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# IDENTIFICATION OF FRESHNESS LEVEL OF MACKEREL (RASTRELLIGER KANAGURTA) IN TANJUNGSARI MARKET, SUMEDANG REGENCY

## Tingkat Kesegaran Ikan Kembung (*Rastrelliger Kanagurta*) Di Pasar Tanjungsari, Kabupaten Sumedang

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## ABSTRAK

Ikan segar atau ikan basah adalah ikan yang belum atau tidak diawet dengan apapun kecuali semata-mata didinginkan dengan es. Ikan dikatakan mempunyai kesegaran yang maksimal apabila sifat-sifatnya masih sama dengan ikan hidup, baik rupa, cita rasa, maupun teksturnya. Tingkat kesegaran ikan dapat diidentifikasi atau dinilai secara organoleptik. Indera manusia merupakan instrumen yang digunakan pada uji organoleptik, yang meliputi penglihatan, penciuman, pencicipan, perabaan dan pendengaran. Penelitian ini bertujuan untuk mengetahui tingkat kesegaran ikan kembung dan segar di Pasar Tanjung Sari secara organoleptic. Metode penelitian ini dengan pengambilan sampel ikan kembung dan pada pukul 10.00 WIB, selanjutnya diidentifikasi kesegarannya secara kualitatif melalui pengamatan organoleptic. Pengambilan sampel dilakukan pada tanggal 20 Mei 2025. Penilaian organoleptik merupakan cara yang paling banyak dilakukan dalam menentukan tanda-tanda kesegaran ikan karena lebih mudah dan lebih cepat dikerjakan, tidak memerlukan banyak peralatan, serta tidak memerlukan laboratorium. Penetapan kemunduran mutu ikan secara subjektif (organoleptik) dilakukan menggunakan score sheet yang telah ditetapkan oleh Badan Standardisasi Nasional SNI 01-2346-2006 (BSN 2006) serta menggunakan 5 (lima) orang panelis. Parameter yang diamati, yakni keadaan mata, insang, lendir, daging, bau, dan tekstur. Untuk pengamatan sifat organoleptik dilakukan dengan memberikan penilaian secara rinci (melihat tabel score sheet) terhadap ikan pada rentang nilai 1 sampai 9. Pada pengujian organoleptik ikan uji yang dijual secara eceran oleh pedagang di pasar Tanjungsari nilai yang diperoleh berkisar antara 7-8 yang berarti bahwa ikan masih memiliki kualitas yang baik dan mem emenuhi syarat yang ditetapkan SNI (2006) yaitu standar ikan segar untuk uji organoleptik yaitu minimal 7.

## ABSTRACT

Fresh fish or wet fish is fish that has not been or is not preserved with anything except simply cooled with ice. Fish is said to have maximum freshness if its properties are still the same as live fish, both in appearance, taste, and texture. The level of freshness of fish can be identified or assessed organoleptically. Human senses are instruments used in

organoleptic tests, which include sight, smell, taste, touch and hearing. This study aims to determine the level of freshness of mackerel and fresh fish at Tanjung Sari Market organoleptically. This research method is by taking mackerel samples and at 10.00 WIB, then its freshness is identified qualitatively through organoleptic observations. Sampling was carried out on May 20, 2025. Organoleptic assessment is the most widely used method in determining signs of fish freshness because it is easier and faster to do, does not require a lot of equipment, and does not require a laboratory. Subjective (organoleptic) determination of fish quality decline is carried out using a score sheet that has been set by the National Standardization Agency SNI 01-2346-2006 (BSN 2006) and using 5 (five) panelists. The parameters observed are the condition of the eyes, gills, mucus, meat, odor, and texture. For organoleptic observations, a detailed assessment (see the score sheet table) is carried out on the fish in the range of values 1 to 9. In the organoleptic testing of test fish sold in retail by traders at Tanjungsari market, the values obtained ranged from 7-8, which means that the fish still has good quality and meets the requirements set by SNI (2006), namely the standard for fresh fish for organoleptic testing, which is a minimum of 7.

