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Jérôme Perez, Raphaël Conde Salazar, Alexia Stokes

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An open access database of plant species useful for controlling soil erosion and substrate mass movement

Jérôme Perez, Raphael Conde Salazar, Rodolphe Dombey, *Claire Atger, Alexia Stokes
INRA, UMR AMAP, 34398, Montpellier Cedex 5, France and *Pousse Conseil, Montpellier, France
Contact: jerome.perez@ird.fr

Introduction

- Due largely to anthropogenic activities and extreme climate events, the risk of shallow landslides and erosion has increased enormously over the last decade.
- To aid the site manager choose the most appropriate species, a database is needed with information on species sorted by their utility for retaining soil on slopes.
- We developed the ‘Stability database’ which is open to experts who can add new information via a website, whereas the general public can access the data freely:
  - http://publish.plantnet-project.org/project/stability_en

The ‘Stability database’ OBSERVATIONS page which allows end-users to add data either manually or as a .csv file, including photos

As root systems are important factors to consider when using vegetation to stabilize soil on slopes, we have included 22 architectural types in the repository TYPOLOGIES. These data are included as line drawings describing horizontal and vertical morphology and topology of root systems. The end user can choose a root system type from a list in the Stability database, which best describes the root system of the species being added to the database.

The database can be searched by a) using the tool Pl@ntNet Publish which permits only or b) using the DBRequest tool which allows data to be exported in text files.

Output

Example of a text file created from the results of DBRequest search. We requested information on species useful for surface protection in a temperate climate. Obligatory output provided but not shown due to lack of space includes the author of the observation and species’ Latin names.

Conclusion

We have developed an open access database of plant species which can be used to stabilize certain types of substrate mass wasting processes. We have included fields which describe species’ habitat, morphology and reproduction, as well as plant traits specific to slope stabilization. End-users can add species’ data to the database or simply access it for information. The Stability database can be searched online and data files can be exported as text files. The database can be used by amateurs or professionals from different backgrounds, providing that the mass wasting process to be mitigated is correctly identified.