

In vitro culture of Borneo's endemic orchid, *vanda dearei*

Abstract

The effect of basal media, complex additives and sugars to the growth and development of *V. dearei* protocorms were reported in this study. Protocorms were initiated from in vitro seeds germination from immature capsule. Among the three basal media, growth of protocorms was superior in 1/2 MS medium followed by KC and VW with maximum percentage of protocorms with leaf and root, and mean number of leaf and root produced. Meanwhile, 0.2% (w/v) yeast extract markedly enhanced the growth of protocorms. In sugar study, results show that protocorms preferred sucrose as compared to fructose and glucose. The leaf and root formation was significantly enhanced as the sugar concentration was decreased. Medium supplemented with 2% (w/v) sucrose was the best compared to the other treatments and sugar at a concentration of 4% (w/v) induced the formation of large size seedlings.

Abstract

Problem statement: The lowland forest of Sabah is the most important habitat for orangutans and pygmy elephants. This is shown in the WWF-Malaysia's elephant tracking programme in which satellite-based Global Position System (GPS) collar devices are used to monitor their movement and the range of their habitats, as well as an aerial survey on orangutan's nest is performed to determine the spatial distribution pattern. We observed the activities of both species and we found that these species stay inside lowland forests with on flat ground or with gentle slopes, below 500 m elevation, which is mostly covered by natural forest. The density of orangutan's population was estimated to be higher in a certain location in natural lowland forests where the soils are more fertile. A suitable long term habitat for both species is located in the lowland dipterocarp forests. However, most of the pristine habitats in the lowland area have been converted into other land use activities such as a large scale plantation. This is due to the fact that most of the lowland forests are facing a continuous degradation process that will decrease its commercial value when it comes to generating revenue to the state government. As a result, the efforts to restore the forest are very vital.

Approach: This study described the technical and biological aspects in the forest restoration planning, prioritizing, implementation and monitoring process, integrated with the data on habitat utilization by orangutan in lowland degraded dipterocarp forest. Key habitats for orangutans were identified, forest condition were mapped and field works are carried out using a plot sampling technique to identify the diversity and density of the forest (current and potential), in order to support the forest restoration planning. A proper database on forest restoration and tree maintenance planning had been developed to enable the monitoring process.

Results: This study outlined some of the findings that include the main challenges that were faced in the forest restoration programme in North Ulu Segama (NUS), which could be

used as lessons and guideline in the future. Conclusion: A long term monitoring programme is important in order to have a successful forest restoration programme as well as to have the opportunity to study the impact of this restoration on the behavior of orangutan as a result of their adaptation to the new forest structure.