| | |
|---|---|
| **Kata Kunci** | *Ikan Kembung, Pasar Tanjung Sari, Uji Organoleptik, Kesegaran Ikan, Parameter* |
| **Keywords** | *Mackerel, Tanjung Sari Market, Organoleptic Test, Fish Freshness, Parameters.* |
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## INTRODUCTION

Organoleptic observation of fish is an observation that uses the five senses to assess the physical and sensory conditions of fish such as the condition of the eyes, gills, body surface mucus, meat texture, and aroma (Puni et al. 2020). Organoleptic testing is also known as product testing with the human five senses as one of the test tools (Nurmianto et al., 2018). Organoleptic testing is intended to determine the quality of fish by observing the appearance (eyes, gills, body surface mucus), meat, odor and texture (Vatria, 2020). Fresh fish eyes are usually clear and convex, gills are bright red, mucus is clear without odor, meat texture is dense and elastic, and the distinctive aroma of fresh fish does not smell fishy or rotten. Fish handling is carried out to maintain the freshness of the fish after being caught for a certain period of time before being purchased by consumers.

In addition, it is important to distinguish between pelagic fish such as mackerel (Rastrelliger sp.) that live in open waters near the surface and have a relatively high oil content, making them more susceptible to fat oxidation which accelerates decay. Fresh mackerel is characterized by clear and convex eyes, transparent mucus, bright and elastic meat, and a fresh odor specific to its type. A decrease in the organoleptic quality of mackerel can occur during distribution, especially if the cold chain is not implemented properly, but with fast handling and the use of ice, the freshness of mackerel can still be maintained for a certain time (Siregar *et al*., 2020).

The problems currently observed are the conditions of fish traders in the market who do not apply caution, the principle of handling is not fast enough, and clean, fish sold

by traders are often found to be contaminated by chemicals, physical contamination, and microbiological before reaching consumers due to lack of knowledge about safe fish handling methods, so that fish can experience a decline in quality before reaching consumers.

The proximity of the Tanjung Sari Market to the Unpad Jatinangor campus allows us as a research team to collect data and observations more efficiently and effectively. With a closer distance, the research team can conduct field visits more often and in a shorter time, thus accelerating the identification and analysis process. The proximity of the location also allows the research team to interact more easily with traders and the surrounding community, thus obtaining more accurate and relevant data. In addition, the proximity of the Tanjung Sari Market to the campus can also reduce transportation and accommodation costs, making it more efficient in resource management. Based on the results of our research, Tanjung Sari Market can be categorized as a market that is still not well maintained in terms of cleanliness and tidiness. One of the causes is that there are still traders who are not organized with the presence of garbage in the area around the trader's kiosk.

Mackerel is one of the most commonly consumed fish in Indonesia and has a high economic value. Mackerel also has a soft meat texture and a distinctive taste, so changes in freshness can be easily detected using the organoleptic method. Mackerel is also relatively easy to obtain in traditional markets, making it easier to collect samples for research. The high public interest in consuming mackerel makes us want to observe the level of freshness. This study aims to determine the level of freshness of mackerel sold at Tanjung Sari Market, Sumedang Regency, so that it can provide accurate information to consumers about the quality of the fish they consume.

The organoleptic method is very suitable for assessing the freshness of mackerel because parameters such as color, texture, and odor can be easily observed and assessed subjectively. Organoleptic testing plays an important role in determining the quality of a product because it can be an early indicator of deterioration in quality and damage to fish nutrition visually. Observation of organoleptic properties is carried out by providing a detailed assessment (see the score sheet table) of mackerel in the range of 1 to 9. Organoleptic test parameters include the condition of surface appearance, scales, mucus, eyes, gills, aroma, and texture.

This study also aims to assess the quality of handling and storage of mackerel by traders at Tanjung Sari Market, so that it can provide recommendations for improving the quality of fishery products. This study also aims to assess the quality of handling and storage of mackerel by traders at Tanjung Sari Market, so that it can provide recommendations for improving the quality of fishery products. By knowing the level of freshness of mackerel, this study can contribute to efforts to improve the quality of fishery products and food safety in Sumedang Regency.

