

# PRESENT STATUS OF BACKYARD HATCHERY IN INDONESIA

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# BACKYARD HATCHERY DEVELOPING IN INDONESIA

- Penaeid shrimp
  - Black tiger shrimp (*Penaeus monodon*)
  - White shrimp (*Litopenaeus vannamei*)
- Grouper
  - Humpback grouper (*Cromileptes altivelis*)
  - Brown-marbled grouper (*Epinephelus fuscoguttatus*)
  - Leopard coral grouper (*Plectropormus leopardus*)
- Milkfish (*Chanos chanos*)
- Seabass (*Lates calcarifer*)
- Mud crab (*Scylla* sp.)

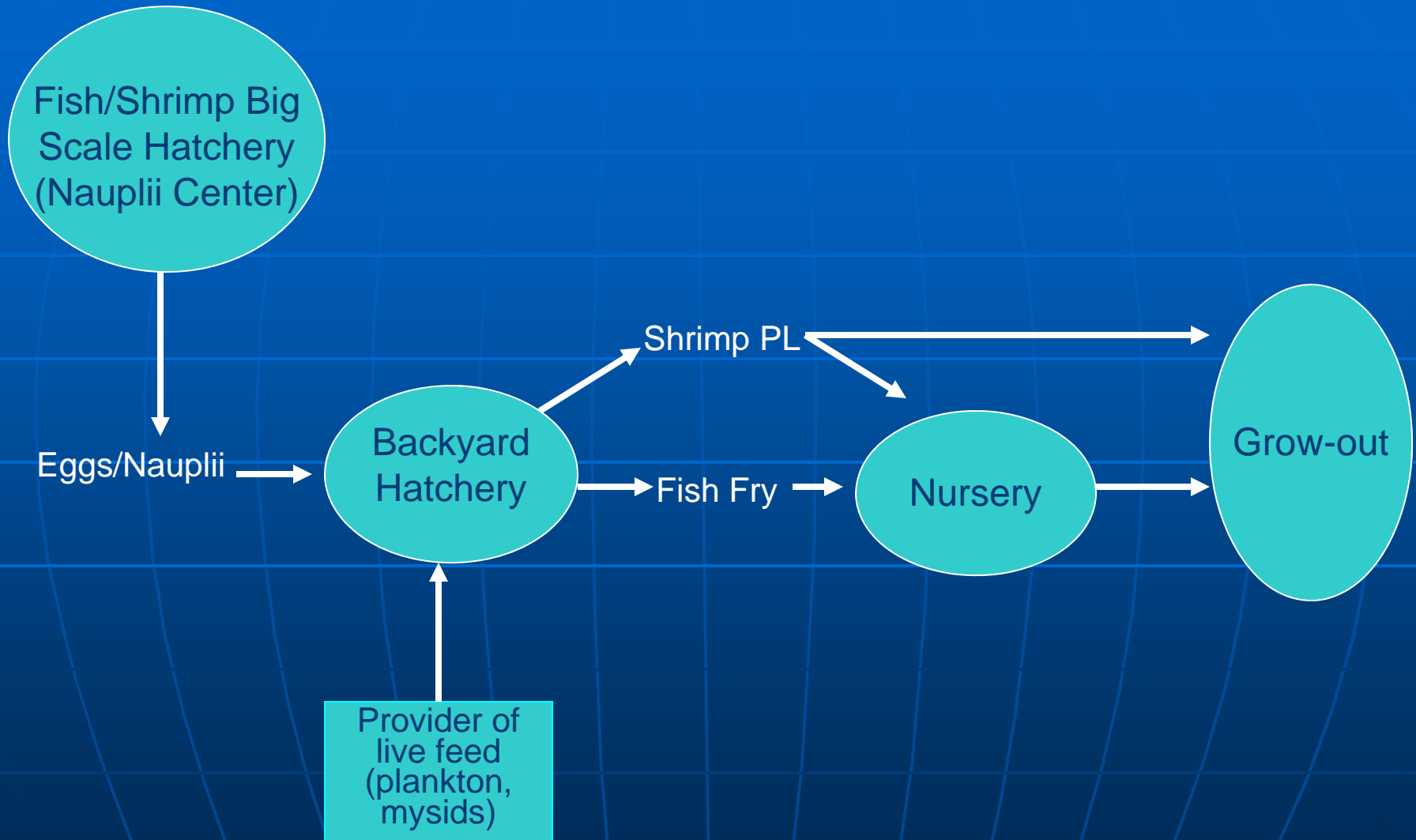
# BACKYARD HATCHERY DEVELOPMENT

- 1980-1996 : Fast development of tiger shrimp backyard hatcheries (starting in Jepara, and developing mainly in West Java, Central Java, East Java, Lampung, East Kalimantan and South Sulawesi)
- Since 1997 : Number of tiger shrimp backyard hatcheries decreased dramatically due to the failures of shrimp culture caused by WSSV diseases
- 1995 to present : Development of milkfish backyard hatcheries in Gondol, Bali and Situbondo, East Java
- 1998 to present : Development of grouper backyard hatcheries in Gondol, Bali and Situbondo, East Java
- 2008 to present : Development of white shrimp backyard hatcheries in Situbondo and Tuban (East Java)

