Package 'PSRICalc'

November 13, 2025

Type Package

Title Plant Stress Response Index Calculator

Version 1.0.0

Description Calculate Plant Stress Response Index (PSRI) from time-series germination data with optional radicle vigor integration. Built on the methodological foundation of the Osmotic Stress Response Index (OSRI) framework developed by Walne et al. (2020) <doi:10.1002/agg2.20087>. Provides clean, direct PSRI calculations suitable for agricultural research and statistical analysis. Note: This package implements methodology currently under peer review. Please contact the author before publication using this approach.

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Encoding UTF-8

RoxygenNote 7.3.3

Depends R (>= 4.0.0)

NeedsCompilation no

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Contents

`calculate_psri` *Calculate Plant Stress Response Index (PSRI)*

Description

This function calculates the Plant Stress Response Index from time-series germination data with optional radicle vigor integration.

Usage

```
calculate_psri(
  germination_counts,
  time_points = c(3, 5, 7),
  total_seeds,
  species,
  radicle_summary = NULL,
  diseased_counts = NULL
)
```

Arguments

`germination_counts`	Numeric vector of cumulative germination counts at each time point (length 3 for days 3, 5, 7)
`time_points`	Numeric vector of time points in days (default: c(3, 5, 7))
`total_seeds`	Integer, total number of seeds in the replicate
`species`	Character string, species name for identification
`radicle_summary`	Optional list containing radicle data
`diseased_counts`	Optional numeric vector of diseased seed counts

Value

A list containing PSRI components and metrics

References

Walne, C.H., Gaudin, A., Henry, W.B., and Reddy, K.R. (2020). In vitro seed germination response of corn hybrids to osmotic stress conditions. Agrosystems, Geosciences & Environment, 3(1), e20087. doi:10.1002/agg2.20087

Examples

```
result <- calculate_psri(
  germination_counts = c(5, 8, 10),
  time_points = c(3, 5, 7),
  total_seeds = 15,
  species = 'corn'
)
print(result$PSRI)
```

PSRICalc *PSRICalc: Plant Stress Response Index Calculator*

Description

Calculate Plant Stress Response Index (PSRI) from germination data

Details

The package provides clean, direct PSRI calculation methodology

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