## METHODS

This study was conducted qualitatively through organoleptic observations of pelagic and demersal fish sold at the Tanjungsari market on May 20, 2025. Organoleptic observation is a testing method that uses human senses as the main tool to assess the properties of a product, especially food products. The senses used include the senses of sight, smell, and touch. The parameters observed include general appearance, gill color, odor, meat texture, and eye condition. Each fish is scored based on its freshness level, with a rating scale of 1 to 9, where a high score indicates fresh fish. Data were collected using

an observation sheet and analyzed descriptively to compare the quality of pelagic and demersal fish found in the market.

Table 1. Organoleptic Test Score Sheet Values

| Criteria | DESCRIPTION | SCORE |
|---|---|---|
| 1. Surface appearance, scale and slime | - Specific type of brilliant, scales firmly attached, thin clear/transparent mucus. | 9 |
| | - Brilliant, scales firmly attached. Thin/slightly transparent mucus. | 7 |
| | - Rather bright, scales adhere rather firmly. The mucus is a bit thick. | 5 |
| | - Slightly dull, scales come off easily, milky white mucus, unevenly thick. | 3 |
| | - Dull, scales fall off easily, mucus is yellowish, thick, foul smelling. | 1 |
| 2. Eyes | - Convex, transparent cornea, brilliant black pupil. | 9 |
| | - Slightly convex, slightly cloudy cornea, black pupil, slightly brilliant. | 7 |
| | - Flat, cloudy cornea, grayish pupil. | 5 |
| | - Slightly sunken, cloudy cornea, white-grey pupil. | 3 |
| | - Sunken, milky white cornea, whitish pupil, sunken. | 1 |
| 3. Gills | - Bright red, regular filaments, fresh odor, thin mucus. | 9 |
| | - Slightly bright pink, filament tips pale, arrangement rather sparse, slightly fresh odor, thin mucus. | 7 |
| | - Brownish red, pale filament tips, sparse arrangement, no distinct odor yet, slightly thick mucus. | 5 |
| | - Pale brownish, slightly dull, pale white filaments, rarely irregular arrangement, slightly foul odor, thick mucus. | 3 |
| | - Pale greenish brown, white and shrunken filament tips, foul odor, thick and viscous mucus. | 1 |
| 4. Aroma | - Fresh, specific type. | 9 |
| | - Fresh, specific smell begins to disappear. | 7 |
| | - Somewhat fresh, neutral and no distinct odor yet. | 5 |
| | - Not fresh, already smells different. | 3 |
| | - Bad odor. | 1 |
| 5. Texture | - Elastic and dense. | 9 |
| | - Somewhat elastic and dense. | 7 |
| | - Somewhat elastic and somewhat dense. | 5 |
| | - Not elastic and a bit soft. | 3 |
| | - Not elastic, soft/soft. | 1 |

## RESULT

### Organoleptic of Fresh Mackerel

Organoleptic testing plays an important role in determining the quality of a product because it can be an early indicator of deterioration in quality and damage to fish nutrition visually. For a detailed explanation of the criteria for organoleptic assessment, see Table 1. Organoleptic assessment is the most widely used method in determining signs of fish freshness because it is easier and faster to do, does not require a lot of equipment, and does not require a laboratory (Hadiwiyoto 1993). Determination of fish quality decline subjectively (organoleptic) is carried out using a score sheet that has been determined by the National Standardization Agency SNI 01-2346-2006 (BSN 2006) and uses 5 (five) panelists. Observation of organoleptic properties is carried out by providing a detailed assessment (see the score sheet table) of mackerel in the range of 1 to 9. Organoleptic test parameters include the condition of surface appearance, scales, mucus, eyes, gills, aroma, and texture.

Table 2. Results of Observations on the Level of Freshness of Test Fish

| Date | Times | Types of Fish | Organoleptic | | | | | Average |
|---|---|---|---|---|---|---|---|---|
| | | | Surface Appearance, Scales and Slime | Eyes | Gills | Aroma | Texture | |
| 20 May 2025 | 10.00 WIB | Mackerel | 9 | 9 | 5 | 9 | 9 | 8,2 |

## DISCUSSION

In this section, researchers systematically compile with rational arguments about the scientific information obtained in the research. Especially information that is relevant to the research problem. Discussion of the research results obtained can be presented in the form of theoretical descriptions, both qualitatively and quantitatively. In its implementation, this section can be used to compare the research results obtained in the research being conducted with the research results reported by previous researchers. Scientifically, the research results obtained in the research can be in the form of new findings or improvements, confirmations, or rejections of the interpretation of a scientific phenomenon from previous researchers.

