Open agrifood Orléans

AFRICA'S INCREDIBLE ENVIRONMENTAL CAPITAL CREATES NEW POSSIBILITIES

By: GODFREY NZAMUJO O.P. (PHD. Eng)

Director of Songhai Center of Excellence

@ORLEANS 18 Nov. 2015

Songhaï
L'AFRIQUE RELÈVE LA TÊTE ! AFRICA STANDS UP !

TO TACKLE THE TRIPLE CHALLENGE

- **POVERTY/FOOD SECURITY**
- **UNEMPLOYMENT**
- **ENVIRONMENTAL DEGRADATION**

By: GODFREY NZAMUJO O.P. (PHD. Eng)

Director of Songhai Center of Excellence

@ORLEANS 18 Nov. 2015

USING REGENERATIVE AGRICULTURE AND AGRO-ECOLOGICAL PRACTICES TO *INCREASE PRODUCTIVITY AND SUSTAINABILITY*

By: GODFREY NZAMUJO O.P. (PHD. Eng)

Director of Songhai Center of Excellence

@ORLEANS 18 Nov. 2015

A SYSTEMIC APPROACH IS THE ONLY WAY FORWARD

- a global and multifaceted crisis
- a systemic problem that requires a holistic and broad based approach

Open agrifood Orléans

A SYSTEMIC APPROACH IS THE ONLY WAY FORWARD

Poor solutions that hardly work

operating from

a mechanistic paradigm developed centuries ago

Open agrifood Orléans

A SYSTEMIC APPROACH IS THE ONLY WAY FORWARD

New frameworks on our human dynamics and that of our planet

A SYSTEMIC PARADIGM

with completely new and different technological orientations

- **Synergy**
- **Symbiosis**
- **Complementarity**, **Collaboration** and
- **Suplementarity**

Open agrifood Orléans

Songhaï
L'AFRIQUE RELÈVE LA TÊTE ! AFRICA STANDS UP !

New and appropriate technological and developmental trajectories

An integrated development system that organically creates **dynamic linkages** and synergy between Agriculture, Industry and services

➔ **a reverse entropy (syntropy) at every level**

Open agrifood Orléans

- a better position to design and re-engineer our way out of these crises

- to create organizations, industries, economic activities that would solve our present day problems

Open agrifood Orléans

THE FUNDAMENTALS OF SONGHAI REGENERATIVE AGRICULTURE

A comprehensive approach that strives

to meet our present day needs in a holistic manner

thanks to

the deployment of authentic Technologies

Open agrifood Orléans

Agriculture as a multifunctional endeavor that must:

- Produce sufficient, safe, wholesome food
- Be economically and spiritually beneficial to both the consumers and producers
- Sustainable and easily practiced by anyone
- That conforms to, enhance and protect the environment
- Be an Energy source instead of primarily an energy sink

Open agrifood Orléans

THE CHALLENGE TODAY IS: PRODUCING MORE WITH LESS

- a biological process
- A new way to practice agriculture

Open agrifood Orléans

THE CHALLENGE TODAY IS: PRODUCING MORE WITH LESS

The Conventional Agriculture is inefficient due to the low utilization of Solar Energy and its transfer through the trophic levels.

The potential utilization of Solar Energy is estimated to be between 10-20%

But in general, **the utilization rate of photosynthesis is lower than 3%** even under conditions that produce optimal yields.

This is because the photosynthetic efficiency of chloroplast of most crops cannot be enhanced much further. **The biomass productivity of these crops has reached a maximum.**

The Solar wavelengths that cannot be used by chloroplasts together account for approximately 80 % of total Solar Energy.
The best opportunity therefore for increasing biomass production is **to find ways to harness this spectrum**.

Open agrifood Orléans

INCREASING THE ENERGY PATHWAY IN AGRICULTURE THROUGH THE DIRECT UTILIZATION OF SOLAR ENERGY AND RECYCLING OF PLANT AND ANIMAL RESIDUS

- **PHOTOTROPHIC bacteria and algae** can utilize wavelengths within this range (out of the range for green plants) to build organic matters.

- Productivity is further enhanced by different **Integrative microbes** that breakdown existing organic matter, releasing complex compounds such as amino acids and building even more complex compounds and enabling environments for plant growth.

Therefore, a key factor for increasing crop production is **the availability of organic matter**, which has been developed by harnessing more solar energy (by Chloroplasts, algae and photosynthetic bacteria) and **the presence of efficient and effective microbes** to decompose the organic matters as they build new ones.

This is how we can increase the overall efficiency of solar energy in Agriculture.

Open agrifood Orléans

Songhaï
L'AFRIQUE RELÈVE LA TÊTE ! AFRICA STANDS UP !

