

Grading Process of Golden Aroma Melon Commodity in Nawasena Greenhouse Hydroponic in Karangnanas Village, Sokaraja District, Banyumas Regency

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ABSTRACT

Horticultural crops play an important role in Indonesian agriculture. One of the horticultural crops that play an important role is melon. Melon (*Cucumis melo* L.) is one of the horticultural commodities that has a great opportunity to be developed. The economic value of various types of horticulture depends on the quality of these commodities. Therefore, it is necessary to classify products (grading) based on appearance, sweetness level, color, shape, size, weight, maturity level, and others. The purpose of this research was to find out more about the grading process of golden aroma melon commodities at Nawasena Greenhouse Hydroponic in Karangnanas Village, Sokaraja District, Banyumas Regency. The method used in the research is a qualitative method with a descriptive analysis approach. The results showed that the grading process every harvest is by conducting a grading test for each segment of the melon plant or it can be said to be a sample of each segment.

Keywords: grading, hydroponic, melon

1 Introduction

Melon (*Cucumis melo* L.) is a fruit plant of the Cucurbitaceae family, many say the melon fruit comes from the Persian Hot Valleys or the Mediterranean region which is the border between West Asia with Europe and Africa. This plant is widely spread to the Middle East and Europe. In the 14th century, melons were brought to the Americas by Colombus and were widely grown in California, Colorado, and Texas. Eventually, melons spread to all corners of the world, especially in tropical and subtropical regions, including Indonesia [1]. Melon (*Cucumis melo* L.) is one of the horticultural commodities that has a great opportunity to be developed [2]. Melons not only have commercial benefits, but also have health benefits [3]. Melon fruit is one of the food commodities that has a high economic value. In addition to having shelf life, melon fruit also contains a lot of water, nutrients in the form of vitamins A, B complex, C, E and K and minerals [4].

The economic value of various types of horticulture depends on the quality of the commodity. Therefore, it is necessary to classify products (grading) based on appearance, moisture content, color, shape, size, weight, maturity level, and so on. Grading is the process of selecting materials based on consumer demand or based on their commercial value. Sorting and grading are closely related to the level of consumer taste of a product or the market segment that will be targeted in marketing a product, especially if the target is the middle to upper market segment and or the foreign market segment. Sorting and grading activities determine whether a product sells well in the market or not [5].

The purpose of this research was to find out more about the grading process of golden aroma melon commodities at Nawasena Greenhouse Hydroponic in Karangnanas Village, Sokaraja District, Banyumas Regency. Agricultural grading is the process of sorting crops based on their quality class. The goal is to ensure that agricultural products have consistent quality and can be marketed effectively [6]. Melon golden aroma is a type of green-skinned melon with orange flesh and a sweet taste. Harvesting results from the cultivation of golden aroma melons at Nawasena Greenhouse Hydroponic vary. This difference can be seen during the grading

process. Grading carried out by Nawasena Greenhouse Hydroponic is grouping golden aroma melons according to the level of sweetness of the melon. The way to classify it is by using a measuring device for the level of sweetness of the fruit. Nawasena Greenhouse Hydroponic does this to classify products to suit consumer tastes.

2 Research Method

The research was conducted at Nawasena Greenhouse Hydroponic located in Karangnanas Village, Sokaraja District, Banyumas Regency. The determination of the research site was chosen purposively on the grounds that Nawasena Greenhouse Hydroponic is a melon hydroponic agritourism that has existed in Karangnanas Village which has been established since 2023. The research was conducted in January - February 2025. This research is a qualitative research using descriptive survey method. The types of data used in this research are primary data and secondary data. Primary data is data obtained directly from the original source without going through intermediary media [7].

The primary data used by the author in this research came from direct interviews with the business owner of Nawasena Greenhouse Hydroponic in Karangnanas Village, Sokaraja District, Banyumas Regency. The method used to collect primary data is through the interview or observation method. Secondary data is data obtained from other parties, not from the original source. The data is collected indirectly by intermediary documentation. Documentation is a data collection technique that takes data by taking pictures [8]. In the data analysis process, several things must be considered, such as interview transcripts, field notes, notes on important events from the field, video recordings and cameras. Qualitative method with a descriptive analysis approach used by the author in this research [9].

The qualitative method with a descriptive analysis approach used by the author in this research as expressed by Suparlan (1997), is a qualitative method that emphasizes the socially constructed nature of reality, the close relationship between the author and the sources, objects, and subjects in this research [10].

