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Uses of Natural Dyes to Develop Tiga Negeri Batik

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Tiga Negeri batik began to be made in the late 18th century on the north coast of Java island but its dyeing process was made in three cities, namely Lasem, Pekalongan, and Surakarta. The term three refers not only to the number of colors but also to the combination of three cultures behind the style, namely Java, China, and Europe. This field research using qualitative methods aims to explore the possibility of developing Tiga Negeri batik through the use of natural coloring from plants. Data were collected through observation and interviews with batik artisans in Lasem, Pekalongan and Surakarta, as well as batik artisans who are also natural dye activists and who are members of the Indonesian Natural Dyers Association living in Kediri and Jombang. The result is that Tiga Negeri batik with environmentally friendly natural dyes can be achieved despite still having to use a small amount of artificial dyes, especially for the red color. This effort to return to natural dyes is mainly because this type of batik attracts the attention of international consumers in particular, and domestic consumers in general.

Keywords: coastal batik, tiga negeri batik, natural dye, Indonesian Natural Dyers

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INTRODUCTION

Since batik was confirmed as part of the Masterpieces of the Oral and Intangible Heritage of Humanity in Abu Dhabi, United Arab Emirates in 2009, the movement of efforts to develop batik patterns has increased. All parties are trying to play a role in the preservation of batik, both inland batik and coastal batik (UNESCO, 2023). One of them is Lasem, a city on the north coast of the island of Java nicknamed Little China and batik city (Wahyudi et al., 2021), which also produces Tiga Negeri batik. In the late 18th century, this type of batik was considered a premium batik with an expensive price (Fraser-Lu & Sylvia, 1989). This is because the three colors in the batik are processed in three different regions. The red color is processed in Lasem, the blue color in Pekalongan, and the soga brown color in Surakarta. At that time, natural dyes were still used, because synthetic dye technology had not yet been discovered (Farobi et al., 2022).

At the beginning of the 20th century, the use of synthetic dyes made in Europe that were sold to Indonesia became an option for craftsmen, as besides the colors being much brighter, the process was also much faster than the traditional dyeing process. way much faster than using the coloring process with natural materials (Rufaidah & Sayekti, 2019). However, the worst impact of this synthetic dye process is the waste that damages the environment. By restoring natural dyes in this three-country batik, it can become an alternative in reducing waste and creating products that are more environmentally friendly (Hidayatulloh et al., 2021). The increasing use of natural dyes is expected to increase environmental awareness and bring about changes in the textile industry as a whole (Rivanti & Sukmayadi, 2021).

Batik is an ancestral heritage that has great value. Seen on the classical batik made for the purposes of Javanese life cycle rituals starting from the womb, birth, growth, to death (Pramuniati et al., 2023). Classic batik was originally made and developed in the society of the palace environment, and used as one of the symbols and attributes of the kingdom (Saddhono et al., 2022). The batik makers who were also courtiers then passed on their batik skills to the community outside the palace, resulting in the emergence of various new styles (Yulianita & Sukendro, 2019). The new patterns are referred to as modern batik, including those made in coastal areas. Modern batik is generally made to be sold on the market. Therefore, the coastal batik business with modern patterns and bright colors along the north coast of Java is growing quite rapidly. In addition to being part of an effort to preserve batik, it also makes batik a very profitable trade commodity (Saddhono, 2020).

The development of batik motifs has actually been done a lot, especially in modern batik. The idea can be taken from classic batik motifs, or modern motifs, or motifs with foreign cultural backgrounds (Yeh & Heng, 2022). Batik Tiga Negeri retains its motifs with Javanese, Chinese, and European cultural backgrounds, as well as its three distinctive colors, namely red, blue, and soga brown (Lukman et al., 2022). What has changed is in the coloring process. The emergence of batik dye formulas derived from natural materials and synthetic colors has caused the coloring process in Tiga Negeri batik to be carried out in just one place (Widiastuti et al., 2022). This can speed up the implementation process, while reducing production costs. Thus, the price can also be easily afforded by various groups of people.

Efforts continue to be made by artisans who are part of the Indonesian Natural Color Association, commonly abbreviated as 'Warlami', to revive the use of natural dyes in batik (Rubiyanto & Maridjo, 1945). Especially for Tiga Negeri batik, the blue color is taken from the indigofera plant, the soga brown color is produced from the bark of the soga tree, either soga jambal, soga tingi, or tenger, as well as the red color from mengkudu root. However, the red color in Tiga Negeri batik made in Lasem in the past has a distinctive feature, namely a dark red color referred to as getih pitik or chicken blood (Afad, 2023). This is said to come from a mixture of noni root with groundwater in Lasem that contains certain minerals (Leki et al., 2023). As a result of efforts made by batik artisans who are members of Warlami, the blue and sogan colors can be created in paste form so that the batik dyeing process can be relatively faster (Afifulloh, 2022). However, the difficulty lies in the red color made from noni root bark due to the fact that the right formula has not yet been found.

