

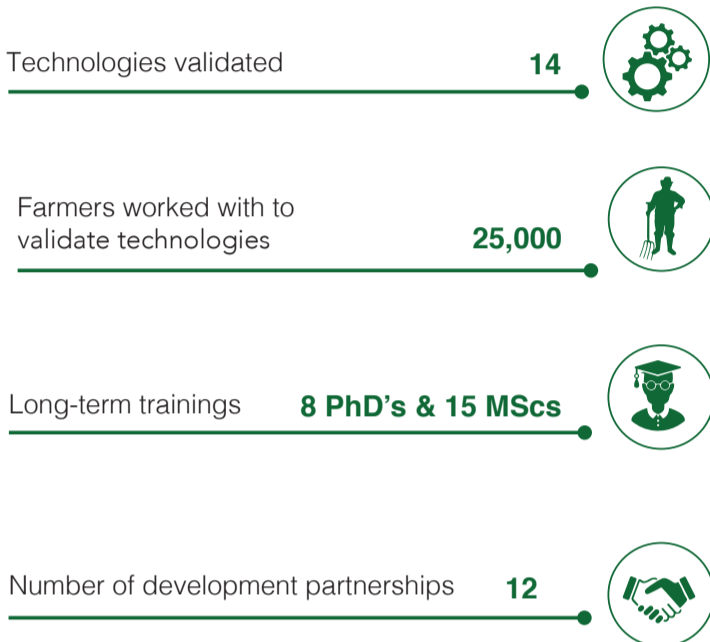
# Africa RISING in Mali



## Creating Sustainable Systems for Agriculture

Country brief - March 2019

### Outcomes



### Research-in-development scope

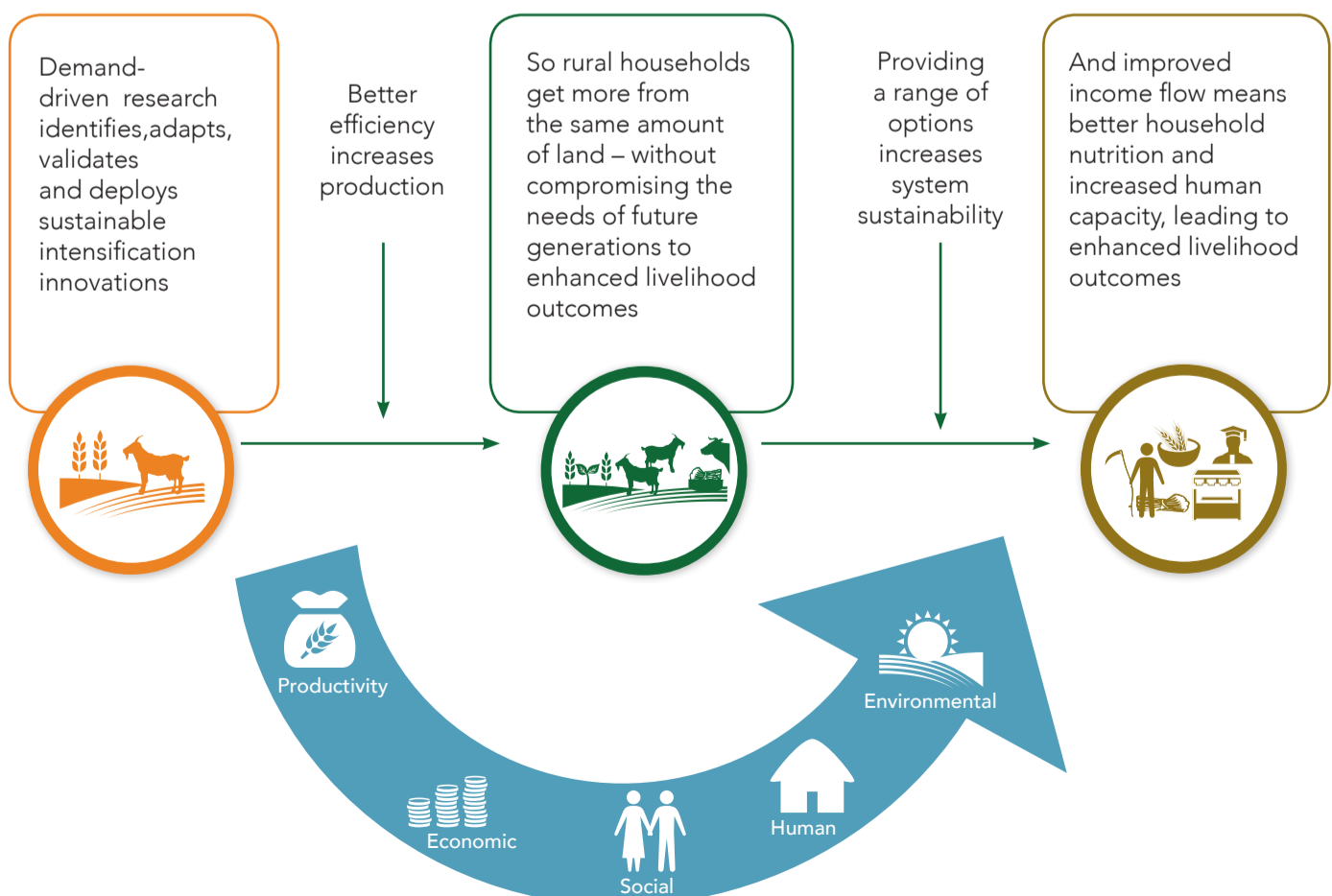
<b>1. Cropping systems</b> <ul style="list-style-type: none"> <li>Varieties</li> <li>Agronomy</li> </ul>	<b>3. Natural resource management [NRM]</b> <ul style="list-style-type: none"> <li>Soil &amp; water management</li> </ul>
<b>2. Livestock systems</b> <ul style="list-style-type: none"> <li>Health</li> </ul>	<b>4. Human condition</b> <ul style="list-style-type: none"> <li>Nutrition</li> </ul>

