

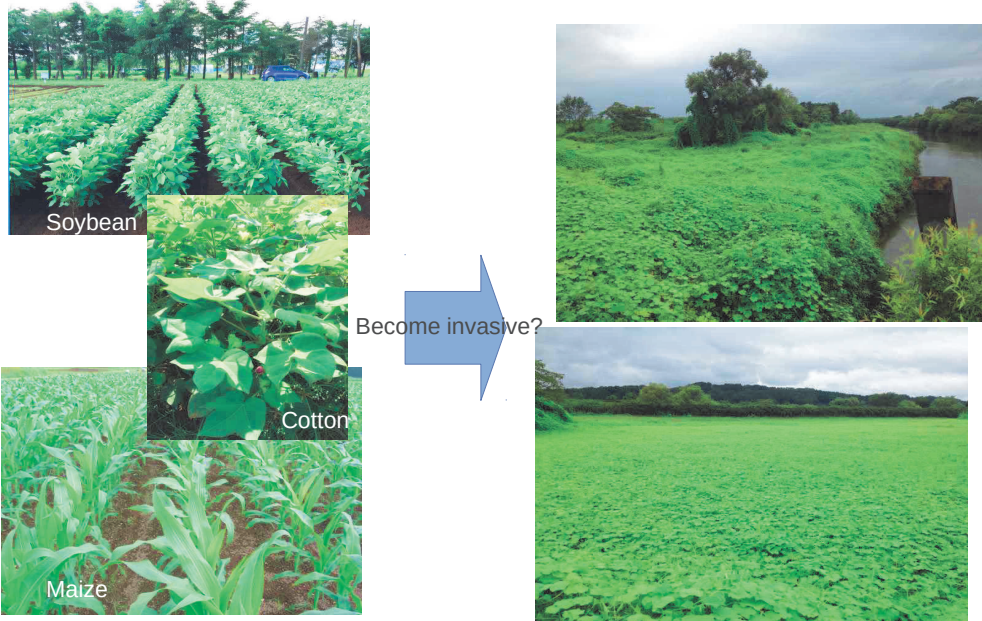
Basic understanding of weediness/invasiveness to identify key evaluation items for assessment endpoint

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I am

- Weed scientist
- Studying for management of alien weeds in arable land
- Member of taxonomic expert group meeting of invasive alien species (plants) for Invasive Alien Species Act of Japan
- Councilor of Weed Science Society of Japan
- Vice Chairman of NPO Institute for Urban Weed Science

To identify key evaluation items for assessment endpoint



Weeds

- Two view points
 - Value judgment by people
 - Plants growing in places where people do not want to grow
 - Plants to inhibit human activities (ex. Crop production)
 - Biological and ecological characteristics 'weediness'
 - Plants growing naturally **on land disturbed by human activities**
- Weeds, which are undesirable plants for human, unlike wild plants, can grow in disturbed places by humans, but, unlike crops, do not require active protection by humans.

Invasive alien plants

- Invasive alien plants that are non-native to an ecosystem, and which may cause economic or environmental harm or adversely affect human health.
- In particular, they impact adversely upon biodiversity, including decline or elimination of native species - through competition or transmission of pathogens - and the disruption of local ecosystems and ecosystem functions.

Referred from Convention on Biological Diversity web site
<https://www.cbd.int/idb/2009/about/what/>

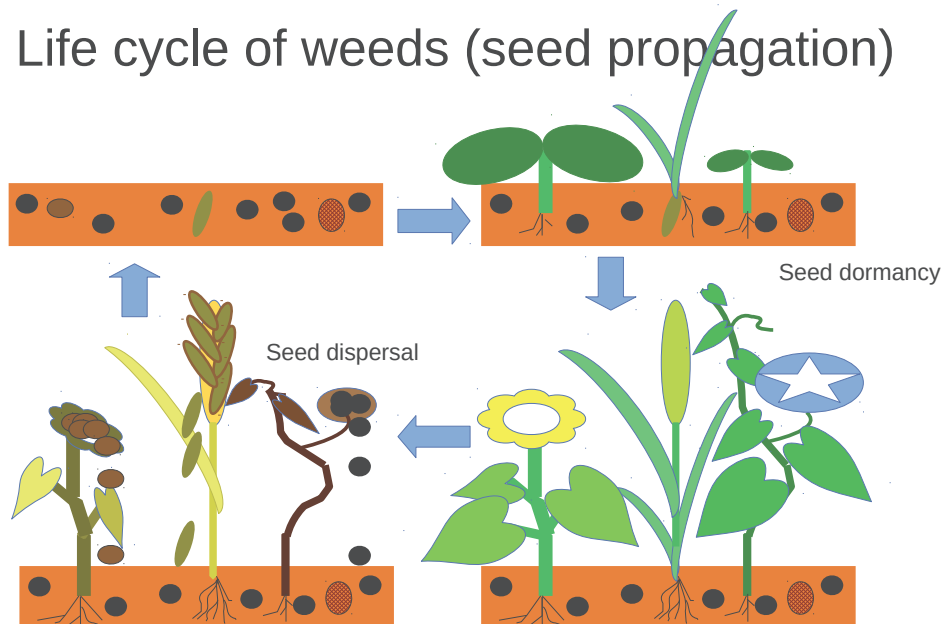
Biological and ecological characteristics of major weeds

