

I INTRODUCTION

1. Background

Vegetable plants have been widely cultivated in Indonesia which used for the nutritional needs of the community. One of the vegetable plants is from the *Brassica* family. This vegetable can grow in several types of soil, but grows well, especially in fertile soil, the more fertile the soil, the faster it grows and other supporting factors. Internal and external factors influence plant growth factors. Internal factors that affect plant growth and development are genetics and hormones. While the external factor that affects plant growth is the environment (Campbell et al, 2017

The environment plays a very important role in plant growth, because environmental factors influence the physiological function of plants. A suitable environment will be able to optimize plant growth. Soil, humidity, air, temperature, light and water are factors that can affect plant growth (A'yuningsih, 2017). In addition to these factors, there are still things that can affect plant growth such as sound. Sound exposure in general can have a positive effect on plant growth and production. Research by giving classical music sound, noise and mixture for 3 hours can increase the growth and production of mustard greens compared to control plants and the best growth in plants which were exposed to classical music sound with a violin (Prasetyo, 2014).

Research conducted by Suwardi (2010), by giving high frequency sound combined with organic nutrients can stimulate the opening of the leaf mouth (stomata). Wider stomata opening can increase the absorption of water, CO₂, and O₂ optimally. In addition, Creath and Schwartz (2004), proved that the sound of music can significantly affect seed germination and sound waves affect biological systems. Lestard et al. (2013), concluded that musical sound can also change the size and modulate physiological processes of cells.

Plants do not only pick up sound waves and respond to them directly, but plants can distinguish the origin of the sound around them. The plant will give a signal and perform metabolism according to the type of sound received in response to capturing sound. From previous research that has been done, plants will respond in different ways if they get different sounds. According to Appel and Cocrof (2014), plants will produce secondary metabolites that are toxic to caterpillars when they hear the sound of caterpillars eating. Meanwhile, according to Veits et al. (2018), plants that are heard voices of pollinating insects will be able to produce higher sugar content in nectar.

Sound can not only be translated by auditory cells, but every cell of living things can respond to sound. According to Lestard et al. (2013), other than auditory hair cells, cell types can respond to audible sounds. Sound has both positive and negative effects on those who receive the sound. Sounds that have a good sense or good meaning will be able to have a positive effect on the recipient of the voice. Conversely, if the sound has a not good meaning, then the resulting effect will also have a negative effect. According to Emoto (2004),

giving a good sound to water molecules will form beautiful water crystals and giving sound with a bad meaning results in an shapeless crystal form of water molecules.

Islamic teachings always encourage its people to say kind words to anything. In the Qur'an Surah Ibrahim verses 24-27 *"Have you not noticed how Allah has made a parable of a good sentence like a good tree, its roots are strong and its branches (towering) to the sky (24), (the tree) produces its fruit on every time by the permission of his Lord. And Allah makes this parable for people so that they will always remember (25). And the parable of a bad sentence is like a bad tree, whose roots have been uprooted from the surface of the earth, unable to remain upright in the slightest (26). Allah confirms (faith) of the believers with firm words in life in this world and in the hereafter; and Allah misleads the wrongdoers. And Allah does what He wills (27).* Adhan is one of the good words where there are words of praise to Allah SWT and Prophet Muhammad SAW. In addition, the call to prayer also contains inviting and calling Muslims to pray. Prayer is a religious commandment which is obligatory for all Muslims every day and is recommended in congregation in the mosque

A mosque filled with five daily prayers will have an impact on prosperity for the environment and the surrounding community, in accordance with the Qur'an Surah Al-Isra verse 1 which means: *"The Holiest to Allah who has taken His servant one night from the Haram Mosque to Al-Masjid al-Aqsa which we have blessed all around so that We may show him some of our (greatness) signs. Verily, He is All-Hearing, All-Knowing."* In the verse above there is a sentence

"*that we have blessed around him*", it can be interpreted as the environment and the community around the Grand Mosque and the Aqsa Mosque. In the interpretation of Ibn Kathir Juz 15 "*from the Haram Mosque in Mecca to the Aqsa Mosque in Baitul Maqdis which Allah has blessed all around him in terms of the plants, fruits and parts of them*". In both mosques it can be seen that every day the Muslims there always pray five times a day.

Sound can also affect the growth of microorganisms and metabolism to a significant degree. The sound given to microorganisms in the form of music can affect the growth of microbes and their metabolism (Sarvaiya and Khotari, 2017). Microorganisms are everywhere. Its interaction with other microorganisms or other organisms can take place in a safe and beneficial or detrimental way. There are beneficial and harmful microorganisms for plant growth. According to Rao (1994), generally classified the functions of microbes into four, namely (1) increasing the availability of plant nutrients in the soil, (2) as a remodel of organic matter in the soil and mineralization of organic elements, (3) rhizosphere-endophytic bacteria to stimulate plant growth by forming enzymes and protecting roots from pathogenic microbes, (4) as biological agents to control plant pests and diseases. Various chemical reactions in the soil also occur with the help of soil microbes. While microorganisms that can be harmful to plants may cause various diseases.