The use of natural colors in batik is in fact nothing new as since ancient times the ancestors of batik artisans have been using them. The use of natural dyes is also used by other nations, especially those

who live across Southeast Asia, East Asia and Africa. The emergence of synthetic dyes that are easy to use has caused natural dyes to be abandoned (Laili, 2016). The impact of synthetic dye waste on environmental damage prompted a study on reverting to natural dyes instead of textile dyes in Indonesia in the 1980s (Djoemana, 1990). Research after research continues to be carried out despite the many obstacles that must be faced, especially when crafters insist on using artificial dyes which are easier to use. Through this research, we want to know the possibility of Tiga Negeri batik being made entirely using natural dyes as done by our ancestors when they were making batik crafts.

Judging from the area where batik is being produced, there are two groups of batik, namely inland batik which is produced in the Yogyakarta and Surakarta regions, and coastal batik which is produced on the north or south coast of Java (Manurung et al., 2019). From the inland batik, classical patterns were born in which the decoration was influenced by Hinduism and Islam, while from coastal batik, the style of non-classical or modern patterns was formed (Nugroho et al., 2022). Inland batik was originally made in the palace environment, both Yogyakarta and Surakarta palaces. The batik artisans in the palace were courtiers who made batik for the palace (Yulianita & Sukendro, 2019). Coastal batik was made by people living on the coast for trading purposes. Its patterns were influenced by foreign cultures that entered the archipelago through the ports on the north coast of Java, such as the Dutch, Chinese, Indians, Portuguese, and Arabs (Arifin et al., 2022). Coastal batik patterns are fairly diverse. There are patterns that combine classical and modern motifs, modern patterns with motifs taken from local nature, and patterns inspired by foreign cultures (Pratiwi & Cahyana, 2023). All of them have the distinctive characteristic of coastal batik, which is its vibrant color.

Natural colors are part of the local knowledge that is culturally based and taught from generation to generation by the ancestors of the Indonesian people. This shows that natural dyes have been used by ancestors since time immemorial. Before there were synthetic dyes, batik was colored with natural dyes taken from plants or animals around where the crafters reside (Herlambang et al., 2022). Despite the long coloring process, the results are not only safer for batik makers, but also friendly to the environment where they live. The use of natural dyes means utilizing biodiversity which will have an impact on the preservation of various plants as well as on the preservation of a healthy environment (Atmawijaya et al., 2020). Craftsmen who use natural dyes will continue to cultivate plants that have the potential as natural dyes in their yards, allowing the need for coloring materials to be fulfilled (Tresnadi & Ratuannisa, 2023). Color substances from plants can be taken from wood, roots, seeds, leaves, flowers, or bark, root bark, seed skin.

One type of coastal batik that is still related to inland batik is Tiga Negeri, which is a representation of three influential cultures in Lasem, namely Java, Indonesia, and Europe, particularly the Netherlands (Marta & Briandana, 2021).

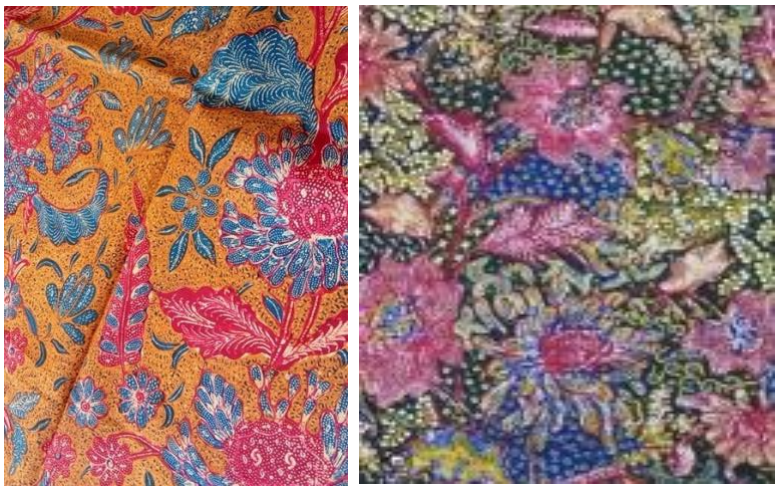

Figure 1 .Tiga Negeri Batik in Typical Surakarta (left); And Typical Lasem (right) Using a combination of Natural and Synthetic Dyes

