

DéfinitiveMarkdown

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R Markdown

This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see <http://rmarkdown.rstudio.com>.

When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

```
summary(cars)
```

```
##      speed      dist
##  Min.   : 4.0    Min.   : 2.00
##  1st Qu.:12.0    1st Qu.: 26.00
##  Median :15.0    Median : 36.00
##  Mean   :15.4    Mean   : 42.98
##  3rd Qu.:19.0    3rd Qu.: 56.00
##  Max.   :25.0    Max.   :120.00
```

Including Plots

You can also embed plots, for example:

```
## Warning: package 'rgdal' was built under R version 4.0.5
## Loading required package: sp
## Warning: package 'sp' was built under R version 4.0.5
## Please note that rgdal will be retired by the end of 2023,
## plan transition to sf/stars/terra functions using GDAL and PROJ
## at your earliest convenience.
##
## rgdal: version: 1.5-28, (SVN revision 1158)
## Geospatial Data Abstraction Library extensions to R successfully loaded
## Loaded GDAL runtime: GDAL 3.2.1, released 2020/12/29
## Path to GDAL shared files: C:/Users/callebaut/Documents/R/R-4.0.3/library/rgdal/gdal
## GDAL binary built with GEOS: TRUE
## Loaded PROJ runtime: Rel. 7.2.1, January 1st, 2021, [PJ_VERSION: 721]
## Path to PROJ shared files: C:/Users/callebaut/Documents/R/R-4.0.3/library/rgdal/proj
## PROJ CDN enabled: FALSE
## Linking to sp version:1.4-6
## To mute warnings of possible GDAL/OSR exportToProj4() degradation,
## use options("rgdal_show_exportToProj4_warnings"="none") before loading sp or rgdal.
## Overwritten PROJ_LIB was C:/Users/callebaut/Documents/R/R-4.0.3/library/rgdal/proj
```

```

## Warning: package 'usethis' was built under R version 4.0.5
## Warning: package 'roxygen2' was built under R version 4.0.5
## Warning: package 'devtools' was built under R version 4.0.5
## Warning: package 'Rcpp' was built under R version 4.0.5
## Warning: package 'lattice' was built under R version 4.0.5
## Warning: package 'ggplot2' was built under R version 4.0.5
##
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':
##
##   filter, lag

## The following objects are masked from 'package:base':
##
##   intersect, setdiff, setequal, union

## Warning: package 'Matrix' was built under R version 4.0.5
## Warning: package 'viridis' was built under R version 4.0.5
## Loading required package: viridisLite

## Registered S3 methods overwritten by 'RcppArmadillo':
##   method          from
##   predict.fastLm   RcppEigen
##   print.fastLm     RcppEigen
##   summary.fastLm   RcppEigen
##   print.summary.fastLm RcppEigen

## Warning: replacing previous import 'RcppArmadillo::fastLmPure' by
## 'RcppEigen::fastLmPure' when loading 'optAM'

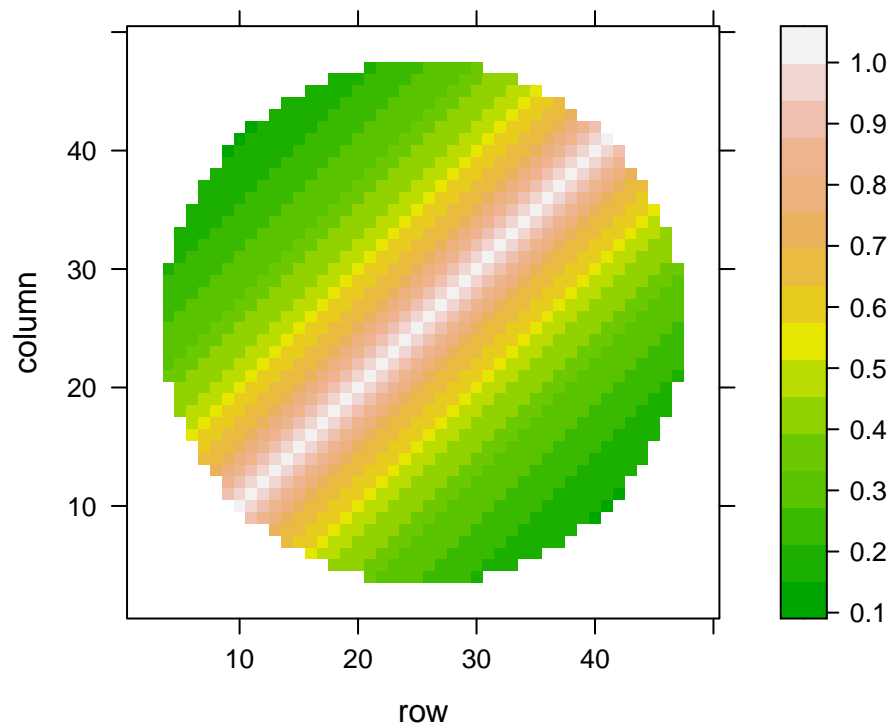
## Warning: replacing previous import 'RcppArmadillo::fastLm' by
## 'RcppEigen::fastLm' when loading 'optAM'

## Warning: package 'hrbrthemes' was built under R version 4.0.5
## NOTE: Either Arial Narrow or Roboto Condensed fonts are required to use these themes.
##       Please use hrbrthemes::import_roboto_condensed() to install Roboto Condensed and
##       if Arial Narrow is not on your system, please see https://bit.ly/arialnarrow
## Warning: package 'raster' was built under R version 4.0.5
##
## Attaching package: 'raster'

## The following object is masked from 'package:dplyr':
##
##   select