Plant diseases can be caused by fungi, bacteria, viruses, viroid, and mycoplasmas. The fungus group is a more dominant pathogen than bacteria and other disease groups. More than 10,000 species of fungi are classified as

pathogens and most can damage more than one plant species (Fang and Ramasamy, 2015). Research on the effect of sound on organisms of the earth is rarely done and there is still much need to be researched. Everything on earth interacts with sound, this is in accordance with the Qur'an Surah Al Isra verse 44 which means: "*And there is nothing but glorifying by praising Him, but you all do not understand their prayer beads; indeed, He is Most Forbearing, Most Forgiving.*" Based on the description above, the writer is interested to conduct research on the effect of giving the call to prayer (adhan) on growth and disease incidence in three plant species from the Brassicaceae family.

1.2. Identification of the problem

- 1 How does giving the call for prayer affect the growth and production of three types of *Brassicaceae*?
- 2 How does the sound of the call for prayer affect the incidence of disease in three types of *Brassicaceae*?

1.3. Research Objectives

- 1 To determine the effect of growth and production of three plant species from the *Brassicaceae* family when the sound of the call for prayer is being heard.
- 2 To see the incidence of disease in three plant species of the *Brassicaceae* family when the sound of the call for prayer is being heard.

1.4. Research Hypotheses

1. The sound of the call for prayer significantly affects the growth and production of plants from the *Brassicaceae* family
2. The interaction between the sound of the call for prayer and the types of *Brassicaceae* plants significantly affects the growth and production of *Brassicaceae* plants.

1.5. Research Benefit

The benefits of this research are as one of the requirements to complete undergraduate studies at the Faculty of Agriculture, Medan Area University and as an updated science for readers in particular and also serves as information for the wider community regarding the response of family plants *Brassicaceae* on giving the call for prayer.

LITERATURE REVIEW

2.1. *Brassica* Plant

2.1.1. Mustard greens (*Brassica juncea* L.)

According to Dasuki (1991), the classification of mustard plants (*Brassica juncea* L.) is as follows: Division: *Spermatophyta*, Class: *Angiospermae*, Sub Class: *Dicotyledonae*, Order: *Papavorales*, Family: *Brassicaceae*, Genus: *Brassica*, Species: *Brassica juncea* L. Green mustard plant is a leaf vegetable plant from the *Brassicaceae* family that has a high use value. Mustard greens are rich in vitamin A, so that they are useful in efforts to overcome vitamin A deficiency. The nutritional content of mustard greens is also useful for the health of the human body. The development of mustard cultivation has good prospects to support efforts for increasing farmers' income, improving community nutrition, expanding employment opportunities, developing agribusiness, increasing state income through reducing imports or spurring export growth (Rukmana, 1994).

According to Margiyanto (2007), mustard greens have short stems and are segmented, so they are almost invisible. Green mustard stems can function as a tool for forming and supporting leaves, while green mustard leaves have long stems and are flat in shape. Mustard greens are generally easy to flower and seed naturally. The structure of the green mustard flower is arranged in a flower stalk that grows elongated and has many branches. Each mustard green flower consists

of four petals, four corolla, bright yellow flowers, four stamens, and one pistil with two cavities.

Table 1. Nutritional Content of Green Mustard (*Brassica juncea* L.) per 100 grams

No	Nutritional Content and Composition	Amount
1	Protein	2.3 g
2	Fat	0.4 gr
3	Carbohydrate	4 gr
4	Calcium	220 mg
5	Phosphorus	38 mg
6	Iron	2.9 mg
7	Vitamin A	1,940 mg
8	B vitamins	0.09 mg
9	Vitamin C	102 mg
10	Energy	22 cal
11	Fiber	0.7 gr
12	Water	92.9 gr
13	Natrium	20 mg

Source: Directorate of Nutrition, Ministry of Health RI (2012)

2.1.2. Mustard Growing Requirements

According to Margiyanto (2007), mustard greens are not native to Indonesia, but come from the Asian continent, because Indonesia has the appropriate climate, weather and soil, green mustard can be cultivated. Mustard greens can grow in the lowlands and highlands. Suitable planting areas start from a height of 5 meters to 1,200 meters above sea level and are usually cultivated in areas that have an altitude of 100-500 meters.

Mustard greens are resistant to rain, so they can be planted throughout the year. In the dry season, it is important to water the plants regularly. During the growth period, however, this plant is also not suitable for stagnant water, thus, this plant is suitable when planted at the end of the rain season (Margiyanto,

2007).

a. Climate Requirements

In particular, mustard greens are generally planted in the lowlands. This plant is not only resistant to hot (high) temperatures, it is also easy to flower and produces seeds naturally in Indonesia's tropical climate, thus, it does not have to rely on imported seeds. Likewise, mustard plants are not only suitable for planting in the lowlands but also in the highlands (Rukmana, 1994).

b. Soil Requirements

Mustard greens can be grown on a variety of soil types, but sandy loam soils, such as andosols are best. In soils that contain clay, perfect land management is needed, including deep soil management, the addition of sand and high doses of organic fertilizers. The ideal soil requirements for mustard greens are: fertile, loose, containing lots of organic matter or humus, not waterlogged, the air system in the soil works well, and the soil pH is between 6-7. Green mustard in the lowlands is generally planted on latosol soil with a pH of 6 and a minimum dose of 20 tons/hectare of manure (Rukmana, 1994).

c. Water requirements

The availability of water determines the success of plant growth, both vegetatively and generatively. In the process of seed germination, the earliest stage that occurs is imbibition, which is the process of entering water into the seed. Without being preceded by the imbibition process, the next stages in the seed germination process will not be able to take place. According to

research by Idrus (2014), in simple irrigated land, the water requirement for mustard plants is 0.275 liters/plant/day or 1.1 liters/plant/day. In the early phase of growth, the water requirements for green mustard plants is much needed, so that watering is carried out regularly, namely 1-2 times a day, especially if the soil conditions dry quickly and in the dry season. After that the irrigation for the mustard greens was gradually reduced, but the condition of the soil should not be in dry conditions.

