Package lactModel

February 6, 2020

Type Package

Title Model lactation curve of (mountain-pastured) cows

Version 0.1.1

Date 2020-02-06

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Description Mathematical modelling of lactation curve of (mountain-pastured) cows

License GPL (>= 2)

Imports RColorBrewer

LinkingTo

RoxygenNote 6.1.1

Suggests

VignetteBuilder knitr

NeedsCompilation no

R topics documented:

`calc_coeff` *Calculate coefficients to model lactation curve of (mountain-pastured) dairy cows*

Description

Calculate coefficients to model lactation curve of (mountain-pastured) dairy cows

Usage

```
calc_coeff(model, dataInput, y_field, t_field, w_field = NULL,
  t1_field = NULL, diff_field = NULL, fullInteraction = FALSE,
  k_wilmink = 0.1, diff_value = NULL, endCurve = FALSE,
  alpDuration = 115)
```

Arguments

model	char One of 'AS' (for Ali-Schaeffer), 'Wilmink','Wood' to describe the type of regression
dataInput	dataframe The dataframe containing the observations in rows with the columns as givenin y_field, t_field etc...
y_field	char The name of the column in dataInput that corresponds to the response field (typically milk)
t_field	char The name of the column in dataInput that corresponds to the time of observation (typically days in milk)
w_field	char The name of the column in dataInput that corresponds to the weight of the observation (typically the number of cows when working on average of cows)
t1_field	char The name of the column in dataInput that corresponds to the time (same unit as t_field) at which the time is alped. If groups of cows are taken, this time must be different for each calving season. If NULL, the base model as presented by AS/Wood/Wilmink will be returned
diff_field	char The name of the column in dataInput that corresponds to the field for which we want the alp term (or all terms if fullInteraction is TRUE) to vary
fullInteraction	boolean If FALSE only the alp term will vary according to diff_field. If TRUE all terms are allowed to vary according to g_field.
k_wilmink	real If model='Wilmink', the value of the k coefficient. By defautl, 0.1.
diff_value	char/integer vector The possible value that diff_field can have. The first value will be taken as the reference value
endCurve	boolean Whether the end of the curve (after high alpine grazing is over) should be plotted or not
alpDuration	integer The duration of the high alpine grazing season (same unit as t_field)

Details

The modelling is based on three types of possible base model (see model), and adaptation is done for mountain-pastured cows: 1) increased linear decrease during high alpine grazing 2) sharp increase after the transhumance is over 3) smoother decrease for the end of the lactation

Value

An obeject of class "lm", as the result of the lm() call

Author(s)

Solange Duruz

plot_lc *Plot, model and test the significance of parameters for lactation curve modelling of (mountain-pastured cows)*

Description

The modelling will be performed with the function `calc_coeff`

Usage

```
plot_lc(dataInput, y_field, t_field, cm_field, month = c(12, 11, 10, 9,
  8, 3, 2, 1), t1_field, diff_field = NULL, diff_value = c(1, 0),
  w_field = NULL, prediction = TRUE, model = "Wilmink",
  k_wilmink = 0.1, endCurve = FALSE, alpDuration = 115,
  fullInteraction = FALSE, interactionMonth = FALSE,
  ylabel = "Milk yield [kg]", xlabel = "Days in milk", pal = "Blues",
  predictionCol = "gray", pch = c(1, 19, 3), diffLegend = NULL)
```

Arguments

`dataInput`	a matrix containing lines observations at different days in milk.
`y_field`	char The name of the column in `dataInput` containing the y-observation (typically milk yield but could also be protein yield)
`t_field`	char The name of the column in `dataInput` containing the time of the observation (typically in days in milk)
`cm_field`	char The name of the column in `dataInput` containing the season of calving (if different calving month are present in the dataset)
`month`	char/integer vector The list of months to consider as defined in `cm_field`
`t1_field`	char The name of the column in `dataInput` that corresponds to the time (same unit as `t_field`) at which the time is alped. If groups of cows are taken, this time must be different for each calving season. If NULL, the base model as presented by AS/Wood/Wilmink will be returned
`diff_field`	char The name of the column in `dataInput` containing the groups (if want to test the difference among groups)
`diff_value`	char/integer vector The possible value that `diff_field can have`. The first value will be taken as the reference value
`w_field`	char The name of the column in `dataInput` that corresponds to the weight of the observation (typically the number of cows when working on average of cows)
`prediction`	boolean Whether the prediction line should be plotted on top of the curve. Necessarily TRUE if want to calculate p-values of
`model`	char One of 'AS' (for Ali-Schaeffer), 'Wilmink','Wood' to describe the type of regression
`k_wilmink`	real If model='Wilmink', the value of the k coefficient. By defautl, 0.1.
`endCurve`	boolean Whether the end of the curve (after high alpine grazing is over) should be plotted or not
`alpDuration`	integer The duration of the high alpine grazing season (same unit as `t_field`)

`fullInteraction`
: boolean If FALSE only the alp term will vary according to `diff_field`. If TRUE all terms are allowed to vary according to `g_field`.

`interactionMonth`
: boolean If true, the coefficients of the regression will be estimated separately for each month

`ylabel`
: char The name of the y-axis label in the plot

`xlabel`
: char The name of the x-axis label in the plot

`pal`
: char The name of the color palette used to draw the data points as defined in color brewer. See ?RColorBrewer::brewer.pal for mor details

`predictionCol`
: char The color name for the prediction line

`pch`
: integer vector The pch code for the different `diff_value` present in the dataset

`diffLegend`
: ?

Value

A list containing the coefficients of the regression ($coeffs), the d-parameter ($alp_coeff), the estimated total milk production ($milk_total), and during alpine grazine only ($milk_alp). If `diff_field` is not null, the list will aslo contain the change in the d-parameter according to the group ($alpdiff_coeff), the p-value of the difference between groups ($pval)

Author(s)

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