RESEARCH TITLE

Application of Effective Microorganisms Technology On Management and Meat Quality of Japanese Quail (*Coturnix Japonica*)

Presented By:

Mohd Fadzli bin Mohd Fadzal

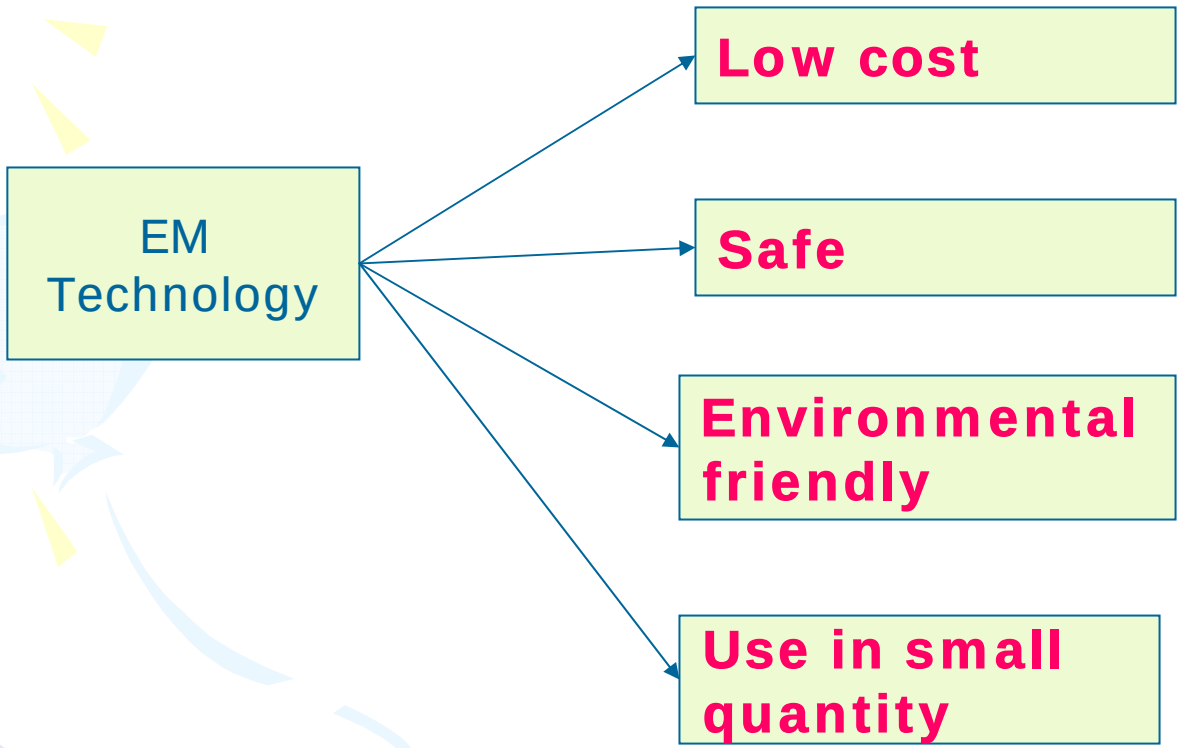
Supervised by:

Dr. Lee Chew Tin

Research Background

- Malaysia – from developing country to advanced country
- Animal husbandry and crops production
- Many researches was conducted to improve these sector
- For example :
  - Improved chemical – e.g:- fertilizer, bran
  - New genetic for plant @ poultry (DNA recombinant)
  - **Effective Microorganisms**

Why we use Effective Microorganism?



Problem Statement

- Previous research and investigation are limited
- More focus on plant and other poultry
- Many of them use chemicals
- The main problem:
  - **How to increase the quality without affect to environment?**
  - **How to give the best option to the public and at the same time, gain a good profit to the breeder?**

So, we use EM as an alternative option for this problem

Objective

To investigate the management and meat quality of the Japanese Quail (*Coturnix Japonica*) following the application of Effective Microorganisms technology.