2.2. Kailan Plant (*Brassica oleracea alboglabra* L.)

According to Rubatzky and Yamaguchi (1995), the classification of kailan plants is as follows: Kingdom: *Plantae*, Divisio: *Spermatophyta*, Subdivisio: *Angiospermae*, Class: *Dicotyledoneae*, Order: *Papavorales*, Family: *Brassicaceae*, Genus: *Brassica*, Species: *Brassica oleraceae alboglabra* L. Kailan is widely used in various Chinese and Tionghoa dishes. Kailan (*Brassica oleraceae* L.) is a short-lived, seasonal vegetable crop. Kailan vegetables have various cultivars with different flower colors and vegetative characteristics, especially in the height and size of the plant stems. Kailan plants are suitable for planting at an altitude of more than 500 m above sea level (asl), but there are several cultivars that can adapt to low-lying climatic conditions. A good temperature for Kailan ranges from 18° C to 32° C and humidity is 60 to 90% (Samadi, 2013). Roots in the floating hydroponic system have a length of 19.7 cm with small white and fibrous roots (Krisnawati, 2014).

Kailan has erect stems and germinates and white flowers appear on 10

tops of plants with stem diameters ranging from 3-4 cm. The leaves on kailan are round and elongated and have a dark green color. The leaves of the kailan plant are relatively thick (Samadi, 2013).

Table 2. Nutritional Content of Kailan per 100 g

No	Content and Nutritional Composition	Amount
1	Energy	22 kcal
2	Total Carbs	3.8 gr
3	Dietary Fiber	2.5 gr
4	Proteins	1.1 gr
5	Total Fat	0.7 gr
6	Calcium	100 mg
7	Vitamin A	1,638 IU
8	Vitamin C	28.2 mg
9	Vitamin E	0.5 mg
10	Vitamin K	84.4 mkg
11	Folic Acid	99 mkg
12	Manganese	0.3 mg
13	Lutein-zeaxanthin	912 mkg

Source: Widadi, 2003

2.2.1. Kailan Growing Requirements

In general, kailan plants are well planted in the highlands with an altitude between 1,000-3,000 meters above sea level. Kailan is able to adapt well to the lowlands. Kailan plants require rainfall ranging from 1000-1500 mm/year, this rainfall condition is closely related to the availability of water for plants. Kailan is a type of vegetable that is tolerant of drought or limited water availability. Too much rainfall can reduce the quality of vegetables, due to leaf damage caused by heavy rains (Sunarjono, 2004).

Kailan plants can grow both in hot and cold places, although in reality the results obtained are better in the highlands. Kailan plants are resistant to rain, so they can be planted all year round. In the dry season that needs to be considered is

regular watering. A good temperature for its growth ranges from 15-25° C. The best condition for Kailan is when the weather is cold. The optimum temperature for growth lies between 15°C, while above 25°C the growth of kailan is inhibited. The minimum temperature for growth may be above 0°C. If the temperature drops below -10°C and persists for a long time, the plant will be severely damaged (Pracaya, 2011). The average daily temperature desired by kailan plants is 15-25° C. At temperatures that are too low, the plant shows symptoms of necrosis in the leaf tissue and the plant will die. Temperatures that are too high cause plants to wither because the evaporation process is too large. Good air humidity for kailan plants is 60-90%. Kailan requires loose soil conditions with a pH of 5.5–6.5. Kailan plants can grow and adapt to all types of soil, both light to heavy textured soils. The best type of soil for kailan plants is sandy loam. In acidic soils (pH less than 5.5), Kailan growth is often stunted, susceptible to club root disease caused by the fungus *Plasmodiophora brassicae* Wor. On the other hand, in alkaline soils (pH greater than 6.5) plants are attacked by *blackleg* disease caused by the fungus *Phoma lingam* (Goldsworthy and Fisher 1992).

2.3. Pakcoy Plant (*Brassica rapa* L.)

Pakcoy is a type of vegetable plant that belongs to the *Brassicaceae* family. Pakcoy plant originates from China and has been widely cultivated after the 5th century in Southern and Central China and Taiwan. This vegetable is a new introduction in Japan and is still own a family with Chinese vegetables.

Currently, pakcoy is widely developed in the Philippines, Malaysia, Thailand and Indonesia (Setiawan, 2014).

According to Paat (2012), pakcoy plants in the plant systematics have the following classification: Kingdom: *Plantae*, Division: *Spermatophyta*, Class: *Dicotyledonae*, Order: *Rhoeadales*, Family: *Brassicaceae*, Genus: *Brassica*, Species: *Brassica rapa L.* Rubatzky and Yamaguchi (1995), stated that the pakcoy plant is one of the important vegetables in Asia, or especially in China. Pakcoy leaves are stemmed, oval in shape, dark green and shiny, grow slightly erect, arranged in tight spirals, attached to depressed stems. The petiole is white or light green, fat and fleshy, the plant height reaches 15-30 cm. It was further stated that pakcoy is less sensitive to temperature than chicory, so this plant has a wider adaptability. It is said that in China, this plant has been cultivated for 2500 years ago, then spread widely to the Philippines and Taiwan. The entry of pakcoy into Indonesia is assumed to have been in the 19th century at the same time with the cross-trade of other types of subtropical vegetables, especially the cabbage group (*Cruciferae*) (Suhardianto and Purnama, 2011).

