



Bioversity
International

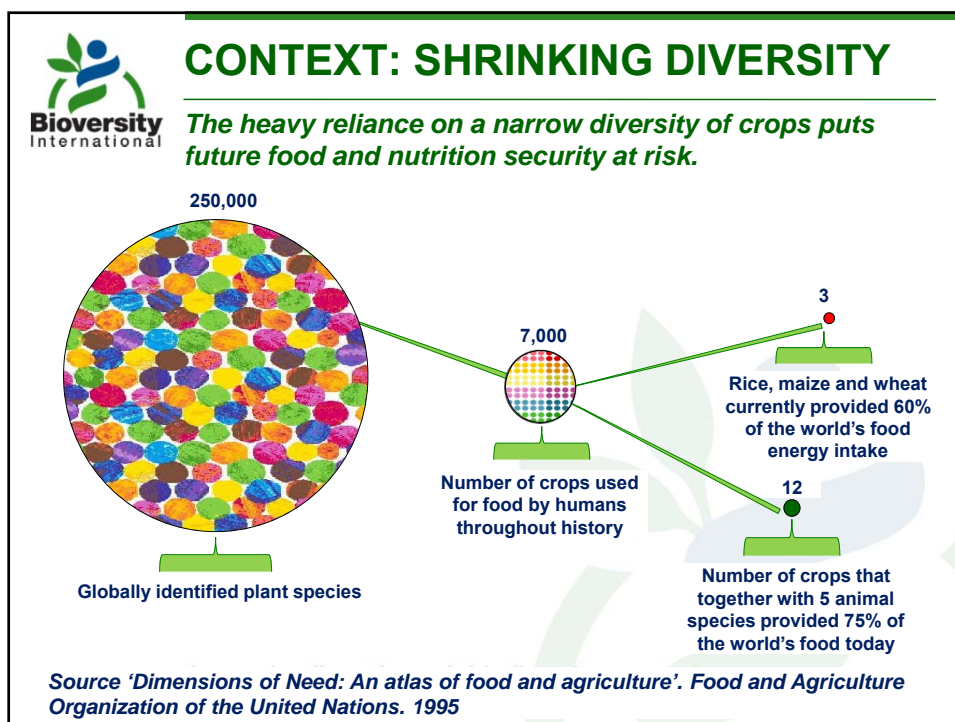


CGIAR
Science for a food secure future



Innovator and Promoter of Agricultural biodiversity: How to consolidate role of farmers in plant breeding and use?

Bhuwon Sthapit
6 October 2015, Thailand







Who are Custodian Farmers?

