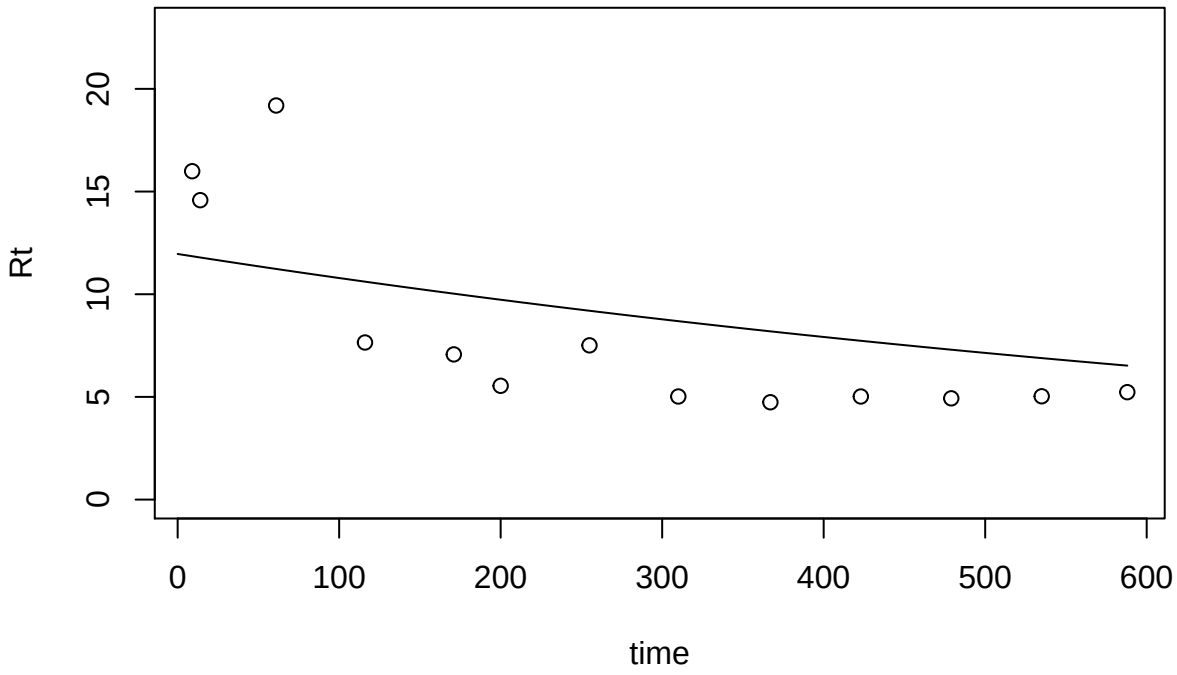
```
## [1] "AIC =  3.4756342963822"
## DLSODA-  Warning..Internal T (=R1) and H (=R2) are
##       such that in the machine, T + H = T on the next step
##      (H = step size). Solver will continue anyway.
## In above message, R1 = 0, R2 = 0
##
## DINTDY-  T (=R1) illegal
## In above message, R1 = 1.17836
##
##       T not in interval TCUR - HU (= R1) to TCUR (=R2)
## In above message, R1 = 0, R2 = 0
##
## DINTDY-  T (=R1) illegal
## In above message, R1 = 2.35671
##
##       T not in interval TCUR - HU (= R1) to TCUR (=R2)
## In above message, R1 = 0, R2 = 0
##
## DLSODA-  Trouble in DINTDY.  ITASK = I1, TOUT = R1
## In above message, I1 = 1
##
## In above message, R1 = 2.35671
##

## Error in lsoda(startValues, t, lsexamp): illegal input detected before taking any integration steps
```



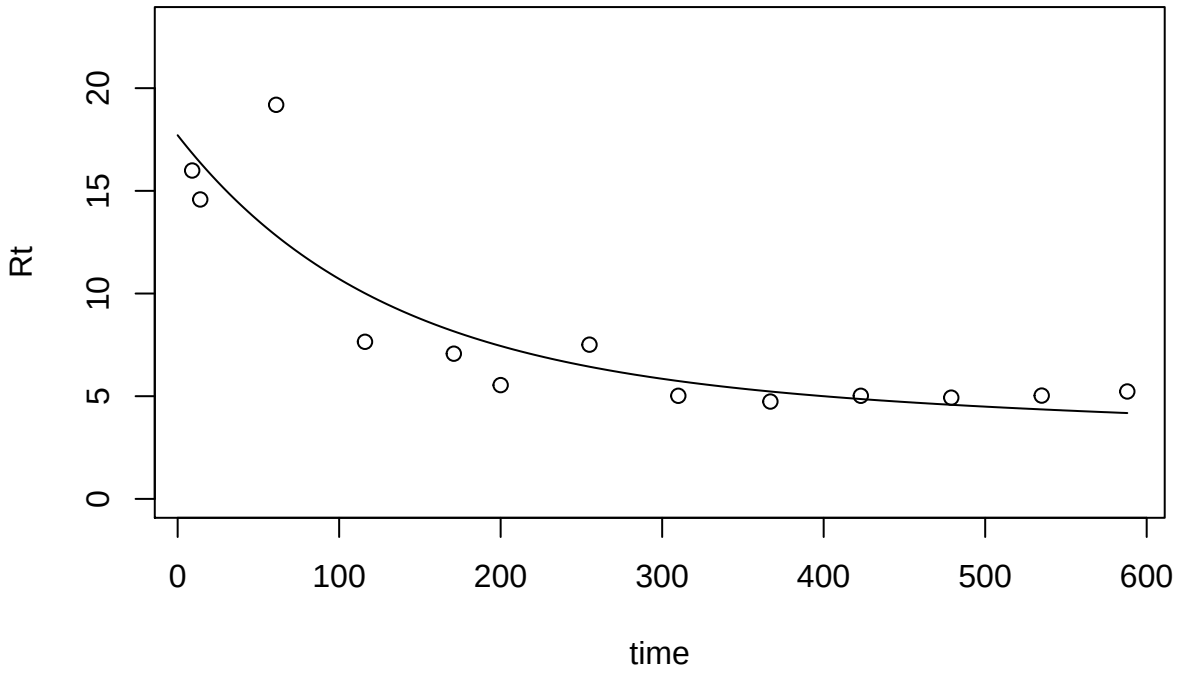
Variable C_ColoNG_35:

Decomposition rates over time at 35 degrees for Colorado, native grassland

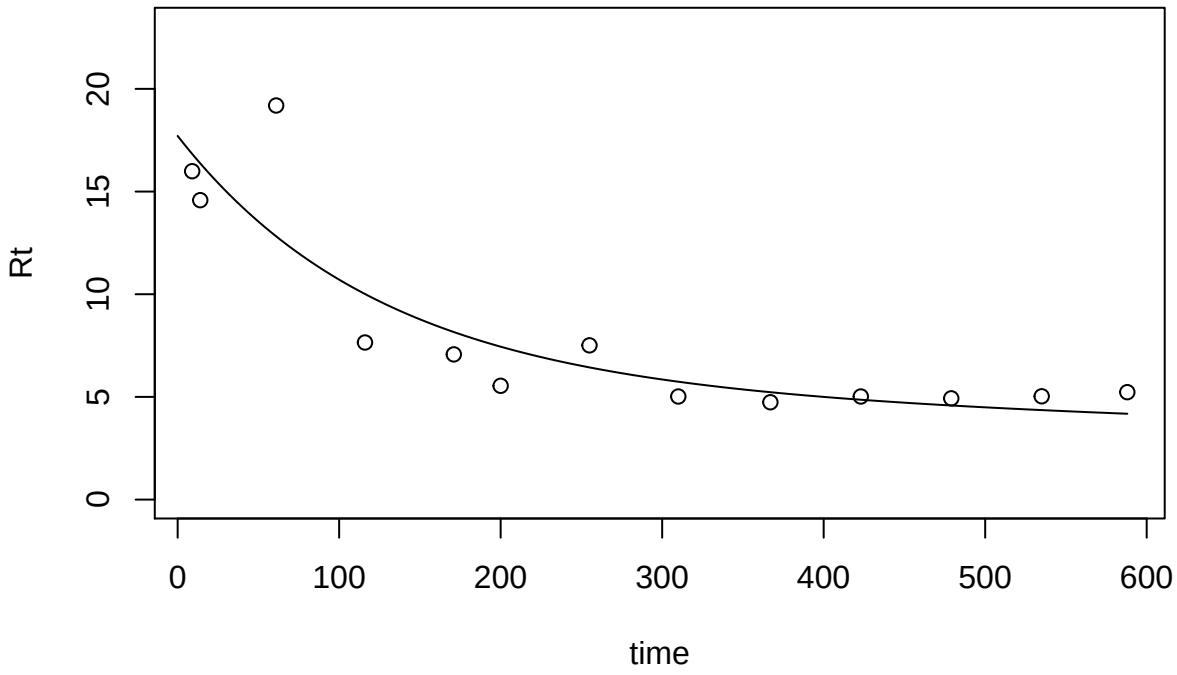
```
## [1] "Best fit parameter:  0.00103105559565381"
```



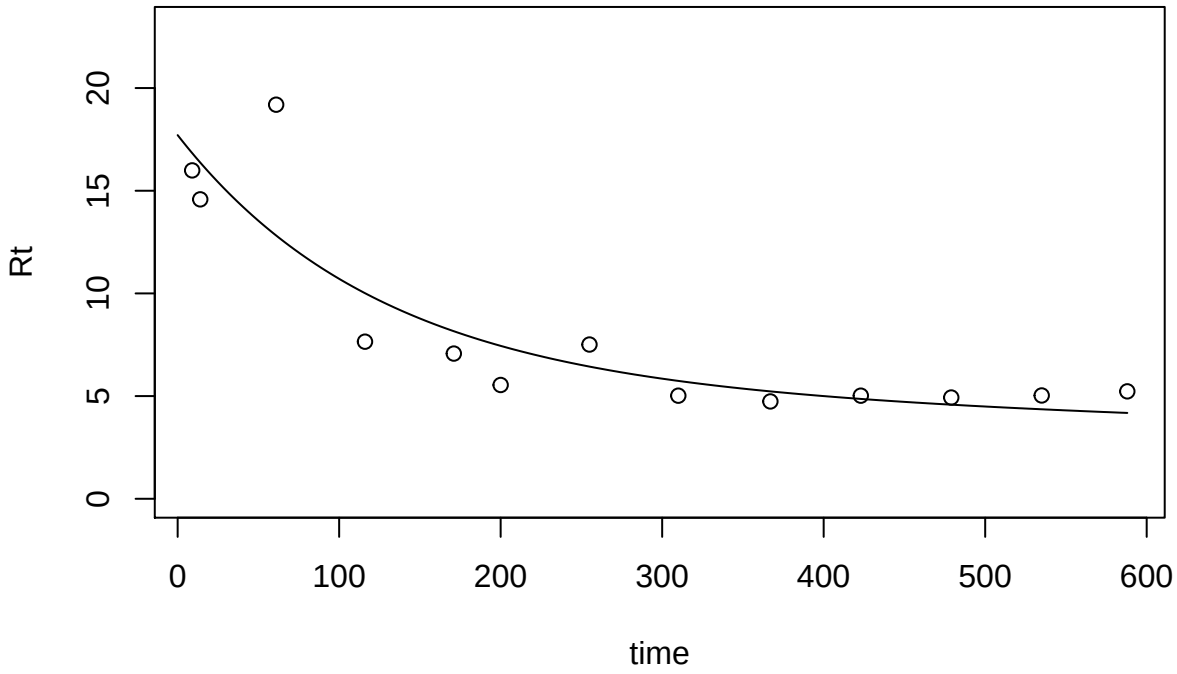

```
## [1] "AIC =  -3.13784783212158"
## [1] "k1= 0.00810975326377227"
## [2] "k2= 0.000560392942518031"
## [3] "proportion of C0 in pool 1= 0.12798091748664"
```



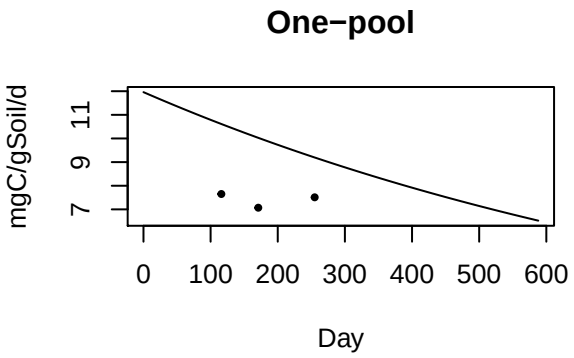

```
## [1] "AIC =  2.99150299140956"
## [1] "k1= 0.00811088102925974"
## [2] "k2= 0.000560430504588588"
## [3] "a21= 0.00788644918928838"
## [4] "a12= 9.39881415029653e-07"
## [5] "Proportion of C0 in pool 1= 0.12904986191753"
```

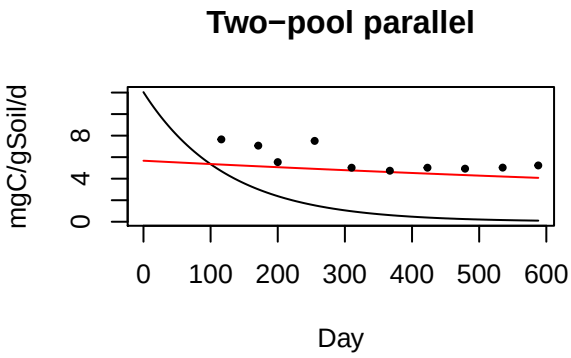


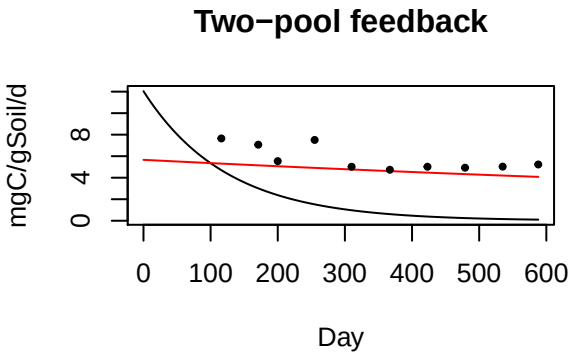

```
## [1] "AIC =  6.99150298391656"
## [1] "k1= 0.00811007425799429"
## [2] "k2= 0.000560403635568647"
## [3] "a21= 0.0151740379872132"
## [4] "Proportion of C0 in pool 1= 0.130094702402452"
```

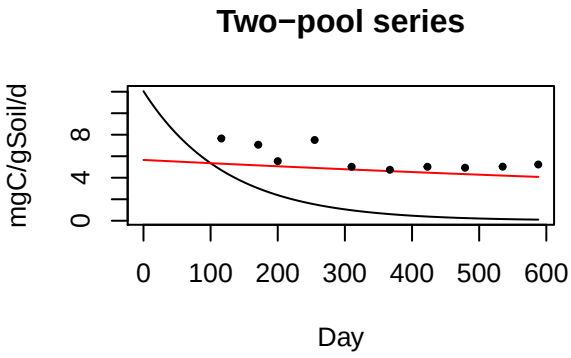



```
## [1] "AIC =  4.99150299541701"
```







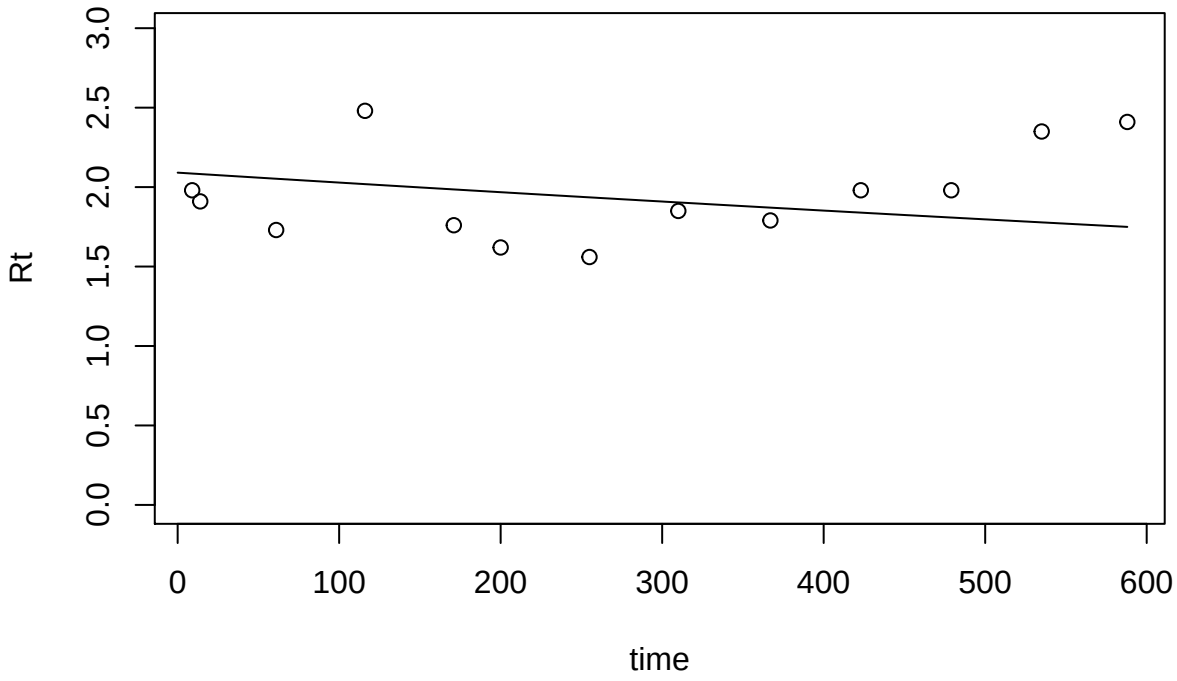


model	AIC	k1	k2	C0Inp1	a21	a12	AICc	wi	MeanTrT	q05
One-pool	-3.14	0.00103	NA	NA	NA	NA	-2.77	0.985	NA	NA
Two-pool parallel	2.99	0.00811	0.00056	0.128	NA	NA	5.66	0.0145	622	141
Two-pool feedback	6.99	0.00811	0.00056	0.129	0.00789	9.4e-07	15.6	0.000103	137	86.4
Two-pool series	4.99	0.00811	0.00056	0.13	0.0152	NA	9.99	0.00167	137	86.4

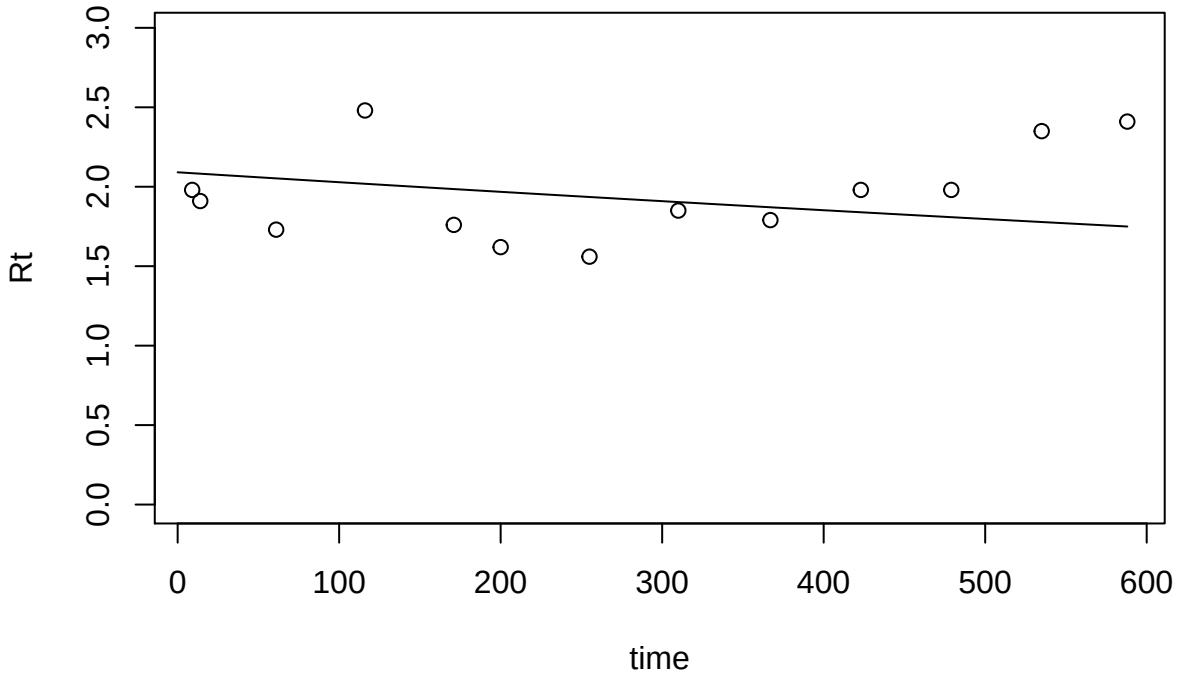
Variable C_ColoCul_15:

Decomposition rates over time at 15 degrees for Colorado, cultivated

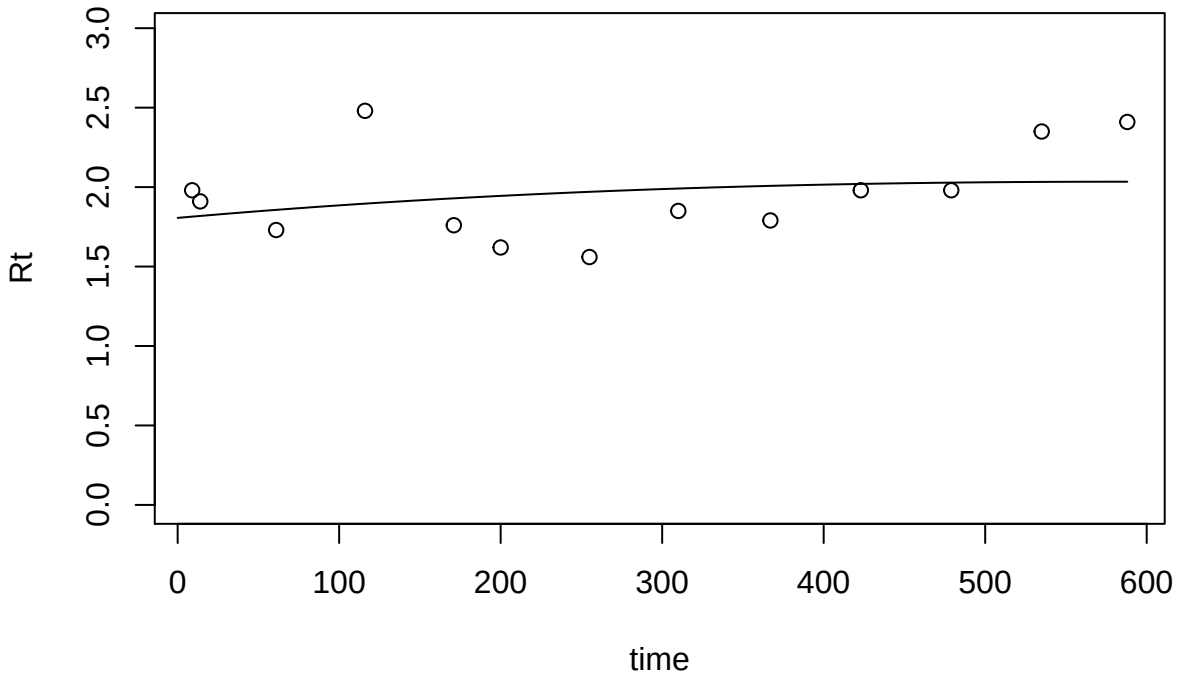
```
## [1] "Best fit parameter:  0.000303038022569663"
```



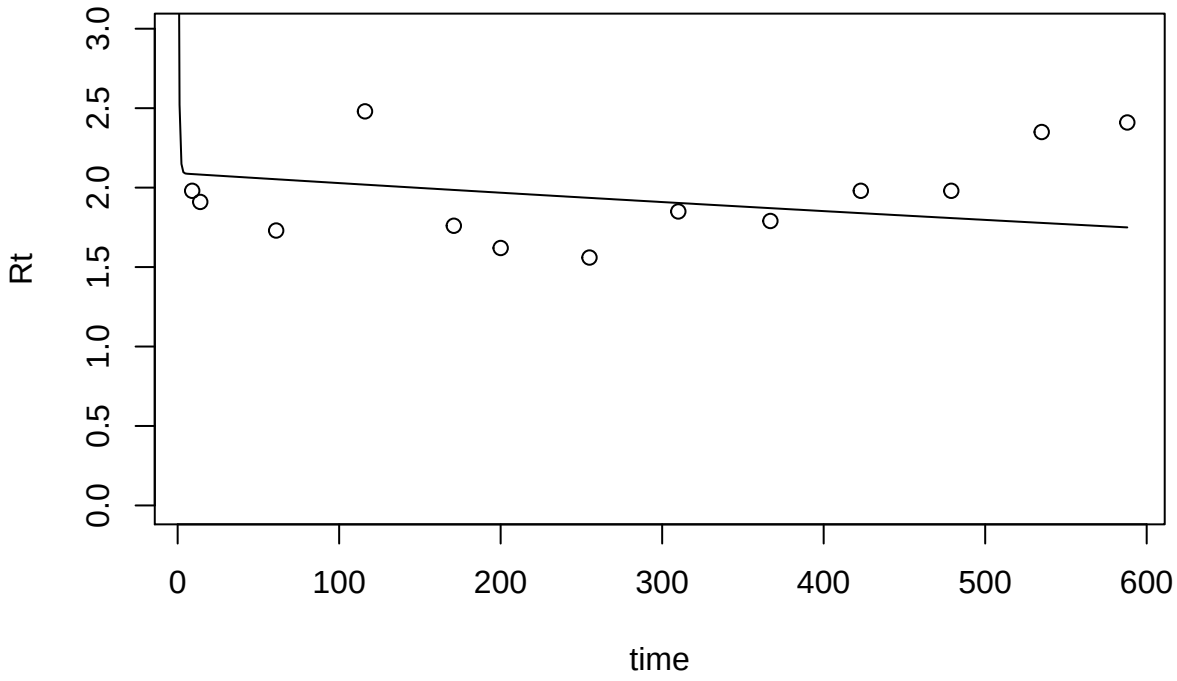

```
## [1] "AIC =  6.32936197078777"
## [1] "k1= 0.000303139820428794"
## [2] "k2= 0.00030303777184114"
## [3] "proportion of C0 in pool 1= 0.00210272757469177"
```



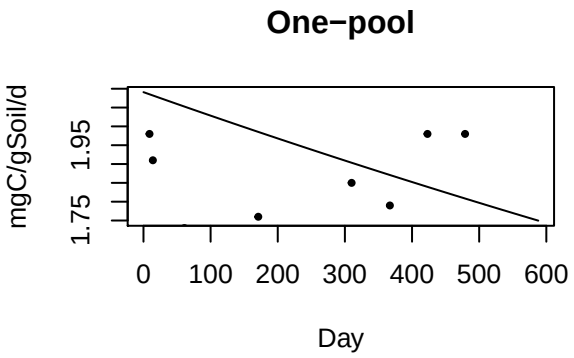

```
## [1] "AIC =  10.3293619706047"
## [1] "k1= 0.000706743947973432"
## [2] "k2= 0.000706504807424257"
## [3] "a21= 0.998337200950842"
## [4] "a12= 2.03406175894871e-05"
## [5] "Proportion of C0 in pool 1= 0.630515617594582"
```

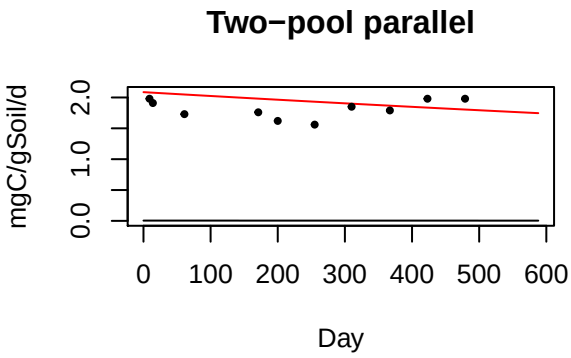


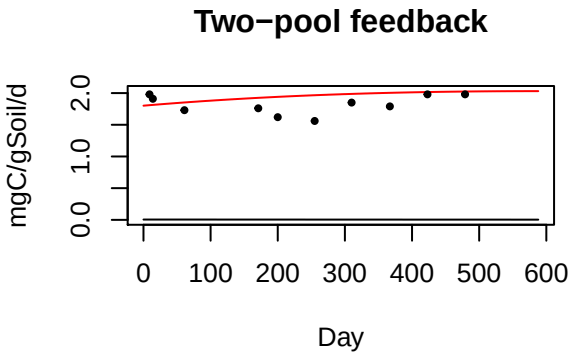

```
## [1] "AIC =  15.1119671938966"
## [1] "k1= 1.68126917052507"
## [2] "k2= 0.000303123630010785"
## [3] "a21= 0.957046215173041"
## [4] "Proportion of C0 in pool 1= 0.00630754975963027"
```

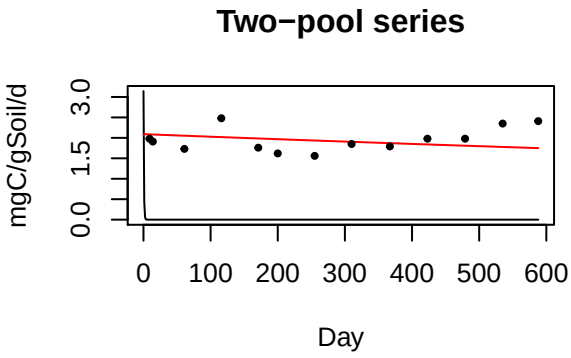



```
## [1] "AIC =  12.3291299946693"
```







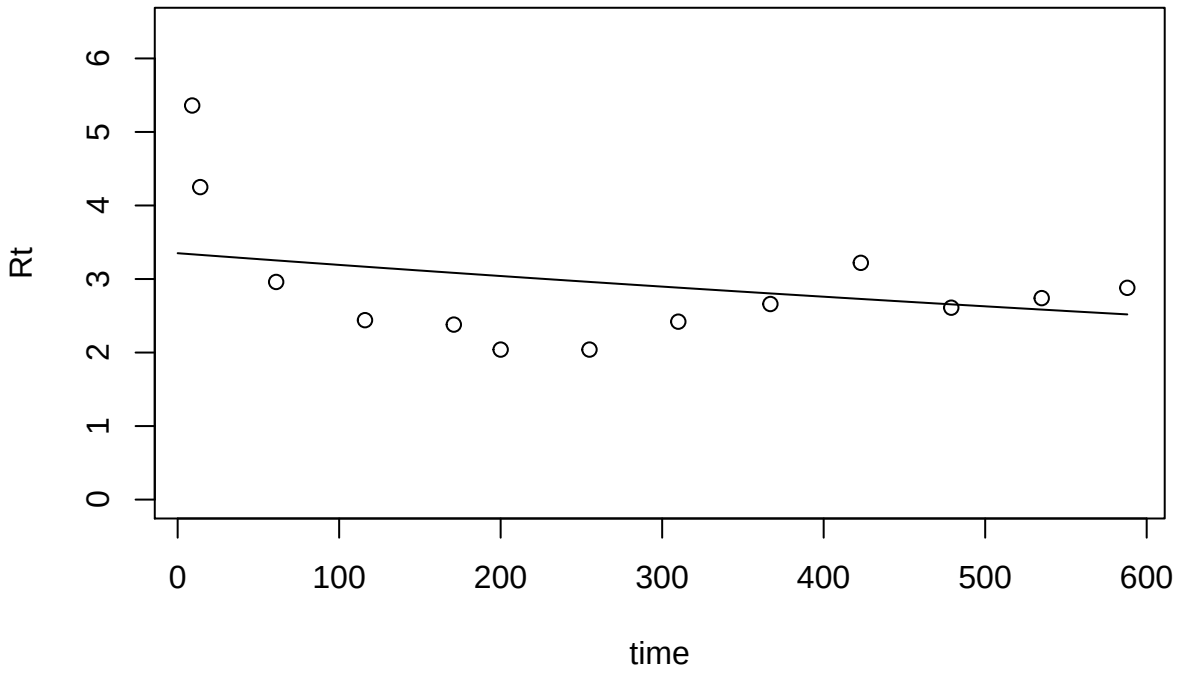


model	AIC	k1	k2	C0Inp1	a21	a12	AICc	wi	MeanTrT	q05
One-pool	6.33	0.000303	NA	NA	NA	NA	6.69	0.959	NA	NA
Two-pool parallel	10.3	0.000303	0.000303	0.0021	NA	NA	13	0.041	3300	2290
Two-pool feedback	15.1	0.000707	0.000707	0.631	0.998	2.03e-05	23.7	0.000196	2830	2370
Two-pool series	12.3	1.68	0.000303	0.00631	0.957	NA	17.3	0.0047	2830	2370

