



International Journal of Agriculture Extension and Social Development

ISSN Print: 2618-0723
ISSN Online: 2618-0731
NAAS Rating (2026): 5.04
IJAESD 2026; SP-9(9): 128-132
www.extensionjournal.com
Received: 26-06-2026
Accepted: 02-08-2026
Published: 30-09-2026

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Current status of consumer preference for ornamental fish keeping in Tapi district

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DOI: <https://www.doi.org/10.33545/26180723.2026.v9.i9Sb.4343>

ABSTRACT

The present study was conducted to assess the current status of consumer preference for ornamental fish keeping in Tapi district over a period of two months. Data were collected through personal interviews of aquarium users using a structured questionnaire. The primary objective was to determine the preferences of ornamental fish keepers and the routine health-care practices adopted by them. A total of 40 respondents were interviewed. The majority of the respondents (63%) belonged to the age group of above 40 years, and male keepers were more actively engaged in aquarium keeping. Most respondents maintained aquariums in their houses for decorative and hobby purposes. A large proportion of the respondents was graduates (43%) and had 1–3 years of experience in aquarium keeping. The study revealed that 92% of the users kept only one aquarium, predominantly of the community type and medium size. Goldfish was the most preferred species. The majority of the respondents used commercially available formulated feeds and fed their fishes twice a day. A few respondents reported diseases such as fin rot, dropsy, and loss of appetite, which were treated based on the advice of ornamental fish shopkeepers.

Keywords: Aquarium keepers, Consumer preference, Ornamental fish, Respondents

Introduction

Ornamental fishkeeping, also known as the hobby of aquarium fish keeping, has emerged as one of the most popular and captivating hobbies worldwide (Novák *et al.*, 2020) [1]. Ornamental fishes often referred as "Living Jewels" because of their different shapes, attractive pattern colors and unique behavioural characteristics (Jayasankar 1988). Their vibrant colors, graceful movements, and unique behaviors have contributed to their popularity as household pets and decorative organisms (Livengood *et al.*, 2007) [2]. The tradition of keeping ornamental fish in glass tanks dates back to ancient times in countries like China, where it began with goldfish in the year 1163 (Balon, 2004) [3]. Over the centuries, this hobby spread to various countries, and in the 17th century, goldfish gained popularity in England and Scotland. Over time, the practice of aquarium keeping spread to different regions and developed into a globally important recreational activity and industry on an international scale (Novák *et al.*, 2020) [1].

Today, ornamental fish are among the most popular pets worldwide, with a large and diverse community of aquarium hobbyists contributing to the continued expansion of the ornamental fish sector (Livengood *et al.*, 2007; Rhyne *et al.*, 2023) [2, 4]. The global ornamental fish trade has also developed into a substantial international industry involving numerous producing, exporting and importing countries (Evers *et al.*, 2019; Cohen *et al.*, 2020) [6, 5].

Consumer preference plays a major role in the ornamental fish industry. The choice of aquatic animals by aquarists is based on their features such as, color, body shape, size, behavior, compatibility with other species, as well as the simplicity of their maintenance (Pargunan *et al.*, 2020) [7]. The demand for attractive, unusual, and distinctive species has contributed to the diversification of ornamental fish available in the market (Borges *et al.*, 2021). Moreover, the rising popularity of aquarism is connected with the fact that the fish requires relatively little space and lower maintenance efforts than most other pets (Laskar *et al.*, 2016) [8].

Gujarat has a well-developed fisheries and aquaculture sector, but research related to ornamental fishkeeping has received comparatively less attention than studies on fisheries production and aquaculture. Therefore, the present study was undertaken to assess ornamental fishkeeping practices among selected respondents in Tapi district, Gujarat. It examined the demographic profile of keepers, their aquarium management practices, species preferences, expenditure patterns, and sources of fish and accessories. The findings provide baseline information on the status of ornamental fishkeeping in the district and highlight the potential for further development of related activities in the region.

2. Materials and methods

The study was conducted in Tapi District over the period of 2 months from July to August 2026. Target groups were, aquarium users. The simple random sampling method was used for data collection. The sample size was 40 respondents of aquarium users. The responses of each respondent were compiled and tabulated

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to indicate frequency and percent distribution for different categories of the questionnaires.

2.1 Data analysis

The collected data were analyzed using Microsoft Excel 2007. Results were presented in graphical form employing simple statistical measures such as frequency, percentage, and arithmetic mean.

