FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
for a world without hunger

Sub Regional Office for the Caribbean (SLC)

Save and Grow

an integrated approach to sustainable production intensification

"more with less"

Why a Save and Grow approach? (1 of 2)

The present paradigm of intensive crop production cannot meet the challenges of the new millennium

The achievements of the Green Revolution have come at significant cost:

- Degraded fertile land
- Depleted groundwater
- Pest upsurges
- Eroded biodiversity
- Air, water and soil pollution

Why a Save and Grow approach? (2 of 2)

Current and emerging challenges include:

- Yield growth rate of major crops declining
- Increasing competition for land and water
- Rising prices of fuel and fertilizer
- Impacts of climate change
- Reduced resilience of cropping systems

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A POLICYMAKER'S GUIDE TO THE SUSTAINABLE INTENSIFICATION OF SMALLHOLDER CROP PRODUCTION

Key elements of the Save and Grow approach:

- *Builds on ecosystem services*
- *Makes more efficient use of inputs*
- *Conserves and enhances natural resources*

Adaptable to:

- specific conditions, locations and scales

Three key lessons learned

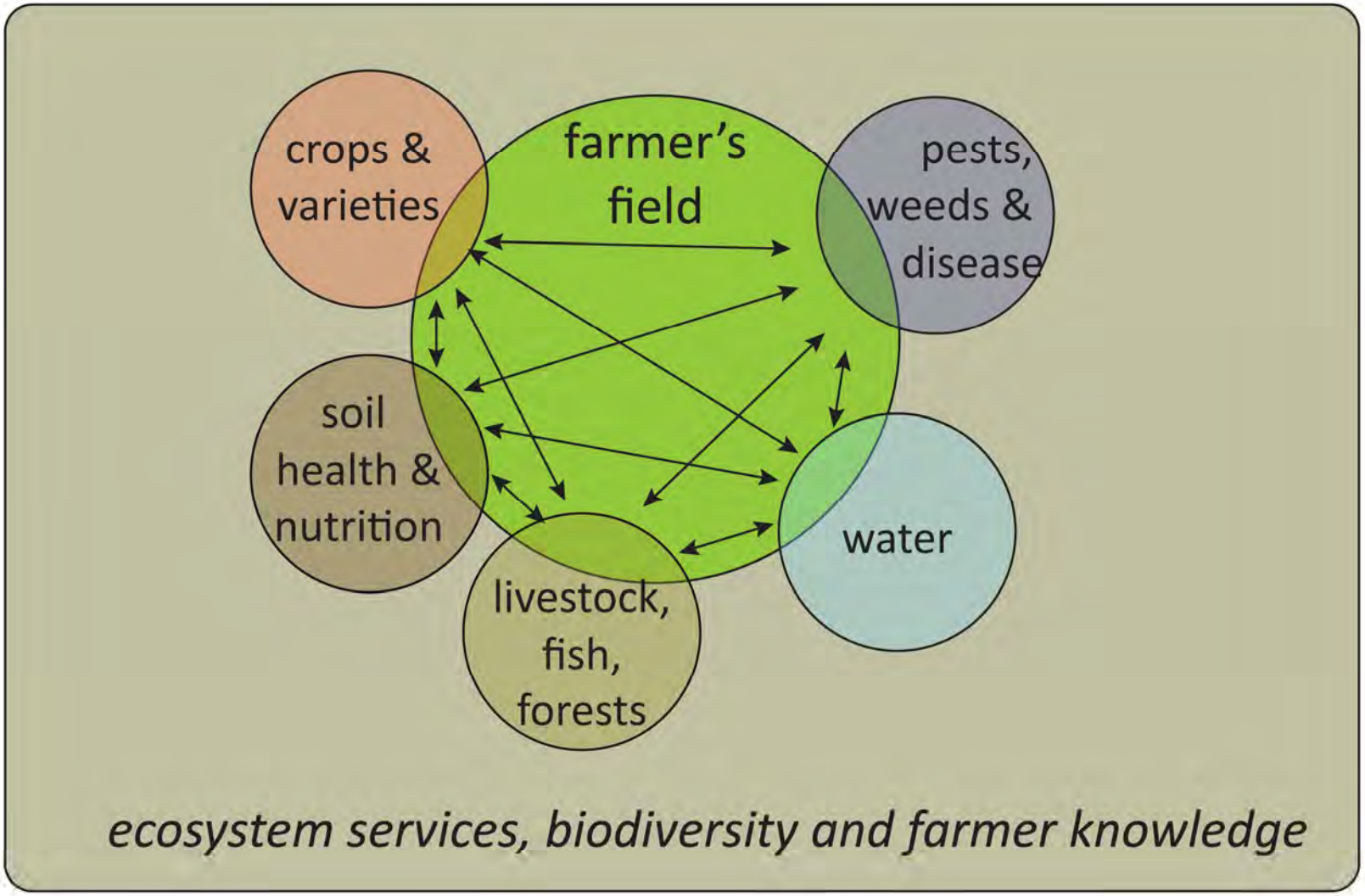
1) Increasing production alone is not sufficient
2) There is no "*one size fits all*" or "*silver bullet*"
3) Sustainable production is knowledge intensive