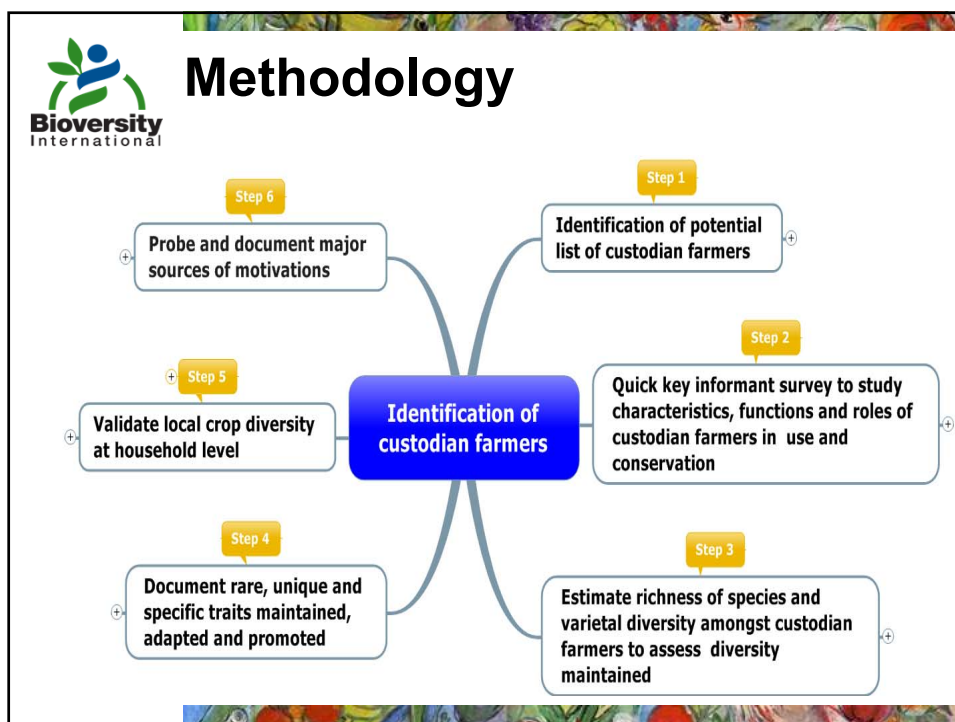
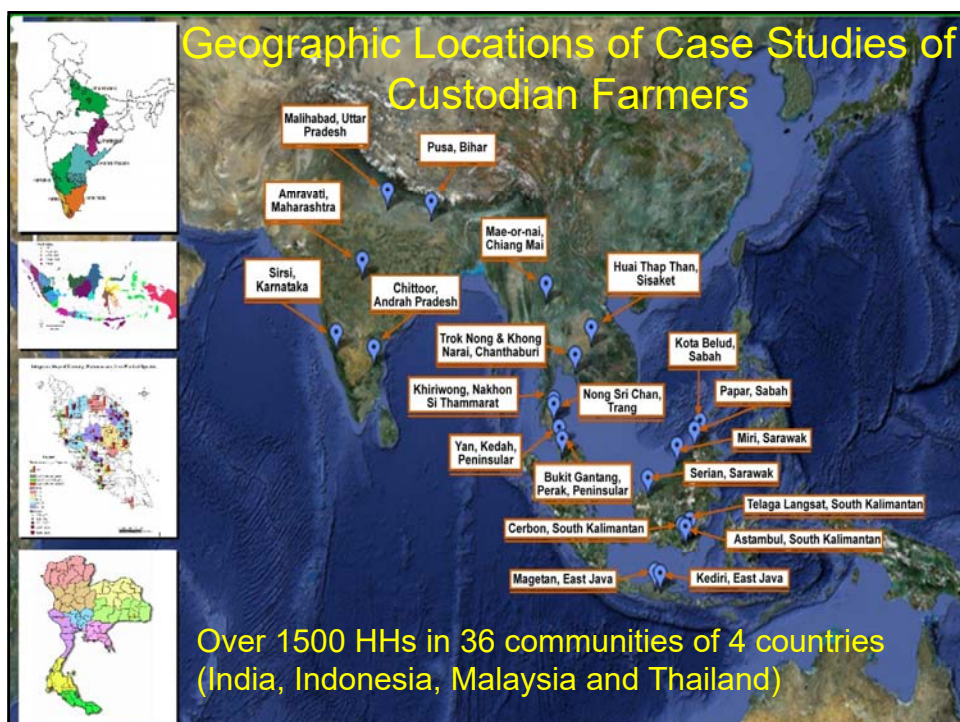
Custodian farmers are those farmers (men and women) who actively maintain, adapt and promote agricultural biodiversity and related knowledge at farm and community levels over an extended period of time, and are recognized by community members for doing so (Sthapit et al., 2013).



Why is it important to identify?