### Fish appearance

Organoleptic characteristics of fish quality, one of which is by observing the appearance of the eyes, mucus, and fish meat. Organoleptic observations of the appearance of mackerel and fresh fish at Tanjung Sari Market were carried out at 10:00 WIB. The organoleptic value of the appearance of fresh tuna can be seen in Table 2.

Fish that are categorized as fresh according to appearance parameters are fish that look bright, specific to the type, scales are firmly attached, thin, clear/transparent mucus. The results of organoleptic observations of the appearance of mackerel marketed at Tanjung Sari Market show good post-harvest handling. The mackerel and mackerel samples taken at 10:00 WIB each gave organoleptic values of 9 and 9, based on the SNI for fresh fish, it shows that the eyeballs are flat, the cornea and pupil are clear, slightly shiny, specific to the type of fish.

According to Lestari *et al*., (2018), improper handling of fish due to impacts during catching or storage. Physical damage experienced during the handling process can be in the form of bruises, wounds caused by rough treatment such as slamming the fish storage container causing shocks and physical pressure on the fish, especially the eyes. The decline in quality of fish caught at sea can occur starting from the time the catching process takes place and will continue to decline until it reaches the hands of consumers. (Quang 2005).

**Eyes**

Observation of the appearance of the eyes, mucus, and fish meat are characteristics of the quality of fish identified using organoleptic tests. Organoleptic observations of the eyes of mackerel and each gave an organoleptic value of 9. Based on the SNI for fresh fish, it shows that the eyeballs are flat, the cornea and pupil are clear, slightly shiny, specific to the type of fish. Meanwhile, based on Table 1, it can be concluded that the condition of the eyes of both test fish is convex, the cornea is transparent, and the pupil is bright black. Which means that the fish still has good quality and meets the requirements set by SNI (2006), namely the standard for fresh fish for organoleptic tests, which is a minimum of 7. Fresh fish have bright eye appearance, protruding eyeballs (convex), and white corneas. This condition is because there have not been many biochemical changes, so that the metabolism in the fish's body is still running perfectly (Widiastuti, 2007).

Figure 1. Appearance of Mackerel Eyes
Source: Personal Documentation

**Gills**

Gills are a respiratory aid for fish that have a labyrinth to filter water impurities that enter the fish's body. Gills are one indicator of fish decline. Organoleptic tests of mackerel gills show that the quality of the fish decreases during marketing. Based on Table 2. Mackerel gills have an organoleptic value of 5 which has characteristics, namely fish gills have a reddish brown color, pale filament tips, sparse arrangement, no different odor, and rather thick mucus. With an organoleptic value of 5, it can be concluded that the gills of the fish have experienced a decline in quality. The gills of mackerel are damaged quickly due to poor handling. Dead fish cause blood circulation to stop, and vice versa, they can be oxidized, so that the color changes to reddish brown (Widiastuti 2007). According to Sevik (2007), gills are one of the internal organs that can accelerate the decay process, making it an ideal place for bacterial growth. Carrying bacteria that grow rapidly, causes changes in odor and changes in color, the quality of the fish decreases during marketing. Based on Table 2. The gills of mackerel have an organoleptic value of 5 which has characteristics, namely the gills have a reddish brown color, pale filament tips, sparse arrangement, no different odor, rather thick mucus. With an organoleptic value of 5, it can be concluded that the gills of the fish have experienced a decrease in quality. The gills of mackerel are damaged quickly due to poor handling. Dead fish cause blood circulation to

stop, and vice versa, they can be oxidized, so that the color changes to reddish brown (Widiastuti 2007). According to Sevik (2007), gills are one of the internal organs that can accelerate the decay process, making it an ideal place for bacterial growth. Carrying bacteria that grow rapidly, causing changes in odor and color changes.

