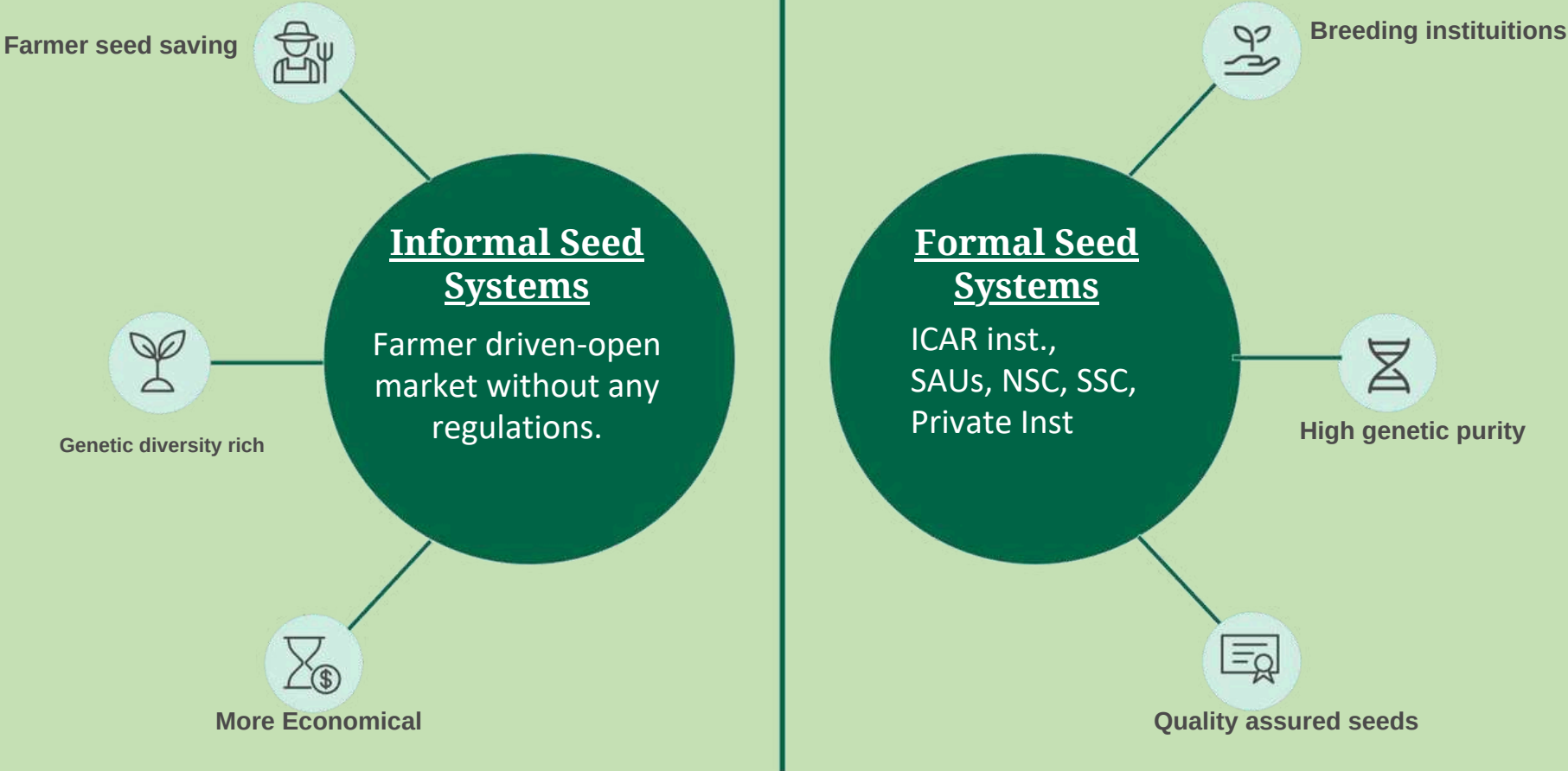


A photograph of a person carrying bundles of rice seedlings in a paddy field. The person is walking through shallow water, and the field is filled with young rice plants. The background shows a vast expanse of green rice fields under a clear sky.