# CHARACTERISTICS OF BACKYARD HATCHERY

- Simple rearing management :
  - Shrimp : Rearing nauplii to PL-10
  - Grouper : Rearing eggs to fry of 2.5 cm
  - Milkfish : Rearing eggs to a 14-16 day old fry
- Using simple tank and facilities with minimum standard
- Number of labour : 2-4 persons
- Number of larval rearing tank : 4-6 tanks
- Eggs or nauplii are purchased from big scale hatchery (nauplii center)

# BACKYARD HATCHERY SEED PRODUCTION AND DISTRIBUTION



# IMPROVEMENT OF BACKYARD HATCHERY



- Using SPF-shrimp broodstock/nauplii
- Implementing biosecurity
- Implementing BMP's for hatchery management





# Improvement of backyard hatchery from outdoor to indoor



Shrimp backyard hatchery (SBH) outdoor



Indoor SBH with bamboo wall



Indoor SBH with cement wall

# Number of Shrimp Backyard Hatchery Farmers



Location	Number of owner	
	Tiger shrimp	White shrimp
Central Java	23	
East Java	15	500
Lampung	67	
East Kalimantan	19	
South Sulawesi	14	

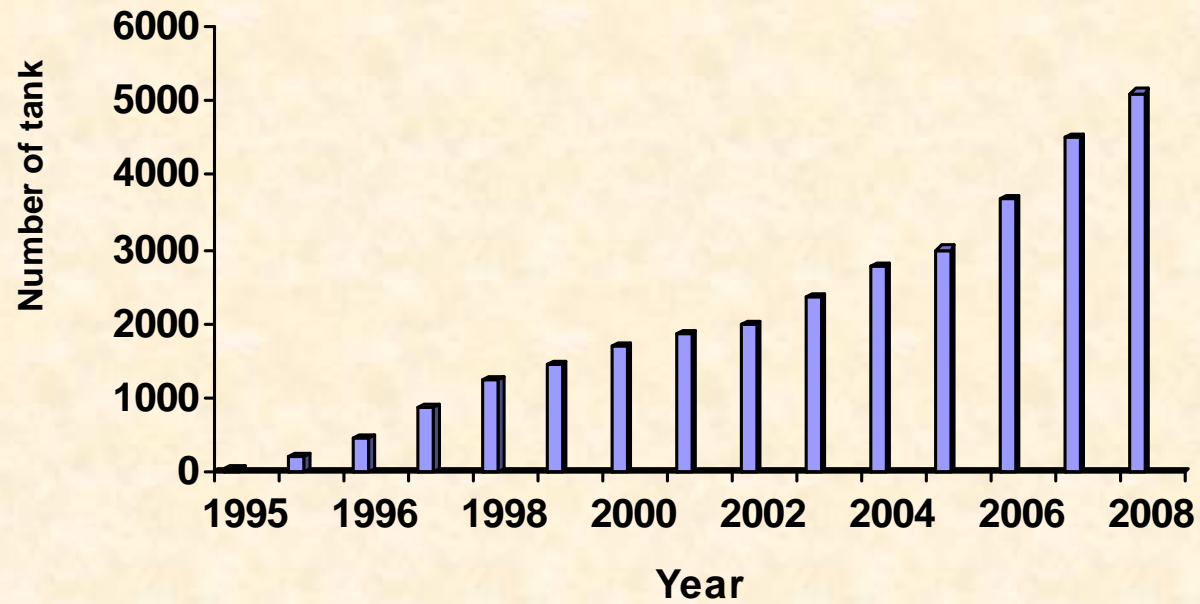




## Number of Fish Backyard Hatchery Farmers

<b>Fish</b>	<b>No. owner</b>	<b>Complete Hatchery</b>	<b>No. Broodstock tank</b>
<b>Milkfish</b>	324	44	130
<b>Grouper</b>	40	3	7
<b>Total</b>	364	47	137

