Biodiversity characterization in Malaysia through biology and genetics.

Abstract

It is often the case that every significant break through in agriculture was preceded by the discovery of some basic biological information. For example, the current widespread practice of planting the tenera type of oil palm in commercial plantations which significantly raised palm oil production was preceded by the discovery of the gene controlling the oil palm fruit shell thickness by Beirnaert and Vanderweyen in 1941 during the course of their research work in the Belgian Congo, Africa (now the Democratic Republic of Congo) (Corley and Tinker, 2003.).Hence, fundamental biological research is important and needs to continue to be supported with adequate and meaningful funding so that Malaysia's rich biological resources can be well characterized and understood. This will enable them to be utilized economically for the benefit of humankind at their optimal sustainable levels that allow them to continue to thrive in our unique species rich tropical ecosystem. In this regard it is gratifying to note that in the effort to utilize the much touted marker assisted selection (MAS) approach to improve the production of our economic plants and animals, funding had been made available to develop molecular markers for species like oil palm (Singh et al., 2007,2008), Asian river catfish, Mystus nemurus, (Usmani et al., 2003) sea bass, Lates calcarifer, (Chong 2004, Hoh 2008) and the Malaysian giant freshwater prawn, Macrobrachium rosenbergii,(Bhassu et al., 2008) so that high density genetic maps can be generated for them. Such a map is essential before the MAS approach can be effectively applied in the breeding program of any one species (Liu and Cordes, 2004). A Malaysian company, Asiatic Center for Genome Technology (ACGT) is collaborating with the US based Synthetic Genomics Inc. (GSI) on a genome sequencing programme to analyze the entire oil palm genome with a view towards increasing its yield as well as to improve its oil composition to meet the growing market demands (ACGT2006). The Bio Nexus Project and the National Biotechnology Policy launched in May 2005 both aim to explore and utilize in a sustainable manner our rich biodiversity commercially. It is hoped that this policy together with the government's current aim of revitalizing the nation's agricultural sector would be accompanied by concrete measures such as the recruitment and retention of competent scientific human resources and increased research and development expenditure in the biological sciences. Then we, the biologists, should respond enthusiastically to our leaders' clarion call for us to help achieve this noble aim. These actions would, in turn, rekindle interest among young Malaysians in the biological sciences. However, there is the danger that while careers and research in biotechnology, proteomics, genomics and molecular biology are becoming attractive, it must be borne in mind that to manage and utilize our bioresources responsibly, basic knowledge of their taxonomy, physiology, genetics and ecology are just as essential and the good health of our various ecosystems must be maintained. Therefore, biology in Malaysia is a diverse science but with a unity of purpose to enable us to be good trustees of the treasure trove of natural resources that our country has been richly endowed with.

Keyword: Biodiversity studies; Malaysia.