

## Research Article

# Dealer's perception towards aqua feeds-A case study of avanti feeds limited, Kovvur, West Godavari Dt. of Andhra Pradesh 

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#### Abstract

The first feed company was set up at Nellore district in Andhra Pradesh named as "Water Base" in the year 1992. The Indian aqua industry has collaborated with East Asian countries like Taiwan, Thailand etc. All the machinery and $83 \%$ of raw materials are imported from East Asian Countries. The R\&D aspects are also imported from other countries but in India, the research and development departments are still underdeveloped. A sample of 200 dealers was taken for the purpose of this study with a structured questionnaire was drafted and distributed to dealers for collecting the primary data. Applying the theoretical models and the related statistical tools, the data collected by the researcher in the form of primary and secondary data, the hypothesis were tested and arrived at conclusions on the problem.


## Introduction

Indian climate conditions are very much suitable for the development of aquaculture. Countries like the U.S.A., Japan and other European countries consume more aqua foods but they don't have proper climatic conditions to adopt this culture, compared to countries like India, Taiwan and Thailand [1-4]. So the exports of aqua food are from these countries, the U.S.A. and Japan. Among these countries, India is the best in adopting this type of culture. To adopt this culture proper feed must be available in doing aquaculture. Feed occupies $60 \%$ of the cost of doing this type of culture $[5,6]$.

In the beginning, farmers faced many types of problems to do this culture due to lack of proper feed that is unavailable in India. The feed is imported from other countries like Taiwan,

Thailand and the Philippines. Because of these countries are well developed than it but the feed that which is imported from their countries used to take for about 6 months and during these posses, the quality of the feed used to decline slowly. Microalgae are more nutritious than the traditional sources of animal and aquatic feed like millet, grams and other small fishes in terms of its protein, omega 3 fatty acids and carotenoids content. Microalgae can be next alternate source for animal and aquatic feed production in an environmentally sustainable and economically advantageous manner [7].

The feed industries slowly started in India in the early 90s collaborating with East Asian countries. The first feed company was set up at Nellore in AP named as "Water Base" is the year 1992 the feed industries started developing very well in India because of high cultures.

With 7 major industries producing close to $1,50,000$ tons of feed with different varieties, there are principally 3 varieties of feeds.

1. Semi-intensive (high stocking)
2. Modified extensive (medium stocking)

## 3. Extensive (low stocking)

## Aqua-feed industries in Andhra Pradesh and India

In India, the first feed company was in Andhra Pradesh at Nellore named as Water Base. The tropical conditions are suitable to do this type of culture in Andhra Pradesh and remaining other Coastal states in India. The total requirements of the feed-in doing culture are consumed around $80 \%$ by Andhra Pradesh. There are 2 major feed companies and also other small units that are located. The major companies are Water base at Nellore, an Avanti Feeds Limited at Kovvur, West Godavari district, Andhra Pradesh occupies second place in feed production. Major aqua feeds industries located in India are listed in Table 1.

Table 1: Major aqua feeds industries located in India.

| Name | Place | State/UT |
| :---: | :---: | :---: |
| Avanti | Kovvur | Andhra Pradesh |
| Charoen Pokphand | Chennai | Tamilnadu |
| Water base | Nellore | Andhra Pradesh |
| Hon aqua | Yanam | Pondicherry* |
| Grow best | Chennai | Tamilnadu |
| Godrej | Chennai | Tamilnadu |
| Higashimaru | Cochin | Kerala |
| * Union Territory (UT) |  |  |

## Need and scope of the study

The analysis of dealer's behaviour is a pre-requisite for the decision-makers as it enables them to have an understanding of the present and future demand of their Products and thereby resolve is of vital importance to marketers in shaping the future of the Organization. The success or failure of the products mainly depends on the dealer's reaction. Because of heavy competition in the shrimp feed market, there is a need to study and understand dealer behaviour towards feeds. In this concept an attempt is made to study the dealer's perception towards feeds with reference to Avanti Feeds Limited.

The scope of the present study was confined and narrowed to the following limits. The study was conducted in various places of Kakinada and Bhimavaram. This study considered the opinion of dealers of Avanti Feeds Ltd. The market conditions may not be the same in all places due to the differences in area and climate conditions. As the shrimp culture mainly depends on tropical conditions. So, the market conditions will be different from one state to another state.