- Seed dormancy. Complex factors of environmental requirements for seed germination
- Discontinuous germination. Longevity of seed bank in soil
- Prompt flowering by rapid vegetative growth
- Seed production over the long term
- Self-fertility, but not absolute self-fertility nor Apomixis
- Wind-pollinated or Insect-pollinated not limited to a specific pollinator
- Fecundity
- Phenotypic plasticity
- Adaptive seed dispersal
- Vigorous vegetative reproduction
- Vegetative reproductive organs to easily remain in the ground
- Ability to compete interspecifically by special means (rosette, choking growth, allelopathy etc..)

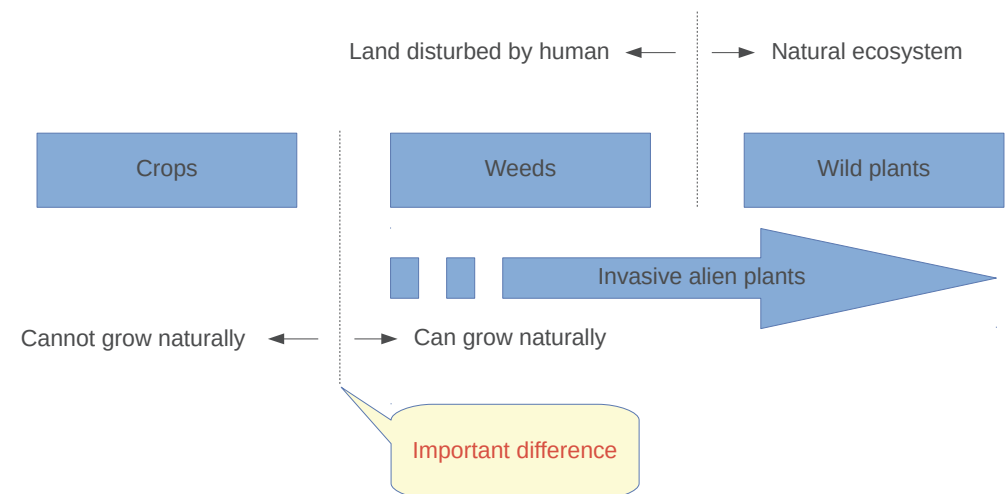
Natural growing ability

(Referred from: Ito 1993; Baker 1974)

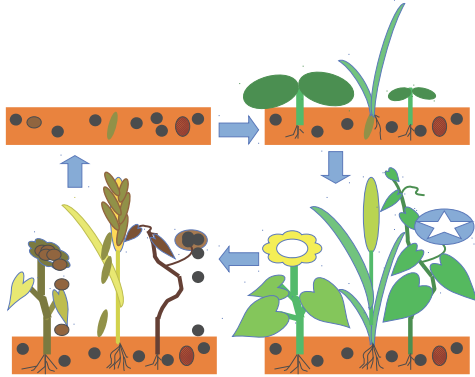
Life cycle of weeds (seed propagation)



Differences among weeds, wild plants, invasive alien plants and crops



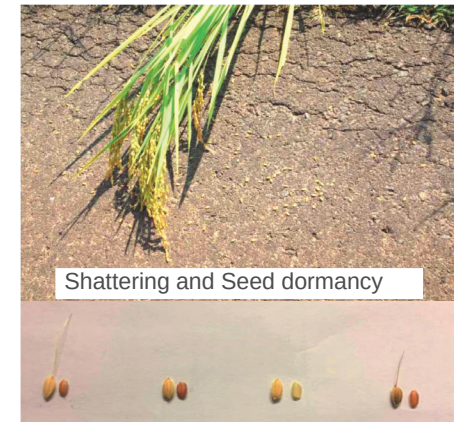
If you make a weed from a crop,



- You should make it possible to grow naturally
- At least
 - Seed shattering
 - Seed dormancy
- or
 - Vegetative propagation

Even if such traits are changed, it is unlikely that it will become invasive

Weedy rice is not wild rice



But, weedy rice is not invasive to natural ecosystem

I think

- As long as changes in seed shattering and seed dormancy of crops do not occur by genetic modification, assessment of their invasiveness will not be needed.



Thank you for your attention!

COI Disclosure Information
Shunji Kurokawa

I have no financial relationships to disclose.