3. Results and discussion

3.1 Profile information of the ornamental fish keepers

To understand the present status of ornamental fish keeping in detail for this study few aspects of the personal details of fish keepers were taken into consideration which include their age, education, duration of ownership and purpose of keeping an aquarium.

Age distribution

The demographic profile revealed that a majority of the fish keepers (63%) were over 40 years of age. Those in the 30-40 age bracket accounted for 20% of the respondents, while the remaining 17% fell within the 20-30 age group (Figure 1).

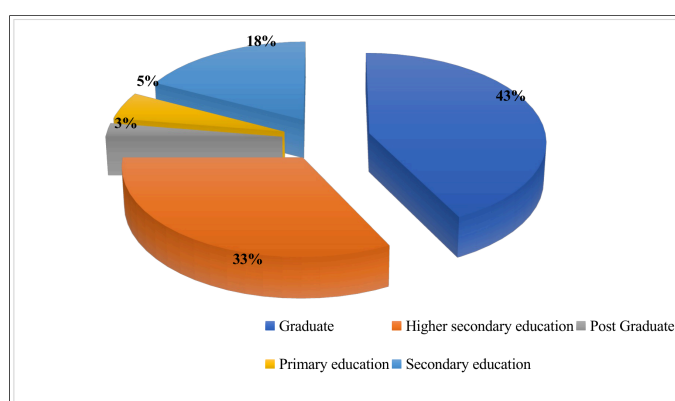


Figure 1. Age of aquarium users

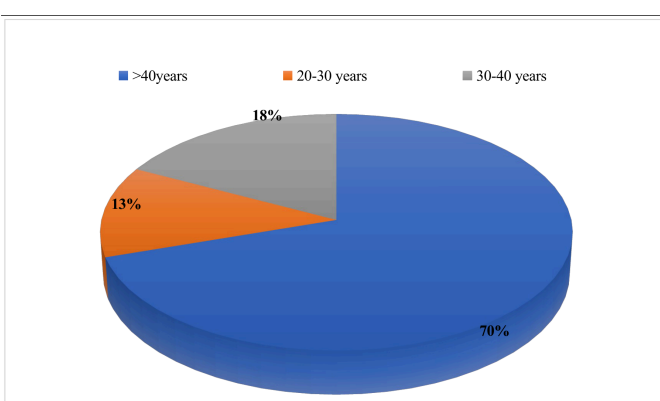


Fig. 2 Education background

Duration of ownership

Regarding the duration of aquarium ownership, 38% of the respondents had maintained their aquariums for 1–3 years or less, 30% for 3–6 years, 15% for 6–9 years, and 17% for 9 years or more (Fig. 5).