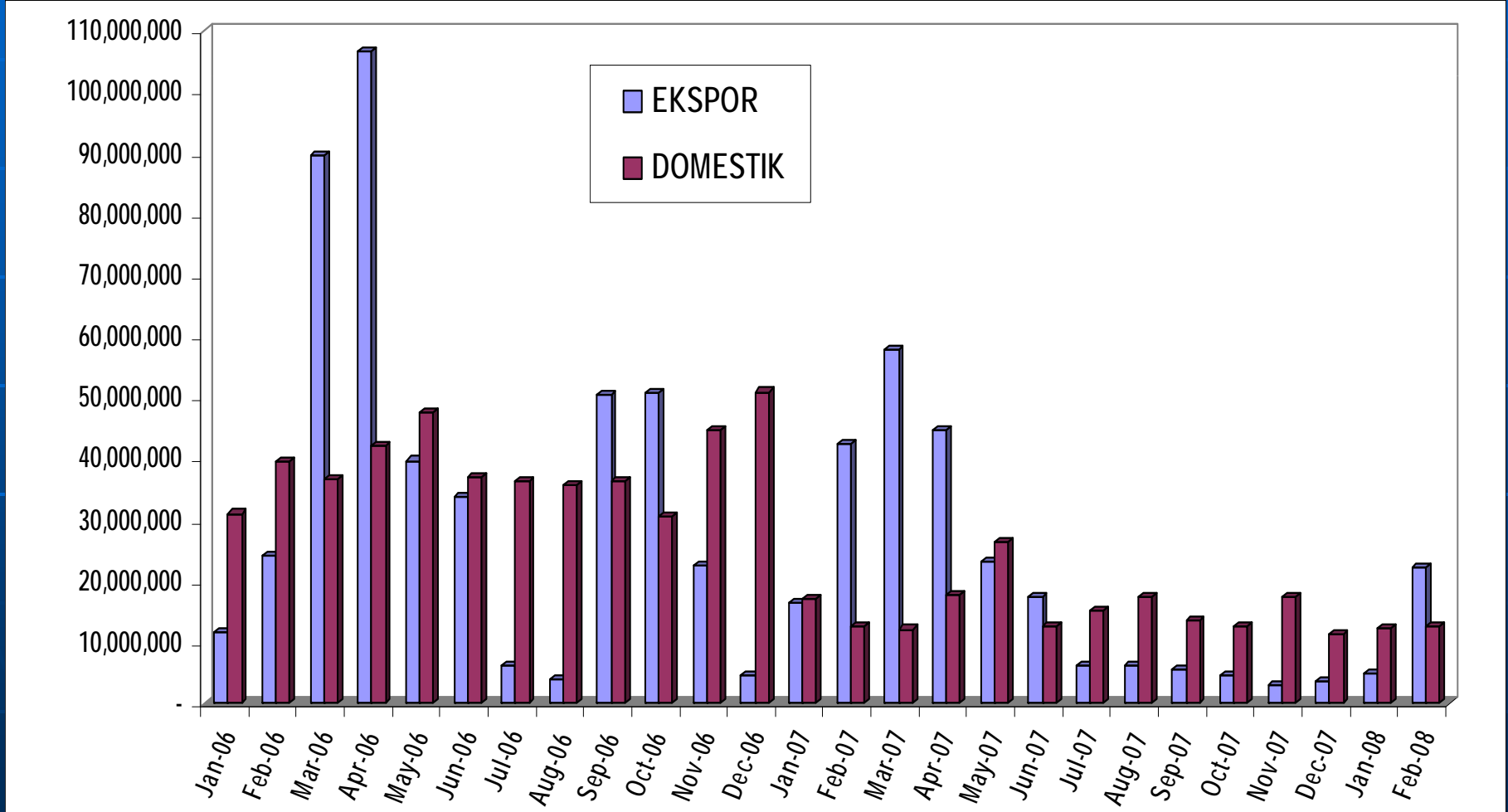
# Development of Milkfish Hatchery



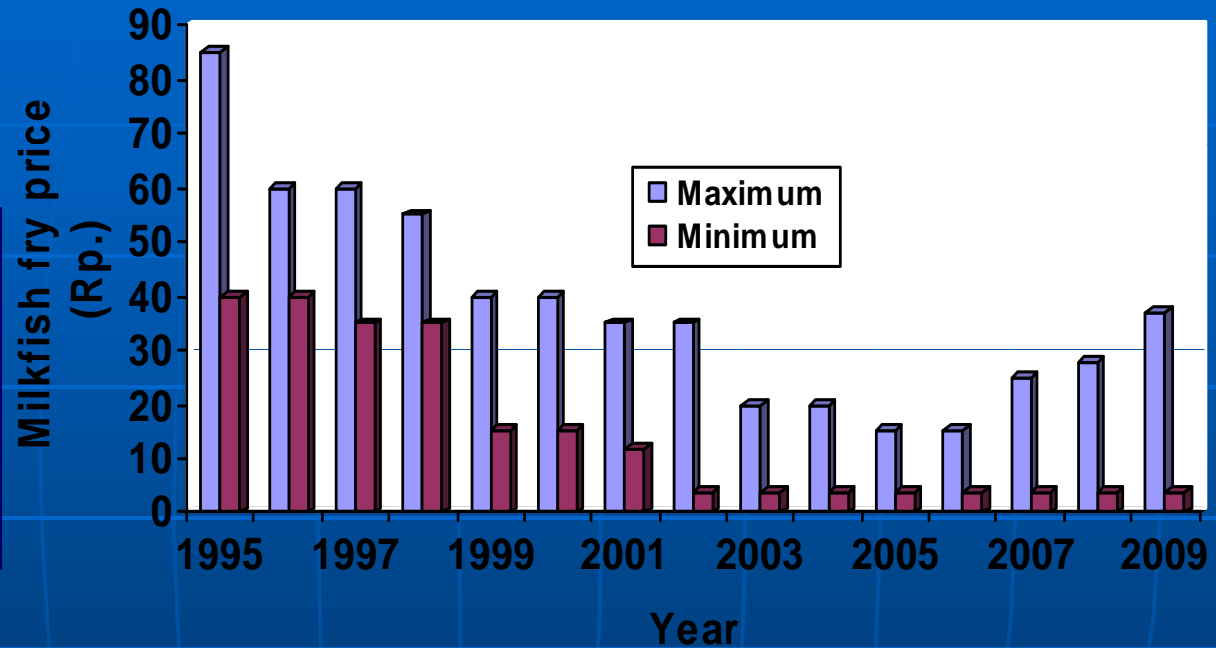
