Project Title

Enhancing Production, Value Addition and Marketing of Indigenous Vegetables (cowpea, spider plant, nightshades, amaranth, pumpkin), French Beans and Mushrooms among Smallholder Farmers in Kenya
**Collaborators**

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3. Prof. Agnes Mwang’ombe and Dr. Margaret J. Hutchinson, University of Nairobi

4. Dr. Gideon Njau Mwai, Bondo University College

5. Dr. Esther Kioko and Dr. Patrick N. Muthoka, National Museums of Kenya
Collaborators (Continued)

6. Dr. Richard M. S. Mulwa and Dr. Joseph W. Matofari, Egerton University

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PARTNERS:

1. Dr. Josephine Ongoma, KLEEN Homes & Gardens, an NGO;

2. Mr. Evans Njuguna, Njoro Canning Factory Limited
Background Information

The vegetable crops prioritized for research in the project are:

- Indigenous vegetables (nightshades, amaranth, cowpea, spider plant and pumpkin),
- Mushrooms and
- French beans.
Constraints

1. Indigenous vegetables
   • Quality planting materials and agronomic packages.
   • Limited value addition & post-harvest handling technologies.
   • Poor marketing and distribution channels.
   • Negative perception and low acceptability.
2. Mushrooms
   • Lack of adequate supply of quality spawn.
   • Limited production technologies.
   • Limited value addition and postharvest handling technologies.

3. French beans
   • Overuse and misuse of pesticides for management of pests.
   • Lack of awareness on local utilization.
   • Limited postharvest practices and value addition.
Objectives

Overall objective
• To increase production, value addition, marketing and utilization of indigenous vegetables, French beans and mushroom products among smallholder farmers in Kenya.

Specific Objectives
• To enhance safe production of indigenous vegetables, French beans and mushroom products through IPM practices.
• To improve postharvest handling, value addition and utilization of indigenous vegetables, French beans and mushroom products.
Objectives (Continued)

• To enhance marketing opportunities for indigenous vegetables, French beans and mushrooms among smallholder farmers.

• To enhance mechanisms for information, communication and knowledge sharing along the indigenous vegetable, French beans and mushroom value chain.

• To undertake initial project screening with a view to identifying environmental, social and gender concerns that must be addressed together with the pests in the proposed research project.
Outcomes

• Availability of high quality and affordable seed and spawn for IVs, French beans, and mushrooms, respectively.

• Reduced vegetable postharvest loses along the value chain and increased volumes of high quality vegetables in markets.

• Increased range of vegetable products and per capita consumption.

• Increased smallholder and community awareness and consumption of IVs, French beans and mushrooms; and overall improved incomes from vegetable enterprises disaggregated by gender.

• Improved food safety and acceptability of the indigenous vegetables along the Value Chain within an expanded market catchment.
Research Plan/Methodology

Project Sites
Homa Bay, Kakamega, Tharaka, Nyeri, Kilifi, Embu and Siaya Counties.

Outputs and Activities
1. Crop improvement
1.1. Germplasm collection, evaluation, and selection of IV varieties and mushroom spawn for production.
1.2. Farmer participatory seed bulking and distribution of selected pure lines for IVs.
2. **Agronomic Practices**

2.1. On-farm evaluation of cropping systems for IVs, French beans and mushrooms.

2.2. On-farm trials on integrated soil, water and nutrient management for French beans and pumpkins.

2.3. On-farm trials on Integrated Pest Management (IPM) options for French beans.
Research Plan/Methodology (Continued)

3. **Improvement of Postharvest Handling Technologies**

3.1. On-farm evaluation of low cost produce handling sheds.

3.2. Evaluate shed covering materials.

3.3. Evaluate existing bulk packaging materials and promote the best bets.

3.4. Develop, evaluate and promote new bulk packaging technologies.
Research Plan/Methodology (Continued)

4. Improvement of value addition
   4.1. Improve utility packaging technologies.
   4.2. Evaluate utility packaging materials and methods.
   4.3. Conduct consumer preference on packaging materials and methods.
   4.4. Evaluate product transformation technologies.
Research Plan/Methodology (Continued)

4.5. Evaluate vegetable dehydration methods and promote the best bests.

4.6. Evaluate milling and blending options for dried IVs and mushrooms.

5. Improvement of product quality and utilization

5.1. Develop quality guidelines for IVs and mushrooms along the vegetable value chain.
Research Plan/ Methodology (Continued)

5.2. Conduct quality evaluation of IVs and mushrooms along the vegetable value chain.

5.3. Develop improved vegetable recipes.

5.4. Evaluate sensory qualities of the finished vegetable products.

5.5. Analyze the nutritional integrity of vegetable products.

5.6. Evaluate the shelf life of the vegetable products.
Research Plan/Methodology (Continued)

6. Improve marketing opportunities for the vegetables

6.1. Develop supplier-buyer databases.

6.2. Analyze produce volumes and pricing trends.

6.3. Determine competing vegetable products.

6.4. Conduct consumer preference profiling and marketing platforms.
6.5. Evaluate farmer market organization models.
6.6. Evaluate efficiency of market outlets.

7. **Increase Information, Communication & Knowledge Sharing Along the Vegetable Value Chain**

7.2. Package information for various VVC actors.
7.3. Identify effective communication strategies for the VVC actors and operators.
Research Plan/Methodology (Continued)

7.4. Produce communication materials for the VVC actors and operators.
7.5. Transmit information using different media.
7.6. Train chain actors in agronomic practices, post-harvest handling, value addition and marketing.
7.7. Train chain actors in agribusiness in IVs, mushrooms and French beans.
7.8. Formulate an IPMP that is uniform and adopted for all actors in the vegetable value chain.