```

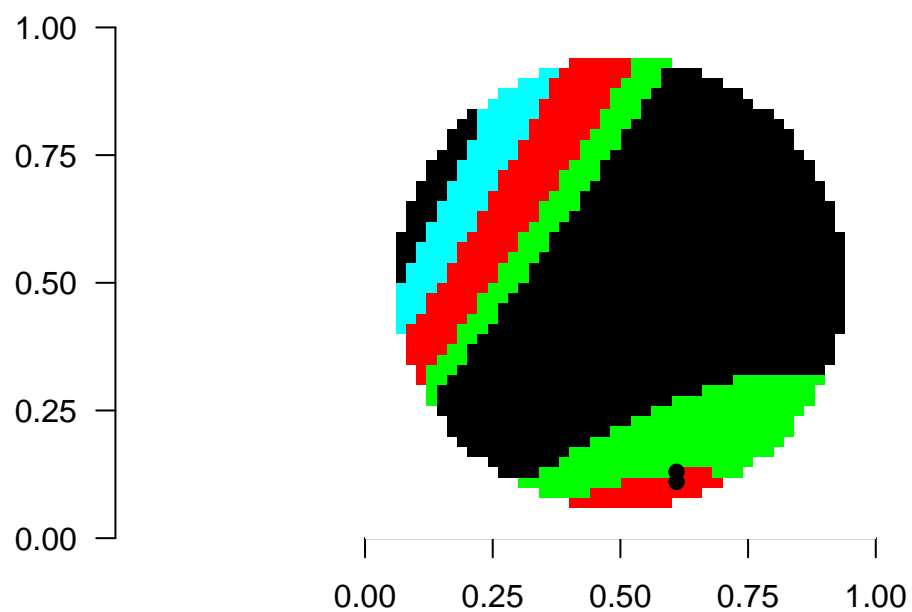
Terrain simulated



```
## Warning in .couldBeLonLat(x, warnings = warnings): CRS is NA. Assuming it is
## longitude/latitude

## Warning in if (class(cost) == "dtCMatrix") {: la condition a une longueur > 1 et
## seul le premier élément est utilisé
```