WHEN WE CHANGE THE WAY WE GROW OUR FOOD,
WE CHANGE OURSELVES,
WE CHANGE OUR VALUES,
WE CHANGE OUR SOCIETY

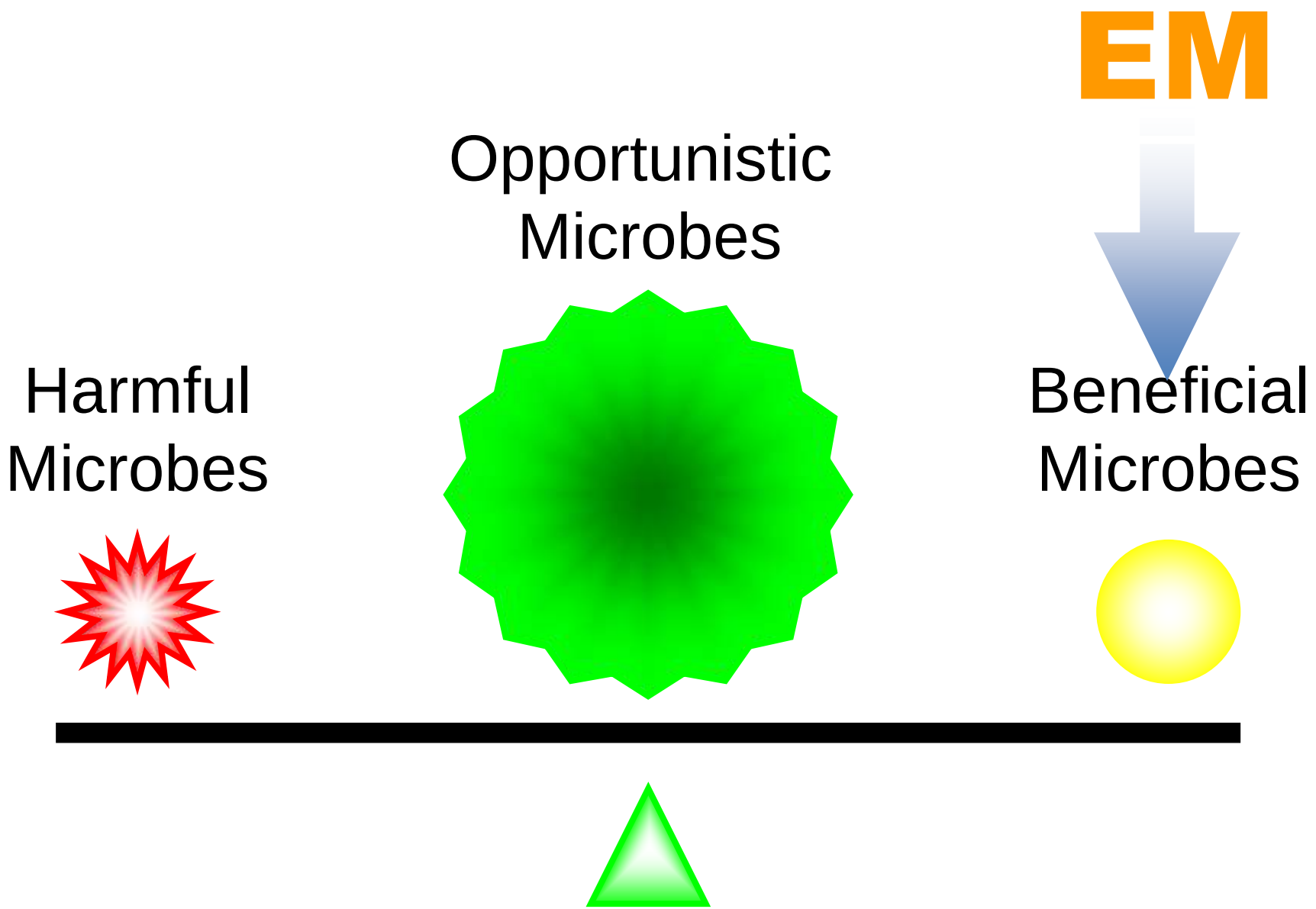
Open agrifood Orléans

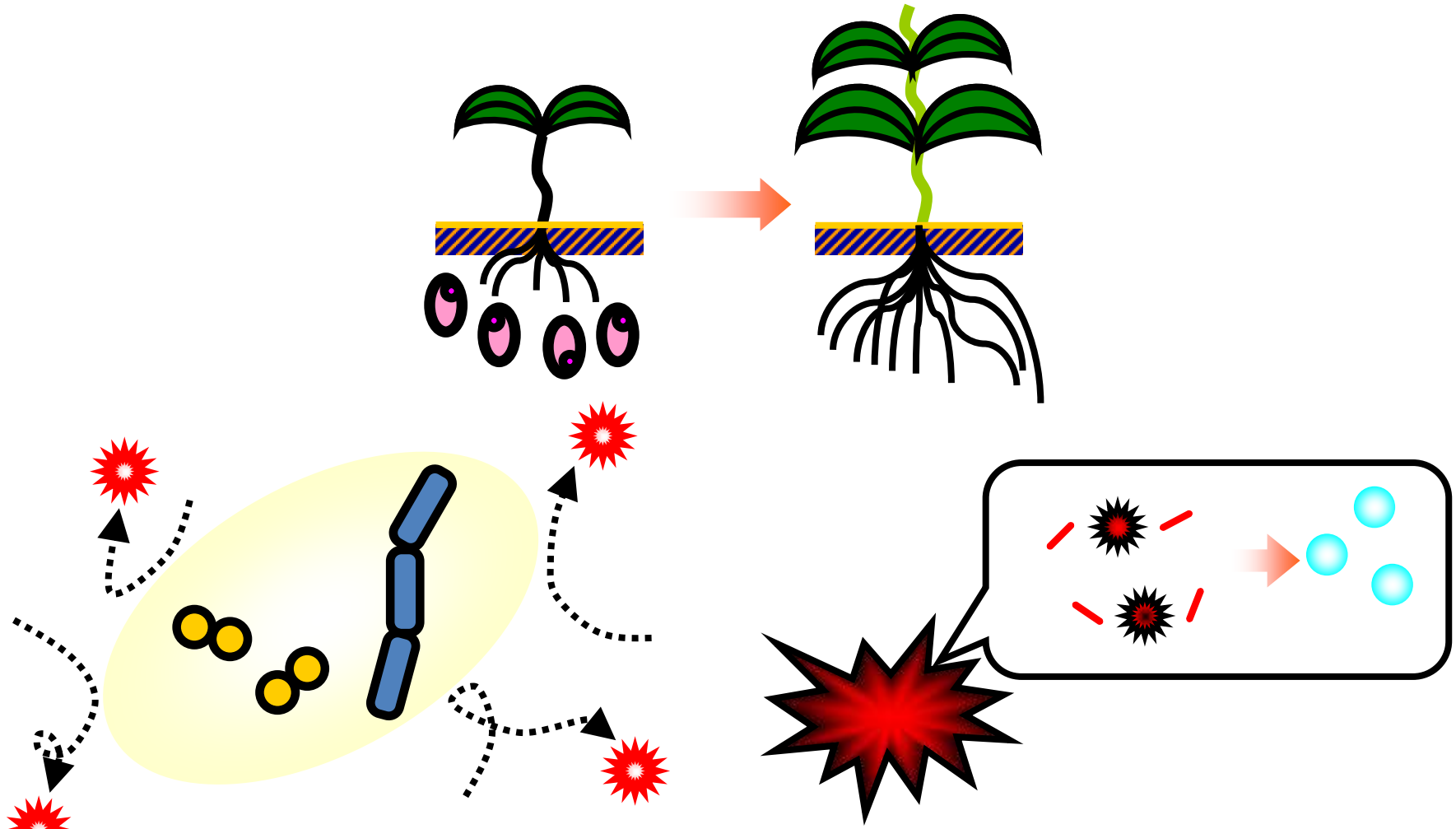
The EM (Energy Matter) concept to unlock the potentials of the Biological and Environmental capital of Africa

by using Integrative Micro-organisms

- *Lactic acid Bacteria*
- *photosynthetic bacteria*
- *Actinomycetes and mycorrhizae (Fungi)*

The concept of EM Technology





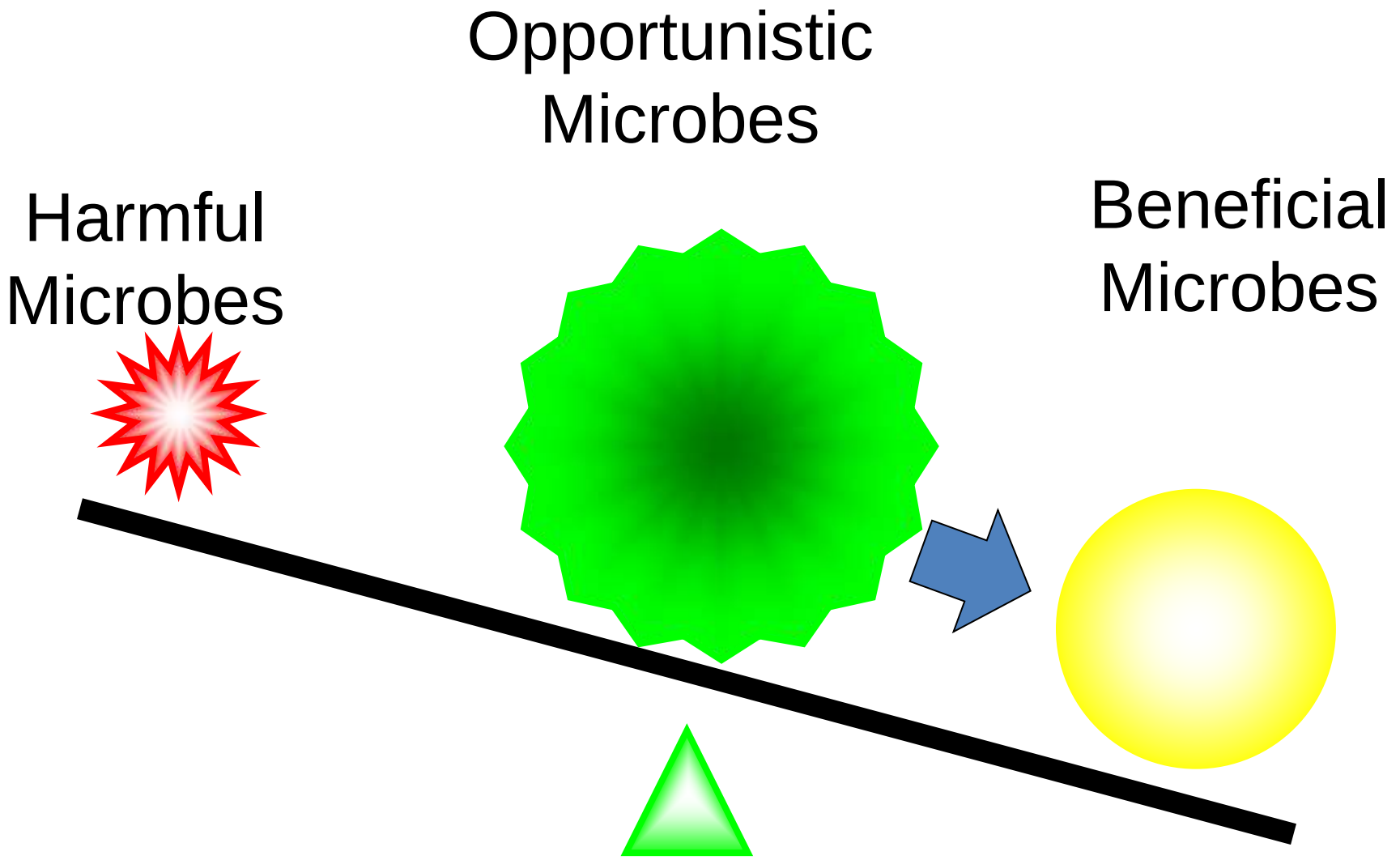
Lactic Acid Bacteria + Phototrophic Bacteria + Yeast

+

Indigenous microbes

This combination can produce EM™ POWER!!

