

# A Comparison of Water Quality between Koi Fish Ponds and Nile Tilapia Ponds in Yan Ta Khao District, Trang Province

## Abstract

This study compared water quality in koi fish ponds and Nile tilapia ponds in Yan Ta Khao District, Trang Province. Water temperature, transparency, and dissolved oxygen were measured. Results showed that koi fish ponds had lower water temperature (25 °C) and higher water transparency (83.3 cm) and dissolved oxygen (4.5 mg/L) than Nile tilapia ponds.

## Research Questions

1. How does the water temperature of koi fish ponds differ from that of Nile tilapia ponds?
2. How does the water transparency of koi fish ponds differ from that of Nile tilapia ponds?
3. How do dissolved oxygen levels differ between koi fish ponds and Nile tilapia ponds?

## Introduction

Water quality is essential for fish survival and growth. Koi fish and Nile tilapia require different water conditions, so comparing and properly managing pond water quality is important to support healthy growth and efficient aquaculture for each species.

## Research Methodology

### Part 1 Study of Water Temperature

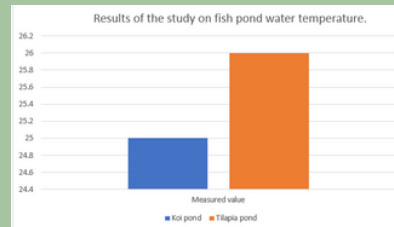
A thermometer was used to measure the water temperature in both koi fish ponds and Nile tilapia ponds. Measurements were taken three times, and the average value was calculated.

### Part 2 Comparison of Water Transparency

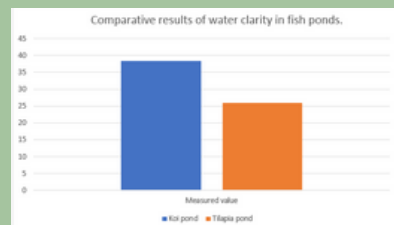
A transparency measuring cylinder was used to measure water transparency in both ponds. Measurements were taken three times, and the average values were recorded.

## Results

**Table 1**  
Water Temperature of Koi Fish Ponds and Nile Tilapia Ponds  
The results indicate that the water temperature of the koi fish pond was lower than that of the Nile tilapia pond. The Nile tilapia pond had a higher average water temperature (26.00 °C) compared to the koi fish pond (24.33 °C), suggesting that the tilapia pond had slightly warmer water conditions.



**Table 2** Water Transparency of Koi Fish Ponds and Nile Tilapia Ponds  
The results indicated that the water transparency of the koi fish pond was higher than that of the Nile tilapia pond.



## GLOBE Badges

Role Descriptions Based on This Research

### 1. Collaborator

The Collaborator was responsible for coordinating and supporting the overall research process. This role included working with local community members and pond owners in Ban Nak Baek, Nong Bo Subdistrict, Yan Ta Khao District, Trang Province, to gain access to koi fish ponds and Nile tilapia ponds for data collection. The Collaborator assisted in planning the research activities, scheduling fieldwork, and ensuring cooperation among team members, advisors, and local stakeholders. In addition, the Collaborator helped with organizing materials, recording observations during experiments, and supporting communication between the research team and advisors throughout the study.

### 2. Data Scientist

The Data Scientist was responsible for managing, analyzing, and interpreting the data collected during the research. This role included recording measurements of water temperature, water transparency, and dissolved oxygen from both koi fish ponds and Nile tilapia ponds. The Data Scientist calculated average values from repeated trials, organized the data into tables, and compared the results between the two types of ponds. The Data Scientist also contributed to identifying patterns and differences in water quality parameters and supported the preparation of the Results and Conclusion sections by presenting the data in a clear and systematic manner.

### 3. Earth Scientist (You)

The Earth Scientist played a key role in designing and guiding the study from an environmental science perspective. This role included identifying important water quality parameters—water temperature, water transparency, and dissolved oxygen—that influence aquatic ecosystems and fish health. The Earth Scientist helped develop the research objectives, research questions, and hypotheses related to water quality differences between koi fish ponds and Nile tilapia ponds. In addition, the Earth Scientist interpreted the results by linking water quality conditions to environmental factors, aquaculture practices, and ecosystem characteristics. The Earth Scientist also contributed to the Discussion section by explaining how differences in water quality reflect the ecological requirements of each fish species and the environmental management of the ponds.

If you want, I can also:

## Discussion

The results showed that koi fish ponds had lower water temperature and higher water transparency and dissolved oxygen levels compared to Nile tilapia ponds. Overall, koi fish ponds demonstrated better physical and chemical water quality. This is because koi fish, as ornamental fish, require cleaner water with higher transparency and oxygen levels. In contrast, Nile tilapia ponds showed lower water transparency and dissolved oxygen levels, reflecting a culture system that emphasizes fish tolerance or indicating higher accumulation of organic matter and plankton in the water.

## Conclusion

The study found that the water temperature of the koi fish pond was lower than that of the Nile tilapia pond, with an average temperature of 25 degrees Celsius. The water transparency of the koi fish pond was higher than that of the Nile tilapia pond, with an average value of 83.3 centimeters. Additionally, the dissolved oxygen level in the koi fish pond was higher than that in the Nile tilapia pond, with an average value of 4.5 milligrams per liter.

## References

- Water Quality Comparison Document. Retrieved January 7, 2026, from <https://share.google/pwUuCVNiDPgmb27b0/>
- Characteristics of Concrete Ponds: A Comparative Water Study Project. Retrieved January 8, 2026, from [http://webpac.library.mju.ac.th:8080/mm/fulltext/thesis/2557/eakachai\\_baukhet/fulltext.pdf/](http://webpac.library.mju.ac.th:8080/mm/fulltext/thesis/2557/eakachai_baukhet/fulltext.pdf/)