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# Muligheter for norsk biomarin industri i Vietnam – del II

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# Sørlige deler av Vietnam



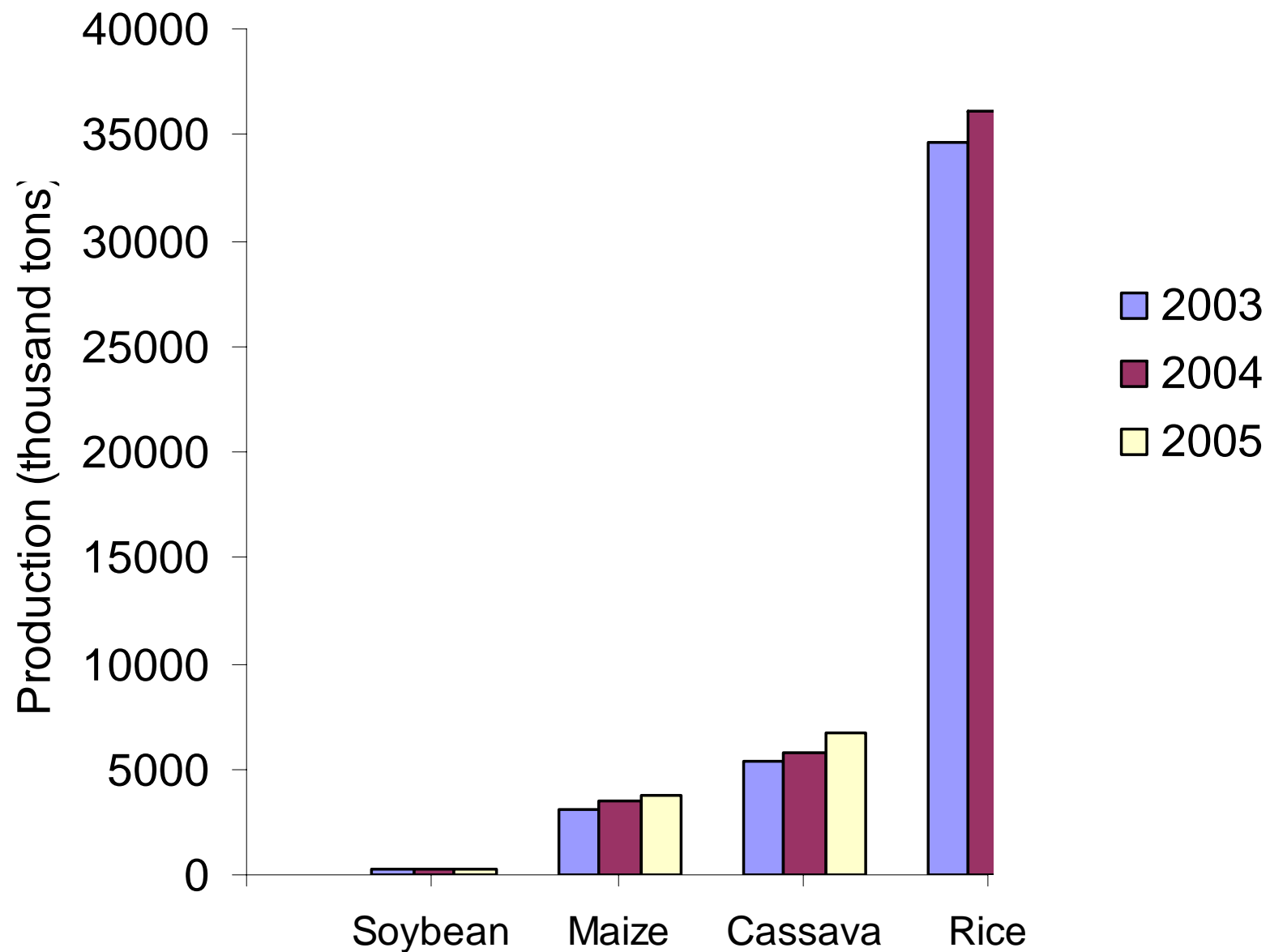
# Fish feed ?



