Package 'infiltrodiscR'

July 22, 2025

Title Minidisc Infiltrometer Data Management

Version 0.0.5

Description A set of functions for the modeling of data derived from the Minidisc Infiltrometer device. It calculates cumulative infiltration and square root of time. Also, it calculates the A parameter based on soil physical properties.

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Depends R (>= 2.10)

Imports dplyr, tidyr, utils

Suggests testthat (>= 3.0.0), tibble, tidyverse

Config/testthat/edition 3

Encoding UTF-8

LazyData true

RoxygenNote 7.3.1

NeedsCompilation no

Author Carolina V. Giraldo [aut] (ORCID: <https://orcid.org/0000-0002-0627-8762>), Sara E. Acevedo [aut, cre] (ORCID: <https://orcid.org/0000-0003-3203-2106>), Carlos A. Bonilla [aut] (ORCID: <https://orcid.org/0000-0003-3107-999X>)

Maintainer Sara E. Acevedo <seaceved@uc.cl>

Repository CRAN

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`infiltration` *Cumulative infiltration and sqrt of time Using time and volume from field spreadsheets, the Cumulative infiltration and sqrt of time are calculated*

Description

Cumulative infiltration and sqrt of time Using time and volume from field spreadsheets, the Cumulative infiltration and sqrt of time are calculated

Usage

```
infiltration(dataset, col_name)
```

Arguments

`dataset`	A tibble or data.frame including time and volume
`col_name`	vars including time and volume

Value

A tibble giving three new columns: sqrt_time, volume_infiltrated and infiltration

Examples

```
infiltration(data.frame(time = c(0, 30, 60, 90, 120, 150, 180, 210, 240, 270, 300,
0, 35, 65, 95, 125, 155, 185, 215, 245, 275, 305),
volume = c(95, 89, 86, 83, 80, 77, 74, 73, 71, 69, 67,
           83, 77, 64, 61, 58, 45, 42, 35, 29, 17, 15)))
```

`parameter_A` *Calculates parameter A from (Philip, 1957)*

Description

Calculates parameter A from (Philip, 1957)

Usage

```
parameter_A(dataset, col_name)
```

Arguments

`dataset`	A tibble or data.frame including n_ho, alpha and suction
`col_name`	vars including n_ho, alpha and suction

Value

A tibble giving two new columns: suction_num, and parameter_A

Examples

```
parameter_A(data.frame(alpha = c(0.145, 0.008), n_ho = c(2.68, 1.09),suction = c("2cm","3cm")))
```

`vg_par` *Tabulated VG parameters Van Genuchten parameters and values of A, n and alpha for the Minidisk Infiltrometer (Decagon Devices, Inc., 2005). 12 soil texture classes and suction from 0.5 to 7 cm are tabulated*

Description

Tabulated VG parameters Van Genuchten parameters and values of A, n and alpha for the Minidisk Infiltrometer (Decagon Devices, Inc., 2005). 12 soil texture classes and suction from 0.5 to 7 cm are tabulated

Usage

```
vg_par(dataset, col_name)
```

Arguments

`dataset`	A tibble or data.frame including suction and texture
`col_name`	vars including suction and texture

Value

A tibble giving three new columns: n_ho, alpha and A value

Examples

```
vg_par(data.frame(suction = c("2cm", "3cm"), texture = c("sand", "clay")))
```

vg_parameters_bytexture *van Genuchten parameters*

Description

van Genuchten parameters for 12 soil texture classes and A values for a 2.25 cm disk radius and suction values from 0.5 to 6 cm.

Usage

```
vg_parameters_bytexture
```

Format

`vg_parameters_bytexture`**:**

A data frame with 12 rows and 11 columns:

texture soil texture according to the USDA

alpha values of parameter alpha

n_ho values of parameter n

0.5 Values of parameter A at 0.5cm

1cm Values of parameter A at 1cm

2cm Values of parameter A at 2cm

3cm Values of parameter A at 3cm

4cm Values of parameter A at 4cm

5cm Values of parameter A at 5cm

6cm Values of parameter A at 6cm

7cm Values of parameter A at 7cm

Source

https://metergroup.com/products/mini-disk-infiltrometer/

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