The concept of Regenerative Micro-organism Technology



ZYMOGENIC SOILS

zymogenic organisms such as lactic acid bacteria and yeast
produce amino acids, sugars, vitamins and other bioactive substances
which promote the growth of crops

SYNTHETIC SOILS

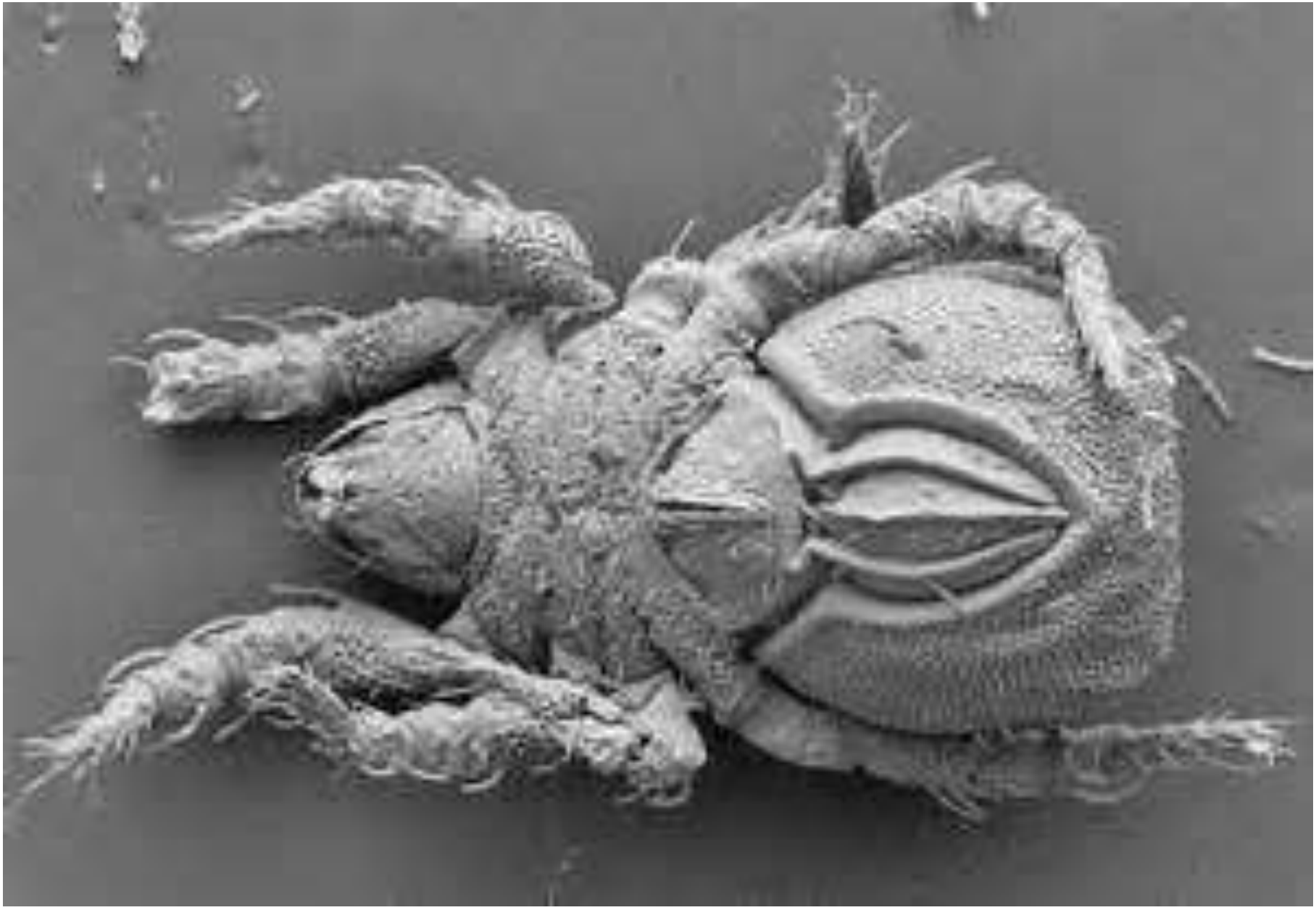
Beneficial microbes such as photosynthetic and nitrogen fixing bacteria

SUPER SOILS

A mixture of Zymogenic and Synthetic soils

With a texture of 30% of Sand, 30% of Clay, 30% of mud and 10% of synthetic and zymogenic soils

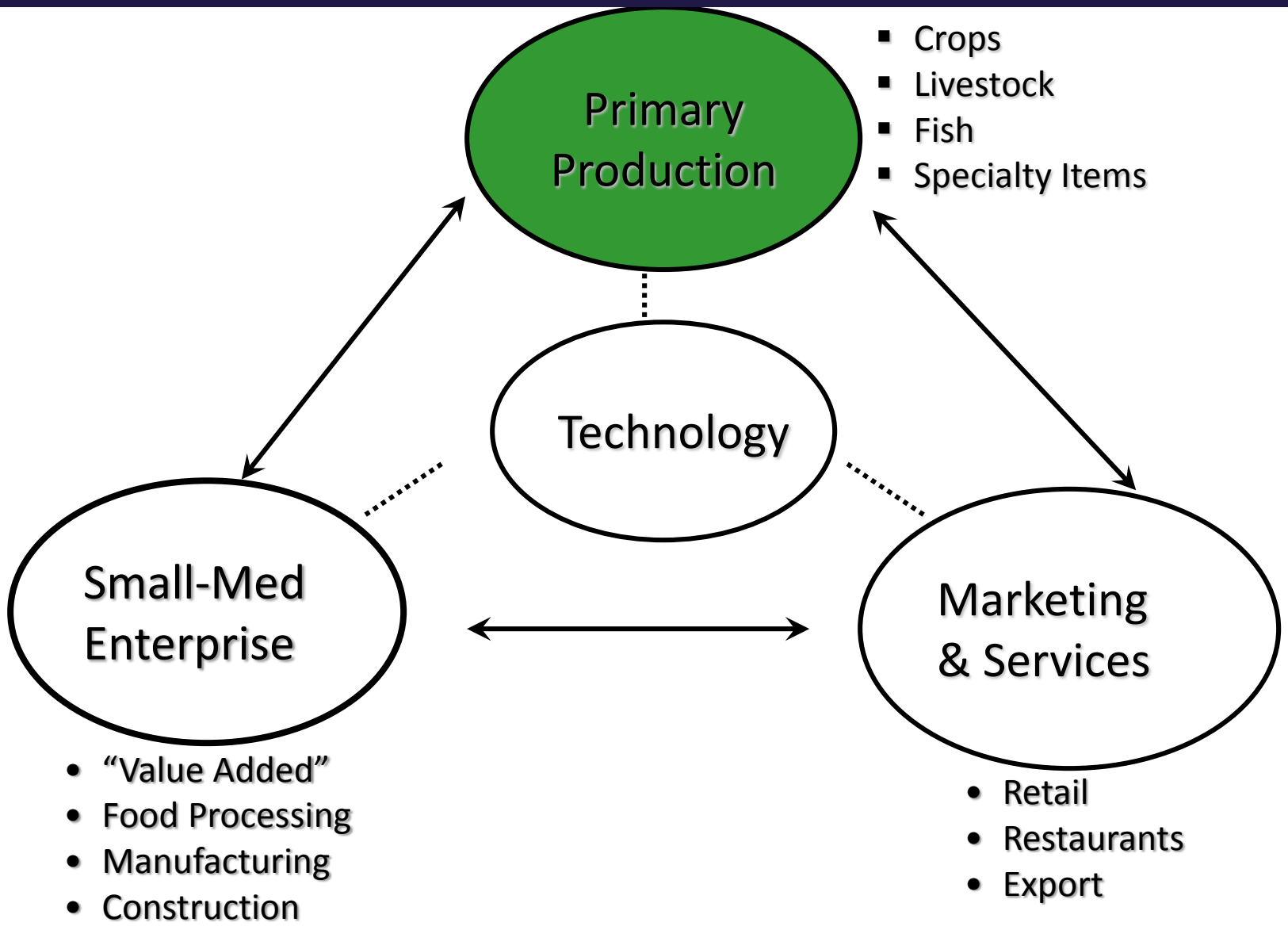
- good for crop growth
- favor plant health, creating bioactive elements such as enzymes etc.
- not favorable for diseases