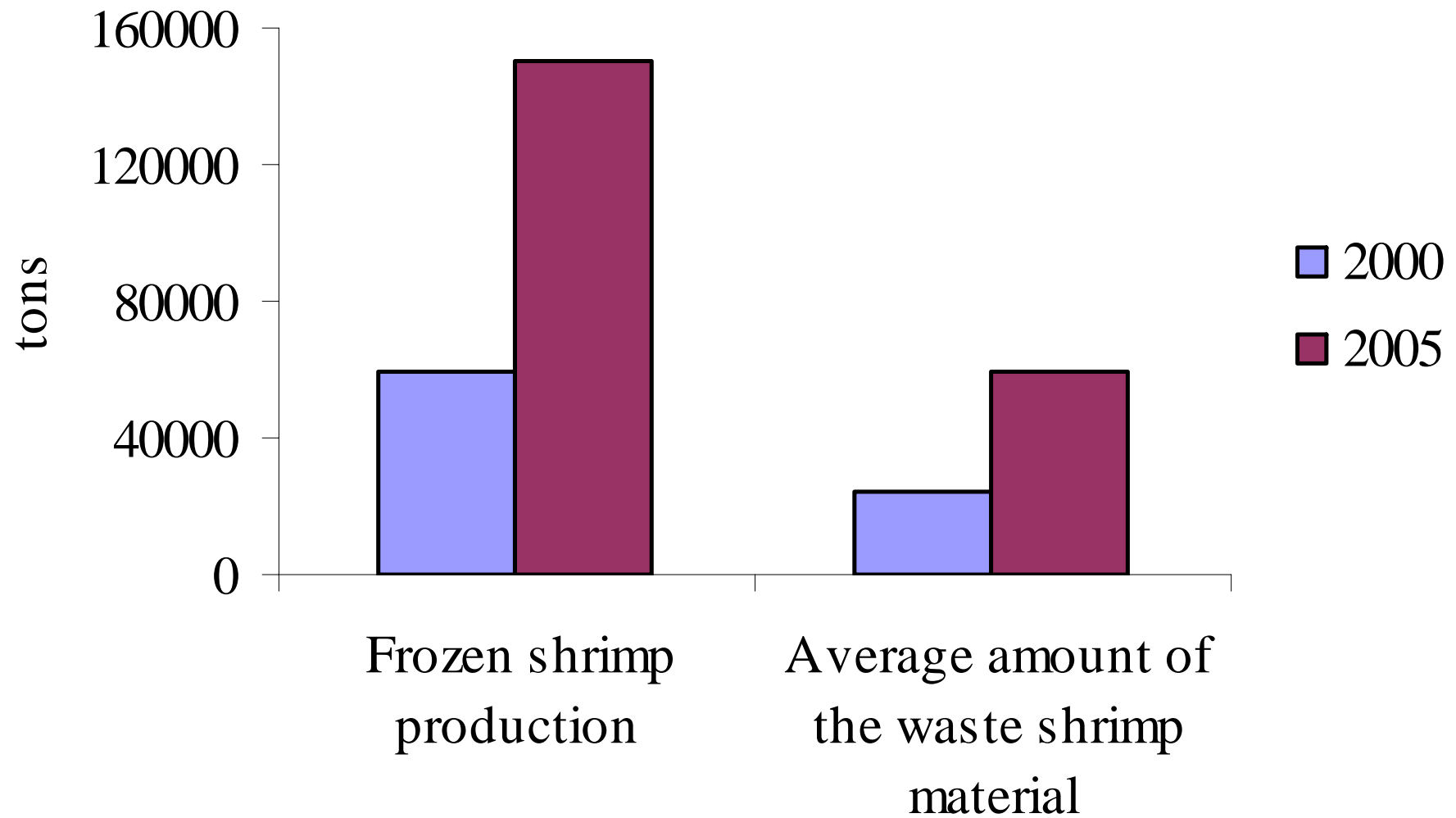
How can we choose the right local raw materials to make a nutritional balanced, efficient, low-cost and low-eutrophication catfish feed?



