A graphical system for computer-assisted plant identification

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Abstract

Species identification is a major constraint for biodiversity conservation. Conventional identification tools are usually difficult to use for non specialists, mainly because they require important botanical knowledge during the identification process. For this reason, we developed a graphical identification approach that resulted in the IDAO (IDentification Assistée par Ordinateur) software. Through simple clicks on vector drawings, the user selects morphological (shape, size, position, color and texture of organs) or ecological characters corresponding to the plant he/she wants to identify, thus building a sort of “identikit” for the species. The software compares this set to all those available in its database with a simple matching coefficient, and provides a probable identification. At any time during the process, the user may consult species description files. Missing information is tolerated, and users can thus access to an identification result without needing to use all characters in the set. Numerous illustrations are present in each species description file in order to facilitate identification.

This graphic multi-entry identification system has been adapted to various floras (weeds, trees, orchids) around the world (West Africa, India, Cambodia, etc.), for weed control or biodiversity conservation. It is accessible on-line on Internet (http://umramap.cirad.fr/amap2/logiciels_amap/index.php?page=idao), or available on CD-ROM. Current developments for the new version of this identification tool will include (i) a free open version, which will allow adaptation of the graphic interface by users according to their own flora, (ii) generalisation of the use of open drawing format (SVG: Scalable Vector Graphics), (iii) the extension of this approach to new characters (such as anatomical characters of the wood), and floras (such as paddy fields weeds).