3 Results and Discussion

Nawasena Greenhouse Hydroponic was established in 2023 by Mr. Yongki Fajar Mustofa. It can be said that this business has not been established for a long time. Nawasena Greenhouse Hydroponic is a business in agriculture in the form of hydroponic melon cultivation combined with tourism, or commonly called agritourism. Nawasena Greenhouse Hydroponic which is agro-tourism is located at Jl. Pecarikan, Dusun II, Karangnanas Village, Sokaraja District, Banyumas Regency, Central Java with village boundaries, namely the East is bordered by Wiradadi Village, Sokaraja District, the South is bordered by Karangkedawung Village, Sokaraja District, the West is bordered by Teluk Village, South Purwokerto District, the North is bordered by Berkoh Village, South Purwokerto District.

Nawasena Greenhouse Hydroponic is currently focusing on golden aroma melon commodities and will continue to develop its business by partnering with young farmers in the Banyumas Regency area. Nawasena Greenhouse Hydroponic itself is also increasingly expanding its market network, which not only focuses on the Purwokerto area, but also to Purbalingga, Cilacap, and Serang Banten. For marketing, Nawasena Greenhouse Hydroponics maximizes through social media, such as WhatsApp, Facebook, and Instagram. Nawasena

Greenhouse Hydroponic produces melons that are cultivated using a hydroponic system. The type of melon cultivated is golden aroma melon. The cruchy texture of the golden aroma melon is the reason why the business owner chooses to cultivate this type of melon over other types of melons sold in the market. The flesh color of golden aroma melon is orange, this is a special attraction for consumers because melons with orange flesh are very rarely sold in the market or roadside fruit shops. Green skin color with tight fruit net. The shape of the golden aroma melon is oval. The flavor of golden aroma melon is sweet with a sweetness level between 14 - 16 brix. Harvest age is around 80 - 95 days after seedling. The fruit weighs between 2.8 - 3.5 kg. Golden aroma melons at Nawasena Greenhouse Hydroponic have an average of 1 kg and above with a selling price of IDR 35,000/kg.

Grading is done based on weight, size, shape or appearance, color and freedom from disease and other defects. This sorting can be done manually based on the senses of sight and hand. In addition, grading can be done mechanically using tools [11]. The grading process of golden aroma melons carried out by Nawasena Greenhouse Hydroponic at each harvest is by conducting a grading test for each segment of the melon plant or it can be said to be a sample of each segment. Each segment is graded to check the level of sweetness in the golden aroma melon fruit. Section 7 is carried out a sample of checking 1 melon, the level of sweetness in the melon represents the taste of the 7th section in other golden aroma melon plants. Section 8 was sampled checking 1 melon, the level of sweetness in the melon represents the flavor of the 8th section in other golden aroma melon plants. Section 9 was sampled to check 1 melon, the sweetness level of the melon represented the flavor of the 9th section of other golden aroma melon plants. The average yield of golden aroma melons in Nawasena Greenhouse Hydroponic obtained at each harvest is 600 pieces. The grading activity of golden aroma melons at Nawasena Greenhouse Hydroponic uses a fruit sweetness level measuring tool called a Brix Refractometer. Business owners prefer to use a manual Brix Refractometer because it is more accurate than a digital Brix Refractometer.

How to use the Brix Refractometer is quite simple, namely before use, make sure the refractometer prism is clean, then drop a sample of golden aroma melon fruit liquid on the refractometer prism, cover the prism with a cover plate carefully (make sure there are no air bubbles), then point the refractometer to a natural light source or a bright enough lamp, focus the eyepiece until the scale is clearly visible. Then, look at the scale on the eyepiece to read the Brix value. After use, clean the refractometer with a tissue or soft cloth to remove any sample residue. The golden aroma melons cultivated by Nawasena Greenhouse Hydroponic are harvested at 80 days for internodes 7 and below, while internodes 8 and above are harvested at 85 - 95 days. Each segment has a different level of sweetness. For the grade level in the golden aroma melon grading process at Nawasena Greenhouse Hydroponic, there are 3 grades:

Grade A: 14 - 16 brix at IDR 35,000/kg.

Grade B: 12 -13 brix at IDR 25,000 - IDR 30,000/kg.

Grade C: 10 - 11 brix with a price of IDR 15,000/kg.



