

Package ‘pestr’

July 23, 2025

Title Interface to Download Data on Pests and Hosts from 'EPPO'

Version 0.8.2

Description Set of tools to automatize extraction of data on pests from 'EPPO Data Services' and 'EPPO Global Database' and to put them into tables with human readable format. Those function use 'EPPO database API', thus you first need to register on <<https://data.eppo.int>> (free of charge). Additional helpers allow to download, check and connect to 'SQLite EPPO database'.

Depends R (>= 3.6.0)

Imports curl, DBI, dplyr (>= 1.0.0), httr, jsonlite, magrittr, readr, rlang, RSQLite, tidyr (>= 1.0.0), utils

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Encoding UTF-8

LazyData true

RoxygenNote 7.1.1

Suggests knitr, mockr, rmarkdown, roxygen2, testthat

URL <https://github.com/mczyzj/pestr>

BugReports <https://github.com/mczyzj/pestr/issues>

VignetteBuilder knitr

NeedsCompilation no

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Repository CRAN

Date/Publication 2021-01-20 11:00:02 UTC

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check_eppo_token	<i>EPPO Data Services token variable</i>
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Description

Maturing check_eppo_token should be used after create_eppo_token to check if the token is correctly recognized by EPPO Data Services API. As a reference it uses link to *Xylella fastidiosa* hosts database - **XYLEFA** eppocode. If token is recognized there will be no message. In other cases function will show following messages: No internet connection or Forbidden (HTTP 403).

Usage

check_eppo_token(token)

Arguments

token object of class pestr_token.

Value

Silent NULL when there is no error, otherwise message.

See Also

To obtain your free EPPO token please register to **EPPO Data Services** <https://data.eppo.int/>

Examples

```
## Not run:
eppo_token <- create_eppo_token("abcdef123456")
check_eppo_token(eppo_token)

## End(Not run)
```

create_eppo_token	<i>EPPO Data Services token variable</i>
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Description

Maturing create_eppo_token makes token that should be saved in a variable and used as argument for [eppo_tabletools_hosts](#), [eppo_tabletools_pests](#), [eppo_tabletools_cat](#) and [eppo_tabletools_taxo](#) functions. It contains token of class string, that is needed to communicate with EPPO Data Services API.

Usage

```
create_eppo_token(x)
```

Arguments

x	A string.
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Value

Token to access EPPO Data Services API in format recognized by `eppo_tabletools_*` functions.

See Also

To obtain your free EPPO token please register <https://data.eppo.int/>

Examples

```
## Not run:  
create_eppo_token("12345678abcdef")  
  
## End(Not run)
```

eppo_database	<i>EPPO Data Services Database connection tools</i>
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Description

Stable `eppo_database_check` checks if there is a file *eppocodes.sqlite* and informs user if it is outdated and should be downloaded. `eppo_database_download` downloads database in *SQLite* format directly. The downloaded file is *zip* archive. On Linux this database will be extracted automatically. On Windows user will need to extract the file manually. `eppo_database_connect` allows user to connect to SQLite database downloaded from EPPO Data Services.

Usage

```
eppo_database_check(filepath = getwd(), filename = "eppocodes.sqlite")

eppo_database_download(filepath = getwd())

eppo_database_connect(filepath = getwd(), filename = "eppocodes.sqlite")
```

Arguments

filepath	A string with path where eppocodes.sqlite file is stored. By default it points to working directory.
filename	A string with name of the file. By default it takes name eppocodes.sqlite.

Value

Checks if database file exist in directory, if it is outdated, and establishes SQLite database connection

Manual download

If you will, you can download database directly from **EPPO Data Services** <https://data.eppo.int>

Examples

```
## Not run:
#to check if the db file exist in the directory (default working directory)

eppo_database_check(filepath = getwd())

#to download EPPO SQLite database into directory (default working directory).
#If you are Windows user, after download finishes you will need to unzip file
#manually.

eppo_database_download(filepath = getwd())

#prior to use functions that check pest names in SQLite database,
#you need to set up connection to SQLite database. Doing so is
#straightforward with function below (once per session):

eppo_connection <- eppo_database_connect(filepath = getwd(),
                                         filename = "eppocodes.sqlite")

## End(Not run)
```

Description

Maturing eppo_names_table checks if string (names or parts of the names) provided by user match any name in the EPPO database. If strings match any name in database, data frame with all names matching codeid, as well as preferred (binary), language and EPPOcode is returned.

Arguments

- | | |
|---------------|--|
| names_vector | A vector with organism or viruses names (or part of the names) to be checked for existence in EPPO SQLite Database. |
| sqlConnection | connection to SQLite EPPO Database. By default NULL; function will automatically connect to database with default credentials. |

Value

Check if provided names are present in EPPO SQLite Database. Creates list which contains: data frame with matching names in database and their codeids, character vector of names from names_vector which do not match any entry in database, data frame with preferred names and their codeids, and data frame containing all names matching codeids of preferred names. Last data frame contains also column with preferred (binary), codelang (two letter character with language code), and EPPOcode.