Evolution of the species niche.



```
## [1] 3151
##      [,1]
## [1,]    0
## [2,]    0
## [3,]    0
## [4,]    0
## [5,]    0
## [6,]    0
## [7,]    0
## [8,]    0
## [9,]    0
## [10,]   0
## [11,]   0
## [12,]   0
## [13,]   0
## [14,]   0
## [15,]   0
## [16,]   0
## [17,]   0
## [18,]   0
## [19,]   0
## [20,]   0
## [21,]   0
## [22,]   0
## [23,]   0
## [24,]   0
```

```

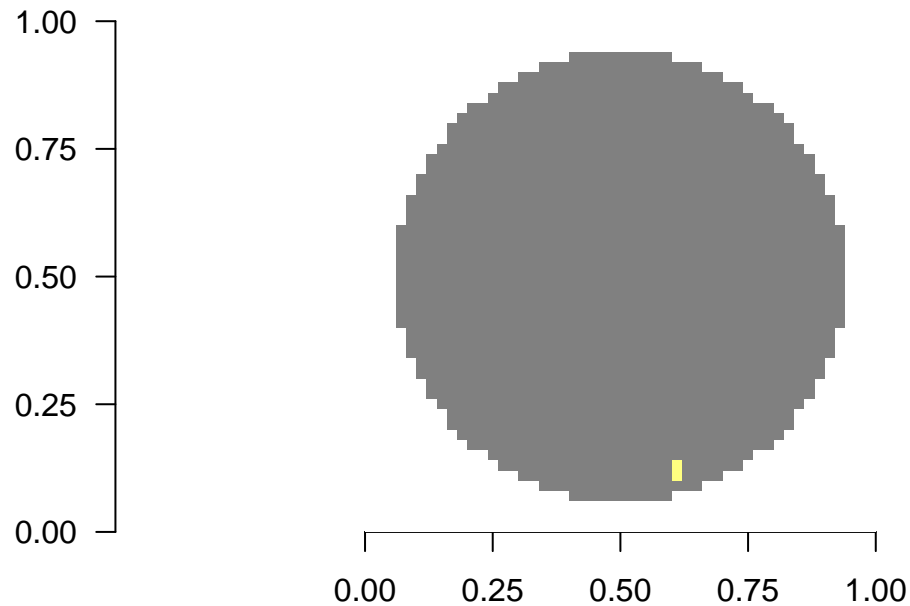
## [25,] 0
## [26,] 0
## [27,] 0
## [28,] 0
## [29,] 0
## [30,] 0
## [31,] 0
## [32,] 0
## [33,] 0
## [34,] 0
## [35,] 0
## [36,] 80
## [37,] 0
## [38,] 0
## [39,] 0
## [40,] 0
## [41,] 0
## [42,] 0
## [43,] 0
## [44,] 0
## [45,] 0
## [46,] 139
## [47,] 0
## [48,] 0
## [49,] 0
## [50,] 0
## [51,] 0
## [52,] 0
## [53,] 0
## [54,] 0
## [55,] 0
## [56,] 0
## [57,] 0
## [58,] 0
## [59,] 0
## [60,] 0
## [61,] 0
## [62,] 0
## [63,] 0
## [64,] 0
## [65,] 0
## [66,] 0
## [67,] 0
## [68,] 0
## [69,] 0
## [70,] 0
## [71,] 0
## [72,] 0
## [73,] 0
## [74,] 0
## [75,] 0

##      [,1]
## [1,] 374

```

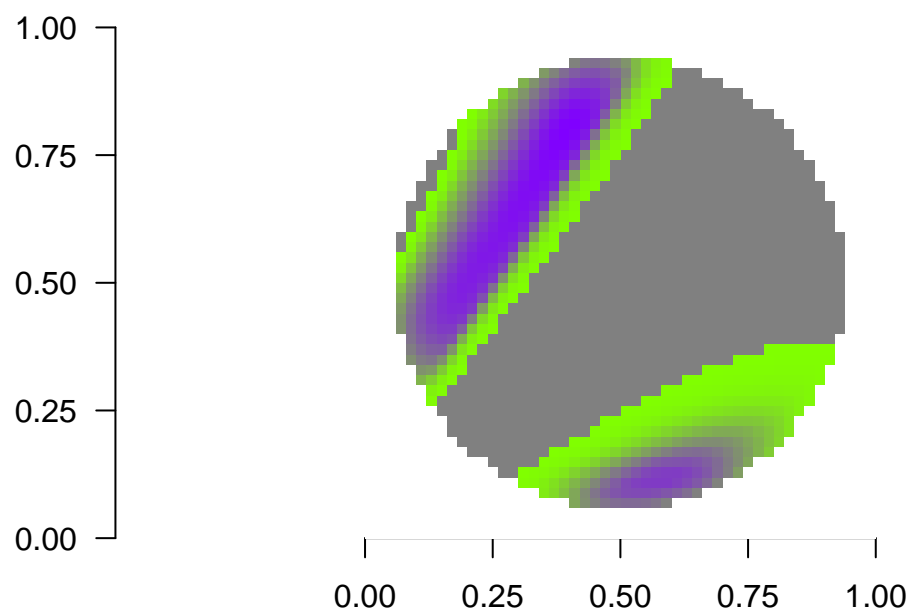
```
## [2,] 373
## Warning in .couldBeLonLat(x, warnings = warnings): CRS is NA. Assuming it is
## longitude/latitude
```

