photobiologyPlants Version 0.4.1
Plots of the data

Pedro J. Aphalo

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1 Set up

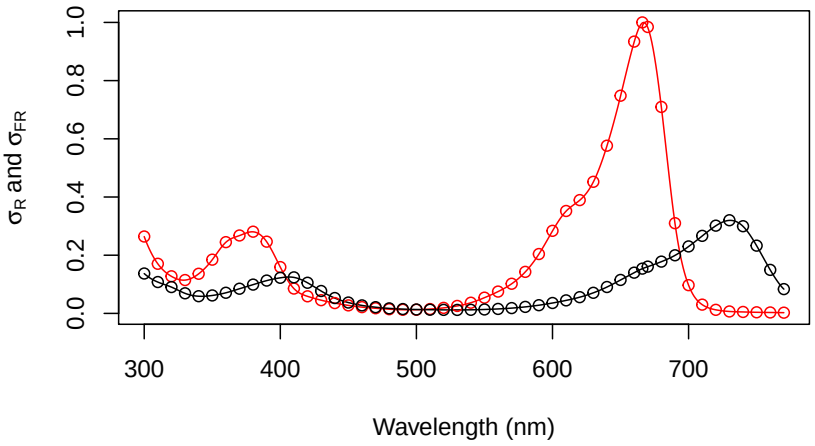
```
library(ggplot2)
library(ggspectra)
library(photobiologyPlants)
library(photobiology)
```

```
# options(photobiology.filter.qty = "absorbance")
options(photobiology.plot.annotations =
          c("boxes", "labels", "colour.guide", "title"))
options(photobiology.radiation.unit = "photon")
```