Fig 1. Melon's Grade in Nawasena Greenhouse Hydroponic

If the sweetness level of the golden aroma melon is < 9 brix, it will not enter the grade. The golden aroma melons will be sold to fruit salad and fruit ice producers. The grading process of golden aroma melons at Nawasena Greenhouse Hydroponic is very important because it directly affects the quality, selling value, and consumer satisfaction.

To ensure that the golden aroma melons produced from the hydroponic system at Nawasena Greenhouse Hydroponic can meet local market standards, the grading process needs to follow criteria that are in accordance with the quality expected by consumers. Here are some of the main criteria in the grading process of golden aroma melons at Nawasena Greenhouse Hydroponic:

a. Sweetness Level

The sweetness level of golden aroma melons can be measured through a fruit sweetness level tool called a Brix Refractometer. The criteria for sweetness of golden aroma melons for local market standards is between 14 - 16 brix. Melons that have a sweetness level between 14 - 16 brix are preferred by consumers because they have a sweet and fresh taste.

b. Netting condition

The netting condition on golden aroma melons indicates the quality and maturity level of the fruit. Consumers prefer netting that is perfect and clearly visible, because perfect netting tends to be sweet and vice versa if the netting is not perfect it tends to be not sweet.

c. Skin and Surface Condition

The melon skin should be intact and free of cracks, scratches, or holes that can indicate physical damage due to harvesting or poor handling. Because the local market standard is golden aroma melon with a smooth surface and intact skin (undamaged) is more visually appealing and has a long shelf life.

The grading process for golden aroma melons in Nawasena Greenhouse Hydroponic does not run smoothly, because there are still several obstacles or obstacles that can affect business productivity and the quality of the commodities produced. The following are some of the obstacles or barriers encountered during the grading process:

a. Uneven Fruit Condition

Not all golden aroma melons will ripen simultaneously even though they are planted at the same time. Some fruits may ripen faster than others. If the fruit is in poor condition on the outside, it may not necessarily be sweet on the inside.

b. Non-representative Sampling

During the grading process at Nawasena Greenhouse Hydroponic, only a small portion of the fruit flesh was taken to measure the Brix level using a Brix Refractometer. This is a problem because the sweetness (Brix) level in a melon is often uneven, especially if the fruit has not reached the optimal level of ripeness across the board. As a result, the sample taken may not reflect the overall sweetness of the fruit, which can lead to inaccuracies in quality assessment.

c. Equipment Damage or Contamination

A Brix Refractometer that is not properly cleaned or damaged can lead to inaccurate Brix measurement results. Sample residue from previous measurements that is still attached to the surface of the prism can contaminate new samples, causing inaccurate data.

d. Improper Sample Cutting Technique

The process of cutting golden aroma melons that will be graded is not done properly, such as cutting too close to the skin or the center containing seeds, can affect the results of measuring Brix levels. This is due to the uneven distribution of sugar content in the melon. The center part tends to be sweeter than the part near the skin. Therefore, non-standard cutting techniques can lead to inconsistent sampling and produce inappropriate data in the grading process.

4 Conclusion and Recommendation

The grading process of golden aroma melons carried out by Nawasena Greenhouse Hydroponic at each harvest is by conducting a grading test for each segment of the melon plant or it can be said to be a sample of each segment. Each segment is graded to check the level of sweetness in the golden aroma melon fruit. The golden aroma melon grading activity at Nawasena Greenhouse Hydroponic uses a fruit sweetness level measuring tool called a Brix Refractometer. The criteria for grading golden aroma melons so that they can be adjusted to local market standards are the level of sweetness, the condition of the netting, and the condition of the skin and fruit surface. Obstacles in the melon grading process at Nawasena Greenhouse Hydroponic are uneven fruit conditions, unrepresentative sampling, tool damage or contamination, and improper sample cutting techniques. Based on research conducted by the author at Nawasena Greenhouse Hydroponic, the author suggests that the maintenance of golden aroma melons at Nawasena Greenhouse Hydroponic should be further maximized so that the yield obtained is satisfactory, according to standards, avoiding pests, and not resulting in crop failure. The owner of Nawasena Greenhouse Hydroponic should optimize social media with interesting content such as the content of the golden aroma melon harvest process, testimonials from visitors to Nawasena Greenhouse Hydroponic, or a brief education about the advantages of golden aroma melons.

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