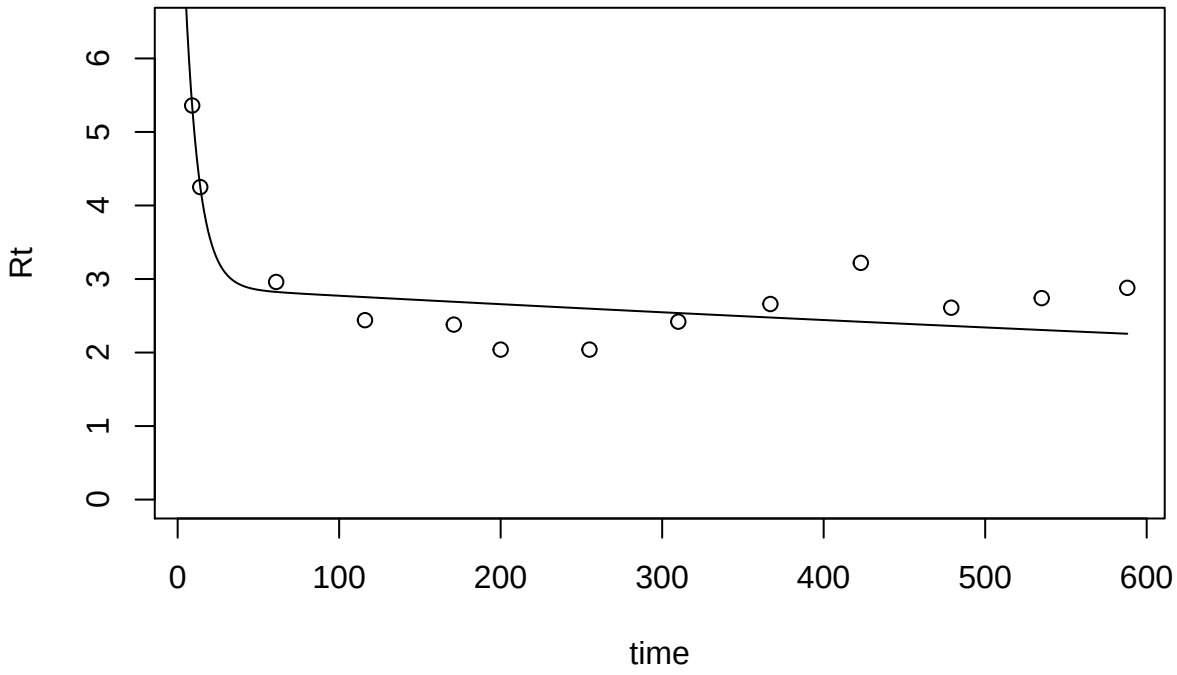
Variable C_ColoCul_25:

Decomposition rates over time at 25 degrees for Colorado, cultivated

```
## [1] "Best fit parameter:  0.000485644743234867"
```



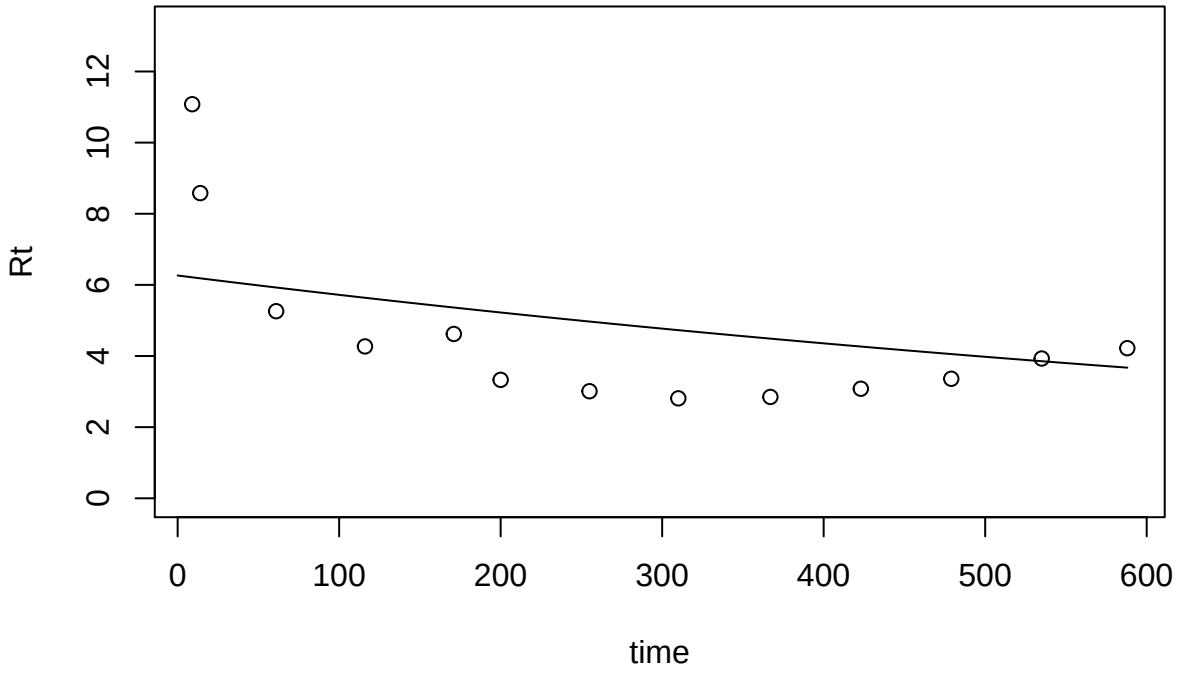

```
## [1] "AIC =  2.84093890467455"
## [1] "k1= 0.116289565657951"
## [2] "k2= 0.00042285844818926"
## [3] "proportion of C0 in pool 1= 0.00875898020777455"

## [1] "AIC =  9.52261576058365"

## Warning in newf - reff: longer object length is not a multiple of shorter object
## length

## Warning in del - (newf - reff)/delt[j]: longer object length is not a multiple
## of shorter object length

## Error in jacob[, j] <- del: number of items to replace is not a multiple of replacement length
```



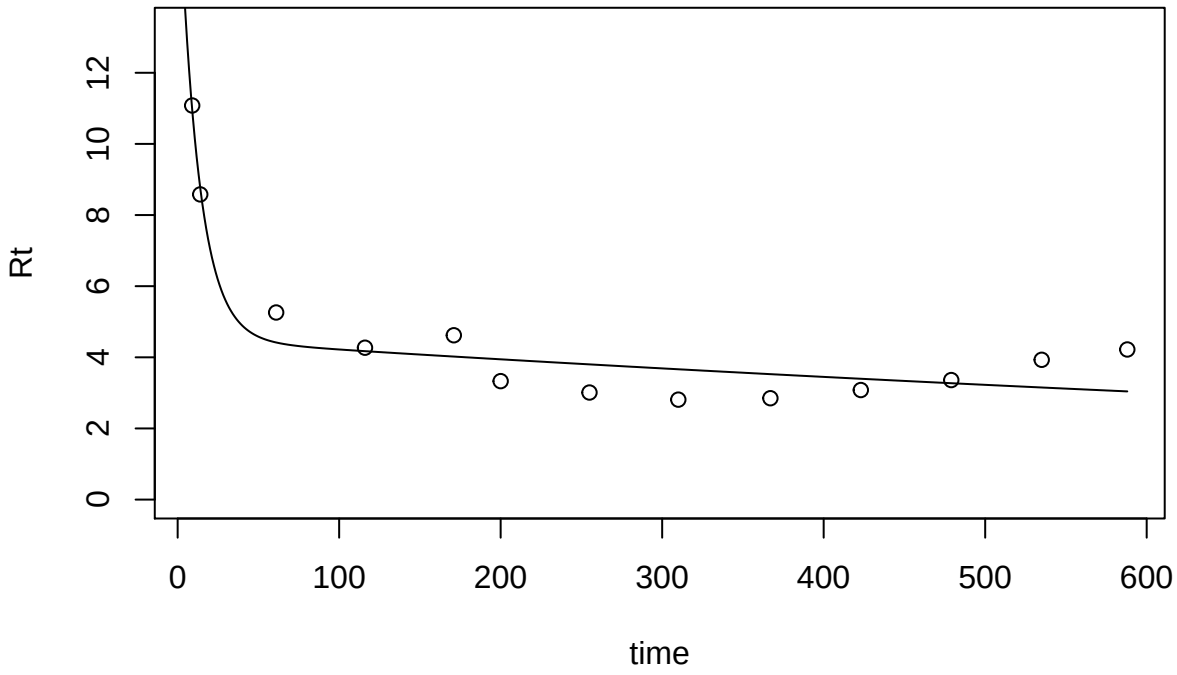
Variable C_ColoCul_35:

Decomposition rates over time at 35 degrees for Colorado, cultivated

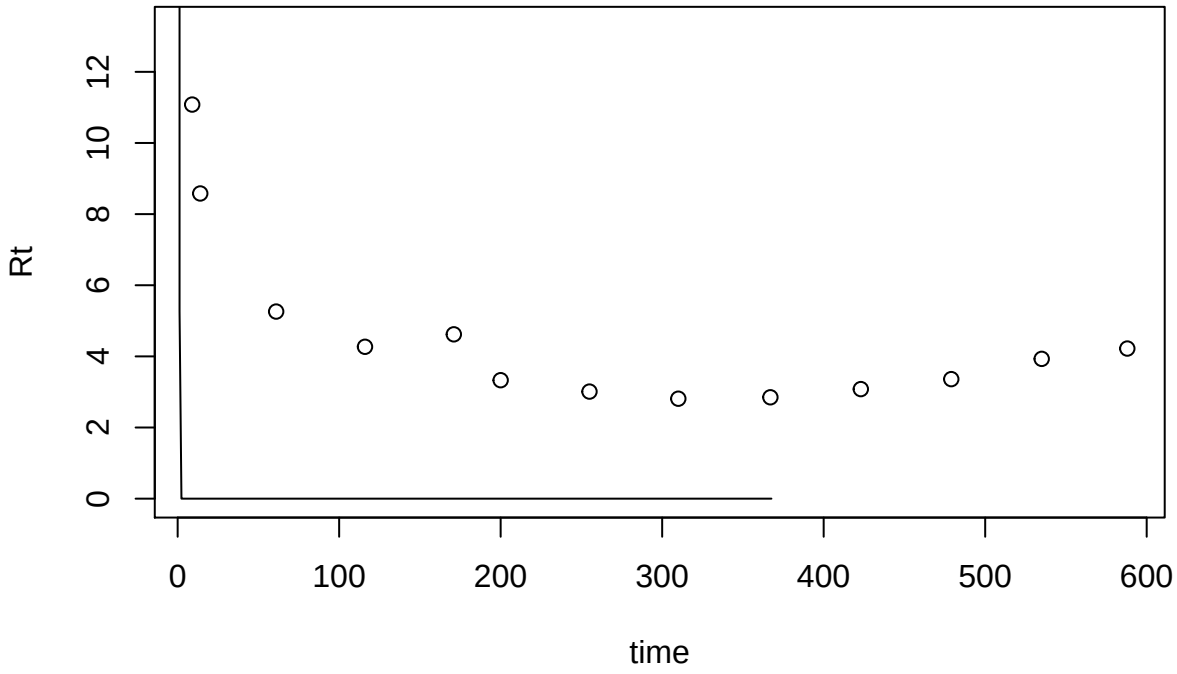
```
## [1] "Best fit parameter:  0.000907791893168688"
```




```
## [1] "AIC =  -0.624051813221348"
## [1] "k1= 0.0824911694451877"
## [2] "k2= 0.00066945460620053"
## [3] "proportion of C0 in pool 1= 0.0239264593524692"
```

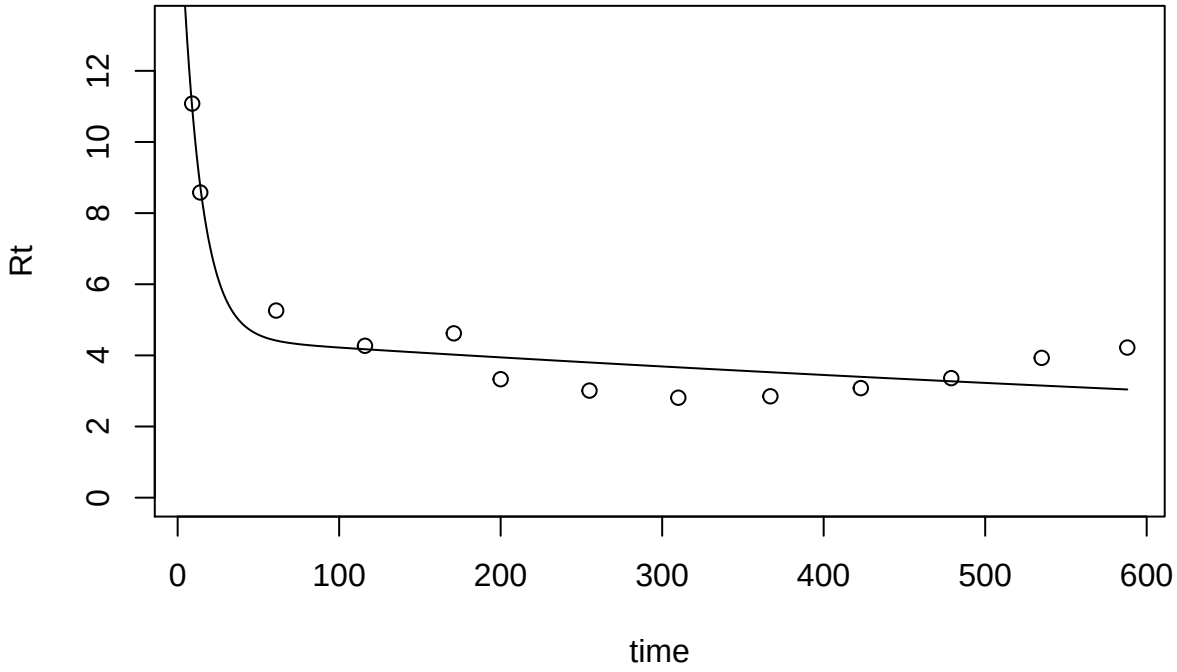



```
## [1] "AIC =  7.75157526969221"
## [1] "k1= 7.83528656357017"
## [2] "k2= 247378904.663827"
## [3] "a21= 0.00249066768125727"
## [4] "a12= 3.82166229984104e-06"
## [5] "Proportion of C0 in pool 1= 0.996861462751911"
```

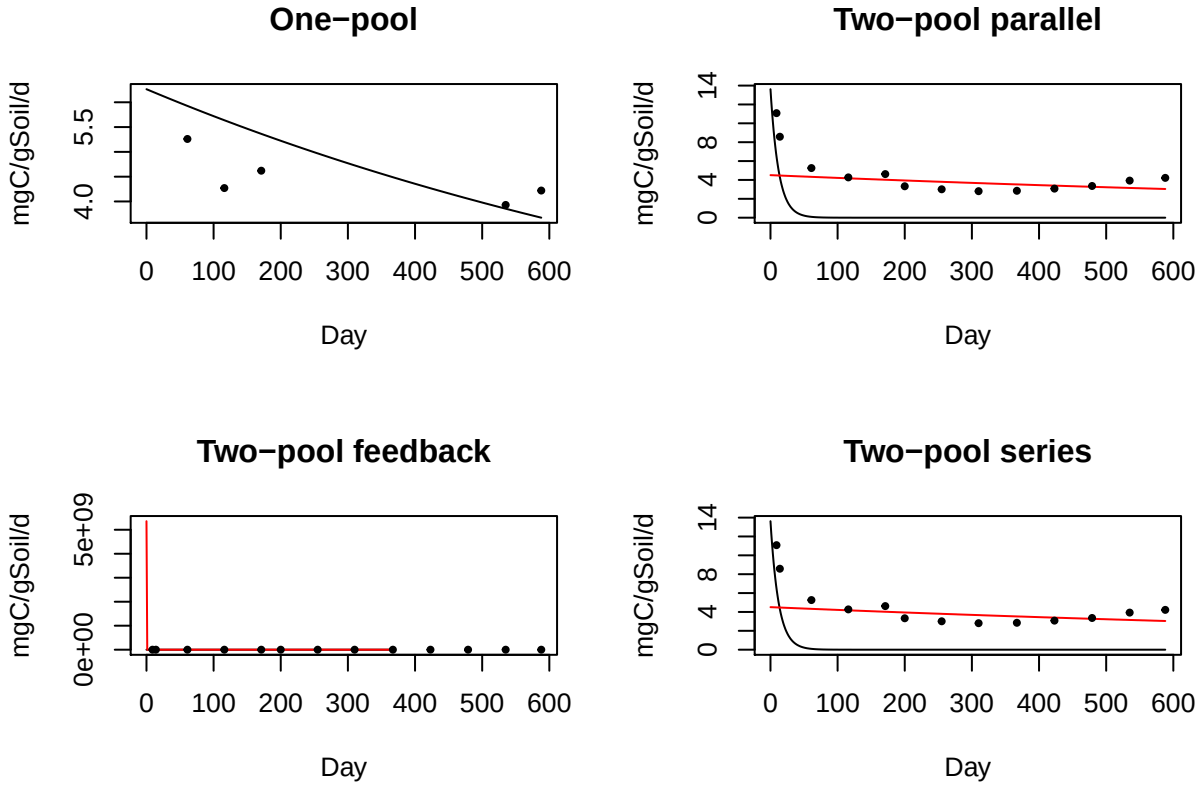



```
## [1] "AIC =  3.7236989078477"
## [1] "k1= 0.0824969518295099"
## [2] "k2= 0.000669455930497747"
## [3] "a21= 0.00329648587219694"
```

```
## [4] "Proportion of C0 in pool 1= 0.0240058314382512"
```




```
## [1] "AIC =  9.75157527471073"
```



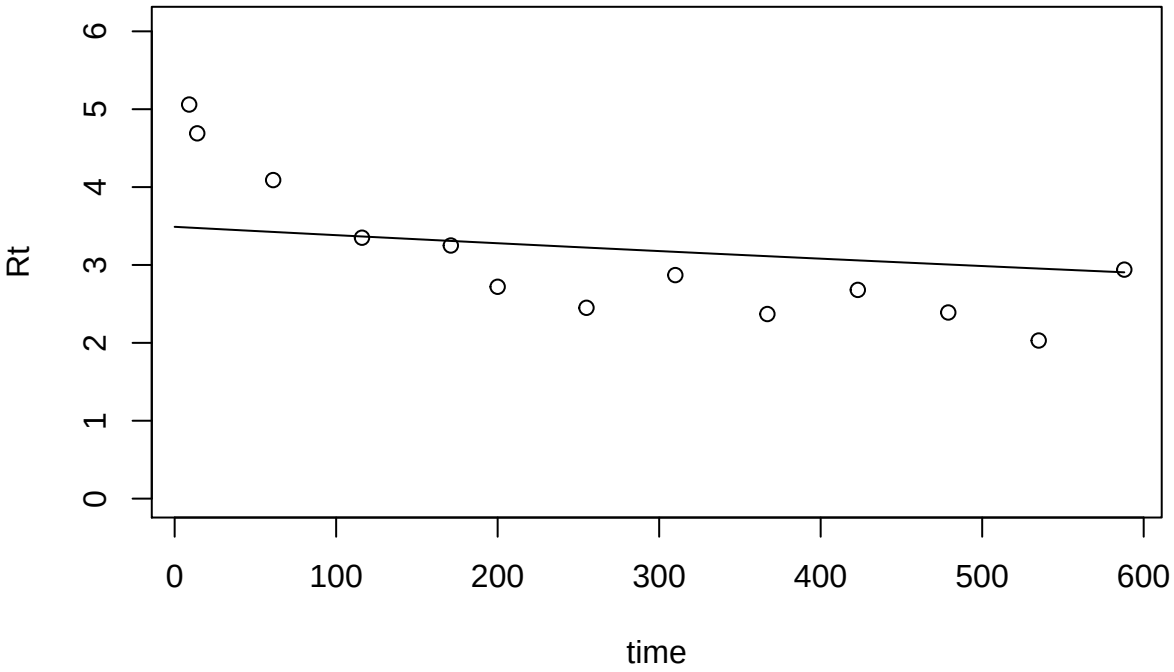
model	AIC	k1	k2	C0Inp1	a21	a12	AICc	wi	MeanTrTq05	
One-pool	-0.624	0.000908	NA	NA	NA	NA	-0.26	0.993	NA	NA

model	AIC	k1	k2	C0Inp1	a21	a12	AICc	wi	MeanTr	Tq05
Two-pool parallel	7.75	0.0825	0.000669	0.0239	NA	NA	10.4	0.00477	457	15
Two-pool feedback	3.72	7.84	2.47e+08	0.997	0.00249	3.82e-06	12.3	0.00187	0.128	0.0885
Two-pool series	9.75	0.0825	0.000669	0.024	0.0033	NA	14.8	0.000546	0.128	0.0885

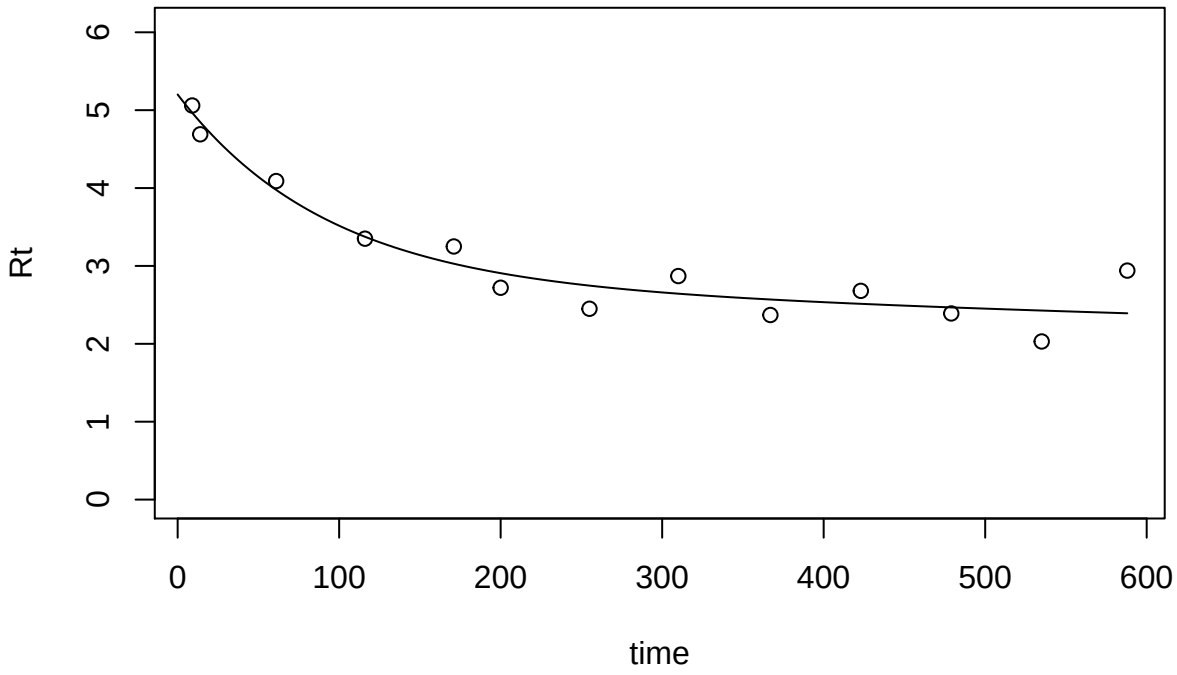
Variable C_TexNG_15:

Decomposition rates over time at 15 degrees for Texas, native grassland

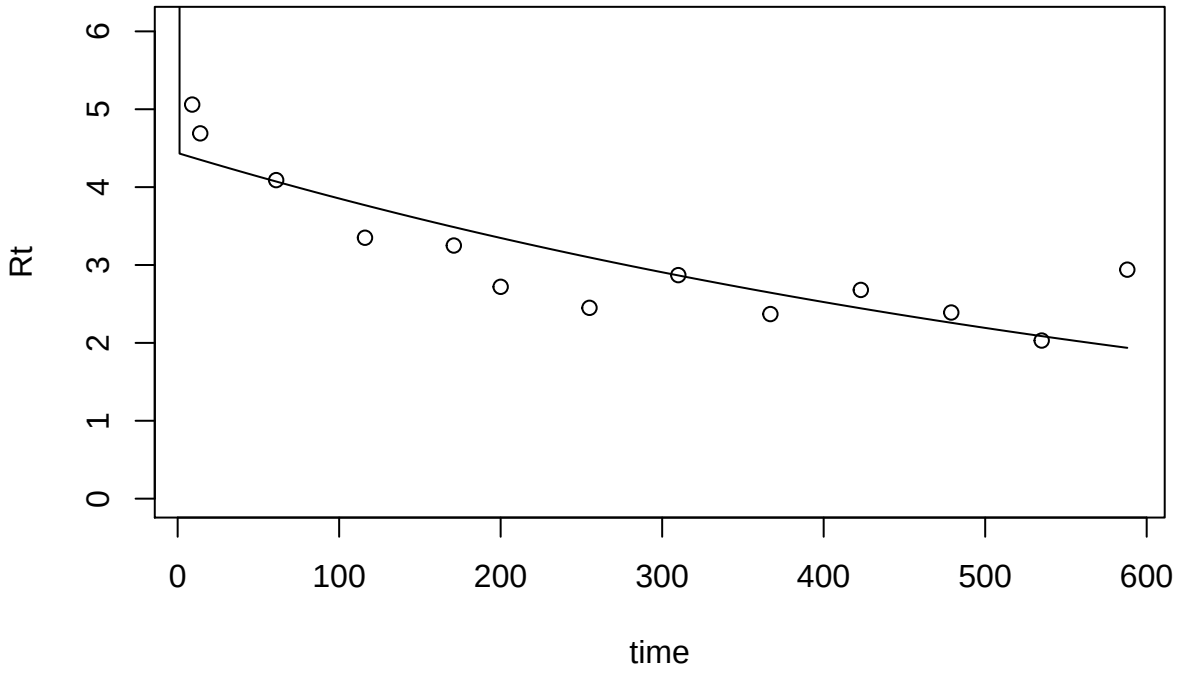
```
## [1] "Best fit parameter:  0.000311589352807685"
```




```
## [1] "AIC =  3.14064440136959"
## [1] "k1= 0.0109235658824398"
## [2] "k2= 0.000252326300203678"
## [3] "proportion of C0 in pool 1= 0.0198749776548512"
```

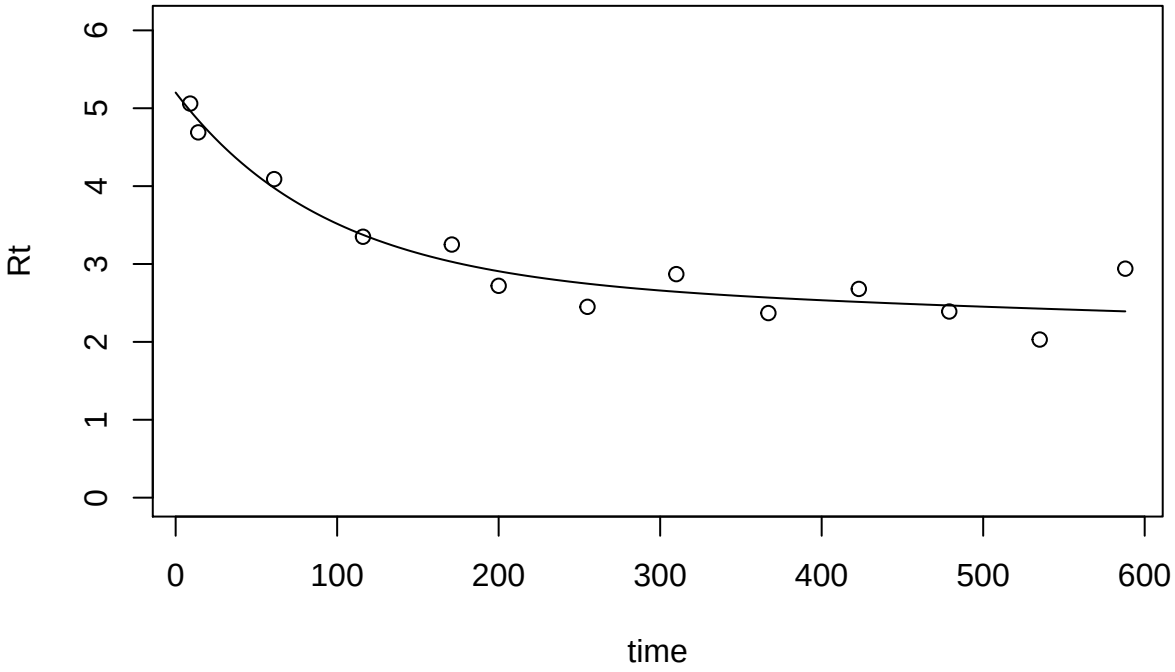



```
## [1] "AIC =  11.5714915955265"
## [1] "k1= 62608048426265.2"
## [2] "k2= 0.00141041706285223"
## [3] "a21= 0.28057244256102"
## [4] "a12= 5.28233978391857e-07"
## [5] "Proportion of C0 in pool 1= 0.999496501287448"
```

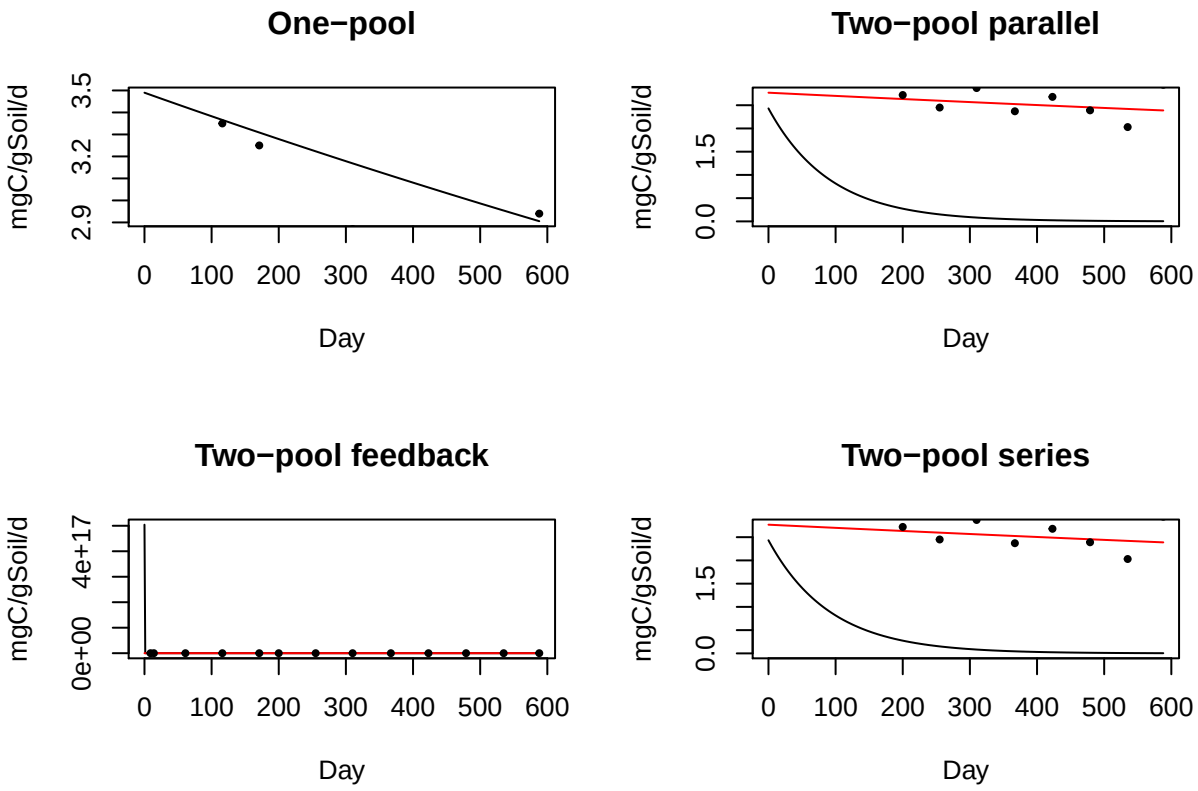



```
## [1] "AIC =  13.0871287284826"
## [1] "k1= 0.0109238426450497"
## [2] "k2= 0.000252327081974748"
## [3] "a21= 0.029307427717929"
```

```
## [4] "Proportion of C0 in pool 1= 0.0204890530636272"
```



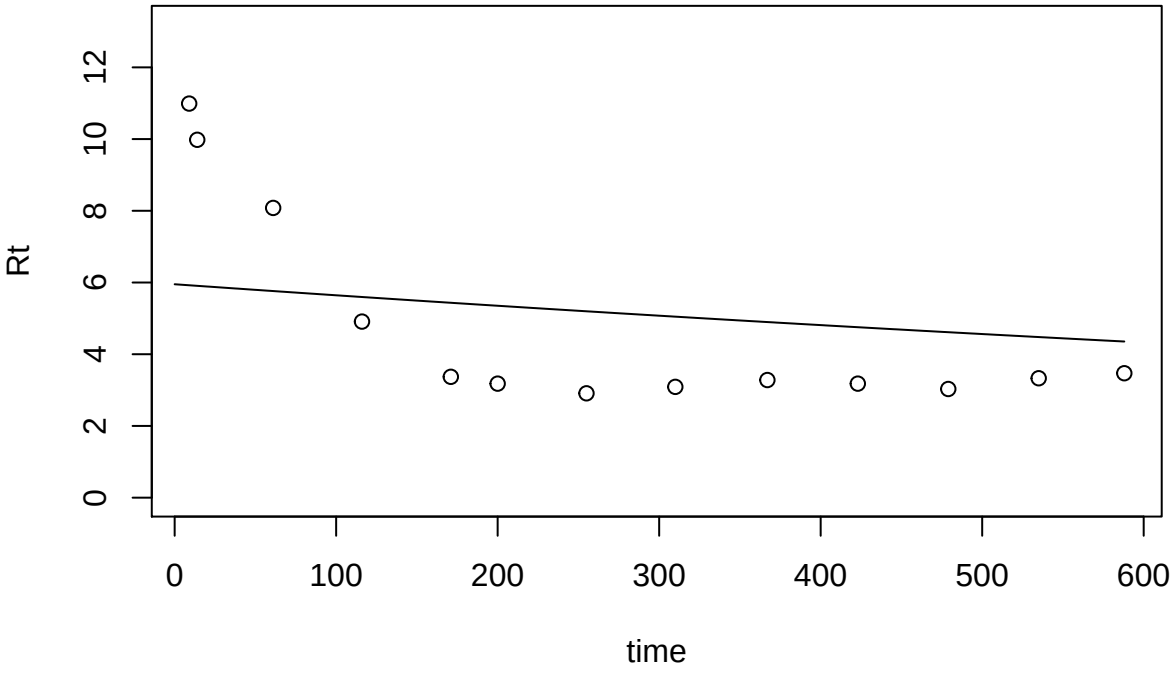

```
## [1] "AIC =  13.5714915931979"
## Error in solve.default(A): system is computationally singular: reciprocal condition number = 1.75919
```



