

Manual for fish culture in rice paddy & earthen pond using Lao fishes



Living Aquatic Resources
Research Center
(LARReC)

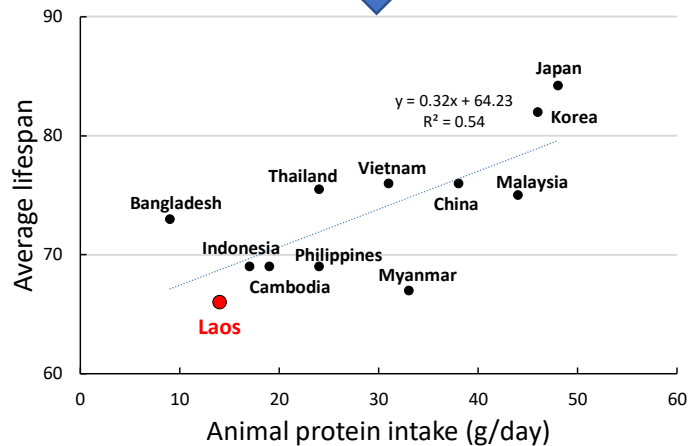


Japan International Research
Center for Agricultural Sciences
(JIRCAS)

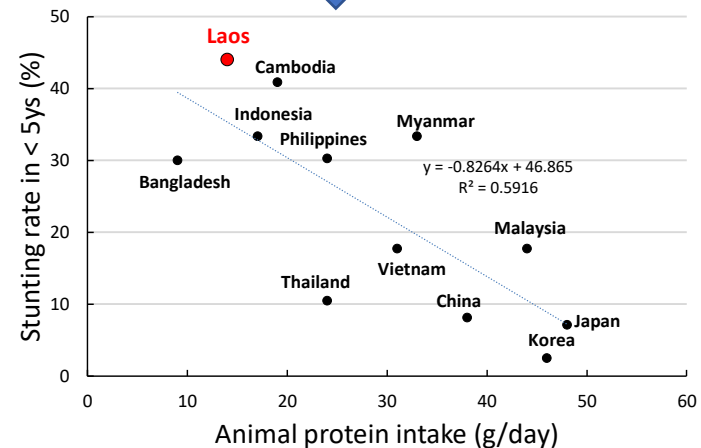
Why fish culture is important? -----(1)

Protein deficiency may lead to:

Shorter lifespan



Higher stunting rate in children



Increase in protein intake necessary

leading to:

Improvements in various health indicators
such as lifespan and stunting rate

Why fish culture is important? -----(2)

Fish is an important commercial product

**Indigenous fishes generally more expensive
than introduced fishes**

Lao fish



Pa kheng



Pa pak



Pa sooai

Introduced fish



Pa nin



Pa ked lap



Pa nai

****Our trial demonstrated a farmer can gain more
than 8,000,000 LAK/year by pond culture in
Savannakhet Province**

Why aquaculture of Lao fishes is necessary?

Introduced fish



Big impact to fish diversity in Lao & other countries

Decrease of fish amount

Decrease of fish diversity

Risks for Economy/environment

Lao fish



No/less impact to fish diversity in Lao

Aquaculture of Lao fishes are necessary

How to operate fish culture (1)

