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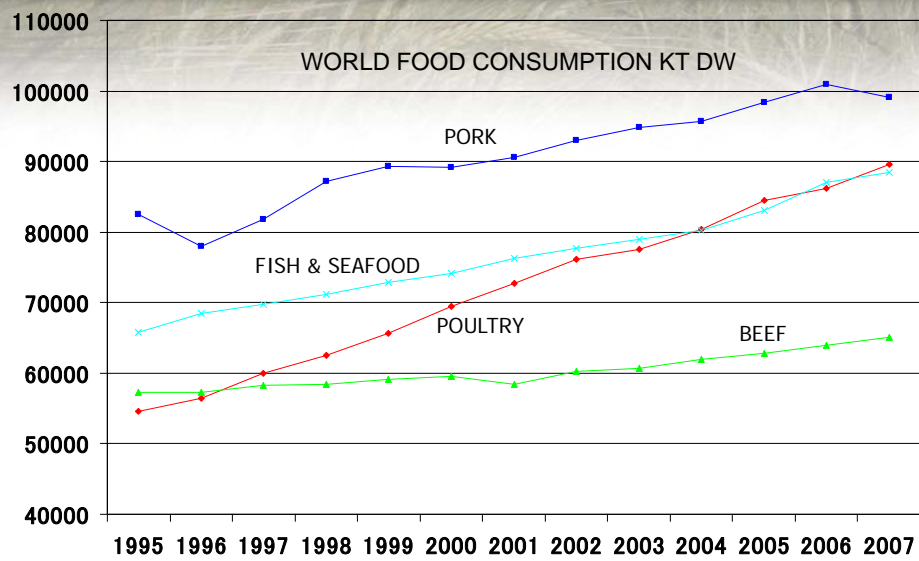