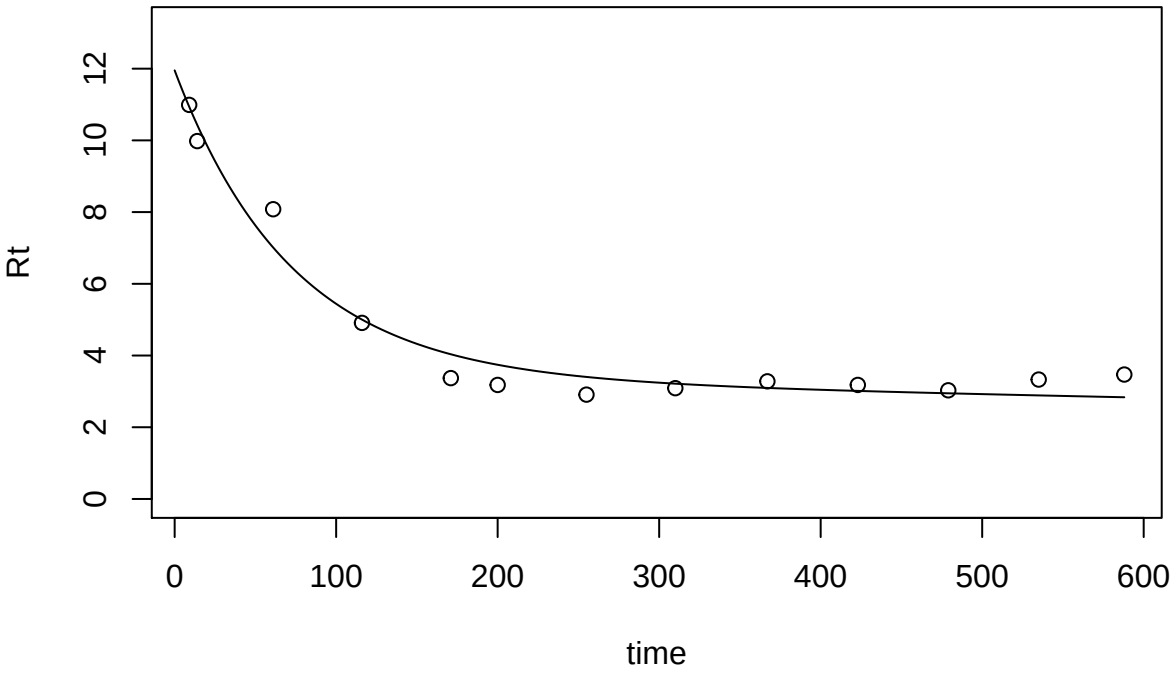
Variable C_TexNG_25:

Decomposition rates over time at 25 degrees for Texas, native grassland

```
## [1] "Best fit parameter:  0.0005313930095397 33"
```




```
## [1] "AIC =  -1.5275523477051"
## [1] "k1= 0.013898086971357"
## [2] "k2= 0.00032383213151785"
## [3] "proportion of C0 in pool 1= 0.0547583113320833"
```

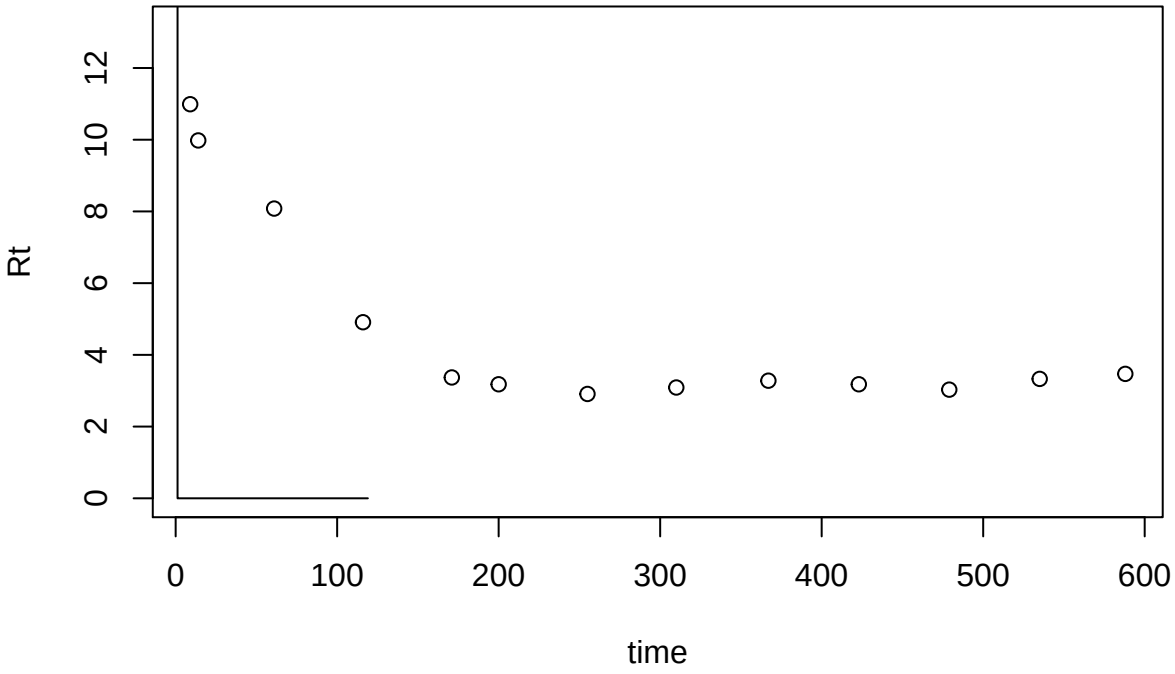



```
## [1] "AIC =  8.90926028396223"
## [1] "k1= 855.675893533662"
```

```
## [2] "k2= 21463710.4811115"
## [3] "a21= 0.0763637893052257"
## [4] "a12= 9.8585892685521e-06"
## [5] "Proportion of C0 in pool 1= 0.00983992211117579"
```

```
## [1] "AIC =  3.54524392015214"
## DLSODA-  Warning..Internal T (=R1) and H (=R2) are
##       such that in the machine, T + H = T on the next step
##      (H = step size). Solver will continue anyway.
## In above message, R1 = 0, R2 = 0
##
## DINTDY-  T (=R1) illegal
## In above message, R1 = 1.17836
##
##       T not in interval TCUR - HU (= R1) to TCUR (=R2)
## In above message, R1 = 0, R2 = 0
##
## DINTDY-  T (=R1) illegal
## In above message, R1 = 2.35671
##
##       T not in interval TCUR - HU (= R1) to TCUR (=R2)
## In above message, R1 = 0, R2 = 0
##
## DLSODA-  Trouble in DINTDY.  ITASK = I1, TOUT = R1
## In above message, I1 = 1
##
## In above message, R1 = 2.35671
##
```

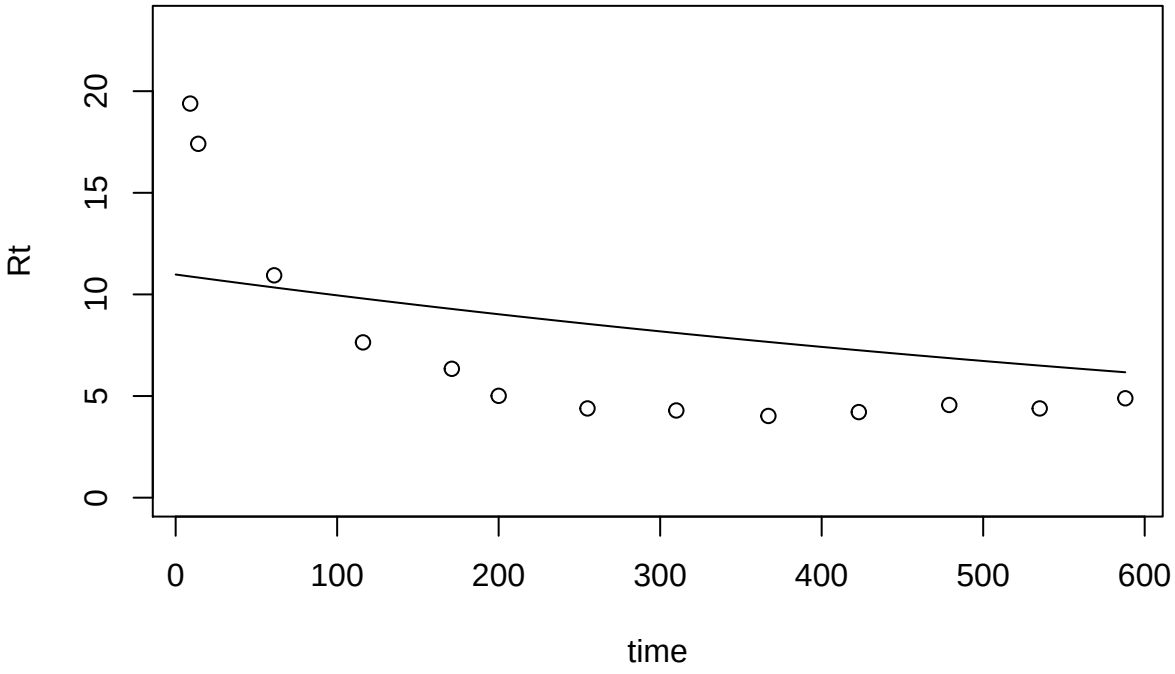
```
## Error in lsoda(startValues, t, lsexamp): illegal input detected before taking any integration steps
```



Variable C_TexNG_35:

Decomposition rates over time at 35 degrees for Texas, native grassland

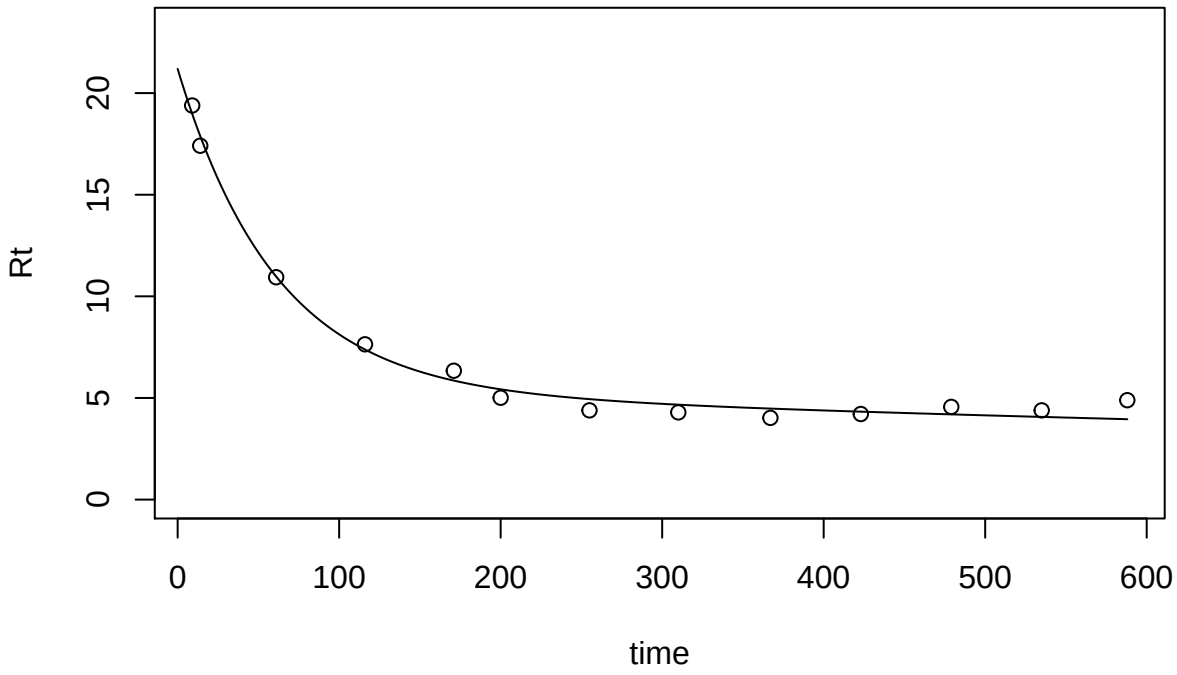
```
## [1] "Best fit parameter:  0.000980323307398862"
```




```
## [1] "AIC =  -3.5761002188197"
## [1] "k1= 0.0165547888080658"
## [2] "k2= 0.00052572120148346"
## [3] "proportion of C0 in pool 1= 0.0852507225141954"
```

```
## [1] "AIC =  9.1794471762795"
```

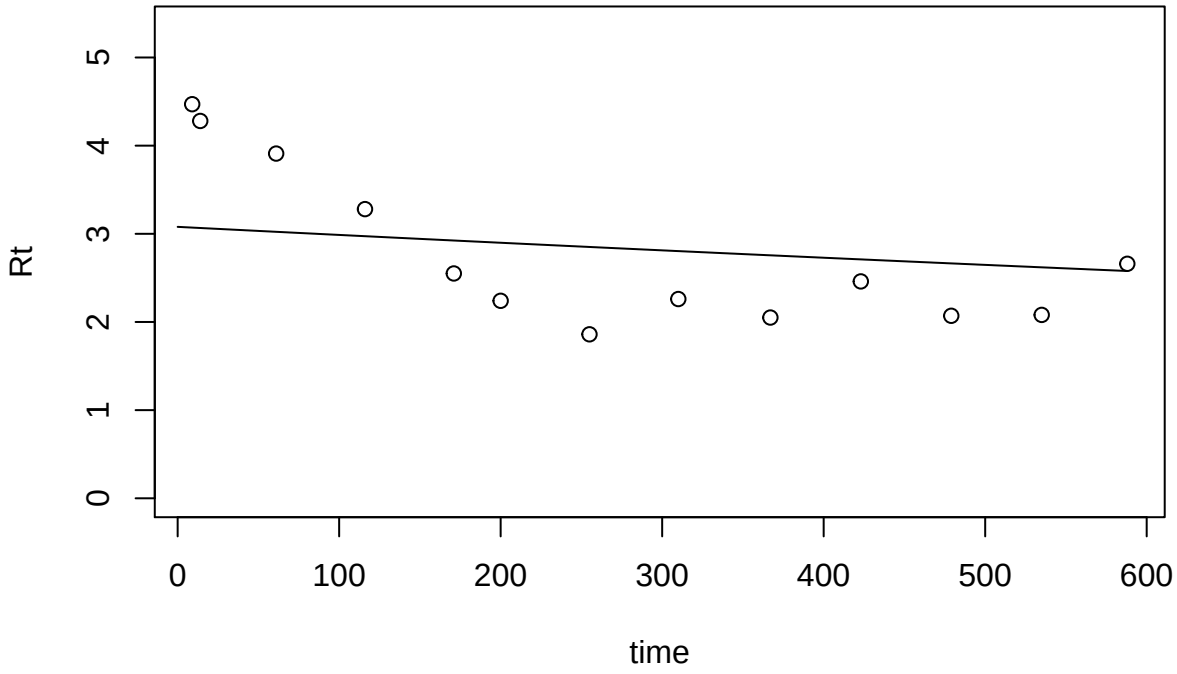
```
## Error in approx(xMod, yMod, xout = xDat): need at least two non-NA values to interpolate
```



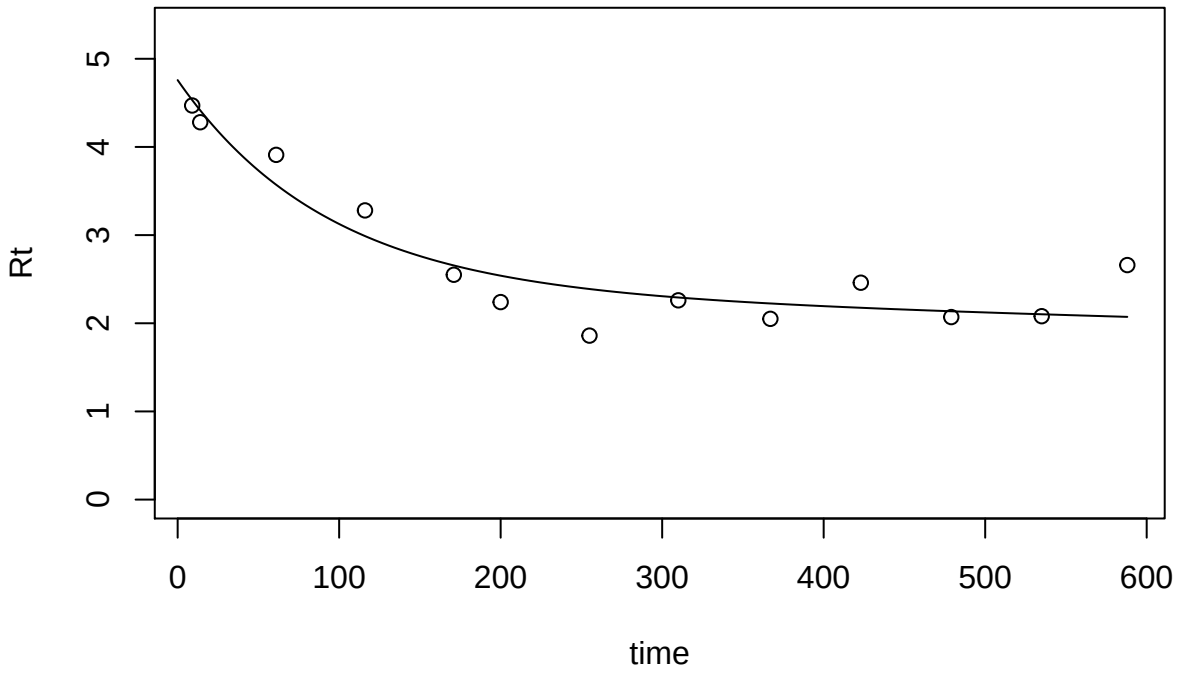
Variable C_TexCul_15:

Decomposition rates over time at 15 degrees for Texas, cultivated

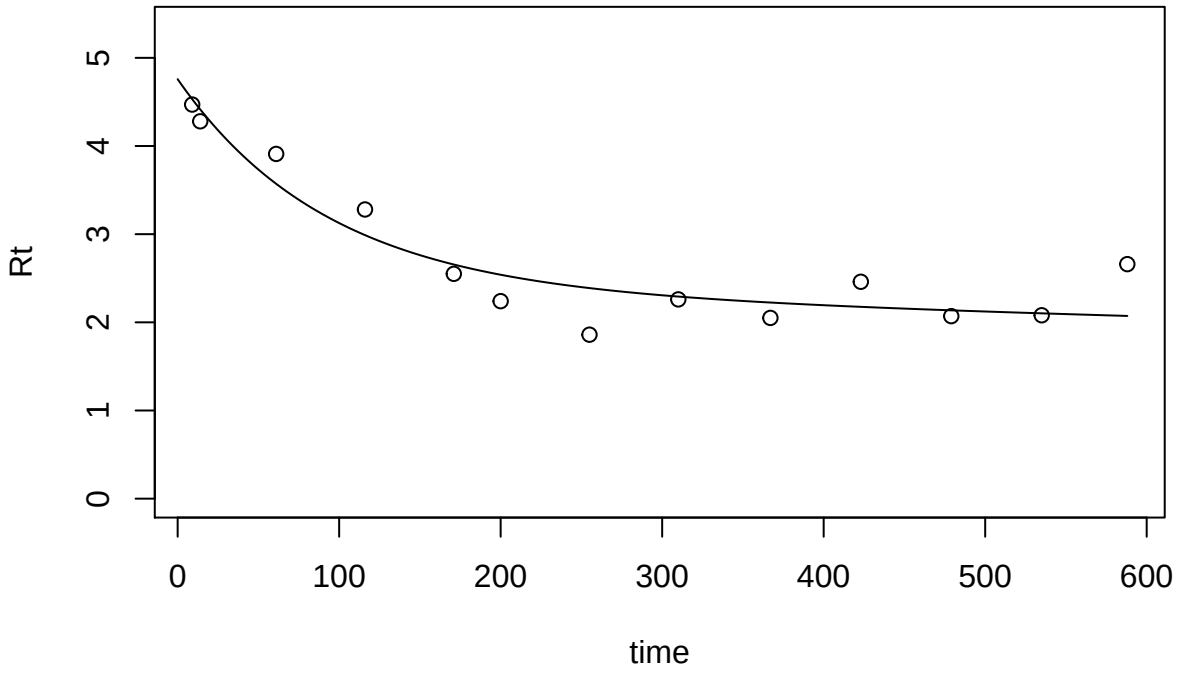
```
## [1] "Best fit parameter:  0.00030184456874486"
```




```
## [1] "AIC =  3.13309175643399"
## [1] "k1= 0.0108682187912208"
## [2] "k2= 0.000238439484423563"
## [3] "proportion of C0 in pool 1= 0.0214556005662826"
```

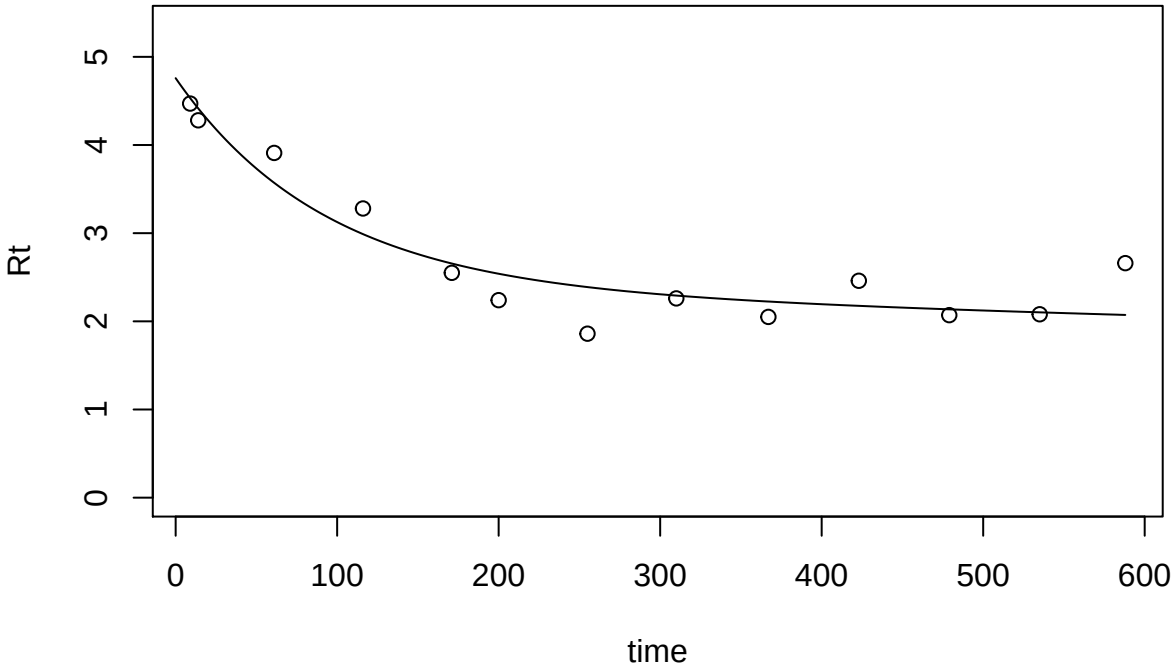



```
## [1] "AIC =  11.0062672018932"
## [1] "k1= 0.010867399914054"
## [2] "k2= 0.000238437805845783"
## [3] "a21= 0.130046651983797"
## [4] "a12= 2.56859422649858e-05"
## [5] "Proportion of C0 in pool 1= 0.02474823317186"
```

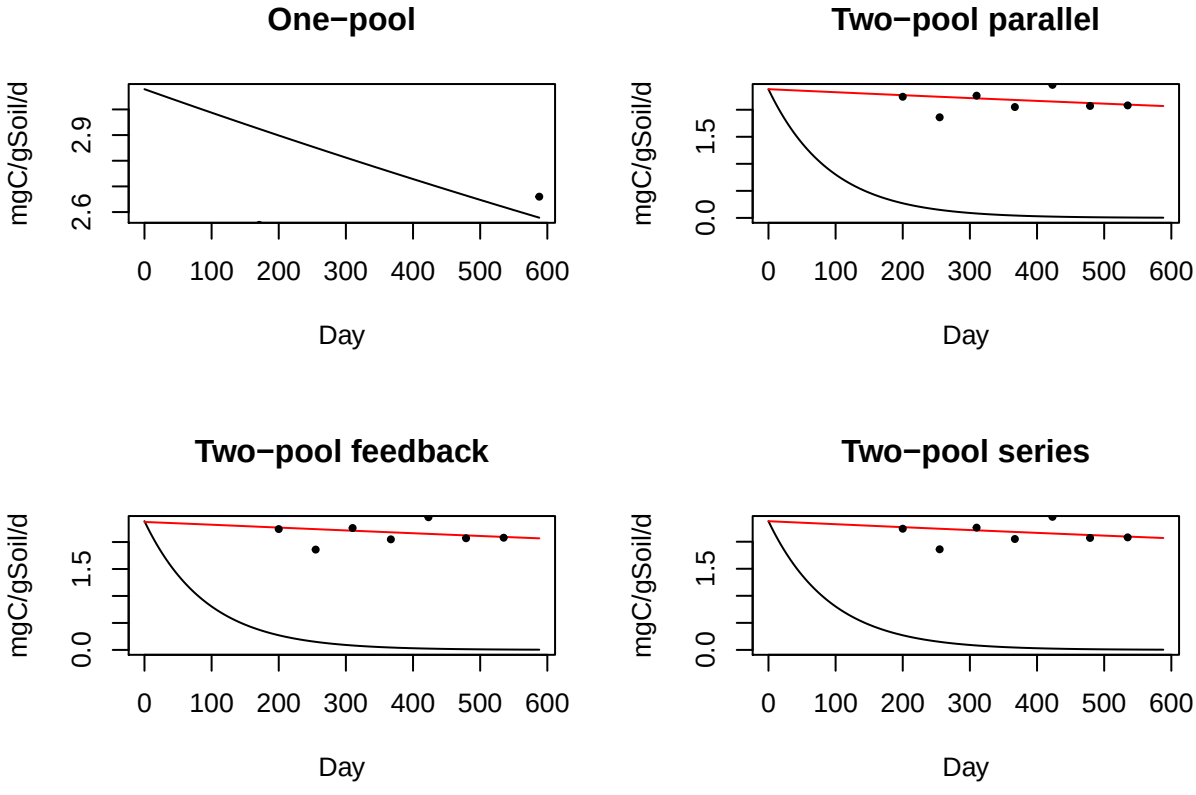



```
## [1] "AIC =  15.0062672033025"
## [1] "k1= 0.0108681153557867"
## [2] "k2= 0.000238439170683113"
## [3] "a21= 0.0169831080993729"
```

```
## [4] "Proportion of C0 in pool 1= 0.0218348754438633"
```




```
## [1] "AIC =  13.0062672036328"
```



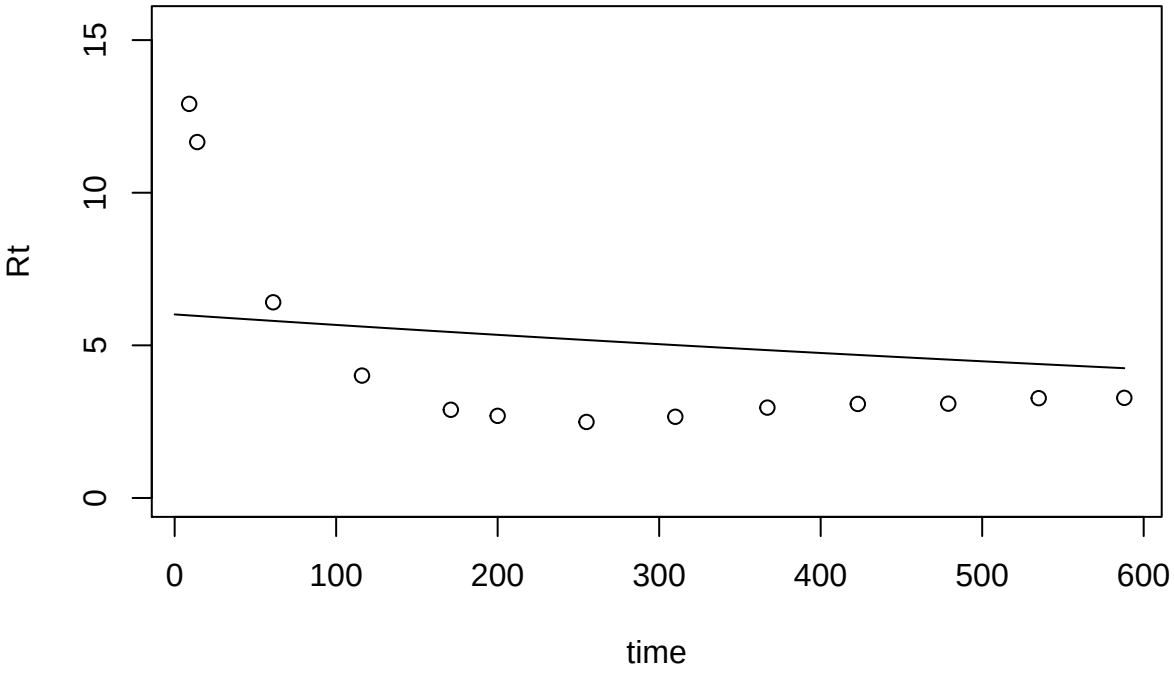
model	AIC	k1	k2	C0Inp1	a21	a12	AICc	wi	MeanTrT	q05
One-pool	3.13	0.000302	NA	NA	NA	NA	3.5	0.994	NA	NA
Two-pool parallel	11	0.0109	0.000238	0.0215	NA	NA	13.7	0.00613	1320	112

model	AIC	k1	k2	C0Inp1	a21	a12	AICc	wi	MeanTrT	q05
Two-pool feedback	15	0.0109	0.000238	0.0247	0.13	2.57e-05	23.6	4.33e-05	637	78.5
Two-pool series	13	0.0109	0.000238	0.0218	0.017	NA	18	0.000702	637	78.5

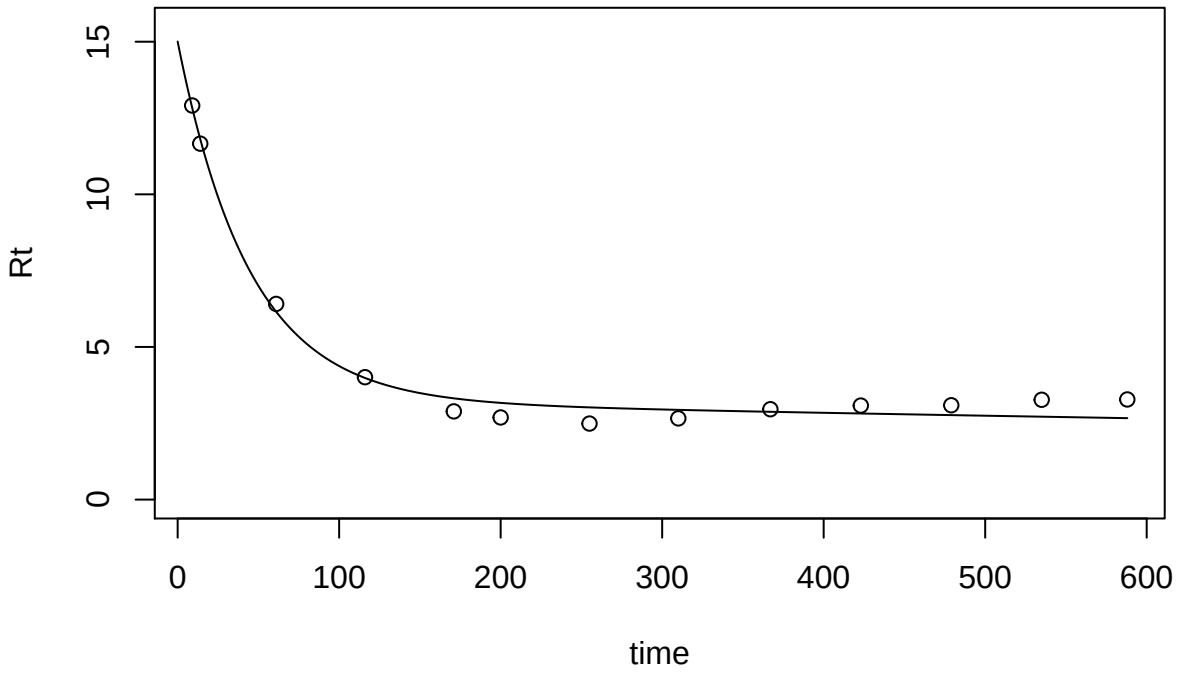
Variable C_TexCul_25:

Decomposition rates over time at 25 degrees for Texas, cultivated

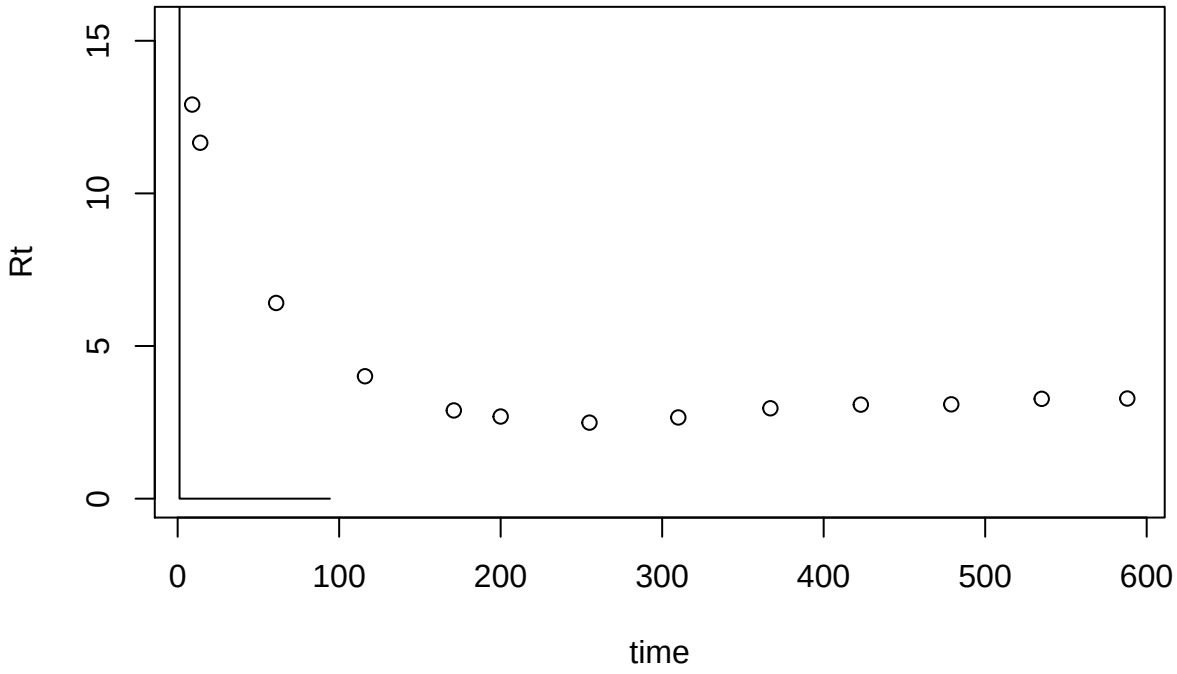
```
## [1] "Best fit parameter:  0.000589523010684013"
```




```
## [1] "AIC =  -2.44600819778359"
## [1] "k1= 0.0225525832980549"
## [2] "k2= 0.000335762254653917"
## [3] "proportion of C0 in pool 1= 0.0511035472328521"
```

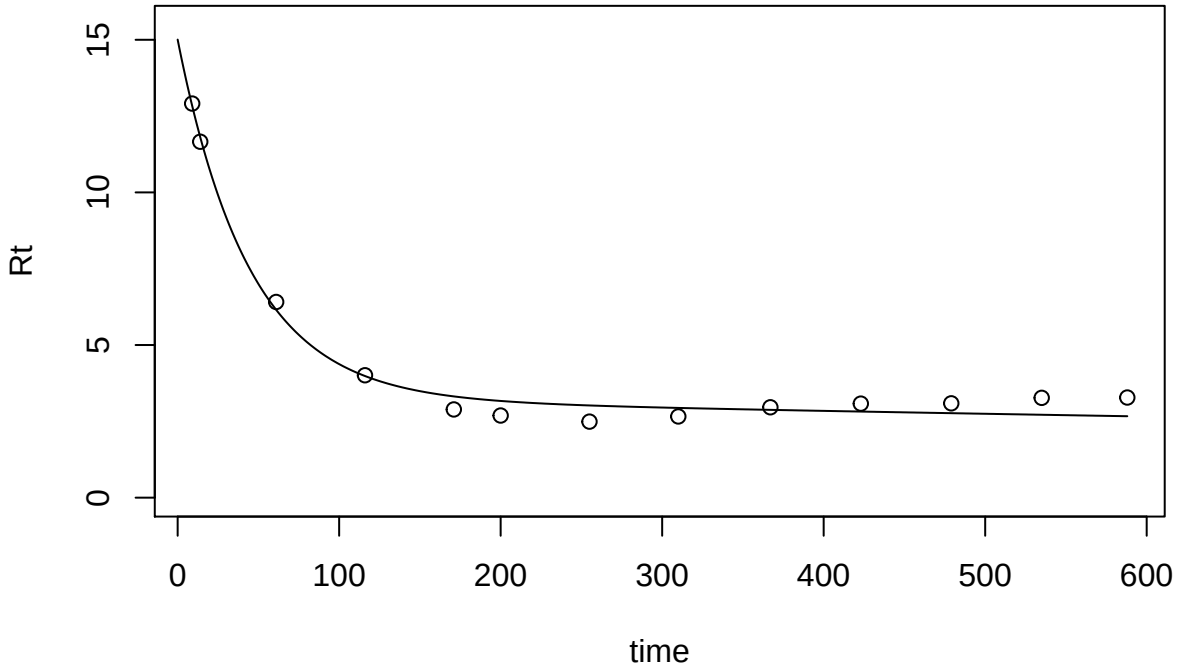



```
## [1] "AIC =  10.0398976161173"
## [1] "k1= 3851.08921725181"
## [2] "k2= 288397.131552985"
## [3] "a21= 0.00774448842416398"
## [4] "a12= 7.59683298384717e-06"
## [5] "Proportion of C0 in pool 1= 0.960207296172717"
```

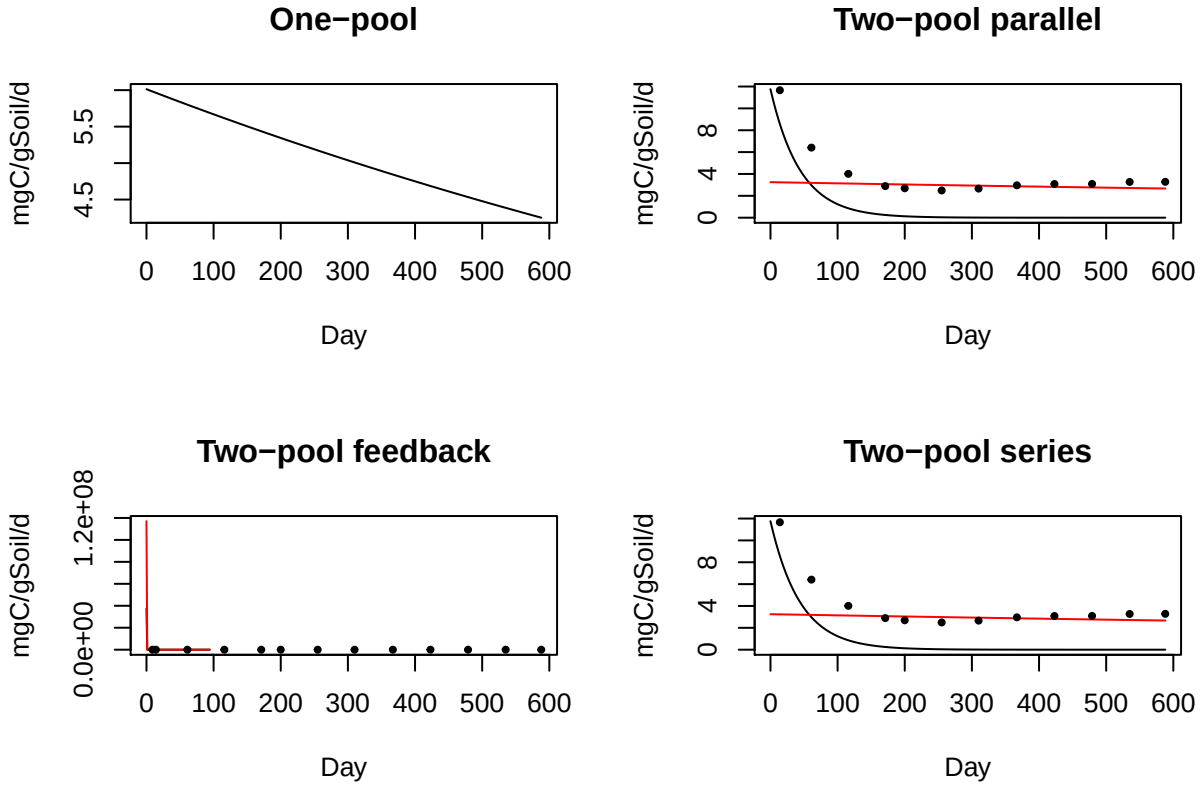



```
## [1] "AIC =  3.38728745737054"
## [1] "k1= 0.0225525649344258"
## [2] "k2= 0.00033576219798996"
## [3] "a21= 0.0128447490362844"
```

```
## [4] "Proportion of C0 in pool 1= 0.0517785056632304"
```




```
## [1] "AIC =  12.0398976129471"
```



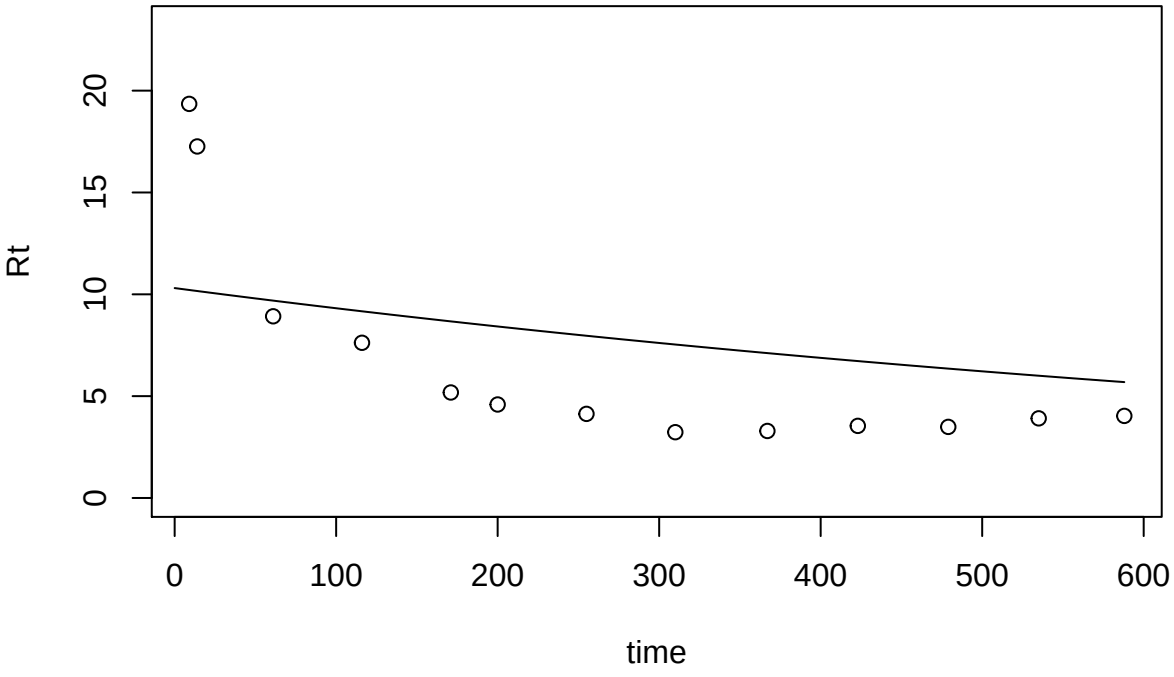
model	AIC	k1	k2	C0Inp1	a21	a12	AICc	wi	MeanTrT	q05
One-pool	-2.45	0.00059	NA	NA	NA	NA	-2.08	0.998	NA	NA
Two-pool parallel	10	0.0226	0.000336	0.0511	NA	NA	12.7	0.000614	925	54.4

model	AIC	k1	k2	C0Inp1	a21	a12	AICc	wi	MeanTrT	q05
Two-pool feedback	3.39	3850	288000	0.96	0.00774	7.6e-06	12	0.000892	0.00026	2e-04
Two-pool series	12	0.0226	0.000336	0.0518	0.0128	NA	17	7.03e-05	0.00026	2e-04

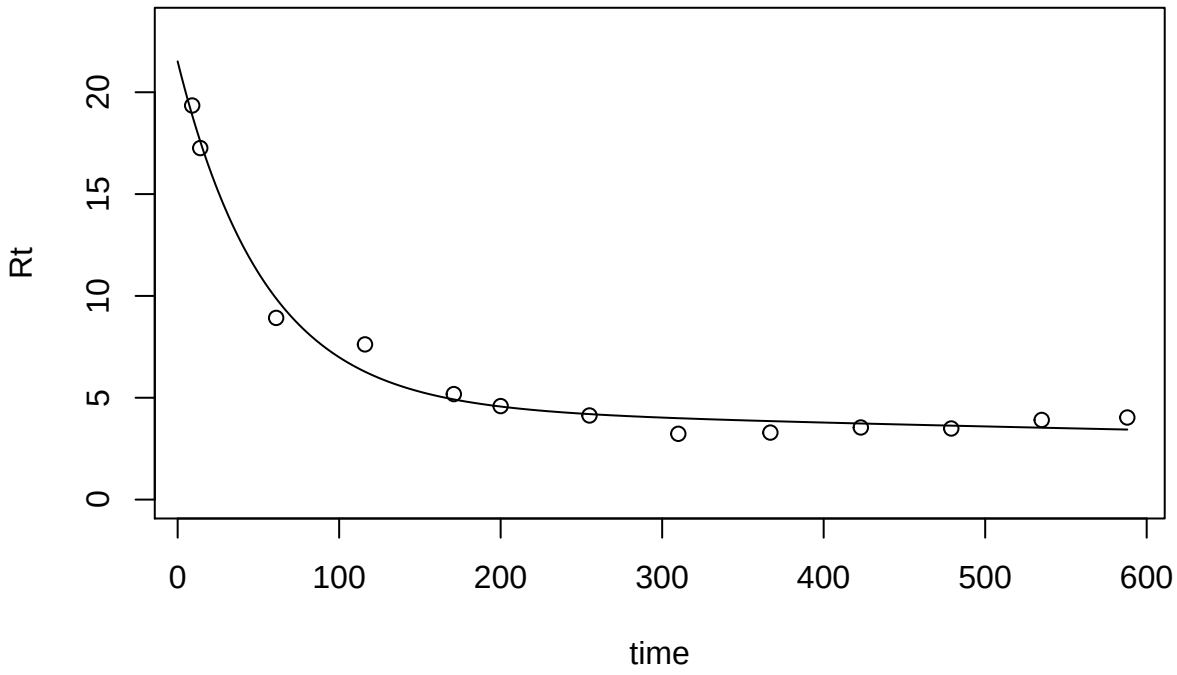
Variable C_TexCul_35:

Decomposition rates over time at 35 degrees for Texas, cultivated

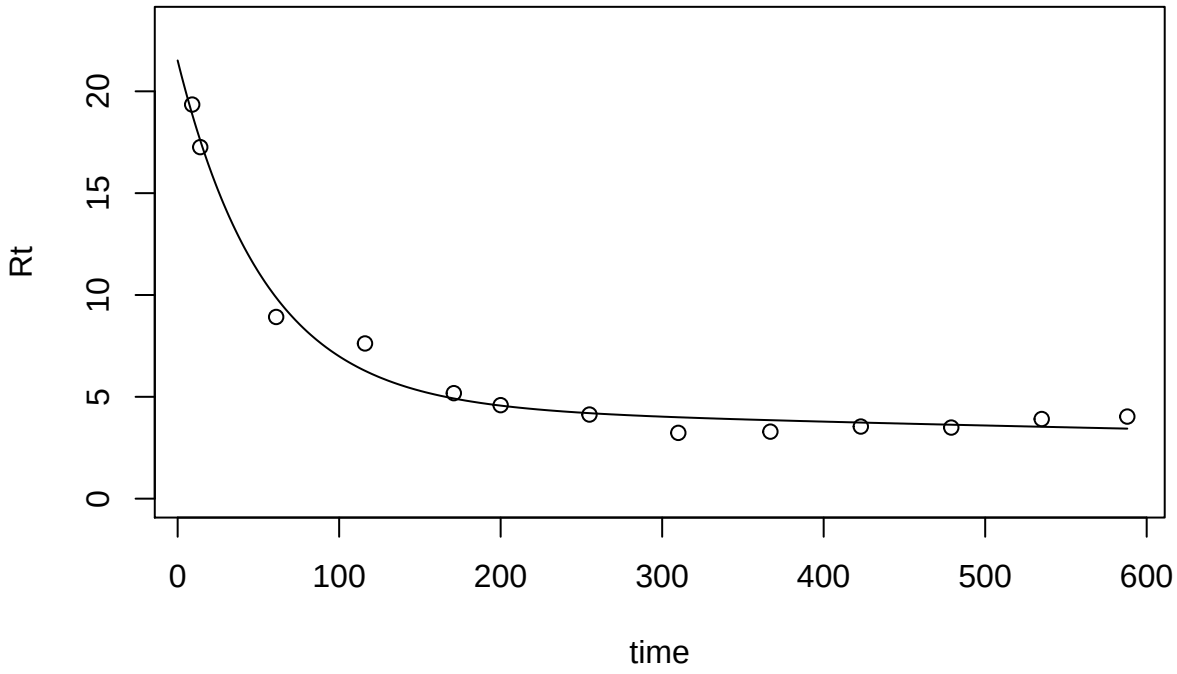
```
## [1] "Best fit parameter:  0.00101041339519676"
```




```
## [1] "AIC =  -3.80639125809738"
## [1] "k1= 0.018681392201747"
## [2] "k2= 0.000494740138349315"
## [3] "proportion of C0 in pool 1= 0.088779261446795"
```

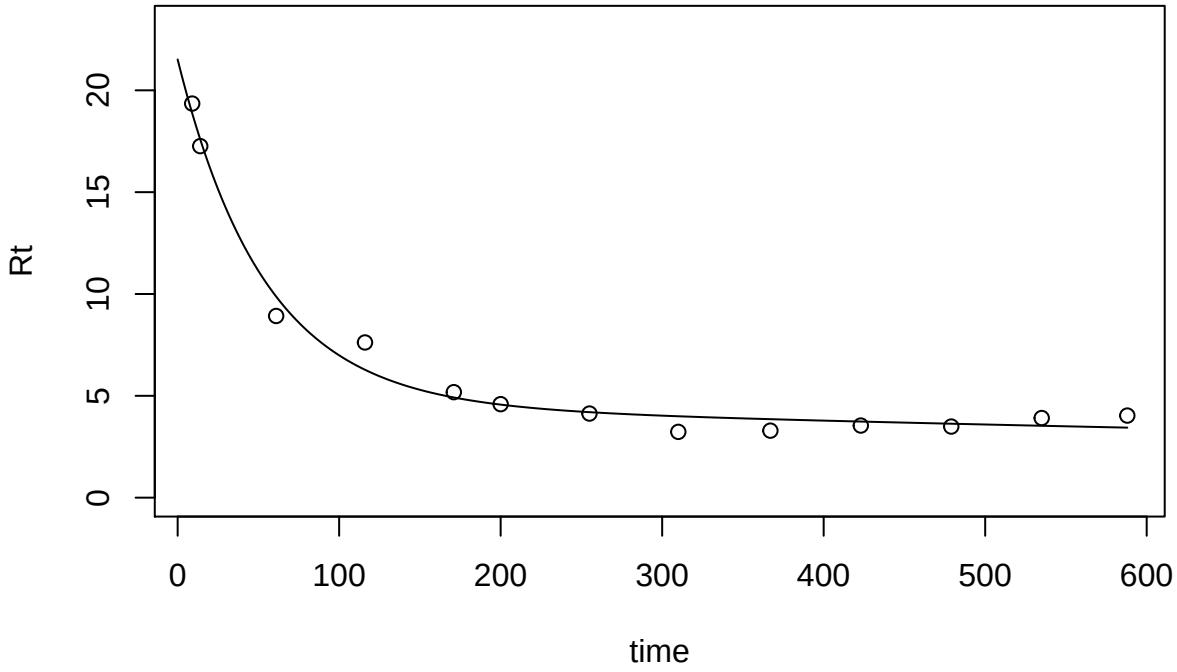



```
## [1] "AIC =  8.09015034031196"
## [1] "k1= 0.0186812779951944"
## [2] "k2= 0.000494739286189622"
## [3] "a21= 0.00159074763603906"
## [4] "a12= 3.57983030879749e-06"
## [5] "Proportion of C0 in pool 1= 0.0889250557053753"
```

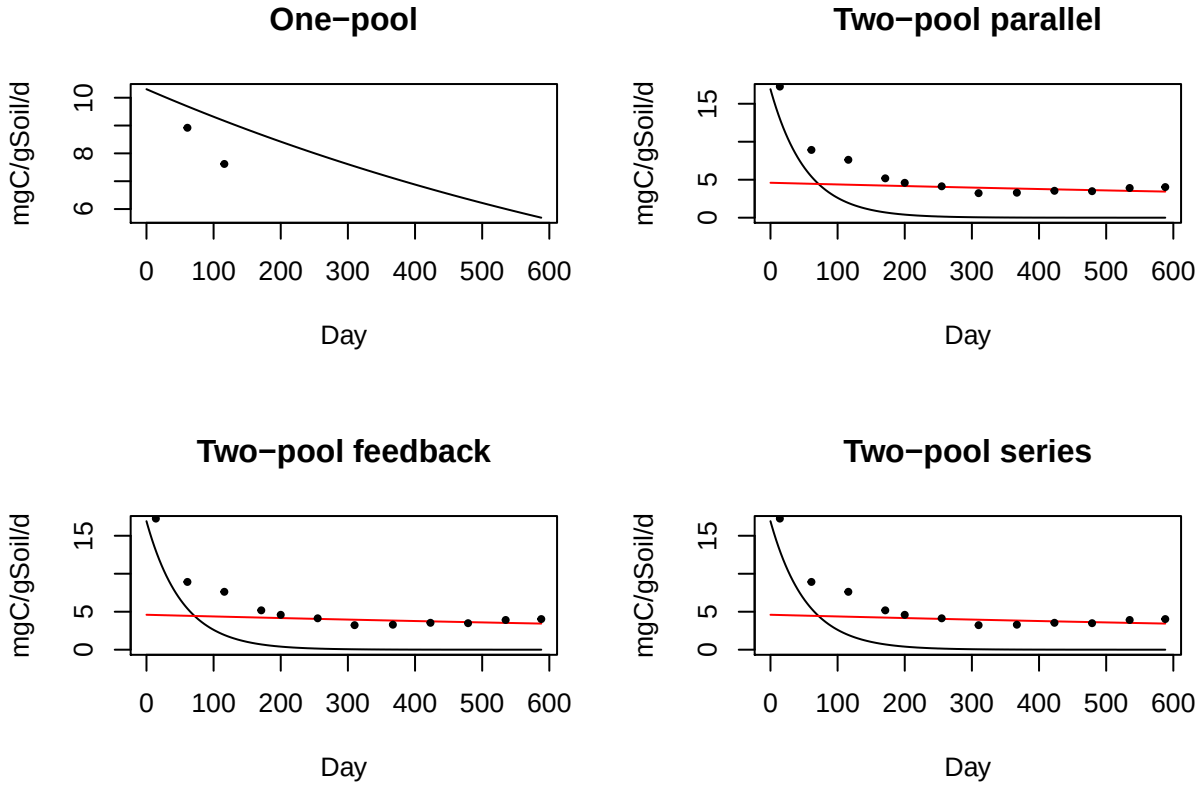



```
## [1] "AIC =  12.0901503402849"
## [1] "k1= 0.0186815043129255"
## [2] "k2= 0.000494740979362756"
## [3] "a21= 0.00322524718034745"
```

```
## [4] "Proportion of C0 in pool 1= 0.0890738302339126"
```




```
## [1] "AIC =  10.0901503393654"
```



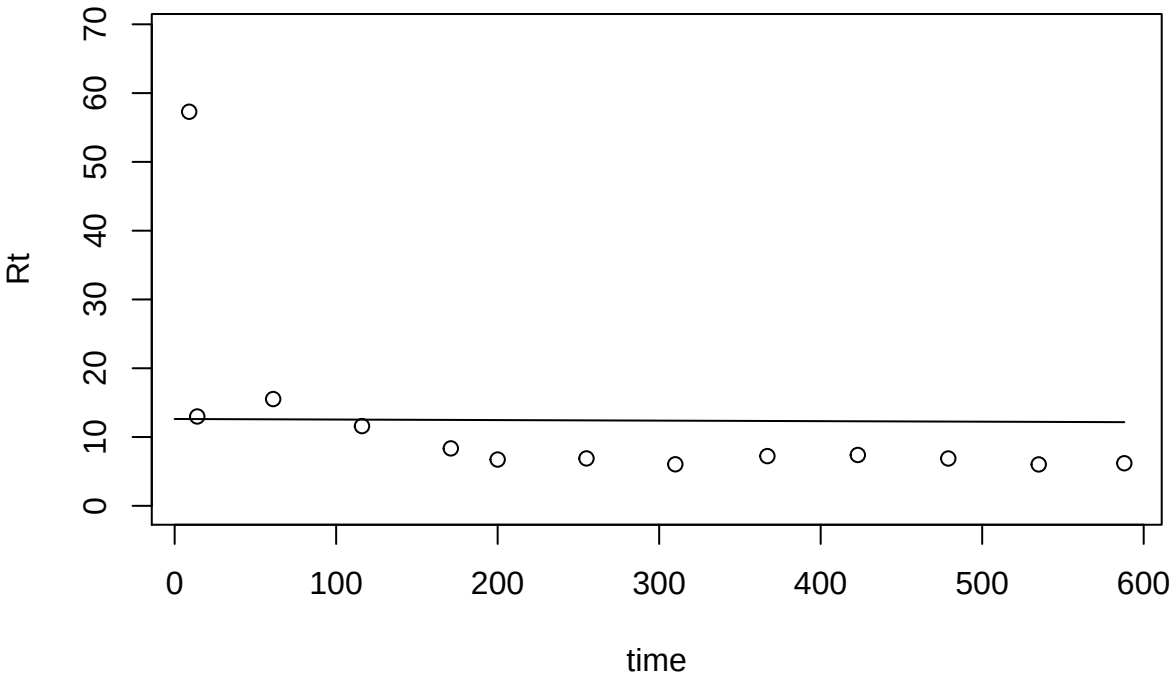
model	AIC	k1	k2	C0Inp1	a21	a12	AICc	wi	MeanTrT	q05
One-pool	-3.81	0.00101	NA	NA	NA	NA	-3.44	0.999	NA	NA

model	AIC	k1	k2	C0Inp1	a21	a12	AICc	wi	MeanTrT	q05
Two-pool parallel	8.09	0.0187	0.000495	0.0888	NA	NA	10.8	0.000825	644	64.6
Two-pool feedback	12.1	0.0187	0.000495	0.0889	0.00159	3.58e-06	20.7	5.83e-06	56.7	37.2
Two-pool series	10.1	0.0187	0.000495	0.0891	0.00323	NA	15.1	9.45e-05	56.7	37.2

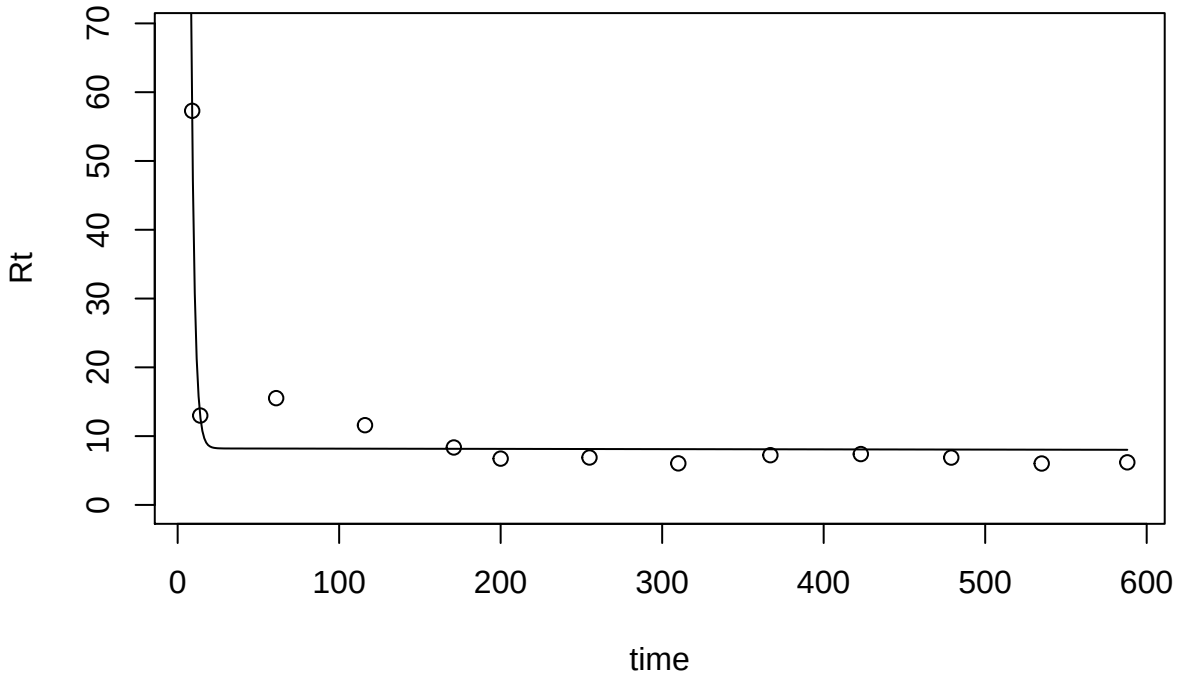
Variable C_CostaNF_15:

Decomposition rates over time at 15 degrees for Costa Rica, native forest

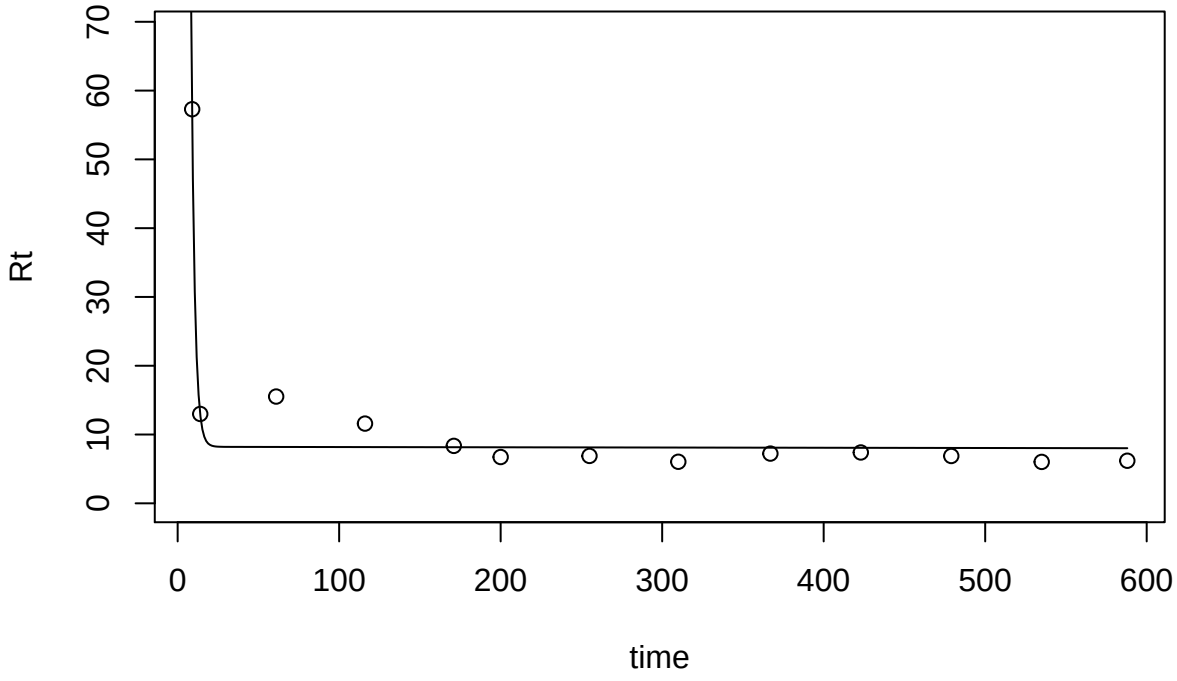
```
## [1] "Best fit parameter:  6.30594657212335e-05"
```




```
## [1] "AIC =  -8.33315629282967"
## [1] "k1= 0.462709470815219"
## [2] "k2= 4.2426169626114e-05"
## [3] "proportion of C0 in pool 1= 0.0329009673425088"
```