- Safe-guarding of unique and rich crop diversity
- Consolidate research- on-farm conservation
- Promote local innovation and selection
- Strengthen community seed system and exchange
- Effective and efficient low cost approach
- Nodal point to link formal and informal seed sector
- Farmer's rights







Identified custodian farmers of tropical fruit tree diversity

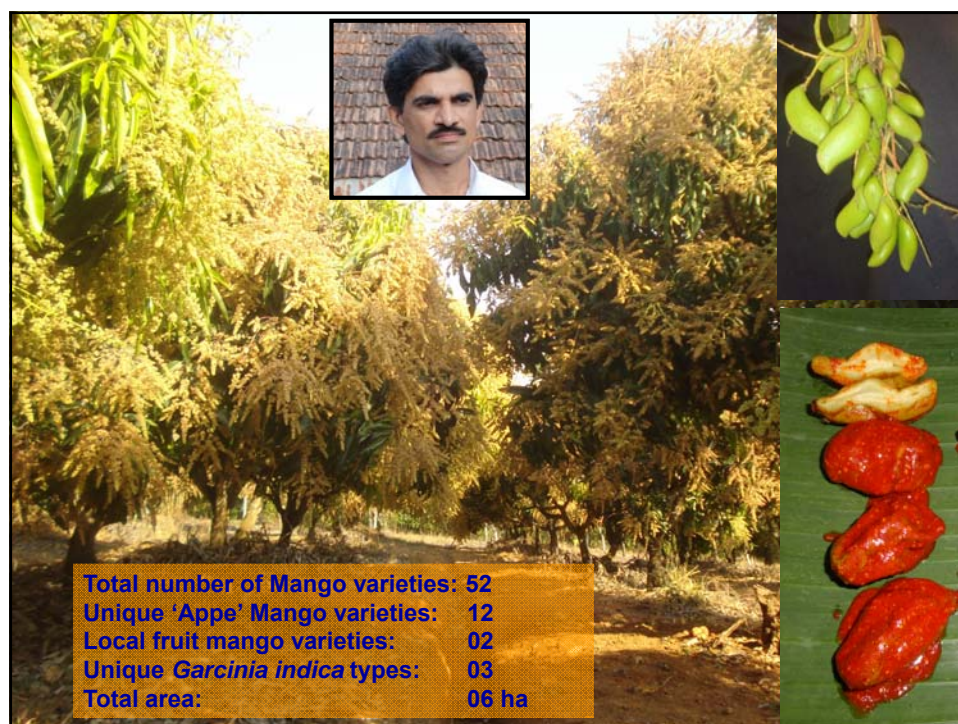
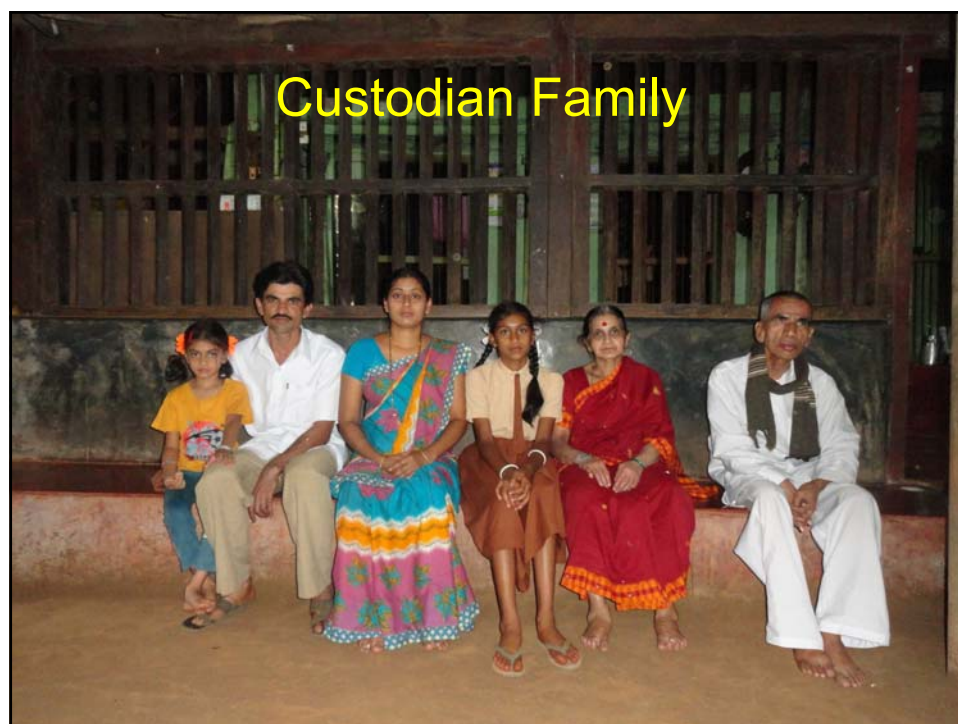
Country	2013	2014
India	43	54
Indonesia	2	16
Malaysia	14	13
Thailand	2	15