2.3.1. Pakcoy Growing Requirements

Pakcoy is not native plant to Indonesia, because Indonesia has suitability to the climate, weather and soil so that it is developed in Indonesia. Suitable planting area from 5 meters to 1200 meters above sea level. However, it grows optimally if cultivated in areas that have a height of 100 meters to 500 meters above sea level. Pakcoy plants can grow well in hot climates as well as the cold air, so it can be cultivated from the lowlands and highlands. According to

Sukmawati (2012), pakcoy cultivation should be selected at areas that have a temperature of 15-30 ° C, and have rainfall of more than 200 mm/month, so that this plant is quite resistant to be cultivated in the lowlands. In Indonesia, Pakcoy has been cultivated by many farmers in the Cipanas regions, West Java with good growth. Pakcoy thrives on the ground loose and rich in nutrients. Pakcoy is planted with high density which is about 20-25 plants/meter. Pakcoy has a short harvest life, but product quality can be maintained for 10 days at 0° C and 95% RH (Rubatzky and Yamaguchi, 1995).

2.3.1. Pakcoy Nutritional Content

According to Prasetyo (2014), the beta-carotene content in pakcoy can prevent cataracts. Besides containing high beta-carotene, pakcoy also contains many nutrients including protein, vegetable fat, carbohydrates, fiber, calcium, magnesium, sodium, vitamin A and vitamin C.

Rukmana (2004), describes that as a leaf vegetable, pakcoy is a rich source of vitamins and minerals. Pakcoy is a rich source of vitamin A so it is useful in an effort to overcome the problem of vitamin A deficiency chicken myopic disease (*xerophthalmia*). The use of pakcoy in the human body, among others, can cool the stomach. The nutritional content of every 100 g of pakcoy plants can be seen in Table 3.

Table 3. Nutritional Content of Pakcoy Plants per 100 grams

No	Nutritional Content	Amount
1	Energy	21 cal
2	Proteins	1.8 g
3	Fat	0.3 g
4	Carbs	3.9 g
5	Fiber	0.7 g
6	dust	0.9 g

7	Phosphorus	33 mg
8	Iron	4.4 mg
9	Sodium	20 mg
10	Potassium	323 mg
11	Vitamin A	3,600 SI
12	Thiamine	0.1 mg
13	Riboflavin	0.1 mg
14	Niacin	1 mg
15	Vitamin C	74 mg
16	Calcium	147 mg

Source: Suhardianto and Purnama (2011)

2.4. Sound

Sound is produced by the friction of solids, gases, liquids or a combination thereof. The friction causes vibrations which will disrupt the balance of nearby air molecules so that the air molecules also vibrate (Harnapp and Noble, 1987). Sound is waves of mechanical vibrations in air or solid objects that can still be caught by the human ear in general, namely in the frequency range. 16–20,000 Hz. Not all loud noises are perceived as a nuisance (Mangunwijaya, 1988).

Sound waves are longitudinal waves that can propagate through gases, solids, and liquids at speeds that depend on the elastic properties and inertial properties of the propagation medium (Esomar et al, 1997). Sound waves are vibrations of the molecules of a substance and collide with each other, however, these substances are coordinated to produce waves and transmit energy but no particle displacement occurs (Halliday and Resnick, 1992).

Wavelength (λ) is the distance a sound wave travels in one vibration period. Frequency is the number of waves that vibrate in one second given the unit Hertz. Based on the division of the frequency range, sound waves are divided into three

types. Sound waves with a frequency of 20 Hz to 20 KHz are sound waves that can be heard by the human ear which are commonly called audio sonic waves, frequencies below 20 Hz are called infrasound waves, and frequencies above 20 KHz are called ultrasonic waves. The ultrasonic frequency used for diagnosis ranges from 1 to 10 MHz. The period is the required time for a wave to travel one wavelength and is proportional to $1/f$. The ultrasonic velocity (v) is the distance traveled by the wave per unit time and is proportional to the wavelength divided by the period (Halliday and Resnick, 1992).

2.4.1. Effect of Sound on Plant Growth

A wave is a vibration that propagates, which carries energy from one place to another (Sutrisno, 1979). Sound waves are vibrations of the molecules of a substance colliding with each other. However, these substances are coordinated to produce waves as well as transmits energy, but no particle displacement occurs (Halliday and Resnick, 1992). In other words, sound has energy, because sound is a form of wave that has the ability to vibrate the particles in its path. The energy or vibration produced by the sound source has an effect on a plant, which is able to stimulate leaf stomata to open. The vibration of the sound will transfer energy to the leaf surface and will stimulate the leaf stomata to open wider. By opening the stomata wider, it means that the absorption of nutrients and other materials in the leaves is greater when compared to plants without sound treatment.