## The objectives of the study

The principal objective of the study is to evaluate the marketing performance of Avanti Feeds Limited, Kovvur (West Godavari district). More specifically the objectives are:

1. To study the buying behaviour of dealers and the attitude of dealers about shrimp feeds
2. To find out the pricing policy and the dealers network of the company
3. To find out the quality consciousness of the dealers and the marketing strategy of the company
4. To provide suitable suggestions to the company for improving its sales performance.

## Location

Kovvur could be a city in West Godavari district (AP) of the Indian state of the province. Kovvur is situated on the west bank of the Godavari River, at a distance of 92 km from the district headquarters, Eluru. It is the peaceful town in the district and devotional town, "Goshpada Kshetram" has an average elevation of 10 m ( 33 ft ). Kovvur is a municipality and the headquarters of Kovvur mandal in Kovvur revenue division. Kovvur ( $17.017^{\circ} \mathrm{N} 81.731^{\circ} \mathrm{E}$ ) is a transformed name of Govur which is considered as the place of Gautama Maharishi Ashramam Figure 1.

## Avanti aqua feeds limited

Avanti Feeds Limited (https://www.avantifeeds.com/) has started its commercial operations in 1993 under the technical collaboration with Pingtai Enterprises, Taiwan. Later expanded the capability and increased technical and selling capabilities by delivery onboard Thai Union Frozen merchandise PCL. Thailand has the world's largest food makers and additionally having Feed Mill and Prawn Hatchery in Thailand. Today the Thai Union is closely associated with Avanti Feeds with equity participation, technical collaboration and marketing tie-up in India.

Avanti Feeds is the leading manufacturer of Prawn, Fish Feeds, Shrimp Processor and Exporter from India. Avanti Feeds restricted has established a venture with the world's largest food processors and leading manufacturer of prawn and fish feeds in the Kingdom of Thailand, Thai Union Frozen product PCL, also with integrated facilities from Hatchery to Shrimp \& Fish processing and Exports.

Aqua feeds: The state of the art technology also as quality consciousness, wonderful storage facilities, supply capabilities, timely deliveries and commitment to client satisfaction has created Avanti be pleased with an extended list of devoted customers from USA, Europe, Japan, Australia. Avanti produces nutritionally well balanced and high-quality feed, systematically, business to the Indian prawn and fish farmers, at their doorstep. The company has 4 prawn and a fish feed manufacturing Unit, which are certified by ISO 9001:2008, in Kovvur, West Godavari District, and Pardi in Valsad District,


Figure 1: Location of Avanti Aqua Feeds Limited in Kovvur, West Godavari District, AP, India.

Gujarat, in Bharat with a capability of 4,00,000 MT per annum. The Shrimp system and Exports Unit was certified by ISO 22000: 2005 is found in Gopalapuram close to Ravulapalem, East Godavari District, India and confirms to HACCP, USFDA, EU \& BRC Global standards. It is additionally associate in nursing command certified for best cultivation practices.

## Sample size

The sample size chosen was 200 dealers from West-East Godavari region. Therefore the percentage of the sample size chosen is taken as $100 \%$.

## Basic problems of the aqua industry

Nowadays, the aqua industry is facing various types of problems. The countries consuming seafood from India are from Japan (60\%), U.S.A. (20\%) and European Countries (20\%) later these countries consumption slowly started declining conditions, terrorism problem and due to this the export of started reducing. The above factors made aquaculture to decline and it is directly proportionate to the aquafeed industries.

## The problem of materials

The company was mainly based upon raw materials feed generally contains nearly 40 types or raw materials. In these 40 types, $83 \%$ of raw materials are imported from different countries among this $83 \%$ of raw materials $60 \%$ of the value is occupied by the feed and $17 \%$ of raw materials are developed in India. Despite facing many problems in importing they are unable to manufacture in our country.

## Present profile

At present, there are seven major units \& some units located in India by the private sector with an installed capacity of 3 lakh tonnes. The companies are well organized \& well equipped. All companies collaborate with East Asian Countries. The technology \& raw materials are imported from these countries. In India, the Industries are located in 3 states like Andhra Pradesh, Kerala and Tamilnadu. The feed to some extent is imported from Taiwan, Thailand and East Asian Countries according to the culture with the 3 above said varieties of feeds.