# Building a seed-centric resilient agricultural system

Sherry Rachel Jacob  
Principal Scientist  
**ICAR-National Bureau of Plant Genetic Resources**

# SEED SYSTEMS



# Quality seed production in formal seed system



**Nucleus Seed**  
(Developed & maintained by the Plant Breeder)



**Breeder Seed**  
(Produced by ICAR Institutes / SAUs / Public Breeding Institutions)



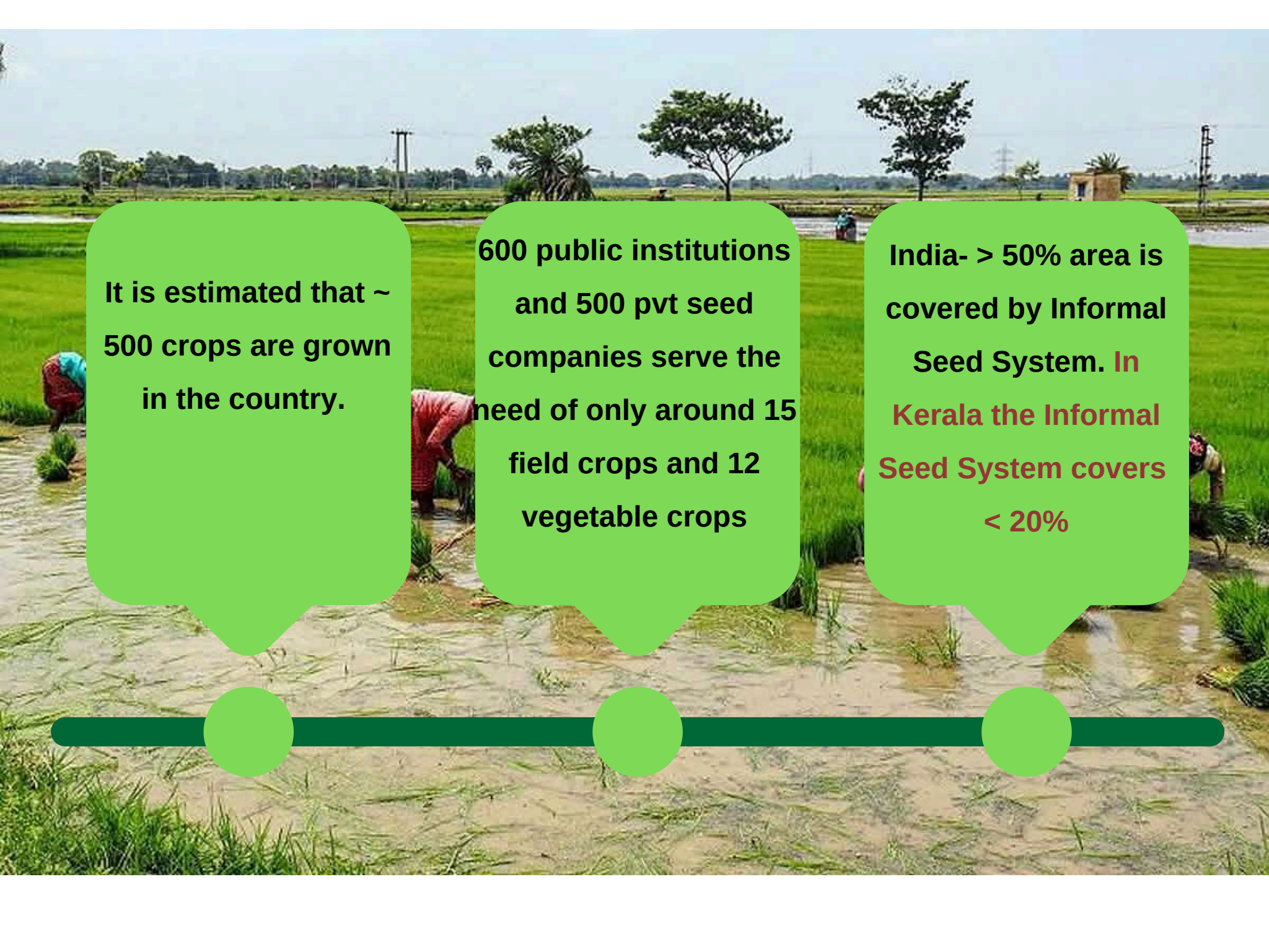
**Foundation Seed**  
(Produced by NSC / SSCs / SAUs / Registered Seed Producers)