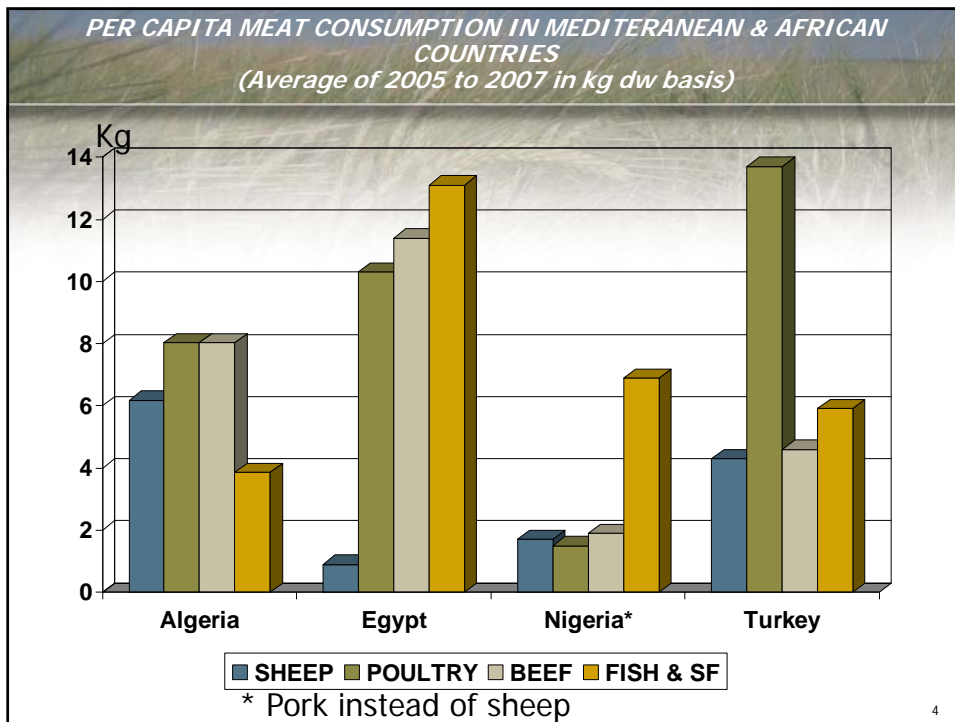
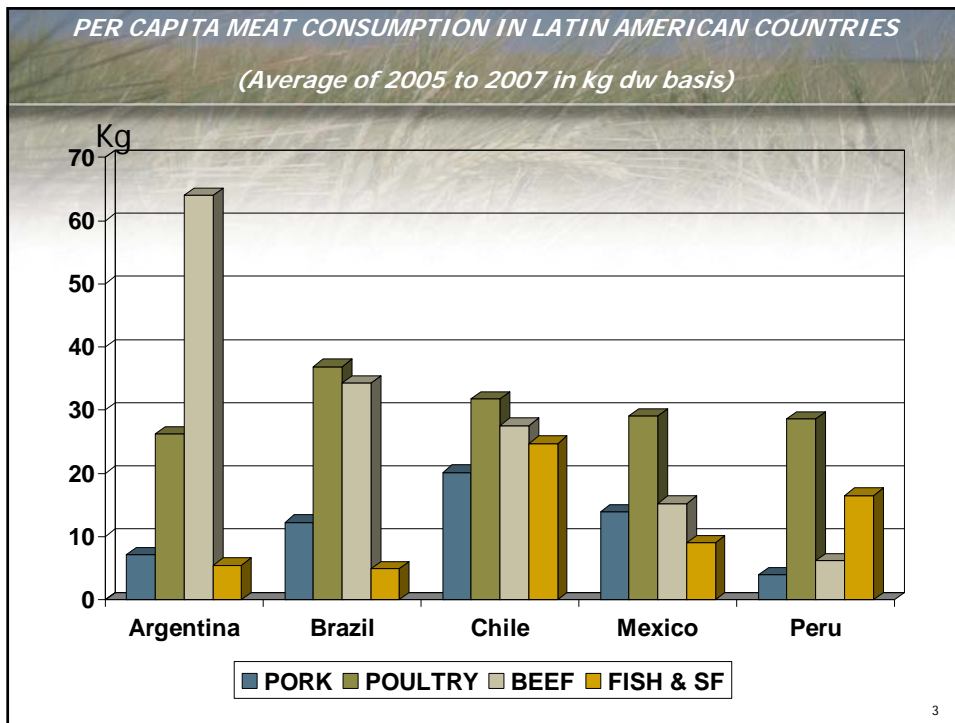
FISH & SEAFOOD CONSUMPTION IN EMERGING AND DEVELOPPING COUNTRIES

PIERRE CHARLEBOIS
"Changing demand in emerging & developing countries"
Tokyo, Japan

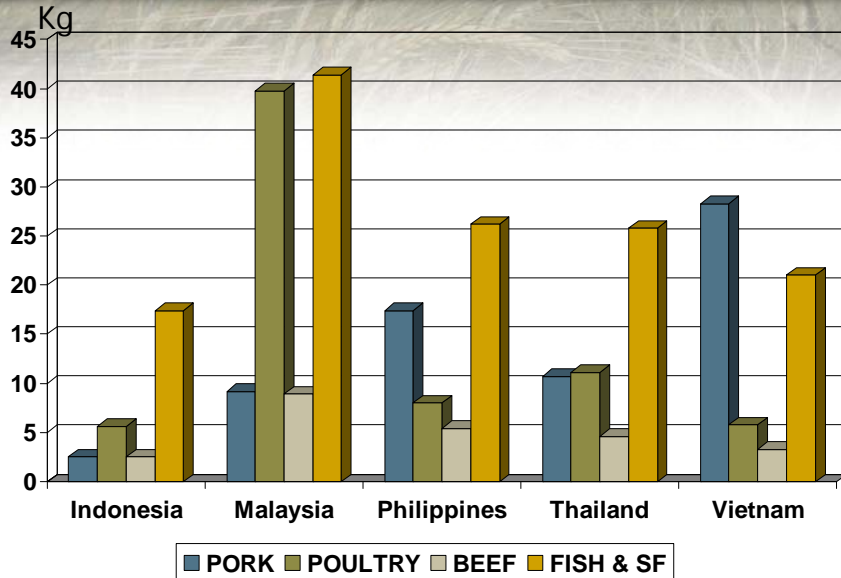
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FISH AND SEAFOOD FOOD CONSUMPTION IS A SIGNIFICANT SOURCE OF ANIMAL PROTEIN