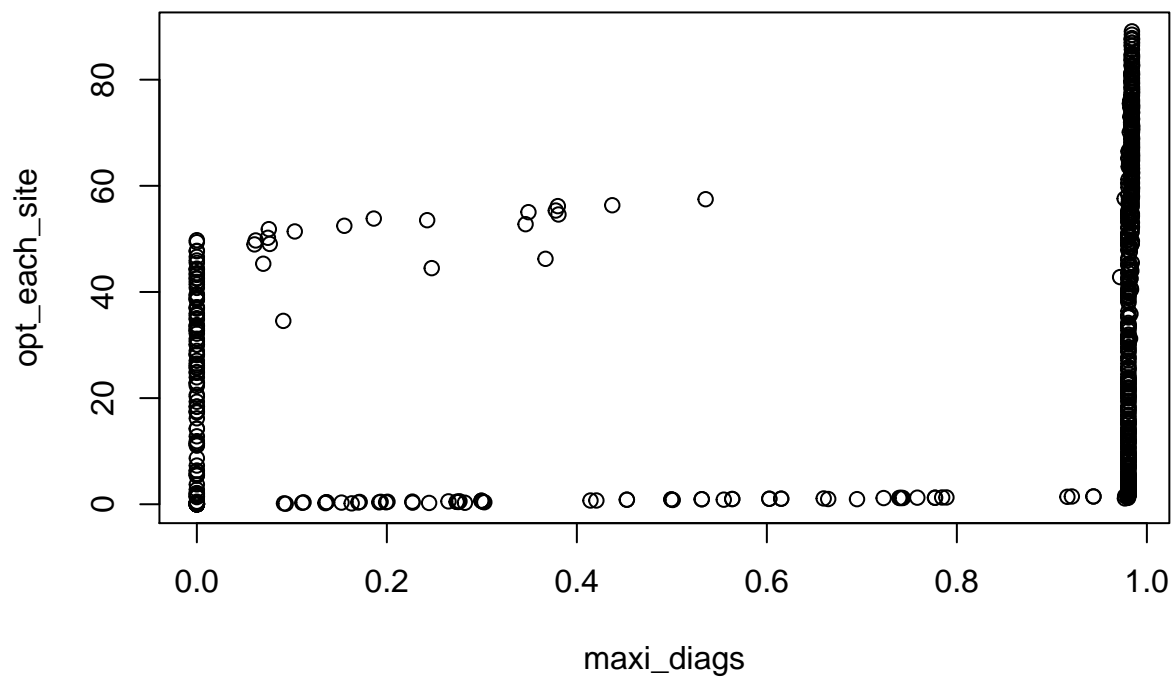
Situation at the end of the simulation if nothing is planted.



```
## Warning: package 'ramify' was built under R version 4.0.5
##
## Attaching package: 'ramify'
## The following objects are masked from 'package:Matrix':
##
##      tril, triu
## The following object is masked from 'package:purrr':
##
##      flatten
## The following object is masked from 'package:graphics':
##
##      clip
## Warning in .couldBeLonLat(x, warnings = warnings): CRS is NA. Assuming it is
## longitude/latitude
```

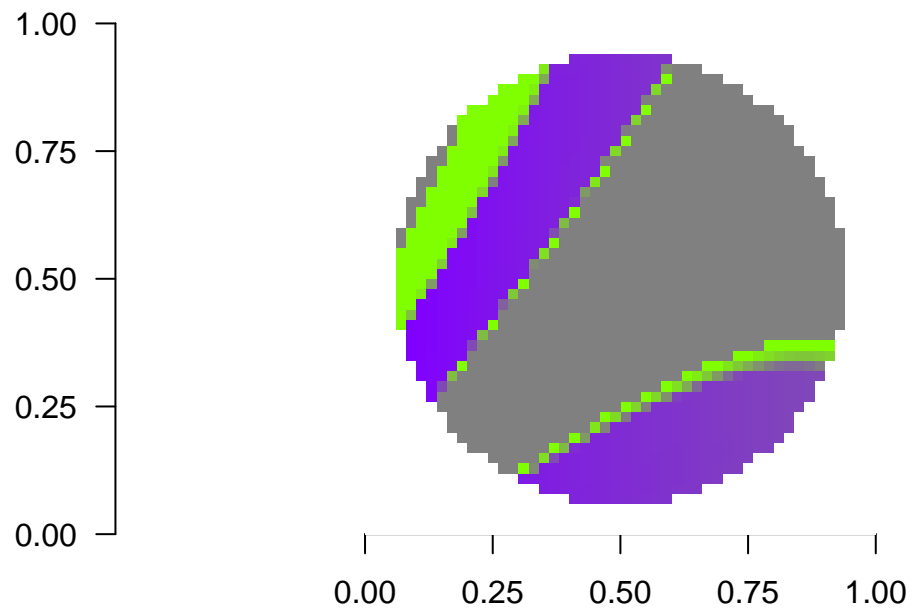
Efficiency of planting, counting migration.