Open agrifood Orléans

MANY NEW PRODUCTS CAN ALSO BE OBTAINED FROM MICROORGANISMS THROUGH FERMENTATION AND ENZYMATIC REACTIONS

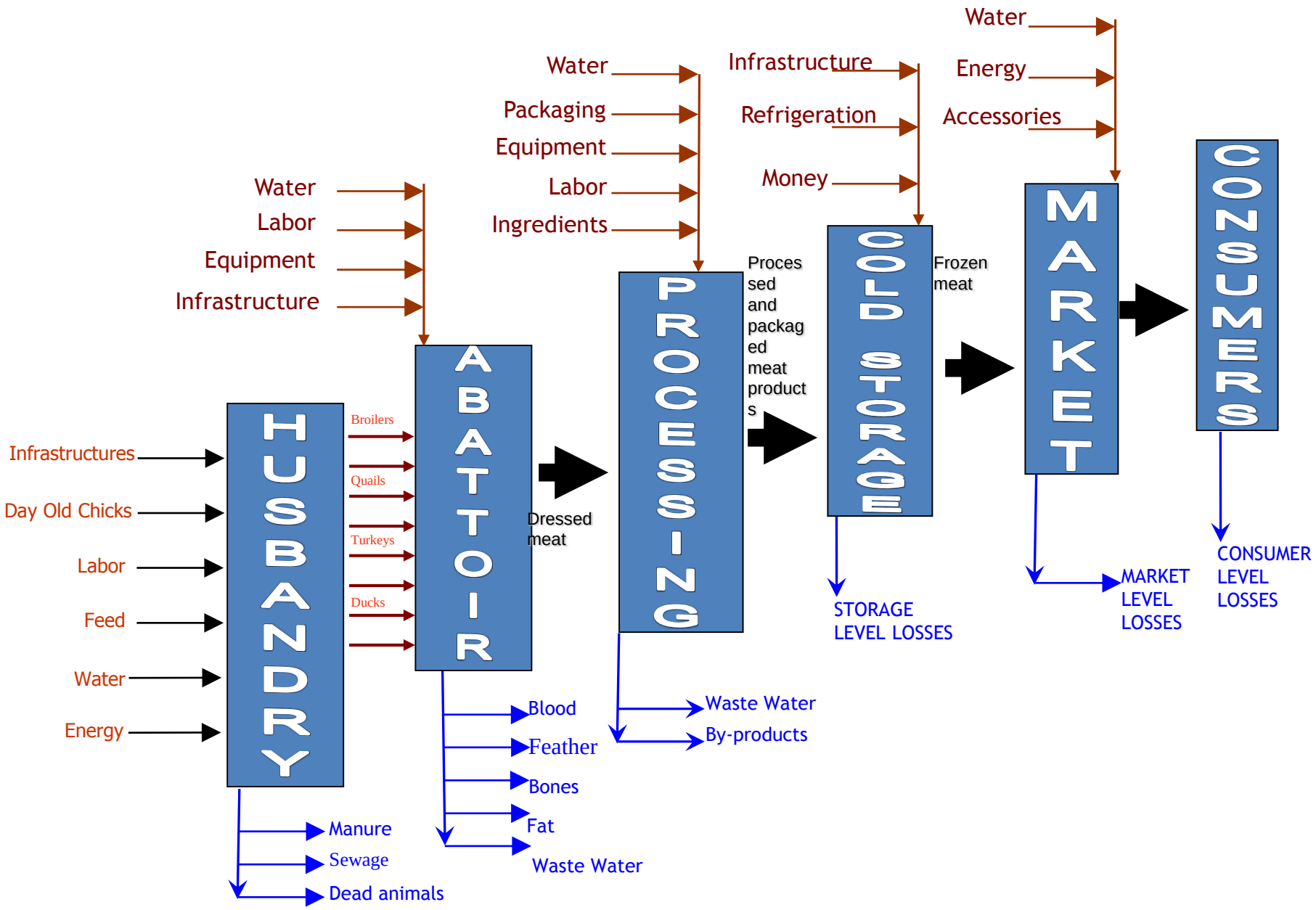
SONGHAI INTEGRATED SYSTEM



Regenerative Green technology
bring into play the natural forces of synergy and amplification (enzymatic actions) in nature that have been ignored by conventional methods

