

# Application of New Technologies in Agriculture/Seed Industry

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# Technologies in Agriculture and their impact

## Pre Tech Era

Manual  
Ploughing



Flood  
Irrigation



Conventional  
Fertilizer



Banana  
Sucker  
Plantation



## Post Tech Era

Tractor based  
Ploughing



Drip  
Irrigation



Nano  
Fertilizers

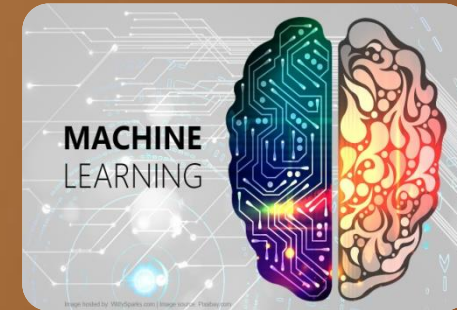


Plant Tissue  
Culture  
derived

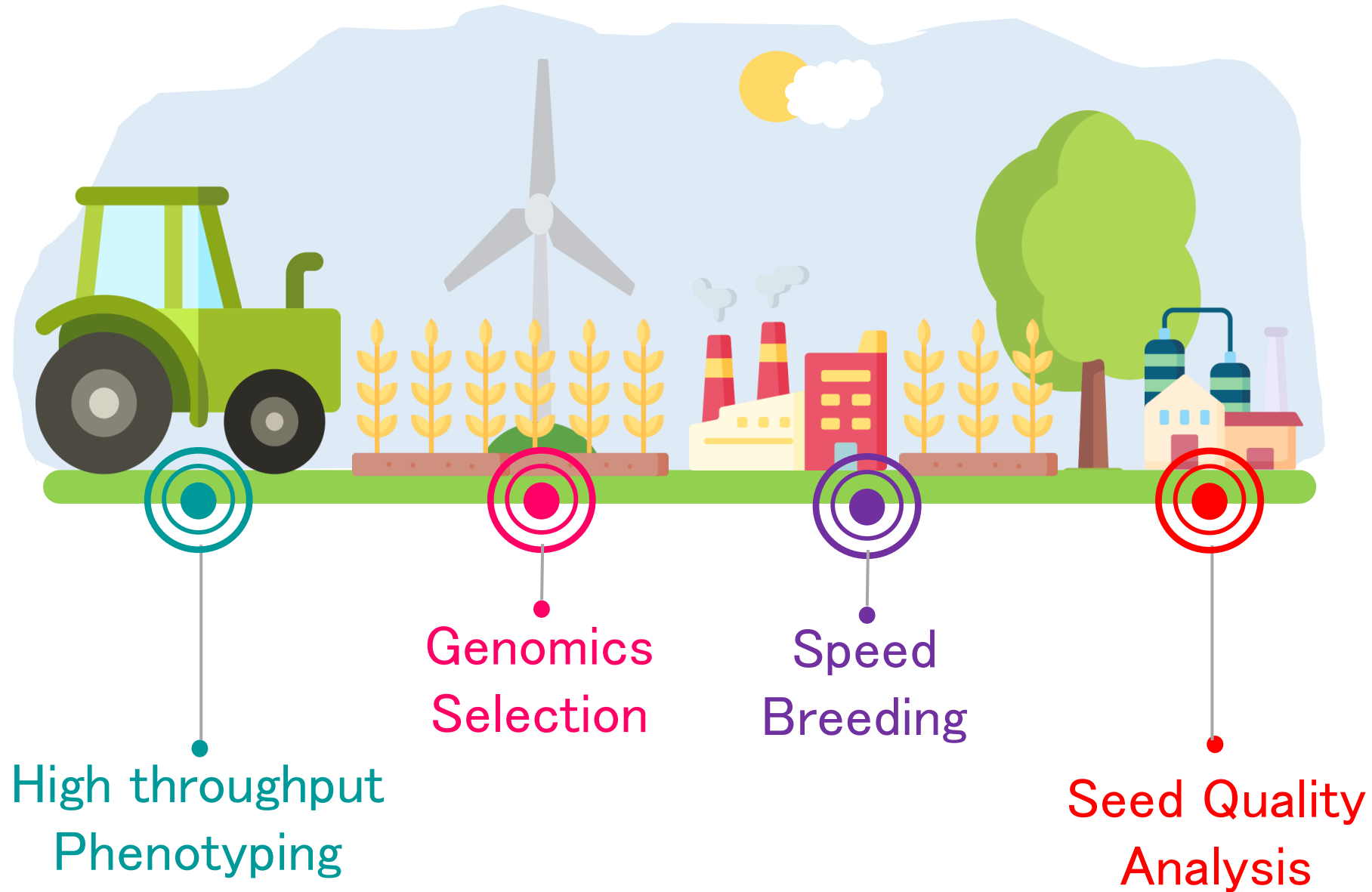


# New Door for Technology Transition

Future!



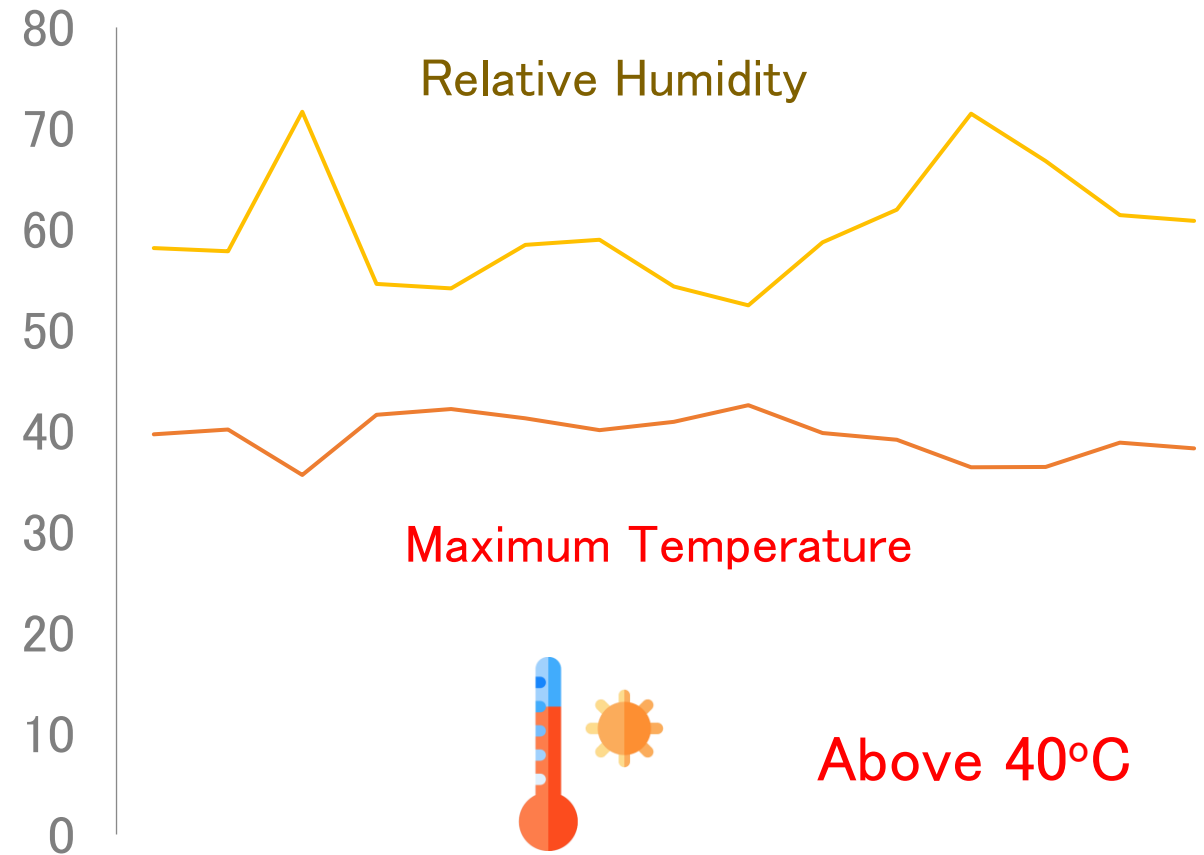
# Case Studies



# COTTON PHENOTYPING



Above 70%



# HIGH THROUGHPUT PHENOTYPING



Healthy Plant



Infected plant



# Genomic Selection

Phenotype



Genotype



Genomic Selection Models  
(Machine learning, Deep learning)