Rice paddy fish culture

Design of paddy for fish culture



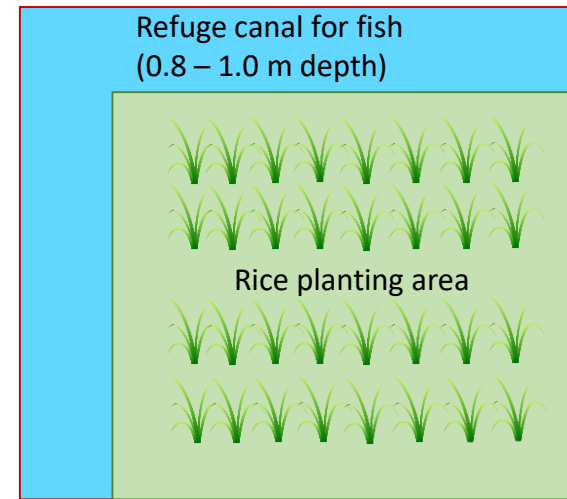
Refuge canal

Rice planting area

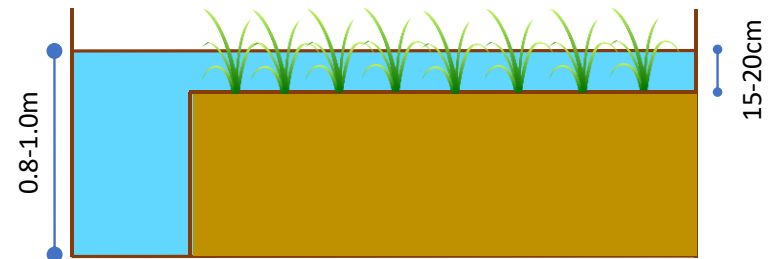


Pa kheng

Pa pak



Top view

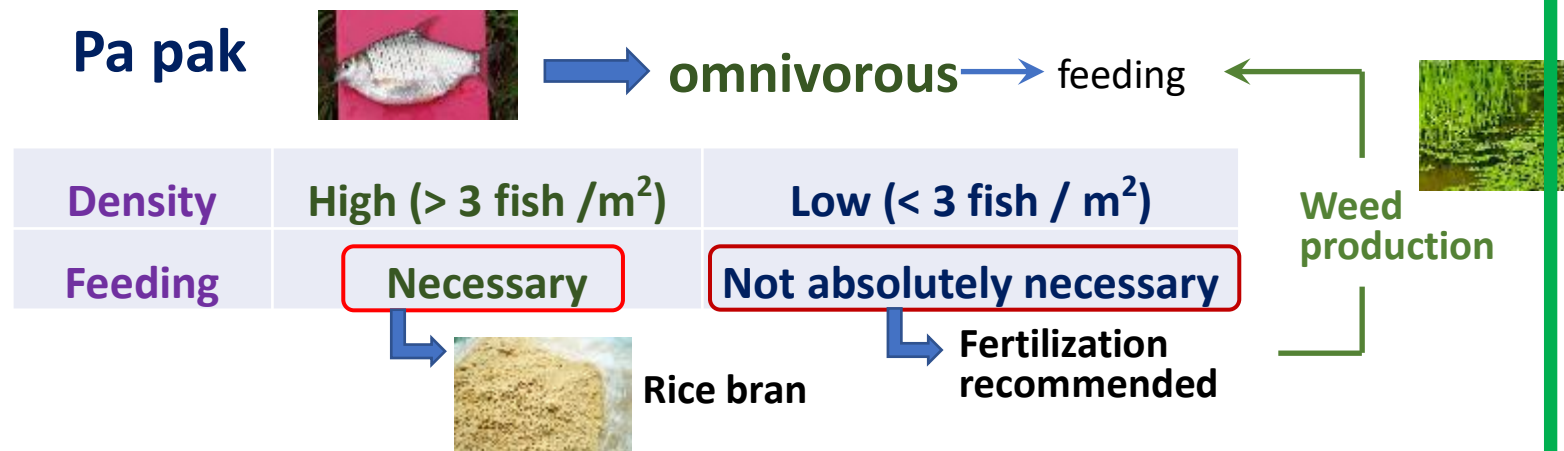
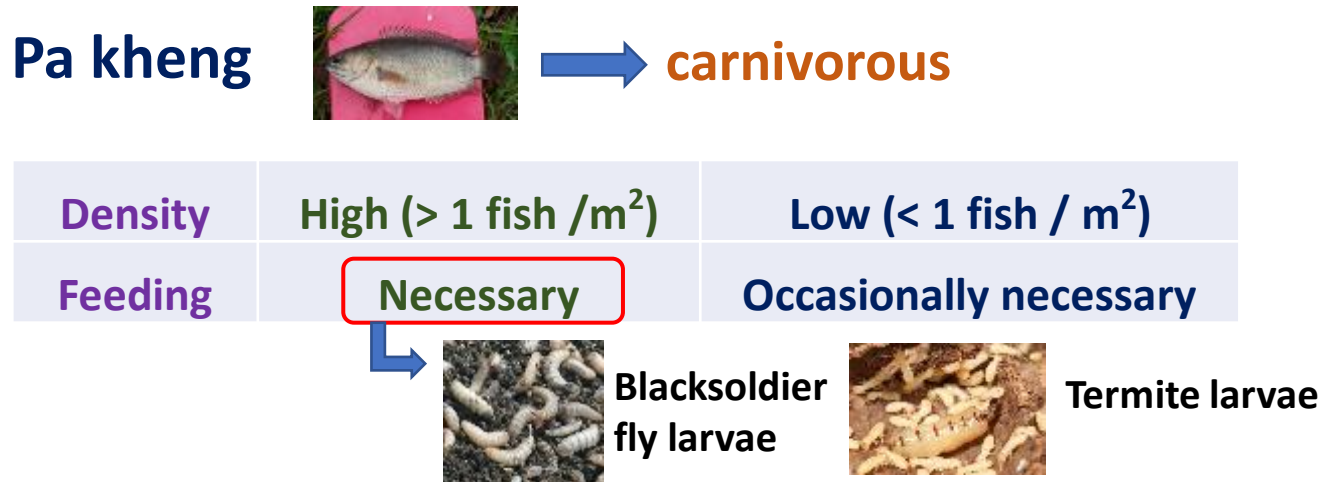