WHAT are the Key Characteristics of Custodian Farmers ?

1. Driven by conservation ideology
2. Knowledge holder of traits
3. Community recognition
4. Highly motivated and self-directed
5. Consistent and unshaken commitment
6. Willing to share knowledge and materials





Mr. Palin Along



Unique features

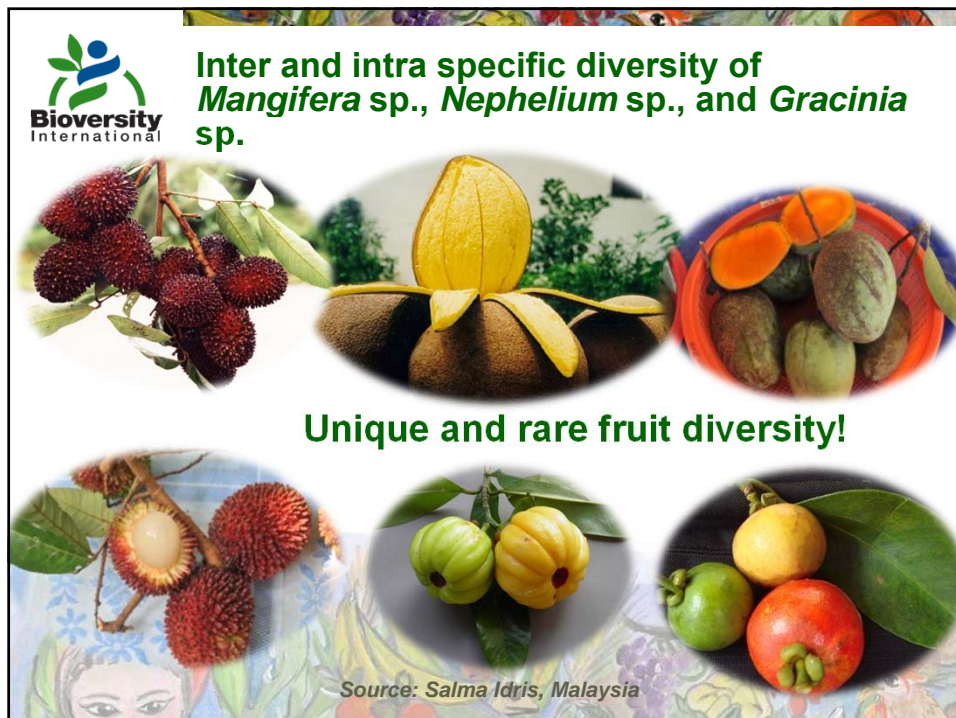
Kg. Penampang Baru, Papar
N 5.605°, E 115.957°

Motivation

Mixed orchard

Bioversity International

Inter and intra specific diversity of *Mangifera* sp., *Nephelium* sp., and *Gracinia* sp.



Unique and rare fruit diversity!