# Agriculture production in Vietnam in the period 2003 - 2005



# Frozen shrimp production and average shrimp byproducts in Vietnam



# Byproducts from two seafood companies in NhaTrang



## 1. KHASPECO company

Month	Fish raw material (tons)	Fish byproducts (tons)
01/2006	85,4	31,4
02/2006	24,3	6,1
03/2006	118,3	47,7
04/2006	175,4	72,4
05/2006	1.631,2	65,4
06/2006	99,8	38,9
07/2006	77,6	23,8
08/2006	85,0	28,8
09/2006	153,8	66,2
Total	2.450,8	380,7

## 2. NhaTrang Seafood

Annual average amount of *byproducts* from

Fish: 1500 - 1600 tons

Shrimp shell and head: 800 - 1000 tons

# Fish bones as feed resource



Ref. Jogeir Toppe



Fiskeriforskning



# Optimising Aquafeed and ingredients



Fiskeriforskning



# New feed for shellfish larvae

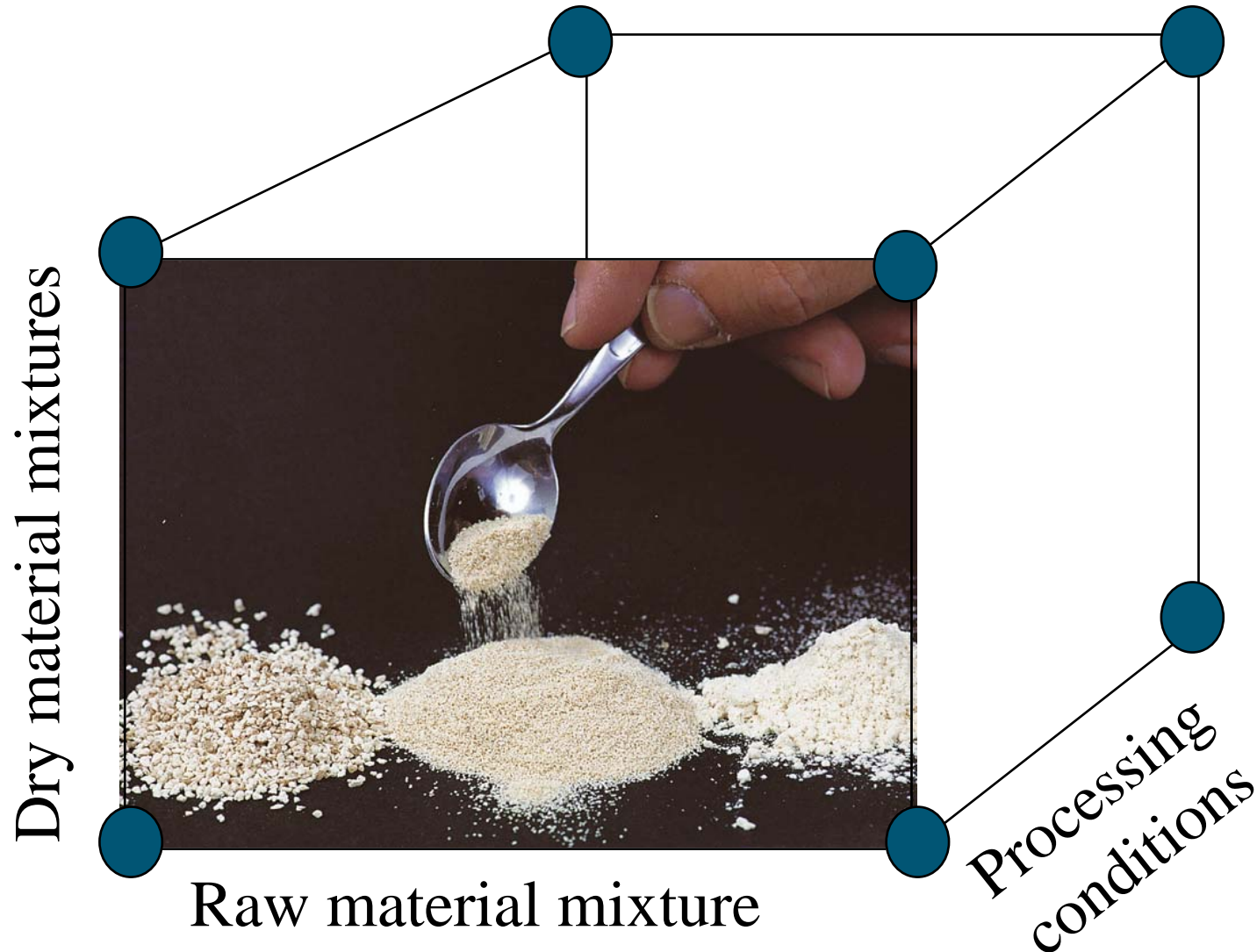


Fiskeriforskning

# Systematisk produktutvikling:



## Experimental design applied to product development



# Havnen i Nha Trang



# Typiske fiskeskøyter





**-eller sett fra turistsiden, som er under  
betydelig ekspansjon i Nha Trang**



# Lokalt klekkeri



# Lovende oppdrettsart: *Cobia*



## Mulig industrisamarbeid med norske bedrifter:



- Fiskefôr
- Utstyr til oppdrettsnæring
- Utstyr til fiskeri
- Utstyr til prosesstyring
- Kunnskap

### Begrensende faktorer:

- Pris
- Kapitaltilgang



# Fremtidig fokus i potensielt prosjekt sammen med vietnamesisk forskning og industri:



- Utnytte avskjær fra lokal filetindustri
- Utnytte biprodukter fra rekeproduksjon
- Særlig fokus på fôr til grouper, cobia og hummer
- Kombinere lokale vegetabiliske og marine ressurser

# Forprosjekt: Gelatin from catfish skin



Industripartner: Agifish, Long Xuyen

FoU: Fiskeriforskning, Bergen og UiB

Finansiering: NORAD + egeninnsats

## Method:

- Based on US Patent 5,093,474.  
S. Grossman, M. Bergman
- Leaching of fish skin to remove water soluble compounds
- Extraction av gelatin
- Cleansing
- Concentration
- Drying

# Industrialization



- Example in patent: 50 g skin in 700 ml water
- Fiskeriforskning: 30 - 33 kg skin in 100 l water
- Proposal for a processing plant:  