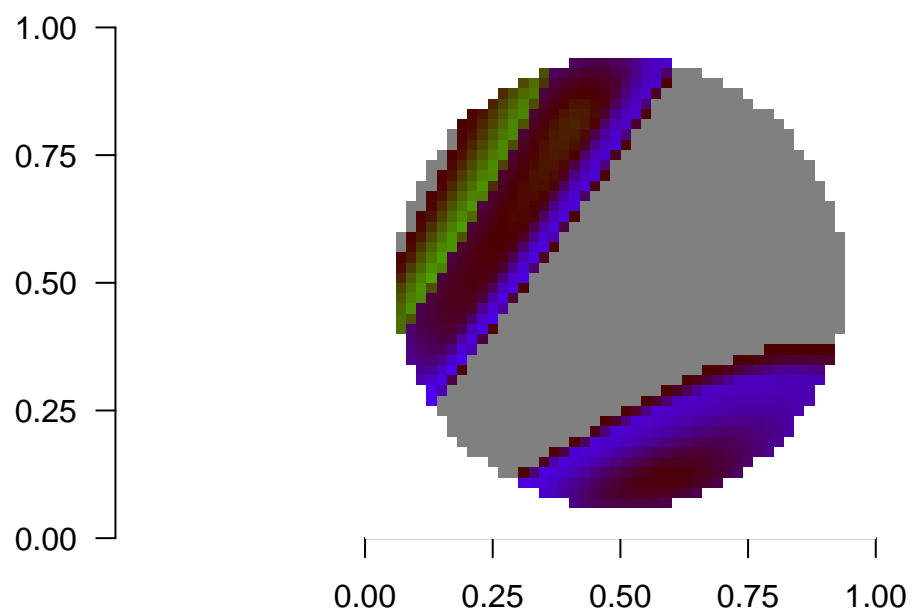
```
## Warning in .couldBeLonLat(x, warnings = warnings): CRS is NA. Assuming it is
## longitude/latitude
```


Efficiency of planting, without effect of migration. (If planted at the right



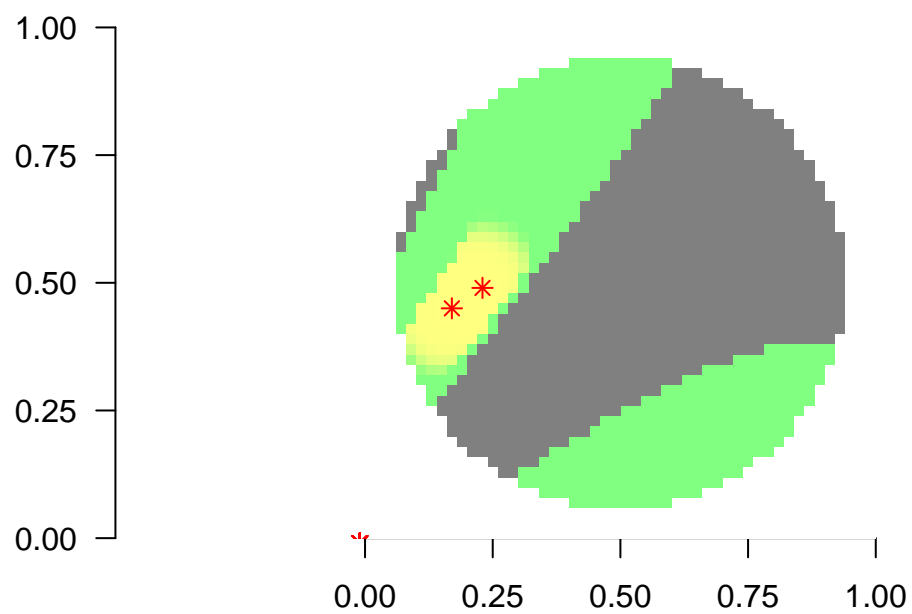
```
## Warning in .couldBeLonLat(x, warnings = warnings): CRS is NA. Assuming it is  
## longitude/latitude
```

Difference between efficiency with and without effect of migration.