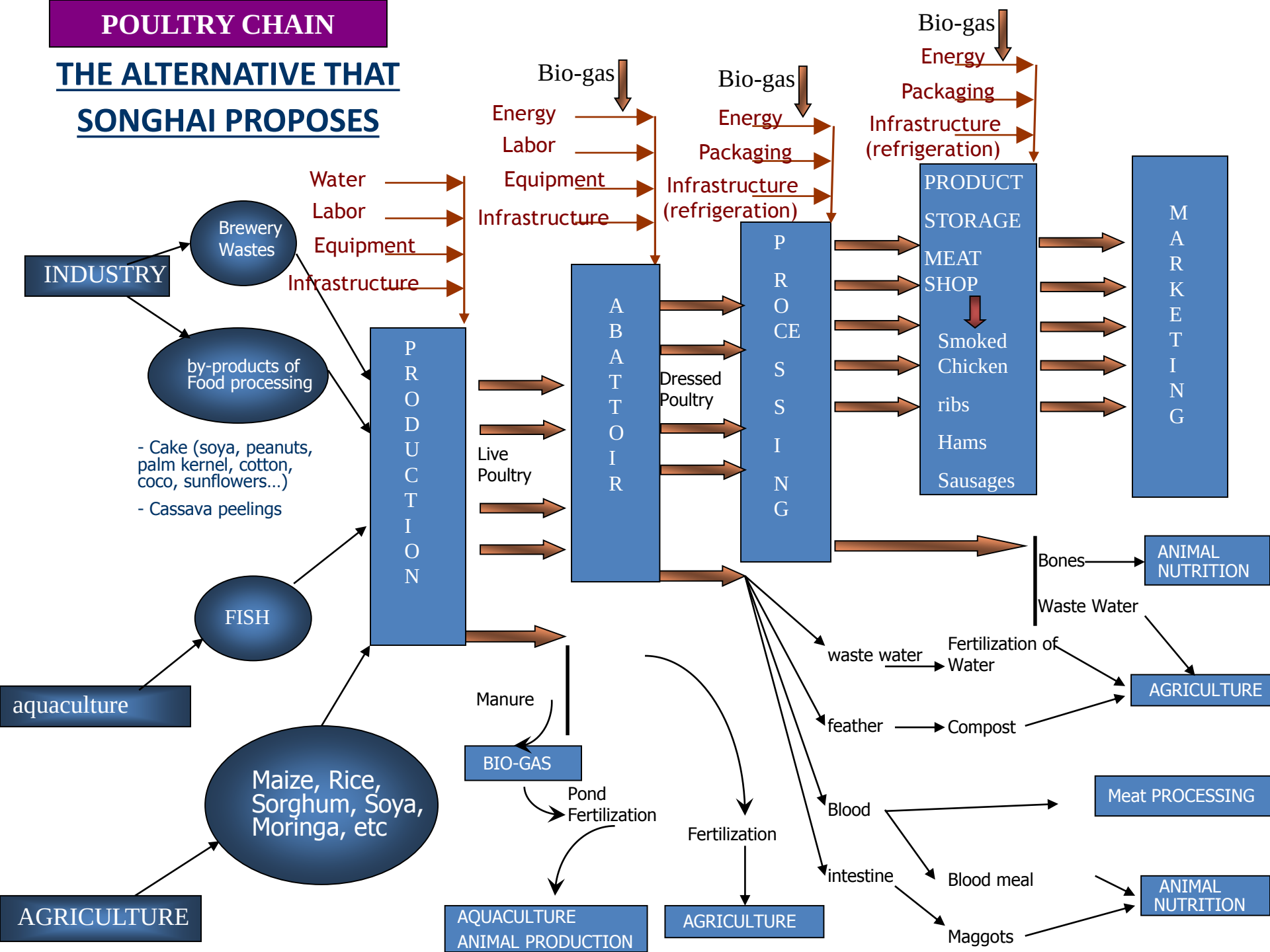
EAT RIGHT
LIVE RIGHT

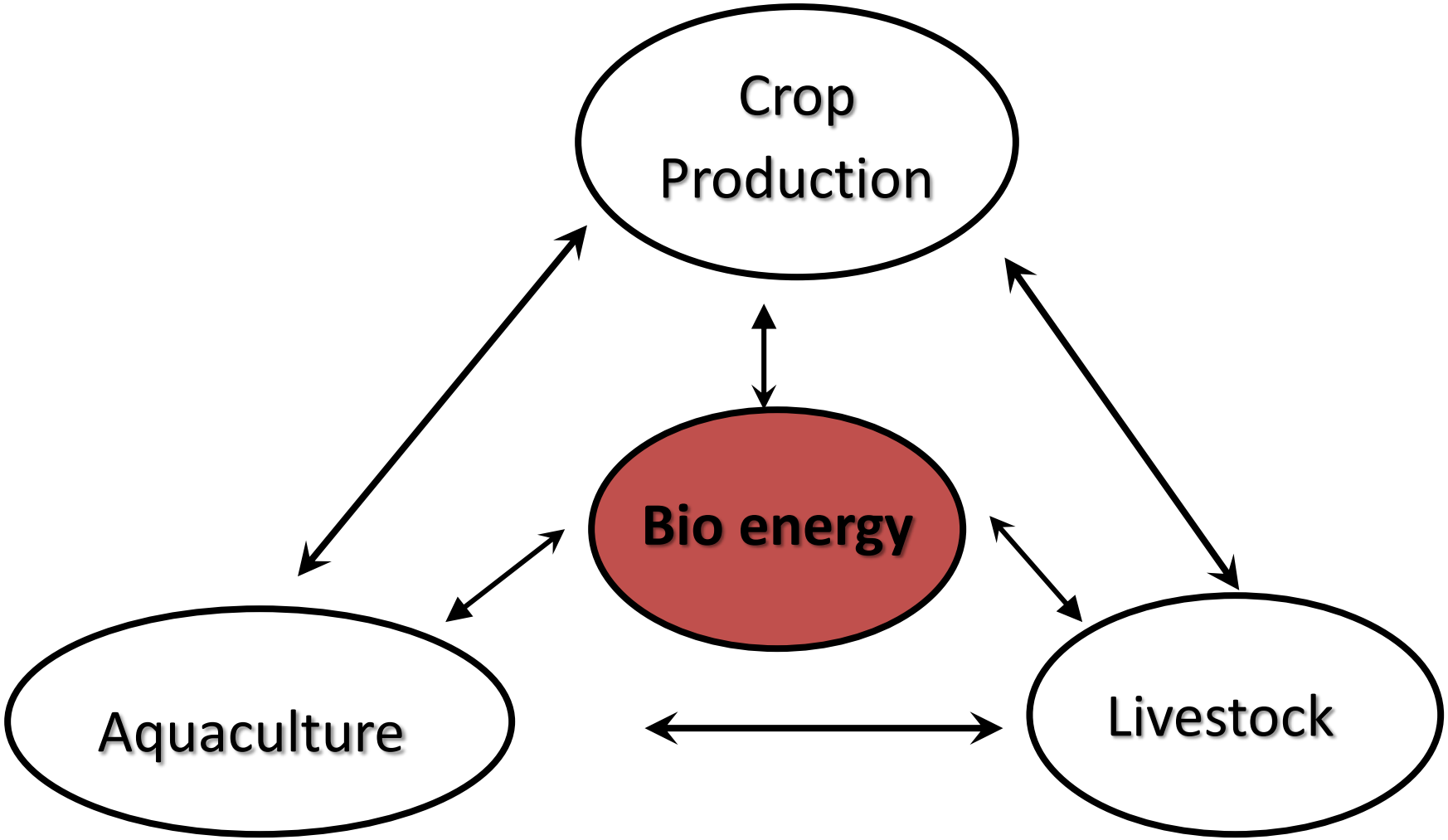
CONVENTIONAL POULTRY PRODUCTION CHAIN



POULTRY CHAIN

THE ALTERNATIVE THAT SONGHAI PROPOSES




Crop
Production
Bio energy
Aquaculture
Livestock

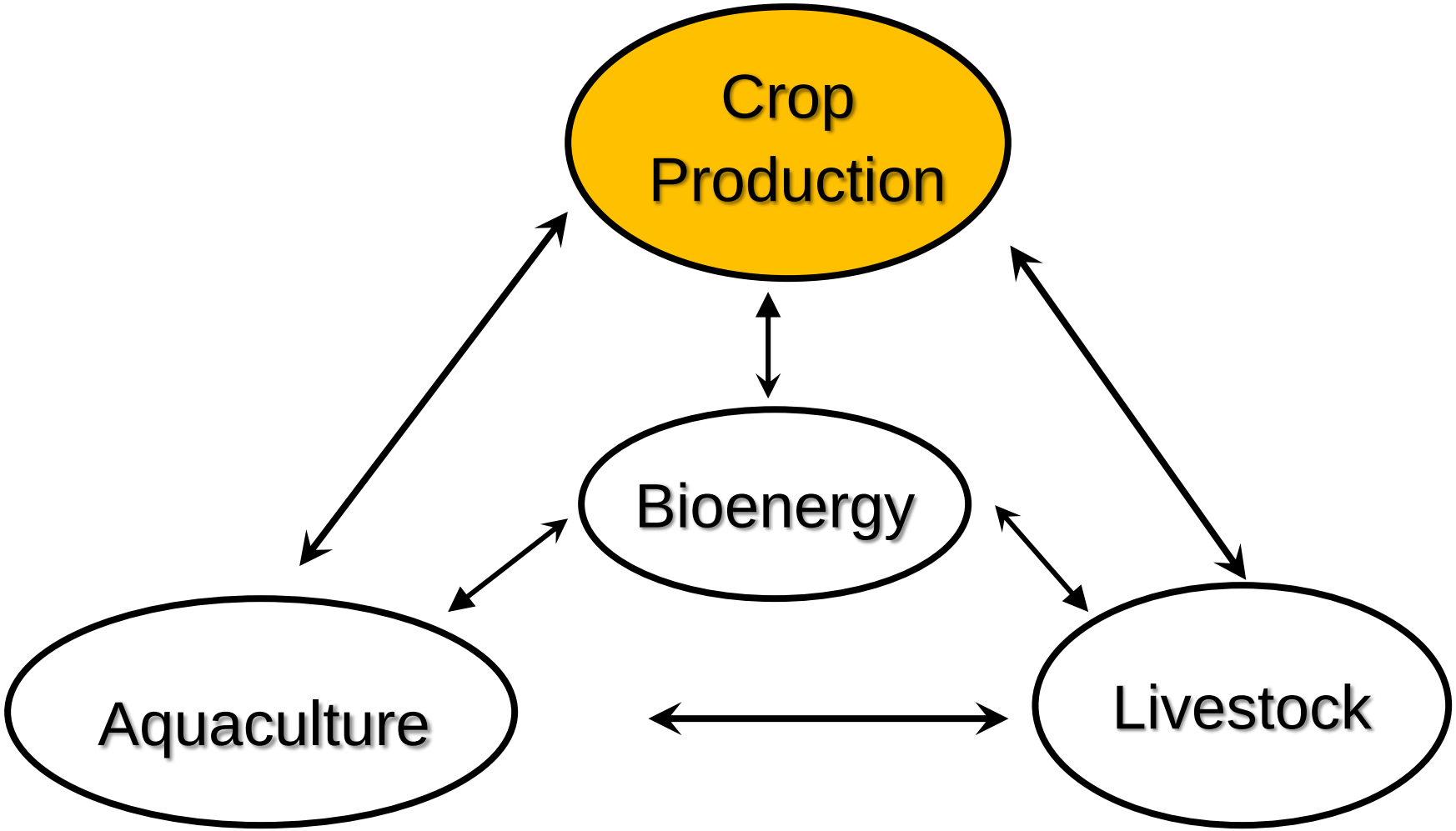
USE OF WATER HYANCINTH FOR WATER PURIFICATION AND ENERGY GENERATION