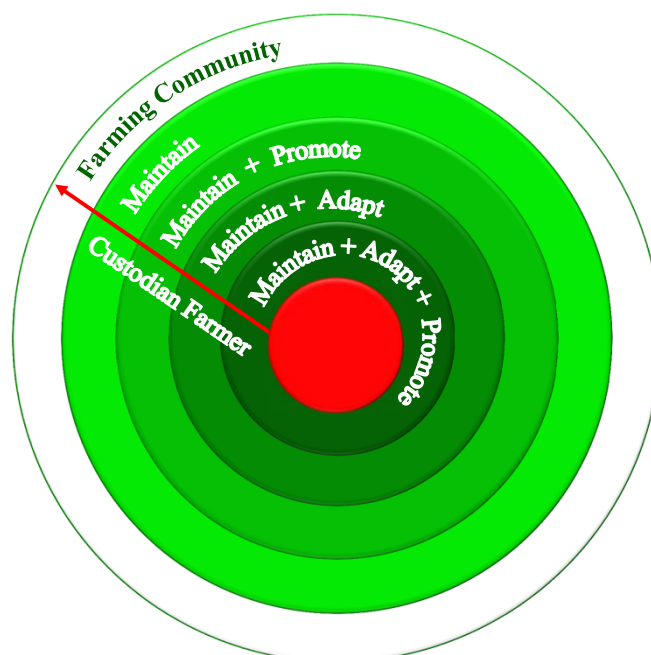
Source: Salma Idris, Malaysia



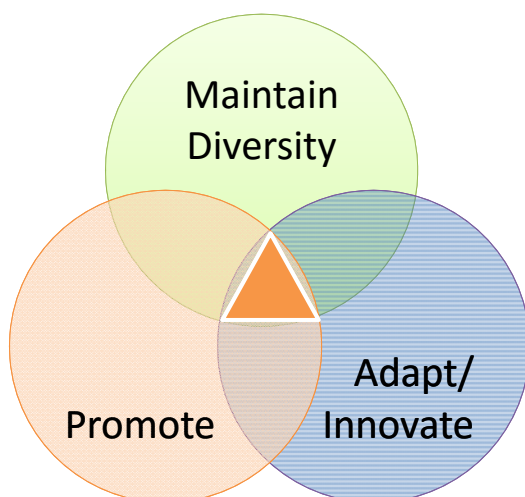
What Drives Custodian Farmers to Persist?

- **Personal** (driven by passion or sensitivity regarding the need for conserving diversity to future generations; preferences, hobby)
- **Social** (driven by the desire to conserve particularly relevant crops for festivity and food culture)
- **Economic** (driven by the need for safeguarding diversity for economic options of the HH)
- **Agro-ecology** (driven by the land types and ecosystem)
- **Cultural** (driven by the awareness regarding the intimate link between genetic and cultural diversity; inherited orchards)

Typology of Custodian Farmers



Custodian Farmer: An Emerging Concept



1. farmers who maintain
2. farmers who maintain and promote
3. farmers who maintain and adapt
4. farmers who maintain, adapt and promote