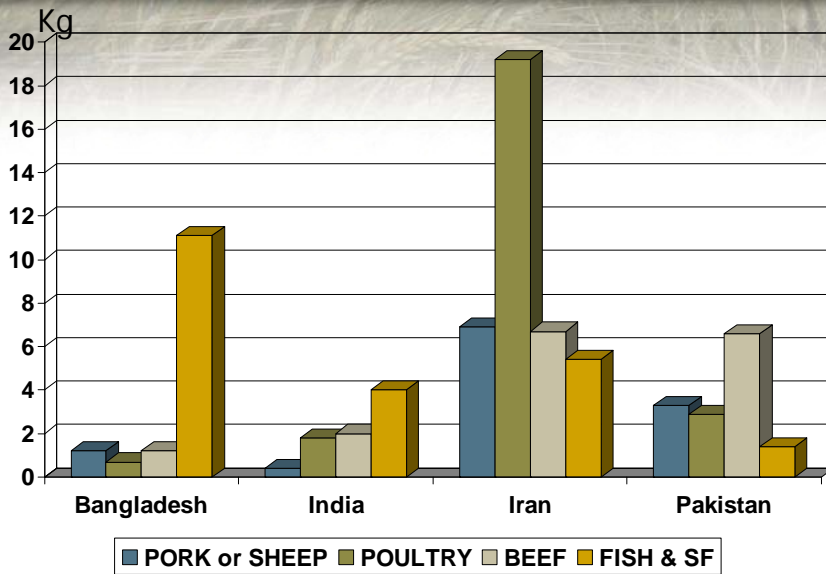


PER CAPITA MEAT CONSUMPTION IN SOUTH EAST ASIAN COUNTRIES
 (Average of 2005 to 2007 in kg dw basis)

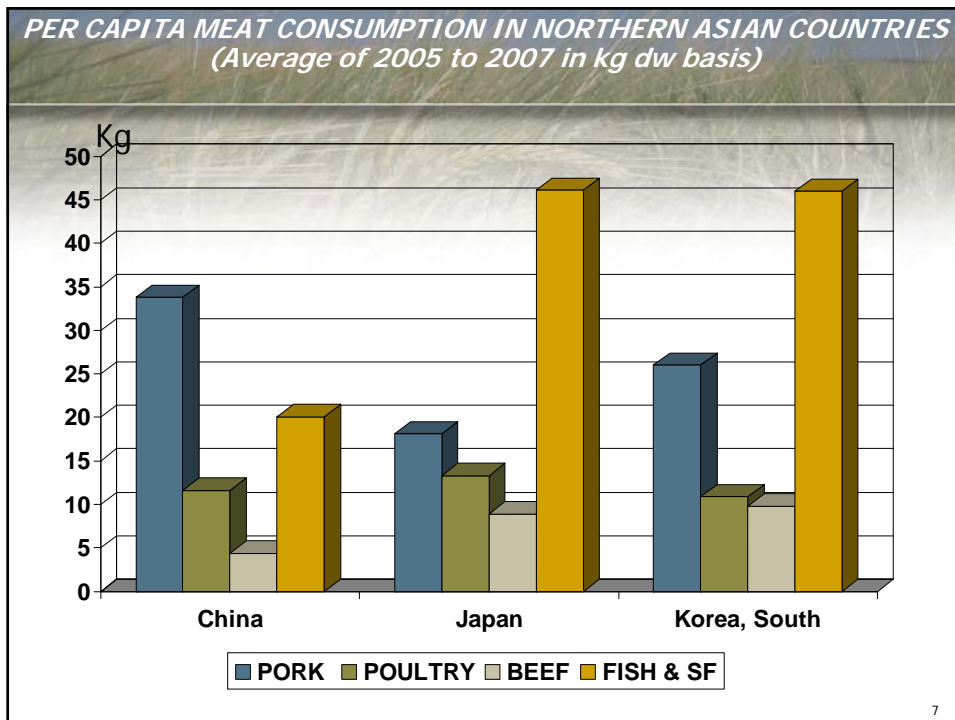


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PER CAPITA MEAT CONSUMPTION IN CENTRAL ASIAN COUNTRIES
 (Average of 2005 to 2007 in kg dw basis)