# Milkfish fry market via Denpasar Air Port



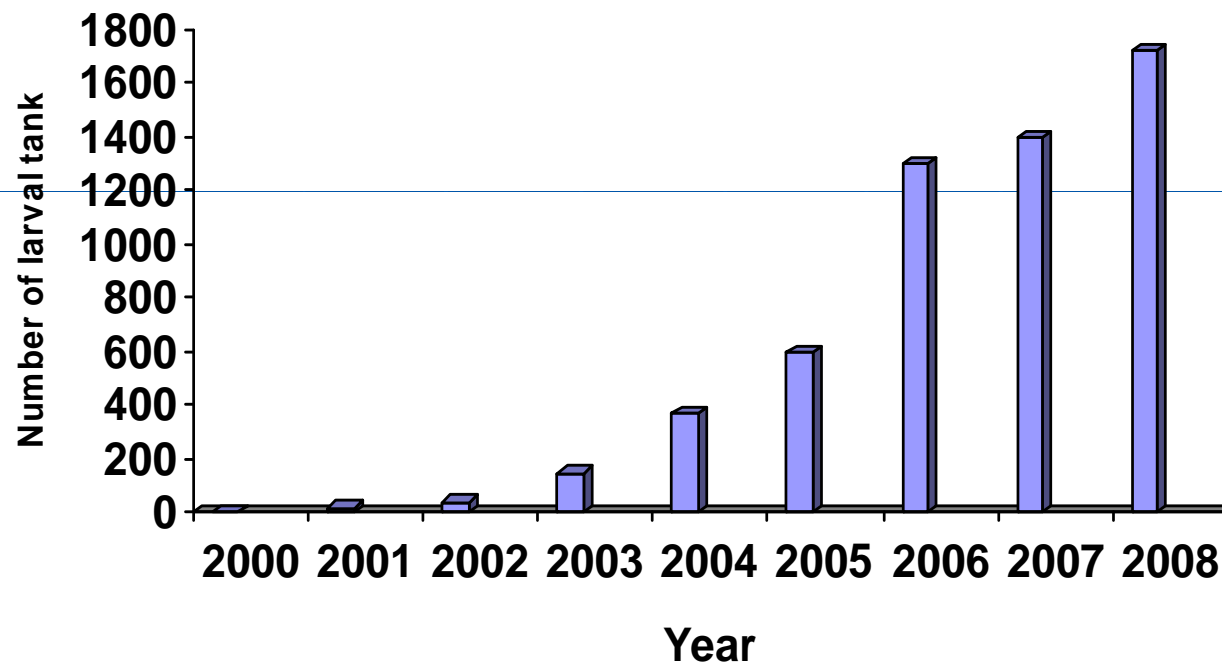
Average of 53 mill/mth  
(Jan 2006 to Feb 2008)