**Certified Seed**  
(Produced by Registered Seed Growers / Seed Companies)



**Distribution to Farmers**



It is estimated that ~  
500 crops are grown  
in the country.

600 public institutions  
and 500 pvt seed  
companies serve the  
need of only around 15  
field crops and 12  
vegetable crops

India- > 50% area is  
covered by Informal  
Seed System. In  
Kerala the Informal  
Seed System covers  
< 20%

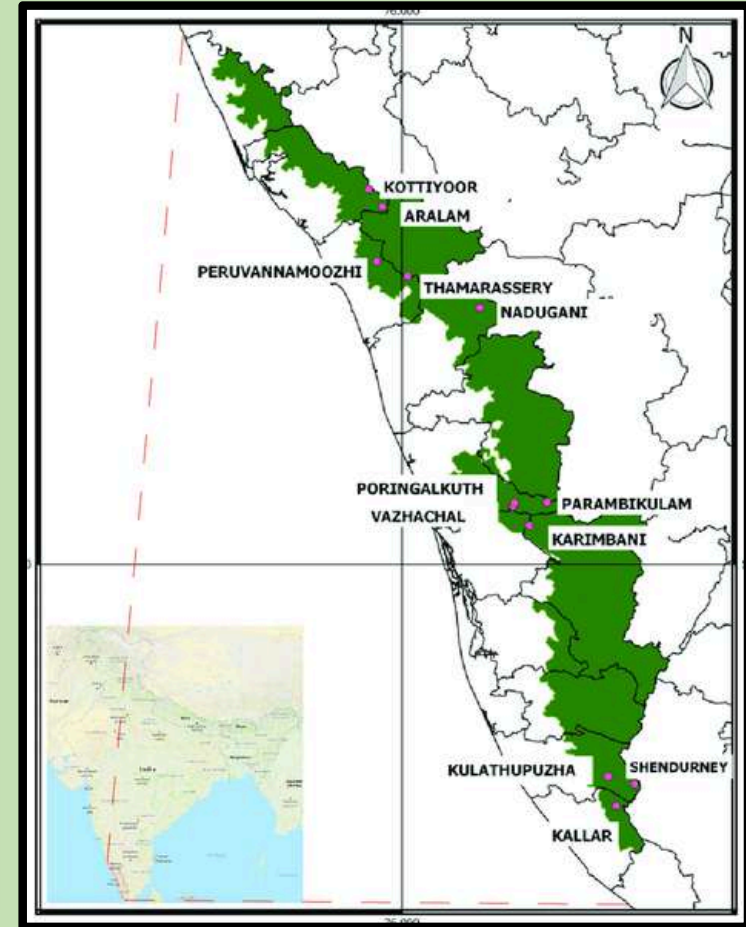
# Why Kerala is unique?

## Huge ecological diversity

- Kerala has about 4,700 angiospermic species [26% of Indian flora vs 1.18% of area]

## Crops cultivated here is notably high

- Physical/climatic/edaphic heterogeneity conducive for diverse tropical crops.
- Demand for new crops by scientifically literate farmers.
- Role of high expatriate population
- Practice of mixed cropping systems.
- Strong agricultural literacy