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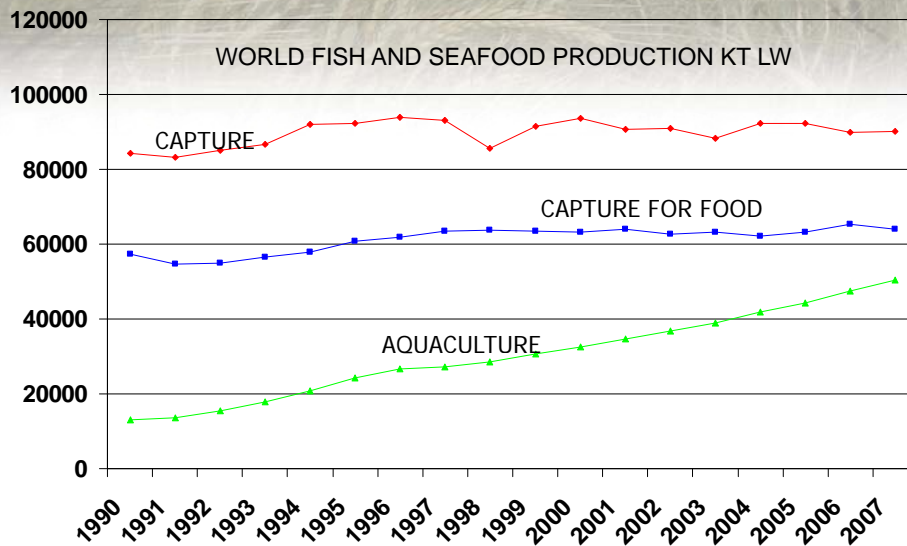


DEMAND ELASTICITIES & POPULATION GROWTH

| COUNTRIES | OWN PRICE | INCOME | ↑ POP % |
|-------------|-----------|--------|---------|
| BANGLADESH | -0.76 | 1.11 | 1.5 |
| CHINA | -0.62 | 1.05 | 0.48 |
| INDONESIA | -0.87 | 1.46 | 0.88 |
| INDIA | -0.98 | 1.62 | 1.22 |
| MALAYSIA | -0.98 | 0.9 | 1.37 |
| PHILIPPINES | -1.41 | 1.09 | 1.57 |
| THAILAND | -0.73 | 0.51 | 0.44 |

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HAVING REACH THE OCEAN CAPACITY GROWTH COULD ONLY COME FROM AQUACULTURE



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AQUACULTURE DEPENDENCY RATIO IN 2007 (%)

| | | | |
|-------------|------|--------------|------|
| Argentina | 1.1 | Algeria | 0.2 |
| Brazil | 22.2 | Egypt | 47.5 |
| Chile | 178 | Nigeria | 6.4 |
| Mexico | 12.3 | Turkey | 21.7 |
| Peru | 6.2 | Bangladesh | 40.2 |
| Indonesia | 25.6 | India | 52.6 |
| Malaysia | 12.0 | Iran | 30.7 |
| Philippines | 22.4 | Pakistan | 43.3 |
| Thailand | 71.7 | China | 90.0 |
| Vietnam | 78.9 | Korea, South | 20.0 |
| World | 43.8 | Japan | 10.6 |