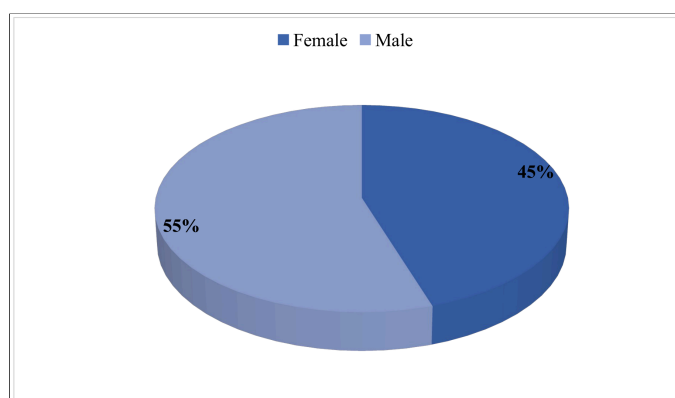


Figure 3. Purpose of keeping Aquarium

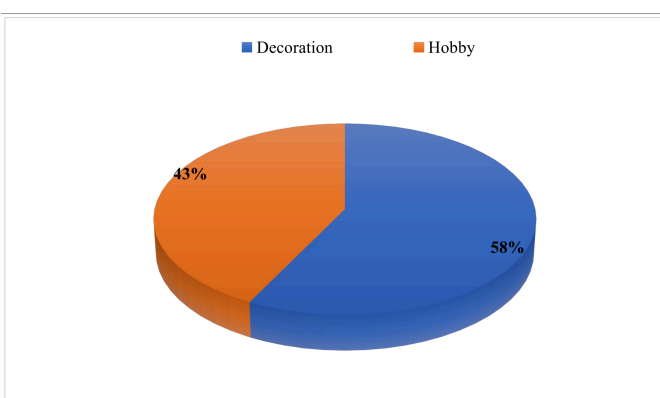


Fig. 4. Gender of aquarium users

Education background

Regarding educational attainment, 43% of respondents held a graduate degree, followed by 35% with secondary-level education. Additionally, 17% ($n = 10$) had completed higher secondary education, while primary-level education and postgraduate degrees represented 3% and 2% of the sample, respectively (Figure 2). These findings align closely with those of Arif *et al.* (2018) [9], who similarly reported that 40% of ornamental fish keepers had attained a graduate-level education.

Purpose of keeping aquarium

The study revealed that the majority of respondents maintained aquariums primarily as a hobby, while others kept them for decorative purposes (Fig. 3).

Gender of aquarium users

Out of the 60 respondents, approximately 55% were male and 45% were female ornamental fish keepers (Fig. 4). This observation aligns with the findings of Saha *et al.* (2013) [10], who also reported a predominance of male aquarium keepers.

These results are comparable to those of Uddin *et al.* (2019) [11] and Tolon (2018) [12], who observed that a substantial proportion of aquarium keepers had less than two years of experience, with many possessing less than one year of experience.

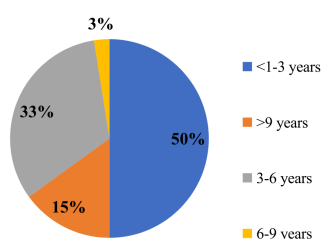


Fig 5. Duration of ownership

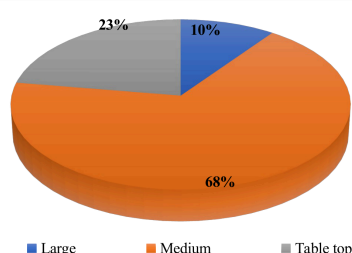


Fig 7. Type of aquarium

The study revealed that goldfish was the most preferred ornamental fish species among the respondents, accounting for 27% of the preferences. This was followed by sharks (15%) and tetras (17%). The remaining 29% of aquarium keepers preferred other species, including guppy, koi carp, dollar fish, flowerhorn, discus, and fighter fish (Fig. 8). These findings are consistent with those of Faruk *et al.* (2012) [13], who reported that goldfish, koi carp, angelfish, guppy, fighter fish, parrot fish, and discus were among the most demanded ornamental fish species by consumers.

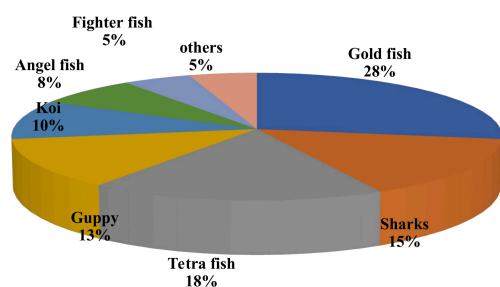


Fig. 8. Preferred species by consumers

Type of aquarium

Among the hobbyists surveyed, community aquariums were the most preferred type, accounting for 60 % of the respondents, while 40% preferred single-species aquariums (Fig. 9). This trend is consistent with the findings of Arif *et al.* (2018) [9], who reported a higher preference for community aquariums (83%) compared to single-species setups (17%). The greater inclination towards community aquariums in the present study may be attributed to the aesthetic appeal of mixed-species displays and the opportunity to observe diverse fish behaviours within a single tank.

3.2 Aquarium details

To assess the present status of ornamental fish keeping in the study area, information pertaining to the aquariums, ornamental fishes, and associated management practices was collected and analysed.

Preferable number of aquarium

The majority of aquarium users (88%) owned only one aquarium, while 10% owned two aquariums and only 2% owned three aquariums (Fig. 6).

Preferable size of aquarium

Regarding aquarium size, 67% of the respondents maintained medium-sized aquariums, 23% preferred table-top aquariums, and 10% owned large aquariums (Fig. 7). These findings are in agreement with those of Laskar *et al.* (2016) [8], who reported that the majority of respondents preferred small- and medium-sized aquariums.

