CRP A4NH
Agriculture for Nutrition and Health

Work Plans for 2013
A4NH Themes

• Value chains for enhanced nutrition
• Biofortification
• Prevention and Control of Agriculture-Associated Diseases (AADs)
• Integrated Agriculture, Nutrition, and Health Programs and Policies
### Research Activities under A4NH Themes

<table>
<thead>
<tr>
<th>Theme 1</th>
<th>(Value chains for Enhanced nutrition)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• One Research Activity</td>
<td></td>
</tr>
<tr>
<td>• Funding Source-McKnight Foundation</td>
<td></td>
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<tr>
<td>• Target countries: Malawi, Tanzania</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Theme 2</th>
<th>(Biofortification)</th>
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</thead>
<tbody>
<tr>
<td>• Four Research Activities</td>
<td></td>
</tr>
<tr>
<td>• Funding Source-Harvest Plus</td>
<td></td>
</tr>
<tr>
<td>• Target country: India and WCA</td>
<td></td>
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</tbody>
</table>

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<thead>
<tr>
<th>Theme 3</th>
<th>(Prevention and Control of AADs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Four Research Activities</td>
<td></td>
</tr>
<tr>
<td>• Funding Source-Window 1 &amp; 2</td>
<td></td>
</tr>
<tr>
<td>• Target countries: WCA, ESA and S Asia</td>
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</tbody>
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Theme 1: Value Chains for Enhanced Nutrition

Research Activity

1. Enhancing Child Nutrition and Livelihoods of Rural Households in Malawi and Tanzania through Post-Harvest Value-Chain Technology Improvements in Groundnuts
Theme 2: Biofortification

1. Coordination of Biofortification Research and Development Activities in Grain and Tuber Crops to Enhance Nutritional Security in India
2. Partnership-based Genetic Enhancement of Pearl Millet for High Grain Iron Density for Improved Human Nutrition in India
3. Genetically Enhanced Pearl Millet with High Grain Iron Density for Improved Human Nutrition in India
4. Identification of Micronutrients and Vitamin A precursor (β Carotene) Dense Sorghums for better health in Western and Central Africa (WCA) and Central India
Theme 3: Prevention and Control of Agriculture-Associated Diseases

1. Promoting cost-effective diagnostic assays for aflatoxin detection in groundnuts and aflatoxin exposure in humans
2. Integrated pre and post-harvest management strategies to mitigate aflatoxin contamination
3. Studies on factors influencing aflatoxin contamination, toxigenic profiling of A. flavus and mapping the hot-spot areas
4. Development of a database of aflatoxin prevalence along the groundnut value chain and capacity building of stakeholders
Enhancing Child Nutrition and Livelihoods of Rural Households

• **Milestone**
  • Nutritional status, dietary diversity, human health and mycotoxin contamination problem spatially characterized

• **Deliverables**
  • Aflatoxin contamination in groundnut and groundnut products decrease by approx. 20% as compared to baseline
Coordination of Biofortification Research and Development Activities

• **Milestones**
  - Joint HP-ICAR-DBT Biofortification Review meeting held
  - Joint trials of NARS breeding lines/varieties in pearl millet, rice, and wheat

• **Deliverables**
  - Report on meeting deliberations
  - Multi-environment database on high-Fe lines/varieties
Partnership-based Genetic Enhancement of Pearl Millet for High Grain Iron Density

• **Milestones**
  - High-yielding, high-Fe hybrids identified
  - NARS partners breeding lines and hybrids characterized for Fe/Zn density
  - Commercial/released hybrids/OPVs characterized for Fe density

• **Deliverables**
  - >5 high -Fe hybrids in state/national trials annually
  - Database and a report on variability for Fe/Zn density in partners lines/hybrids
  - A Journal article on variability for Fe and Zn content in >130 hybrids/OPVs
Genetically Enhanced Pearl Millet with High Grain Iron Density

• **Milestones**
  • Validated germplasm sources with high Fe density identified
  • High-Fe hybrid parents developed/identified

• **Deliverables**
  • Data base and seed of >10 high Fe germplasm sources available as IPG
  • Seed of >10 high-Fe hybrid parents available annually as IPG
Micronutrients and Vitamin A precursor (β Carotene) Dense Sorghums for WCA and Central India

• Milestones:
  – Generation mean analysis for understanding the inheritance of grain Fe/Zn contents in sorghum
  – Multi-location testing of selected advanced high Fe/Zn hybrids in three locations
  – Multi-location testing of identified high Fe/Zn lines and hybrid parents in three locations

• Deliverables:
  – Inheritance of grain Fe/Zn contents in sorghum established
  – 2 high Fe/Zn hybrids with agronomic desirability identified in India
  – 8 high Fe/Zn germplasm lines and 4 hybrid parents identified
Promoting cost-effective diagnostic assays for aflatoxin detection

- **Milestone**
  - Aflatoxin biomarker levels in different commodities detected and risk groups identified

- **Deliverable**
  - Top down (TDS) and bottom up (BUS) strategies to improve trade and human health
Integrated pre and post-harvest management strategies to mitigate aflatoxin

• **Milestone**
  - At least 2 new technologies pertaining to pre- and post-harvest aflatoxin contamination tested on station

• **Deliverable**
  - Best bet technologies made available for on farm testing
Studies on factors influencing aflatoxin contamination

- **Milestone**
  - Soil health parameters influence on *A. flavus* populations revealed

- **Deliverable**
  - Region specific Aflatoxin Risk Index parameters identified
Development of a database of aflatoxin prevalence along the groundnut value chain

• **Milestone**
  • Groundnut value chains of at least 2 countries in sub-Saharan Africa and South Asia studied for aflatoxin prevalence

• **Deliverable**
  • Database on aflatoxin prevalence in groundnut value chains of selected regions/countries