INTEGRATED BIO-CYCLES FARMING SYSTEM

Cahyono Agus
RCE YOGYAKARTA

Universitas Gadjah Mada
Yogyakarta - INDONESIA

THE ROLEOF AGRICULTURE FOR HUMAN LIFE

- around 60% poverty in Indonesia was located in rural areas, more than 70% of rural poverty was linked to agriculture.
- agriculture is a way of life and source of life for most people in our community.
- Agriculture must be able to give a function as a primary supplier for food, clothing and shelter for the life of all human beings in the world, as the sustainable natural conservation, as the provision for natural beauty, as the producer of bio-pharmacy and bio-energy.
- The improvement of agricultural conditions in the form of strategies, regulations, implementations, technology, management, institutions and so on will improve all aspects and bases of life involve

Center of Excellence in KP4 UGM

INTEGRATED FARMING

EfSD:
Economic,
environment,
socio-culture

NATURAL RESOURCE MANAGEMENT
- **Land & Water Resource Management**
- **Biological Resource Management**
- **Environmental resource management**

ABCG:
Academic
Business
Community
Government

PRODUCTION AND COMSUMPTION
FOOD, FEED, FUEL, FERTILIZER , WOOD, WATER, OXYGEN, MEDICINE, EDU-TAINMENT

INTEGRATED BIO-CYCLE FARMING SYSTEM (IBFS)
(Integrated Crop-, -Moisture-, -Nutrient-, -Pest Management)

GENETIC IMPROVEMENT
- Selection
- Cross breeding
- DNA manipulation

GAMA FOOD UGM

SITE ENGINEERING
- Moisture Regime
- Nutrient Regime
- Temperature Regime

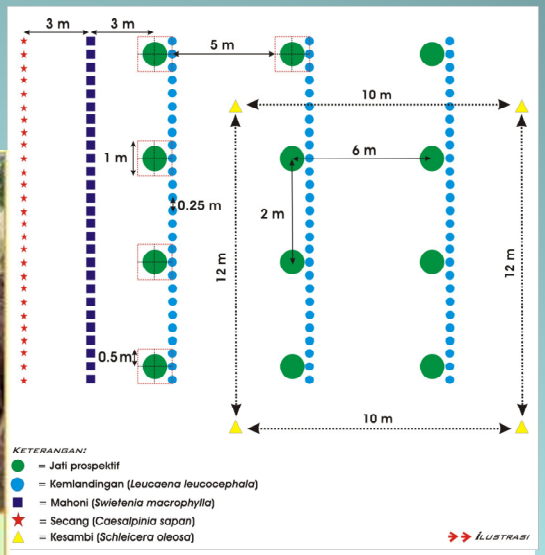
5 A (AGRO-PRODUCTION, AGRI-BUSINESS, AGRO-TECHNOLOGY, AGRO-INDUSTRY, AGRO-TOURISM)

9 R (Reduce, Reuse, Recycle, Repair, Refill, Replace, Rebuild, Replant, Reward)

7W (WAREG, WARAS, WUSONO, WISMO, WASIS, WASKITO, WIBOWO)

INTEGRATED CROP MANAGEMENT

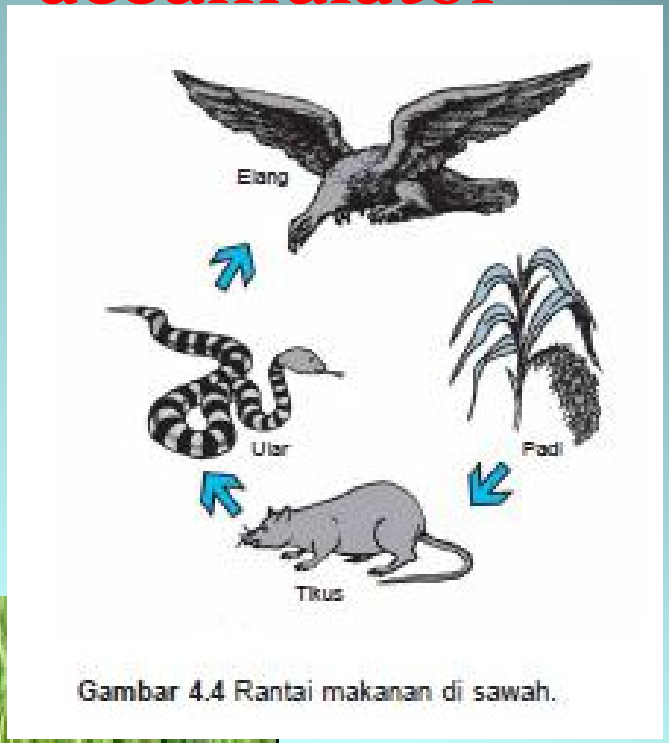
- Agro-forestry, consist of agriculture, plantation, forestry, fishery, animal husbandary and other life in one unite of land



INTEGRATED PEST MANAGEMENT

- Bio-pesticide, medicine plant, natural enemy, predator, bio-remediation, bio-accumulator

Berkheya sp.



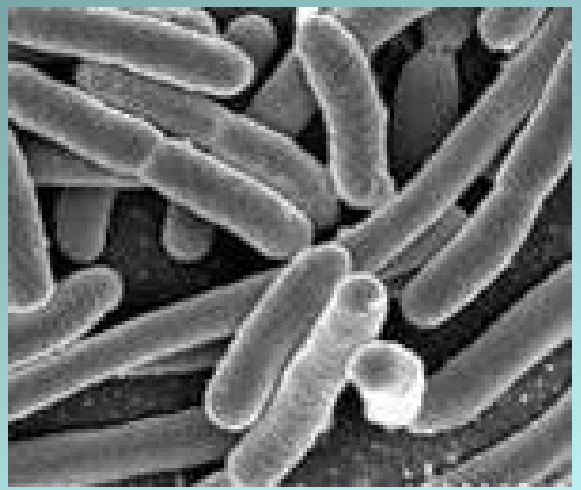
Gambar 4.4 Rantai makanan di sawah.