Scope

To monitor and **analyze** the mortality rate and average weight of Japanese quail

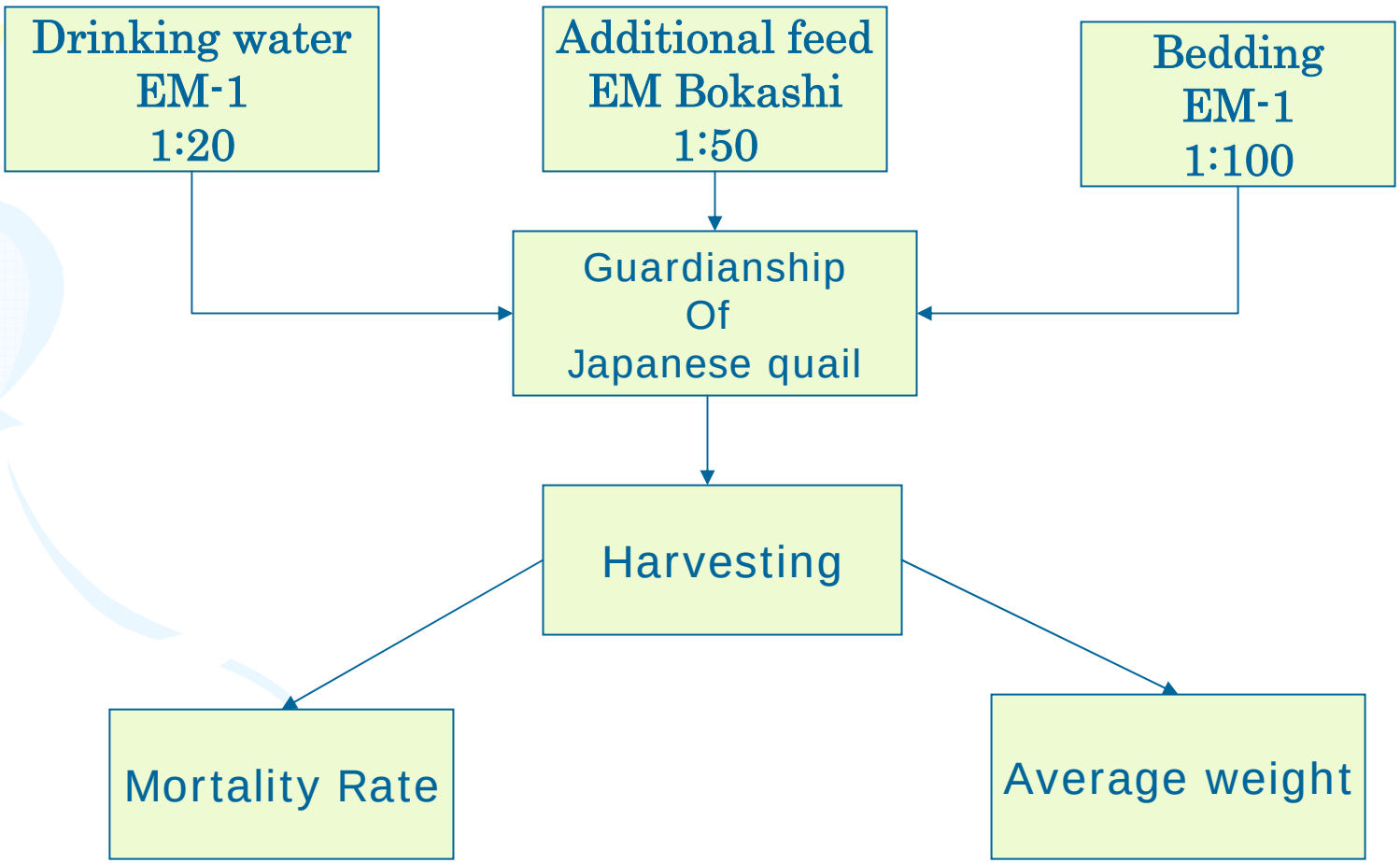
To study the nutrient content of Japanese Quail using proximate analysis

To compare the meat quality of Japanese Quail with and without the application of Effective Microorganisms.

