PHARMACOLOGY, MEDICAL REPORTS, ORTHOPEDIC, AND ILLNESS DETAILS (COMORBID)
VOLUME 2 NO. 2 (2023)

ANALYSIS OF SUSPENDED SOLIDS CONTENT IN RICE FIELD STREAM WATER CONSUMED BY PANTE KUYUN VILLAGE COMMUNITY ACEH JAYA DISTRICT

Ambia Nurdin[1*], Rauzatul Jannah[2], Rossalia Putri[3]
[1,2,3] Public Health Study Program, Faculty of Health Sciences,
Universitas Abulyatama, Aceh Besar
E-mail: [1)] ambianurdin_fkm@abulyatama.ac.id

Abstract

Water is vital to life and ecosystems on Earth. It supports important ecological functions, such as providing resources for flora and fauna, regulating climate, and various biogeochemical processes that affect the environment as a whole. All living organisms, including humans, depend on water for their survival and well-being. This research is a descriptive analysis that aims to reveal the content of suspended solids in the water of rice field streams in Pante Kuyun Village. Conducted since November 2023, this research took place in Aceh Jaya District, with the analysis of suspended solids levels carried out at the Aceh Health Research and Development Center Laboratory. The research subjects included the people of Pante Kuyun Village and the water of the rice fields in the area. The sampling method was representative, where one sample was taken from the water of the Pante Kuyun Village rice field. The results showed that the level of suspended solids (TSS) in the rice paddy stream water reached 6.4 mg/L. These findings provide an important snapshot of the water quality in the area, which can serve as a foundation for further policies and actions to maintain the sustainability of the ecosystem and the health of local communities.

Keywords: Solid Substances, Rice Field Water, Community, Ecosystem

1. INTRODUCTION

Water is the most important aspect for survival and is the source of life on earth. The existence of water is needed by all living things on earth for their survival. The water to be used must be based on the Government Regulation of the Republic of Indonesia Number 82 of 2001 concerning clean water quality (Zat, 2021). Natural water contains two groups of substances, namely dissolved substances such as salts and organic molecules, and suspended and colloidal solids such as clay, kwarts. The main difference between these two substances is determined by the size/diameter of the particles. Total suspended solids (TSS) are suspended materials (diameter > 1 μm). TSS consists of mud and fine sand and microorganisms caused by soil erosion or soil erosion that are carried into water bodies (Tarumingkeng, 2019). Suspended solids are the earliest sediment-forming material and can hinder the ability to produce organic matter in a water body. Penetration of sunlight to the surface and deeper parts does not take place effectively due to obstruction by suspended solids, so photosynthesis does not take place completely. According to Tarigan & Edward (2010), the distribution of suspended solids in the sea is influenced by inputs from land through river flow and erosion (Tarumingkeng, 2019).

Rice fields are a typical cultivation method or system from the point of view of plants that are usually cultivated on rice fields, not only from the point of view of plants but from the point of view of processing, water management, and its impact on the environment rice fields have their own characteristics both in processing and management. Rice fields are the most water-intensive crop cultivation system. Water is needed a lot in rice fields, which is useful for loosening the rice field soil, to inundate the planting plots, and to be able to flow from one plot to another. this means that rice fields provide the heaviest burden on the availability and resources of groundwater (Rus, 2018).

TSS is a solid that causes water turbidity that is difficult to dissolve and settles directly consisting of particles smaller than sediment (Zat, 2021). Suspended Solids (TSS) are insoluble particles and particles that are difficult to settle, causing turbidity in water. Solids are particles that are smaller in size and weight than sediment, such as clay, certain organic materials and chemicals that are insoluble in water (Kusniawati & Budiman, 2020). TSS is a solid that causes turbidity in water. TSS is a suspended solid in water that captures or reflects light, affecting the color of the water (Rahadi et al., 2020). Suspended solids that are less than 1000 mean that they still meet the quality standards, while suspended solids that are more than equal to 1000 mean that they do not meet the clean water quality standards (Zat, 2021).

Suspended solids in rice field water consumed by the community generally consist of solid particles such as mud, soil, or dissolved organic matter. This can happen because paddy field water is often polluted by materials carried by rivers or waterways.