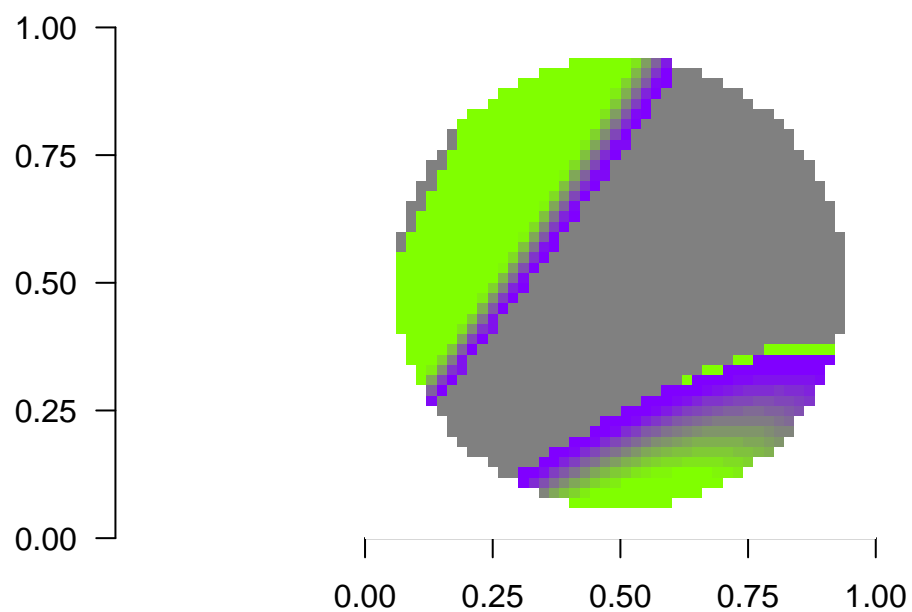
```
## Warning in .couldBeLonLat(x, warnings = warnings): CRS is NA. Assuming it is  
## longitude/latitude
```

optimal choices and probability of tree covering for each site



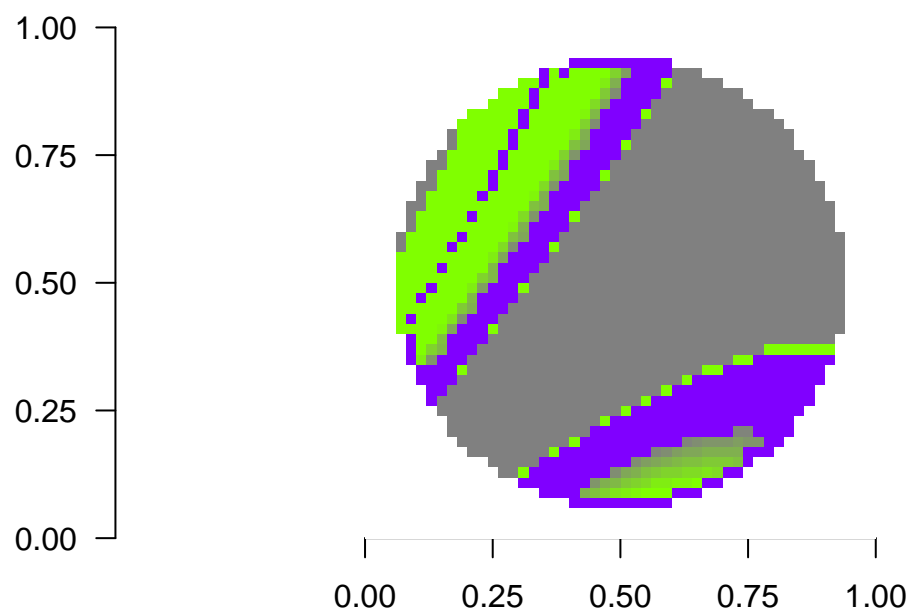
```
## Warning in .couldBeLonLat(x, warnings = warnings): CRS is NA. Assuming it is  
## longitude/latitude
```