2 Phytochrome

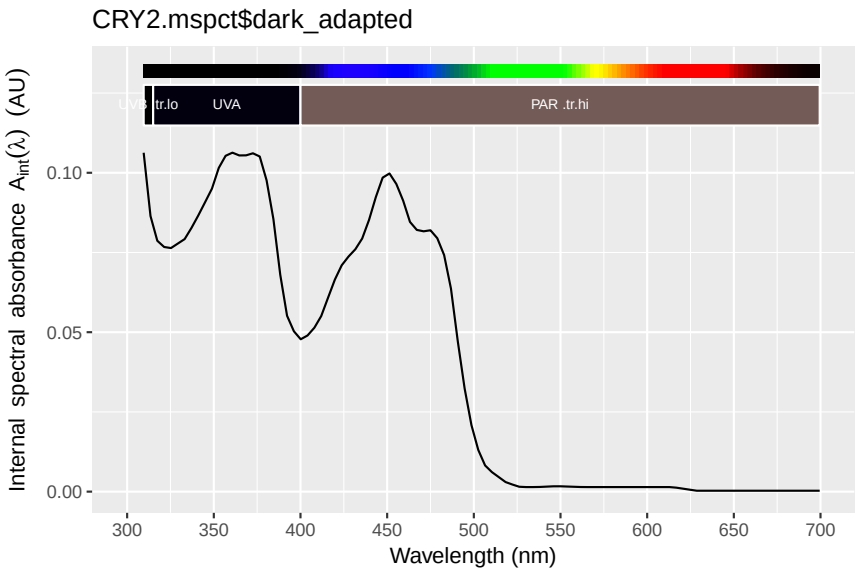
3 Test of interpolation

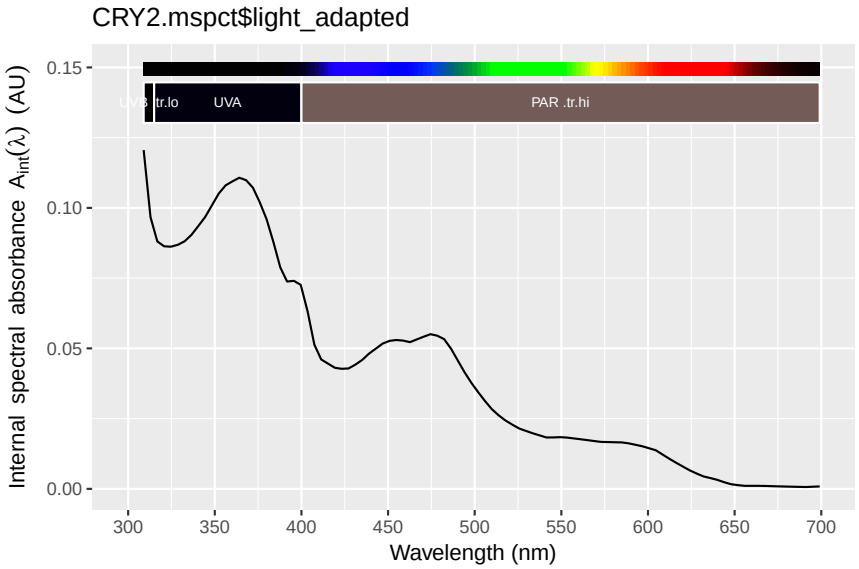
```
ex7.dt <- data.frame(w.length=300:770,
                     sigma.r = Phy_Sigma_R(300:770),
                     sigma.fr = Phy_Sigma_FR(300:770),
                     sigma = Phy_Sigma(300:770))
plot(I(sigma.r/ max(sigma.r)) ~ w.length, data=ex7.dt, type="l", col="red",
     xlab="Wavelength (nm)", ylab=expression(sigma[R]~and~sigma[FR]))
lines(I(sigma.fr/max(sigma.r)) ~ w.length, data=ex7.dt, col="black")
points(I(Sigma.R/max(Sigma.R)) ~ w.length, data=phytochrome.spct, col="red")
points(I(Sigma.FR/max(Sigma.R)) ~ w.length, data=phytochrome.spct, col="black")
rm(ex7.dt)
```



4 Cryptochromes

```
plot(CRY2.mspct$dark_adapted, plot.qty = "absorbance")
plot(CRY2.mspct$light_adapted, plot.qty = "absorbance")
```

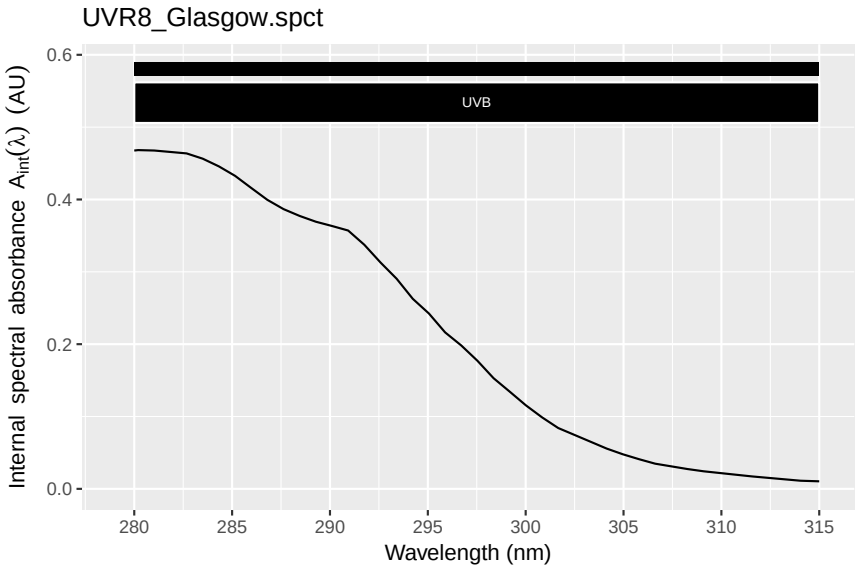


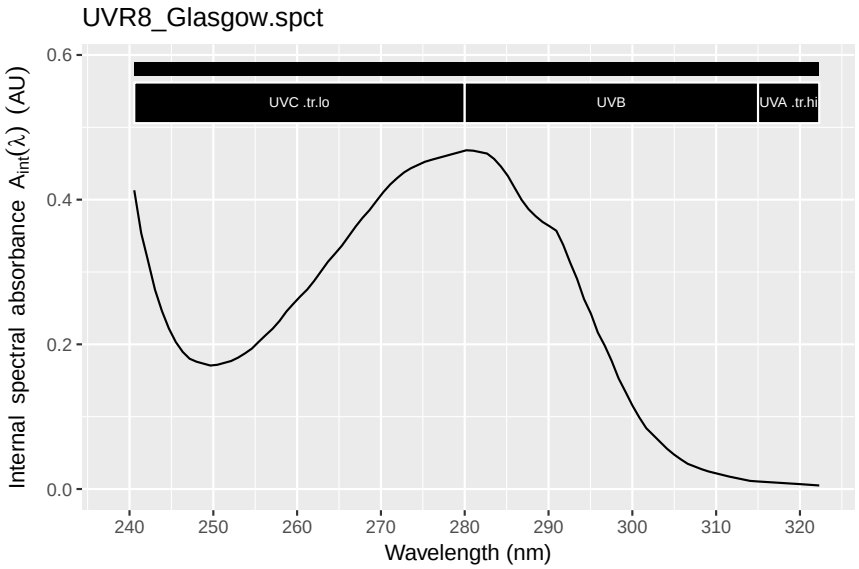


4.1 UVR8 wavebands

We can limit the plotted wavelengths to a range, even using another waveband object.