2. RESEARCH METHOD

This research is descriptive in nature as the objective is to describe the suspended solids content in the water of rice field streams in Pante Kuyun Village. It involves observing and measuring existing conditions without experimental intervention. The research was conducted since November 2023. The analysis of suspended solid content was conducted at the Laboratory of the Aceh Health Research and Development Center. This laboratory has facilities for examining water physics such as Suspended Solids (TSS). The study population was the Pante kuyun Village Community of Aceh Jaya district and rice field flow water, and the number of samples was 1 sample. Samples were taken from the rice field flow water of Pante kuyun Village, Aceh Jaya district and then analyzed to determine the content of suspended solids.

3. RESULT AND DISCUSSION

3.1. Result Research

Sampling was carried out in Pante kuyun Village, Aceh Jaya Regency and Analysis of Suspended Solids (TSS), carried out at the Aceh Health Research and Development Center. This laboratory has facilities for physical examination of water such as Suspended Solids (TSS).

Table 1. Laboratory Test Results

No	Test parameters	Test method	Unit	Test results

1	Suspended solids (TSS)	SNI. 6989.3-2019	mg/L	6,4

Based on table 1, it was found that the suspended solids (TSS) in the rice field water flow in Pante kuyun Village, Aceh Jaya district was 6.4 mg/L.

3.2. Discussion

Based on table 1, it is known that from 1 sample that was examined, it was found that the sample of rice field water flow in Pante kuyun Village, Aceh Jaya district met the requirements because it had TSS levels of less than 50 mg/L in accordance with Government Regulation of the Republic of Indonesia Number 82 of 2001 concerning clean water quality (RI, 2001).

According to the researcher, high TSS levels in water are caused by dirty fishing fields that have never been cleaned so that a lot of dirt and dust participate in the water. The high level of TSS in water is due to the presence of organic substances floating in water such as microorganisms and bacteria from human activities such as household activities so that many solids are collected on filter paper (Zat, 2021).

According to Tarumingkeng (2019) showed that at all three observation times, the TSS value varied according to the observation station. The values at St. 1, 4 and 7 were generally relatively higher compared to the other stations. This is related to the position of the station, where the 3 stations are located closer to the mainland. So it can be said that the measured TSS value decreases with increasing distance towards the sea. Except at 08.00 Wita in the left part of the Estuary, the measured TSS value is relatively lower. This is because at the time of measurement the dominant freshwater flow turned to the left, indicated by the relatively low salinity value at that point (Tarumingkeng, 2019). Research by Zat (2021), found that most of the rainfed infiltration well water in Kayulemah Village, Sumberrejo District, Bojonegoro Regency has TSS levels of 100 mg/L and a small portion of the water has TSS levels of 200 - 300 mg/L (Zat, 2021).

4. CONCLUSION

Based on the results of the study, it was found that the suspended solids (TSS) in the rice field water flow in Pante kuyun Village, Aceh Jaya Regency was 6.4 mg/L. Based on table 1, it is known that from 1 sample that was examined, it was found that the sample of rice field water flow in Pante kuyun Village, Aceh Jaya district met the requirements because it had TSS levels of less than 50 mg/L in accordance with PP of the Republic of Indonesia Number 82 of 2001 concerning clean water quality

REFERENCES

Kusniawati, E., & Budiman, H. (2020). A analisa sifat air injeksi berdasarkan parameter pH, TSS, TDS, DO Dan Kesadahan. *Jurnal Teknik Patra Akademika*, *11*(02), 9–21.
Rahadi, B., Haji, A. T. S., & Ariyanto, A. P. (2020). Prediksi tds, tss, dan kedalaman

Waduk Selorejo menggunakan aerial image processing. *Jurnal Sumberdaya Alam Dan Lingkungan*, *7*(2), 65–71.

RI, P. P. (2001). Peraturan Pemerintah Republik Indonesia Nomor 82 Tahun 2001 tentang Pengelolaan Kualitas Air dan Pengendalian Pencemaran Air. *Peraturan Pemerintah Republik Indonesia*, 1–41.

Rus, M. A. (2018). *Analisis Kandungan Bahan Organik pada Aliran Irigasi Tanah Sawah Berteras di Kota Padang*. Universitas Andalas.

Tarigan, M. S., & Edward, E. (2010). Kandungan total zat padat tersuspensi (total suspended solid) di perairan Raha, Sulawesi Tenggara. *Makara Journal of Science*, *7*(3), 13.

Tarumingkeng, A. (2019). Analisa Kandungan Total Zat Padat Tersuspensi (Tss) Pada Muara Sungai Di Teluk Manado. *Chemistry Progress*, *3*(2).

Zat, K. (2021). *Karya tulis ilmiah nur wahyuni agustina 181310038.*