

# Session 2 - Harnessing Chickpea's Microbes

## 1. N-fixing inoculants

- **Field performance of Meso strains** – include M. temp group strains

2Yr      test “*strains at hand*” for GxGxExM in multi-location field trials

5Yr      Obtain Understanding of GxGxExM for chickpea symbiosis

Funding - Link to CRP program

Key resource needed – Coordination/Focus leader for field program

- **Survival of strains** – in inoculant formulation, on seed, in soil

2Yr      Assess diversity of Strains x Survival

5Yr      Understand causes of death & mechanisms of survival  
have knowledge of genes needed for enhanced survival

- **Long-term objective**

10Yr      Understand what makes an “effective chickpea symbiosis”  
have sufficient knowledge for genetic manipulation of Host & Strain  
“*intelligent breeding for symbiotic improvement*”

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## 2. Microbiomes & PGPR

### Two targets identified

- **Microbes that enhance nodule services**

  - increase occupancy by inoculant strain
  - enhance nutrient acquisition

- **Biocontrol of root disease organisms**

  - Fusarium*

  - seedling damping-off diseases

2Yr      testing of "*strains at hand*"

5Yr      develop Strain Consortia from Centre of Origin Microbiomes  
testing on chickpea symbioses

- QC process for inoculants
  - Policies needed for inoculants – strains, standards
  - Engage with Policy makers in each country
- Biodiversity protocols for strain sharing