



WHY DOES DSI MATTER FOR AGROBIODIVERSITY CUSTODIANS?

Rachel Wynberg

DSI/NRF Research Chair on the Social and
Environmental Dimensions of the Bio-economy
Department of Environmental and Geographical Science
University of Cape Town



WHAT IS THE LINK BETWEEN DSI AND AGROBIODIVERSITY?

- Agrobiodiversity of crops provides the **foundation** of **food** and **agriculture** based on farmers' knowledge over millennia
- Farmers have **selectively bred plants** and **animals** that meet their needs and preferences and are also **adapted** and **adaptable** to changing ecological conditions and local climates



Photo: Rachel Wynberg



Photo: Rachel Wynberg

Plant breeding today mostly based on **elite, modern varieties** but there is growing interest in crop wild relatives and farmer varieties due to their climate adaptability, nutritional value, consumer trends

Genomics and molecular biology developments leading to **characterization and evaluation** of wild genetic resources and landraces, and hence the DSI publicly available

If farmers have reared a particular plant to express desired traits over generations and this plant's genome is sequenced, then **the TK of those who bred this plant is embedded within this DSI**

WHY IS THIS A CONCERN?

Challenging to identify links to TK in sequences - multiple sources, often no provenance data, may change in research process

Thus a concern that **PIC and benefit-sharing arrangements can be bypassed** by companies and others seeking to use DSI in commercial application - **“digital biopiracy”**

TWO WORLDVIEWS

STEWARDSHIP



OWNERSHIP



TAKING A STEP BACK

- Concerns that the benefit-sharing system is tied to profits generated from seed sales, related inputs and IPRs, supporting **enclosure of the commons** and **commodification of life**
- Research resulting from DSI may continue pattern of **supporting a handful of industrial crops and traits** rather than the food, nutritional and agricultural needs of resource-poor farmers in the global South
- **Intensified exclusion of farmers** through DSI means the contribution they can make towards agricultural innovations will be lost.



Photo: Rachel Wynberg

FARMERS' RIGHTS AND DSI

ITPGRFA

- Protection of **farmers' TK**
- Equitable **benefit sharing**
- **Participation** in **decision-making** at national level
- Rights of farmers to **save, use, exchange, and sell** farm-saved seed

UNDROP

- **Individual** and **collective rights** to be granted to local communities for land, seed and natural resources
- **Research priorities** to be defined and implemented by farmers

	Ownership approach	DSI	Stewardship approach	DSI
Protection of farmers' TK (9.2a)	Protect farmers' knowledge from mis-appropriation.	DSI related to TK shared with PIC.	Protect farmers' knowledge from further erosion and encourage its use. Protection by sharing.	Unrestricted sharing of DSI may increase the use of traditional varieties, provided IPRs can be avoided.
The right to participate in equitable benefit sharing (9.2b)	Benefits shared between 'owners'/ providers and 'buyers'/users.	Access to DSI if benefit sharing based on MAT.	Benefits shared between stewards and society.	Benefit sharing by innovation in plant breeding and PPB.

	Ownership approach	DSI	Stewardship approach	DSI
Participate in decision-making at national level (9.2c)	Ensure adequate ABS and IPR laws.	Ensure that DSI is covered in ABS laws.	Ensure legal space and rewards for farmers' contributions.	Ensure that any DSI regulation safeguards legal space for farmers to maintain genetic resources.
Farmers' rights save, use, exchange and sell farm-saved seed (9.3)	Balance farmers' rights with plant breeders' rights.	Enable farmers to use DSI on equal footing with breeders, with equal access to IPRs.	Uphold legal space to ensure farmers' continued contributions.	Ensure use of DSI does not impede legal space for farmers.

PATHWAYS TO DSI GOVERNANCE



STEWARDSHIP

- **Subscription approach** within enhanced MLS?
- Ensure **IPRs** developed using DSI **don't pose barriers** to further sharing
- **Capacity building** and **tech transfer** to enable PPB and public plant breeding
- Needs **international agreement**



EXPANSIVE STEWARDSHIP

- Bringing together **stewardship, farmers' rights** and **open source science** and **breeding**
- New norms of **sharing** and **solidarity**
- **Transforming research agendas** to be inclusive of needs of agrobiodiversity custodians
- **Stimulating investments** in public research to deliver healthy, nutritious, sustainable and locally appropriate food
- **Aligns** well with **UNDROP**
- Already **evolving**



POLICY AND PRACTICE REVIEWS article

Front. Plant Sci., 13 August 2021

Sec. Plant Breeding

<https://doi.org/10.3389/fpls.2021.686728>

Farmers' Rights and Digital Sequence Information: Crisis or Opportunity to Reclaim Stewardship Over Agrobiodiversity?



Rachel Wynberg^{1*},



Regine Andersen²,



Sarah Laird³,



Kudzai Kusena^{1,4},



Christian Prip² and



Ola Tveitereid Westengen⁵

Rachel.Wynberg@uct.ac.za