High outcrossing rate and pollen dispersal distance of diospyros celebica bakh (ebenaceae), an endemic three species in Sulawesi Island, Indonesia

Muhammad Restu, author

Abstrak

Diosphyros celebica Bakh., also known as Sulawesi ebony, is an endemic to central and northern Sulawesi. Information about pollen dispersal patterns of D. celebicahave not been previously investigated. This study was aimed to determine pollination type, percentage ofselfing and outcrossing, as well as distance ofpollen dispersal of D. celebica.This study was conducted at experimental forest of Universitas Hasanuddin, Maros District, South Sulawesi Province, Indonesia. One hundred and sixty six individuals ofD. celebicaconsisted ofadult trees and seedlings were analyzed in this study. Ninety four adult trees were selected to become parent trees. The trees were mapped with GPS coordinates. All samples were genotyped using four SSR markers loci. Parental analysis and determination ofpollen dispersal patterns were carried out using Cervus 3.0.3.Results indicated that the evaluated markers were effective for assigning candidate ofmale parents to all evaluated seedlings. Donated pollens could come from male parents in any directions relative to female parent positions. Pollen dispersal pattern showed outcrossing pollination among different male parents (pollen donated trees). The results indicated that seeds were produced predominatly by outcrossing. Pollen dispersal reached up to 166 m. Pollen related processes were linked through female parents, pollinators availability and ecological environment. Simultaneous use ofprogeny genotyping, spatially explicit analysis ofenvironmental variables and outcomes ofplant–animal interactions were the key elements for an expanded approach to gene flow analysis considering dispersal via pollen and seeds. Research on pollen dispersal of D. celebica should be carried out in other forest types, such as mixed forest and highland forest.