# Price of Milkfish Fry

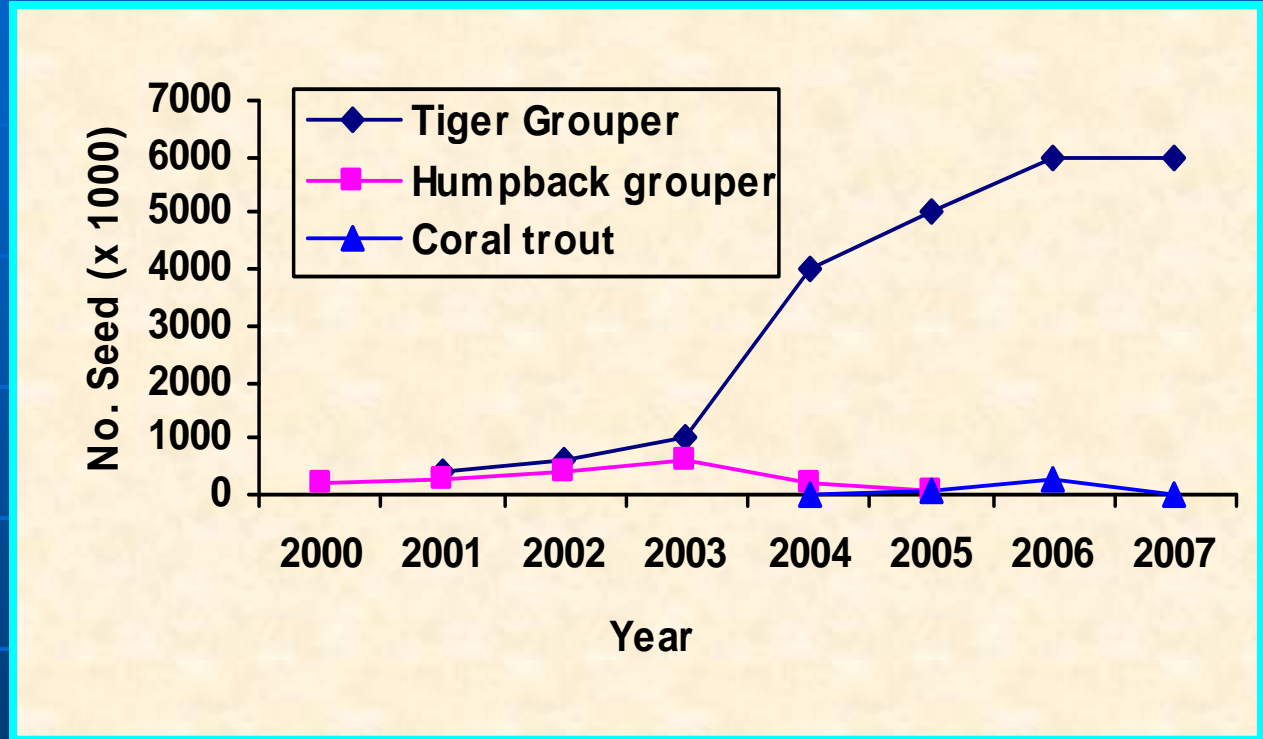


# Grouper Backyard Hatchery Development





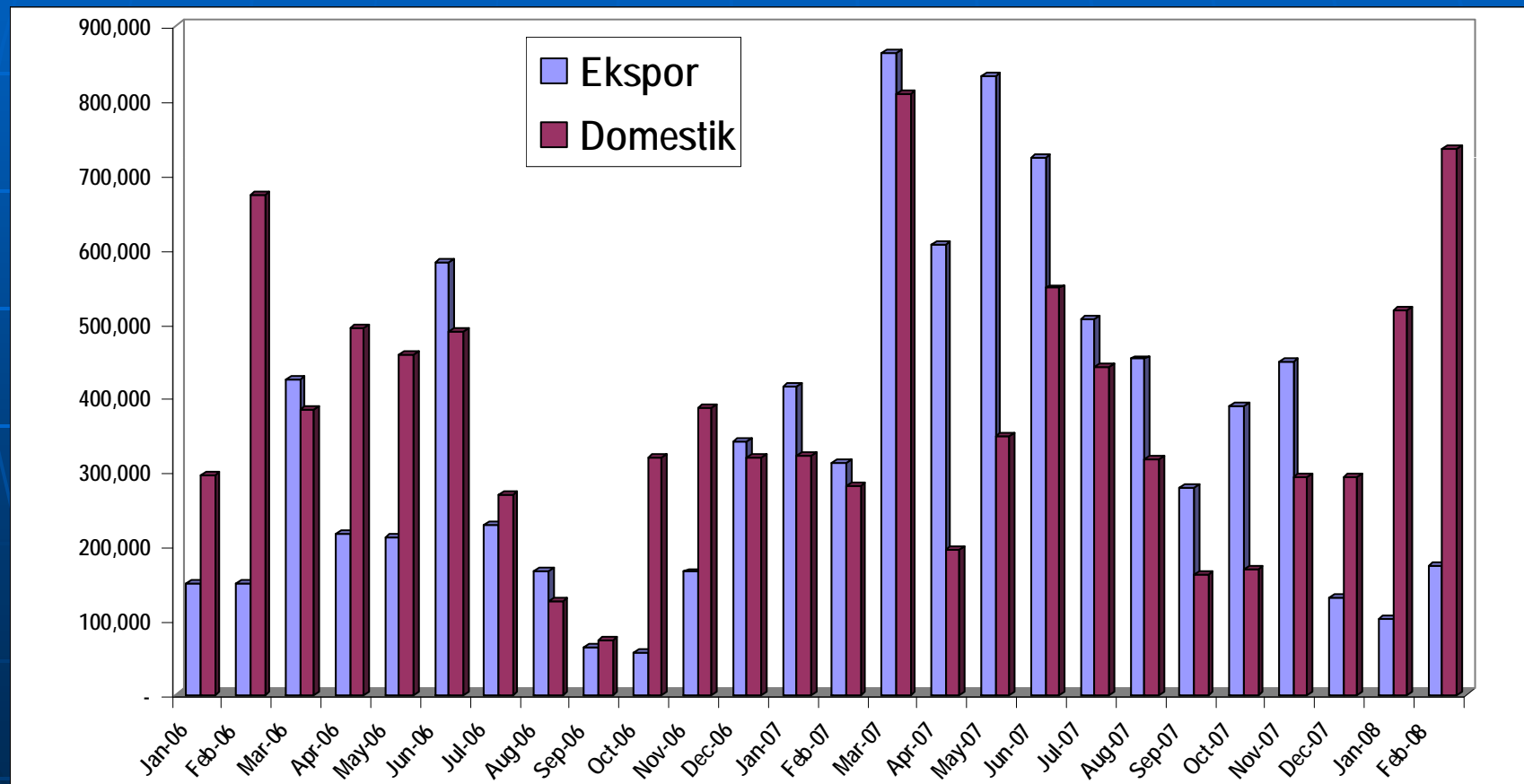
# Grouper Backyard Hatchery Production



# Market of grouper seed via Denpasar Air Port



Average of 718.000/mth  
(Jan 2006 to Feb 2008)



## Number of Larval Tank

Milkfish*	5.015
Grouper*	1.722
Total	6.737
Ratio of tank for LARVAE : ROTIFER : PHYTOPLANKTON	1.5 : 1 : 3