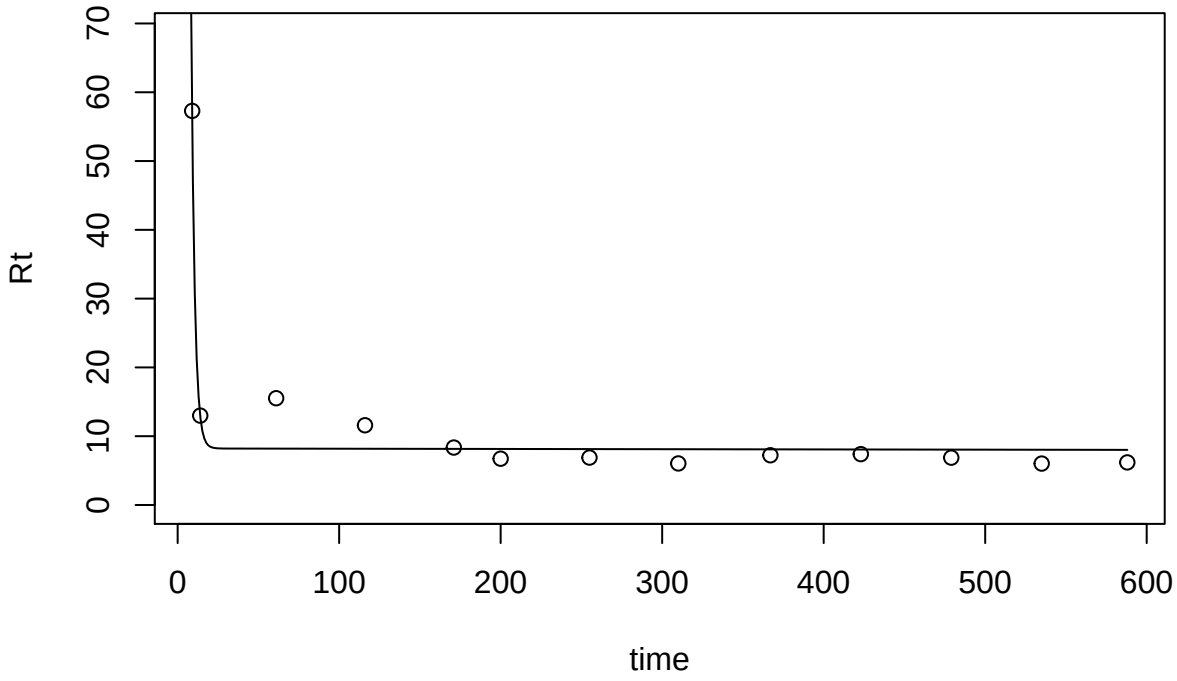



```
## [1] "AIC =  2.28946845376702"
## [1] "k1= 0.462704195689329"
## [2] "k2= 4.70368845964724e-05"
## [3] "a21= 0.0980174000541074"
## [4] "a12= 0.999992279969306"
## [5] "Proportion of C0 in pool 1= 0.0365747616535738"
```

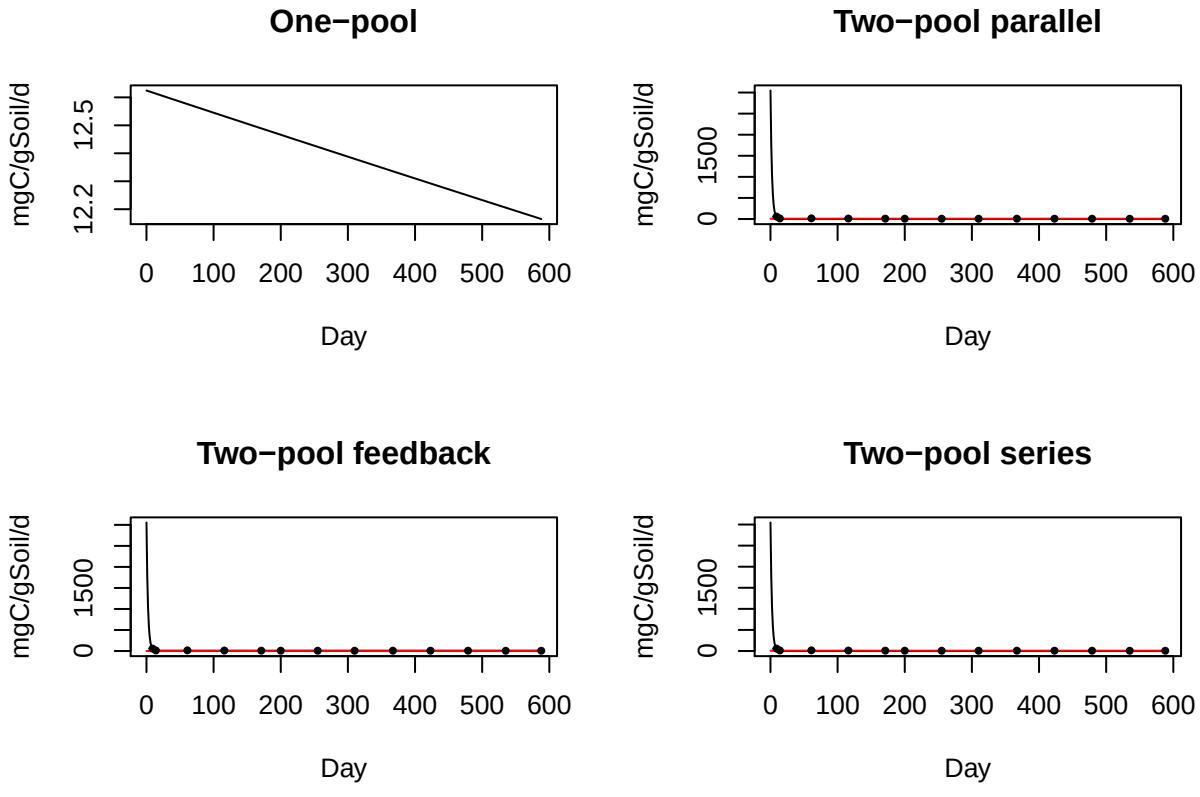



```
## [1] "AIC =  6.28946847089284"
## [1] "k1= 0.46270963323025"
## [2] "k2= 4.24261728166187e-05"
## [3] "a21= 0.202459924909887"
```

```
## [4] "Proportion of C0 in pool 1= 0.0412540074445475"
```




```
## [1] "AIC =  4.28946845084232"
```



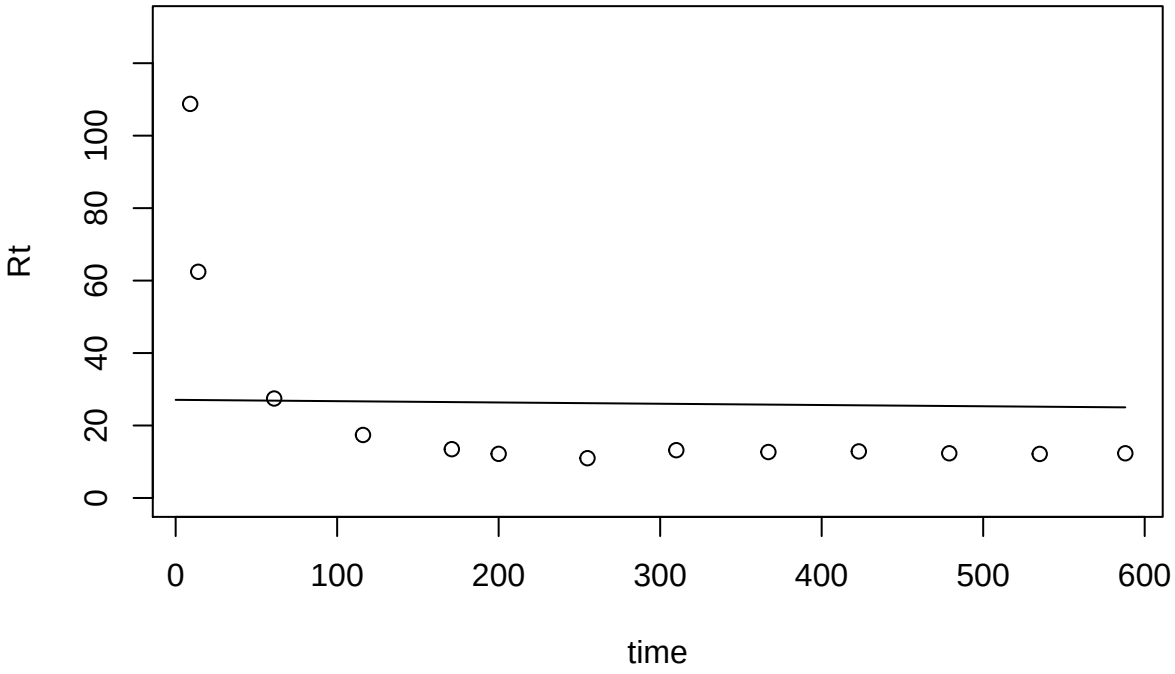
model	AIC	k1	k2	C0Inp1	a21	a12	AICc	wi	MeanTrT	q05
One-pool	-8.33	6.31e-05	NA	NA	NA	NA	-7.97	0.998	NA	NA
Two-pool parallel	2.29	0.463	4.24e-05	0.0329	NA	NA	4.96	0.00156	7070	2.71

model	AIC	k1	k2	C0Inp1	a21	a12	AICc	wi	MeanTrT	q05
Two-pool feedback	6.29	0.463	4.7e-05	0.0366	0.098	1	14.9	1.1e-05	2310	1.75
Two-pool series	4.29	0.463	4.24e-05	0.0413	0.202	NA	9.29	0.000178	2310	1.75

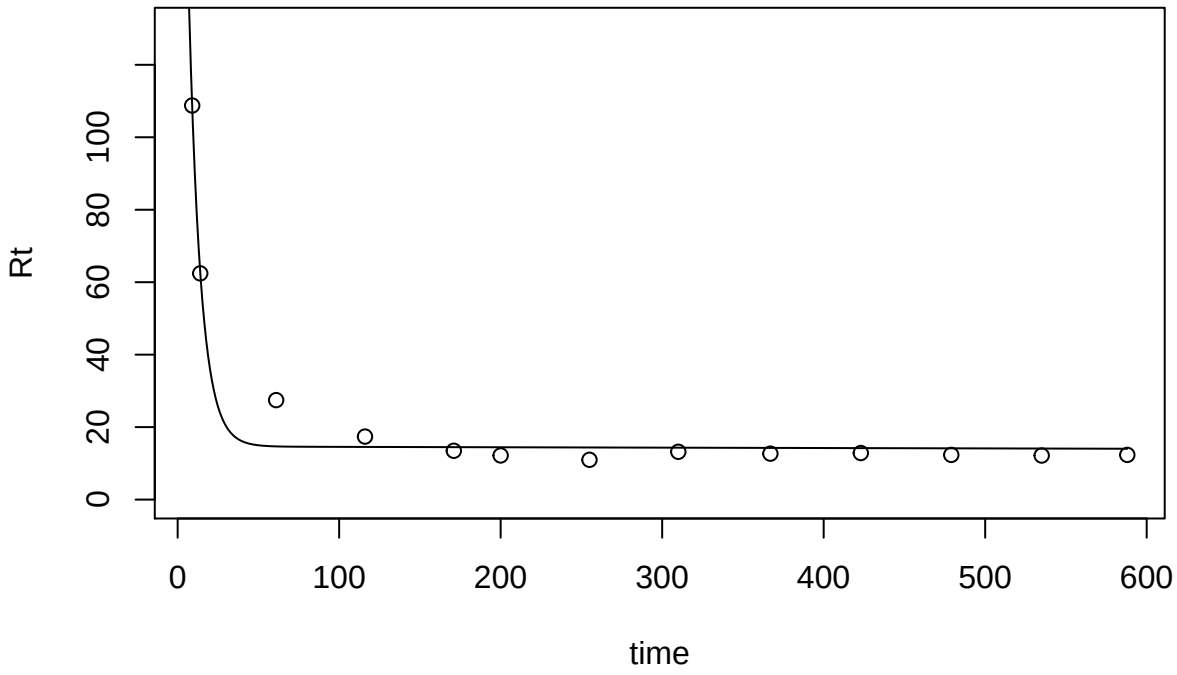
Variable C_CostaNF_25:

Decomposition rates over time at 25 degrees for Costa Rica, native forest

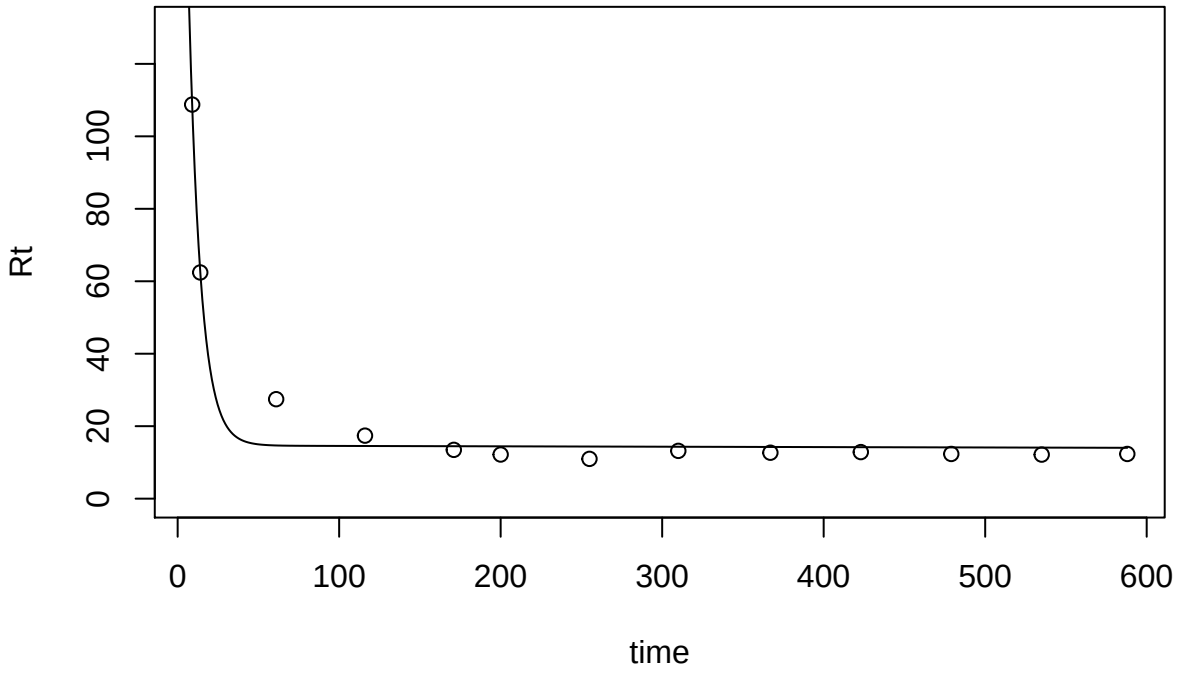
```
## [1] "Best fit parameter:  0.0001352832343953 72"
```




```
## [1] "AIC =  -11.2124154834161"
## [1] "k1= 0.13400069762539"
## [2] "k2= 7.40775475674368e-05"
## [3] "proportion of C0 in pool 1= 0.0116708022323239"
```

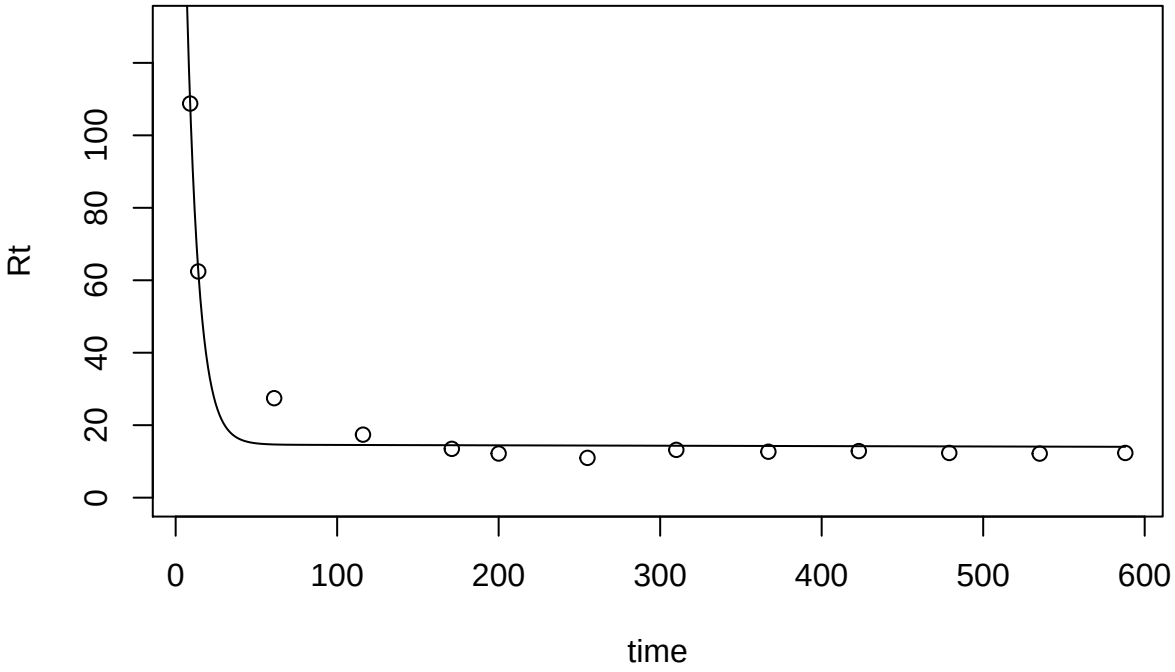



```
## [1] "AIC =  0.488075015896563"
## [1] "k1= 0.134000574584823"
## [2] "k2= 7.40777186414053e-05"
## [3] "a21= 0.565983880521044"
## [4] "a12= 4.24379527480534e-06"
## [5] "Proportion of C0 in pool 1= 0.0269096867375668"
```

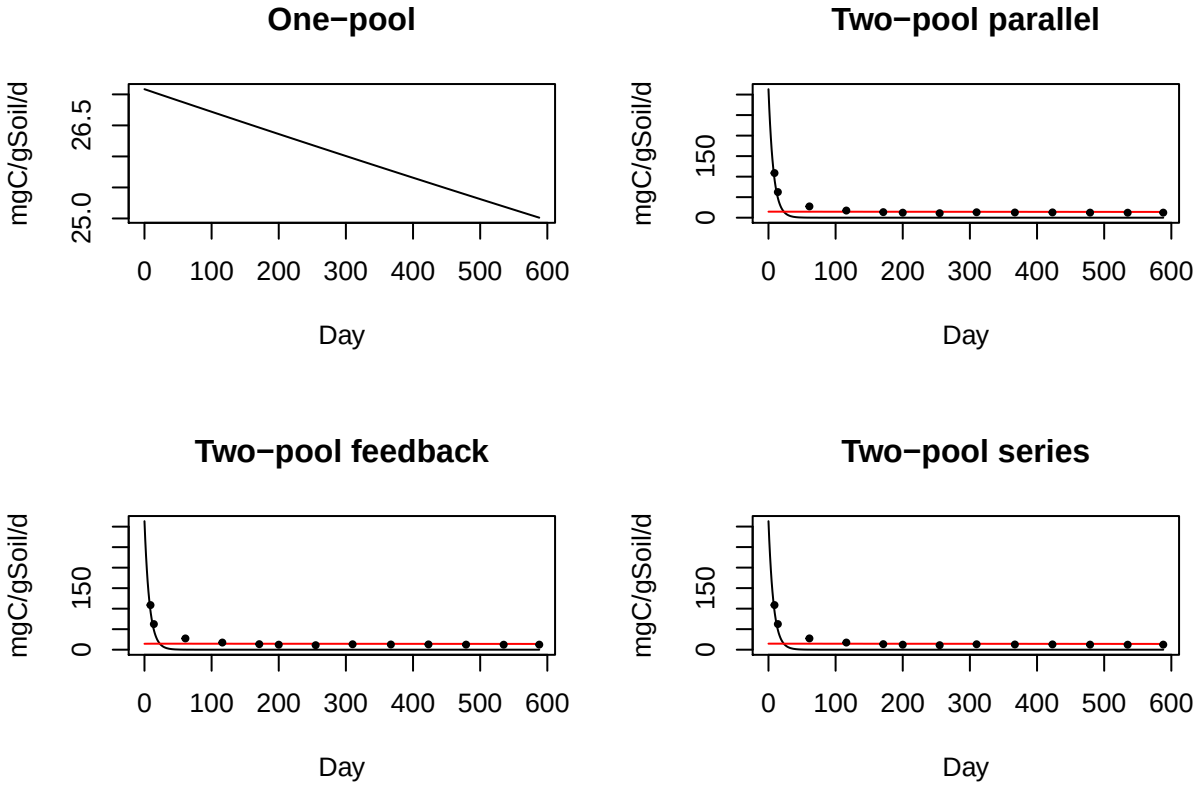



```
## [1] "AIC =  4.48807501578714"
## [1] "k1= 0.134000576432362"
## [2] "k2= 7.40775409879961e-05"
## [3] "a21= 0.0190202170171531"
```

```
## [4] "Proportion of C0 in pool 1= 0.0118971714337324"
```




```
## [1] "AIC =  2.48807501467178"
```



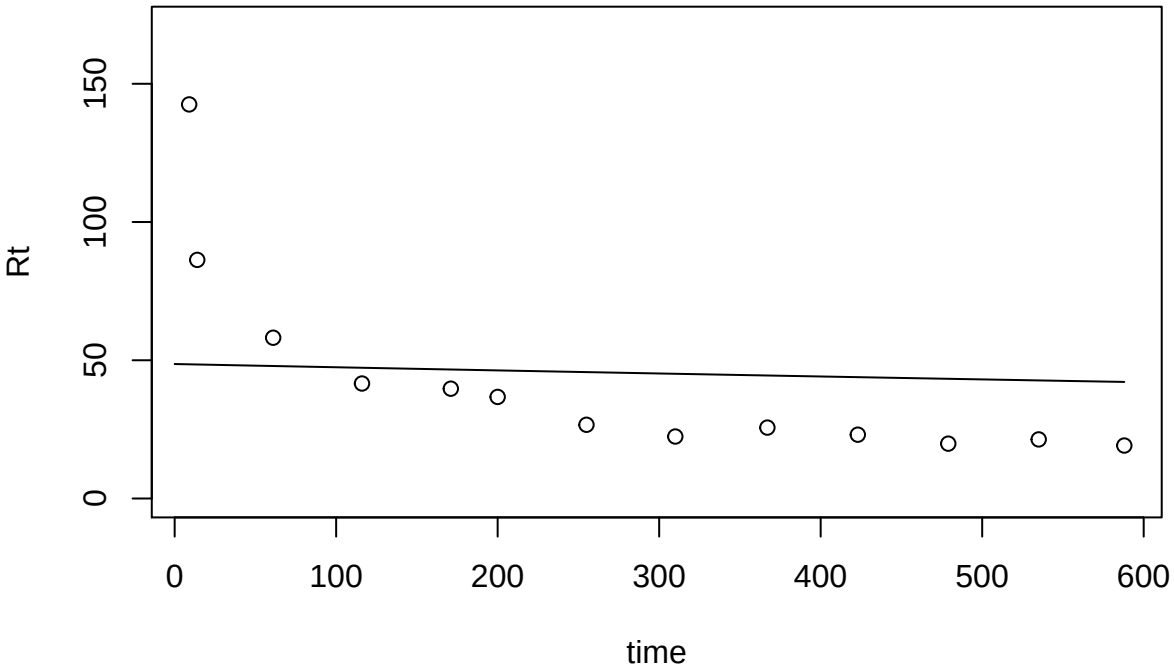
model	AIC	k1	k2	C0Inp1	a21	a12	AICc	wi	MeanTrT	q05
One-pool	-11.2	0.000135	NA	NA	NA	NA	-10.8	0.999	NA	NA

model	AIC	k1	k2	C0Inp1	a21	a12	AICc	wi	MeanTrT	q05
Two-pool parallel	0.488	0.134	7.41e-05	0.0117	NA	NA	3.15	0.000909	4060	9.34
Two-pool feedback	4.49	0.134	7.41e-05	0.0269	0.566	4.24e-06	13.1	6.43e-06	7650	1680
Two-pool series	2.49	0.134	7.41e-05	0.0119	0.019	NA	7.49	0.000104	7650	1680

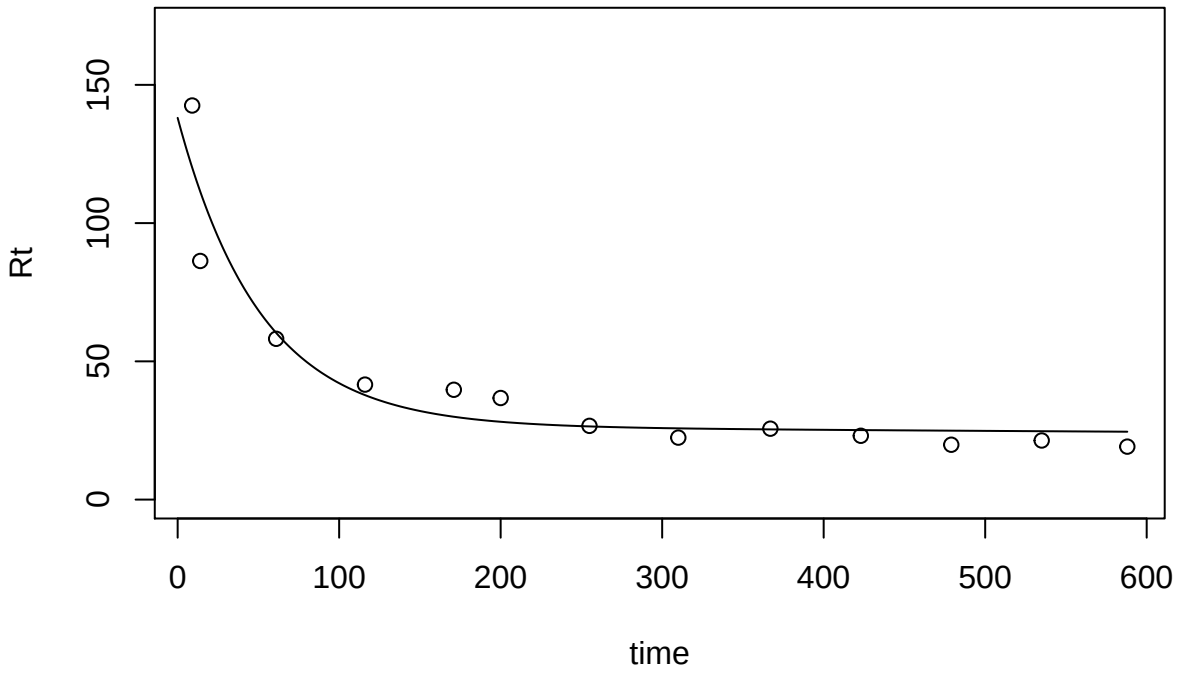
Variable C_CostaNF_35:

Decomposition rates over time at 35 degrees for Costa Rica, native forest

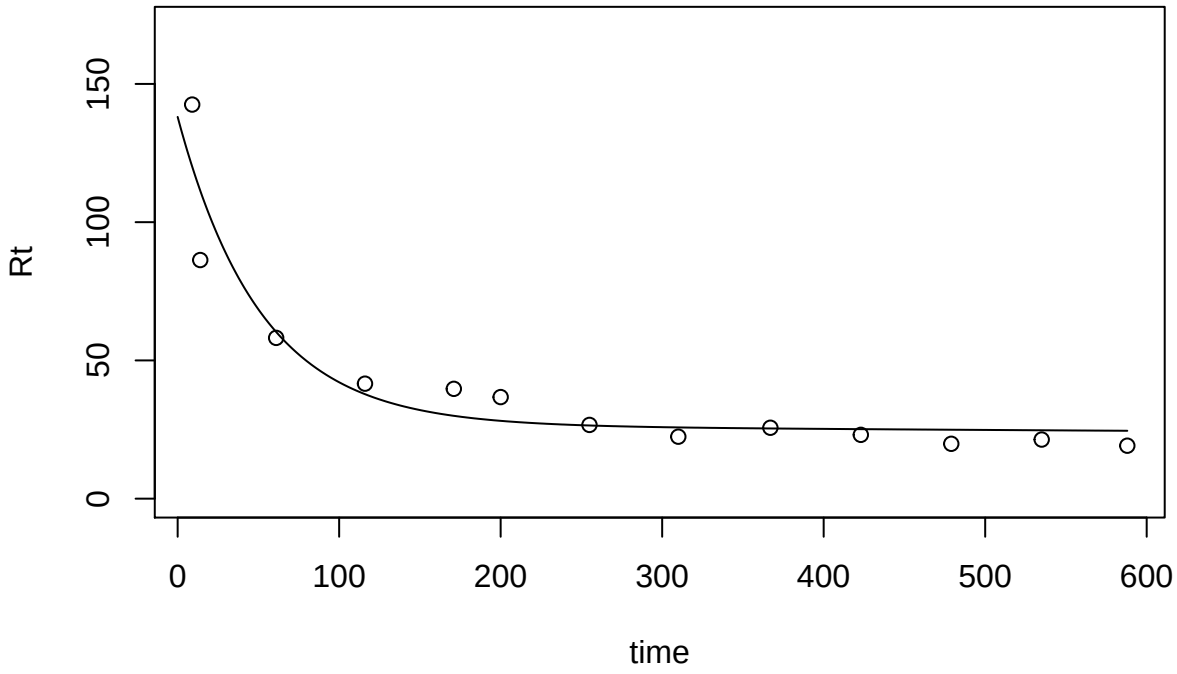
```
## [1] "Best fit parameter:  0.000242941415608324"
```




```
## [1] "AIC =  -11.9273692758489"
## [1] "k1= 0.0195025261703798"
## [2] "k2= 0.000136790204397538"
## [3] "proportion of C0 in pool 1= 0.0285491401496474"
```

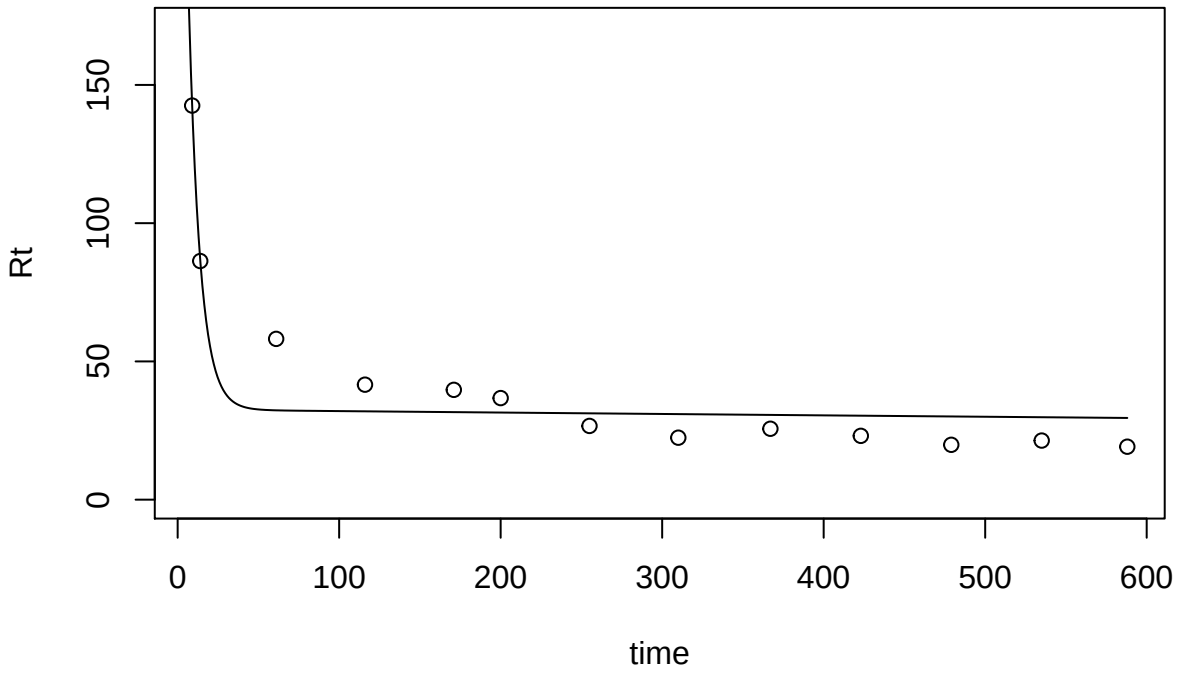



```
## [1] "AIC =  -3.36243639797887"
## [1] "k1= 0.0195034609697065"
## [2] "k2= 0.000136791926053142"
## [3] "a21= 0.00174404819966706"
## [4] "a12= 4.77364316729401e-05"
## [5] "Proportion of C0 in pool 1= 0.0285985684870529"
```

