

Centres Of **EXCELLENCE**

Annual Report 2009



Institute Of Environmental And Water Resources Management (IPASA)

Institute of Environmental & Water Resource Management (IPASA) was established in 1994 (previously known as the Institute of Environmental Studies) as an effort to integrate available expertise in various fields in UTM to understand and to overcome complex problems related to the environment. IPASA is an interdisciplinary Centre of Excellence for environmental research, consultations and graduate training. IPASA also provides continuing education programs (seminars and short courses) in environmental related areas. Most of the IPASA associated fellows have vast experience in environmental studies, consultancies and teaching since early 1980s.

IPASA research interests encompass several broad areas, and a flexible organisation allows for response to new issues as they arise. Current areas of emphasis include:

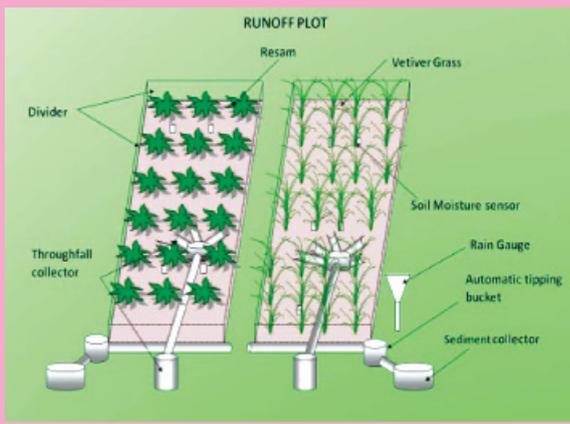
- ▶ Environmental Management
- ▶ Environmental Control Engineering
- ▶ Environmental Science



With its wide range of expertise, IPASA also provides consultancy and testing services in environmental related areas. IPASA members have carried out many Environmental Impact Assessment (EIA) and related environmental management and risk assessment projects during the last past years.

IPASA also conducts courses and in-service training for public and private sectors. For example, the Introduction to Cleaner Production Workshop and the Water Forum- "Strategies for Water Environment Management: Fostering Collaboration Between UK and Malaysia" was attended by professionals such as engineers, surveyors, and planners.

IPASA through Uni-Technologist Sdn. Bhd (UTSB) and Biro Inovasi dan Perundingan (BIP), have carried out seven consultancy projects in 2009 worth RM1.6 million. The clients were from Syarikat Air Johor, Forestry Department, Department of Irrigation and Drainage, National Hydraulic Research Institute of Malaysia and one private firm. Among the studies carried out were to assess performance of Resam (*Dicranopteris sp*) compared to Vertiver grass for erosion control and slope stabilization. The client for this study was the Department of Irrigation and Drainage.



The study focused on the use of vegetative cover to prevent soil erosion. Resam could provide a better alternative as this plant grows naturally in abundance on hill slopes. Its wiry fronds structure can be a good mechanism to reduce the kinetic impact of rainfall. In addition, as the fronds form a thick layer, Resam is expected to intercept large amounts of rainfall, thus allowing only a small amount of rainwater to form overland flow. The thick litter layer underneath the fresh frond provides additional protection to the soil surface against erosive energy. The parameters studied were the rainfall kinetic interception through canopy, reduction of overland flow through canopy storage, reduction of soil moisture by evapotranspiration and soil binder through the root system which play an effective role to minimize the erodibility factors of the soil.

Resam	Vetiver Grass
 Thick layer of Resam fronds can intercept large volume of rainwater	 Sparse growth of Vetiver Grass and its simple leaf structure are less effective in intercepting rainwater
 Can grow well even on less fertile soil	 Poor growth on slope

Another study awarded by the Department of Irrigation and Drainage to IPASA was the study on “Optimization of Rainfall Observation Network on Model Calibration and Application for the Johor, Batu Pahat and Muar River Basins”. This project cost was about RM 320,000 and was completed in eight months. The main purpose of this rainfall network optimization study is to define a certain number of gauges whose site and their functioning can best estimate the aerial rainfall. The analysis of the organization of the rainfall

network in place (density, distribution of gauges according to the relief, functioning) and its confrontation to international norms allow us to identify possible imperfections of rainfall network.

Climate Change impact has been the main topic in most environmental issues discussions. IPASA was awarded by the Department of Irrigation and Drainage to conduct a study on the Impact of Climate Change on Design Flood and its Application for the Damansara, Johor and Kelantan River Basin. This study which cost RM 199,000.00 was completed in 18 months. This study serves to investigate and measure the impact on Malaysia water resources sector posed by global climate change. The impact of climate change focused on the design rainfalls and design floods to water-hydraulic related infrastructure projects, particularly under the control of the Department of Irrigation and Drainage (DID) such as flood mitigation projects, dams, reservoirs and ponds, river engineering and improvement, etc. The study region includes Damansara, Johor and Kelantan River basins. These are relevant geographic areas for Malaysia that differ strongly in climate and land-use history and are likely to differ in their specific sensitivities to climate change and therefore, in the potential water resources impacts of such changes. A potential impact of climate change is examined by estimating the design rainfalls in order to estimate design floods. The estimated design flood is then used for the rainfall-runoff modelling.



On top of that, IPASA has received invitations for two more EIA studies, one from the Unit Pembangunan Ekonomi Negeri (UPEN) Melaka on the “Perlombongan Bijih Timah Di Perairan Pantai Kuala Sungai Baru” worth RM1.2 million and the other is from HATIMUDA Sdn. Bhd. on the “Dredging and Deepening of Sungai Simpang Kiri and other related work in the district of Batu Pahat, Johor” worth about RM103,000.