In Yannick Van Doorne's article entitled "The Effects of Variable Sound Frequencies on Plant Growth and Development" it is explained that sound with a certain frequency can affect the opening of stomata (Doorne, 2000), as follows:

1 Sound resonates with objects

The sound resonates with the stomatal cavity. According to Dan Carlson, leaf nutrient uptake and water uptake can be increased due to the permeability properties of the stomatal membrane. Sound can resonate with cell organelles. Some sounds with a certain frequency resonate so as to increase the movement of the cytoplasm in the cell (Weinberger, 1972 in Pujiwati 2017).

2 The phenomenon of cavitation

Cavitation is a phenomenon caused by sound in a liquid. The sound emitted will hit the cytoplasm. Cytoplasm is composed of water and some dissolved chemicals (Istamar, 2003). Sound with a certain frequency hitting the cytoplasm causes the appearance of *microbubbles* (bubbles) which then resonate with the sound and push against the guard cell walls. Therefore, the turgority pressure increases and the stomata can open maximally.

3 Scale resonance

Sternheimer (2002), a quantum physicist developed scale resonance method. It is called scale resonance because the sound source with certain frequencies can activate certain genes in cells, so that affect cell growth and expression. Cell expression is the process where the information codes in genes are converted into proteins that operate in the cell. Scale resonance method by transmitting specific sound sequences to stimulate or inhibit genes appropriate protein is very useful as a tool to study protein function which can affect the optimization of stomata opening

In the journal entitled "Method for The Regulation of Protein Biosynthesis",

Sternheimer (2002), found the composition of musical notation and musical notation period of the amino acid sequence. The sound vibrations of music as quantum vibrations affect the molecular level as proteins are composed of amino acid reactions. Amino acids emit a signal of the quantum nature of the sound emitted with a certain frequency. The resulted sound signal is translated into musical notation. The application of the discovery of amino acid sequences is used to compose musical notations that would serve to stimulate the formation of proteins in organisms, thereby limiting their biological functions. The present invention relates to the scale resonance of the previous invention.

2.4.2 Adzan (the call for prayer)

1. The Meaning *Adzan* (the call to prayer)

Adzan in lughawi (etymology): solely to inform. While the terms (terminology) are: informing about prayer times with certain words. This call for prayer has been ordered since the first year of the Prophet's Hijrah to Medina. In addition, the call for prayer also means an exclamation or calling. This meaning is used when Prophet Ibrahim 'alaihissalam was ordered to tell people for performing the pilgrimage contained in the Qur'an Surah Al-Hajj verse 27. It means: "*and call people to perform Hajj, surely they will come to you on foot, and riding a skinny camel that comes from all directions far away*", (Surah Al-Hajj: 27). Thus, the call for prayer is a notification of a mu'azin (person who call for prayer) to humans regarding the entry of the obligatory prayer time. Every day we hear the call for prayer from the mosque. The song is unique and melodious. The lyrics are uplifting. The sentence has been "blown" into our right ear since birth.

In the tradition of some people, the sentence is even "heard" on a stiff body wrapped in a white cloth in the grave (Mughniyah, 2011).

2. The Meaning of the Sentences in the Adhan

Chapter one, *Allahu Akbar*. this is the first rung of the call for prayer meaning as an evocative, by showing various signs of greatness Allah SWT. As awareness and reassurance related to the calling of Allah is the Greatest One. Chapter two, *Ashhadu anla ilaha illallah*. We tread the stairs second. Where is its position as the syahadat (confession to faith) and the scope of its meaning. How does he direct the perspective, goals and become a guide as well as our life force. Then we tread the meaning in the call for prayer to fill in the symbols and image, repeating the oath to ensure our commitment is not unshakable, so that we understand it as an invitation from God. Chapter three, *Ashhadu Anna Muhammadan Rasulallah*. We are on the third ladder, which bring it closer to the top. The inclusion of this sentence suggests that we know and always remember and follow in the footsteps of Muhammad Rasulallah's role model, feel the mercy from the apostleship to our love always warm to him. Chapter four, *Hayya alash shalah*. This is the peak first call for prayer. Here the crucial things are prayer as a necessity, the core of worship, and as an obligation. We pay attention to the practice of prayer, the map of time and solemnity our prayers. We discuss the meaning or function of our prayer including: the function of worship, remembrance, sin remover, pillars of religion, and the function of education and training, as well as what it means if the prayer function fails. Chapter five, *hayya alal falah*. We're at the top the call for prayer in the ideal hemisphere. Al-falah

traced in the Quran and what is the achievement *al-falah* according to the hadith. Next, we export those posts or maqam al-falah, on faith, piety, righteous deeds, repentance and islah, which turns out to be studded with pearls success t^l 20 are always longing for. Chapter six, final sentences. After reaching its peak, the call for prayer still emits the final sentences full of wisdom. Those last sentences are basically affirmative and the conclusion of the previous sentences but in it is also present other nuances, which are also terms of value and meaning as in the following sentences: 1) *Ash-shalatu Khairun Min-annaum* (This sentence is echoed in the call for prayer at Dawn time). When we enjoy God's incomparable gift, sleep soundly. The sentence floats as if it shakes the shoulders and inspires: prayer is better than sleep. The sentence "*ash -shalatu khairun-minannaum*", prayer is better than if it is connected with the tahajjud prayer, it contains the meaning of appreciation to those of us who can manage the time to sleep and overcome lazy to wake up at night to pray, which is a distraction from the devil. Wake up at the end of the night or no later than when the call for dawn prayer is heard, in terms of health, also has positive effect. Provides physical fitness and prevents many diseases (Armuz,2010).