Lateral view

How to operate fish culture (1)

Rice paddy fish culture

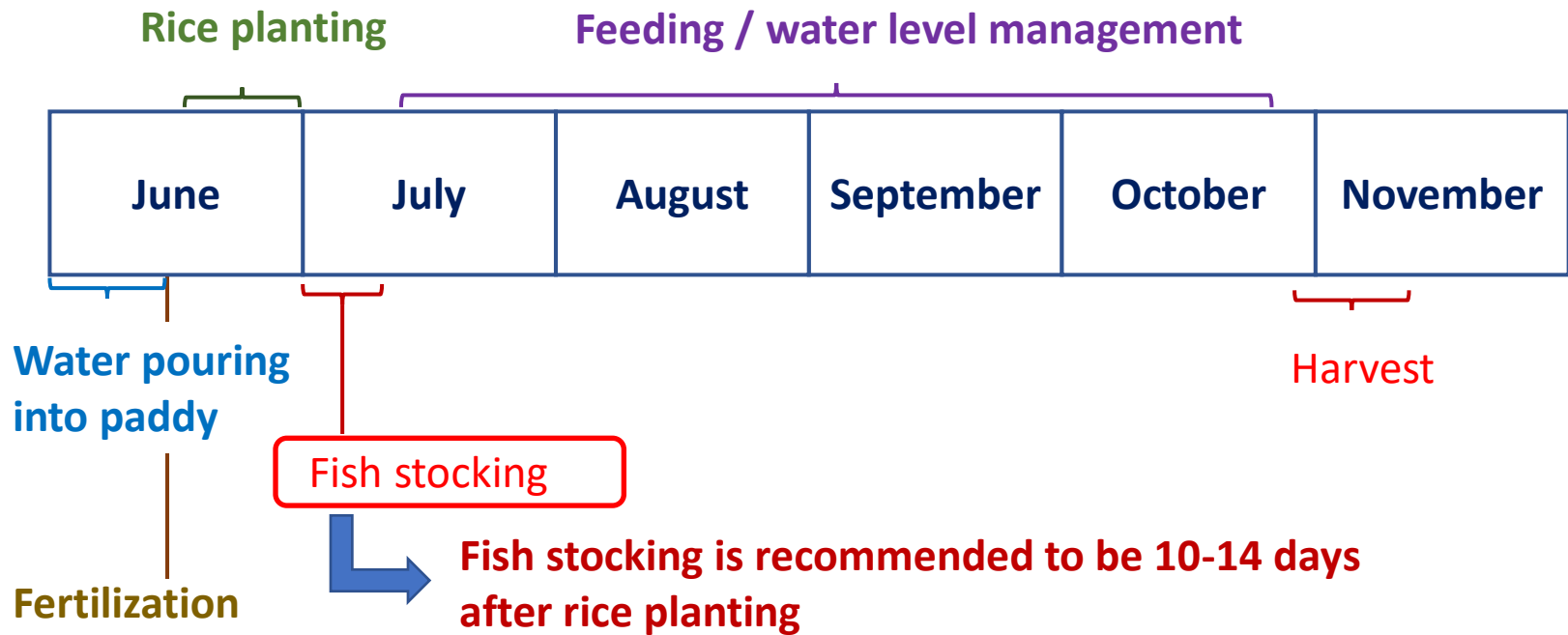
Fish density and feeding condition



How to operate fish culture (1)