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SPECIES RAISED IN AQUACULTURE

| SPECIES | FEED | LAG | COUNTRIES |
|------------------|---------------|---------|--|
| SALMON | FM,FL,CE | 24 M | AUS,CAN,CHL,E27,NOR |
| RAINBOW TRUIT | FM,FL,CE | 12-18 M | CHL,E27,IRN,NOR,TUR |
| CATFISH | FM,FL,CE | 18-36 M | IDN,MYS,THA,USA |
| TILAPIA | FM,FL,CE | 5 M | BRA,CHL,IDN,MYS,PHL,ECU,THA |
| SHRIMP | FM,FL,CE | 4-14 M | BGD,CHN,E27,JPN,MEX,MYS,NOR PHL,ECU,THA,VNM |
| GRASS CARP | FM,FL,CE, OTH | 24-36 M | CHN,EGY,PAK |
| OTHER CARP | FM,FL,CE, OTH | 42-48 M | BGD,CHN,IDN,IRN,RUS |
| MUSSEL | NATURAL | 18-24 M | AUS,CAN,KOR,NZL,PHL |
| OYSTERS | NATURAL | 24 M | AUS,CAN,CHN,E27,KOR,USA |
| CLAM | NATURAL | 12 M | CHN,E27,KOR,MYS,USA |
| SMALL SCALLOP | NATURAL | 12 M | CHN |
| MILK FISH | FM,FL,CE | 5 M | IDN,PHL |
| SEA BREAM & BASS | FM,FL,CE | 12 M | E27,TUR |
| CRAYFISH | NATURAL | 12 M | USA |
| SEA TRUIT | FM,FL,CE | 24 M | RUS |

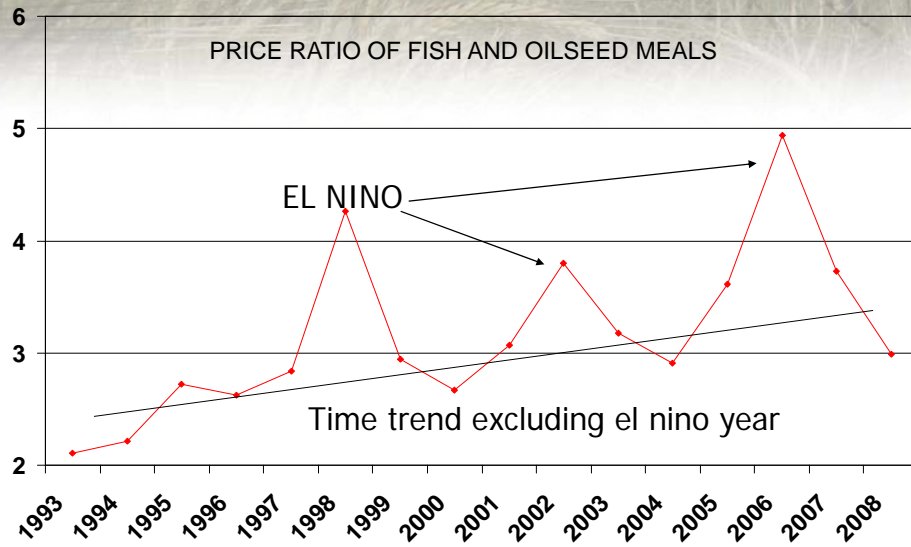
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FISH MEAL IMPORT DEPENDENCY RATIO IN 2007 (%)

| | | | |
|-------------|------|--------------|------|
| Argentina | 20 | Algeria | 100 |
| Brazil | 17.5 | Egypt | 100 |
| Chile | NA | Nigeria | 100 |
| Mexico | 26.3 | Turkey | 87.6 |
| Peru | NA | Bangladesh | 98.7 |
| Indonesia | 56.5 | India | 80 |
| Malaysia | 41.4 | Iran | 2.2 |
| Philippines | 100 | Pakistan | 0 |
| Thailand | 5.3 | China | 62.3 |
| Vietnam | 100 | Korea, South | 100 |
| World | NA | Japan | 9.5 |