## Review of literature

Carbohydrates are a unit the smallest amount overpriced style of dietary energy and area unit oftentimes used for supermolecule frugal in developed diets. Fish and shrimp vary in their ability to digest sugar effectively [8]. The utilization of dietary sugar has additionally been found to vary with the complexness or chemical structure of the sugar supply used. Channel catfish (Ictalurus punctatus) and Kuruma shrimp (Penaeus japonicus) seem to utilize advanced carbohydrates additional promptly than straightforward sugars [9] The ability of carnivorous fish species to change or digest advanced sugar is restricted because of the weak chemical change activity in their canal, thus for species such as trout, starch digestion decreases as the proportion of dietary starch is increased. By the application of salmonids, carbohydrate digestibility will also weaken with growing molecular weight [10,11]. In a study published it was identified the major market competitors for aqua feed business were Avanthi ( $38 \%$ ) and CP ( $31 \%$ ). The aqua dealers have reported CP (39\%) and Avanthi (26\%) as best feed brands in Andhra Pradesh also majority (71\%) of
the aqua dealers were engaged in both cash and credit mode of business and maintained an average profit margin of $10 \%$ while expecting a minimum of $40 \%$ protein in the aquafeeds for better business [12].

In general, heat water all-devouring or saprozoic fish species like common carp, channel catfish and eel are more tolerant of high dietary carbohydrate levels. Furuichi and Yone compared the use of carbohydrates by common carp, red sea bream, and yellowtail [13,14]. Growth retardation and low feed efficiency were noticed in common carp fed diets containing over $40 \%$ Dextrin, red sea bream fed over $30 \%$ Dextrin, and yellowtail fed over $20 \%$ Dextrin [15,16]. Studies of common carp and Ictalurus punctatus [17] have shown that sugar levels up to concerning twenty-fifth of the diet area unit utilised as effectively as lipids and carbohydrates as an energy sources [18-20].

## Research methodology

The research has chosen and designed the research in such a way to explore the factors involved in the problem and was further conducted research to describe the relationship between the factors explore on the given problem. By applying the theoretical models and the related statistical tools, the data collected by the researcher in the form of primary and secondary data, the hypothesis were tested and arrived at certain conclusions on the problem given. So, the present study mainly adopted the descriptive research design and party exploratory research design in attempts to provide suitable solutions to the problem chosen in the study.

## Statistical approach

The role of statistics in research is to furnish as a tool designing research analyzing its data and drawing conclusions therefrom. As every individual knows that any research worker cannot ignore the science of statistics. Tools used are as follows:

## Percentage calculation

The percentage method was used in processing the data bar charts and pie-diagrams were used to explain tabulation clearly.

## Primary data

The data, which is collected freshly, for a specific purpose in hand and thus, happen to be original in character and is referred to be the primary data. The collection of primary data for business research is of paramount importance to assist management in marketing decisions.

## Secondary data

In this paper, the secondary data was collected mainly from company records, trade journals, internal sales reports, theoretical textbooks, industry-related web sites and newspapers.

This research has been based on both the primary and secondary data.

## Data collection methods

Questionnaire: The questionnaire technique of statistics collection is relatively prevalent and it contains several questions printed/typed in a certain order on a form or set of forms. Care was taken in the main aspect as general form, questions sequence, question formulation and wording. The study was associated with both open and close-ended questions. The free-response was invited from respondents. Before using this direct method of personal and telephone interview with a large sample "pilot study" was conducted.

Pilot survey: As it is advisable to conduct "a pilot study" for the testing questionnaire, few respondents were taken from the total sample. The pilot survey is an infant the "Replica and Rehearsal of the main survey". This brings into the weakness of the questionnaire. Thus certain changes were in the questionnaire concerning the study.

## Sampling method

Non-probability sampling: Non-probability sampling procedure which does not provides any basis for estimating the probability that each item in the population possesses to be included in the sample. In such a case, the sampling error is not measurable and the error in the estimator tends to increase sharply because the representativeness of the sample members is questionable.

Convenience sampling: In this method, we have no way of determining the representativeness of the sample. This may result in biased estimation. This procedure is widely suitable in analysis of survey etc. The convenience sampling technique is comprehensively applied in marketing studies.

Data analysis and elucidation: The present study is about the perception of dealers those who are engaged in Aqua Business. First-hand information has been collected and elucidated by using various statistical tools. Dealers' dealing period with aqua products has been presented in the following Table 2.