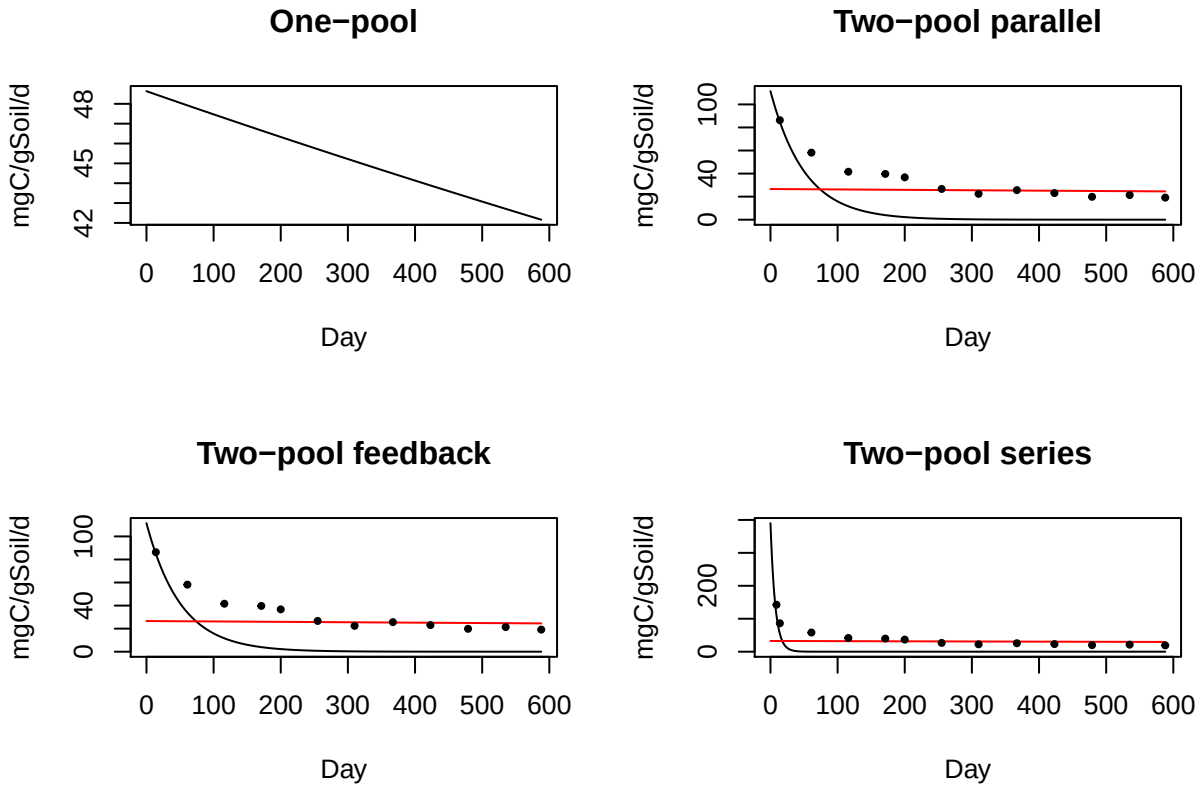



```
## [1] "AIC =  0.637563607562221"
## [1] "k1= 0.141130598593293"
## [2] "k2= 0.00016492717548664"
## [3] "a21= 0.0206563542700414"
```

```
## [4] "Proportion of C0 in pool 1= 0.0140977708876839"
```




```
## [1] "AIC =  -1.22505899516107"
```



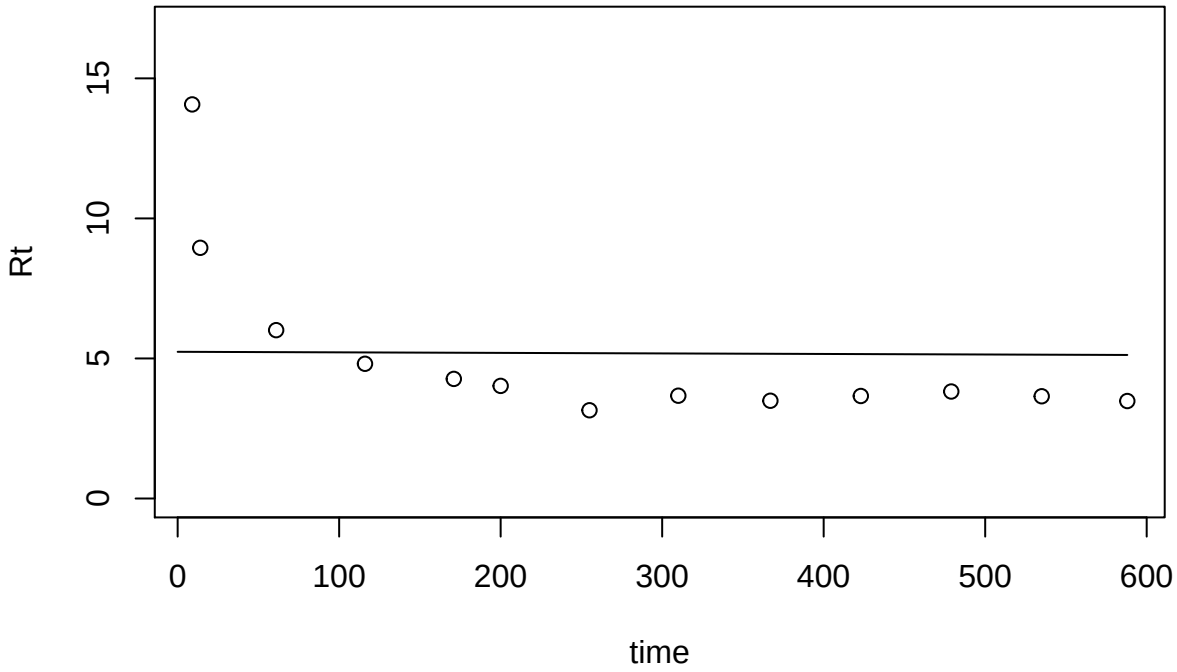
model	AIC	k1	k2	C0Inp1	a21	a12	AICc	wi	MeanTrTq05	
One-pool	-11.9	0.000243	NA	NA	NA	NA	-11.6	0.996	NA	NA

model	AIC	k1	k2	C0Inp1	a21	a12	AICc	wi	MeanTr	Tq05
Two-pool parallel	-3.36	0.0195	0.000137	0.0285	NA	NA	-0.696	0.00435	2230	63.6
Two-pool feedback	0.638	0.0195	0.000137	0.0286	0.00174	4.77e-05	9.21	3.07e-05	64	35.6
Two-pool series	-1.23	0.141	0.000165	0.0141	0.0207	NA	3.77	0.000465	64	35.6

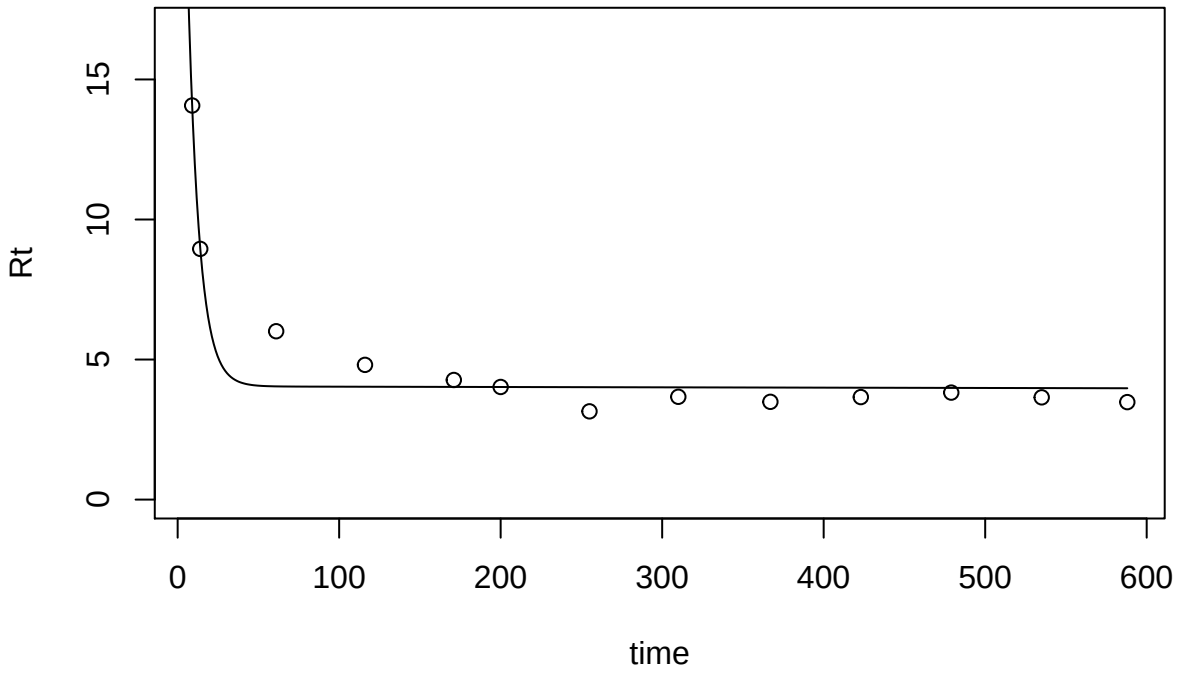
Variable C_CostaPas_15:

Decomposition rates over time at 15 degrees for Costa Rica, Pasture

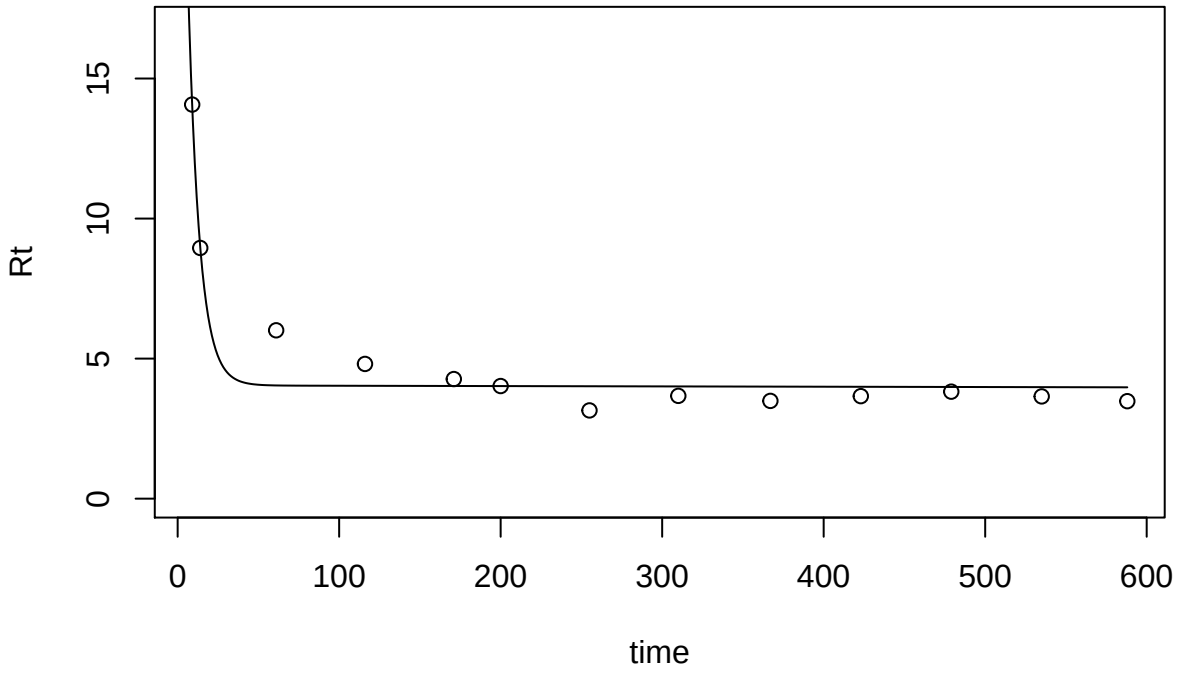
```
## [1] "Best fit parameter:  3.6987225655807e-05"
```




```
## [1] "AIC =  -2.32549580122039"
## [1] "k1= 0.141193391791066"
## [2] "k2= 2.85980855879331e-05"
## [3] "proportion of C0 in pool 1= 0.00177959270203198"
```

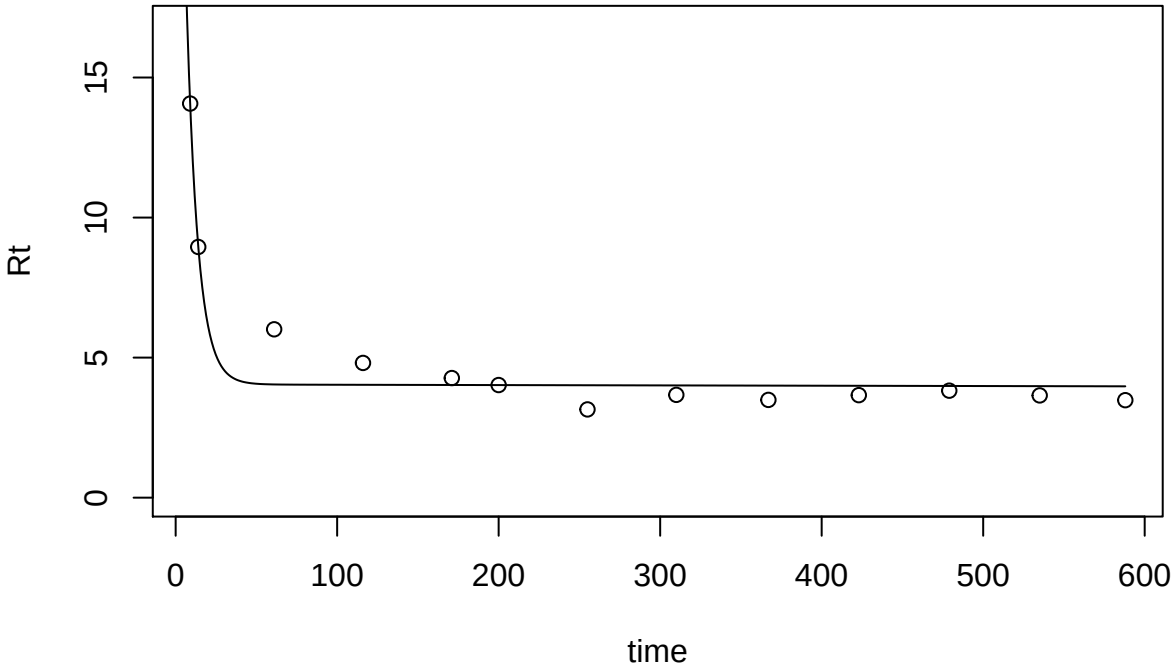



```
## [1] "AIC =  7.49434425578148"
## [1] "k1= 0.14119349423699"
## [2] "k2= 2.85983145342833e-05"
## [3] "a21= 0.403875117169345"
## [4] "a12= 1.970811000096e-05"
## [5] "Proportion of C0 in pool 1= 0.00298567329464022"
```

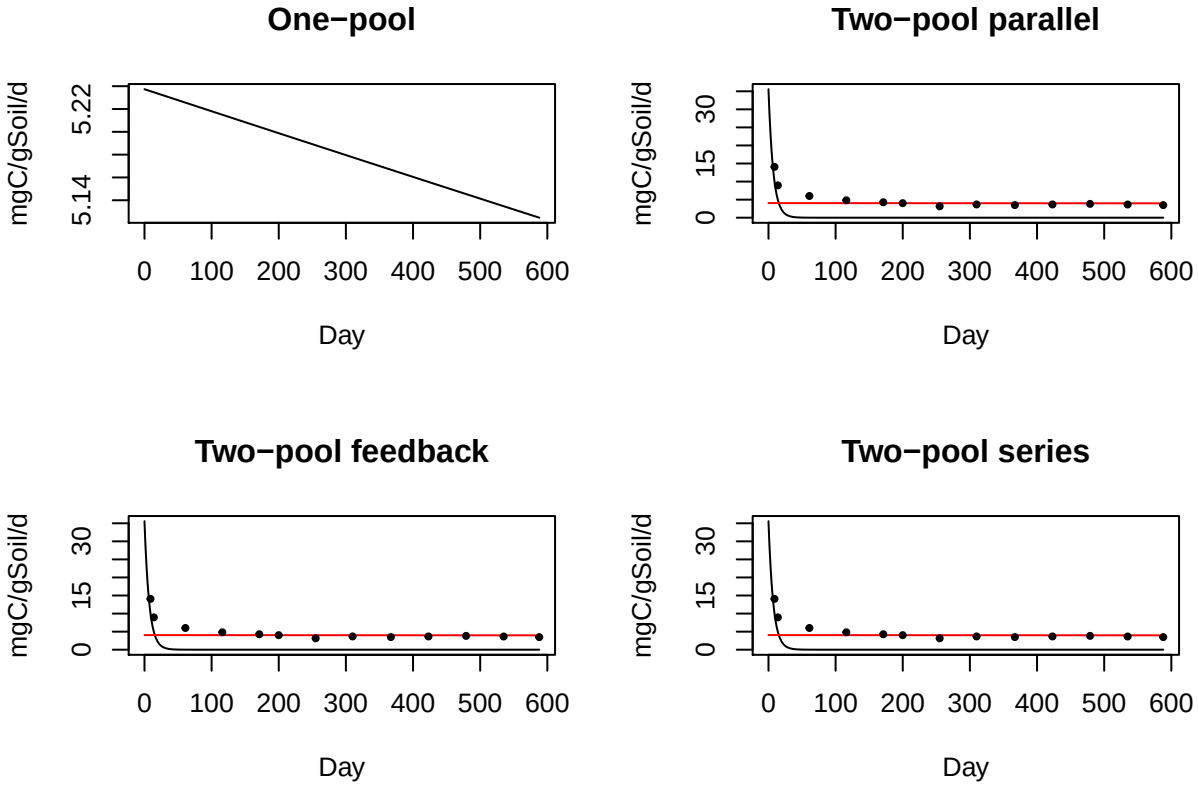



```
## [1] "AIC =  11.4943442541589"
## [1] "k1= 0.141193557776422"
## [2] "k2= 2.8598086272021e-05"
## [3] "a21= 0.087367546147258"
```

```
## [4] "Proportion of C0 in pool 1= 0.00194998166394678"
```




```
## [1] "AIC =  9.49434425374707"
```



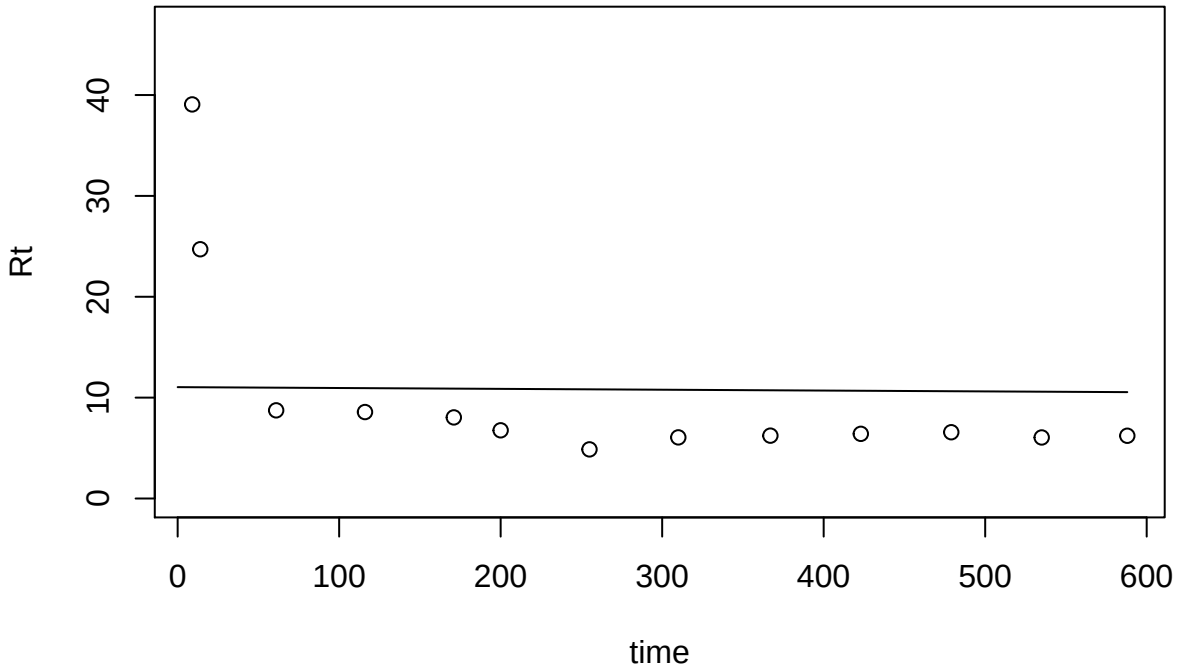
model	AIC	k1	k2	C0Inp1	a21	a12	AICc	wi	MeanTrT	q05
One-pool	-2.33	3.7e-05	NA	NA	NA	NA	-1.96	0.998	NA	NA

model	AIC	k1	k2	C0Inp1	a21	a12	AICc	wi	MeanTrT	q05
Two-pool parallel	7.49	0.141	2.86e-05	0.00178	NA	NA	10.2	0.00233	10500	8.87
Two-pool feedback	11.5	0.141	2.86e-05	0.00299	0.404	1.97e-05	20.1	1.64e-05	14100	12.9
Two-pool series	9.49	0.141	2.86e-05	0.00195	0.0874	NA	14.5	0.000266	14100	12.9

Variable C_CostaPas_25:

Decomposition rates over time at 25 degrees for Costa Rica, Pasture

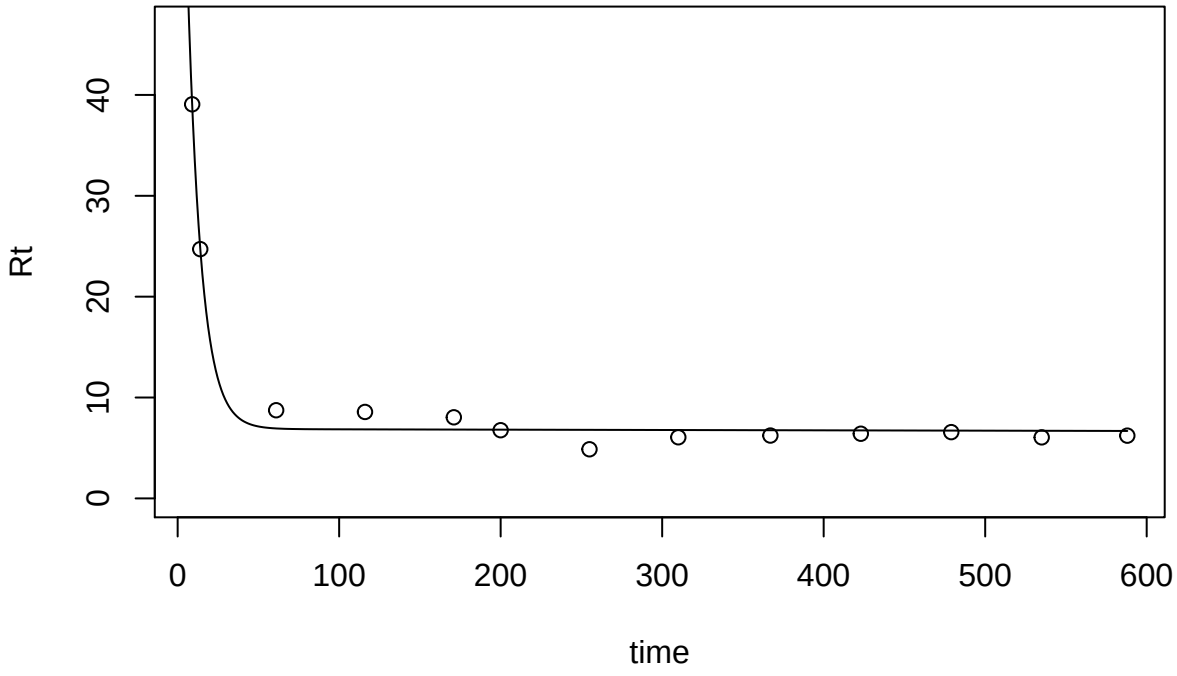
```
## [1] "Best fit parameter:  7.79635225660693e-05"
```




```
## [1] "AIC =  -6.98420306507251"
## [1] "k1= 0.116778889951504"
## [2] "k2= 4.88669992553495e-05"
## [3] "proportion of C0 in pool 1= 0.0055498113461851"
```

```
## [1] "AIC =  5.99788309038935"
## DLSODA-  Warning..Internal T (=R1) and H (=R2) are
##       such that in the machine, T + H = T on the next step
##      (H = step size). Solver will continue anyway.
## In above message, R1 = 0, R2 = 0
##
## DINTDY-  T (=R1) illegal
## In above message, R1 = 1.17836
##
##       T not in interval TCUR - HU (= R1) to TCUR (=R2)
## In above message, R1 = 0, R2 = 0
##
## DINTDY-  T (=R1) illegal
```

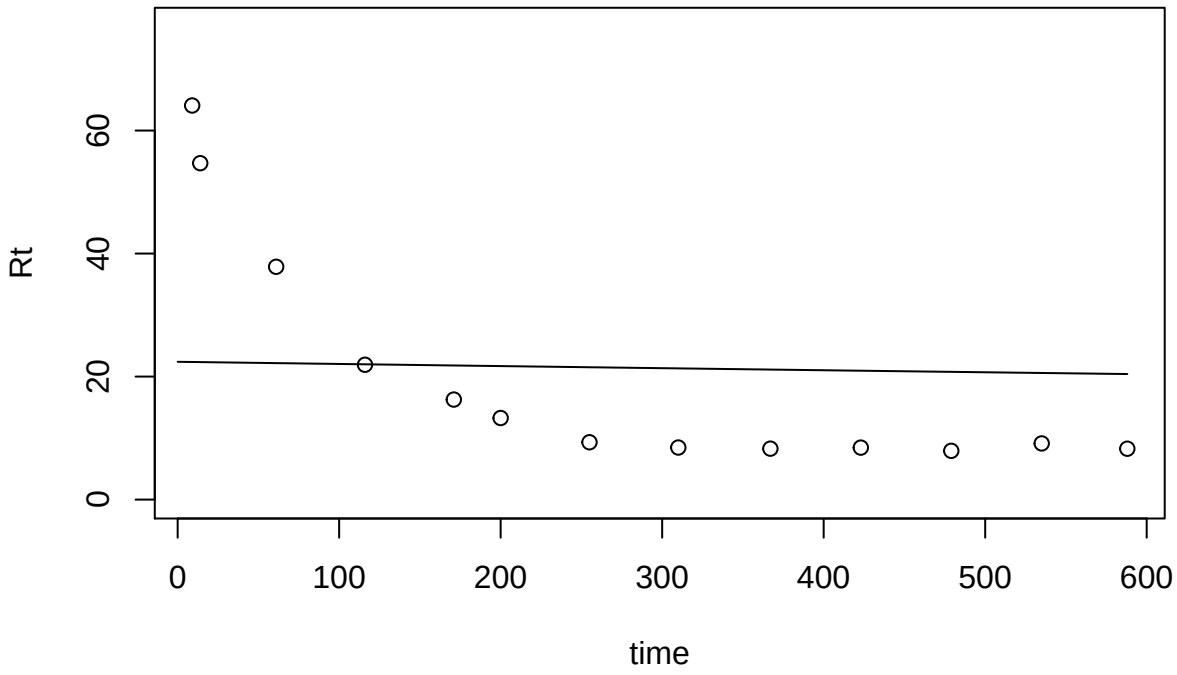
```
## In above message, R1 = 2.35671
##
##       T not in interval TCUR - HU (= R1) to TCUR (=R2)
## In above message, R1 = 0, R2 = 0
##
## DLSODA-  Trouble in DINTDY.  ITASK = I1, TOUT = R1
## In above message, I1 = 1
##
## In above message, R1 = 2.35671
##
## Error in lsoda(startValues, t, lsexamp): illegal input detected before taking any integration steps
```



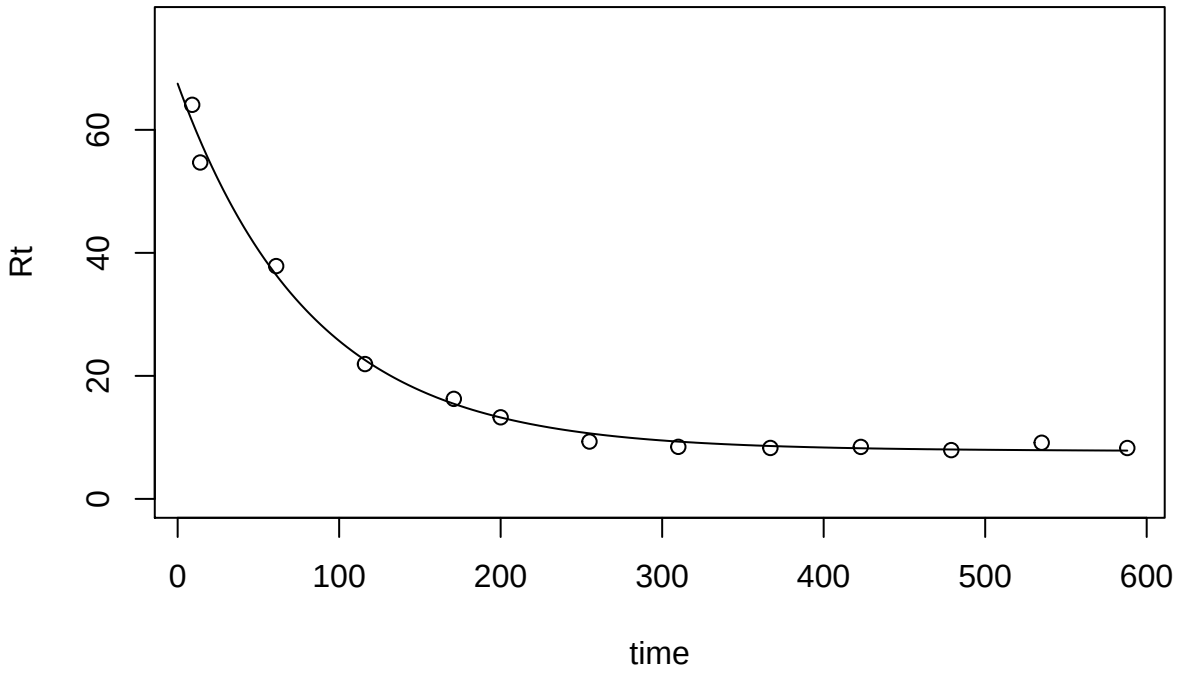
Variable C_CostaPas_35:

Decomposition rates over time at 35 degrees for Costa Rica, Pasture

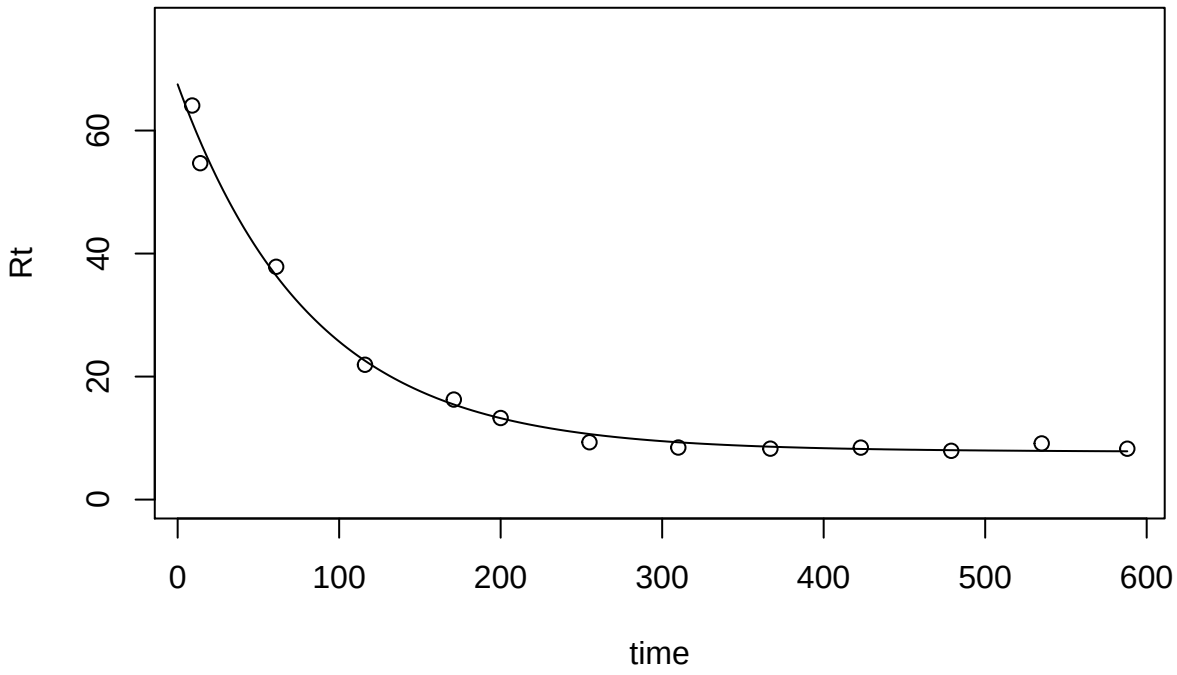
```
## [1] "Best fit parameter:  0.000158202466724091"
```



