

# Doing away with biodiversity: farmers' preferences in cultivation of ricebean in Asia.



Peter Andersen  
Associate professor, PhD.  
Dept. Geography, Univ. Bergen, Norway



# Background: genetic erosion of agro-biodiversity

## **Species level**

- 12 species produce 80 % of the World's food energy needs
  - rice, maize, wheat, potatoes more than 50 %

## **Genetic level**

- rice from 80,000 to 8 varieties in Punjab
- theoretically increased *risk*

# Definition of underutilized species

- *“those non-commodity crops, which are part of a larger biodiversity portfolio, once more popular and today neglected by users’ groups for a variety of agronomic, genetic, economic, social and cultural factors” (Padulosi and Hoeschle-Zeledon 2004, emphasis added)*

# Examples of underutilized species

Buckwheat (*Fagopyrum spp.*)

Finger millet (*Eleusine coracana*)

Quinoa (*Chenopodium quinoa*)

Amaranth (*Amaranthus caudatus*)

Achira (*Canna edulis*),

Maca (*Lepidium meyenii*)

Yacon (*Smallanthus sonchifolius*)

Noni fruit (*Morinda citrifolia*)

African Eggplant (*Solanum aethiopicum*)

Bambara groundnut *Vigna subterranea*)

Grass pea (*Lathyrus sativus*)

Ricebean (*Vigna umbellata*)

# Institutional framework around underutilized crops

- International Plant Genetics Resources Institute (IPGRI)
- Platform for Agrobiodiversity Research PAR <http://www.agrobiodiversityplatform.org> + Global Facilitation Unit for Underutilized Species + International Centre for Underutilised Crops (ICUC) → Crops for the Future (Bioversity International)
- Related to CGIAR, FAO
- NGO's, populist discourses

# Framing by *GFU for Underutilized Crops*

***“ increasing incomes  
ensuring food security  
improving nutrition [ref. to hidden hunger]  
enhancing biodiversity  
withstanding stress conditions  
occupying important ecological niches  
being produced with low external inputs  
stabilizing ecosystems  
creating new markets”***

-participatory approaches

- *noble savages* among crops? Alternative top-down? Why not diffusion on its own?

# Ricebean – *Vigna umbellata*



# Terrace riser protection, intercropping with maize





# Relative advantages of ricebean

- Multipurpose: food, fodder, erosion control, N fixation
- Few pests, disease, drought resistant
- rich in amino acids, B vitamins, minerals (Ca, Fe, Zn, K)
- free from toxic, allergenic, flatulence producing compounds

# Challenges for adoption / reasons for dis-adoption: Farming system, **viewed as a crop**

- Indeterminate growth, asynchronous flowering
  - cropping calendar, labour, seed maturity
- Twining habit, pests, yield
- New cropping patterns:
  - ceasing of shifting cultivation, cropping intensity
  - winter wheat, vegetables, broomgrass, hybrid maize
  - improved varieties of other pulses: black gram, pigeon pea, soybean, mungbean
- low market price



Blister beetle

# Challenges for adoption / reasons for dis-adoption: **viewed as a food**

- taste
  - differs between varieties, locations
- variable size, colour
- cooking time, not easy to split
- hard seeds
- socio-cultural role
- gastritis



# Conclusions

- “native crops” - undesired traits
- breeding needed -> reduced within-species diversity
- abandonment not necessarily reduced crop diversity
- participatory approaches: species assessed as *crops* and *food*

# References

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- Padulosi, S. and Hoeschle-Zeledon, I. 2004: Underutilized plant species: what are they? *LEISA Magazine* 5-6
- [www.ricebean.org](http://www.ricebean.org)