Dealers dealing period with aqua products are shown in Table 2. 60\% dealers are dealing with aqua feed for 5 years, $15 \%$ dealers are dealing for more than 4 years, $8 \%$ dealers are dealing for more than 3 years, $12 \%$ dealers are dealing for more than 2 years and $5 \%$ dealers are dealing from less than 2 years with the aquafeed. From the above table, it was obvious, that most of the dealers are doing aqua feed business for more than 5 years. The competitors for Avanti Aqua Feeds Ltd have been projected in the following Table 3.

Table 2: Dealers dealing period with aqua products.

| No. of years | Respondents | $\%$ |
| :---: | :---: | :---: |
| Below 2 years | 10 | 5 |
| $2-3$ years | 24 | 12 |
| $3-4$ years | 16 | 8 |
| $4-5$ years | 30 | 15 |
| $>5$ years | 120 | 60 |
| Total | 200 | 100 |
|  |  | 092 |

$75 \%$ of dealer's opinion is Charoen Pokphand is the competitor for Avanti Feeds Ltd. 12\% of dealer's opinion is Grobest is the competitors for Avanti Feeds Ltd, 5\% of dealer's opinion is Godrej is the competitors for Avanti Feeds Ltd., 8\% of dealer's opinion is Water base is the competitors for Avanti Feeds Ltd. It will be concluded that Chorean Pokhand is the main competitor for Avanti Feeds Ltd. The factors influencing the dealers to deal with Avanti Aqua Feeds Ltd has been projected in Table 4.
$51 \%$ of dealers influenced by the quality, $20 \%$ of dealers influenced by profit margin, $6 \%$ of dealers influenced by credit, $15 \%$ of dealers influenced by demand and $8 \%$ dealers influenced by turn over. So, numbers of dealers are influenced by Avanti Feeds Ltd. Monthly average turnover of aquafeeds for various companies are presented in Table 5.

From the above information, it can be understood that the major demanding products in the market are the Avanti company products, hence it can be concluded that Avanti Products are occupying the major market share. In Table 6 the factors influencing the farmers to purchase the products of Avanti are listed.
$16 \%$ farmers are influenced by appearance, $11 \%$ farmers are influenced by smell, $21 \%$ farmers are influenced by price, $21 \%$ farmers are influenced by the quality, $9 \%$ farmers are influenced by reputation and 3\% farmers are influenced by other factors. From the above table it is observed that farmers are taking care of quality and freshness, then appearance and price of the feed. The comparison of Avanti products Prices with other brands is presented in Table 7.

From Table 7, it is clear that comparatively, Avanti prices are lower than other company feed prices.

The opinion of dealers on the delivery system of Avanti Feeds Limited was taken with total respondents as $200,57 \%$ of dealers are satisfied with Avanti delivery system (responded within a day), $35 \%$ of dealers are the moderate opinion

Table 3: Co-competitors for Avanti Aqua Feeds Limited.

| Company | Respondents | Percentage |
| :---: | :---: | :---: |
| Charoen Pokphand | 150 | $75 \%$ |
| Grow best | 24 | $12 \%$ |
| Godrej | 10 | $5 \%$ |
| Water base | 16 | $8 \%$ |
| Total | 200 | $100 \%$ |


| Table 4: Factors influencing the dealers to deal with Avanti Feeds Ltd. |  |  |
| :---: | :---: | :---: |
| Factors | Respondents | $\%$ |
| Quality | 102 | 51 |
| Profit margin | 40 | 20 |
| Credit | 12 | 6 |
| Demand | 30 | 15 |
| Turnover | 16 | 8 |
| Total | 200 | 100 |

Table 5: A monthly average sales of aquafeeds from various companies.

| Company | Average sales per month | Respondent |
| :---: | :---: | :---: |
| Charoen Pokphand | 30 | $15 \%$ |
| Grow best | 24 | $12 \%$ |
| Avanti | 120 | $60 \%$ |
| Water base | 10 | $9 \%$ |
| Godrej | 8 | $4 \%$ |
| Total | 200 | $100 \%$ |

Table 6: Factors influencing the farmers to purchase the products.

| Factors | Respondent | $\%$ |
| :---: | :---: | :---: |
| Appearance | 34 | 16 |
| Smell | 22 | 11 |
| Freshness | 43 | 21 |
| Packing | 13 | 6 |
| Price | 27 | 13 |
| Quality | 45 | 21 |
| Reputation | 18 | 9 |
| Others | 6 | 3 |
| Table | 200 | 100 |
|  |  |  |

Table 7: Comparison of Avanti feed prices with other brands

| Brand | High | Medium | Low |
| :---: | :---: | :---: | :---: |
| Avanti | 30 | 140 | 30 |
| Charoen Pokphand | 64 | 108 | 28 |
| Grow best | 80 | 66 | 54 |
| Godrej | 76 | 56 | 68 |
| Water base | 84 | 66 | 50 |

(responded 1-2 days), on Avanti delivery system and $8 \%$ of dealers are not much satisfied with the Avanti delivery system (responded after 2 days). Dealers' feeling the distribution is good and order processing is also good.