In principle, all Tiga Negeri Batik must contain the colors red, blue, and brown. However, the Tiga Negeri produced in Surakarta has the typical soga brown color of inland batik, which is yellowish brown or golden brown. Meanwhile, Tiga Negeri produced in Lasem has a brown color mixed with greenish. This is what distinguishes the two of them although they are both Tiga Negeri Batik. The red color in both types of Tiga Negeri batik still uses synthetic dyes making the red color quite sharp. It is different from the Tiga Negeri batik made by Yudiaji, a batik craftsman from Jombang, East Java, who is an activist and administrator of Warlami in the field of Research, Development and Training. All the colors, including red, blue, and brown in Tiga Negerinya Batik use natural dyes. Interestingly, the red color does not look bright red but tends to be a pinkish indigo or even indigo purple as shown in the picture below.

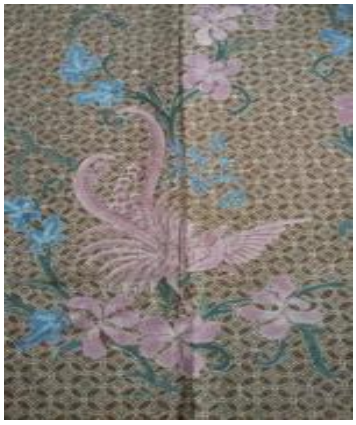

Figure 2 Tiga Negeri Batik made by Jombang Craftsmen Using Natural Dyes

Historically, the coloring process of Tiga Negeri batik began with the application of red color which was carried out in the city of Lasem, which is located in Rembang Regency, Central Java Province. This city became a stopover for traders from China who eventually settled and married local residents, leading to Lasem being nicknamed Little China. Currently, Lasem has become a batik tourism area that attracts many visitors from within and outside the country (Ghofur & Ismanto, 2022). The red color symbolizes luck, happiness, and prosperity in Chinese culture. The red color in Tiga Negeri batik as well as in other types of Lasem batik is produced from the bark of noni root (morinda citrifolia) mixed with local water.

Figure 3 Noni Trees (left), noni roots (upper right), Pieces of root bark ready to be processed to natural dyes (bottom right)

It is said that the water in the Lasem region has a distinctive mineral content (Mekarsari & Jatmiko, 2020). This type of water distinguishes the red from Lasem with red in other areas despite being with the same source; noni. Lasem in particular has a blackish red color resembling blood, hence the name chicken blood or getih pithik. This dark red color is the defining characteristic of Lasem batik (Setyawan, 2021). The coloring process begins with giving red color to Tiga Negeri batik in Lasem. For this reason, the term blangko batik is known, which is batik with red and white before being given other colors, as in the figure below:

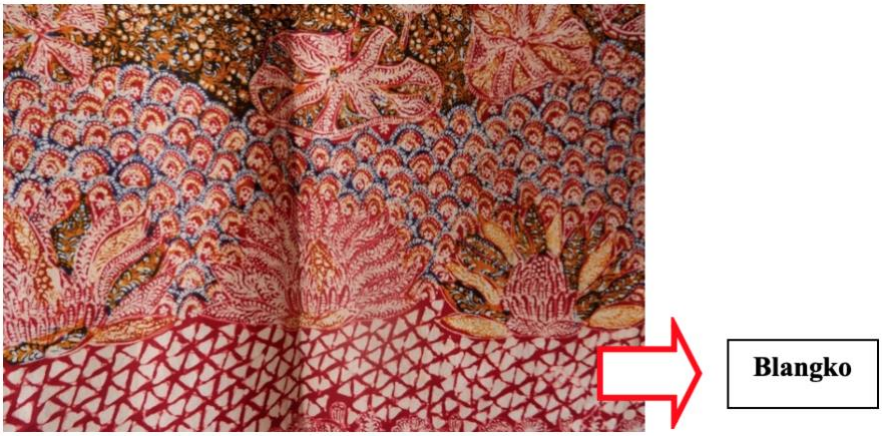

Figure 4 Lasem Batik Typical of Lasem products of Lumintu Lasem Batik

The next color is blue, which is processed in Pekalongan. The blue color is obtained from the indigofera plant (indigofera tinctoria) or nila which is a tropical plant, which can be shrub-shaped and tree-shaped. Indigofera shrubs are usually used as livestock feed. In regions of Java indigofera is referred to as tom, while in Sunda it is referred as tarum. Indigo with binding materials such as lime, arbor, and alum can produce shades of color ranging from light blue to dark bluish green (Setyoningrum et al., 2019). This indigofera material is then processed into some sort of paste by mixing additional ingredients, such as rice or flour, so that it can be easily used. The paste for blue color produced from indigofera can be seen in the figure below.