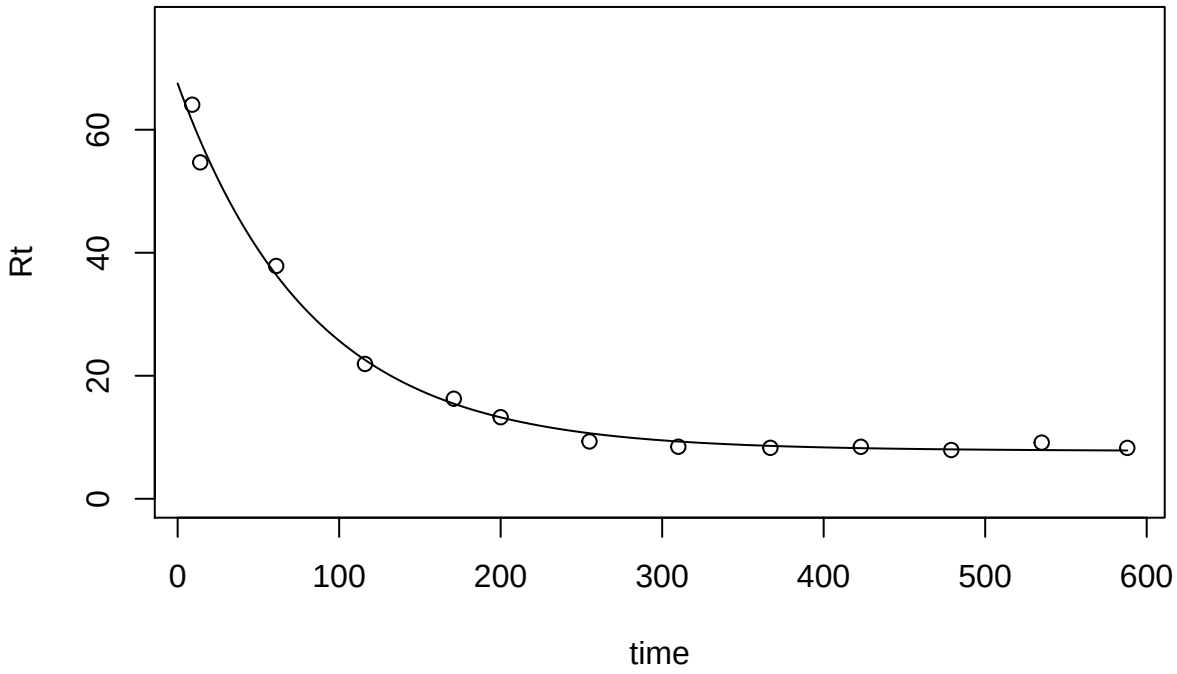

```
## [1] "AIC =  -9.56120536559137"
## [1] "k1= 0.0121338297353242"
## [2] "k2= 5.91034357649428e-05"
## [3] "proportion of C0 in pool 1= 0.0345919447460946"
```



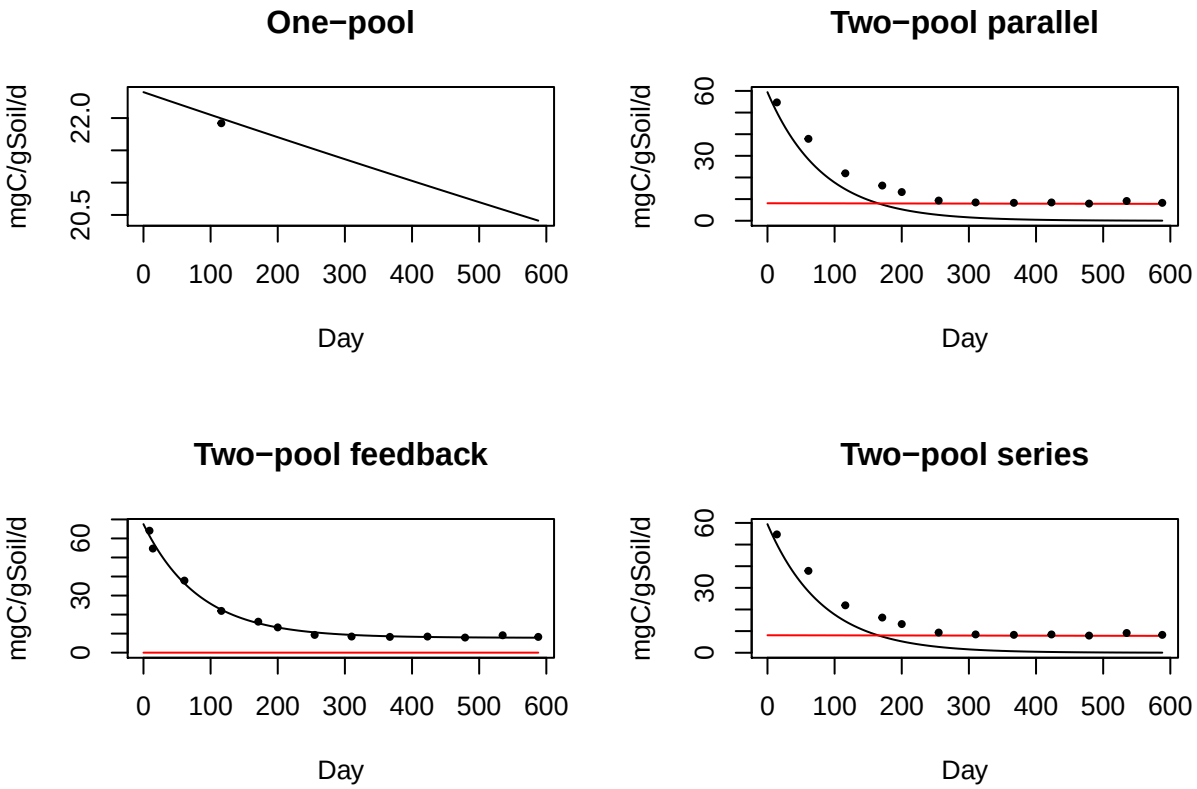

```
## [1] "AIC =  4.51806103003168"
## [1] "k1= 0.0121336103100437"
## [2] "k2= 5.9322211340427e-05"
## [3] "a21= 0.00367033630890656"
## [4] "a12= 0.999931366841848"
## [5] "Proportion of C0 in pool 1= 0.0394395579299986"
```




```
## [1] "AIC =  8.51806103003064"
## [1] "k1= 0.0121338296703742"
## [2] "k2= 5.91034354576989e-05"
## [3] "a21= 0.0122731849707754"
## [4] "Proportion of C0 in pool 1= 0.0350238799763052"
```




```
## [1] "AIC =  6.51806102981526"
```

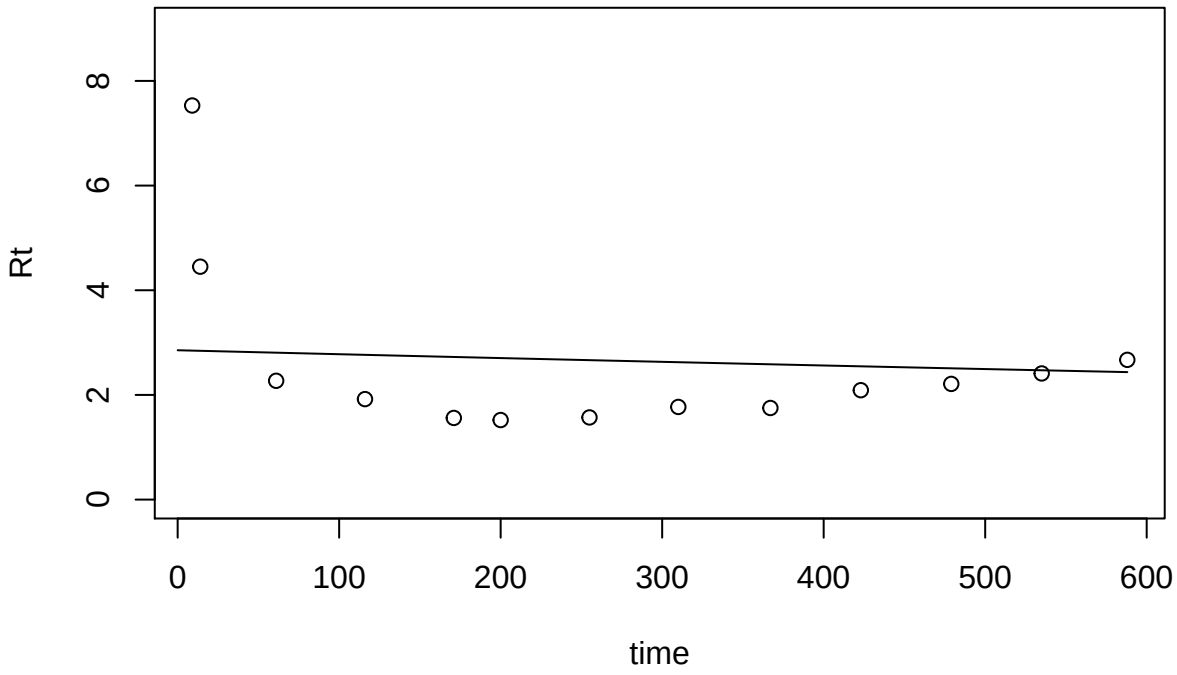


model	AIC	k1	k2	C0Inp1	a21	a12	AICc	wi	MeanTrT	q05
One-pool	-9.56	0.000158	NA	NA	NA	NA	-9.2	1	NA	NA
Two-pool parallel	4.52	0.0121	5.91e-05	0.0346	NA	NA	7.18	0.000277	5130	103
Two-pool feedback	8.52	0.0121	5.93e-05	0.0394	0.00367	1	17.1	1.96e-06	145	57.4
Two-pool series	6.52	0.0121	5.91e-05	0.035	0.0123	NA	11.5	3.17e-05	145	57.4

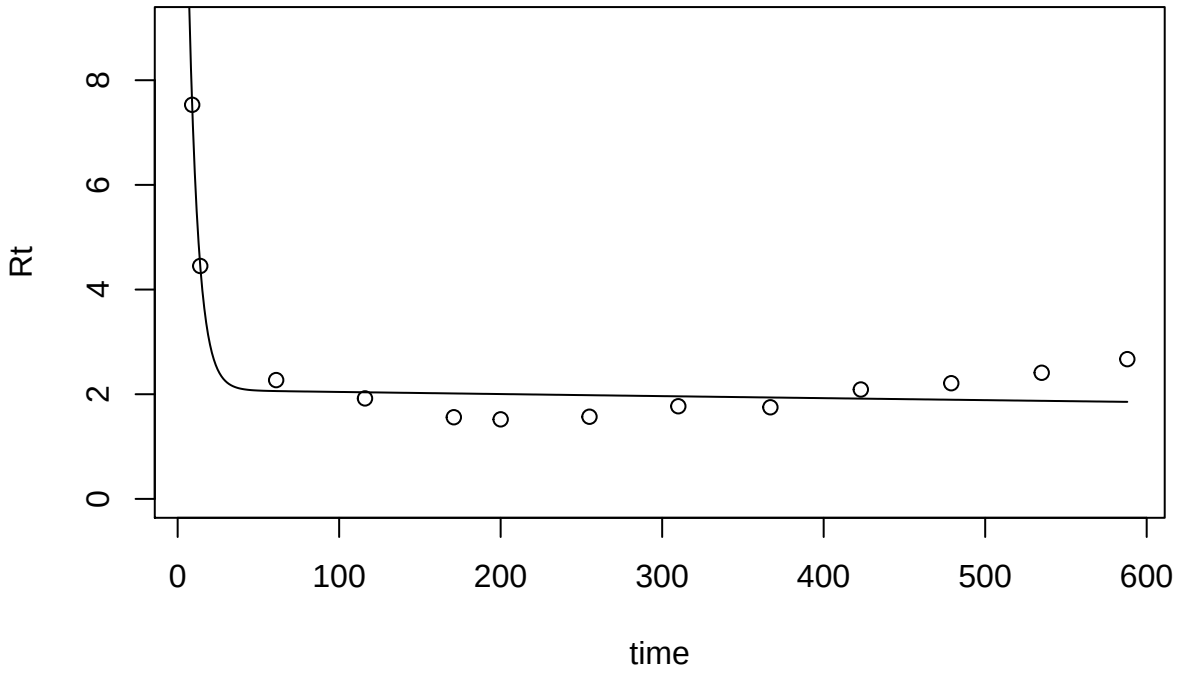
Variable C_BrazilNF_15:

Decomposition rates over time at 15 degrees for Brazil, native forest

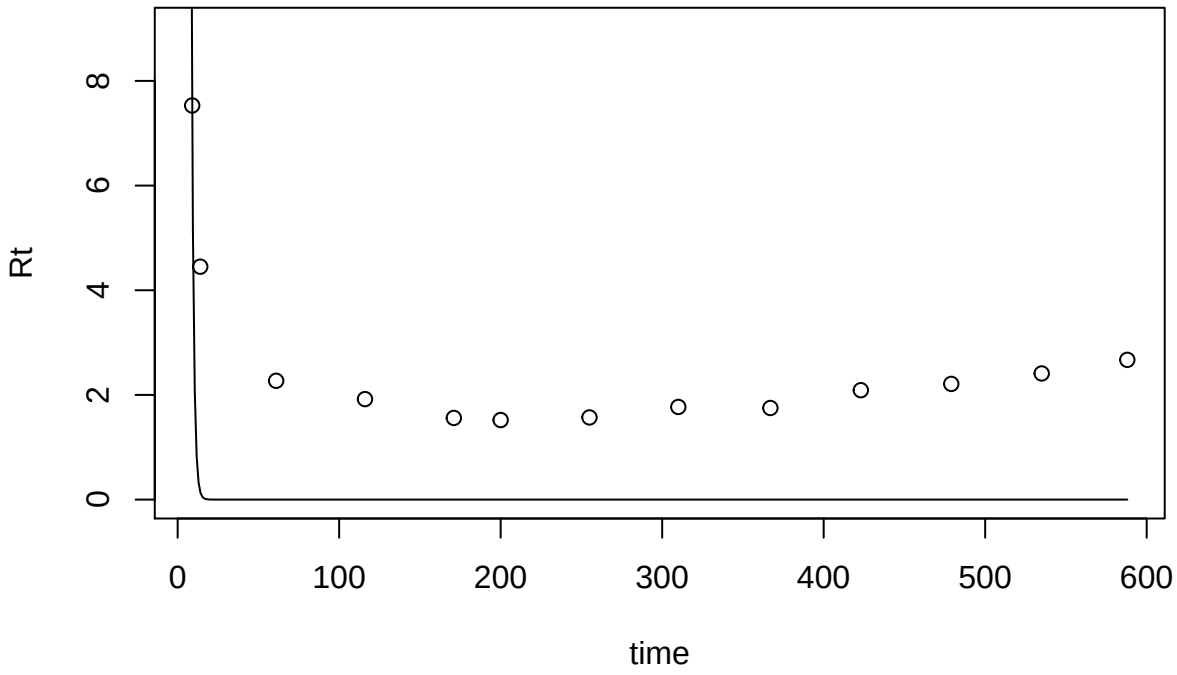
```
## [1] "Best fit parameter:  0.000269188066035735"
```



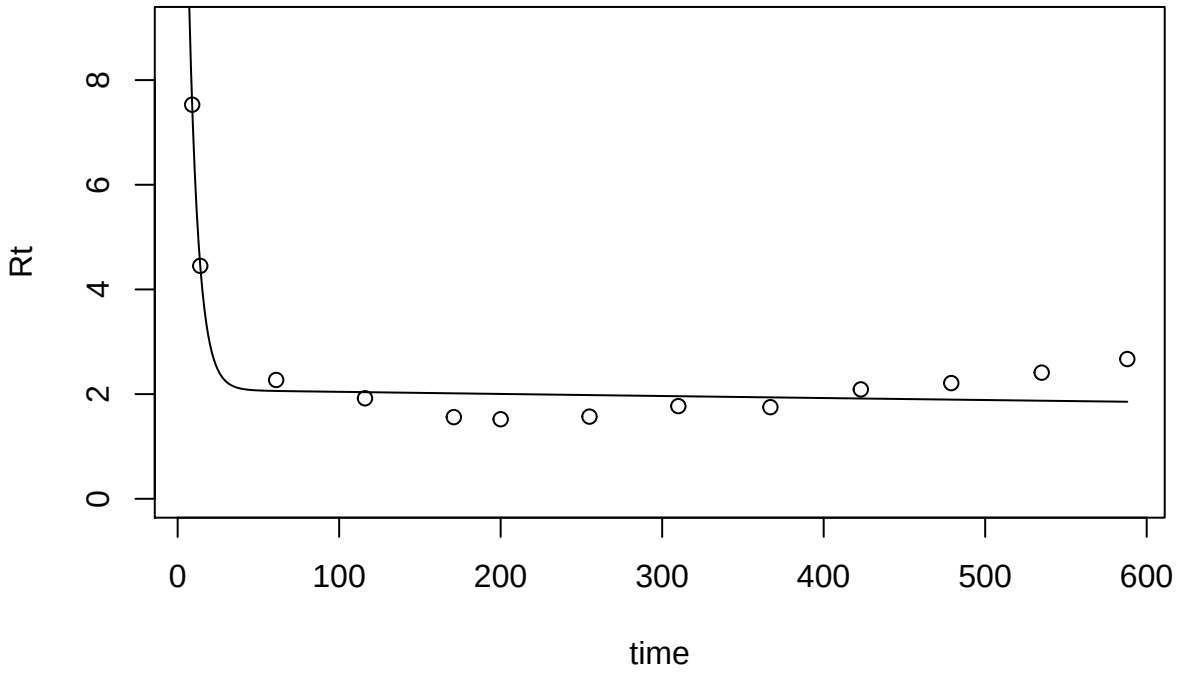

```
## [1] "AIC =  0.245097581958049"
## [1] "k1= 0.165753562764115"
## [2] "k2= 0.000199390952075759"
## [3] "proportion of C0 in pool 1= 0.0137212636189568"
```



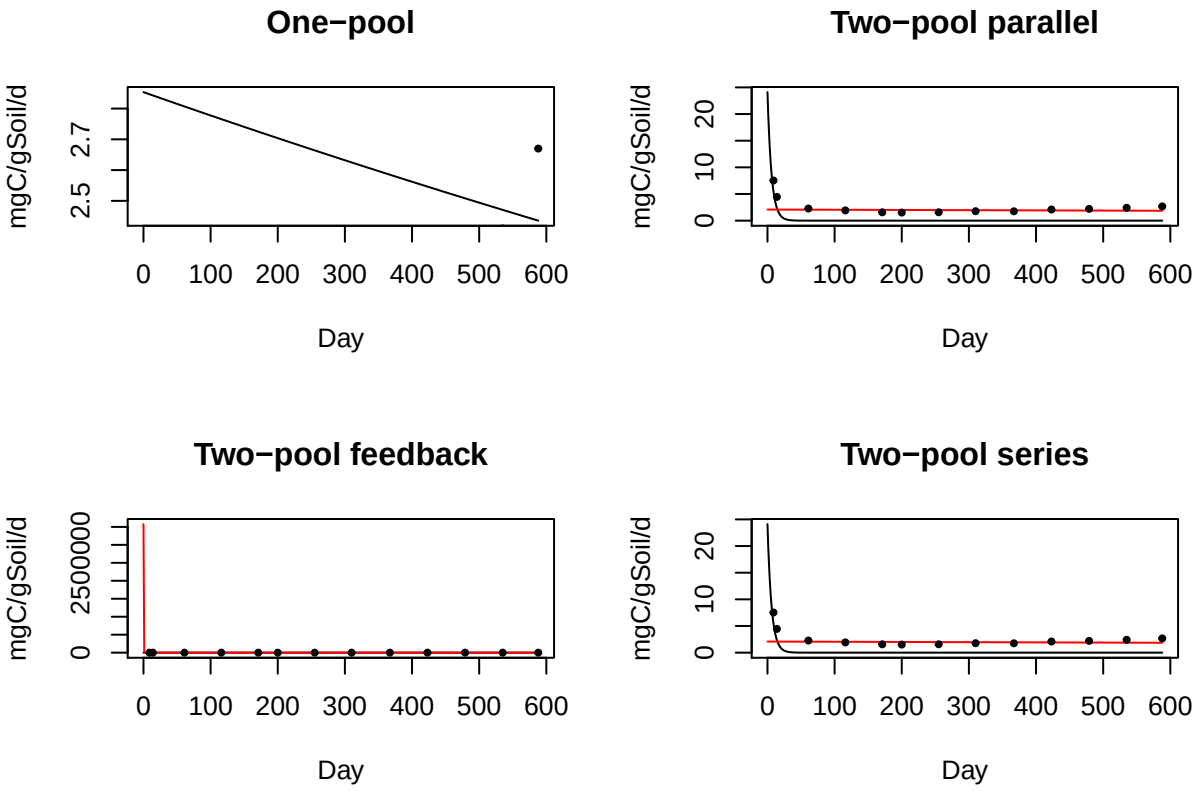

```
## [1] "AIC =  9.93083682933522"
## [1] "k1= 132.467096409886"
## [2] "k2= 1450043.24434175"
## [3] "a21= 0.994324381776729"
## [4] "a12= 0.999766435661135"
## [5] "Proportion of C0 in pool 1= 0.00364504372143371"
```




```
## [1] "AIC =  6.83886007113847"
## [1] "k1= 0.165753548283152"
## [2] "k2= 0.000199390950578424"
## [3] "a21= 0.0282132888598952"
## [4] "Proportion of C0 in pool 1= 0.0141200801398711"
```




```
## [1] "AIC =  11.9308368290605"
```

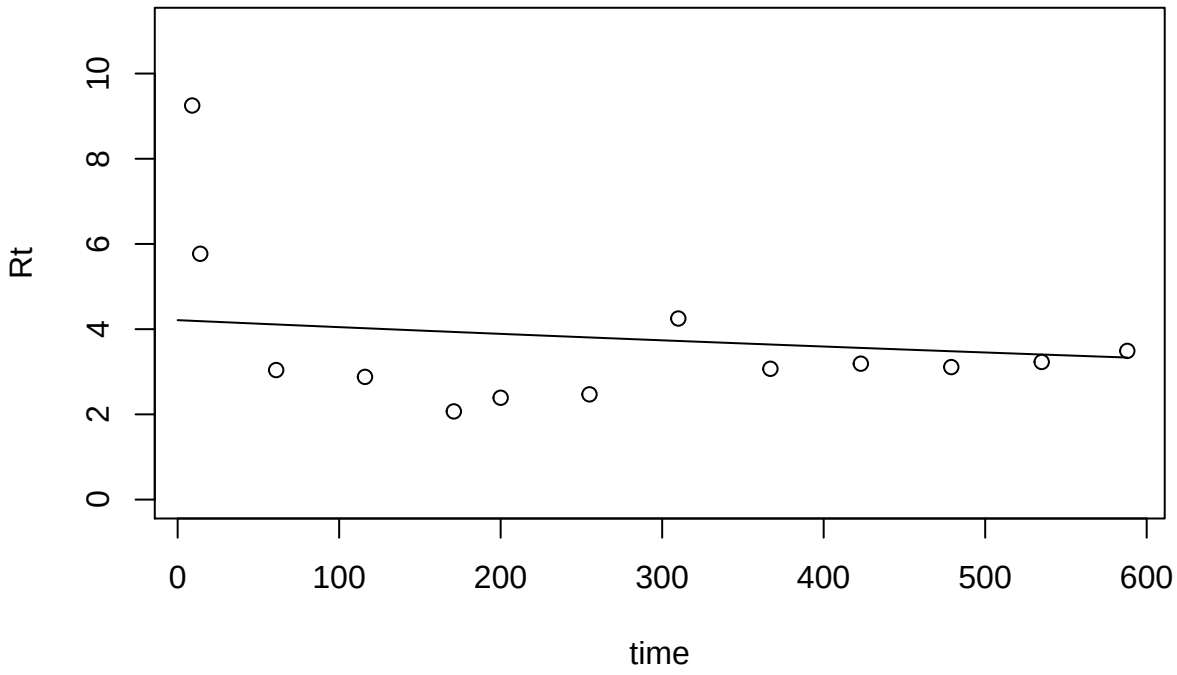


model	AIC	k1	k2	C0Inp1	a21	a12	AICc	wi	MeanTrT	q05
One-pool	0.245	0.000269	NA	NA	NA	NA	0.609	0.997	NA	NA
Two-pool parallel	9.93	0.166	0.000199	0.0137	NA	NA	12.6	0.00248	1510	7.54
Two-pool feedback	6.84	132	1450000	0.00365	0.994	1	15.4	0.000609	1.28	0.886
Two-pool series	11.9	0.166	0.000199	0.0141	0.0282	NA	16.9	0.000285	1.28	0.886

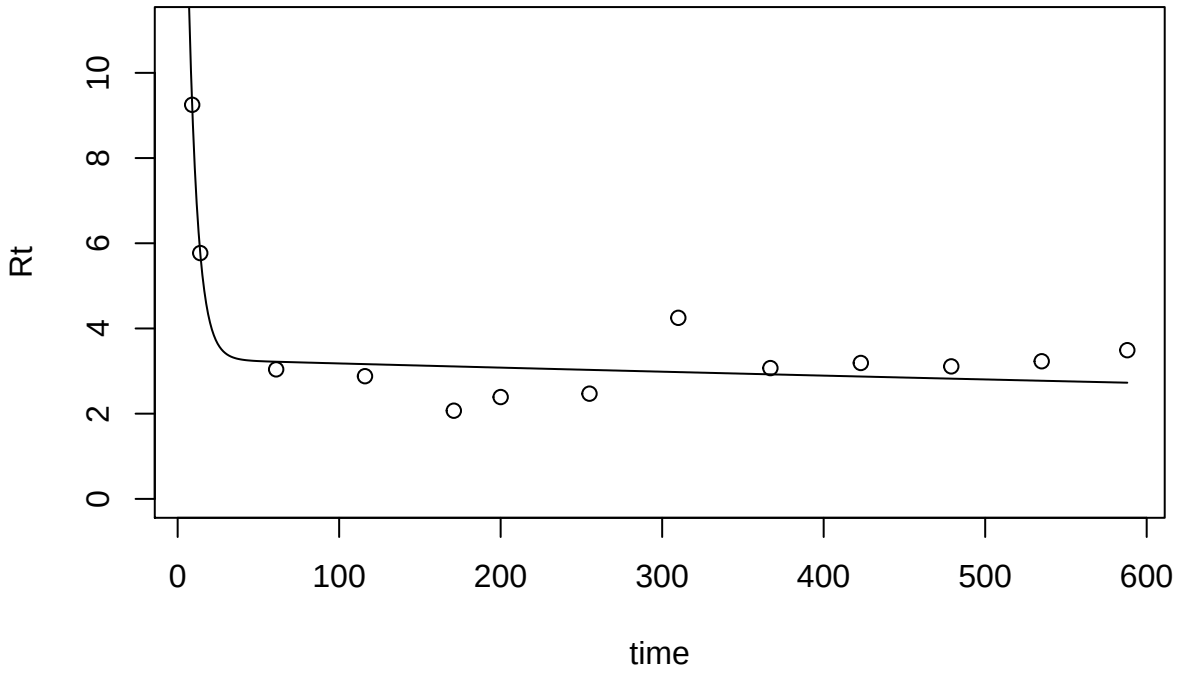
Variable C_BrazilNF_25:

Decomposition rates over time at 25 degrees for Brazil, native forest

```
## [1] "Best fit parameter:  0.000397306368218982"
```

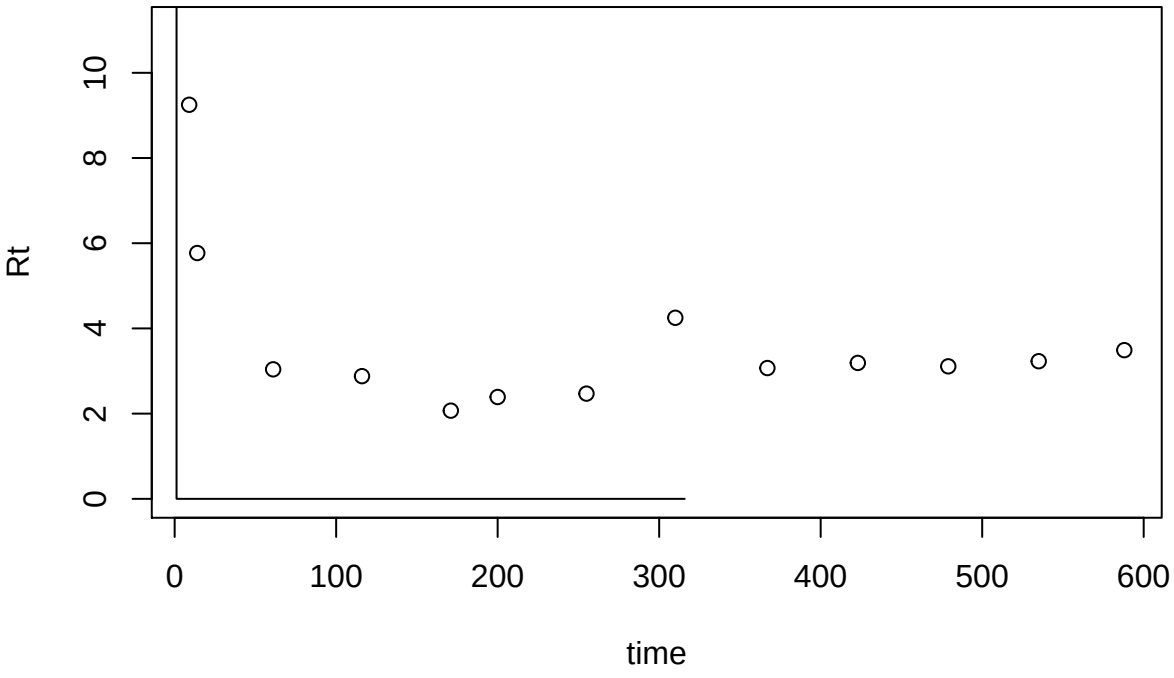



```
## [1] "AIC =  -0.193836069481878"
## [1] "k1= 0.173261052004621"
## [2] "k2= 0.000314344739659319"
## [3] "proportion of C0 in pool 1= 0.0153974955852097"
```




```
## [1] "AIC =  8.07792314307083"
## [1] "k1= 11.0899311733361"
## [2] "k2= 14852888.5747362"
## [3] "a21= 0.988841611865125"
## [4] "a12= 1.65864640833124e-05"
## [5] "Proportion of C0 in pool 1= 0.0047078409768907"
```

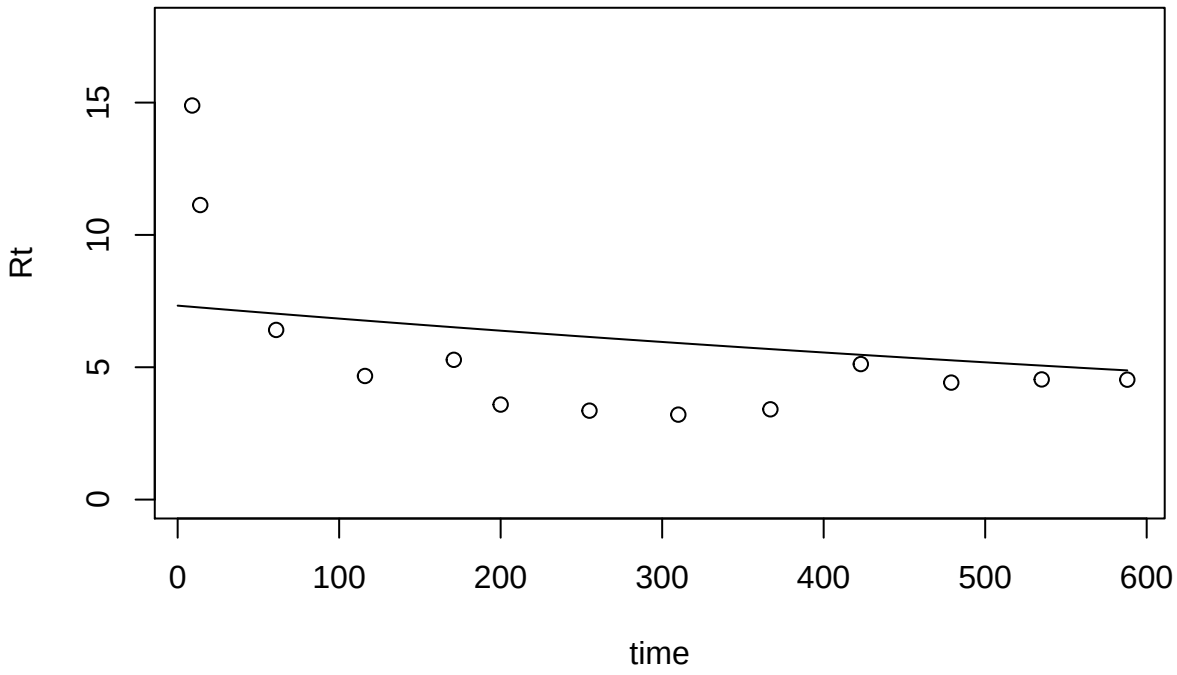
```
## [1] "AIC =  4.85182058933032"
## DLSODA-  Warning..Internal T (=R1) and H (=R2) are
##       such that in the machine, T + H = T on the next step
##      (H = step size). Solver will continue anyway.
## In above message, R1 = 0, R2 = 0
##
## DINTDY-  T (=R1) illegal
## In above message, R1 = 1.17836
##
##       T not in interval TCUR - HU (= R1) to TCUR (=R2)
## In above message, R1 = 0, R2 = 0
##
## DINTDY-  T (=R1) illegal
## In above message, R1 = 2.35671
##
##       T not in interval TCUR - HU (= R1) to TCUR (=R2)
## In above message, R1 = 0, R2 = 0
##
## DLSODA-  Trouble in DINTDY.  ITASK = I1, TOUT = R1
## In above message, I1 = 1
##
## In above message, R1 = 2.35671
##

## Error in lsoda(startValues, t, lsexamp): illegal input detected before taking any integration steps
```



Variable C_BrazilNF_35:

Decomposition rates over time at 35 degrees for Brazil, native forest

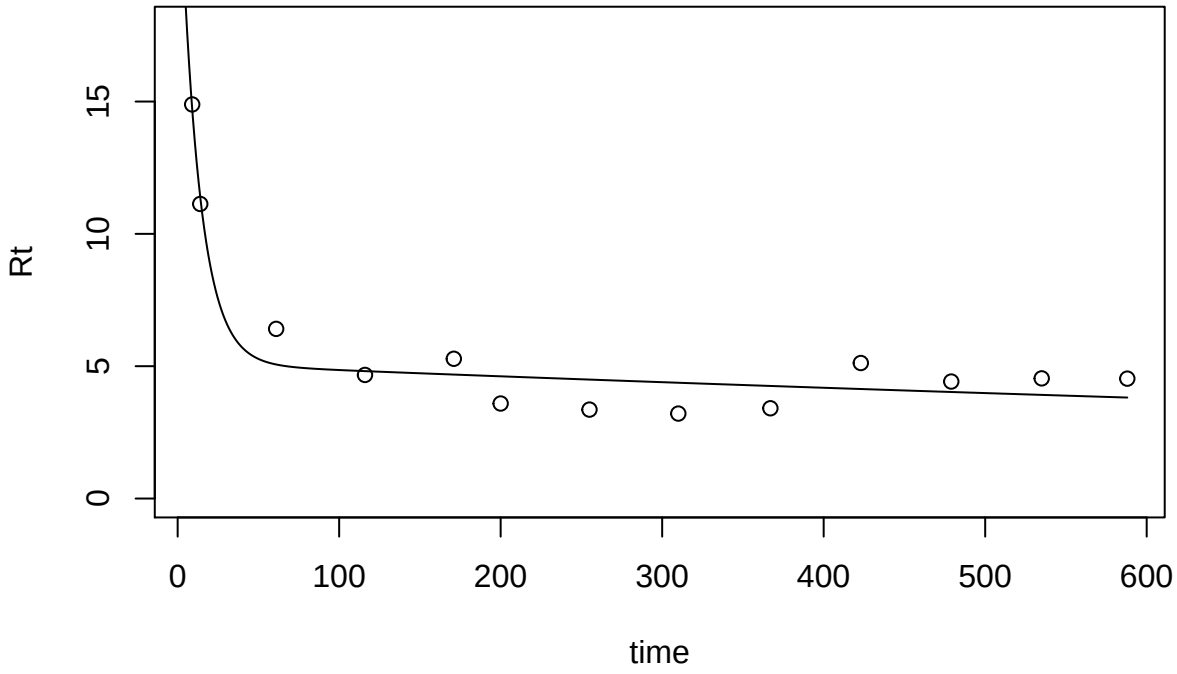
```
## [1] "Best fit parameter:  0.000691311089567852"
```




```
## [1] "AIC =  -2.24193216136035"
## [1] "k1= 0.0842914142089285"
## [2] "k2= 0.000492027972111373"
## [3] "proportion of C0 in pool 1= 0.0230590498265432"
```

```
## [1] "AIC =  6.80096477261502"
```

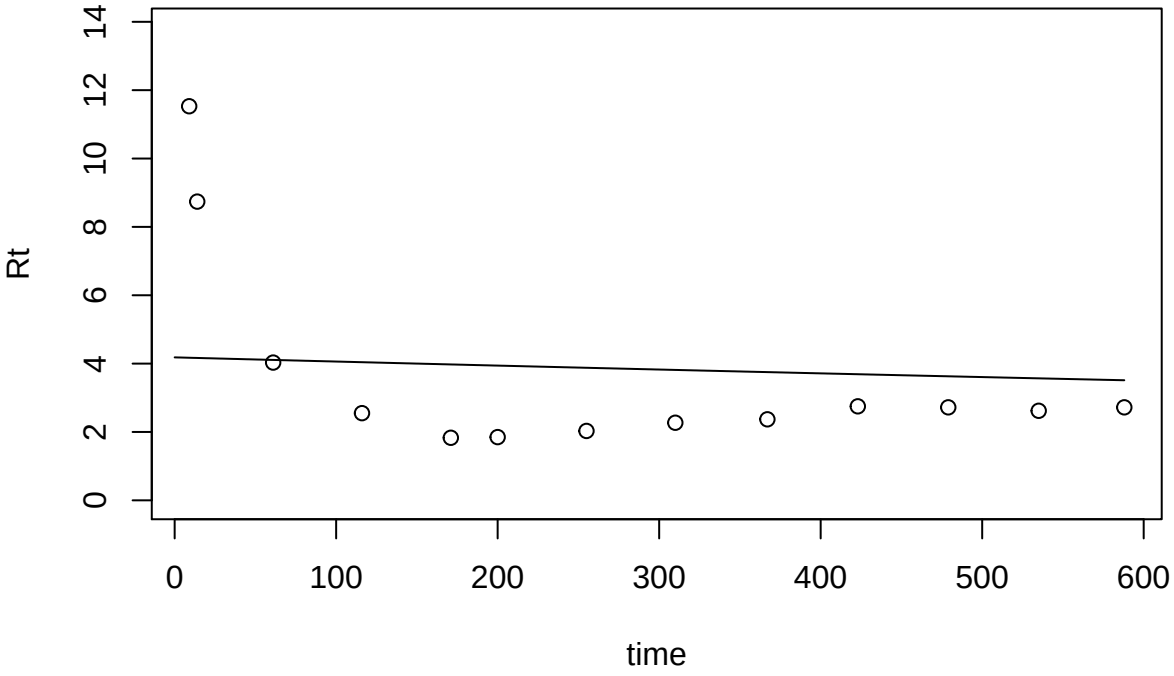
```
## Error in approx(xMod, yMod, xout = xDat): need at least two non-NA values to interpolate
```



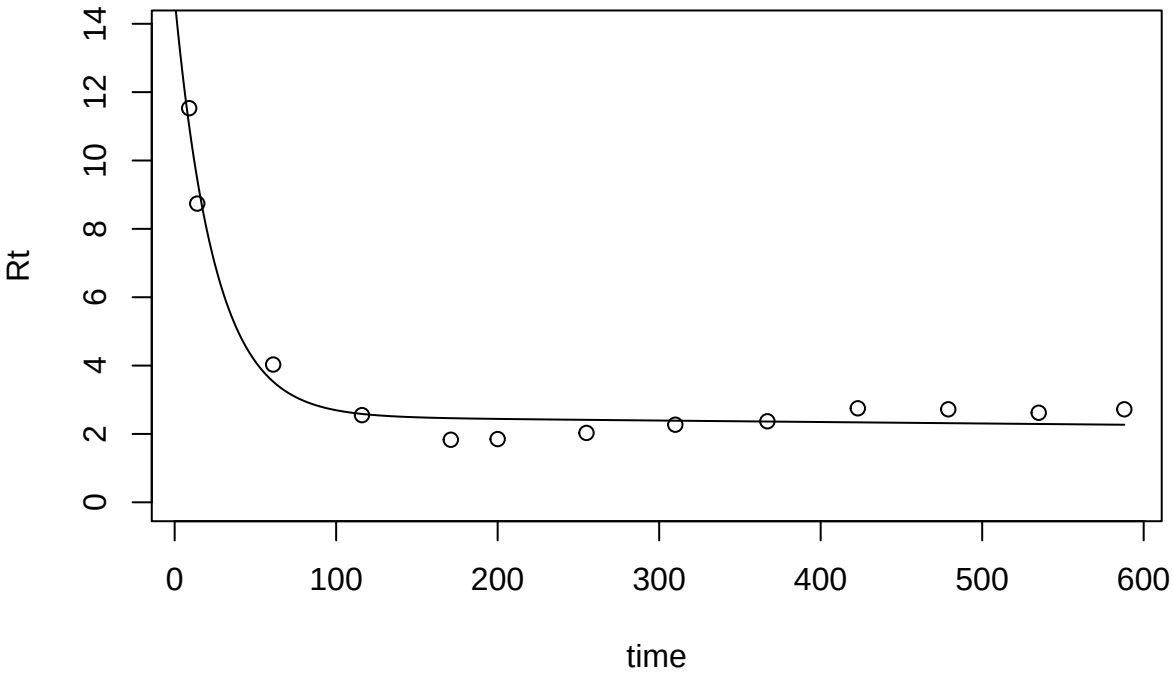
Variable C_BrazilPas_15:

Decomposition rates over time at 15 degrees for Brazil, Pasture

```
## [1] "Best fit parameter:  0.000296643113217529"
```

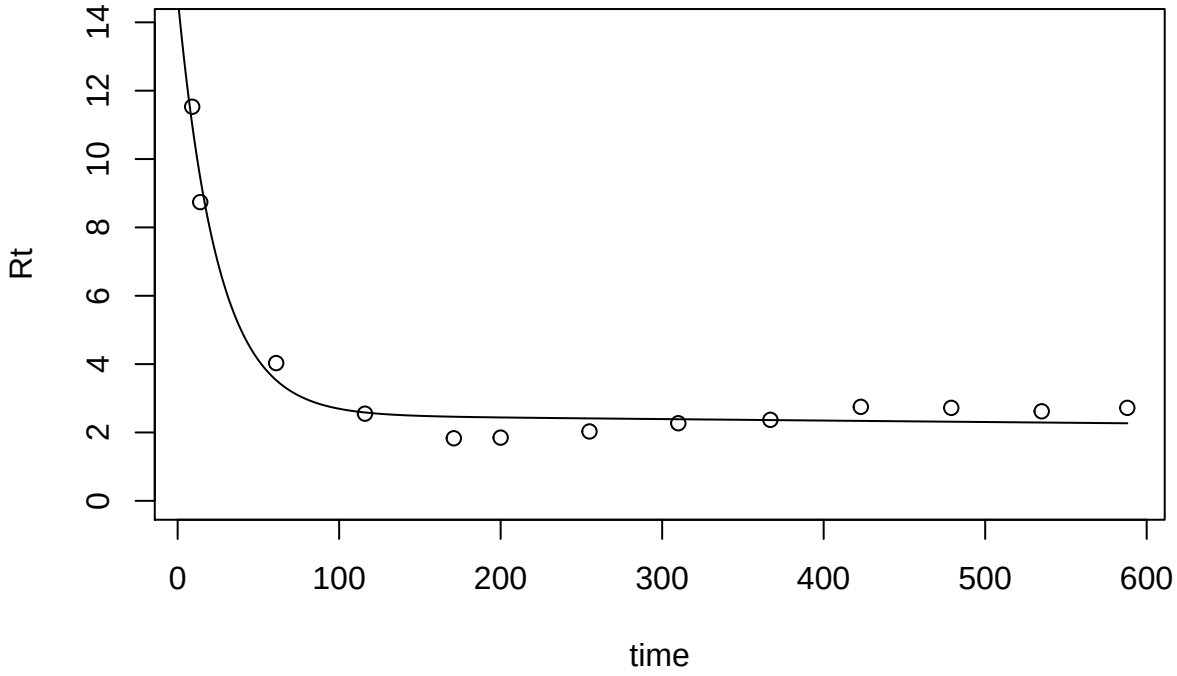



```
## [1] "AIC =  -2.02430469404338"
## [1] "k1= 0.0405199219093405"
## [2] "k2= 0.000183149120622935"
## [3] "proportion of C0 in pool 1= 0.0213839362190317"
```

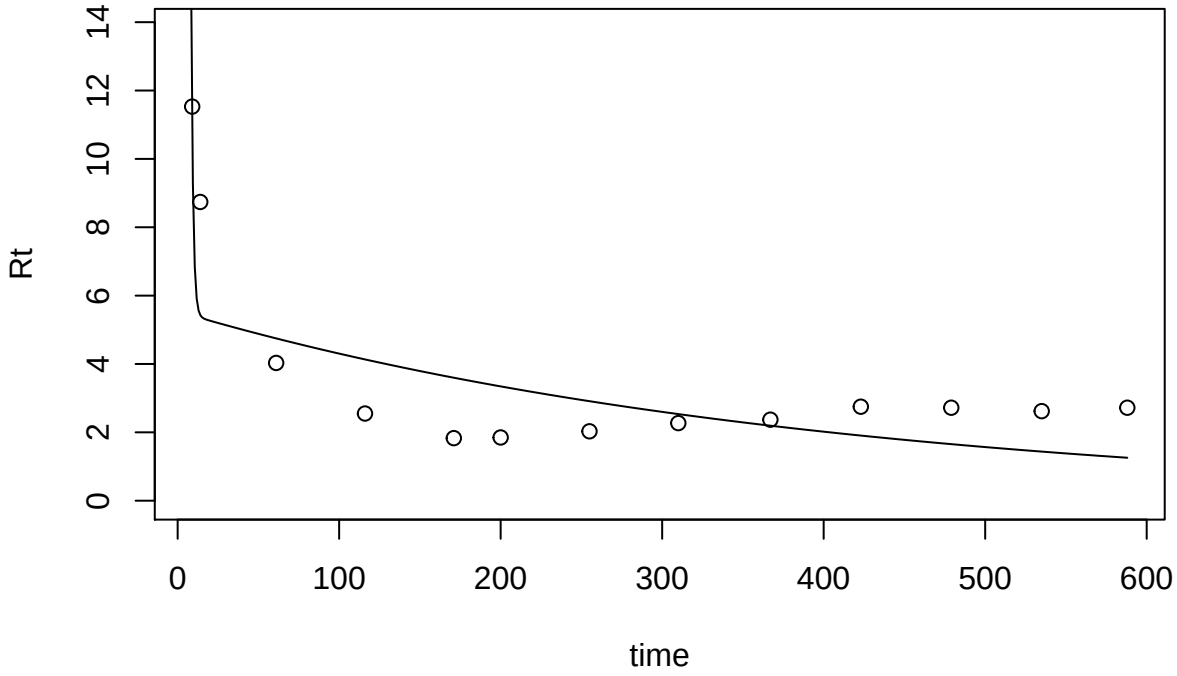



```
## [1] "AIC =  9.23737818396233"
```

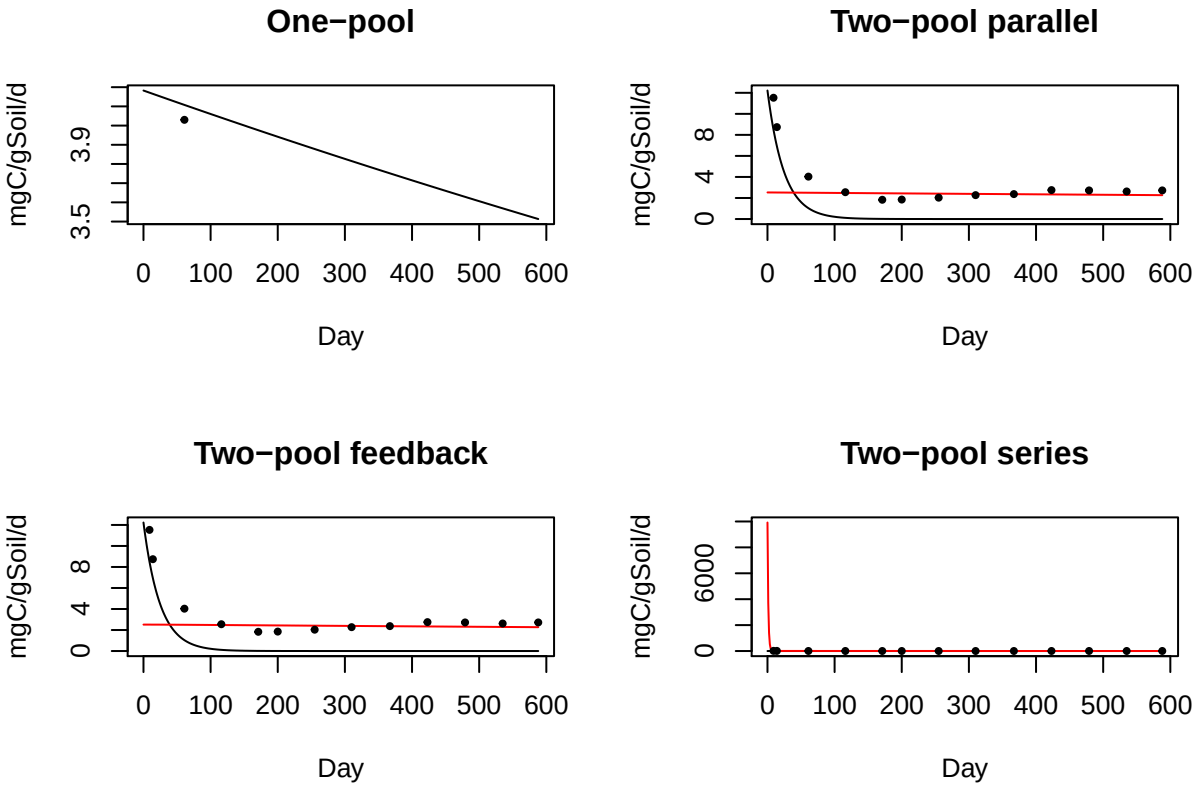
```
## [1] "k1= 0.0405203195463524"
## [2] "k2= 0.000183150601366434"
## [3] "a21= 0.193472463638234"
## [4] "a12= 3.66013695320411e-05"
## [5] "Proportion of C0 in pool 1= 0.0265424990105955"
```




```
## [1] "AIC =  13.2373781843218"
## [1] "k1= 0.00252243249490236"
## [2] "k2= 0.832728166352242"
## [3] "a21= 0.999994693336582"
## [4] "Proportion of C0 in pool 1= 0.155246447259717"
```



```
## [1] "AIC =  6.64775790877218"
```

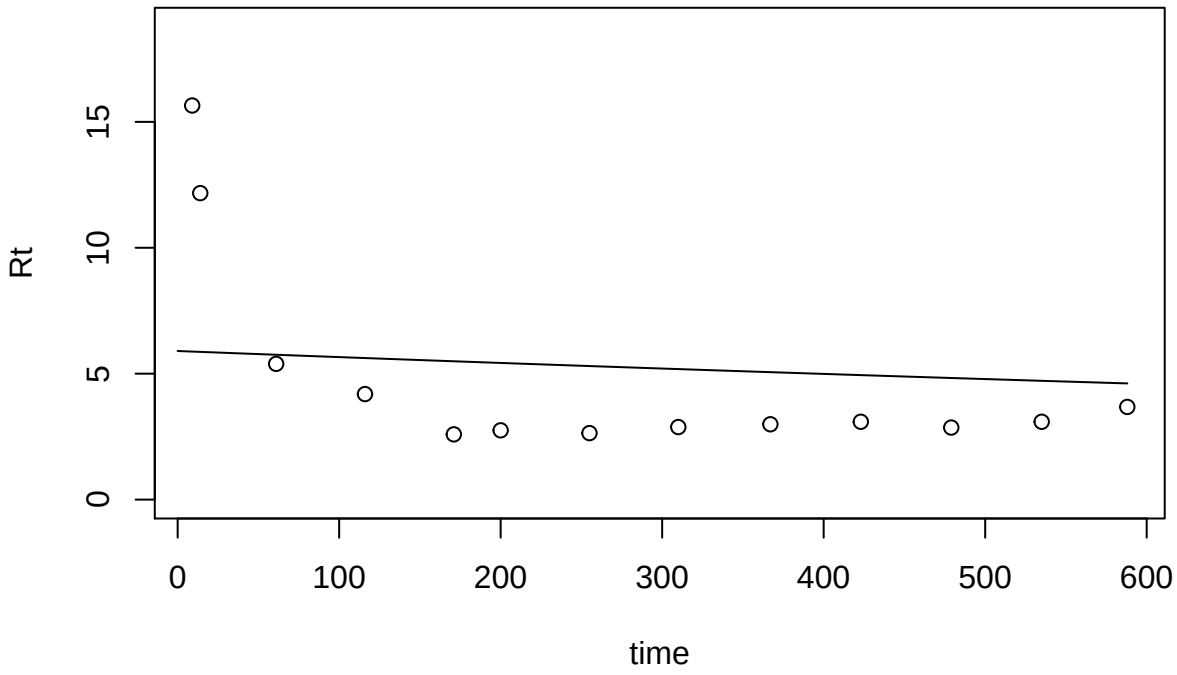


model	AIC	k1	k2	C0Inp1	a21	a12	AICc	wi	MeanTrT	q05
One-pool	-2.02	0.000297	NA	NA	NA	NA	-1.66	0.999	NA	NA
Two-pool parallel	9.24	0.0405	0.000183	0.0214	NA	NA	11.9	0.00113	1660	30.7
Two-pool feedback	13.2	0.0405	0.000183	0.0265	0.193	3.66e-05	21.8	8e-06	1080	23.9
Two-pool series	6.65	0.00252	0.833	0.155	1	NA	11.6	0.00129	1080	23.9

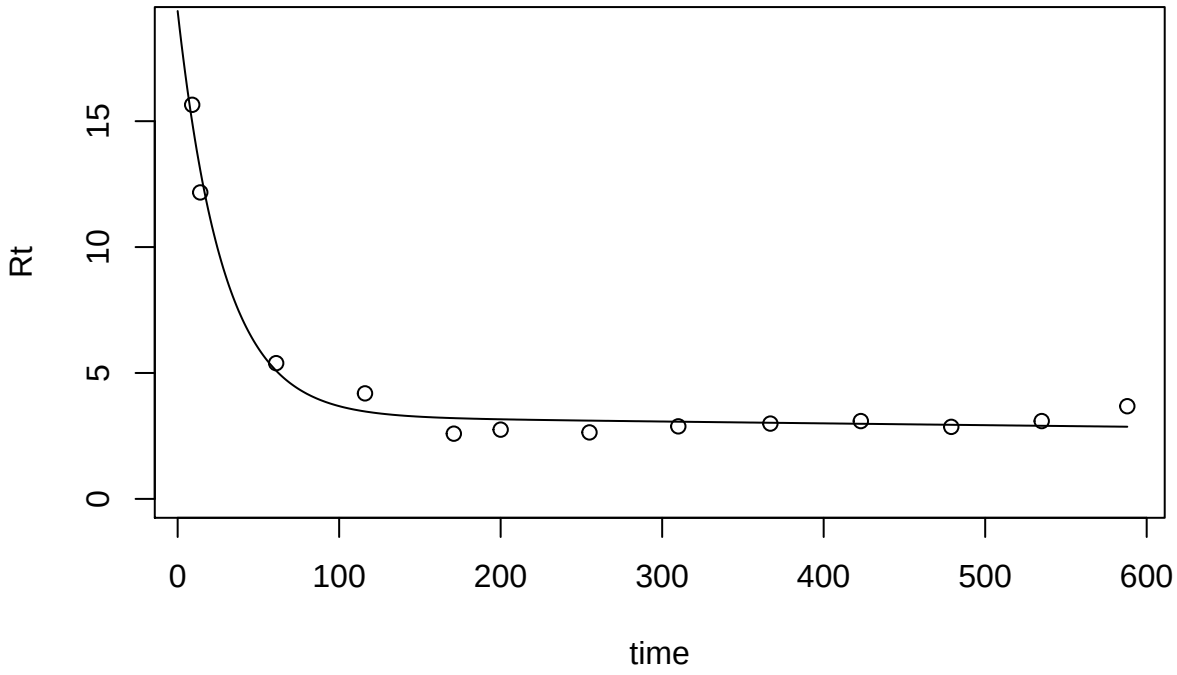
Variable C_BrazilPas_25:

Decomposition rates over time at 25 degrees for Brazil, Pasture

```
## [1] "Best fit parameter:  0.000418439210045636"
```

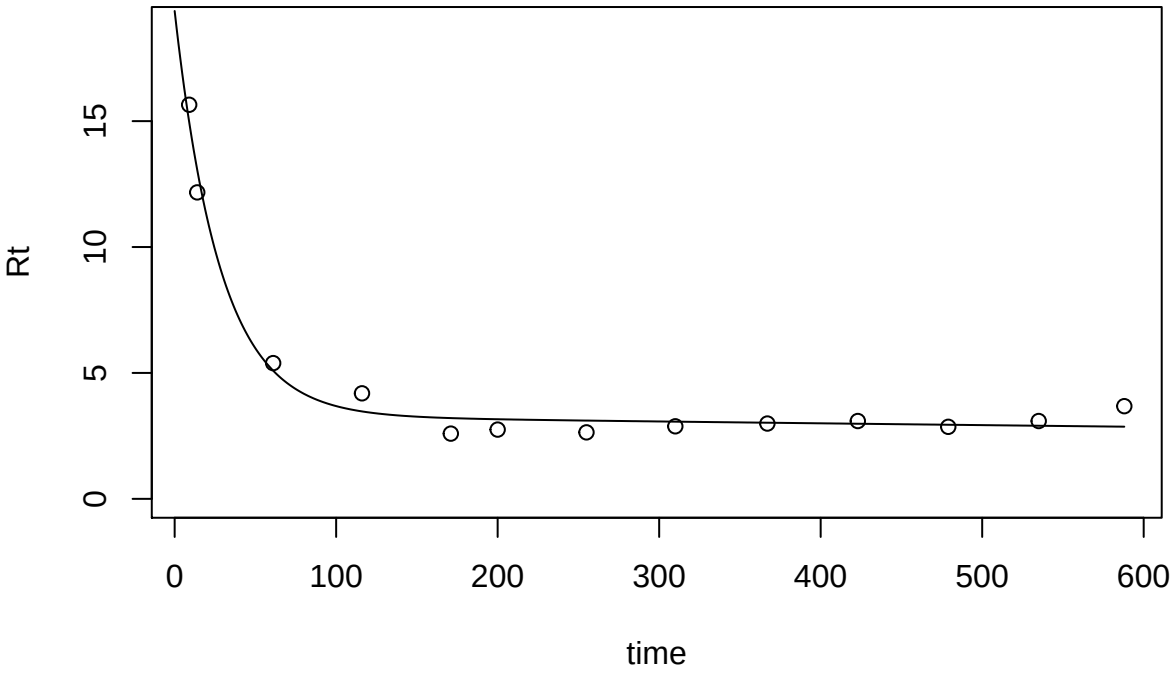



```
## [1] "AIC =  -3.26164296985283"
## [1] "k1= 0.03557438811851"
## [2] "k2= 0.000242077445181125"
## [3] "proportion of C0 in pool 1= 0.0320359100284035"
```




```
## [1] "AIC =  8.69141584514738"
## [1] "k1= 0.0355746553282603"
## [2] "k2= 0.000242079671239813"
## [3] "a21= 0.11918613867809"
## [4] "a12= 6.9878295858139e-05"
## [5] "Proportion of C0 in pool 1= 0.0364046294835234"
```

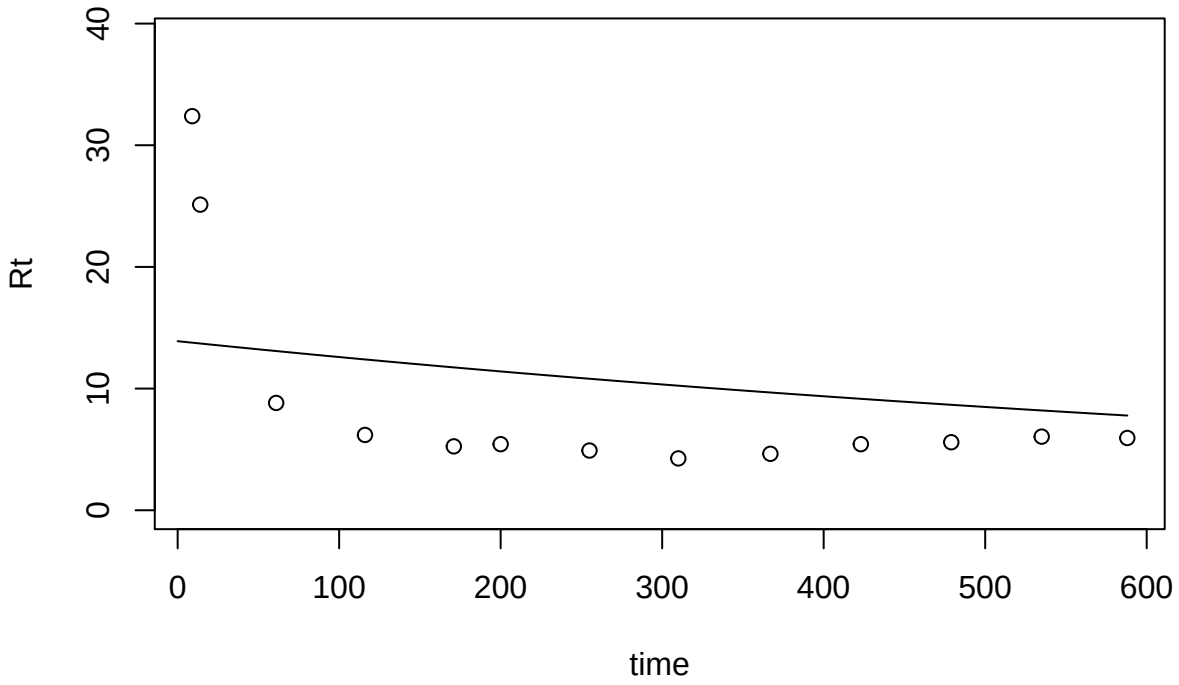
```
## [1] "AIC =  12.691415841263"
## DLSODA-  Warning..Internal T (=R1) and H (=R2) are
##       such that in the machine, T + H = T on the next step
##      (H = step size). Solver will continue anyway.
## In above message, R1 = 0, R2 = 0
##
## DINTDY-  T (=R1) illegal
## In above message, R1 = 1.17836
##
##       T not in interval TCUR - HU (= R1) to TCUR (=R2)
## In above message, R1 = 0, R2 = 0
##
## DINTDY-  T (=R1) illegal
## In above message, R1 = 2.35671
##
##       T not in interval TCUR - HU (= R1) to TCUR (=R2)
## In above message, R1 = 0, R2 = 0
##
## DLSODA-  Trouble in DINTDY.  ITASK = I1, TOUT = R1
## In above message, I1 = 1
##
## In above message, R1 = 2.35671
##
## Error in lsoda(startValues, t, lsexamp): illegal input detected before taking any integration steps
```



Variable C_BrazilPas_35:

Decomposition rates over time at 35 degrees for Brazil, Pasture

```
## [1] "Best fit parameter:  0.000985513977433452"
```



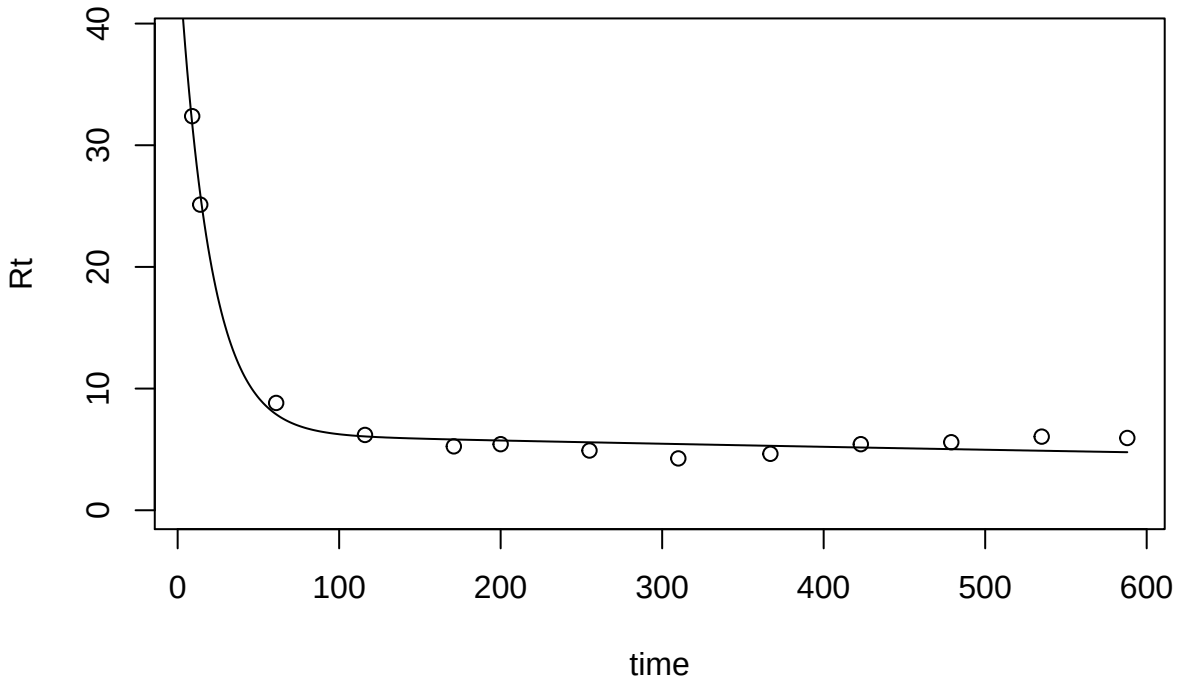

```
## [1] "AIC =  -6.08006576311655"
## [1] "k1= 0.0513732756163521"
## [2] "k2= 0.00047327952011995"
## [3] "proportion of C0 in pool 1= 0.0558923866056459"
```

```
## [1] "AIC =  7.02010249611864"
```

```
## Warning in newf - reff: longer object length is not a multiple of shorter object
## length
```

```
## Warning in del - (newf - reff)/delt[j]: longer object length is not a multiple
## of shorter object length
```

```
## Error in jacob[, j] <- del: number of items to replace is not a multiple of replacement length
```


Rt
0
10
20
30
40
0
100
200
300
400
500
600
time