# Invitro Genebank

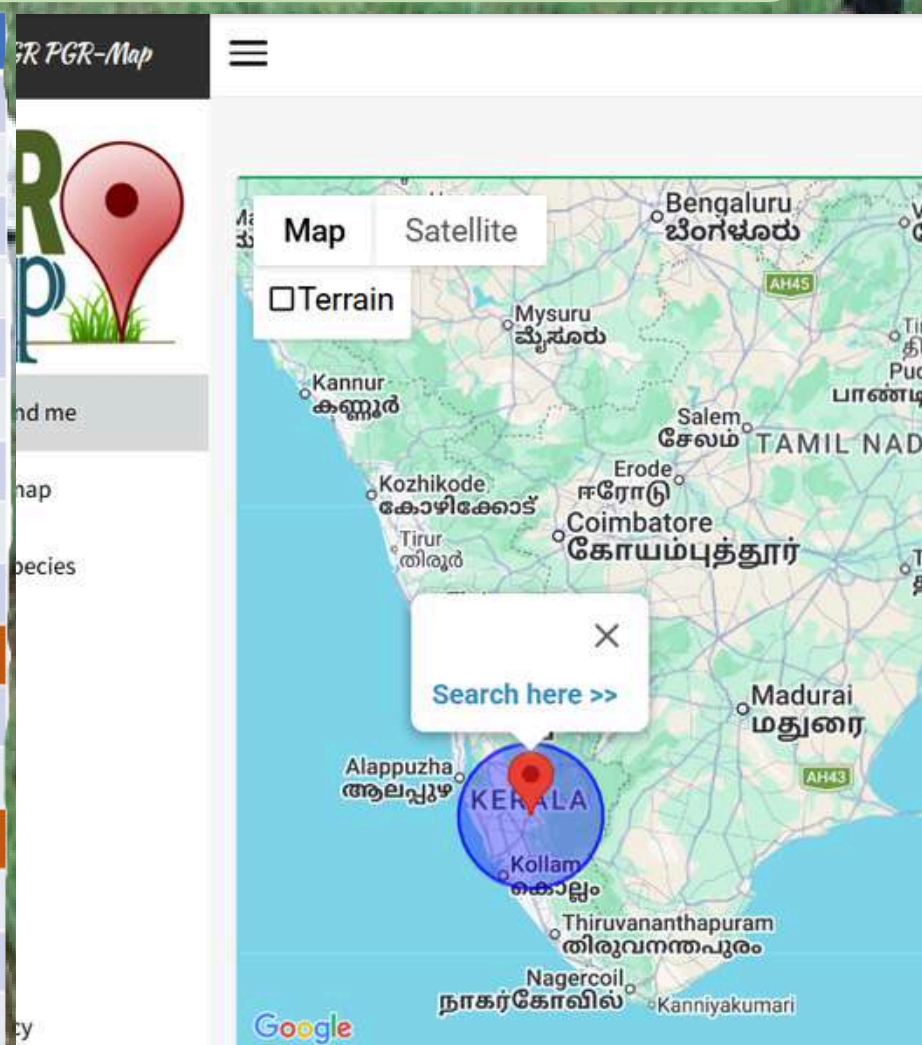


# Cryo Genebank

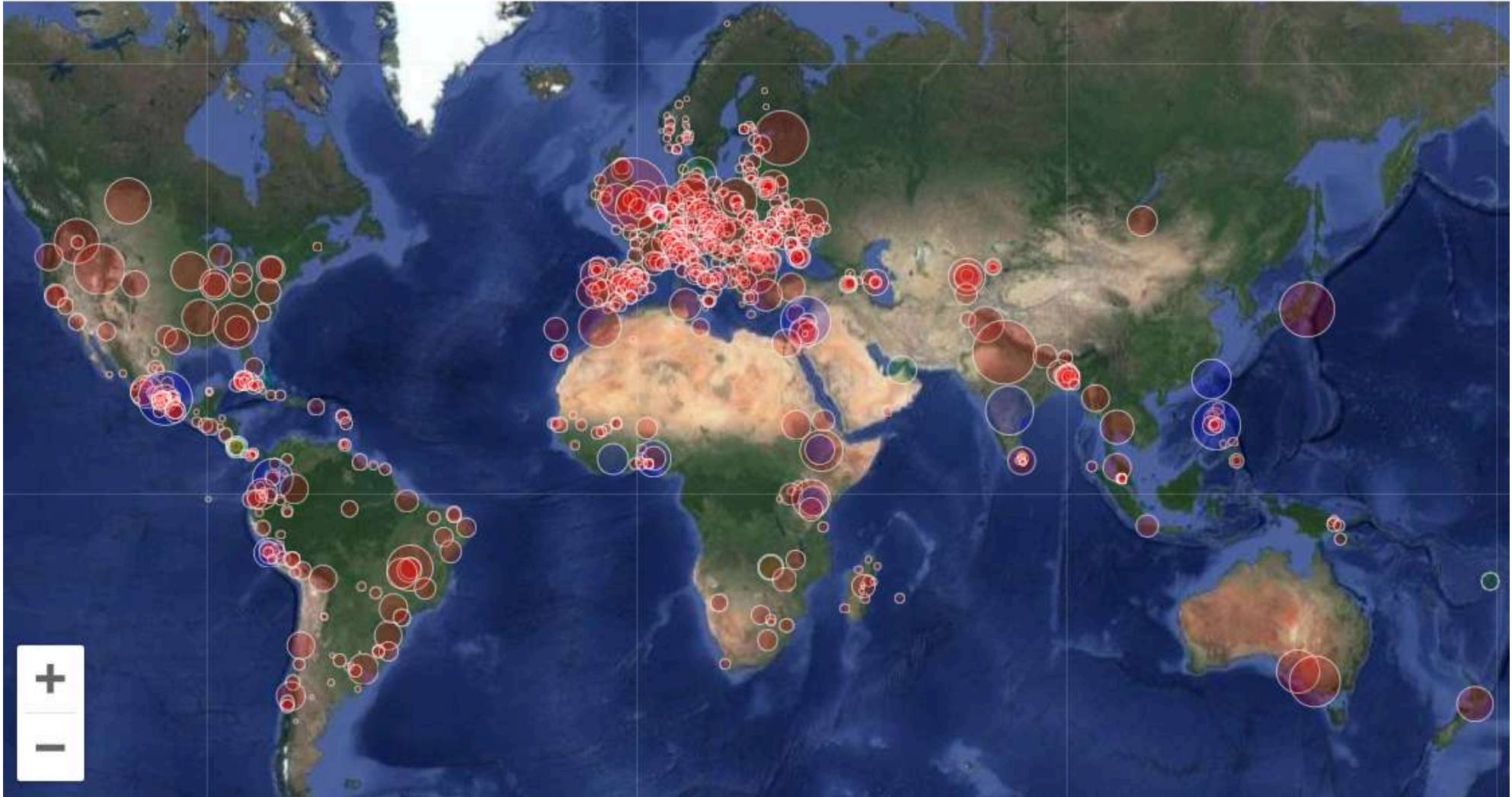


# Collection & Seed Conservation from Kerala

#	District	Collected	Conserved (Seeds Only)
1.	Alappuzha	186	119
2.	Ernakulam	537	254
3.	Idukki	1048	269
4.	Kannur	390	173
5.	Kasaragod	323	209
6.	Kollam	556	110
7.	Kottayam	416	123
8.	Kozhikode	224	91
9.	Malappuram	545	244
10.	Palakkad	2027	1049
11.	Pathanamthitta	574	78
12.	Thiruvananthapuram	750	108
13.	Thrissur	1480	986
14.	Wayanad	926	352
15.	Unclassified	567	978
<b>Total 722 taxa</b>		<b>10,578</b>	<b>5,155</b>