INTEGRATED MOISTURE MANAGEMENT

- Effective and efficient soil moisture management through: technical irrigation, semi-technical irrigation, non-technical irrigation, pump, ”sumur renteng”, infuse system, pipe, scheduling, system surjan, gel,**Mulch**, suitable low consumption crop species

INTEGRATED NUTRIENT MANAGEMENT

- Integrated and empowering nutrient cyling, compost, green manure, bio-fertilizer.



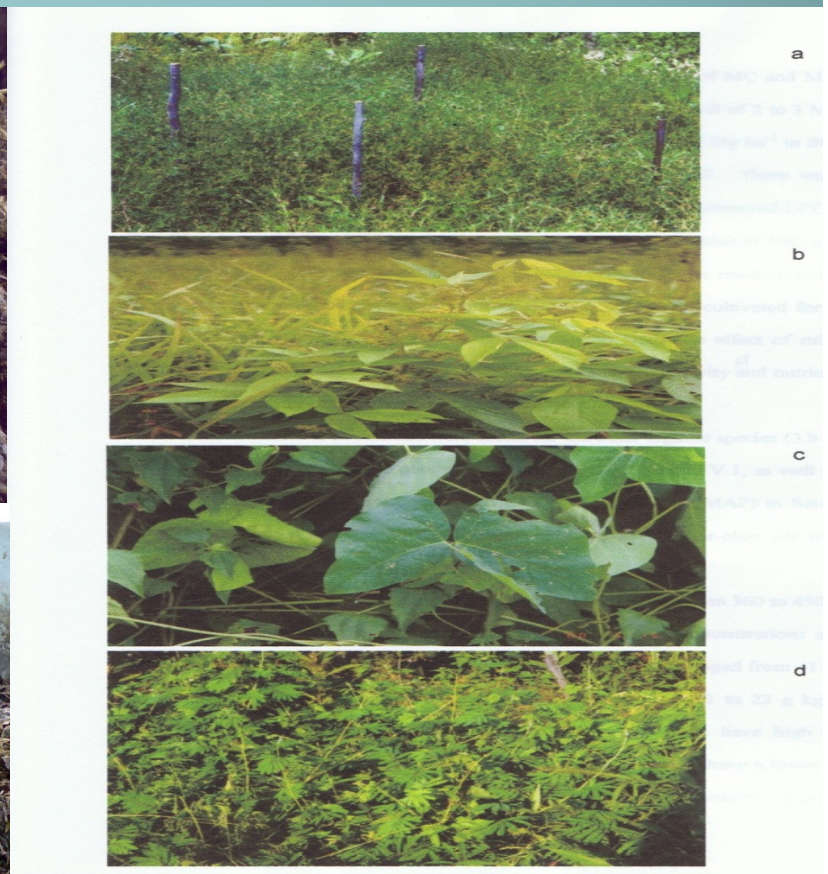


Fig. 5-4. Condition of legume at 6 month after planting a. *Styloxanthes quionensis* (SQ) b. *Flamengia congesta* (FC), c. *Mucuna chochuchinensis* (MC), d. *Mimosa pudica* (MP)

Key characteristics of various types of sustainable agricultural system

LOW INPUT/INTEGRATED	ORGANIC FARMING	BIO-DYNAMIC	AGROFORESTRY	INTEGRATED BIO-CYCLE (IBFS)
Integration of advantageous natural process	Integration of land, environment and health of human beings	Management of organism which optimise quality of land, plants, animal and human health	Integration of wood and herbal plants	Integration of agriculture and non agriculture sector
Adding environmental values	Natural fertilizer. Environmental values	Economic values	Environmental values	Value of environment, esthetics and economics
Plant rotation	Plant rotation,diversification and ideal space	Plant rotation,diversification and ideal space	Spatial diversitas tipe crop	Rotation and diversity of plants

LOW INPUT/INTEGRATED	ORGANIC FARMING	BIO-DYNAMIC	AGROFORESTRY	INTEGRATED BIO-CYCLE
Impact of minimum land management	Adequacy of N through fixation -N	Adequacy of N through fixation N, Special preparation for improvement of land quality nd living plants	Plant variation and pastoral system	Artifical and functional Bio-technology, nanotechnology, pro-biotik
The use of chemical fertilizer	Prohibition on treatment of plants and fertilizer	Prohibition on treatment of plants and fertilizer	Fertilisation on agricultural plants, the use of cycle in forest plants	Management of closed organic cycle and integration in an integrated area among ICM, IPM, IMM, INM, IVM

LOW INPUT/INTEGRATED	ORGANIC FARMING	BIO-DYNAMIC	AGROFORESTRY	INTEGRATED BIO-CYCLE
The use of pesticide	Management of traditional animal	Management of traditional animal		Management of integrated bioprotection and ecosystem health management
General principle	Principle of grouping units	Principle of grouping units	General principle	Landscape ecological management, agropolitan concept
Specific management of plants	Specific management pf plants	Specific management of plants	Specific management pf plants	Specific management of plant
Semi-traditonal	Natural	Integrated	Traditional	Holistic and integrated
Stockdale & Cookson (2003), Chan, (2006)	IFOAM (1998),	Koept *et al* (1976),	Stockdale & Cookson (2003)	This paper

Pengelolaan Limbah Organik Kampus UGM

```
ERROR: stackunderflow
OFFENDING COMMAND: begin

STACK:
```