GASIFIER

OFF GRID ENERGY PRODUCTION

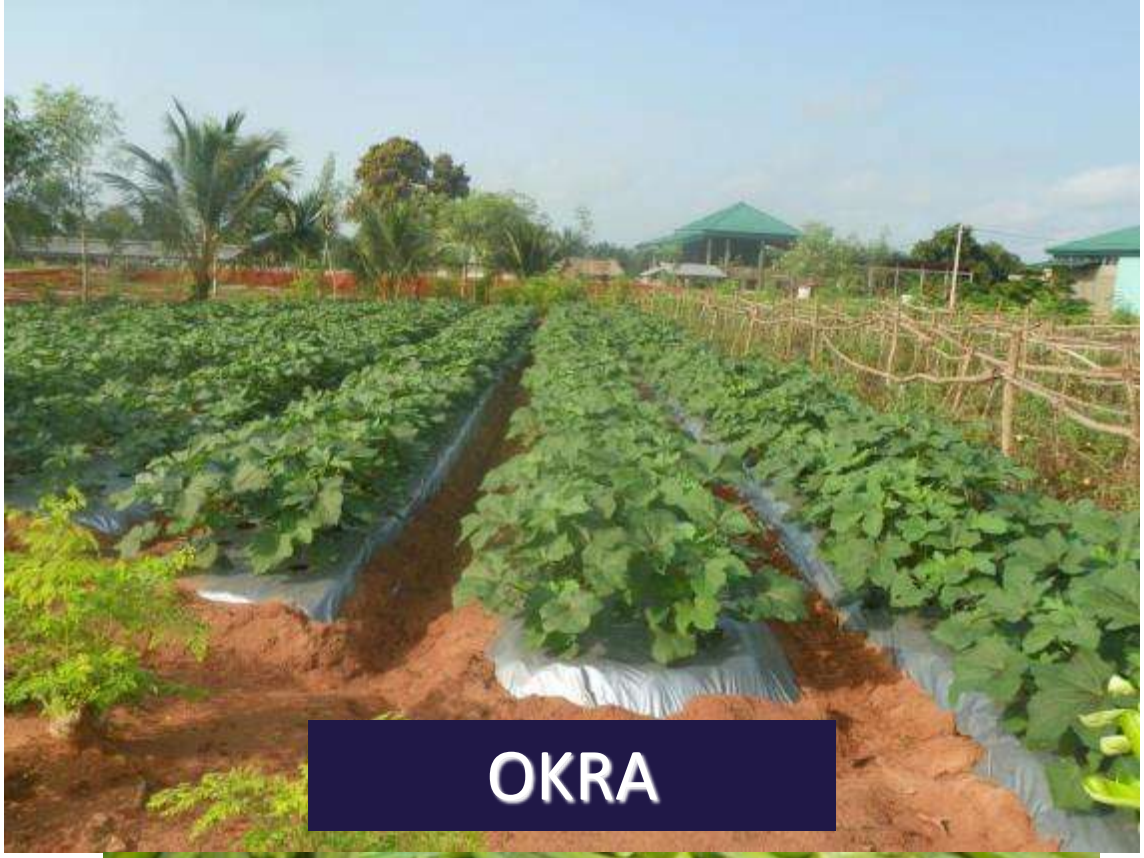
BIOGAS

Integrated Production System



Parameter	Conventional farming	Traditional farming	Integrated authentic Nature Farming using EM
Yield	Medium - High	Low - medium	Medium – High
Quality	Low - medium	Medium - High	Medium – High
Cost	High	Low	Low
Toxicity	High	None	None
Environment	Damaged	Protected	Protected + improved
Sustainability	Not sustainable	Sustainable	Sustainable