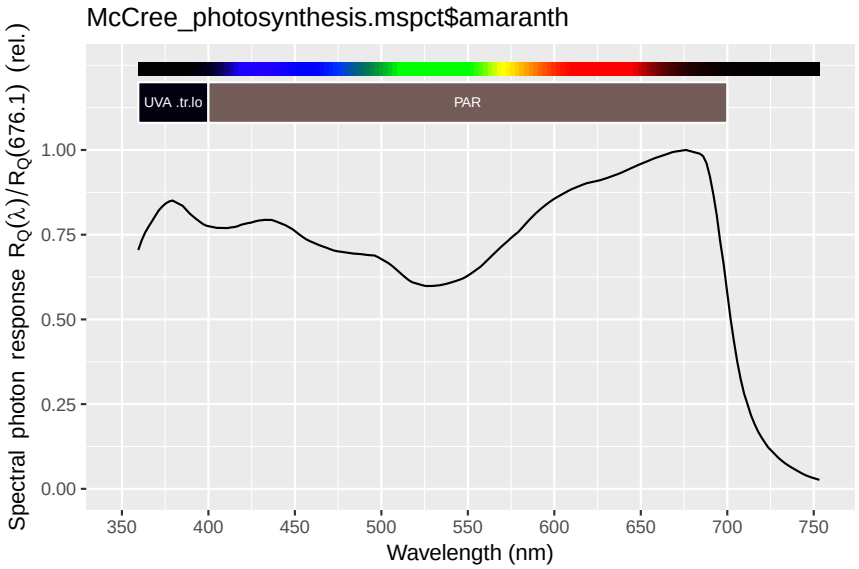
```
plot(UVR8_Glasgow.spct, range = UVB(), plot.qty = "absorbance")
plot(UVR8_Glasgow.spct, range = UV(), plot.qty = "absorbance")
```