\*Appropriate technologies are integrated within and across the components above.

### Technology delivery

<b>Sustainable intensification domains</b> <ul style="list-style-type: none"> <li>Productivity</li> <li>Environment</li> <li>Economic</li> <li>Human condition</li> <li>Social</li> </ul>	<b>Collaboration</b> <ul style="list-style-type: none"> <li>CGIAR centers</li> <li>NARS</li> <li>Farmers</li> <li>Private sector</li> <li>Universities</li> <li>Extension services</li> <li>Government agencies</li> </ul>	<b>Capacity building</b> <ul style="list-style-type: none"> <li>Short term training</li> <li>Post-graduate training [MSc, PhD]</li> <li>Exchange visits</li> <li>Farmer field days</li> </ul>
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### Africa RISING's theory of change



Multiple sustainability domains result in long-term equity and viability



## 1 Cropping systems

### > Varieties

#### o Dual-purpose sorghum varieties

(Soubatimi and Tiandougou-coura) - New sorghum varieties combining grain yield of 2-3 t/ha (over 40% advantage over the local variety) and fodder yield of 15-20 t/ha as the local variety while maintaining green leaves until grain maturity. The stems are slightly sweet so increase palatability for livestock. These sorghum varieties are well adapted to variable rainfall (700-1100 mm) and seed production is managed by farmer organizations and seed companies in Mali.