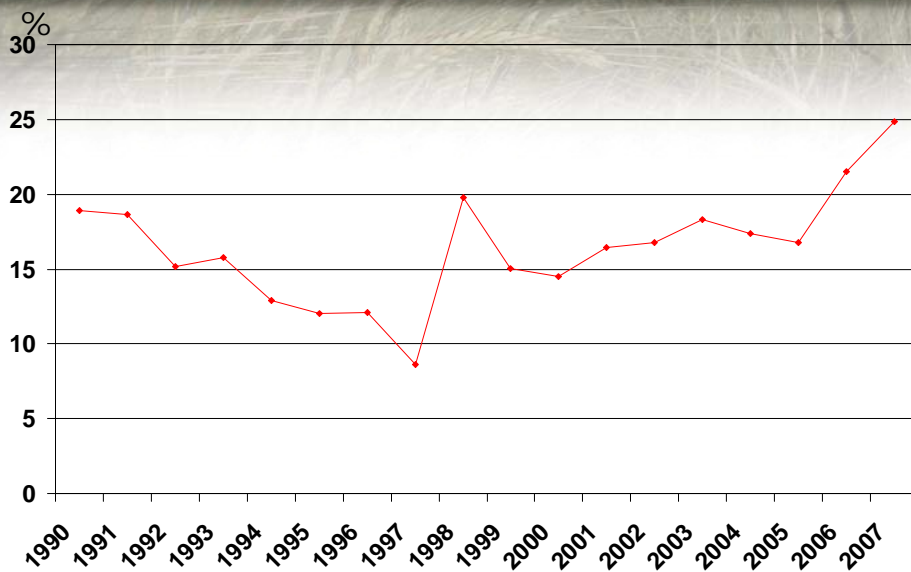
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THE INCREASING DEMAND FOR FISH MEAL BY AQUACULTURE IS CHANGING THE PRICE RATIO



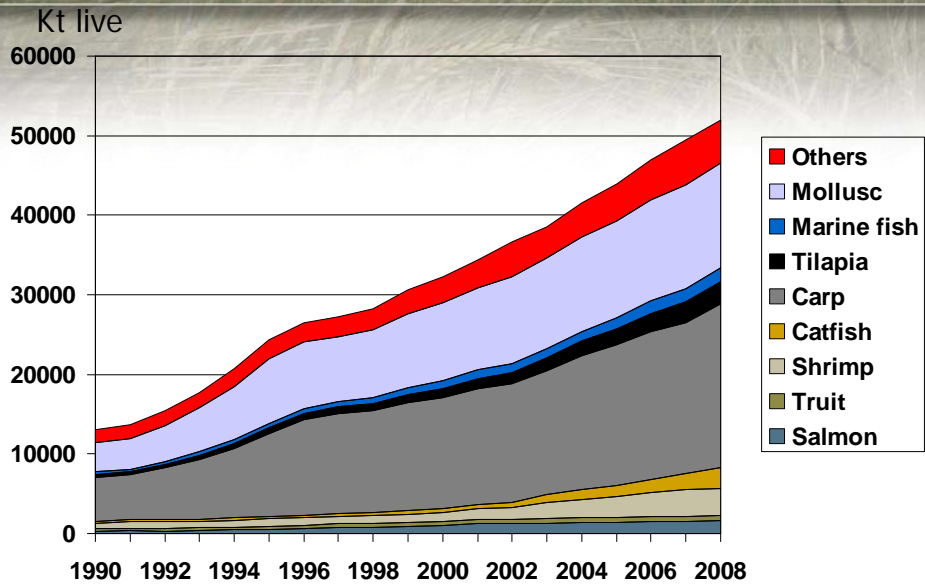
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AN INCREASING SHARE OF FISH MEAL PRODUCTION COMES FROM FISH RESIDUE



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AQUACULTURE PRODUCTION BY MAIN SPECIES



