TAXONOMY & ECOLOGY

Beyond Classical Approaches

Edited by
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UNIVERSITI MALAYSIA SARAWAK
UNIMAS

TILLERING AND DRY WEIGHT OBSERVATION OF *IMPERATA CYLINDRICA* AND *ISCHAEMUM MAGNUM* IN REFERENCE TO THE DURATIONS OF CUTTING

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ABSTRACT

The invasive C_4 perennial grass, *Imperata cylindrica* and *Ischaemum magnum* are among the most troublesome weeds in tropical and subtropical regions around the globe. It is considered as the worst weed of south eastern Asia occurred in most agricultural areas and road verges. Improper land used, logging activities, shifting agriculture systems, transmigration and fires are the most frequent causes of land degradation and establishment of grassland which are mainly dominated by these C_4 grassy species. Grasslands play an important role in global carbon cycle as its dominant species have efficient C_4 type of photosynthesis, converting carbon in atmosphere into biomass. In the study presented here, tillering and dry weight observation were done in the pure stand of *Imperata cylindrica* and *Ischaemum magnum* in the west campus of University Malaysia Sarawak (UNIMAS) in order to determine optimal production between frequent of cutting and the production of tillers and its dry weight within a particular duration. In total of 20 weeks, each species was treated with different duration of cutting that were every 2 weeks, 4 weeks, 6 weeks and 8 weeks which 5 quadrates (1m x 1m) were used for each treatment. One-way analysis of variance (ANOVA) was used to analyse the data. *Imperata cylindrica* showed significant difference, at $P>0.05$, of effect of different duration of cutting on the total tillers and its total dry weight while *Ischaemum magnum* showed significant difference only on the total tillers with no significant difference on its total dry weight. For *Imperata cylindrica*, duration of cutting at every 2 weeks and 4 weeks gave the highest, 4011 and 3690 total tillers with highest total dry weight, 0.93 kg and 0.75 kg respectively. *Ischaemum magnum* also gave the highest total tillers in duration of cutting at every 2 weeks and 4 weeks, 1130 and 1233tillers with highest total dry weight, 1.53 kg and 1.47 kg respectively. This study showed that decreased in duration of cutting had increased the production of tillers and its dry weight.

Keywords: Tiller, dry weight, duration of cutting, *Imperata cylindrica*, *Ischaemum magnum*

INTRODUCTION

Imperata cylindrica is a fast growing and rhizomatous perennial grass which its extensive rhizomes allow it to spread and dominate a wide range of disturbed area (MacDonald, n.d.). *Imperata cylindrica*, a warm-season grass species has covered huge world areas, estimated on over 500 million ha throughout the world which 200 million ha are found in Southeast Asia (Muniati, 2002). *Ischaemum magnum*, an aggressive colonizer in open or disturbed sites is described as a perennial tussock grass with stout culms. Its extensive formation of phalanx tillers with high survival has made it pernicious to other plants. This light tolerance species and well adapted to wet sites is occurred abundantly in most agricultural areas and road verges (Ipor and Tawan, 1992).

A warm-season C_4 plant, *Imperata cylindrica* and *Ischaemum magnum* are widely distributed in the tropics and subtropics areas and they have been recognised as among the most serious weed over the word (Chikoye *et al.*, 2002; Tominaga, 2003). They are generally seen as pernicious pest plant due to its ability to greatly disperse, colonize, spread and subsequently compete with crops and disrupt ecosystems over a wide range of environmental conditions (Van Loan *et al.*, n.d).

As claimed in Otsamo (2001), about 3.8 million ha of rainforest in Southeast Asia was changed annually into grasslands in 1981-1990. Friday *et al.* (1999) had stated that improper land used management, logging activities, shifting agriculture systems and fires are the most frequent causes of land degradation and establishment of grassland which are mainly dominated by these C_4 grassy