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A prioritized crop wild relative inventory to help underpin global food security

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Abstract

The potentially devastating impacts of climate change on biodiversity and food security, together with the growing world population, means taking action to conserve crop wild relative (CWR) diversity is no longer an optionâ€”it is an urgent priority. CWR are species closely related to crops, including their progenitors, which have potential to contribute traits for crop improvement. However, their utilisation is hampered by a lack of systematic conservation which in turn is due to a lack of clarity over their identity. We used gene pool and taxon group concepts to estimate CWR relatedness for 173 priority crops to create the Harlan and de Wet inventory of globally important CWR taxa. Further taxa more remotely related to crops were added if they have historically been found to have useful traits for crop improvement. The inventory contains 1667 taxa, divided between 37 families, 108 genera, 1392 species and 299 sub-specific taxa. The region with the highest number of priority CWR is western Asia with 262 taxa, followed by

China with 222 and southeastern Europe with 181. Within the primary gene pool, 242 taxa were found to be under-represented in ex situ collections and the countries identified as the highest priority for further germplasm collection are China, Mexico and Brazil. The inventory database is web-enabled (http://www.cwrdiversity.org/checklist/) and can be used to facilitate in situ and ex situ conservation planning at global, regional and national levels.

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Keywords

Crop wild relative; Gene pool; Food security; Plant conservation; Plant genetic resources

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