

The Challenges of Studying Biodiversity in Indonesia (cases of Invasive Alien Plant Species)

Dr. Sri S. Tjitrosoedirdjo and
S. Tjitrosoedirdjo PhD**.*

Affiliate Scientist (Plant Taxonomist * and Weed Scientist **),
SEAMEO BIOTROP, Jln.Tajur Raya Km6, Bogor,
Indonesia

INTRODUCTION

- Weeds in Agricultural Ecosystem in Indonesia are well known which is related to the lost of agricultural products under the IPPC
- Invasive alien plant species are relatively new for publics although Indonesia has retify CBD (Convention on Biological Diversity) in 1994
- Invasive Alien Plant Species concerns loss of biodiversity in natural ecosystem



EXAMPLE OF PLANT
INVASION.

Merremia peltata dominates vegetations at Bukit Barisan Selatan N.P. Sumatra . It prevents regeneration of local species, which happen to be commercial trees such as *Dipterocarpus* sp.(kruing minyak)

**DECREE OF THE MINISTER OF ENVIRONMENT
AND FORESTRY REPUBLIC OF INDONESIA
NUMBER P.94/MENLHK/SETJEN/KUM.1/12/2016
ON THE INVASIVE SPECIES**

- Consisted of 4 chapters
 - I. General definitions** , with 2 sections
 - section 1, definition of 13 subjects under article 1
 - section 2, the decree objectives under article 2
 - II. Definition of Invasive Species** covering 9 articles
 - III. Definition of Amendment**, under article 10
 - IV. Implementation**, under article 11
- The decree was issued on the 6th of December 2016

NATIONAL STRATEGY AND ACTION PLANS ON INVASIVE SPECIES

- a. Prevention
- b. Early Detection and Rapid Response
- c. Control and mitigation
- d. Eradication and restoration
- e. Awareness and community education
- f. Capacity buildings
- g. Data management
- h. National and International Cooperations

SEAMEO BIOTROP THROUGH **FORIS** HAS BEEN ACTIVELY CONTRIBUTING TO THE DEVELOPMENT OF THE ABOVE STRATEGY AND ACTION PLANS

The General Director of Natural Resources and Ecology of The Ministry of Environment and Forestry issued a decision letter No.P.4/KSDAE/SET/KSA.2/11/2019 on Risk Analysis of Invasive Alien Species in protected forests

- Through FORIS SEAMEO BIOTROP has been contributing actively also on a more detail activities related to Invasive Alien Plant species management such as risk analysis to prioritise them for further treatment as guided in Aichi Biodiversity Target No.9
- FORIS :Removing Barriers to Invasive Species Management in Production and Protection Forest in Southeast Asia **Project** , grant from GEF, under the Indonesian Ministry of Environment and Forestry
- The managers of forest ecosystem in a protective forests are trained to carry out this technique, how to identify the invasive alien plant species, to evaluate their invasiveness and how much cost to contain them. The evaluation of those will generate the way how to control the mentioned species.

Risk of Invasive alien plant Species	Fisibility of containment				
	Negligible > 113	Low >56	Medium >31	High >14	Very high <14
Negligible <14	Limited actions	Limited Actions	Limitd Actions	Limited Actions	MONITOR
Low <39	Limited action	Limited Actions	Limitd Actions	MONITOR	MONITOR
Medium <101	Manage sites	Manage sites	Manage sites	Protect Sites	Contain spread
High <192	Manage Invasive Species	Manage Invasive Species	Protect Sites	Contain spread	Destroy invasion
Very high >192	Manage Invasive Species	Protec sites Manage Invasive Species	Contain spread	Destroy invasion	Eradication

ALERT

Modified from **Dr John Virtue, 2008**. Animal and Plant Control Group, Dept. Water Land and Biodiversity Consevation, Adelaide, South Australia

Experiences in giving general lecture at University level in 2016

- BIOTROP funded by FORIS gave general lectures at 5 Universities (3 in Java, 2 outside Java) on the management of invasive alien plant species. The responses of some participants
 - Not familiar yet with the topic of Invasive Alien Species, it was considered as a political term, when you say a plant is an invasive species, others may say the opposite, for example *Acacia mangium* is an invasive species, but Forest Plantation Company it is not,
 - Some protest that *Chromolaena odorata* is an alien species, as this plant has been around even since his grand father was still around
 - It seemed that Understanding of Invasive Alien Species was far from clear for a greater participants in the lecture room

Further responses provide the following information

- Those Invasive Alien Plant Species were only weeds which we are familiar with, such as *Ageratum conyzoides*, we can control it easily.
- Those invasive alien plant species are not harmful even they have been useful to us, such as *Eclipta alba* useful for shampo
- Those plants are created by God, therefore , they must be useful, nothing invasive with negative impact

With those responses we believe that **INVASIVE ALIEN SPECIES MUST BE UNDERSTOOD BETTER, BY INTRODUCING THE PLANT AND OTHER MEMBER OF INVASIVE SPECIES EARLY IN FORMAL EDUCATION POSSIBLE.**

CURRICULUM AT PRIMARY SCHOOL

- There are 7 subjects under Primary School
 - Citizenship
 - Indonesian language
 - Health/Sports
 - Local Culture
 - Mathematics
 - Natural Sciences
 - Social Sciences

Under Natural Sciences, students should be introduced to plants (*Manihot utilisima*) around the school, it is originated from South America, originated from South America, but mango (*Mangifera indica*) is local species.

SECONDARY SCHOOL LEVEL

- To the secondary school level concept of ecological specification must be introduced.
- However, when a plant is taken out of its ecosystem and planted in another ecosystem, it may become invasive
- This plant is invasive, competing out local species damaging and altering local ecosystems, impacting negatively on economy , health and social life of human being.

HIGH SCHOOL AND UNIVERSITY LEVEL

- What are invasive alien plant species?
- How to control or manage those invasive alien plant species.,
- How to control waterhyacinth?
- How to predict foreign plants become invasive ?
- Follow regulations to avoid spreading those foreign plants that may be invasive
- We have to work together internationally to manage our environment carefully to avoid the emergence of invasive alien species.
- Convention on Biological Diversity should be observed when trasfering an organism from one place to another

COVID-19 versus IAPS

- During pandemic Covid-19 almost no activities on the research, control, training and other activities of IAPS.
- While in the fields IAPS keep on growing without any control
- Invasive alien plant species must be introduced early in primary school up, to support the process of awareness and public education.

**The time is up I hope it is enough to
incite you to comment on this very
short presentation**

Thank you very much
for your attention