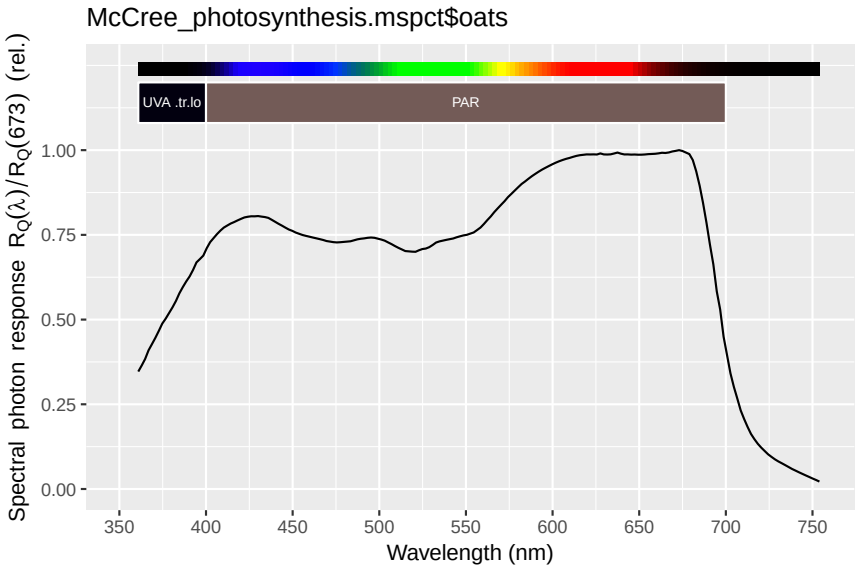




5 Photosynthesis action spectra

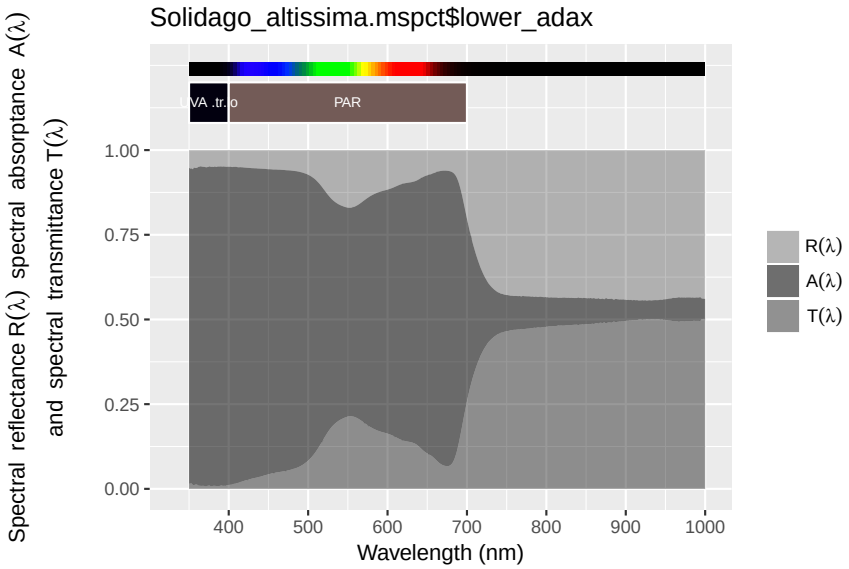
```
plot(McCree_photosynthesis.mspct$amaranth)
plot(McCree_photosynthesis.mspct$oats)
```

