

```
Lipid=dat$Lipid.Wt
Species=dat$Colony.Info
Light=dat$Season
Wet=dat$WET.Larva
Lean=dat$LEAN.Larvae
Dry=dat$DRY.Larva
```

```
y=cbind(Lipid,Wet,Lean,Dry)  The dependent variables that have been combined and included in y
A=Species  Independent Factors
B=Light
```

```
allvar_manova=manova(y~A*B)
summary(allvar_manova, test = "Pillai")
```

```
##           Df   Pillai approx F num Df den Df   Pr(>F)
## A           1 0.112516   3.3280     4    105 0.01311 *
## B           1 0.080931   2.3115     4    105 0.06250 .
## A:B          1 0.023772   0.6392     4    105 0.63568
## Residuals 108
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

MANOVA output

```
summary.aov(allvar_manova)
```

```
## Response Lipid :
##           Df   Sum Sq   Mean Sq F value   Pr(>F)
## A           1 0.00026250 2.625e-04   9.4797 0.002634 **
## B           1 0.00000366 3.665e-06   0.1323 0.716723
## A:B          1 0.00000473 4.734e-06   0.1710 0.680076
## Residuals  108 0.00299057 2.769e-05
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Response Wet :
##           Df   Sum Sq   Mean Sq F value   Pr(>F)
## A           1 0.02310 0.0230995   4.4750 0.03669 *
## B           1 0.00946 0.0094644   1.8335 0.17854
## A:B          1 0.00987 0.0098666   1.9114 0.16966
## Residuals  108 0.55749 0.0051619
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Response Lean :
##           Df   Sum Sq   Mean Sq F value   Pr(>F)
## A           1 0.00008157 8.1566e-05   5.1891 0.02470 *
## B           1 0.00008747 8.7468e-05   5.5646 0.02013 *
## A:B          1 0.00000511 5.1070e-06   0.3249 0.56985
## Residuals  108 0.00169762 1.5719e-05
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Response Dry :
##           Df   Sum Sq   Mean Sq F value   Pr(>F)
## A           1 0.0004551 0.00045507   2.4117 0.1234
## B           1 0.0001028 0.00010282   0.5449 0.4620
## A:B          1 0.0000084 0.00000842   0.0446 0.8331
## Residuals  108 0.0203793 0.00018870
##
## 10 observations deleted due to missingness
```

MANOVA output

```
Dry_datanova=aov(Dry ~ Species+Light+Light*Species, data=dat)
Wet_datanova=aov(Wet ~ Species+Light+Species*Light, data=dat)
Lean_datanova=aov(Lean ~ Species+Light+Species*Light, data=dat)
Lipid_datanova=aov(Lipid ~ Species+Light+Lean+Species*Light*Lean, data=dat)
```

```
summary(Dry_datanova) ANOV output for Dry mass
```

```
##              Df Sum Sq   Mean Sq F value Pr(>F)
## Species      1 0.00168 0.0016816   3.537 0.0625 .
## Light        1 0.00009 0.0000929   0.195 0.6592
## Species:Light 1 0.00030 0.0003048   0.641 0.4249
## Residuals    117 0.05562 0.0004754
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 1 observation deleted due to missingness
```

```
summary(Wet_datanova) Wet Mass
```

```
##              Df Sum Sq   Mean Sq F value Pr(>F)
## Species      1 0.0282 0.028219   5.592 0.0197 *
## Light        1 0.0149 0.014928   2.958 0.0881 .
## Species:Light 1 0.0131 0.013075   2.591 0.1102
## Residuals    116 0.5854 0.005047
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 2 observations deleted due to missingness
```

```
summary(Lean_datanova) Lean Mass
```

```
##              Df Sum Sq   Mean Sq F value Pr(>F)
## Species      1 0.00072 0.0007231   2.409 0.123
## Light        1 0.00005 0.0000549   0.183 0.670
## Species:Light 1 0.00034 0.0003364   1.121 0.292
## Residuals    115 0.03452 0.0003002
## 3 observations deleted due to missingness
```

```
summary(Lipid_datanova) Lipid Mass
```

```
##              Df Sum Sq   Mean Sq F value Pr(>F)
## Species      1 0.0002327 0.0002327 10.584 0.00154 **
## Light        1 0.0000008 0.0000008   0.037 0.84845
## Lean         1 0.0006696 0.0006696 30.449 2.49e-07 ***
## Species:Light 1 0.0000216 0.0000216   0.982 0.32396
## Species:Lean  1 0.0001072 0.0001072   4.876 0.02940 *
## Light:Lean    1 0.0000007 0.0000007   0.032 0.85785
## Species:Light:Lean 1 0.0000110 0.0000110   0.501 0.48083
## Residuals    105 0.0023088 0.0000220
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 9 observations deleted due to missingness
```