Figure 2. Appearance of Mackerel Gills
Source: Personal Documentation

**Aroma**

The process of fish quality degradation can produce a new or aroma that is less desirable by consumers. The odor can be caused by the activity of rotting microorganisms or chemical activities such as fat oxidation. Ilyas (1993), stated that the process of fat oxidation in fish will cause a rancid odor. The organoleptic value of the aroma in mackerel and can be seen in Table 2.

The improper handling process can cause an aroma or odor that is less desirable by consumers. The organoleptic results of the aroma in mackerel show that the fish is still very fresh and has a specific fish odor, which means that these two test fish did not experience a decrease in quality. The factor that causes fish to develop an odor quickly is because the low ratio of glycogen to the rigor mortis phase is faster (Syamsir, 2008).

**Texture**

Texture is a description of the characteristics of the surface of the fish body that can be an indicator of the freshness of the fish that can be observed using the sense of touch. The results of the organoleptic analysis of the texture of mackerel and fresh fish show high quality during marketing at Tanjung Sari Market. The average organoleptic value of mackerel and. Based on the results of the organoleptic analysis of the texture of mackerel and fresh fish, the texture value is still in accordance with and even exceeds the SNI with an organoleptic value of 9 which has the following characteristics: elastic and dense. It can be concluded that the texture of the two test fish is still said to be good and suitable for consumption. Fish that have a non-compact texture are caused by the activity of bacteria that contaminate the fish. This is because fish are a good medium for bacterial growth because fish have a high water content (Wati and Hafiludin, 2023). The texture is dense, elastic when pressed with fingers, and it is difficult to tear the meat on the spine. Fresh fish meat is quite flexible when bent and will immediately return to its original shape when released. This flexibility is due to the fact that the connective tissue in the meat has not been broken (Burhan, 2006). 9 which has characteristics, namely elastic and dense. It can be concluded that the texture of the two test fish is still said to be good and suitable for consumption. Fish that have a non-compact texture are caused by bacterial activity that contaminates the fish. This is because fish are a good medium for bacterial growth because fish have a high water content (Wati and Hafiludin, 2023). The texture is dense, elastic when pressed with fingers, and it is difficult to tear the meat on the spine.

Fresh fish meat is quite flexible when bent and will immediately return to its original shape when released. This flexibility is due to the fact that the connective tissue in the meat has not been broken. (Burhan, 2006).

Figure 3. Appearance of Mackerel Texture
Source: Personal Documentation

## CONCLUSION AND SUGGESTION

### Conlusion

Based on the results of the research that has been conducted on the identification of the freshness level of mackerel (Rastrelliger kanagurta) at Tanjung Sari Market, Sumedang Regency, it can be concluded that in general the fish sold by traders are still fresh and suitable for consumption. Freshness assessment is carried out using the organoleptic method, namely the method of observing fish quality based on the five senses (sight, smell, touch, and taste) which includes observing the condition of the eyes, gills, mucus, odor, texture, and fish meat.

Sampling was carried out on May 20, 2025 at 10:00 WIB, and was carried out by five panelists using a score sheet based on the Indonesian National Standard (SNI) 01-2346-2006. The assessment results showed that the mackerel and the observed fish obtained a value between 7 and 8. This value indicates that the fish is still in the fresh category and meets the minimum quality requirements set by SNI for fresh fish, which is a minimum value of 7.

This assessment shows that the quality of fish handling in the market is quite good, at least when sampling was carried out. However, it is important to carry out routine monitoring to ensure that the quality and freshness of the fish are maintained over time. Maintaining the freshness of fish is not only important for consumer health, but also affects public trust in fishery products sold in traditional markets.

### Suggestion

It is recommended that markets and fish traders conduct routine monitoring of the quality and freshness of fish sold to ensure that the established quality standards are maintained. In addition, training and counseling are needed for fish traders on how to handle and store fish properly to improve the quality of fishery products sold in traditional markets. Thus, public trust in fishery products can continue to increase and consumer health can be maintained.

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