Focus on the Farmer

Farmers are at the heart of Save and Grow

This is the common ground where decisions at all levels: *field, national, global* connect have impact

Farmers



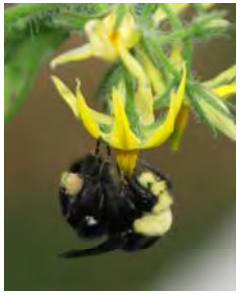
There are essential linkages between **all** the components of the farmer field level and with policy and normative instruments

Farmers

Production in a Farmer's Field is a result of:

Farmer knowledge:

understanding agro-ecosystems, making choices, +



Ecosystem Services:

nutrient cycling, control of pests, pollination, water provisioning, +

Biodiversity: genetic resources,

grasslands and forests, food webs, +

Farmers - Ecosystem services - Biodiversity

Save and Grow is

knowledge intensive

rather than *input intensive*

Farmers

Farmer Field Schools (FFS)

platforms for farmers to learn in a hands-on way how to manage complex agro-ecosystems more sustainably

Farmers

Healthy soils

Basis for sustainable production intensification

- **Crop rotation and diversification**
- **Efficient nutrient management**

Ecosystem services

Crop rotation and diversification

Integration of maize with soybean, cowpea and trees (agroforestry) leads to:

- *reduced fertilizer use by half*
- *increased maize yields by 140-300%*
- *vastly improved* soil health and
- reduced leaching

Adopted by an increasing number of farmers in sub-Saharan Africa

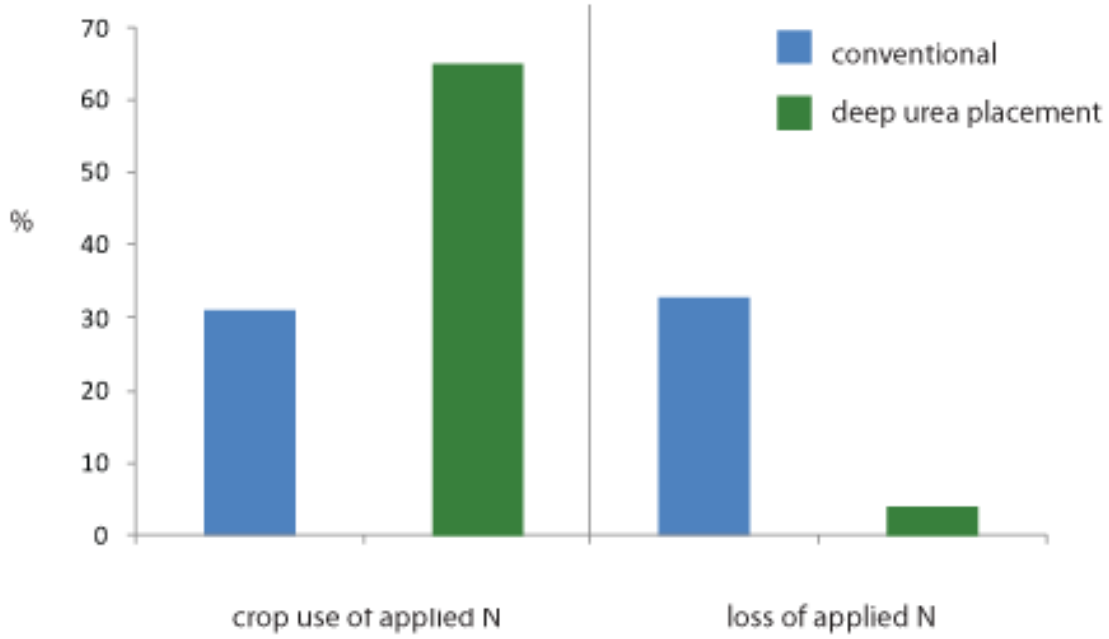
Do we have a similar example from the Caribbean?