Breeding Population

GEBV' s

Hybrids /  
varieties  
performance  
prediction



Paddy



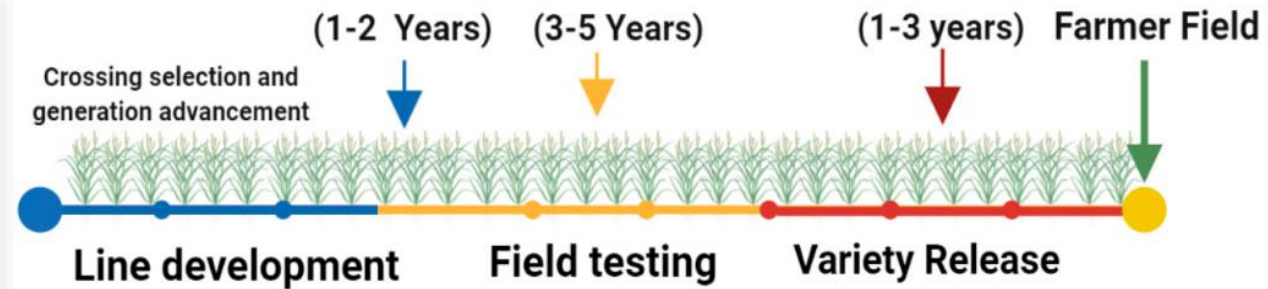
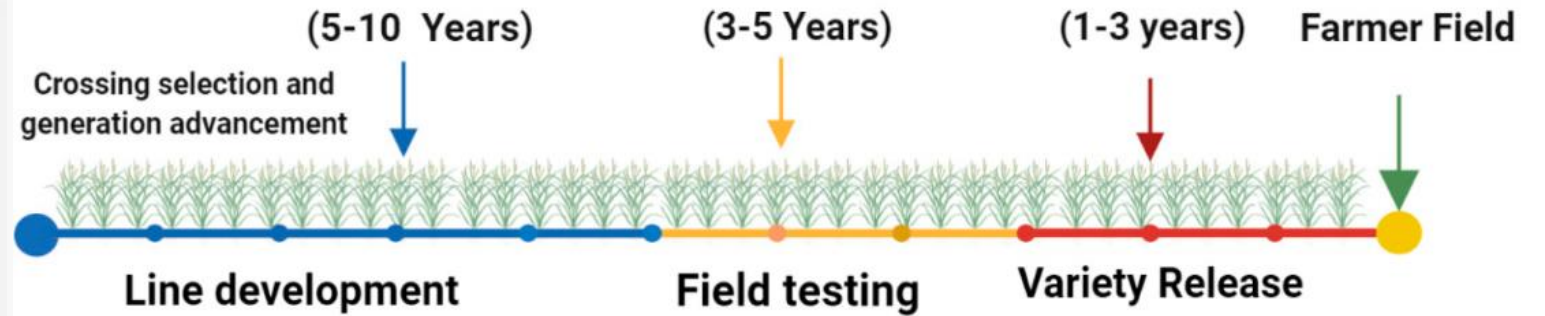
Cotton