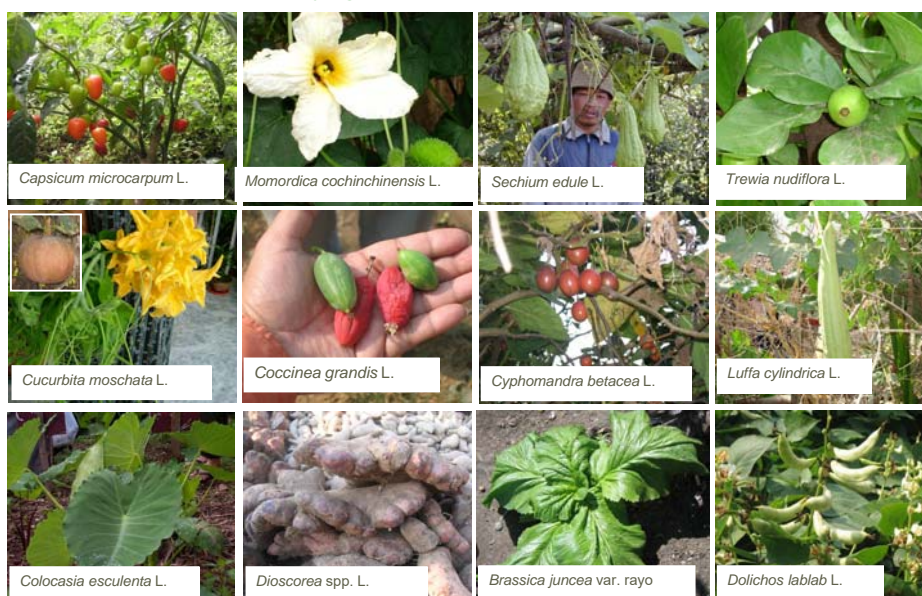
Three Pillars of On-Farm Conservation

Adapt Diversity	Maintain Diversity	Promote Diversity
<ul style="list-style-type: none"> • Selection: Crops continually adapted to local climatic conditions, pests, disease, cultural requirements and preferences • Varieties introduced and discontinued • New skills and techniques developed to improve performance 	<ul style="list-style-type: none"> • Cultivation of traditional crops and landraces, rare and endangered varieties, • Application and transmission of knowledge 	<ul style="list-style-type: none"> • Sharing seed • Sharing knowledge • Marketing traditional diversity

What are the key roles of custodian farmers?

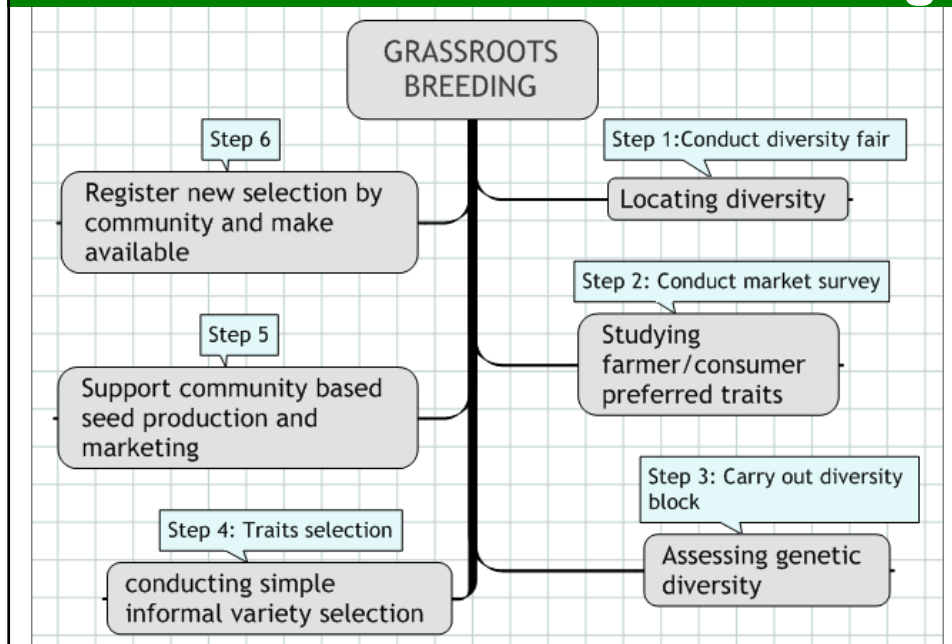
Role	Description	Indicators
Maintain	Richness of species/varieties/ traits	Guardian of at least 1 unique/rare/ special/difficult to propagate
Adapt	Rich ecological knowledge of diversity, heritability and selection	Selection of specific crop, varieties and trait adapted to local conditions; needs; adversity
Promote	High frequency of exchange of seed and associated knowledge	Community members frequently cite source of seed from a particular node
Continuity	Over time ensure land use system that harbor portfolio of species and varieties	Transfer of knowledge and practice to younger generation
	Sets of traits maintained when old varieties are replaced	Ensure alternative options that under threat

Why grassroots PPB?



Reality: There will never be enough plant breeders for all crops for all situations!