Ecosystem services

Efficient nutrient management

Inappropriate/inefficient
application of N-fertilizer leads to high losses of N,
green house gas emissions
and water pollution

Innovation:
deep urea placement (UDP)
•reduces amount applied
•releases nitrogen slowly where needed and
• reduces pollution



UDP used on 10% of Bangladesh's rice production area - being tested in fifteen other countries

Ecosystem services

Efficient water management

- **Maximizing capacity of soils to hold water**
- **Efficient of water management in:**
  - *rain-fed and*
  - *irrigated systems*

Ecosystem services

Rain-fed systems

Rain-fed systems are 'held hostage' to the uncertainty of rainfall

- Focus on maximizing water retention in the root zone

To allay farmers' aversion to risk:

- seasonal and annual forecasting of rainfall and
- improved water availability through better on-farm water management

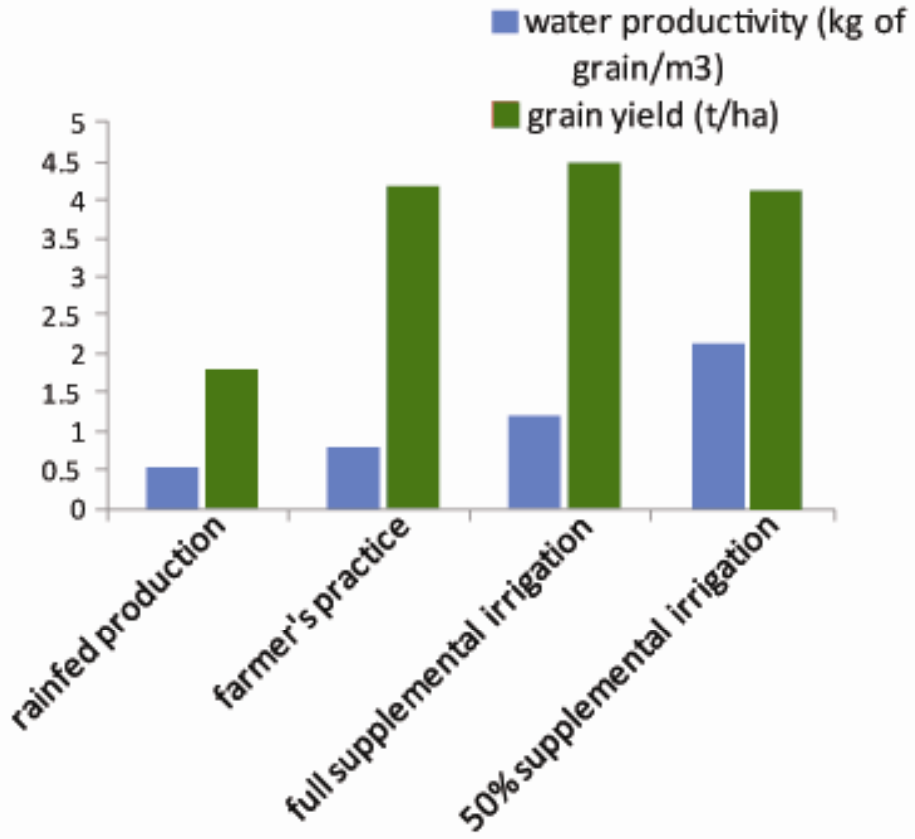
Eastern Ethiopia: floodwater and run-off capture have led to:

- improved soil moisture and fertility
- reduced flooding and
- 400% increases in value in 4 years

Ecosystem services

Rain-fed systems
Supplemental irrigation

Productivity of water in wheat production, dry areas of North Africa and West Asia