Chilli

# Speed Breeding

## Conventional Breeding



## Speed Breeding

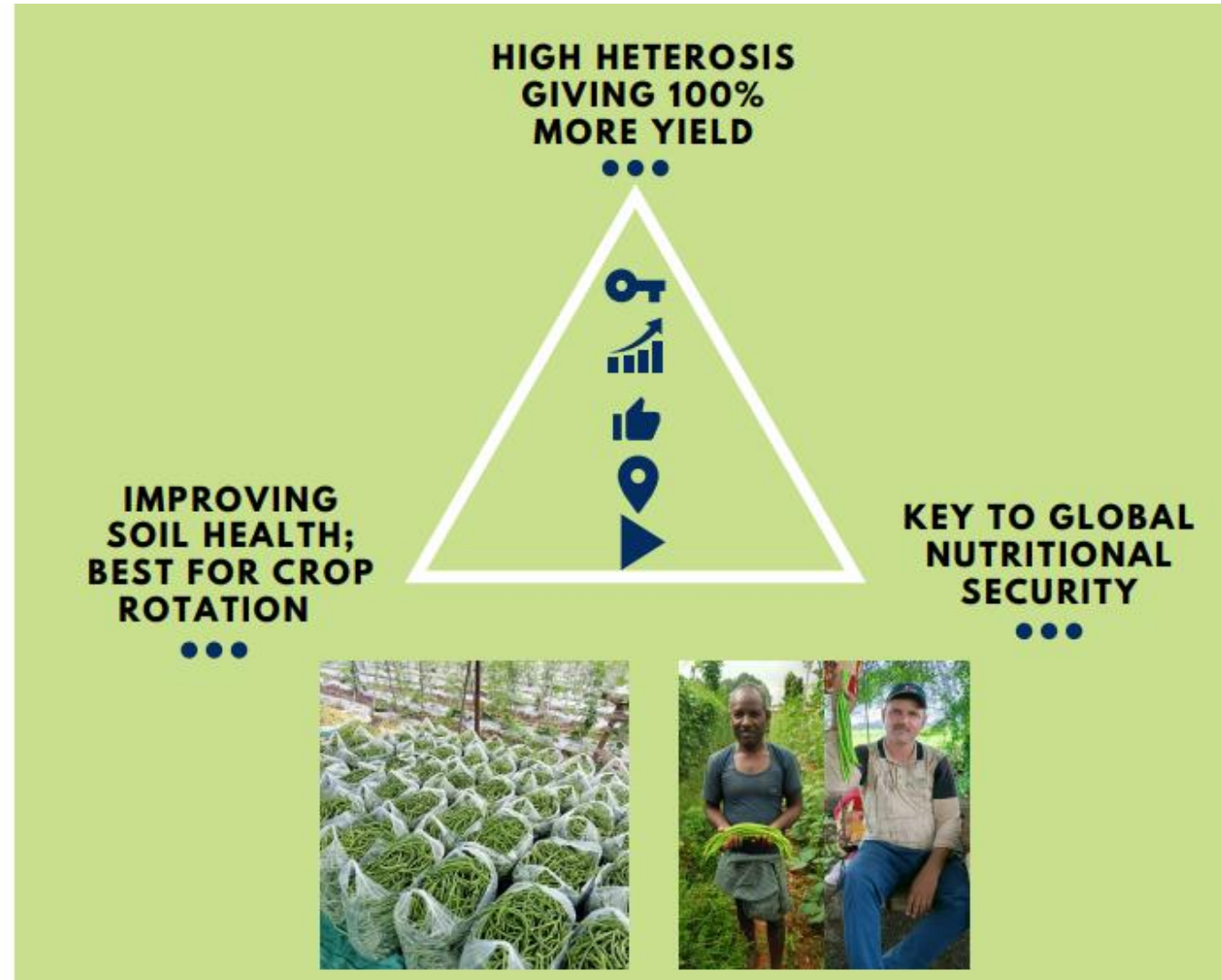
(Samantara, K. *et al.*, Breeding More Crops in Less Time: A Perspective on Speed Breeding. *Biology* **2022**, *11*, 275. <https://doi.org/10.3390/biology11020275>)



# First Hybrid in Cowpea

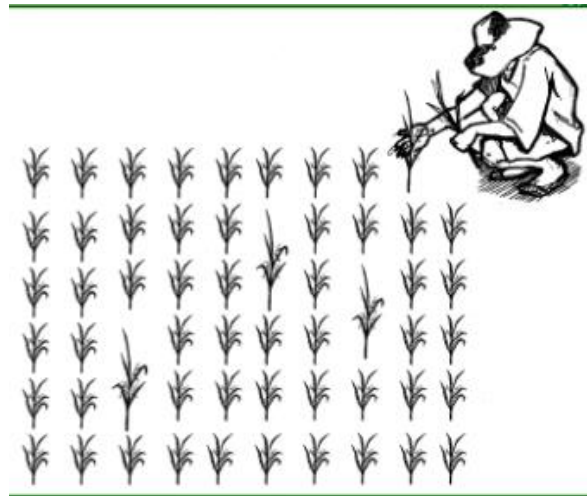
**First  
Successful  
Hybrid In  
Cowpea**

...