MARKET GARDEN
IRRIGATION


OKRA

OKRA

CABBAGE

ONION

CUCUMBER

LAITUCE

HOT PEPPER PRODUCTION

HOT PEPPER PRODUCTION


BELL PEPPER

TOMATO AND CUCUMBER IN THE GREENHOUSE

GROWING AND HARVESTING TOMATO

GROWING AND HARVESTING TOMATO

GREEN BEAN

COMMERCIAL AND INTENSIVE WATER MELON PRODUCTION

VERNONIA

GROUNDNUT

HIGH VALUE CORN ON SUPER SOIL

HARVESTING CORN

MAIZE SHELLING

PINEAPPLE

PINEAPPLE

PAWPAW


BANANA

BANANA

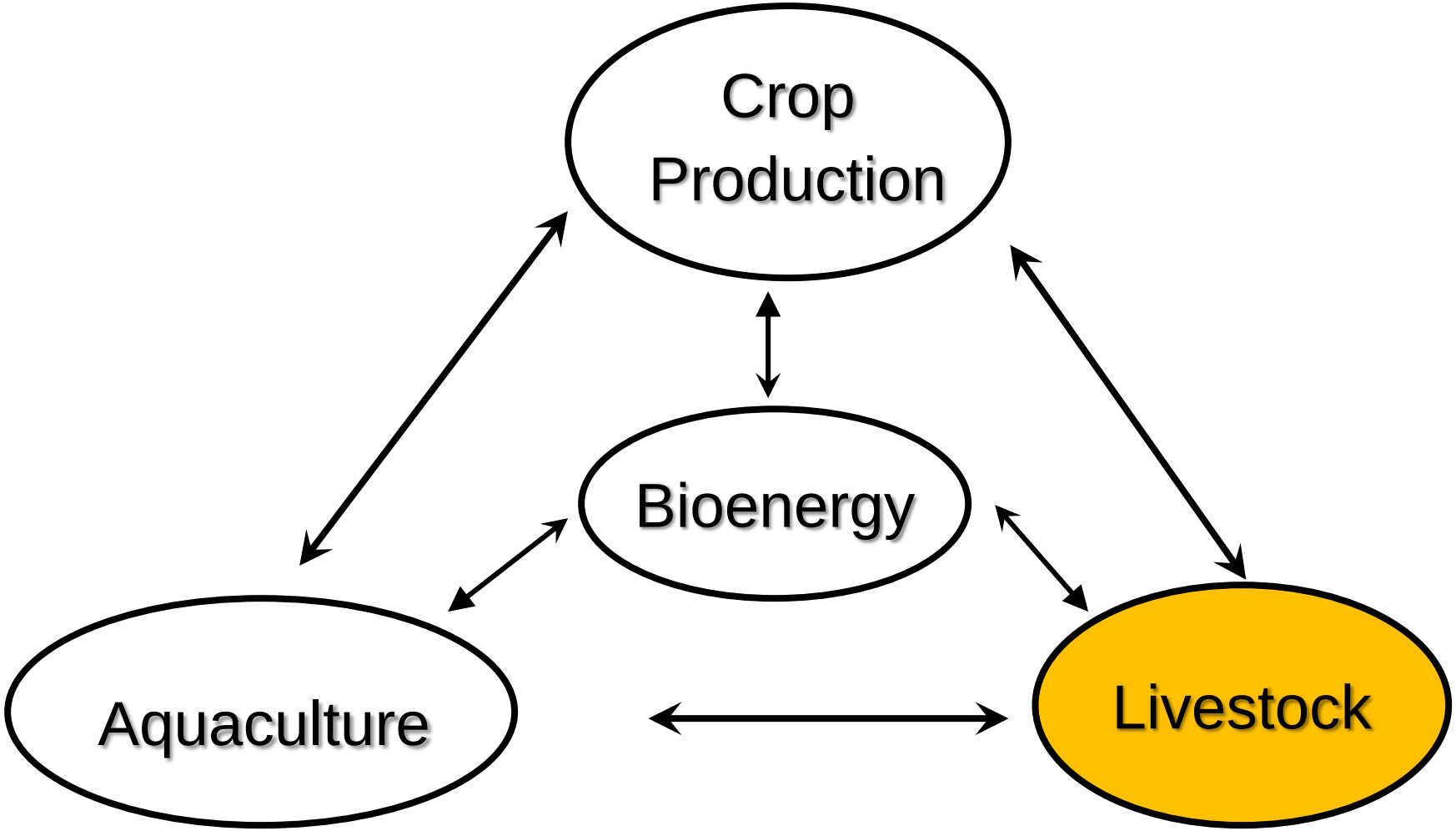
INTENSIVE CASSAVA PRODUCTION

INTENSIVE CASSAVA PRODUCTION

INTENSIVE RICE PRODUCTION

INTEGRATED PEST MANAGEMENT

Integrated Production System



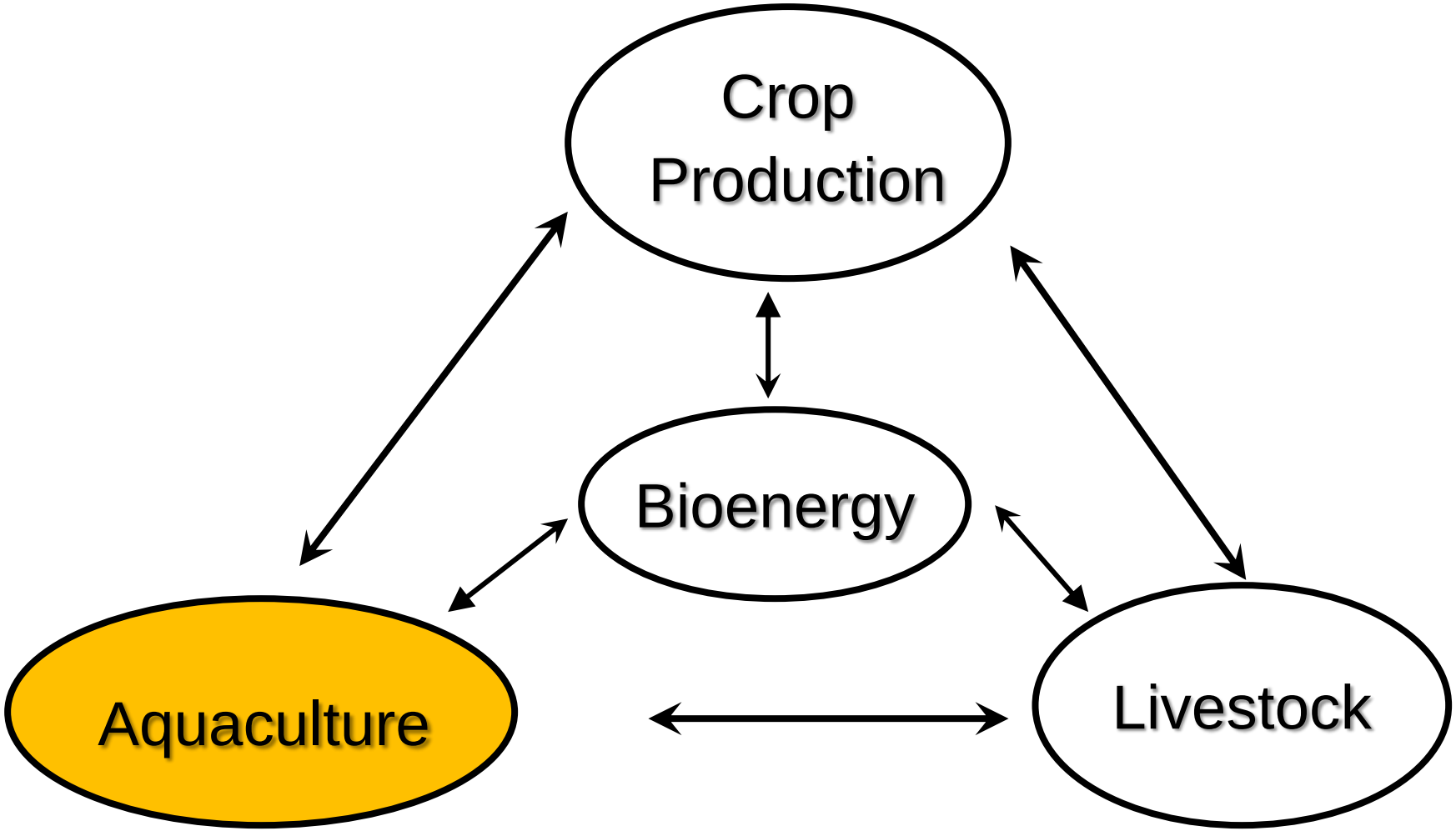
ANIMAL HUSBANDRY

ANIMAL HUSBANDRY

ANIMAL HUSBANDRY

ANIMAL HUSBANDRY

Integrated Production System



AQUACULTURE COMPLEX


FP53

HATCHERY – PRODUCTION OF FINGERLINGS

AQUACULTURE

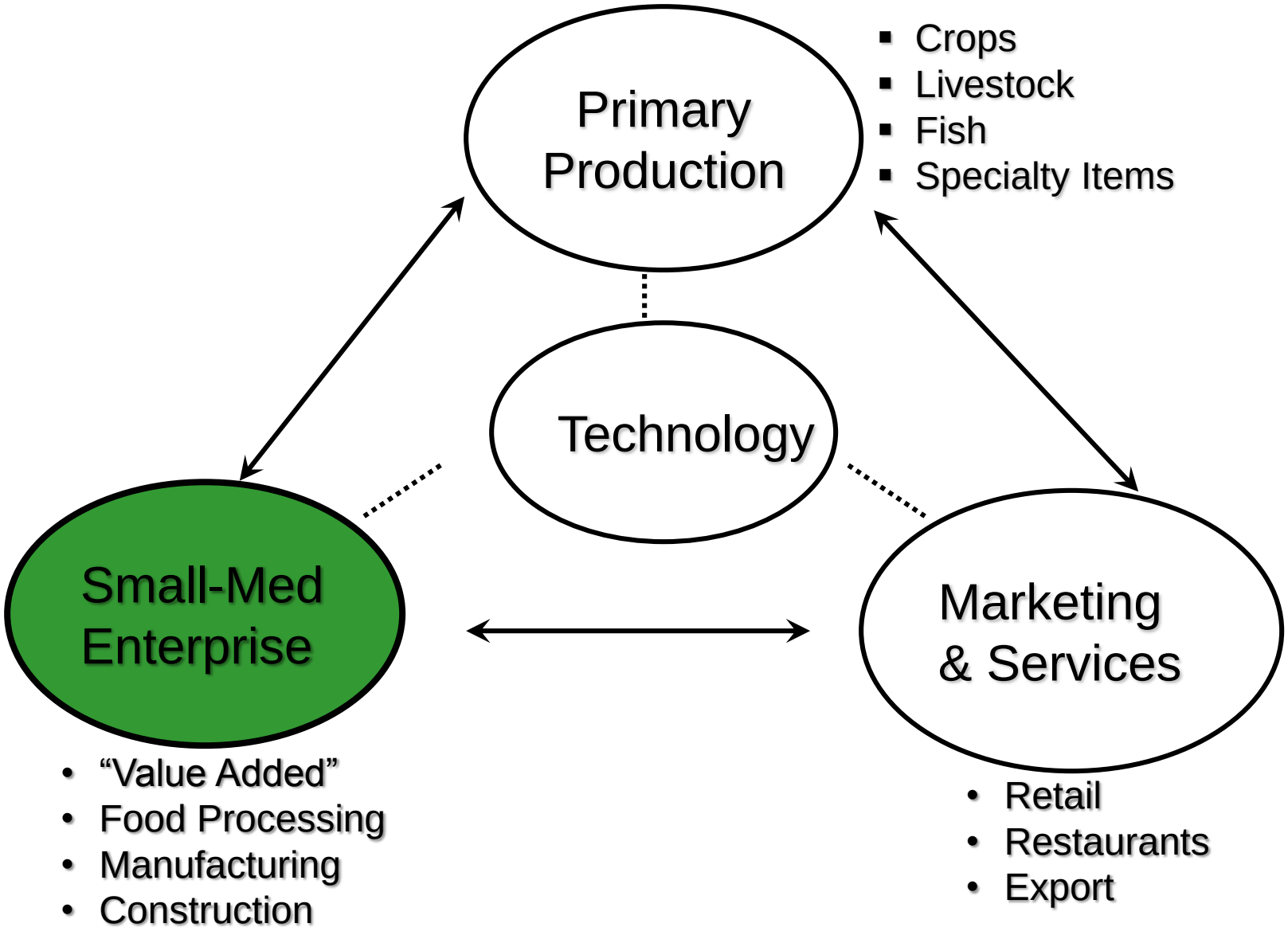
FINGERLINGS

CATFISH – up to 25 Kg


FLOATTING FISH FEED

MAGGOTS PRODUCTION FOR FISH FEEDING

SONGHAI INTEGRATED SYSTEM



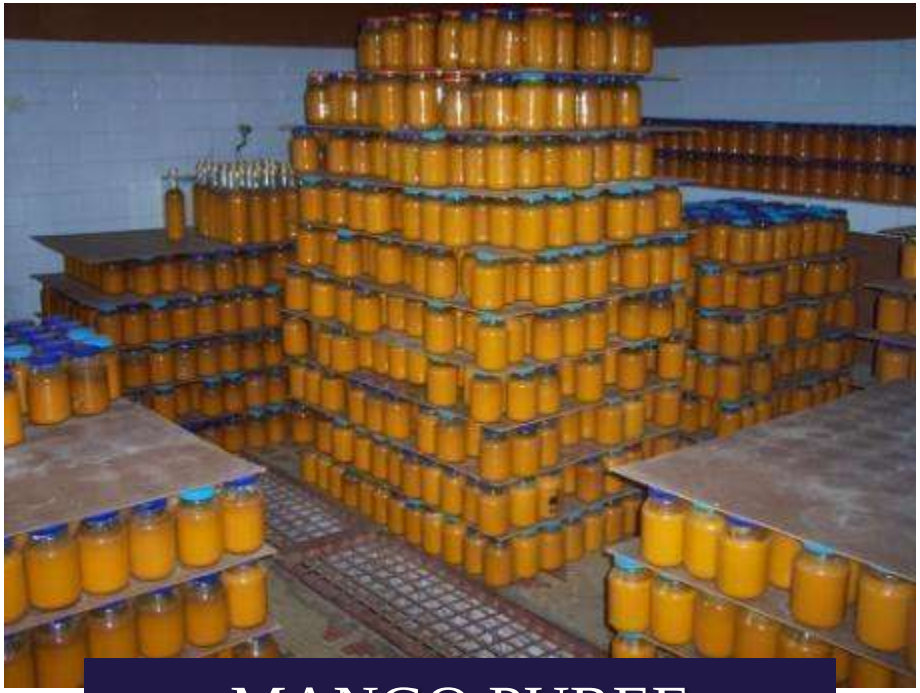
GRATER FOR CASSAVA PROCESSING

RICE TRESHER

