

e-Science应用

国家战略种质资源保藏与创新系统的e-Science环境

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摘要:

中国西南野生生物种质资源库是国家大科学工程,其保藏的野生种质资源是人类社会可持续发展所依赖的战略资源。本文结合国家对战略种质资源的保护和持续利用研究的需求,利用当前先进的e-Science的科学理念和信息技术,针对如何快速、有效地鉴定和发掘优异基因这一科学问题,以重要野生禾本科植物的比较基因组学研究为例,提出实施e-Science应用环境的建设方案。通过对种质资源库保藏与创新活动的全过程分析,抓住4个关键环节(采集计划、监测评价、实验分析、创新研究),深入了解每个环节上的信息需求,合理部署科研工具、数据标准、模型分析和计算过程,为科学家和支撑服务人员打造一个全面服务于种质资源采集、整理、保存、共享、传递和创新的软硬件结合、协同工作的信息化科研环境。该项工作的实施将有利于提升种质资源库的国际地位,为我国在国际生物战略资源竞争做出贡献。

关键词: 种质资源; e-Science环境; 建设方案

The e-Science Environment for Conservation and Innovation of Germplasm Resources of Wild Species

Abstract:

The Germplasm Bank of Wild Species is a national key project of scientific facilitation in China. The wild germplasm resources, including seeds, micro-propagated samples, genomic DNA/cDNA libraries, and mycological spores/bodies, are the basis for human sustainability. Considering the national demands to conserve and sustainably use of wild germplasm resources, the paper proposed to set up an e-Science environment for conservation and innovation of germplasm resources of wild species of plants, animals and microbes with advanced e-Science and information technology. Comparative genomic research of wild gramineae plants was taken as an example, focusing on how to identify and clone useful genes quickly and effectively. By analyzing the process of conservation and innovation of the wild plant germplasm resources, it is proposed to build a Collaboration Environment for the research of conservation technology and utilization of genetic resources, especially on the four critical links, i.e. data collection, evaluation, examination and innovation. It is helped that the international recognition of the Germplasm Bank of Wild Species will be enhanced by making such an initiative, and it will be beneficial for China to be more competitive on the global strategic resources.

Keywords: Wild Germplasm Resources; e-Science Environment; Proposal

收稿日期 2009-03-30 修回日期 2009-04-06 网络版发布日期 2009-07-16

DOI:

基金项目:

国家科技基础条件平台建设项目

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