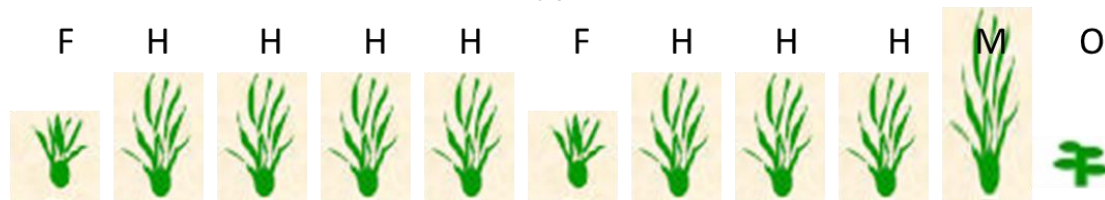


# Seed Quality Analysis

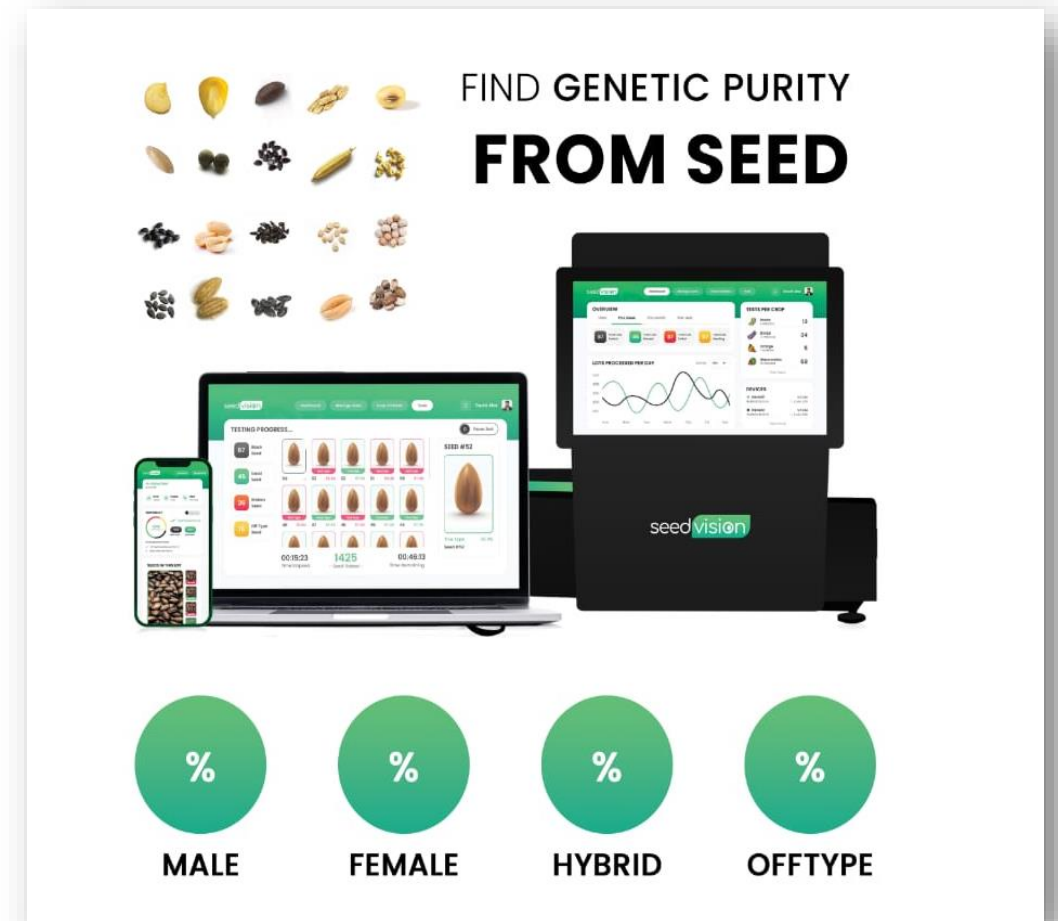
## Conventional method of testing Genetic Purity



F1 Lot



## AI/ML based method of testing Genetic Purity



FIND GENETIC PURITY  
**FROM SEED**

seedvision

%  
MALE

%  
FEMALE

%  
HYBRID

%  
OFFTYPE

# Thank you

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