



AGRICULTURE AND FOOD AUTHORITY

REPORT ON INNOVATIONS IDENTIFIED

AT

AGRICULTURAL SOCIETY OF KENYA

KISUMU REGIONAL SHOW 2019

21st - 28th July 2019

Introduction

Innovation is the process of translating an idea or invention into a good or service that creates value or for customers. It may involve deliberate application of information, imagination and initiative in deriving greater or different values from resources, and includes all processes by which new ideas are generated and converted into useful products. To an idea/invention to qualify as an innovation, it must be replicable at an economical cost and must satisfy a specific need.

Kisumu Agricultural Show Identified Innovation

Ecological Farming

One of the key challenges facing cultivation of scheduled crops is low production and productivity arising out of poor agronomic practices as well as pest and disease attacks. Ecological farming ensures healthy farming and food by protecting soil, water and climate. It promotes biodiversity and does not contaminate the environment with chemical inputs or genetic engineering. By making the best possible use of locally available inputs, ecological farming keeps money in the local economy.

Ecological farming practices include agroforestry, push-pull technology, sustainable land management, water harvesting and organic farming. *Critically, ecological farming lowers production costs and it increases yields; thus boosting incomes for small-scale farmers in resource-poor communities.*

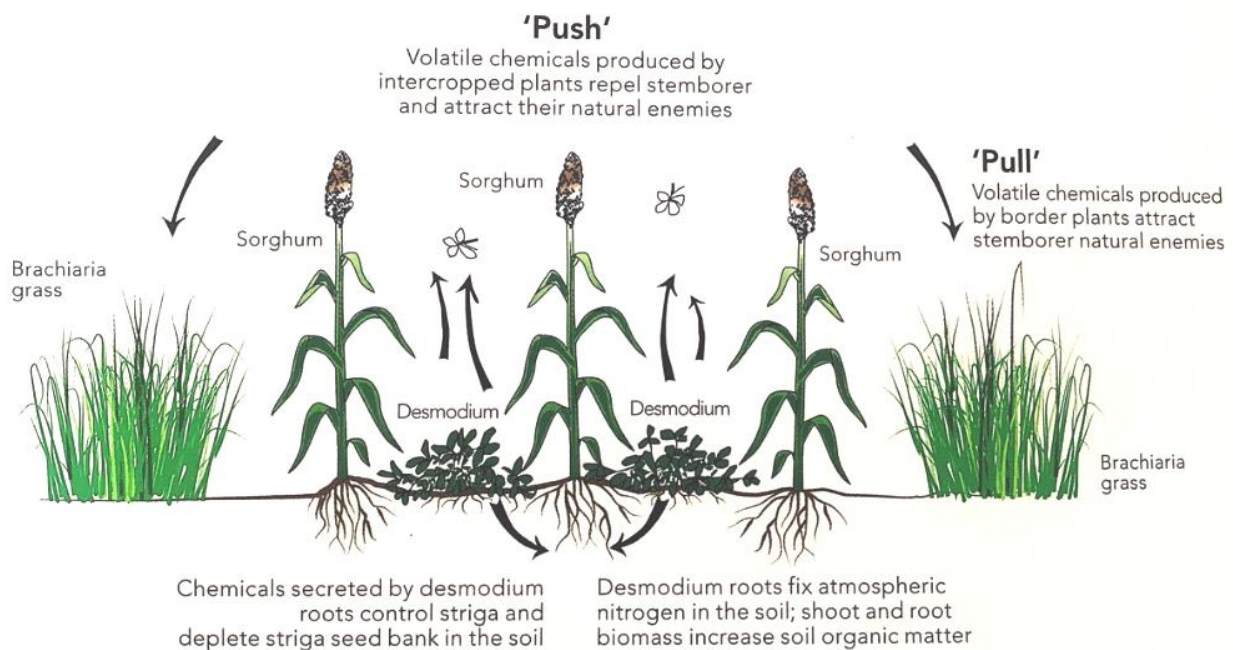
Push and Pull is a cropping strategy to control stem borers, fall armyworm and striga weed in drier agro-ecologies. The farmers use drought-tolerant Brachiaria grass and Desmodium legume for management of these pests in maize or sorghum fields. Desmodium is planted in between the rows of maize or sorghum and produces volatile chemicals that “pushes” the moths away from the maize or sorghum crop. Desmodium also covers the surface of the ground between the rows of the maize or sorghum and chemically stops striga weed from growing on maize and sorghum.



Maize crop attacked by the fall armyworm

Brachiaria grass planted around the maize or sorghum crop as a trap plant, produces volatile chemicals that attracts or “pulls” the stemborer moths to lay their eggs on it. Brachiaria grass does not allow stemborer larvae or armyworm moth to develop on it, due to its poor nutrition for the larvae. This means few stemborer or armyworm moth larvae survive hence saving the maize or sorghum crop.

The technology eliminates the need for pesticides by using plants that attract and repel pests. It’s a platform technology around which agriculture innovations can develop to bring about an overall improvement in the farming systems and livelihoods. It simultaneously reduces crop losses, improves productivity, household nutrition and incomes, enables increased production of livestock fodder, addresses soil fertility constraints and enables a minimum tillage system.



7 Principles of Ecological Farming

1. **Food sovereignty** – ecological farming supports a world where producers and consumers, not corporations, control the food chain. Food sovereignty is about the way food is produced and by whom.
2. **Rewarding rural livelihoods** – ecological farming contributes to rural development and fighting poverty and hunger, by enabling livelihoods in rural communities that are safe, healthy and economically viable.

3. **Smarter food production and yields** – in order to increase food availability globally and improve livelihoods in poor regions, we must achieve higher yields through ecological means and reduce unsustainable use of food crops currently grown (reduce food waste and meat consumption, and minimise land for bio-energy).

4. **Biodiversity** – ecological farming is based on diversity from the seed to the landscape level, relying on and protecting nature by taking advantage of biodiversity. This biodiversity translates into a high diversity in the food we eat, improving diets and nutrition, taste and health.

5. **Sustainable soil health** – ecological farming can increase soil fertility without chemicals while protecting soils from erosion, pollution, and acidification; and by increasing soil organic matter that enhance water retention in the soil and prevent land degradation.

6. **Ecological crop protection** – ecological farming enables farmers to control pest and weeds without the use of chemical pesticides that can harm our soil, water and ecosystems, and the health of farmers and consumers.

7. **Resilient food systems to climate change** – ecological farming can be used as an adaptation and mitigation strategy to climate change, creating resilience with biodiversity.

The Benefits of Push and Pull

1. Increased maize and sorghum yields;
2. A continuous supply of cattle green feed from the Brachiaria and Desmodium;
3. Earn an income from sales of green fodder and Desmodium / Brachiaria hay;
4. Soil Protected from erosion as Desmodium acts as mulch;
5. Increase in profits from the sale of Desmodium seeds at high prices;
6. Saving on farm labour, as you do not have to pull out striga weed;
7. Cereal crop is protected from fall armyworm using this technology.

Way Forward

The Kenyan government should increase its support to ecological farming, including Push-Pull, through increased budgetary allocations, advice and training (including of extension officers), and research and development.

Also critical is **greater investment in agricultural research**. Currently, research is mainly focused on conventional farming and developing 'improved' or hybrid seeds. Research into

ecological farming is still in its infancy and tends to receive a minimal allocation in agricultural research budgets

AFA Potential Areas of collaboration

Market linkages: Partner with the The Maseno University-Mbita, Mr Rogers Oliech 0716 665 375 to bring to the attention of County Government the existence of technology and train farmers through the counties on Climate-Smart push-pull technology.