Preferred species by consumers

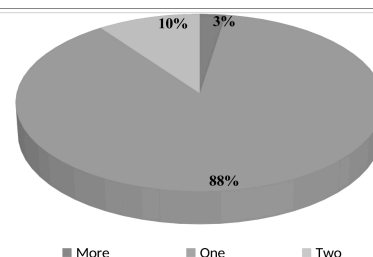
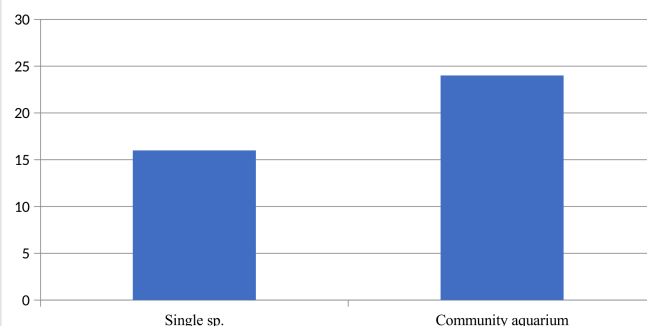


Fig. 6 Number of of aquarium

Type of aquarium

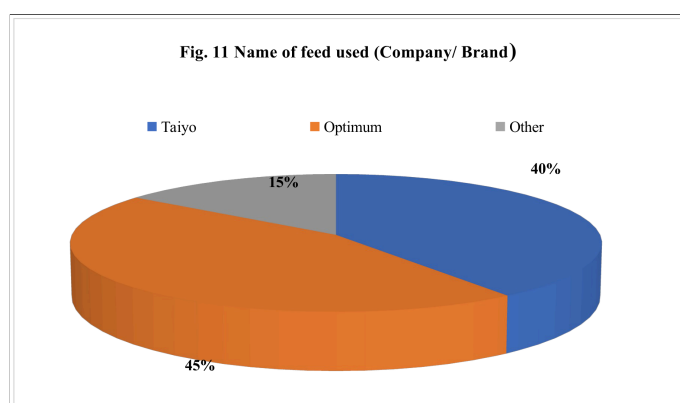


3. Aquarium maintenance and feeding strategies

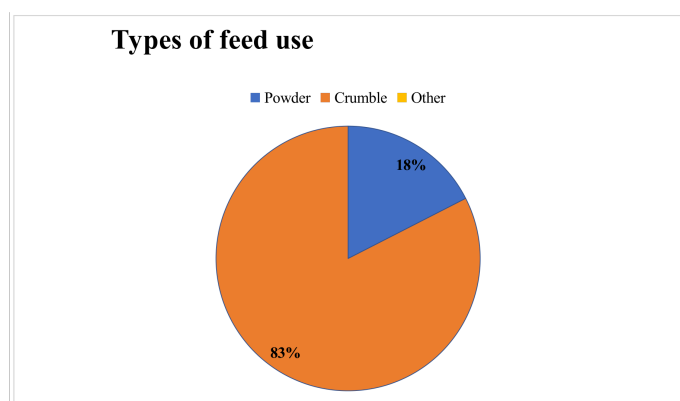
Proper aquarium maintenance and feeding practices are essential for ensuring the health and longevity of ornamental fishes. Feeding strategies, in particular, play a critical role in maintaining aquarium. In the present study, information was collected on the type of feed used, brand preferences, and feeding frequency adopted by aquarium keepers.