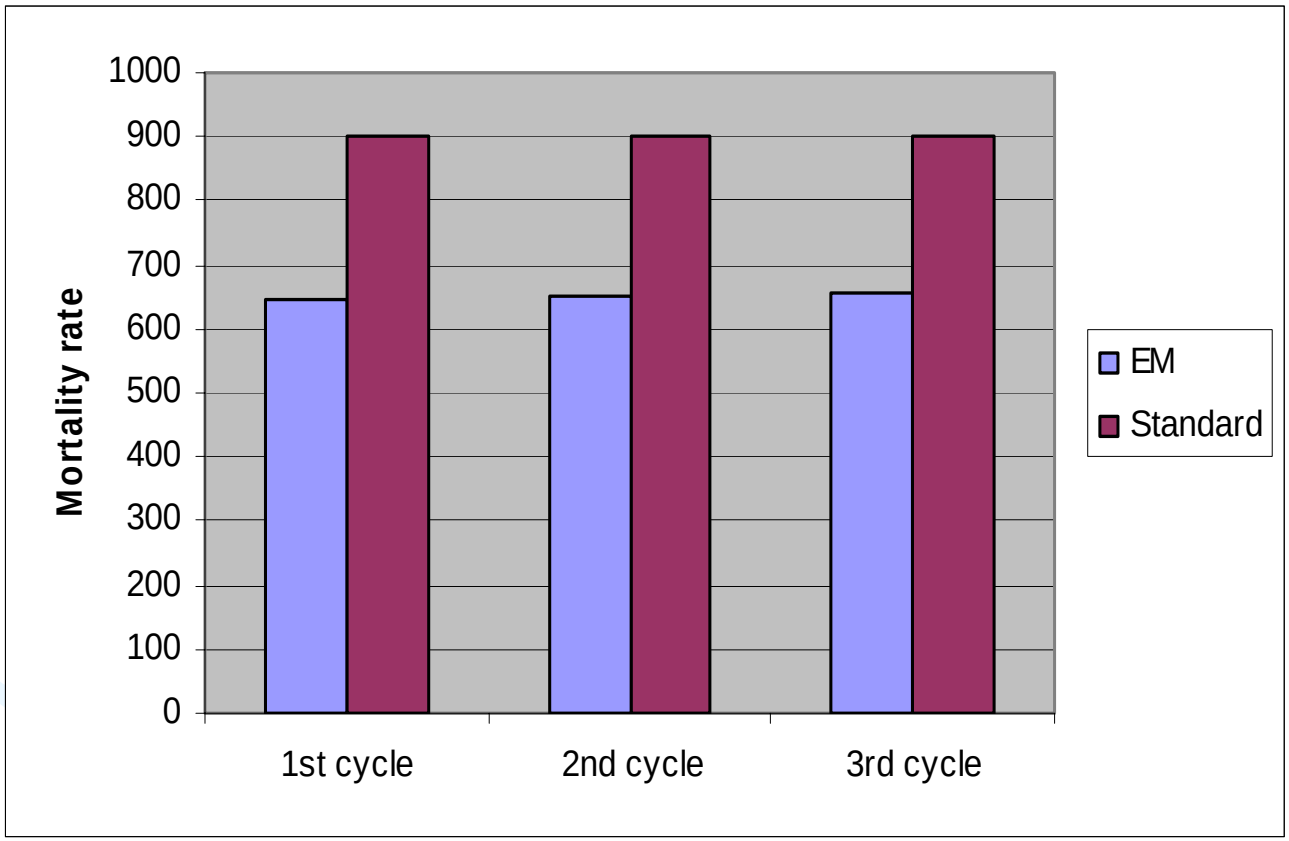
SCOPE 1:

To monitor and **analyze** the mortality rate and average weight of Japanese quail