Farmers dependent on rainfall for cereal production may increase yields:

- by harvesting rainwater runoff and storing it
- apply during critical crop growth stages

Ecosystem services

Irrigated systems

Irrigation accounts for
20% of cropped area yet produces
40% of agricultural output

Andhra Pradesh, India
Farmer Water School

Ecosystem services

Increasing synergies
for a balanced agro-ecosystem

Efficient water and nutrient management are linked to the management of the other key inputs including:

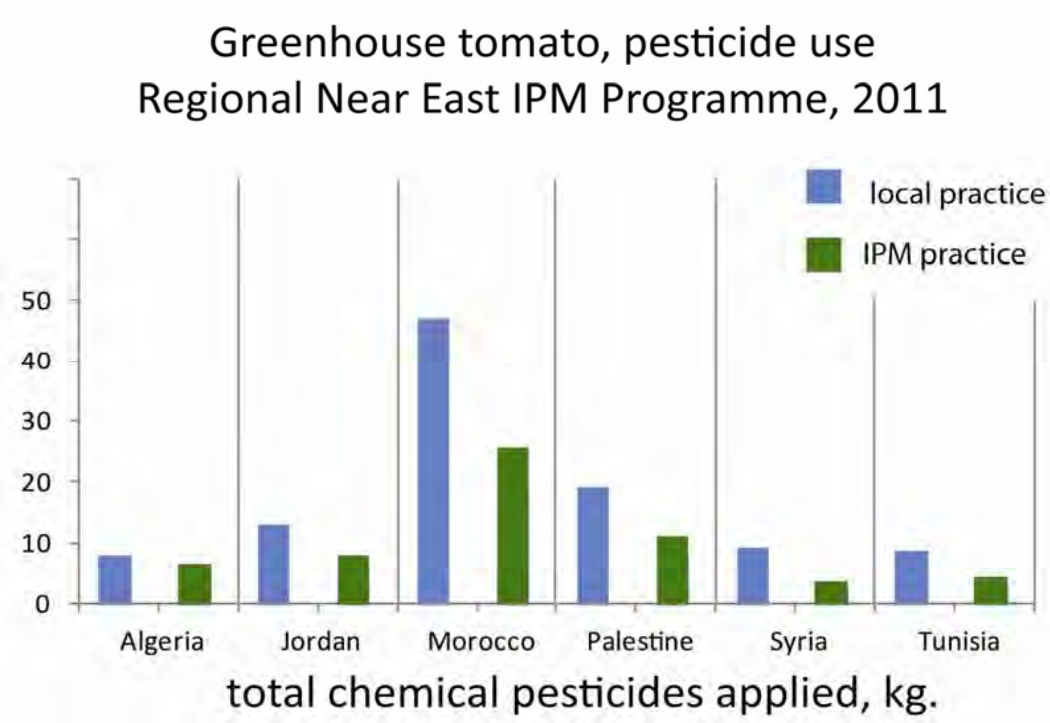
- pest, disease and weed control
- genetic material – seeds and crop varieties
- farming systems/agronomy

Andhra Pradesh, India
Farmer Water School

Ecosystem services

Pest and disease control
Integrated pest management (IPM)

- Reduced pesticide use leads to an increase in profits



Ecosystem services

Integrated Weed Management

Farmers devote 20-50% of their time to weed control

Herbicides are the most widely used pesticides globally - increased resistance leads to:

- higher weed management costs and
- increased risk of crop failure

Integrated approaches in Benin include:

- rotation of cereal crops with cowpea as a (trap crop) for control of *Striga* a parasitic weed of cereals
- mulching with native grasses (e.g. *Acroceras zizanioides)* protects the soil, releases nutrients and eliminates weeds - land value increases if vegetation cover is dominated by the grass

