

International Research Network on Invasive Alien Plant Species

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A large number of alien species have been introduced into Japan over a long period of time. While some of them have been able to coexist with native species over time, others affect the local biological diversity. Recently, the movement of people and substances is becoming more and more active as human activity develops, and living organisms are being introduced through intentional or unintentional human activity into new regions from other countries or regions in a manner that exceeds the living organisms' natural ability to move. Among these living organisms are those that are being used for a variety of purposes, including cultivated plants, landscape plants, garden plants, etc. These organisms have penetrated and coexisted in daily living and culture over a long period of time, and have come to serve a variety of active roles through their industrial use. On the other hand, there are cases where, if living organisms that did not previously exist in a region are brought into the region through human intervention, they may drastically alter biodiversity in the region when they feed on or drive out native living organisms that do not have defensive capabilities. Such occurrences are reported in all parts of the world including Japan, and cases have been observed in which this has led to harm to human beings or to agriculture, forestry, or fisheries. Preventing the introduction and establishment of invasive alien species is the most desirable measure environmentally as well as from the viewpoint of cost-effectiveness. If they invaded, prompt eradication will be effective. Then, Japan has enacted the "Invasive Alien Species Act" (Law No. 78 (2004)) (<http://www.env.go.jp/en/topic/as.html>) with the purpose of preventing adverse effects to Japanese ecosystems, human safety, or agriculture, forestry and fisheries caused by alien species that were intentionally or unintentionally introduced into Japan from overseas through human activity and that exist outside their original habitats. A person who has performed raising of IAS with the aim to sell or distribute in violation of the provisions of Act shall be punished by imprisonment for any period not exceeding three years or a fine not exceeding three million yen. This is the strictest Act in Japan concerning environment. The first designation of IAS (Invasive Alien Species, that pose risks to cause damages to biodiversity, human safety, or agriculture in Japan), UAS (Uncategorized Alien Species, which have the possibility to be categorized as IAS through detailed investigation, need the detailed investigation in order to be allowed to be imported into Japan) and LORCA (Living Organisms Required to have a Certificate Attached during their importation in order to verify their types) proposed by academic experts on Oct, 2004. 2nd designation just finished on July, 2005.

In order to contribute to this Act, a new National Project "Risk assessment of alien plants and their control (http://www.niaes.affrc.go.jp/project/plant_alien/index.html)" has just started in Japan, and NIAES is the host Institute. The aim of this project is to survey the distribution and hazard by alien invasive plants, and make scientific background for the selection of harmful alien species, and develop practical method for the mitigation of alien invasive plants. This project has three objectives:

- 1) To know the stats of distribution of alien invasive plants in Japan, and to know the mechanism of invasion.
 - a) To investigate the actual status of invasion.
 - b) To know the mechanism of invasion.
 - c) To know the allelopathic or toxic principle of invasive alien plants. As for the success of invasion, allelopathy or toxic chemicals play an important role.
- 2) To develop risk assessment method for alien invasive plants.
 - a) To know the route of invasion.
 - b) To know the mechanism for settlement, development and expansion of each invader plants.
 - c) To make data base for the risk assessment of invasive plants.
 - d) To select hazardous invasive plants using risk assessment methods. WRA (Weed Risk Assessment) introduced in 1997 in Australia is a good model for us.
- 3) To develop mitigation method and control or eliminate hazardous alien plants.
 - a) Chemical control using herbicides.
 - b) Mechanical control.
 - c) Biological control using cover plants.
 - d) Development of total mitigation method for invasive alien plants.

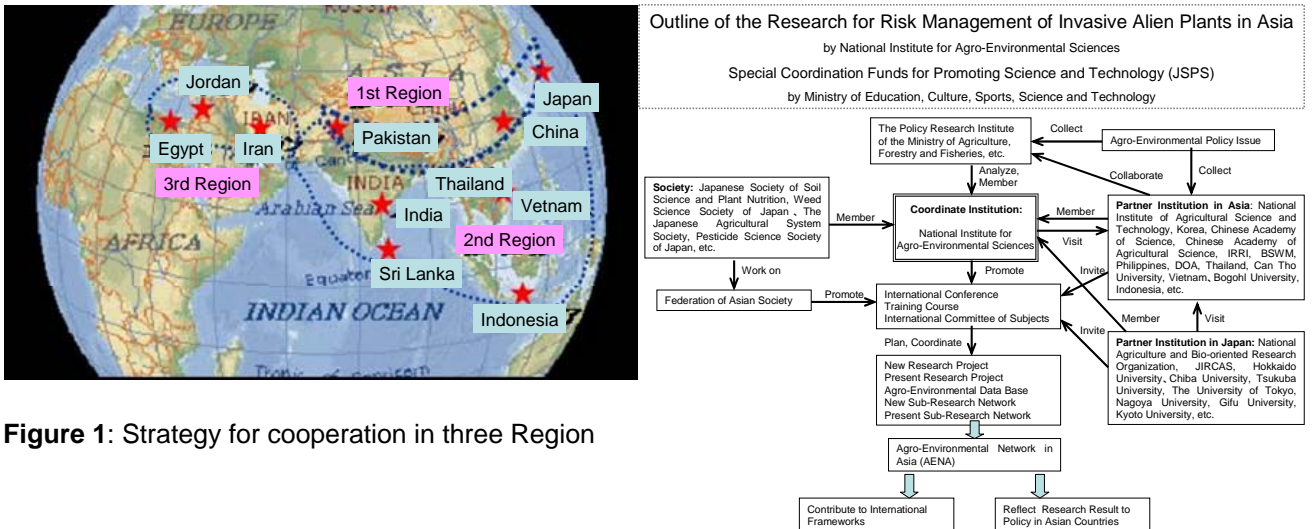


Figure 1: Strategy for cooperation in three Region

Problem invader in the 1st region are :Potamogeton distinctus, Echinochloa colonum, Echinochloa crusgalli, and southern part of this region, Mimosa invisa, Mimosa pigra, Lantana camara, Parthenium spp., Mikania micranth are problem. Aquatic weeds such as Salvinia molesta and Alternanthera philoxeroides is acute problem in the southern area. In Pakistan and Indian sub-continent, Parthenium hysterophorus is harmful.

In 2nd Region, Broussonetia papyrifera, Prosopis juliflora, Eichhornia crassipes, Salvinia molesta, Parthenium hysterophorus and Lantana camara are serious invaders. Leptochloa chinensis and Marsilea quadrifolia are also problem.

From 3rd Regin, Diplotaxis erucoides, Senecio vulgaris, Chenopodium murale are now problem. Especially Egypt has old histry, and Cyperus rotundus is originated. Risk assessment of these weed is our common goal and we would like to establish a e-mail network and communicate each other and hope to have a big International Cooperative Scientific work.