Rice paddy fish culture

Expected schedule



Productivity

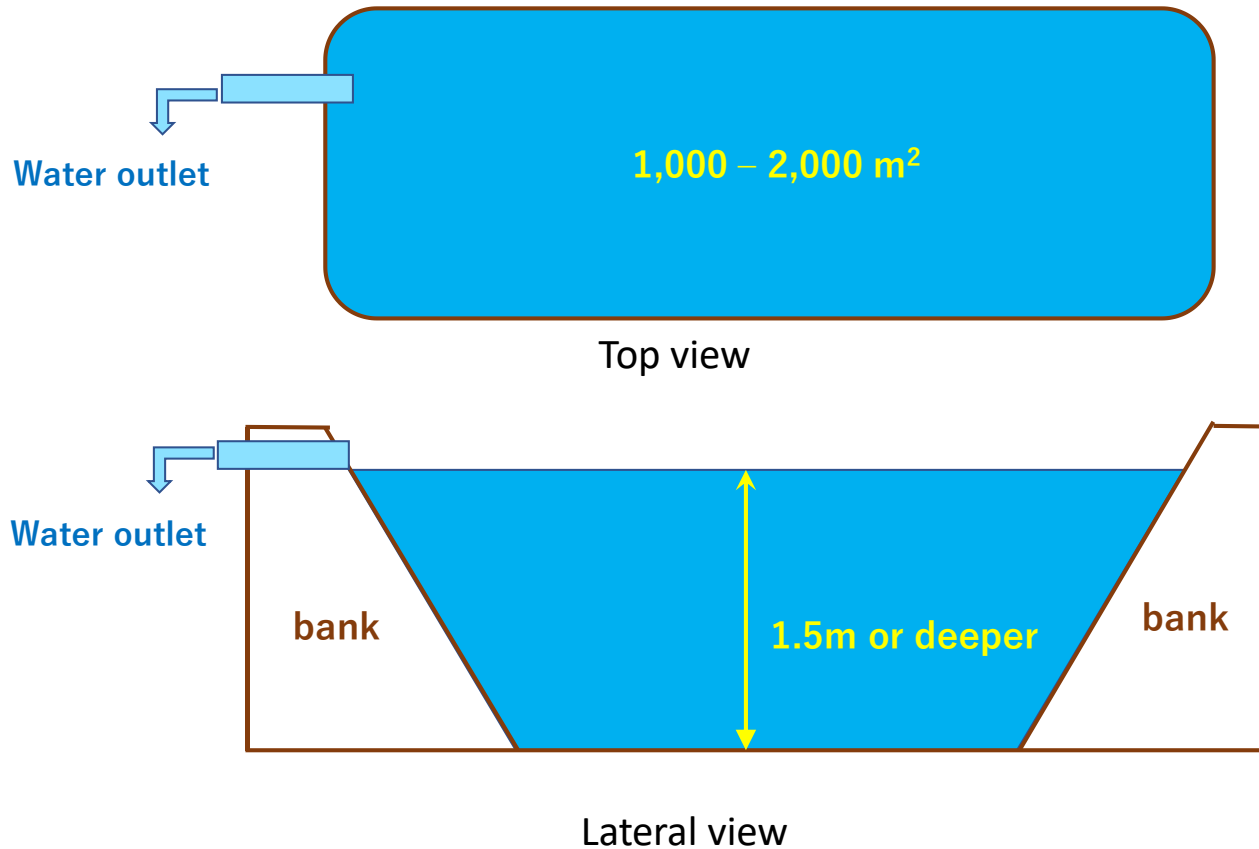
250 – 500 kg / ha (25 – 50 kg / 1,000m²)

Not high productivity, good for **domestic supply** rather than commercial sale

How to operate fish culture (2)

Pond fish culture

Design of pond for fish culture



Pa kheng



Pa pak



Pa sooi

How to operate fish culture (2)

Pond fish culture

Feeds for fishes



Pa kheng



Pa pak



Pa sooai

carnivorous

omnivorous

omnivorous



Pellet feed



Rice bran



Blacksoldier fly larvae



Termite larvae

Expensive, high availability

Cheep, high availability

Cheep, low availability

How to operate fish culture (2)

Pond fish culture

Fish density – examples of our trials

Year (trial)	Fish species	Number of stocked fish	Stocking density (n/m ²)	Feeding
2017 (T17)	Pa kheng	2,000	4.1 (high)	Intensive (pellet)
	Pa pak	4,000		
	Pa sooai	100		
2018 (T18)	Pa kheng	1,200	2.5 (low)	Occasional (rice bran etc.)
	Pa pak	2,300		
	Pa sooai	200		
2019 (T19)	Pa kheng	1,500	3.4 (medium)	Occasional (rice bran etc.)
	Pa pak	3,500		
	Pa sooai	100		

Intensive method

Semi-intensive method

Semi-intensive method

Intensive method → **High risk** (many fish, many feeding) & **high return** (cash gain)

Semi-intensive method → **Low risk** (limited fish and feeding) & **low**

Semi-intensive method → **return** (less cash gain)

How to operate fish culture (2)

Pond fish culture

Expected cash gain (based on our case study)

Trial	Total input cost (LAK)	Work hours	Labor cost (LAK)	Harvest cost (LAK)	Sales income (LAK)	Net income (LAK)
T17	17,500,000	124.5	1,245,000	300,000	27,258,000	8,213,000
T18	2,604,500	117.5	622,500	300,000	4,611,000	1,084,000
T19	3,996,500	94.5	507,500	300,000	4,521,000	-283,500

T17: Intensive method: large income (8,213,000 LAK) with high cost

T18: Semi-intensive method (low fish density): limited income (1,084,000 LAK) with limited cost

Practical way of pond culture for positive income

T19: Semi-intensive method (medium fish density): **negative income (-283,000 LAK)** with limited cost

Insufficient feed amount to number of stocked fish