Quantity of bags preferred by farmers on every purchase of a product was taken with total respondents as 200 . It is evident that $70 \%$ (respondents 140 ) of the farmers are buying 25 Kg bags and whereas the remaining $30 \%$ (respondents 60 ) of farmers are buying 10 Kg bags.

Sales promotional techniques adopted by the company to promote the sales were obtained with total respondents as 200. $25 \%$ dealers respondent to personal selling offered by the company (respondents 50), $30 \%$ dealers respondent to sales promotion offered by the company (respondents 60), $22 \%$ dealers respondent to advertising (respondents 44), $15 \%$ dealers respondent to publicity (respondents 30 ) and $8 \%$ dealers responded to other activities (respondents 16). Most of the dealers are responded to sales promotion and personal selling after that advertising and publicity.

## Summary, observations and suggestions

The study focuses on dealer's perception towards the Avanti Feeds by focusing on different factors, which influence
the buying behaviour. Some of the dealers are shown dissatisfaction due to lower margins. In pricing aspects, a company is maintaining a good impression. There are some superior qualities feeds also provide by the company, but very few farmers are using this superior quality feed. Extensive type feed is mostly preferred by a maximum number of farmers so that the sale of this type of feed is more than other types.

In all other aspects of distribution, order processing, sales promotion, personal, selling and in advertising company is improving its activities and getting better results. Shrimp aquaculture has contributed significantly to increase our export trade. In recent years, some circles have alleged aquaculture as environmentally damaging and socially disruptive, which has levelled without conducting a technically sound environmental impact assessment. When compared to the sectors, the discharges from aquaculture sector are less harmful to the
environment. List of observations and suggestions framed out of this study are given in Table 8.

## Limitations of the study

1. Time is a major constraint, conducts surveys with all the dealers is not possible within a short period.
2. There is a possibility for giving biased answers from the dealers and farmers to promote their brand of product.
3. The topic is wide and narrow, which requires great attention to complete in a short period.
4. The sample size is less, which may restrict the researcher to generalize the findings to the entire population.
5. Because of the fast-changing marketing environment, the analysis may not hold good for a long time.

Table 8: List of observations and suggestions framed out of this study.

| Observations |  |
| :---: | :---: |
| Avanti has several dealers having greater than 5 years' experience in aquafeed business |  |
| Dealers have more sales from Avanti Feeds, but competition is mainly from Charoen Pokphand |  |
| Water base is another main Competitor rest of them is not to be considered as main competitors |  |
| The quality in the fed and profit margin offering by the company is mainly attracting the dealers to deal with Avanti Feeds Limited |  |
| Comparatively, Avanti Feeds prices are lower than any other company feed prices |  |
| By the experience of the dealers, it was found that the farmers are purchasing the Avanti Feeds due to its quality, freshness and appearance |  |
| Avanti is maintaining a good distribution system. The company is taking care of delivering the order to dealers within time |  |
| Dealers are showing interest in sales promotion than that of advertising by maintaining good relations and proper delivery |  |
| Rather than 10 Kg bags, 25 Kg bags are having more demand from Avanti Feeds |  |
| Number of dealers is having the opinion that Avanti is maintaining very good quality feeds |  |
| Company is providing promotional tools to dealers attracting more attention from the dealers |  |
| Maximum percentages of dealers are satisfied with the profit margin offered by the company |  |

## References

1. Bardach JE, Ryther JH, McLarney WO (1975) Aquaculture, the farming and husbandry of freshwater and marine organisms. Wiley-Interscience, New York, USA 868.
2. Boonyaratpalin M (1980) Protein requirement of Pla-chon (Ophicephalus striatus), Bangkok, Thailand 3.
3. Boonyaratpalin $M$ (1981) Lipid requirements of snakehead fingerlings. Progress report of the regional project RAS/76/003, Network of Aquaculture Centres in Asia, Bangkok, Thailand 30-36.
4. Boonyaratalin M (1981) Vitamin requirements in snakehead diets. Progress report of the regional project RAS/76/003. Network of Aquaculture Centres in Asia, Bangkok, Thailand 18.
5. Boonyaratpalin M (1988) Catfish feed. National Inland Fisheries Institute. Bangkok, Thailand 17-19.

