

## ABSTRACT

*Cinnamomum* Schaeff is one of the most important genera consisting crop wild relatives (CWR) in Sri Lanka. Out of the nine *Cinnamomum* species found in Sri Lanka, *Cinnamomum verum* J. Presl is an indigenous species, *Cinnamomum camphora* L. Presl is an introduced species and other seven species are considered as endemic species to the country. These seven endemic *Cinnamomum* species are considered as valuable CWR representing the secondary gene pool of *Cinnamomum verum* (cultivated cinnamon). Conservation and sustainable use of these CWRs are important for improving cultivated crops, achieving food security and maintaining ecosystem health. Main objectives of the study are to find out the threatened status and study the potential species of domestication in seven endemic wild *Cinnamomum* species.

Seven endemic wild *Cinnamomum* species were included in this study. The study was mainly based on the eco-geographical survey which consisted of the study of the herbarium specimens to collect reliable secondary data and development of potential distribution maps using available data. DIVA-GIS software was used to develop potential maps. Thereafter, high potential areas were identified using the above maps and field visits were made to collect primary data. According to the field survey, GPS readings, morphological characters of the plants and ethno-botanical data and germplasm were collected from each location. *Ex-situ* conservation and chemical analysis were done using collected germplasm. Data were analyzed according to global and national red list criteria.

According to global red list criteria, that *Cinnamomum dubium* is Least Concern (LC), *Cinnamomum capparucoronae* and *Cinnamomum ovalifolium* are in Endangered (EN), and *Cinnamomum litseaefolium*, *Cinnamomum rivulorum* and *Cinnamomum sinharajaense* are in Critically Endangered (CR). In addition, according to national red list criteria, that *Cinnamomum dubium* was considered as Not Threatened (NT) and found in wet zone forests was the most common species. *Cinnamomum ovalifolium* was considered as Indeterminate (I) and distributed only in Nuwara Eliya, Kandy and Badulla districts. *Cinnamomum litseaefolium* was Threatened (T) and limited to Kandy and Matale districts. *Cinnamomum rivulorum* and *Cinnamomum sinharajaense* were considered as Threatened and limited only to Sinharaja forest reserve and very rare species. *Cinnamomum capparucoronae* was considered as Highly Threatened (HT) and rare species and limited to the low country wet zone rain forests. *Cinnamomum citriodorum* was also considered as

Highly Threatened and limited from Balangoda to the Haputale region with scattered distribution. Lack of awareness, habitat destruction, urbanization and unsuitable agriculture practices were the major threats to endemic wild *Cinnamomum* species.

Morphological characterization of wild *Cinnamomum* species were done and prepared practically usable endemic *Cinnamomum* species identification key. In addition, public awareness programs were conducted to educate to the people around the forest reserve. It was the more useful for *in-situ* and *ex-situ* conservation of endemic wild *Cinnamomum* species. Species management plan for *Cinnamomum capparucoronde* were commenced in Kanneliya forest reserve and nine germplasm demonstration plots where endemic wild *Cinnamomum* species were established in Royal Botanical Garden at Peradeniya, Kanneliya Forest Reserve at Galle, National Herbarium Plant Nursery at Peradeniya, Horticultural Crop Research and Development Institute at Gannoruwa, Export Agriculture Mid Country Research Station at Dalpitiya, Bandaranayaka Memorial Ayurveda Research Institute at Nawinna. Forest Department Research Station at Badulla, Faculty of Agriculture of the University of Ruhuna at Kamburupitiya and Barbarian Beach Resort at Waligama.

This investigation revealed, suitable characters of *Cinnamomum capparucoronde* for domestication were high amount of eugenol (nearly 90%) consisting in leaf oil, resistant to cinnamon gall disease, erect stem used for improving cultivated cinnamon, high medicinal value and timber value, less pest and diseases, and good survival rate. The characters need to be improved during the domestication process were the peelability, vegetative propagation, and survival rate during the juvenile period.

**Key word:** Endemic wild *Cinnamomum* species, global and national red list status, eco-geographic survey, conservation and domestication , *Cinnamomum verum* J. Presl, *Cinnamomum capparucoronde* Blume, *Cinnamomum citriodorum* Thw., *Cinnamomum dubium* Nees, *Cinnamomum litseaefolium* Thw., *Cinnamomum ovalifolium* Weight, *Cinnamomum rivulorum* Kosterm, *Cinnamomum sinharajaense* Kosterm and *Cinnamomum camphora* L. Presl