Process of Grassroots Breeding



Pummelo Clone - 3

Collector No.	IPS - 506
Name of Farmers	Sankar Sah, Dardha, Murol Mujaffarpur, Bihar
Fruit wt	542 g
No. of Segment	16
Rind thickness	10.4 mm
TSS	10.3 °B
Acidity	1.1%
No. of Fruit/ plant	198
Less seeded (8/fruit), attractive fruit with very tender and sweet segment	

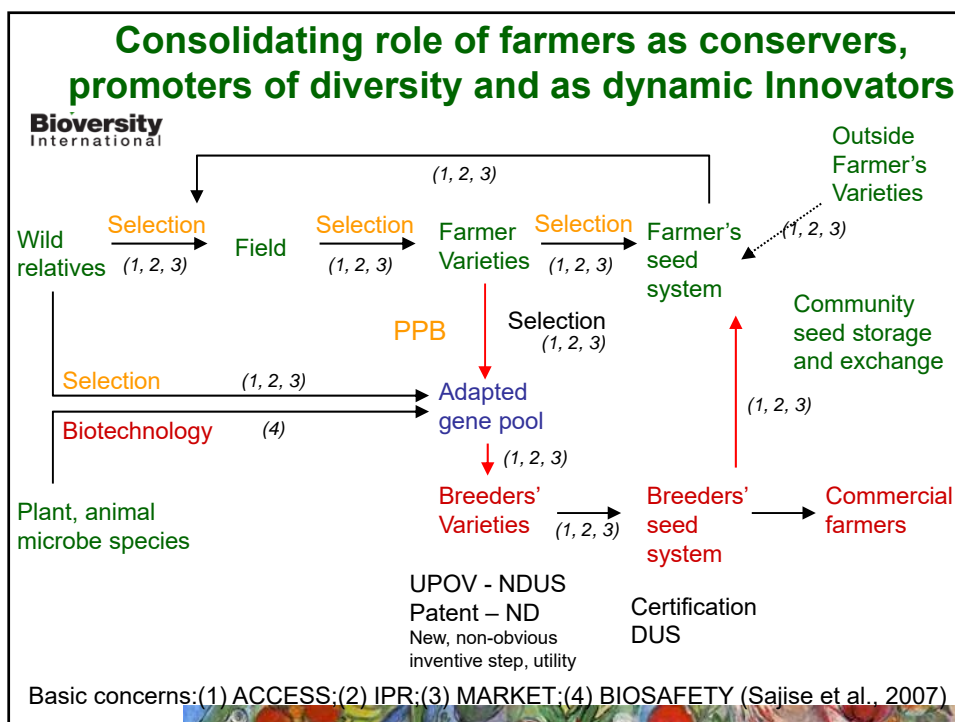


Total 10 clones identified from farmer home gardens

Pummelo Clone - 4

Collector No.	IPS - 520
Name of Farmers	Ramnandan Yadav, Basdevpur, Darbhanga, Bihar
Fruit weight	1641 g
No. of Segment	19
Rind thickness	10.0mm
TSS	9.0 °B
Acidity	1.4 %
No. of Fruit/ plant	135
More edible portion with thin rind thickness and attractive fruit	





Opportunities

- Registration of unique and rare varieties of custodian farmers and contribute to the national list (e.g. 54 mango in India)
- Recognition
- Strengthened capacity of local planting material production and marketing unique/elite varieties
- Consolidate roles for conservation, innovation and promoter by integrating informal network of national PGR system



Bhuvan Shrivastava/Bioversity



Vasudeva/ICR



Key Questions

- How can society continue to motivate such farmers, generation after generation?
- Can custodian farmers contribute to a national conservation strategy?
- How can policy support their roles in use and conservation?



**Thank you
custodian
farmers for safe-
guarding
agrobiodiversity
for current and
future
generation!**



**Custodian Farmers of
Agricultural Biodiversity:
Selected Profiles from South
and South East Asia**

Proceedings of the Workshop on Custodian Farmers of
Agricultural Biodiversity, 11-12 February 2013, New Delhi, India

Bhuvon Sthapit, Hugo Lamers and
Ramanatha Rao, editors