Management for Japanese quail

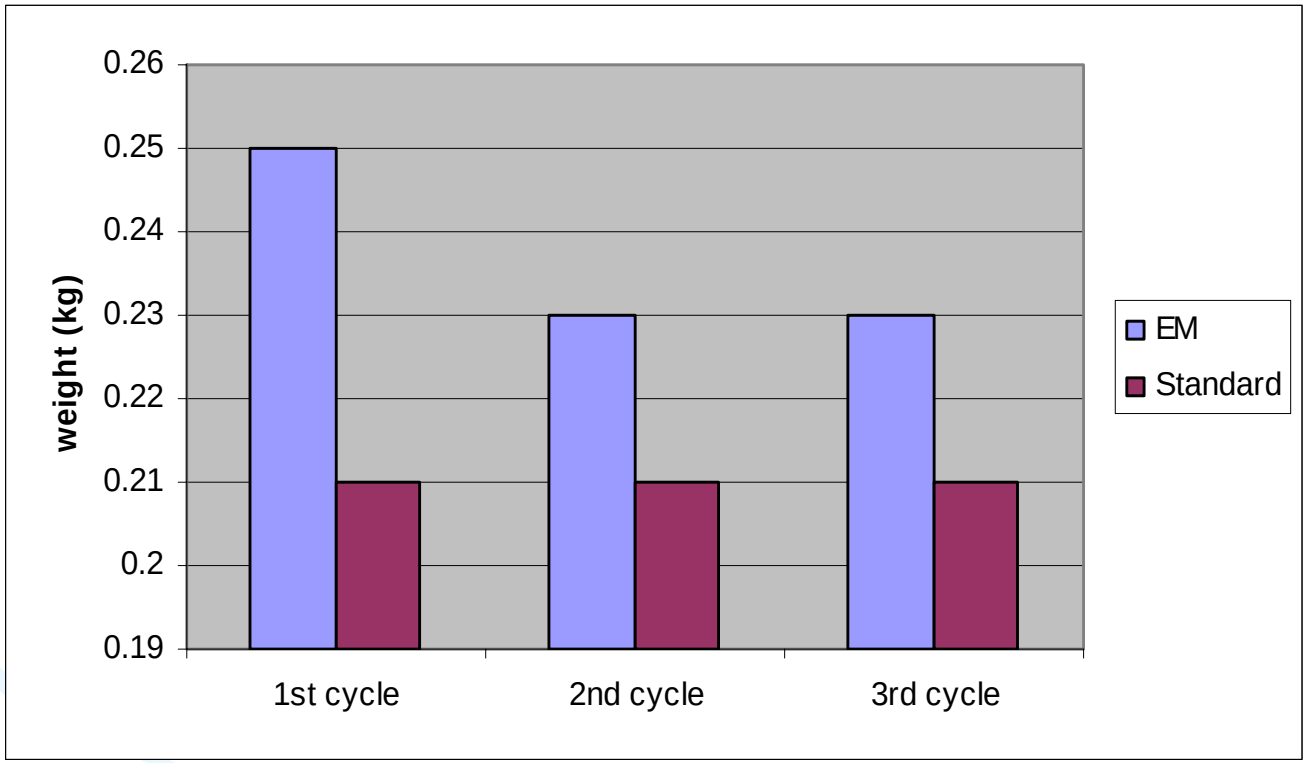


Mortality Rate



Comparison of mortality rate for 4500 birds of Japanese Quail (with & without EM) per cycle or intake

Average weight



Comparison for the average weight of 4500 birds of Japanese quail per cycle/intake, with and without EM-applied