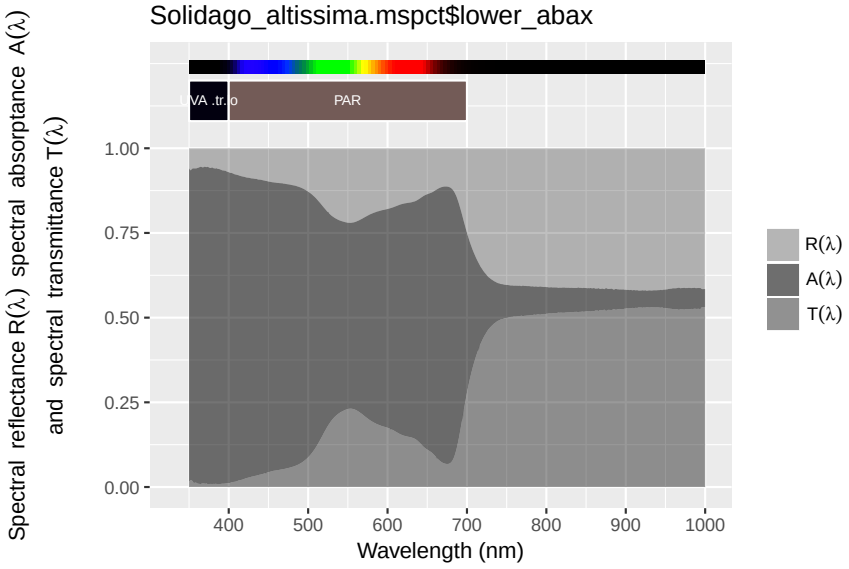




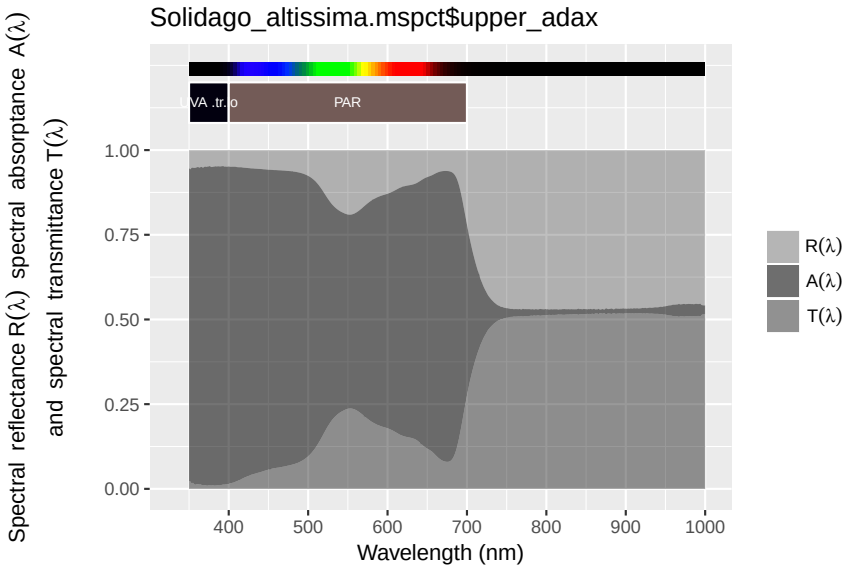
6 Optical properties of leaves

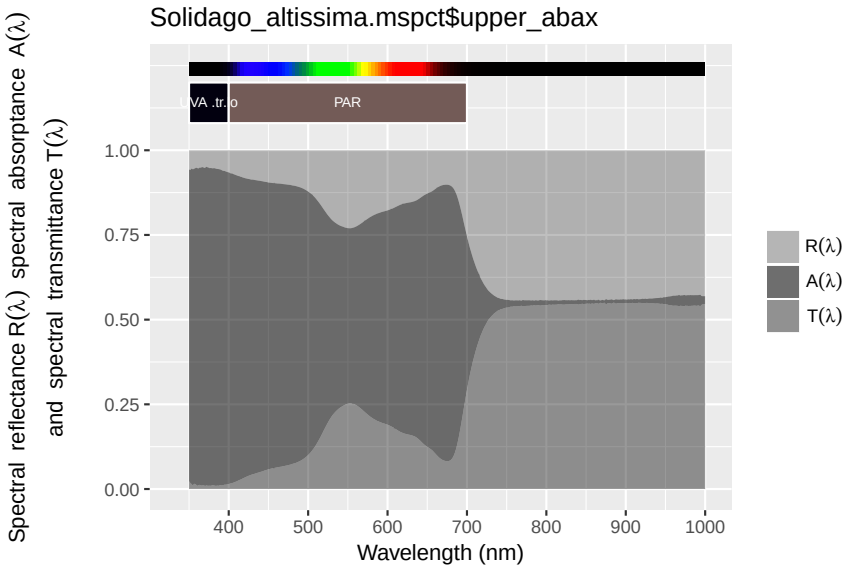
```
plot(Solidago_altissima.mspct$lower_adax)
plot(Solidago_altissima.mspct$lower_abax)
```