Allahu Akbar-Allahu Akbar Repetition of *Allahu Akbar-Allahu Akbar* at the end of the call for prayer is said once, of course it has a separated value and meaning. *Allahu a'lam*, Allah knows the best. But when we connect it with the core of the call, namely ash-shalah and al-falah, with all the sensitivity of the heart, we can feel the nuances of the call for peace with the God Almighty. The peace that springs from prayer towards the hope of victory with Allah the Greatest

One (Armuza, 2010)

La ilaha illallah, this is the locking sentence for the call for prayer and at the same time the core sentence of the confession to faith. The meaning of the call for prayer as the best syiar (symbol) of Islam is this sentence: *la ilaha illallah*. Rasulullah SAW predicated this sentence as *miftahul jannah*, the key to heaven and *afdlala dhikr*, especially remembrance. As the core of the confession to faith of monotheism, we often forget, so we need to be reminded many times through the Azdan. How important is the phrase *la ilaha illallah*, so that Rasulullah ordered to dictate it to people who are dying, nearing death (Nursyamsudin, 2009).

III. MATERIALS AND METHODS

3.1 Time and place

This research was carried out from May 2020 to August 2020. The location of this research is at Campus 1, Medan Area University, Jl. Pool No. 1 Medan Estate, Percut Sei Tuan District. The place of this research is in the experimental garden of the Faculty of Agriculture, University of Medan Area, with an altitude of ± 22 above sea level, with a flat topography.

3.2 Materials and Tools

The tools used in the research are: hoe, sickle, Advance Digital 2.0 loudspeaker, meter, scissors, solder, knife, application noise sound on a Samsung type J5 cell phone, stationery, leaf color chart and buzz. The materials used in the research are: green mustard seeds, kailan seeds, pakcoy seeds, water, duct tape, cables, chicken manure, urea fertilizer, solar cigarette box cardboard cans, plastic and polybags.

3.3. Experiment Method

This research was conducted using a factorial Split Plot Design consisting of

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2 factors, namely: plant species and the sound of the call for prayer.

Types of Plants	Sound of Adzan
A1 = Mustard Greens	B0 = Without giving the call to prayer
A2 = Kailan Plant	B1 = Giving the call for prayer 2 times a day every 08.00 and 10.00 WIB
A3 = Pakcoy Plant	B2 = Giving the call for prayer 3 times a day every 08.00, 10.00 and 12.00 WIB
	B3 = Giving the call for prayer 4 times a day every 08.00, 10.00, 12.00 and 14.00 WIB
	B4 = Giving the call for prayer 5 times a day every 08.00, 10.00, 12.00, 14.00 and 16.00 WIB
	B5 = Giving the call for prayer 6 times a day every 08.00, 10.00, 12.00, 14.00, 16.00 and 18.00 WIB

Thus, it is obtained with the number of treatment combinations as much as

$3 \times 6 = 18$ treatment combinations, namely:

A1B0	A1B1	A1B2	A1B3	A1B4	A1B5
A2B0	A2B1	A2B2	A2B3	A2B4	A2B5
A3B0	A3B1	A3B2	A3B3	A3B4	A3B5

Description :

Number of repetitions = 2 repetitions

Number of experimental plots = 36 plots

Number of polybags per plot = 6 polybags

Total number of plants = 216 plants

Number of sample plants per plot = 6 plants

Number of plants per plot = 6 plants

Polybag size = 35 x 35 cm

Distance between plots = 50 cm

Distance between repetition = 100 cm

3.4. Analysis Method

After the research data is obtained, data analysis will be carried out using the formula: The linear method assumed for the Divided Plot Design is as follows:

$$Y_{ijk} = \mu + \alpha_i + \beta_j + \gamma_{ik} + (\alpha\beta)_{ij} + \epsilon_{ijk}, \text{ where}$$

Y_{ijk} = Observations on the experimental unit - k that obtain a combination of treatment of the level-i of factor A and the level -j of factor B

μ = Population mean value.

α_i = Additive effect of the level -i of factor A

β_j = Additive effect of the level -j of factor B

γ_{ik} = Random effect of the main tile, which appears at the level -i from factor A in repetition - k

$(\alpha\beta)_{ij}$ = the additive effect of the level -i of factor A and the level -j of factor B

ϵ_{ijk} = Random effect of the experimental unit -k that gets the treatment combination

If the results of the treatment in this study have a significant effect, further testing will be carried out with the Duncan Distance Test (Montgomery, 2009).