Using with other functions

Output of the function might be passed to functions:

- eppo_tabletools_names
- eppo_tabletools_cat
- eppo_tabletools_hosts
- eppo_tabletools_distribution

Examples

```
## Not run:
##This code needs SQLite dabatase in working directory
test_names <- c("Xylella", "dog", "leafhopper")
test_names_table <- eppo_names_table(test_names)

## End(Not run)
```

eppo_tabletools	<i>EPPO table manipulation tools</i>
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Description

Maturing `eppo_tabletools_names` creates tables with names – preferred, common and synonyms – of pests. It is particularly useful for creating whole table with [eppo_table_full](#), otherwise it might be more informative to use [eppo_names_tables](#) which provides additional information for your query. `eppo_tabletools_hosts` creates tables with hosts of pests. `eppo_tabletools_cat` creates tables with categorization of pests. `eppo_tabletools_taxo` creates tables with taxonomy of pests/hosts. `eppo_tabletools_distri` creates tables with distribution of pests. `eppo_tabletools_pests` creates table with pests of host. All functions return both long table and compact, human friendly table.

Usage

```
eppo_tabletools_names(names_tables)
```

```
eppo_tabletools_hosts(  
  names_tables = NULL,  
  token,  
  raw_eppocodes = NULL,  
  use_raw_codes = FALSE  
)
```

```
eppo_tabletools_cat(  
  names_tables = NULL,  
  token,  
  raw_eppocodes = NULL,  
  use_raw_codes = FALSE  
)
```

```
eppo_tabletools_taxo(  
  names_tables = NULL,  
  token,  
  raw_eppocodes = NULL,  
  use_raw_codes = FALSE  
)
```

```
eppo_tabletools_distri(  
  names_tables = NULL,  
  raw_eppocodes = NULL,  
  use_raw_codes = FALSE  
)
```

```
eppo_tabletools_pests(  
  names_tables = NULL,
```

```

    token,
    raw_eppocodes = NULL,
    use_raw_codes = FALSE
  )

```

Arguments

names_tables	A list of tables created via <code>eppo_names_tables()</code> .
token	An object containing EPPO API token created via <code>create_eppo_token()</code> .
raw_eppocodes	A character vector of eppocodes. Use with caution, and ONLY when sure that provided eppocodes are correct.
use_raw_codes	logical. Default FALSE. Set TRUE if you want to provide eppocodes directly.

Value

List containing two data frames. First is in a long format, and each row contains synonyms and names in other languages in respect to preferred names. The second data frame contains coerced synonyms and other names to single cell for each preferred name.

See Also

EPPO Data services <https://data.eppo.int/> and *EPPO Global Database* <https://gd.eppo.int/>

Examples

```

## Not run:
## the code below requires SQLite DB in the working directory
## which can be downloaded with eppo_database_download function
test_names <- eppo_names_tables(c("Xylella", "Poacea"))
# get data on naming
eppo_tabletools_names(test_names)

## below functions connect to EPPO Global Database or EPPO Global Services
## they need connection to internet.

# get data on distribution
eppo_tabletools_distri(test_names)
# you can also get data using eppocodes directly
eppo_tabletools_distri(raw_eppocodes = c("XYLEFA", "1GRAF"),
  use_raw_codes = TRUE)

## below functions, beside internet connection require also valid token that
## can be obtained after free of charge registration at EPPO Data Services

# first create token variable:
create_eppo_token("paste_your_token_here")

# then use result of eppo_names_tables or raw eppocodes to query REST API
# get data on hosts
eppo_tabletools_hosts(test_names, eppo_token)

```

```

eppo_tabletools_hosts(token = eppo_token,
                      raw_eppocodes = c("XYLEFA", "1GRAF"),
                      use_raw_codes = TRUE)

# get data on categorization
eppo_tabletools_cat(test_names, eppo_token)
eppo_tabletools_cat(token = eppo_token,
                    raw_eppocodes = c("XYLEFA", "1GRAF"),
                    use_raw_codes = TRUE)

# get data on taxonomy
eppo_tabletools_taxo(test_names, eppo_token)
eppo_tabletools_taxo(token = eppo_token,
                    raw_eppocodes = c("XYLEFA", "1GRAF"),
                    use_raw_codes = TRUE)

# get data on pests
eppo_tabletools_pests(test_names, eppo_token)
eppo_tabletools_pests(token = eppo_token,
                    raw_eppocodes = c("XYLEFA", "1GRAF"),
                    use_raw_codes = TRUE)

## End(Not run)

```

eppo_table_full

EPPO Data Services information table

Description

Maturing `eppo_table_full` creates table in human friendly format with data on pest preferred name, synonyms and common names, hosts, categorization, taxonomy and its distribution.

Usage

```
eppo_table_full(names_vector, sqlConnection, token)
```

Arguments

<code>names_vector</code>	A vector with organism names (or part of the names) to be checked for existence in EPPO SQLite Database.
<code>sqlConnection</code>	connection to SQLite EPPO Database. By default NULL; function will automatically connect to database with default credentials.
<code>token</code>	An object containing EPPO API token created via create_eppo_token .

Value

Wraps results of function from `eppo_tabletools`, namely: [eppo_tabletools_names](#), [eppo_tabletools_hosts](#), [eppo_tabletools_cat](#), [eppo_tabletools_taxo](#), and [eppo_tabletools_distri](#) into one compact, human readable table.

pestr	<i>pestr: A package for retrieving data from EPPO Data Services</i> https://data.eppo.int/
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Description

The pestr package provides function for downloading SQLite EPPO database, searching for pest names in SQLite database, and retrieving all necessary data from EPPO Data Services API for selected pest names.

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