Optimal time to plant for each site (with migration)



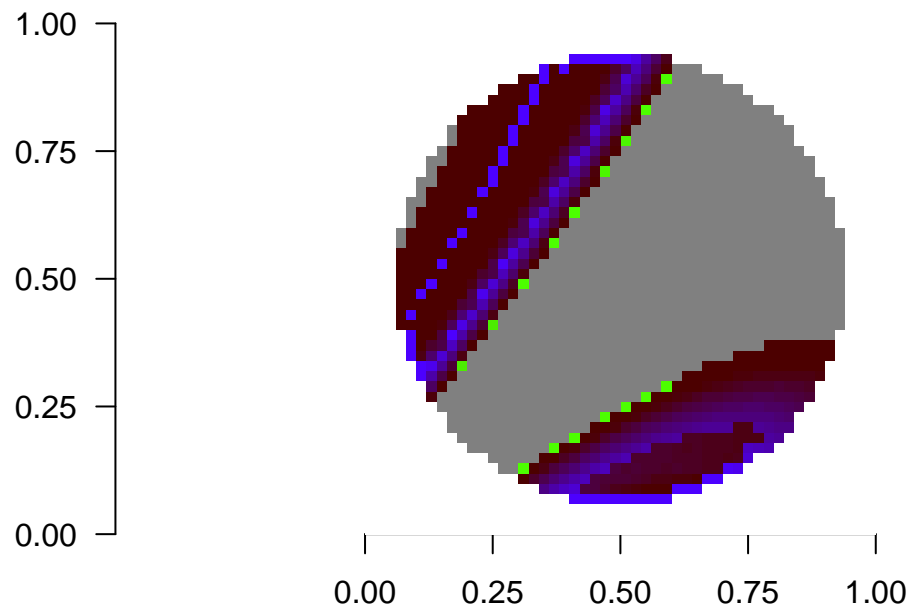
```
## Warning in .couldBeLonLat(x, warnings = warnings): CRS is NA. Assuming it is  
## longitude/latitude
```

Optimal time to plant for each site (without migration)



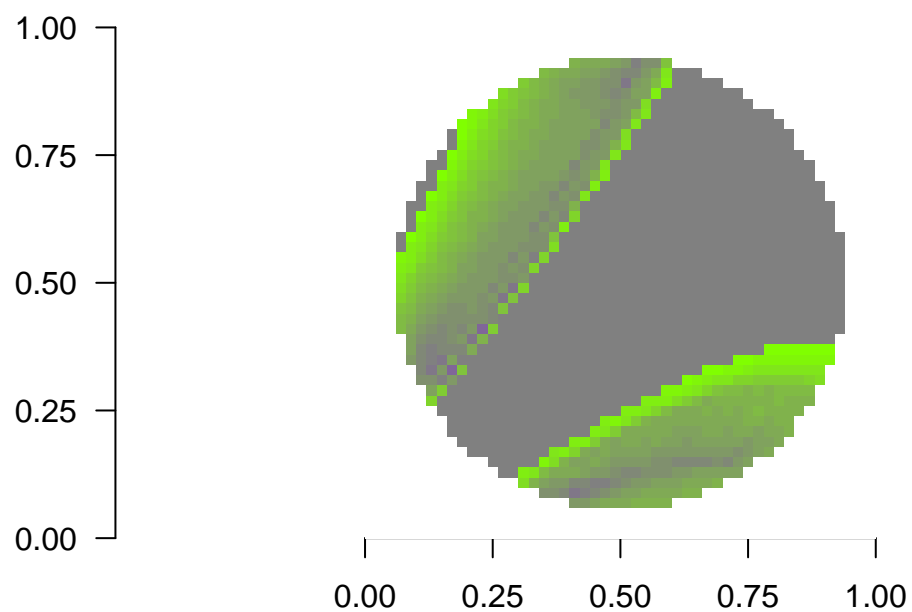
```
## Warning in .couldBeLonLat(x, warnings = warnings): CRS is NA. Assuming it is  
## longitude/latitude
```

ifference of optimal time choice with and without taking into account mi



```
## Warning in .couldBeLonLat(x, warnings = warnings): CRS is NA. Assuming it is  
## longitude/latitude
```

Importance of choosing well the moment you plant



Note that the `echo = FALSE` parameter was added to the code chunk to prevent printing of the R code that generated the plot.