Tank volume : 10 m<sup>3</sup>

# Financial Analysis Tiger Shrimp

## A. COST

- a) Investment (land, tanks, generator, pumps, etc. and 10% unrealized cost) IDR 126,800,00
- b) Operational cost per year (8 cycles, 4 larval rearing tanks):
  - Fixed cost (labours, electricity, maintenance) IDR 19,200,000
  - Variable cost (shrimp nauplii, Artemia cysts, artificial feed, fertilizers, chemicals, etc) IDR 40,800,000
  - Total cost (fixed cost + variable cost) IDR 60,000,000

## B. PRODUCTION

- a) Seed production per cycle :  $30\% \times 4000,000$  nauplii = 1,200,000 PLs
- b) Seed production per year :  $8 \times 1,200,000$  PLs = 9,600,000 PLs
- c) Receivable per year :  $9,600,000 \times \text{IDR } 12 = \text{IDR } 115,200,000$

## C. ECONOMIC ANALYSIS

- a) Profit & Loss :  $\text{Receivable/year} - \text{Total cost/year} = \text{IDR } 55,200,000$
- b) Return cost ratio (R/C) :  $\text{Profit/Total cost} = 1.92$
- c) Payback period (PP) :  $\text{Investment/Gain} = 2.3$
- d) Break even point (BEP) :  $\text{Total cost/Seed production} = \text{IDR } 6.25$

Note : US \$ 1 = ± IDR 10,000

# Financial Analysis of White Shrimp

## A. COST

- a) Investment (land, tanks, generator, pumps, etc. and 10% unrealized cost) IDR 126,800,00
- b) Operational cost per year (8 cycles, 4 larval rearing tanks):
  - Fixed cost (labours, electricity, maintenance) IDR 19,200,000
  - Variable cost (shrimp nauplii, Artemia cysts, artificial feed, fertilizers, chemicals, etc) IDR 56,800,000
  - Total cost (fixed cost + variable cost) IDR 76,000,000

## B. PRODUCTION

- a) Seed production per cycle :  $50\% \times 4000,000$  nauplii = 2000,000 PLs
- b) Seed production per year :  $8 \times 2,000,000$  PLs = 16,000,000 PLs
- c) Receivable per year :  $16,000,000 \times \text{IDR } 10$  = IDR 160,000,000

## C. ECONOMIC ANALYSIS

- a) Profit & Loss :  $\text{Receivable/year} - \text{Total cost/year} = \text{IDR } 84,000,000$
- b) Return cost ratio (R/C) :  $\text{Profit/Total cost} = 2.1$
- c) Payback period (PP) :  $\text{Investment/Gain} = 1.5$
- d) Break even point (BEP) :  $\text{Total cost/Seed production} = \text{IDR } 4.75$

**Note : US \$ 1 = ± IDR 10,000**



# Financial Analysis of Milkfish

## A. COST

- a) Investment (land, tanks, generator, pumps, etc. and 10% unrealized cost) IDR 209,000,000
- b) Operational cost per year (4 cycles, 4 larval rearing tanks):
  - Fixed cost (labours, electricity, maintenance) IDR 7,200,000
  - Variable cost (shrimp nauplii, Artemia cysts, artificial feed, fertilizers, chemicals, etc) IDR 18,800,000
  - Total cost (fixed cost + variable cost) IDR 26,000,000

## B. PRODUCTION

- a) Seed production per cycle :  $80\% \times 400,000 \text{ eggs} = 320,000 \text{ fish fries}$
- b) Seed production per year :  $12 \times 320,000 \text{ fish} = 3,840,000 \text{ fish fries}$
- c) Receivable per year :  $3,840,000 \times \text{IDR } 10 = \text{IDR } 38,400,000$

## C. ECONOMIC ANALYSIS

- a) Profit & Loss :  $\text{Receivable/year} - \text{Total cost/year} = \text{IDR } 12,400,000$
- b) Return cost ratio (R/C) :  $\text{Profit/Total cost} = 0.48$
- c) Payback period (PP) :  $\text{Investment/Gain} = 5.44$
- d) Break even point (BEP) :  $\text{Total cost/Seed production} = \text{IDR } 6.77$