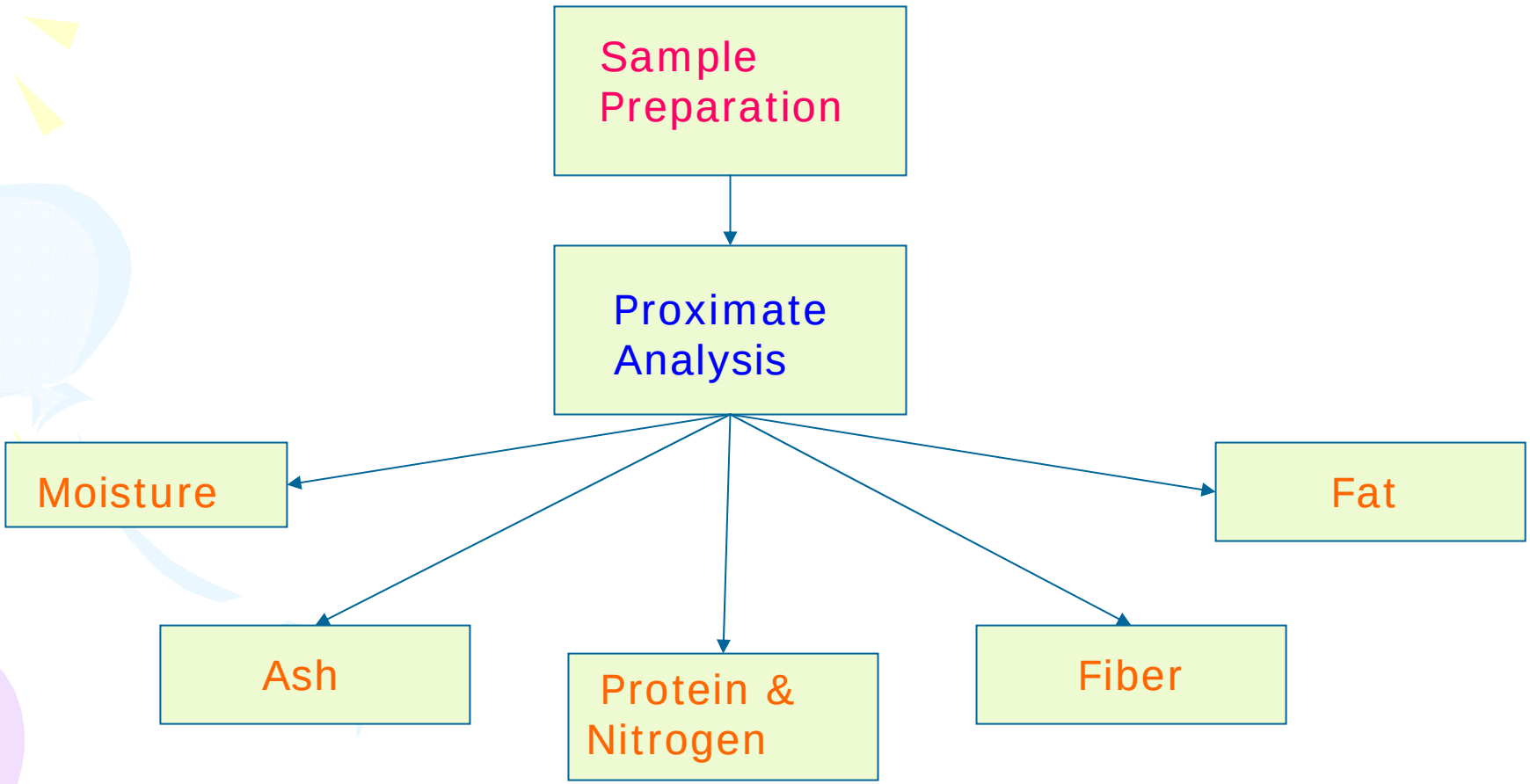
SCOPE 2:

To study the nutrient content of Japanese Quail using proximate analysis

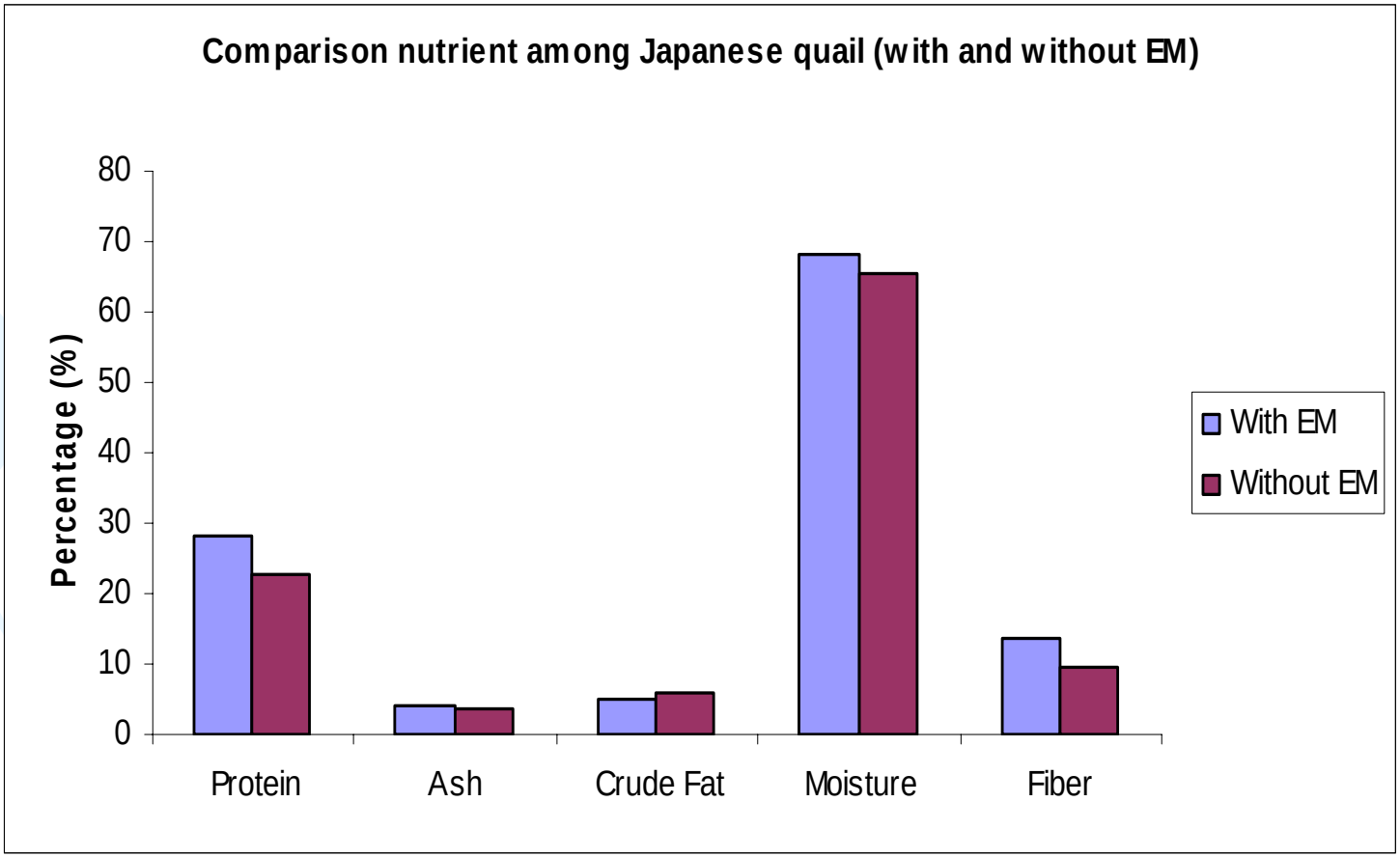
SCOPE 3:

To compare the meat quality of Japanese Quail with and without the application of Effective Microorganisms

Sample Analysis



Nutrient content



Comparison of nutrient content for 4500 birds Japanese quail per cycle (with and without EM)

	With EM	Without EM
Crude Protein (%)	28.32	22.5
Moisture(%)	68.35	65.48
Ash (%)	4.06	3.52
Fiber (%)	13.55	9.56
Crude Fat (%)	5.03	5.8

Conclusion

Following the application of EM technology, the mortality rate among the Japanese Quail has been reduced.

The average weight and the nutrient content for the Japanese Quail has also been increased with EM technology

References.