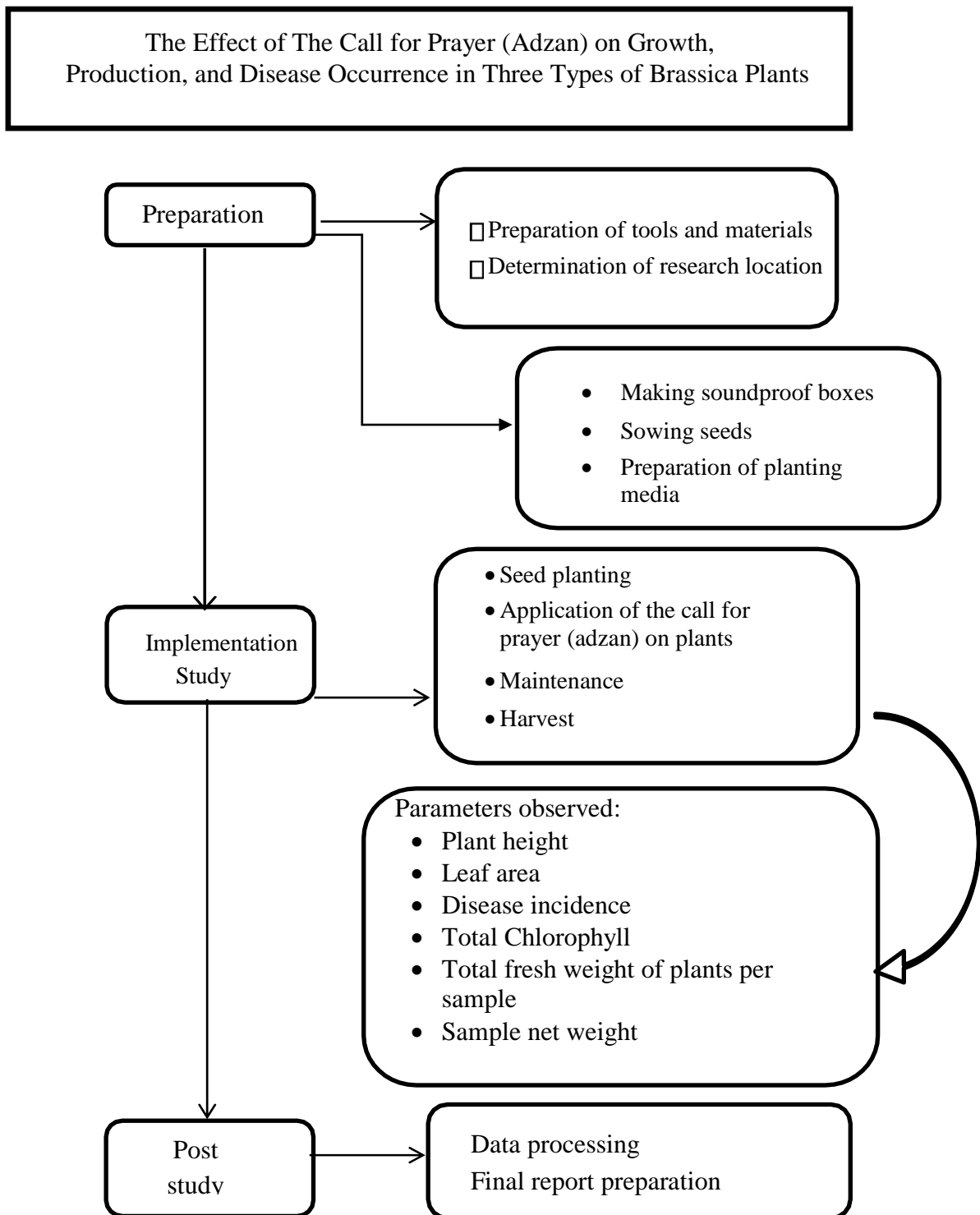


Figure 1. Research Flowchart

3.5. Research Implementation

3.5.1. Making Soundproof Box

The soundproof box is made from a modified Surya cigarette cardboard box, coated with plastic and given a loudspeaker with the Advance Digital 2.0 brand, Mini Channel Multimedia Speaker, in the box with the call for prayer sound's treatment.

3.5.2. Seedling

The seeds of the mustard greens, kailan, and pakcoy are sown with using a seedling tray then filled with top soil. Each container is filled with 2 seeds and arranged neatly and then given a shade.

3.5.3. Preparation of Planting Media

Polybags with a size of 35 x 35 cm are filled with top soil and mixed with 100 grams of chicken manure/polybag. Preparation of the planting media is done 7 days before planting.

3.5.4. Planting

Seeds that are 2 weeks old or have 3-4 leaves are transferred to polybags. Each polybag is planted with 1 plant by making a planting hole first \pm 2 cm. Seeds are moved carefully to avoid damage to plant roots.

3.5.5. The call for prayer (Adzan) Sound Application

The voice application is given through an mp3 recording by Shaykh Ali Ahmad Mulla Muadz in at the Grand Mosque (Masjidil Haram) which is downloaded on the website <https://islamdownload.net/125594-download-adzan-mekkah-mp3.html>, according to treatment B0 to B6 with a duration of 3 minutes

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23 seconds starting 4 days after planting, every day until the plants are 5 MSPT. To prevent the sound of other plants from being heard, when the sound is applied, the plants are covered with a soundproof box that had speakers installed. After the sound application is complete, the soundproof box covering the plant is reopened. Giving the call to prayer using speakers is set the noise level (amplitude) of 65-75 decibels.

3.5.6. Maintenance

A. Watering

Watering is done using gushing water pot, watered to all parts of the plant. Watering time is done in the morning at 07.00 to 09.00 WIB and in the afternoon from 16.00 to 18.00 WIB. If it rains, then there is no need to do watering.