**Note : US \$ 1 = ± IDR 10,000**

# Financial Analysis of Humpback Grouper

## A. COST

- a) Investment (land, tanks, generator, pumps, etc. and 10% unrealized cost) IDR 314,100,000
  
- b) Operational cost per year (4 cycles, 4 larval rearing tanks):
  - Fixed cost (labours, electricity, maintenance) IDR 19,700,000
  - Variable cost (shrimp nauplii, Artemia cysts, artificial feed, fertilizers, chemicals, etc) IDR 93,300,000
  - Total cost (fixed cost + variable cost) IDR 113,000,000

## B. PRODUCTION

- a) Seed production per cycle :  $10\% \times 400,000 \text{ eggs} = 40,000 \text{ fish of 3 cm}$
- b) Seed production per year :  $4 \times 40,000 \text{ fish} = 160,000 \text{ fish}$
- c) Receivable per year :  $160,000 \times \text{IDR } 3,750 = \text{IDR } 600,000,000$

## C. ECONOMIC ANALYSIS

- a) Profit & Loss :  $\text{Receivable/year} - \text{Total cost/year} = \text{IDR } 487,000,000$
- b) Return cost ratio (R/C) :  $\text{Profit/Total cost} = 4.3$
- c) Payback period (PP) :  $\text{Investment/Gain} = 0.64$
- d) Break even point (BEP) :  $\text{Total cost/Seed production} = \text{IDR } 706.25$

Note : US \$ 1 = ± IDR 10,000

# Financial Analysis of Brown-marbled Grouper

## A. COST

- a) Investment (land, tanks, generator, pumps, etc. and 10% unrealized cost) IDR 314,100,000
- b) Operational cost per year (4 cycles, 5 larval rearing tanks):
  - Fixed cost (labours, electricity, maintenance) IDR 21,600,000
  - Variable cost (shrimp nauplii, Artemia cysts, artificial feed, fertilizers, chemicals, etc) IDR 107,400,000
  - Total cost (fixed cost + variable cost) IDR 129,000,000

## B. PRODUCTION

- a) Seed production per cycle :  $10\% \times 400,000 \text{ eggs} = 40,000 \text{ fish of 3 cm}$
- b) Seed production per year :  $5 \times 40,000 \text{ fish} = 200,000 \text{ fish}$
- c) Receivable per year :  $200,000 \times \text{IDR } 1,000 = \text{IDR } 200,000,000$

## C. ECONOMIC ANALYSIS

- a) Profit & Loss :  $\text{Receivable/year} - \text{Total cost/year} = \text{IDR } 71,000,000$
- b) Return cost ratio (R/C) :  $\text{Profit/Total cost} = 0.55$
- c) Payback period (PP) :  $\text{Investment/Gain} = 4.42$
- d) Break even point (BEP) :  $\text{Total cost/Seed production} = \text{IDR } 645$

Note : US \$ 1 = ± IDR 10,000

# Financial Analysis of Leopard Coral Grouper

## A. COST

- a) Investment (land, tanks, generator, pumps, etc. and 10% unrealized cost) IDR 314,100,000
- b) Operational cost per year (4 cycles, 4 larval rearing tanks):
  - Fixed cost (labours, electricity, maintenance) IDR 19,700,000
  - Variable cost (shrimp nauplii, Artemia cysts, artificial feed, fertilizers, chemicals, etc) IDR 24,300,000
  - Total cost (fixed cost + variable cost) IDR 43,000,000

## B. PRODUCTION

- a) Seed production per cycle :  $2\% \times 400,000 \text{ eggs} = 8,000 \text{ fish of 3 cm}$
- b) Seed production per year :  $4 \times 8,000 \text{ fish} = 32,000 \text{ fish}$
- c) Receivable per year :  $32,000 \times \text{IDR } 4,500 = \text{IDR } 144,000,000$

## C. ECONOMIC ANALYSIS

- a) Profit & Loss :  $\text{Receivable/year} - \text{Total cost/year} = \text{IDR } 141,000,000$
- b) Return cost ratio (R/C) :  $\text{Profit/Total cost} = 3.28$
- c) Payback period (PP) :  $\text{Investment/Gain} = 2.18$
- d) Break even point (BEP) :  $\text{Total cost/Seed production} = \text{IDR } 1,343.75$

Note : US \$ 1 = ± IDR 10,000



# Thank You



Larvi 2009, Ghent, Belgium, 7-11 September 2009