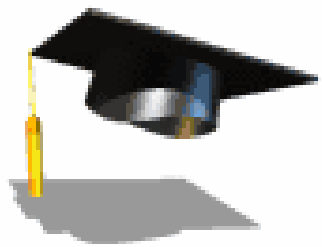
- FutureTech Researcher Group, "*The Introduction to EM – Effective Microorganisms,* 2006
- Dr Teruo Higa, "*An Earth Saving Revolution, Volume* I", 2003
- Higa, T. 1991. "*Effective microorganisms: A biotechnology for mankind".* P.8-14. Department of Agriculture, Washington, D.C., USA.
- *Panduan Menternak Puyuh Pedaging IKTA",* Broiler's Institute of Development, Johor Bahru

References.

- Hornick, S.B. 1992. *Factors affecting the nutritional quality of crops*. Amer. J. Alternative Agric. 7:63-68.
- Pearson, D (1976). " *The Chemical Analysis of Food*", 7th Edition, Churchill Livingstone, Edinburgh
- W.J. Li, Y.Zh. Ni and H. Umemura (1992), *"Effective Microorganisms for Sustainable Animal Production in China "* Beijing Agricultural University, Beljing, China
- S.Chantsavang, P. Piafupoa and O. Triwutanon (1996), "*Effect of EM on Growth, Egg Production and waste Characteristic of Japanese Quail.*", Department of Animal Science, Kasetsart University, Bangkok, Thailand

Thank You

Q & A Session



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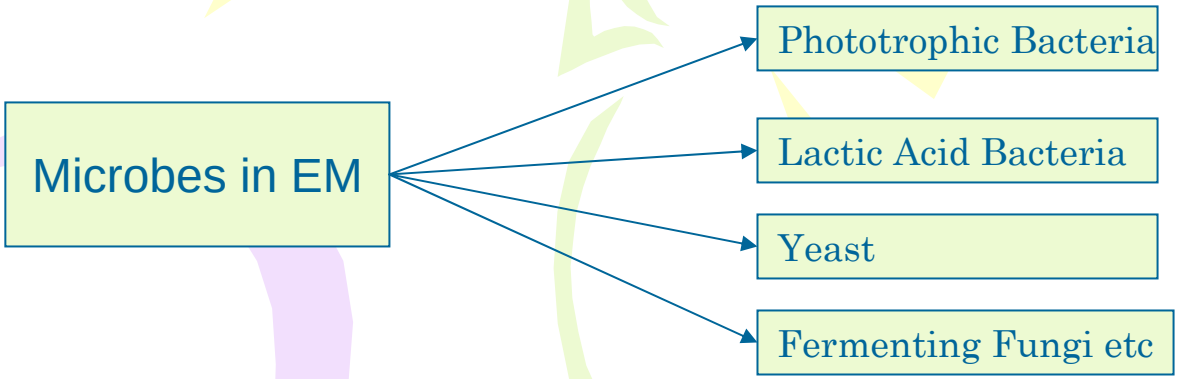
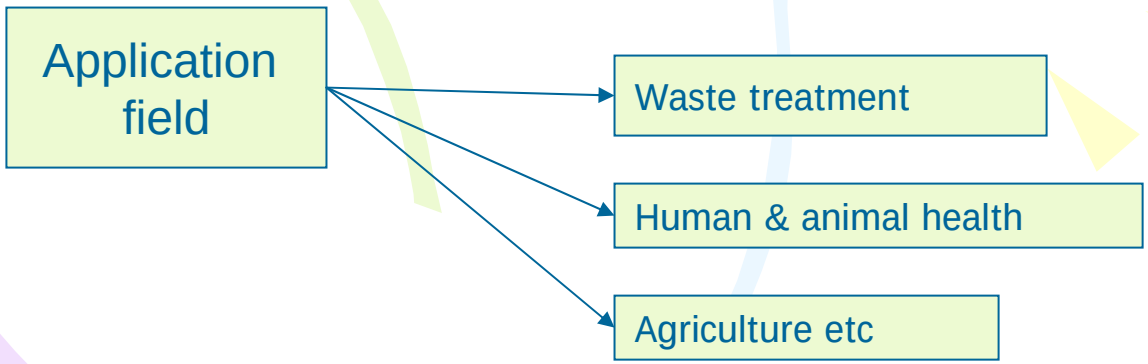
Effective Microorganism