100 kg gelatin/hour – 800 kg fish skin

Ref. Eyolf Langmyhr

# Manuell transport



# Den første fiskepumpen i Mekong-deltaet:



# Filetproduksjon



# Sortering av biprodukter:



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The University of Fisheries (UoF) has the mandate to provide quality manpower for the fisheries and aquaculture sectors, which are growing rapidly in Vietnam. Dynamic changes in these areas have prompted tremendous effort of UoF to keep its training relevant to the industries' needs while maintaining UoF's established standards. In recent years, UoF with its current capacity has struggled to accommodate increasing demand for training in fisheries science and technology. Furthermore, competition started with more and more universities/colleges in Vietnam put Aquaculture and Fisheries Science on their list of training programs.

More...



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**News**

- » Writing software for management of University of Fisheries
- » MASTER THESIS RESEARCH PROPOSALS PRESENTED
- » MASTER THESIS PRESENTATIONS
- » NORAD Aquaculture Master batch 2 just finished the two courses taught by international experts.
- » Information about NORAD Master batch - Aquaculture
- » Component 1 - Economics Faculty will hold a field trip to support research proposal
- » Annual meeting between Norwegian Embassy and University of Fisheries, 2006
- » Workshop on library development
- » Component 1 will hold a training course for Economic Faculty Lecturer
- » Component 2 held a field trip to Ninh Thuan province

# Pågående aktivitet innen delprosjekt akvakultur



- Kartlegge lokale "trashfish" ressurser
- Utvikle ensilasjebasert fôr
- Optimalisere kriterier for holdbarhet og næringsverdi til ensilasjebasert fôr til cobia
- Vurdere videre utnyttelse av de lokale ressursene

Studenter er en stor ressurs og viktige fremtidige ambassadører i nettverksbyggig!

# Produktutvikling ved studenter, University of NhaTrang



# Stort produktutvalg på markedene



# Kreativitet!



Takk for oppmerksomheten!



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