Suggestions
Feb.-Jun. and Jul.-Oct. are the periods for shrimp culture with more demand. According to the demand, the production has to be optimized
Numbers of technicians are needed to assist the farmers in maintaining their ponds (presently 2 )

Shrimp farming sector is badly affected by viral diseases
The company should focus more attention on informing the farmers with latest technology development to control virus diseases
More technical awareness has to create among the farmers about the usage of feed property
The company should conduct programs for the farmers on shrimp culture and feed importance. It also acts as publicity
Advertising is a major tool to attract customers. Avanti has not done much and has to pay more attention to advertising
In packing the feed, paper liner bags should be used to preserve the quality, freshness of feed and water stability
Avanti has a good brand image in the aquafeed market, it has to sustain its image in future as well
In the case of the profit margin, the company should satisfy the dealers then that of competitors

Encourage the dealers to increase the sales by giving them additional incentives
The company can give cash discounts on big orders and more commission concerning their sales with other dealers
6. Butthep C, Sitasit P, Boonyaratpalin M (1983) Finfish nutrition in Asia. C.Y.Cho, C.B.Cowey and T.Watanabe (eds.), IDRC, Ottawa, Canada 118-129.
7. Gnanasekaran D, Gargi G, Ratan K, Ankan S, Debasish D (2019) Microalgaenutritious, sustainable aqua- and animal feed source. J Funct Foods 62: 103545. Link: https://bit.ly/3aOfJMO
8. New MB (1987) Feed and feeding of fish and shrimp. ADCP/REP/87/26. FAO, Rome, Italy 275. Link: https://bit.ly/3I8Dx2o
9. New MB (1992) Farm-made feeds. ASEAN-EEC Aquaculture Development and Coordination Programme, Bangkok, Thailand 23. Link: https://bit.ly/317mkXm
10. Sitasit P, Unpresert N, Jantrarotai W (1984) Vitamin requirement for growth and survival rate of Clarias macrocephalus fry. Bangkok, Thailand 31. Link: https://bit.ly/3hljfk3
11. Luquet $P$, Moreau $Y$ (1990) Energy-protein management by some warm water finfishes, In Advances in tropical aquaculture. Actes Colloq. No. 9. IFREMER, Paris, France 751-756.
12. Viswanatha BS, Padmavathi P, Veeraiah K (2017) Dealers perception on aqua feed business in Andhra Pradesh, India. Int J Fish Aquat Stud 5: 33-36. Link: https://bit.ly/2YmGSS2
13. Furuichi $M$, Yone, $Y(1982)$ Availability of carbohydrate in nutrition of carp and red sea bream. Bull Jpn Soc Sci Fish 48: 945-948. Link: https://bit.ly/34hiYel
14. Wilson RP (1994) Review-Utilization of dietary carbohydrate by fish. Aquaculture 124: 67-80. Link: https://bit.ly/3aOMOmH
15. Al-Dubakel AT, Abdul-wahid, Batool HH (2009) The ability of common carp cyprinus carpio to digest different carbohydrate sources. Basrah J Vet Res 8: 65-70. Link: https://bit.ly/3ghiFCK
16. Garling DL, Wilson RP (1976) Optimal dietary protein to energy ratio for channel catfish fingerlings, Ictalurus punctatus. J Nutr 106: 1368-1375
17. Takeuchi T, Satoh S, Kiron V, (2002) Common carp, Cyprinus carpio. In C.D. Webster \& C. Lim, eds. Nutrient requirements and feeding of finfish for aquaculture. Oxon and New York, CABI 418.
18. Takeuchi T, Watanabe $T$ (1977) Requirement of carp for essential fatty acids. Nippon Suisan Gakkaishi 43: 541-551.
19. Takeuchi T, Watanabe T, Ogino C (1979a) Availability of carbohydrate and lipid as dietary energy sources for carp. Nippon Suisan Gakkaishi 45: 977-982. Link: https://bit.ly/327usyk
20. Takeuchi T, Watanabe T, Ogino C (1979b) Optimum ratio of dietary energy to protein for carp. Nippon Suisan Gakkaishi 45: 983-987. Link: https://bit.ly/2FLIObl

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