- **Main function : To increase the beneficial microbes either inside the soil or body**

Also as an alternative to chemicals



Microbes in EM

- Non-harmful
- Non-genetically-modified (non-GMO)
- Not a fertilizer
- Not a medicine

EM

Japanese Quail

- Scientific Name = *Coturnix Japonica*
- In a group of bird which including chicken, duck, goose and other type of birds
- One of the smallest type in birds' family
- Have 35 days for its life cycle

Medium of research

- Japanese Quail
- *WHY:*
  - *Have a market potential*
  - *Give more option*
  - *Increase the quality of food industry*
  - *Can generate more income*
  - *The guardianship is simple*

	Chicken	Duck	Beef	Quail
Protein (%)	28.9	27.6	29.9	22.5
Fat (gram)	7.41	39.0	9.28	5.8
Calorie (kcal)	190	404	211	145
Ash (gram)	1.8	1.14	Not given	3.52
Iron (mg)	1.2	Not given	3.0	4.4
Cholesterol (mg)	89	76	86	72
Minerals (%)	14.5	5.36	13.75	18.6

Source: Jabatan Perkhidmatan Haiwan Perak

Japanese Quail

Moisture Content

- Moisture, % = $\frac{M1 - M2}{M1} \times 100$

- Where:
- M1= mass g before dried;
- M2= mass in g after dried 7 hours.

- Equipment : Oven at 105°C

Ash Content

$$\text{Ash, \%} \qquad \frac{A1 - A2}{S} \times 100$$

Where

Weight ash, g + crucible, g (after 12-18 hours ignition) : A1

Weight crucible, g : A2

Weight sample, g : S

Equipment : Furnace at 550°C

Protein and total nitrogen

Original weight sample : W
H_2SO_4 volume is use for titration H_3BO_3 : Is
H_2SO_4 volume is use for blank titration : Ib
H_2SO_4 Concentration (N) : N

$$\% \text{ Nitrogen} = \frac{(Is - Ib) \times N \times 1.4}{W}$$

% Protein = % nitrogen x Protein factor for sample (6.25)

Total Fiber

$$\% \text{ Total fiber} = \frac{(S-K)-A}{W} \times 100$$

Where

Weight sample before dried, g	:	W
Weight of filter, g	:	K
Weight of crucible, g - weight of filter,		
g + dried sample weight, g	:	S
Weight of crucible + ash content, g	:	A

Fat Content

Thimble weight	=	T
Thimble + sample weight	=	W
Weight of flask + porous chips	=	F
Weight of flask + porous chips + extracted oil	=	Q
Weight of extracted oil	=	Q - F
	=	M

Percentage of crude oil in sample (%) = M / W x 100

Moisture Content

- Moisture, % $= \frac{M1 - M2}{M1} \times 100$

Ash Content

- Ash, % $\frac{A1 - A2}{S} \times 100$

Protein and total nitrogen

- % Nitrogen $= \frac{(Is - Ib) \times N \times 1.4}{W}$

- % Protein = % nitrogen x Protein factor for sample (6.25)

Total Fiber

- % Total fiber = $\frac{(S-K)-A}{W} \times 100$

Fat Content

- Crude oil in sample (%) = $M / W \times 100$

Week	1st intake Mortality	2nd intake Mortality	3rd intake Mortality
1	375	360	386
2	162	164	167
3	86	102	98
4	25	27	24
Total	648	653	655

Week	1st intake Average Weight (kg)	2nd intake Average Weight (kg)	3rd intake Average Weight (kg)
1	0.09	0.09	0.08
2	0.14	0.13	0.12
3	0.21	0.19	0.19
4	0.25	0.23	0.23

	1st Test (%) (14 August 2006)	2nd Test (%) (25 September 2006)	3rd Test (%) (22 January 2007)	Average (%)
Protein	26.89	29.57	28.51	28.32
Ash	3.94	4.21	4.02	4.06
Fiber	13.26	13.86	13.53	13.55
Moisture	67.85	68.48	68.72	68.35
Crude Fat	5.64	4.31	5.15	5.03