B. Fertilizer

Fertilizer is given according to the recommended dose of each plant. Two weeks after planting, fertilization is conducted using urea fertilizer as much as 1 gram/polybag is given evenly by making an array around the plant and then on 20 days after planting it is given back by mixing it with splash water (BPTP Jambi, 2010). Fertilization of kailan plants is given two weeks after the plant using Urea fertilizer as much as 1 gram/polybag given mixed with splash water (BALITSA, 2010). Meanwhile, for Pakcoy plants at the age of two weeks after planting, urea fertilizer 1 gram/polybag is given evenly by making an array around the plant and then on 20 days after planting it is given back by mixing it with splash water

(BPTP Jambi, 2010).

3.5.7. Pest Control

Pests attack *Brassicaceae* plants are *Crocidolomia binotalis*, *Oxya servile*, *Achatina fulica*, *Phyllotreta nemorum*, and *Psylliodes chrysocephala*. In controlling

these pests using a chemical pesticide with the active ingredient Deltamethrin 25 g/l at the recommended dose of 1 ml/liter of water. The use of chemical pesticides by spraying the entire plant using a hand sprayer sufficiently to evenly wet.

3.5.8. Harvest

Harvesting is done after the plant is 40 days after planting, according to the type of plant. Harvesting is done by removing the plant from the polybag and labeling it according to the treatment sample.

3.6. Observation Parameter

3.6.1. Plant Height (cm)

Measurement of plant height was started after the plant was 2 weeks after transplanting (MSPT) to 5 MSPT. Plant height was measured from the base of the stem to the tip of the growing point of the sample plant. Plant height measurements were carried out at intervals of once a week for 4 times.

3.6.2 Leaf Area (cm)

The process of calculating leaf area is carried out when the plant is 2 weeks old after transplanting (MSPT) in polybags at intervals of 1 week. The calculation

of leaf area is carried out up to 5 MSPT, using the following formula:

$$LD = P \times L \times K$$

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Remarks:

P : leaf length

L : leaf width

K : constant

The following constant values for each plant:

Mustard greens: 0.759 (Susilo, 2015)

Kailan : 0.6825 (Mutaharri, 2018)

Pakcoy : 0.6825 (Munar et al, 2018)

3.6.3 Disease Incidence

Observation of disease incidence was carried out 2 weeks after transplanting by looking at the morphology of the disease attack directly. Symptoms of the disease are observed once a week and the percentage of attacks is measured using the formula:

$$\text{Disease Incidence (KP)} : \frac{n}{N} \times 100\%$$

Where :

n : number of diseased plants

N : number of plants

3.6.4. Amount of Chlorophyll

Analysis of the amount of leaf chlorophyll was measured using a leaf color chart. Leaf chlorophyll measurements were carried out starting at 2 weeks after transplanting by measuring 1 leaf per sample. The leaf blade measured was in the

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middle position of the number of leaves. This measurement is done at intervals of once a week until the plants are 5 weeks old after transplanting.



Figure 2. Leaf Color Chart (BWD)

3.6.5. Plant Fresh Weight per Sample

Plants are harvested after 40 days upon planting by pulling the plants and cleaning from the soil at the plant roots. Then weighed using a scale to calculate the total fresh weight of plants in each sample

3.6.6. Net Weight per Sample

Plants are harvested after 40 days upon planting by pulling plants and cleaned from the soil on the roots of plants, and the roots were cut off leaving the stems and leaves. Plants whose roots have been cut, they are weighed using a scale to weigh the net weight on each sample.

V. CONCLUSIONS AND SUGGESTIONS

5.1. Conclusion

- 1 The effect of the call for prayer had no significant effect on three types of *Brassicaceae* plants, namely mustard greens, kailan and pakcoy on plant height, leaf color, plant fresh weight per sample, and net weight per sample. However, leaf area at the age of 2 MSPT had a very significant effect and at the age of 3 to 5 MSPT it had no significant effect.
- 2 Giving the call for prayer to three types of *Brassicaceae* plants seen morphologically does not significantly affect growth, production, and disease incidence.
- 3 The interaction between the call for prayer and the three types of *Brassicaceae* did not significantly increase growth and production

5.2. Suggestion

It is necessary to do further research on giving the call for prayer to plants on plant physiology and metabolism. Further research can be done by giving the call for prayer at every prayer time according to the research location in order to reveal plant activity at prayer time.

PROOFREADING

1.	the sound treatment	:	the proper treatment
2.	the noiseless treatment	:	the silent treatment
3.	result in an increase in	:	increase
4.	that there is a difference	:	a difference
5.	that can	:	to
6.	words that are heard	:	words heard
7.	was able to significantly increase	:	significantly increased
8.	Disease attacks that occur can be seen	:	Disease attacks can be seen
9.	spots which in turn can	:	spots that can
10.	The presence of this	:	This
11.	have an influence on	:	influence
12.	metabolism as well as enzyme	:	metabolism and enzyme
13.	which have an age of	:	ages
14.	At the time of	:	When
15.	wider so that it can increase	:	wider to increase
16.	This green color is produced by a combination of pigments in plants	:	A combination of pigments in plants produces this green color
17.	The results of this correlation show	:	This correlation shows
18.	results of the analysis	:	analysis results
19.	Based on the results of the variance	:	Based on the variance
20.	states that the constituent	:	the constituent
21.	Plant growth factors are influenced by internal and external factors	:	Internal and external factors influence plant growth factors
22.	the physiological function of plants is influenced by environmental factors	:	environmental factors influence the physiological function of plants
23.	meaning that is not good	:	not good meaning