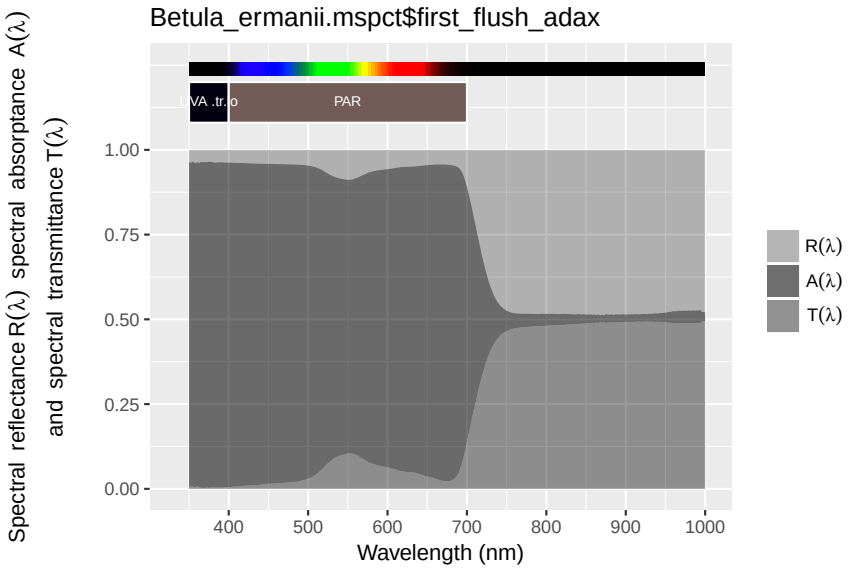


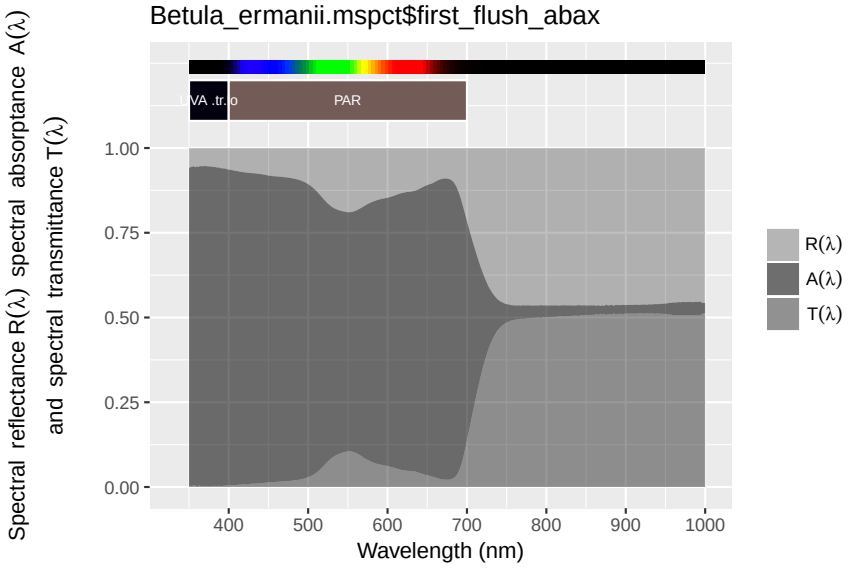

```
plot(Solidago_altissima.mspct$upper_adax)
plot(Solidago_altissima.mspct$upper_abax)
```



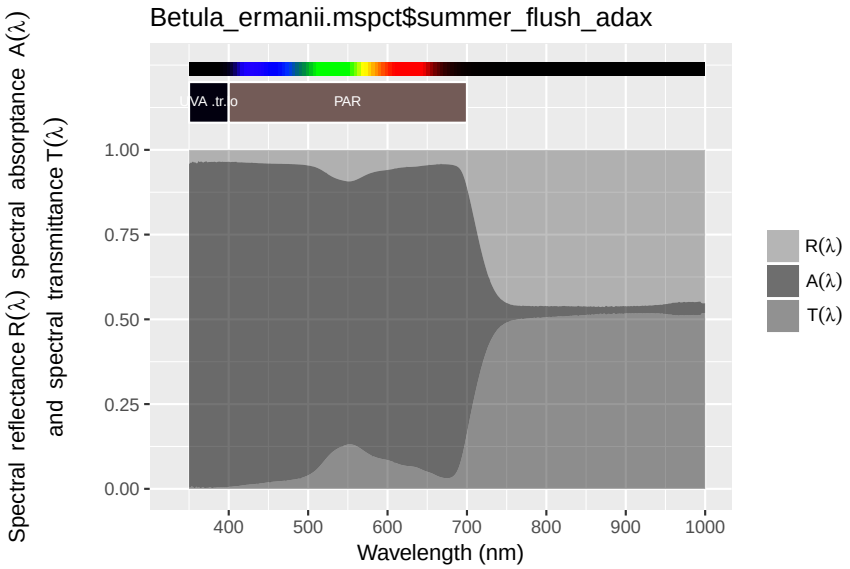


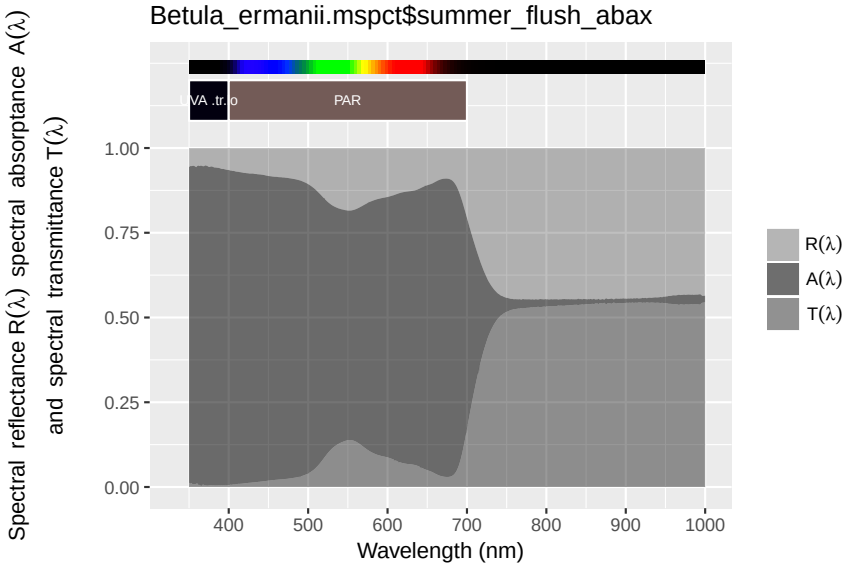

```
plot(Betula_ermanii.mspct$first_flush_adax)
plot(Betula_ermanii.mspct$first_flush_abax)
```