Fish feed

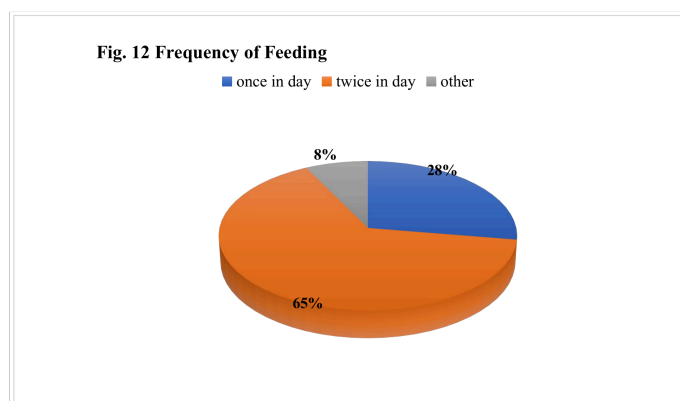
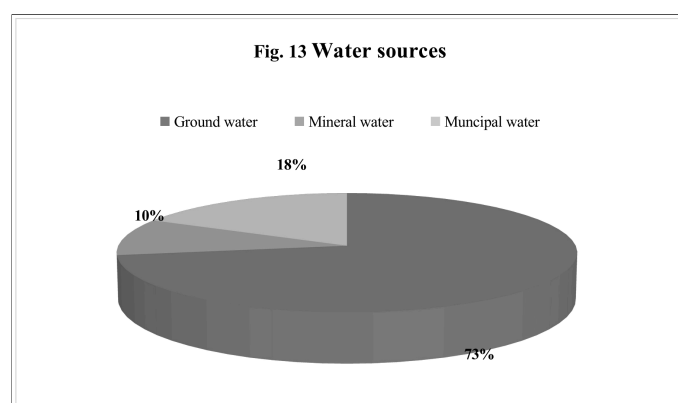
All the respondents used formulated feed for their ornamental fishes. Among them, the majority (95%) preferred crumble-type feed, while 3% used powder feed and only 2% opted for other types of feed (Fig. 10). These results are in partial agreement with Gobiraj *et al.* (2020) [14], who reported that 72% of respondents used formulated feed in their aquariums. The overwhelming preference for formulated feeds, particularly crumbles, in the present study may be due to their convenience, balanced nutritional composition, and ready availability in the local market.

Name of feed (company/brand) used by aquarium keepers

The study revealed that the majority of ornamental fish keepers (95%) used commercially available Taiyo and Optimum brand feeds, while only a small proportion relied on other brands (Fig. 11). These findings are consistent with those of Chadnee *et al.* (2019) [15], who reported that aquarium fish traders and customers commonly used Optimum and Taiyo feeds, along with Nova and Oscar brands. The high preference for Taiyo and Optimum feeds in the present study may be attributed to their wide availability, competitive pricing, and established reputation among local aquarium keepers.

Frequency of feeding

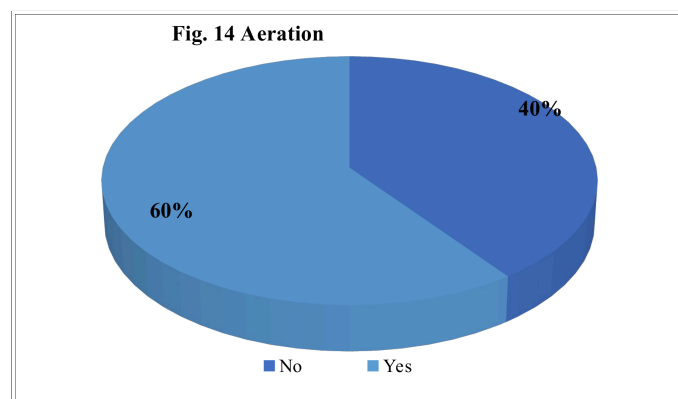
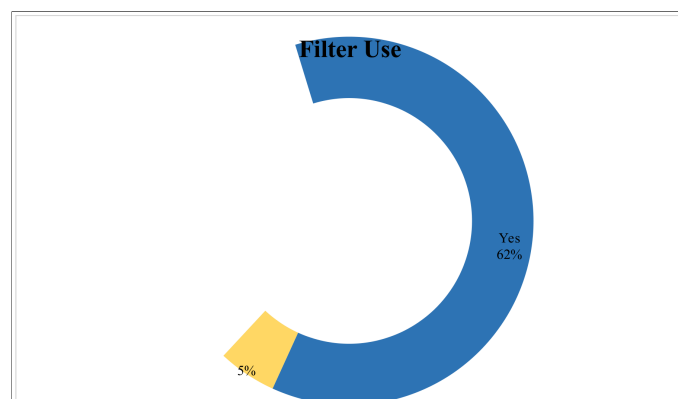
With regard to feeding frequency, 67% of the respondents fed their fishes twice a day, 28% fed once a day, and only 5% followed other feeding schedules (Fig. 12). The predominance of twice-daily feeding suggests that most aquarium keepers adhere to a standard management practice aimed at maintaining optimal fish health and growth while avoiding overfeeding.

**Water sources**

Good water chemistry is the basis for a healthy aquarium system whether it is freshwater or saltwater. The study revealed that ground-water was the predominant source of water used by aquarium keepers, accounting for 72% of the respondents. Municipal water was used by 18% of the keepers, while only 10% relied on mineral water (Fig. 13).