- o **Sorghum hybrids** (Pablo, Fadda, and Sewa) - Grain yield potential of 5 t/ha and 30% yield advantage over the local variety across different conditions of sorghum production in farmers' fields in Mali. These hybrids are well adapted to variable rainfall (700-1100 mm) and have been selected by farmers through participatory evaluation based on yield, grain quality for local processing, and taste. Farmers' cooperatives and seed companies are managing hybrid seed production in both Mali and Burkina Faso.
- o **Drought tolerant groundnut** - Reduce aflatoxin infestation and through improved cultural practices (weeding, ploughing, fertility management, harvesting, and storage) aflatoxin level reduced by 4 ppm/kg (EU standard for human health condition).
- o **Early maturing groundnut** - Matures rapidly (within 90 days) before terminal drought arrives, resistant to foliar diseases, and has a minimum yield advantage by 20% from the local variety. Preferred by male and female farmers interested in seed production.
- o **High performing and dry season-adapted and farmer-preferred vegetable varieties** of okra, eggplant, and tomato.
  - Okra variety Konni yields more than 9 t/h whatever the field management conditions. This is 30% more than the average of local varieties grown by farmers.
  - African eggplant variety L10 is preferred by many farmers due to its sweet taste. Under recommended practices and favorable environment, L10 yields > 20 t/ha. This is a 100% yield increase over the local variety in the same conditions.
  - Tomato varieties Rio Grande and Roma were very high yielding, giving farmers more than 35 t/ha under improved crop management practices and favorable environments.

### > Agronomy

- o **Cereal-legume intercropping** (groundnut, soybean) - Grain yields have increased by 35% due to use of improved varieties and good agronomic practices. Intercropping sorghum with soybean doubled sorghum yield (from 1138 kg/ha under sole cropping to 2325 kg/ha).

- o **Cereal-vegetable intercropping** (tomato, pepper) - An economic analysis of cereal-vegetable production system showed that intercropping 75% vegetable with 25% maize was economically profitable compared to other intercropping and monocropping options. Women farmers performed better than men in intercropping options and most farmers were satisfied with the intercropping strategy.

- o **Fertilizer microdosing, composting** - The yield and biomass of the cotton cash crop were significantly higher ( $P < 0.05$ ) with microdosing (66% and 69%, respectively) and recommended chemical fertilizer doses (67% and 72%, respectively) than traditional manure



## 2 Livestock systems

### > Health

- o **Improving small ruminant production** through feed and health interventions - Feeding small ruminants on 300 g concentrate (per animal per day) which was validated by Africa RISING staff and farmers increased the weight of small ruminants by 730%. Vaccination on Pasteurellosis and Peste Petits Ruminants (PPR), and deworming reduced the mortality rate of small ruminants by 237%.



## 3 Natural resource management (NRM)

### > Soil & water management

- o **Implementation of Contour Bunding (CB)** associated with fast growing tree species (Adansonia digitata or Baobab, Tamarindus indica, Vitellaria paradoxa, and Ziziphus mauritiana) reduces soil erosion by 40% thus allowing more soil water infiltration. Sediment losses were reduced by 192%. The net returns with the use of CB were higher by 20% and in addition the willingness of farmers to pay \$10 per hectare to have a CB in their farm land to a local NGO makes the investment socially viable.



## 4 Human condition

### > Nutrition

- o **Trainings for extension workers** (50+) on infant and young children feeding best practices and integration of agriculture and nutrition activities.
- o **Trainings for women** (4500+) on vegetable production for improved household nutrition.
- o **Establishing nutrition support groups** (12) in Africa RISING intervention communities.



Partners:



The Africa Research In Sustainable Intensification for the Next Generation (Africa RISING) program comprises three research-for-development projects supported by the United States Agency for International Development as part of the U.S. government's Feed the Future initiative. Through action research and development partnerships, Africa RISING is creating opportunities for smallholder farm households to move out of hunger and poverty through sustainably intensified farming systems that improve food, nutrition, and income security, particularly for women and children, and conserve or enhance the natural resource base. The three projects are led by the International Institute of Tropical Agriculture (in West Africa and East and Southern Africa) and the International Livestock Research Institute (in the Ethiopian Highlands). The International Food Policy Research Institute leads an associated project on monitoring, evaluation and impact assessment.

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