## Geographic Distribution of Genebanks



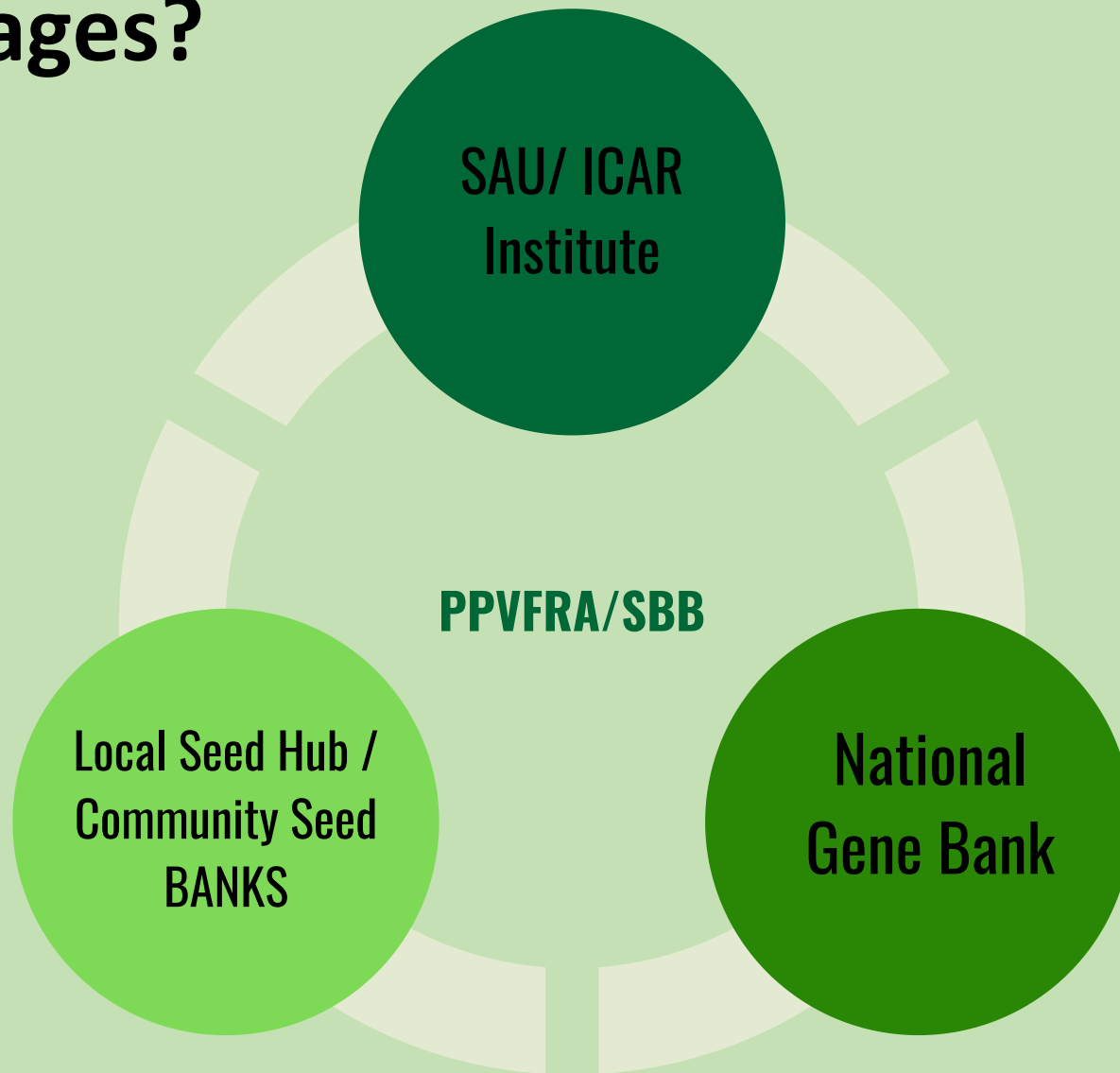
**~ 1750 genebanks are there in the world**

- Kerala has the highest number of plant genome saviour awardees- but very less number of varieties registered with PPV&FRA
- Under ABS system- Kerala yet to benefit proportionately
- The soft protection granted by NBPGR's registration system has very less number from Kerala

**Major reason**

**Poor documentation**

# Linkages?



# Capacity Building

- Supervising seed production of diverse crops
- Facilitating collection, conservation and characterization of plant genetic resources
- Extensive documentation and development of databases
- Universities need focused funding and training for utilization of genetic resources

# UN Sustainable Development Goals



Target  
**2.5**

By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed

Indicators

**2.5.1**

Number of (a) plant and (b) animal genetic resources for food and agriculture secured in either medium- or long-term conservation facilities

**2.5.2**

Proportion of local and transboundary breeds classified as being at risk of extinction



**Thank you**