Aeration

Continuous aeration is an important management practice as it facilitates water circulation, enhances dissolved oxygen levels, and aids in the removal of carbon dioxide from the aquarium. In the present study, 60% of the respondents used aeration in their aquariums, while 40% did not practise aeration (Fig. 14). The relatively high adoption of aeration indicates that a majority of aquarium keepers are aware of its benefits in maintaining water quality and supporting fish health.

**Filters used in aquarium**

Filters play an important role in aquarium management by removing unwanted particulate matter and introducing desirable substances into the water. Biological filtration is particularly crucial, as it facilitates the conversion of toxic ammonia into less harmful nitrate. In the present study, 62% of the respondents used filters in their aquariums.

Among them, the majority (62%) preferred power filters, while only 3% used trickle filters and (Fig. 15). The high preference for power filters may be attributed to their efficiency, ease of installation, and widespread availability in the local market.

3.4 Disease observed by aquarium users

Only three aquarium keepers reported clinical signs of disease in their fishes, including fin rot, white spot, partial loss of appetite, and gill fluke. These observations are consistent with the findings of Faruk *et al.* (2012) [13], who reported that aquarium keepers commonly identified diseases such as white spots, ulcers, tail and fin rot, dropsy, ich, and mouth fungus.

Disease treatment

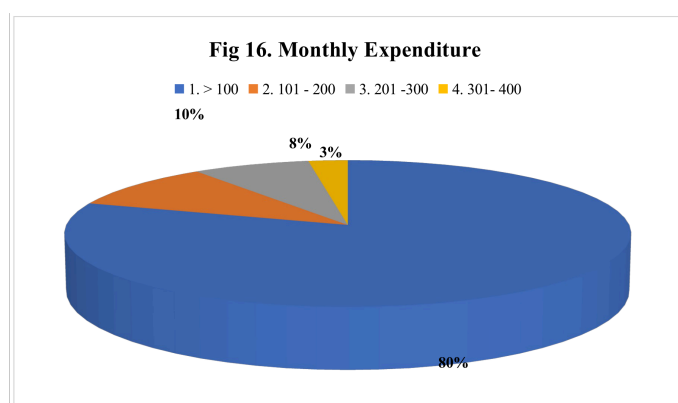
When aquarium keepers noticed any abnormal behaviour or clinical signs in their fishes, they generally initiated immediate treatment by applying drugs and chemicals either directly into the aquarium or in a hospital tank. The drugs used were mostly those recommended by ornamental fish shopkeepers. Similar observations were made by Faruk *et al.* (2012) [13], who noted that traders often provided treatment suggestions based on their experience with various drugs.

Issues related to aquarium keeping

The majority of respondents (87%) reported no significant issues related to aquarium keeping, while 13% faced difficulties mainly concerning aquarium cleaning and fish feeding. Providing proper awareness and training programmes on aquarium maintenance, along with the development of paid services such as professional aquarium cleaning, could help address these challenges and improve the overall experience of pet fish keepers.

Monthly expenditure

The study revealed that most aquarium users (80%) spent less than ₹100 per month on their aquariums, 10% spent up to ₹200, and the remaining respondents spent between ₹200 and ₹400 (Fig. 16). These findings are in agreement with those of Saha *et al.* (2013) [10], who reported that the majority of aquarium keepers expended ₹50–100 per month on aquarium maintenance. The relatively low monthly expenditure indicates that ornamental fish keeping is generally considered an affordable hobby in the study area.



4. Conclusion

Ornamental fish keeping has emerged as a popular hobby in Tapi district. The findings of the present study highlight that proper training in fish handling and disease management is a critical need of this sector. Therefore, regular training programmes for aquarium owners are essential to improve their knowledge and management practices. Given the growing popularity of ornamental fish keeping and its potential for entrepreneurship development and income generation, the government should accord greater priority to this sector by organising skill development programmes and promoting the installation of aquariums in public places.

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How to cite this article: Tandel DC, Lende SR, Kartu SC, Patel KD. Current status of consumer preference for ornamental fish keeping in Tapi district. *International Journal of Agriculture Extension and Social Development*. 2026;SP-9(9):128–132. doi: <https://www.doi.org/10.33545/26180723.2026.v9.i9Sb.4343>