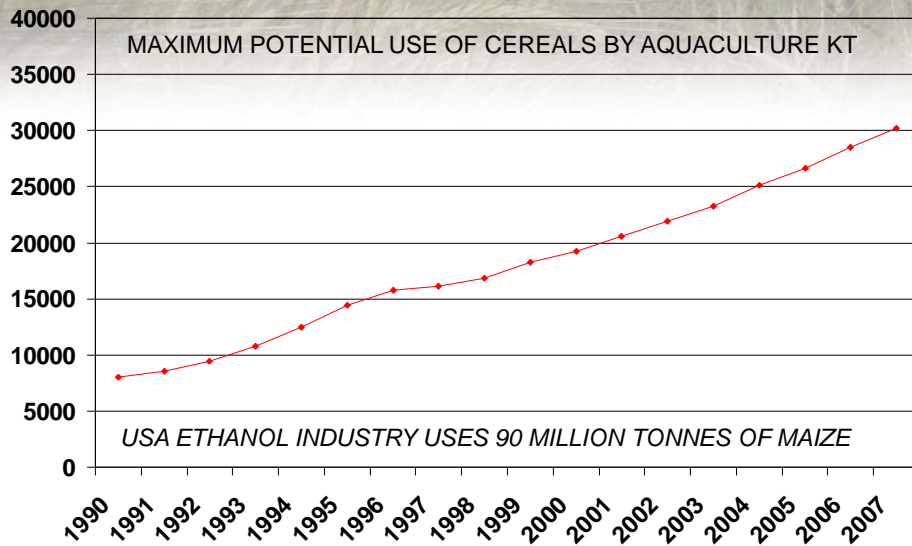
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FISH THE BEST FEED CONVERTER

| SPECIES | FCR | % CEREALS | %HIGH PROTEIN | % FISH OIL |
|-----------|---------|-----------|---------------|------------|
| SK STEERS | 2 (6) | 96 | 4 | 0 |
| LK STEERS | 3 (5) | 94 | 6 | 0 |
| HOGS | 3.5-4 | 80 | 20 | 0 |
| EGGS | 2-2.2 | 71 | 29 | 0 |
| CHICKEN | 1.6-1.8 | 78 | 22 | 0 |
| SALMON | 1.25 | 50 | 30 | 20 |
| TROUT | 1.25 | 55 | 30 | 15 |
| CATFISH | 1.07 | 88.3 | 10 | 1.7 |
| TILAPIA | 1.38 | 93.5 | 6 | 0.5 |
| SHRIMP | 1.56 | 78 | 20 | 2 |
| CARP | 0.83 | <95 | 5 | 0 |
| MILK FISH | 0.8 | 96 | 3 | 1 |

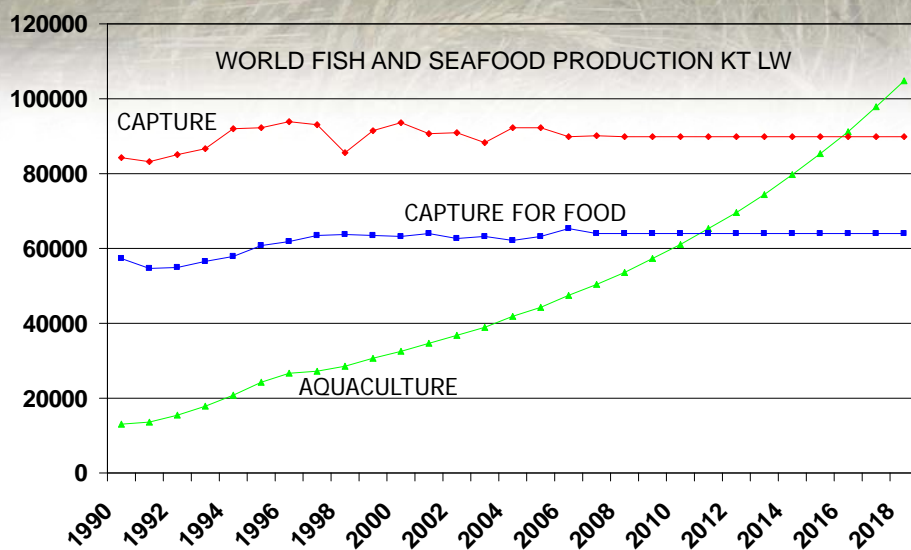
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AQUACULTURE IS CONTRIBUTING TO THE UPWARD PRESSURE ON CEREALS PRICE



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HAVING REACH THE OCEAN CAPACITY GROWTH CAN ONLY COME FROM AQUACULTURE



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