

Towards a global understanding of the utilized plant species diversity

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Plants are essential components of ecosystems and human livelihoods. They sustain life on earth and provide services such as food, medicines, materials, and fuels. Yet, the large majority of the useful species are underutilised and poorly known, and an increasing proportion is under threat. In 2016, the Royal Botanic Gardens, Kew led an international program to compile a global checklist of useful plants from various published sources, which resulted in 31,128 plant species with documented human use. After subsequent efforts to integrate more sources, in 2020 we published the World Checklist of Useful Plants (WCUP), with 40,283 useful species. The continuation of the program has allowed us to further expand the checklist, improve the quality of the information, and address taxonomic and geographic gaps, with a total of 49,823 species. The classification in ten large categories of use includes human food (25,058 species), medicines (19,328), materials (9,247), environmental uses (6,162), animal food (3,013), gene sources (2,953), poisons (1,968) social uses (1,774), fuels (1,592) and invertebrate food (1,032). We describe the program achievements so far, including our efforts to understand the diversity, phylogenetic representation, geographic distribution, and conservation status of all the plants used by humans. At a national level, two important case studies have delivered significant impact on the ground: a long-term collaborative project to protect, conserve, and enhance the natural capital of Mexican forests and native trees, and the Useful Plants and Fungi of Colombia project. Both projects have delivered detailed checklists of native species, and have contributed to the conservation and sustainable use of these resources, with measurable impacts on the livelihoods of human communities. Finally, we will mention ongoing work and challenges, as well as future milestones of the program.