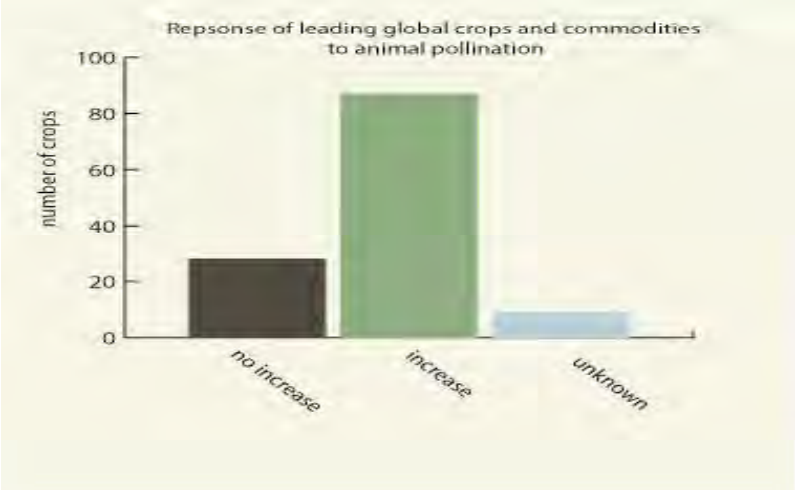
Gbèhounou, G. & Adango, E. 2003.

Ecosystem services

Management of Pollination Services

Pollinators such as bees, birds and bats contribute significantly to the yields of 85% of the leading food crops worldwide

- since 1961 the production of crops that depend on animal pollination has increased some 400% in developing countries



Increased levels of pollinators have:

- increased fruit set in mango in Ghana - 35%
- improved production of mustard seed in Nepal - 25%

Closely linked to pesticide management

- Apple growers in India understand that small black flies are important crop pollinators, not crop pests

Seeds and Crop Varieties

Growing improved well-adapted crop varieties:

- increases yields by 50% on the average
- helps farmers "*produce more with less*" through reduced need for external inputs through:
  - increased drought tolerance – *less water*
  - more efficient nutrient use – *less fertilizer*
  - resistance to pests and diseases – *less pesticides*

Use of local crop varieties and seed systems that link farmers to researchers are key in adapting to local conditions

- **NERICA - New Rice for Africa** – was developed by incorporating the high yield of Asian varieties with resilient African types

Biodiversity

Conservation Agriculture (CA)

***Farming systems* such as CA incorporate many of the concepts of Save and Grow**

CA is characterized by three principles:

1. Minimum mechanical soil disturbance
2. Permanent organic soil cover
3. Diversification of crop species grown in rotation

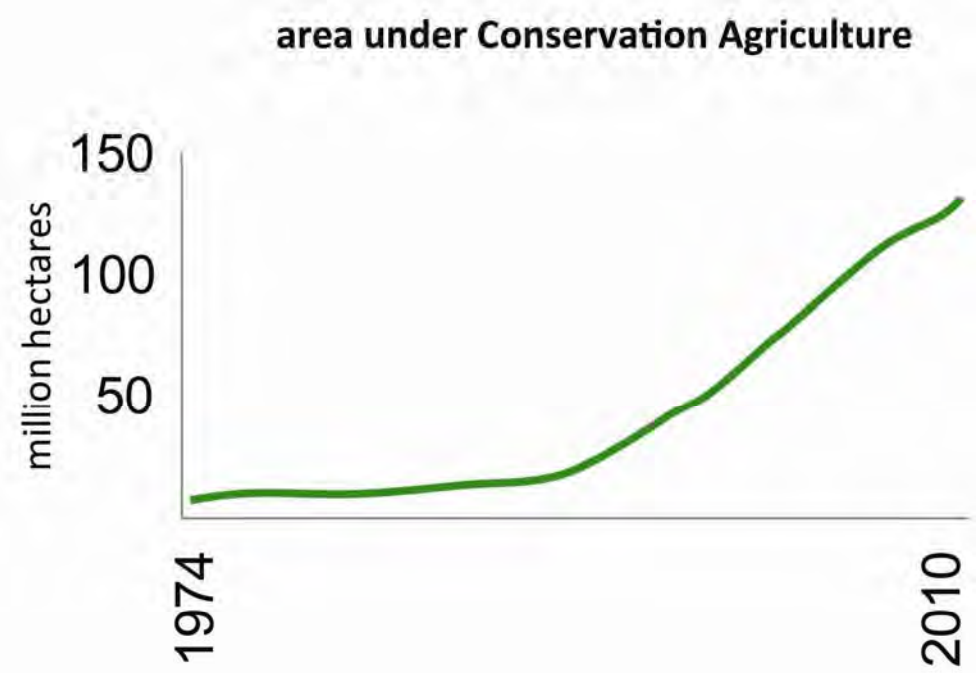
Farming systems

Conservation Agriculture (CA)