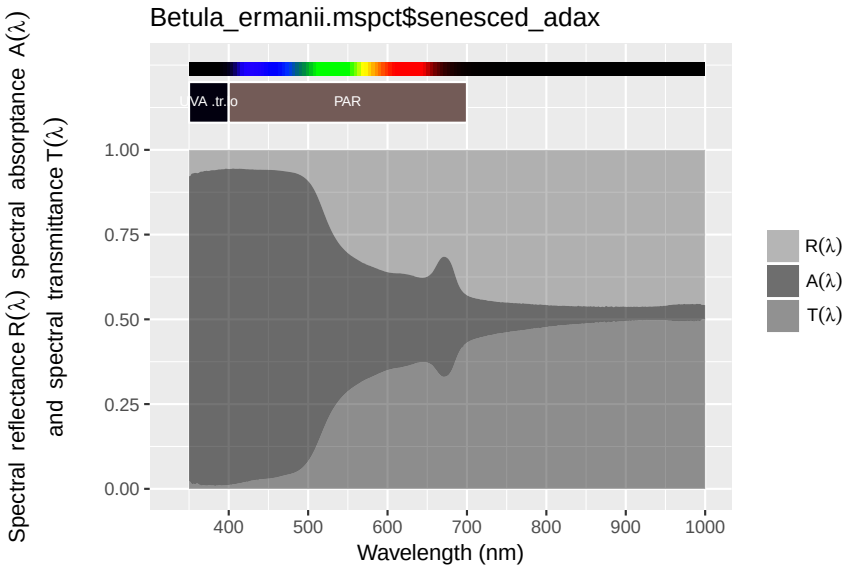


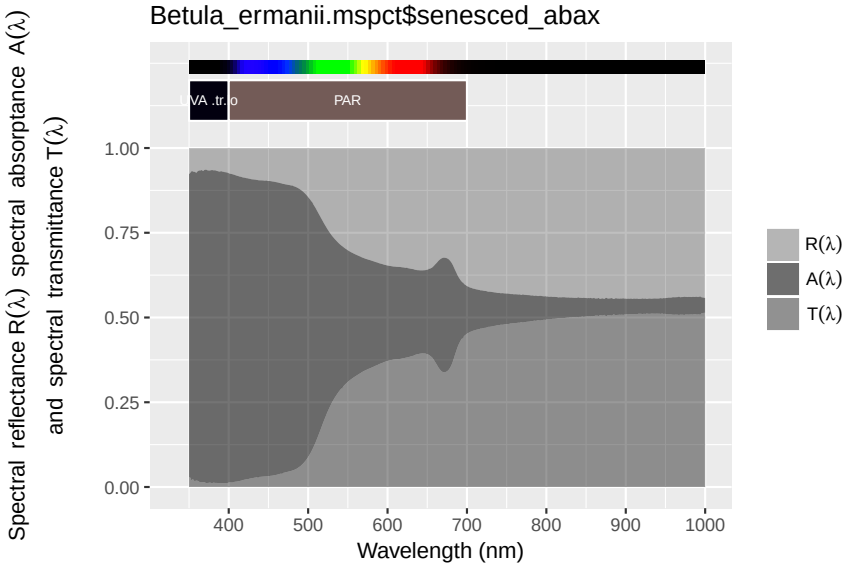

```
plot(Betula_ermanii.mspct$summer_flush_adax)
plot(Betula_ermanii.mspct$summer_flush_abax)
```






```
plot(Betula_ermanii.mspct$senesced_adax)
plot(Betula_ermanii.mspct$senesced_abax)
```


Betula_ermanii.mspct$senesced_adax
Spectral reflectance R(λ) spectral absorptance A(λ)
and spectral transmittance T(λ)
UVA .tr.o
PAR
1.00
0.75
0.50
0.25
0.00
400
500
600
700
800
900
1000
Wavelength (nm)
R(λ)
A(λ)
T(λ)


Betula_ermanii.mspct$senesced_abax
Spectral reflectance R(λ) spectral absorptance A(λ)
and spectral transmittance T(λ)
UVA .tr.o
PAR
1.00
0.75
0.50
0.25
0.00
400
500
600
700
800
900
1000
Wavelength (nm)
R(λ)
A(λ)
T(λ)