PREFILLING & FILLING LINES FOR WATER, JUICE, SOY MILK & OIL

DRIED MANGO

GARI



MANGO PUREE

TOMATO PUREE

BAKERY - PASTERY

MEAT PROCESSING

WATER DISPENSER BOTTLES (25 L)

CARBONATED WATER

CRATES FOR SEEDILINGS – RECYCLED PLASTICS

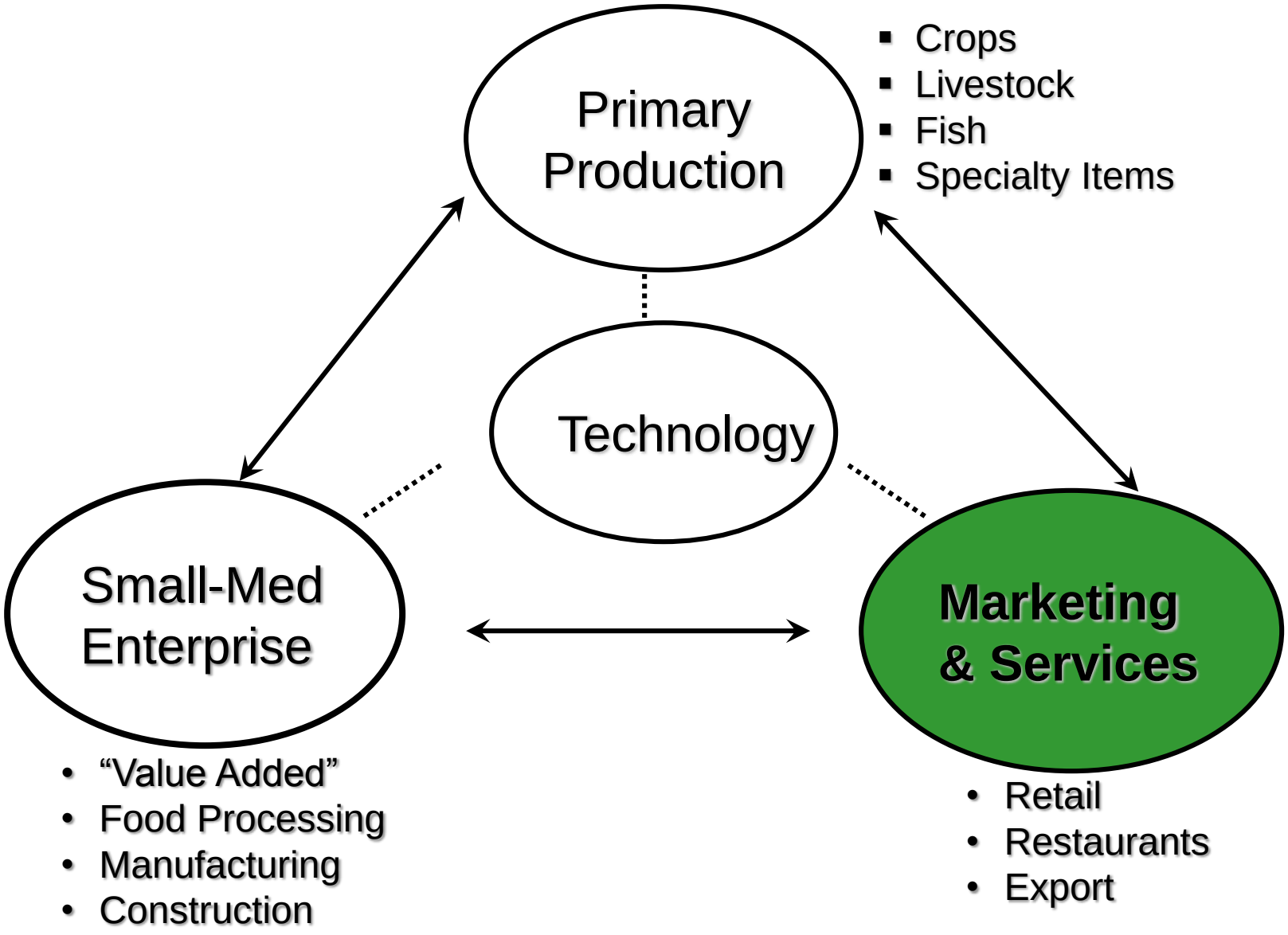
CRATES FOR SEEDILINGS – RECYCLED PLASTICS

PLASTIC RECYCLING FOR THE PRODUCTION

OF FLOWER POTS, BUCKETS ETC

SOAPS – made of Carrot, Aloe Vera, Cucumber, Pawpaw, Moringa

SONGHAI INTEGRATED SYSTEM



MARKETING & SERVICES

HUMAN SETTLEMENT & ECO TOURISM


Songhaï
Cross River State
DEVELOPMENT
INITIATIVE

HUMAN SETTLEMENT & ECO TOURISM

SWEEMING POOL

Open agrifood Orléans

WORLD LEADERS VISITING SONGHAI

THE UN SECRETARY GENERAL VISITING SONGHAI

KOFI ANAN FORMER UN SECRETARY GENERAL VISITING SONGHAI

MOHAMAD YUNUS - NOBEL PRIZE WINNER VISITING SONGHAI

H. E. NICEPHORE SOGLO FORMER PRESIDENT OF THE REPUBLIC OF BENIN AND MR JEAN MARC AYRAULT FORMER PRIME MINISTER (FRANCE) AT SONGHAI

H. E. DLAMINI ZUMA, AFRICAN UNION CHAIRPERSON AT SONGHAI

Open agrifood Orléans

Thanks

Songhaï

L'AFRIQUE RELÈVE LA TÊTE ! AFRICA STANDS UP !

songhai@songhai.org