CA contributes to:

- sustained increases in production of 10 - 100%
- increased soil moisture, fertility and overall health
- reduces external inputs 10 to 50%

Results in greater resilience to climate change, increased farm profits and improved ecosystem services

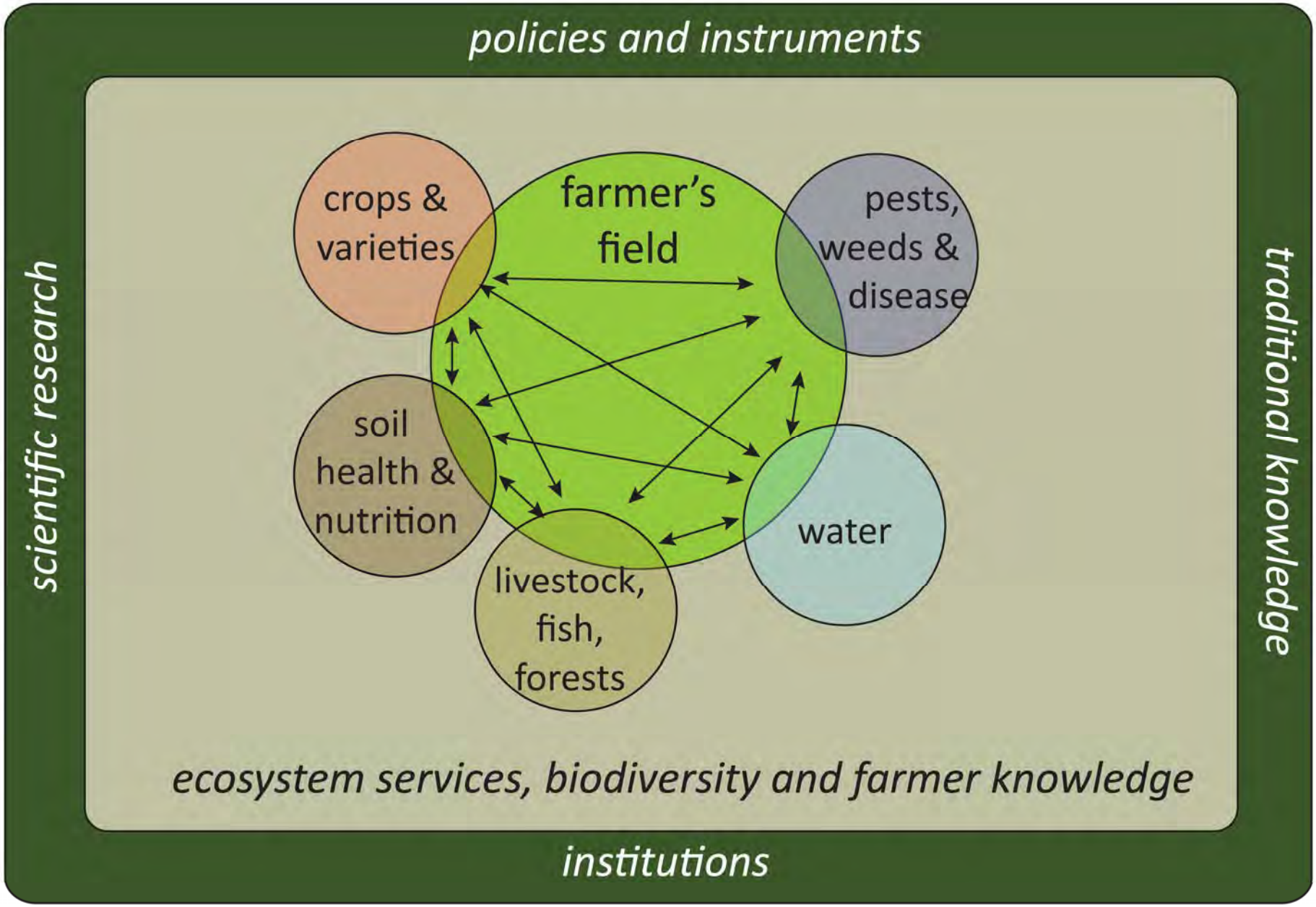


Farming systems

Conservation Agriculture in Tanzania

Working together farmers in Karatu district REDUCED:

- **soil erosion**
  - *brought the land back to original condition*
- **labour used for weeding**
  - *allowing children to go to school*
  - *more time for vegetable gardening and diversified production*
- **need for herbicides**
  - *reduced costs – increased net incomes*



There are essential linkages between all the components of the farmer field level and **with policy and normative instruments and institutions**

Implementing a Save and Grow approach:

Farmers see benefits of adopting more sustainable practices through*:*

- *more efficient use of external inputs including labor/time – leading to increased profits*

There is a need for an "***enabling environment***"– to ensure that appropriate incentives are in place to catalyze the transition to more sustainable practices

Need for a systems approach

- Ensuring access to land and production resources
- Supporting on-going research and development and technology transfer
- Extension services, Farmer Field Schools

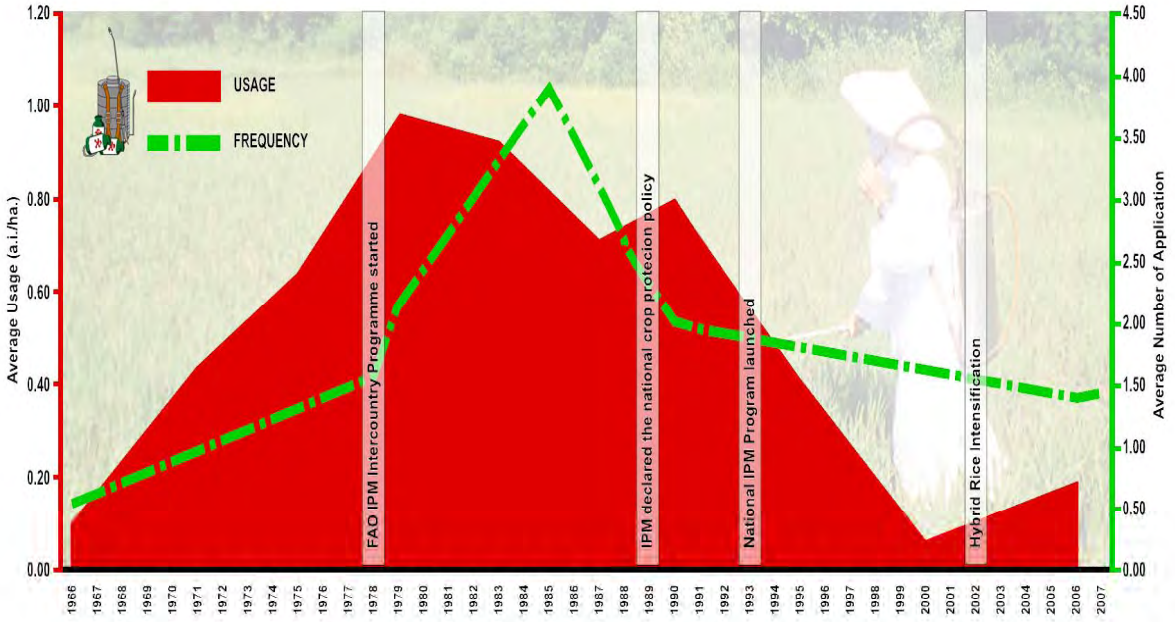
Enabling environment

Polices that encourage innovation

- Reliable access to credits and markets
- Protection from high and volatile food prices
- Facilitate farmer cooperatives – private sector participation
- Promote resource use efficiency

Enabling environment

Concerted policy support is needed



Philippines, 1966-2007 pesticide total use and frequency of application in relation to policy interventions

The way forward

We can sustainably produce the food needed in a sustainable manner

There is no silver bullet

- *approaches need to be tailored to individual countries*

Increasing production alone is not sufficient

- ***i**nvestment along the food value chain is required*

Sustainable production is knowledge intensive

- *ongoing agricultural research, development and capacity building are essential*

THANK YOU!