Figure 5 Indigofera Plant (left) processed into paste (right) and is ready to be used as batik dye

Indigofera plants are widely grown in the wild and are usually fed to livestock. In other words, it has the potential to be used as an environmentally friendly textile dye that is biodegradable and able to be decomposed. The weakness of indigofera as a textile dye is it has weak binding power, less washability, prone to fade and its fabric unables to withstand lights for too long; thus, it requires reinforcing agents such as alum, arbor, lime and brown sugar (Nanoparticles et al., 2022).

The last color is soga brown, often referred to as sogan, which is processed in Surakarta. The dye is extracted from the soga tree, which is Latin for Alnus Glutinosa, which produces yellow-brown, red-brown, and dark brown colors. The soga tree lives in the tropics not just in Indonesia but also in other countries across the southern, central, southeast Asian continent, all the way to Papua New Guinea. It usually grows in forests around the coast, around mangrove forests, or grows wild in teak forests. There are three types of soga bark that are used as batik coloring materials, namely soga teger, soga tingi, and soga jambal. Soga teger produces a yellow-brown color, tingi produces a

dark red towards brown, and jambal produces a red color.

Soga teger

Soga tingi

Soga jambal

Figure 6 Soga tree (left) and types of soga barks (right)

To keep the color from the soga bark the same as the original, a locking agent in the form of jirek is required. For the finished color to be darker than the original color, a locking agent in the form of slaked lime is needed. Meanwhile, in order to obtain an even darker color, a locking agent of arbor is used. Jirek in the Latin language is called Symplocos and is derived from the endemic jirek or loba plant that grows in Flores and Sumba.

Figure 7 Color enhancing Loba plant: Symplocos, is extracted from its dried leaves

Natural colors are nothing new as they have been used to color textile crafts throughout the Indonesian archipelago since time immemorial. The presence of synthetic dyes from outside the archipelago causes natural colors to no longer be used because they are considered an easier and faster manufacturing process.

The destruction of the natural environment of the Indonesian archipelago due to synthetic color

waste encouraged activists to return to nature by joining the Indonesian Natural Dyes Association or Warlami [Web Warlami]. Restoring natural dyes as handicraft dyes including batik as it used to be is not an easy matter considering that for a long time crafters have been using synthetic dyes which are much more practical and produce brighter colors. The use of natural dyes requires time and patience, just as the ancestors had done in the past. The Warlami Association has tried to approach crafters to participate and revert back to using natural dyes, especially from the plants around them. Together with the crafters, Warlami began to explore the tradition of coloring with natural materials, an activity that is part of the local wisdom of every region in the archipelago.

METHODOLOGY

This research uses a qualitative method with a qualitative descriptive approach (Yusanto, 2019) to obtain accurate data about the phenomena that occur in the field, especially at the place of craftsmen who live in the Kediri, Jombang, and Lasem regions. This place was chosen, in addition to the crafters making Tiga Negeri batik, they also began reusing natural dyes, either wholly or partially. Data obtained from interviews with crafters were recorded in the form of writing and documentation, and further explored through related reading materials. At the pre-field stage, in addition to developing a research plan, researchers also contacted the head of Warlami Myra Widiono to learn what activities had been carried out in order to restore the use of natural dyes. Through the Whatsapp Group, Warlami administrators and members were assembled so that we could communicate more intensively before carrying out research in the field. The outcome was to determine the place we would visit to observe and at the same time talk directly with Batik Tiga Negeri crafters and entrepreneurs.

Of the several batik businesses on the island of Java that have started using natural dyes, the place chosen to visit is the business that produces Tiga Negeri batik. The business has started using natural dyes, either as a whole or still combining them with artificial dyes. Through the medium of WhatsApp, researchers were able to find what the crafters have done in regards to the use of natural dyes. The advantages and disadvantages, conveniences and difficulties faced when using natural dyes, especially when compared to the use of artificial dyes that have been used by crafters for a long time. In general, what was observed was batik that uses natural dyes, but in particular, Tiga Negeri batik, which has three colors that used to be made in three cities but nowadays can be made in just one location. Observations were conducted along with the process of digging further information openly, particularly directed at the reuse of natural dyes to prevent the environment from being damaged by artificial dye waste.

Observations and interviews were conducted at Batik Aulya in Tambibendo village, Kediri, owned by Wiwin Munawaroh, a crafter and member of Warlami who has begun to actively use natural dyes; and batik Retno Aji Mojoagung Jombang, owned by Wahyudi, a crafter and administrator of Warlami. In addition, Batik Lumintu and Batik Kidang Mas Lasem are among the oldest batik makers. Currently, both businesses are managed by the sixth generation of the founder's descendants. They are still actively producing Tiga Negeri batik. The difference between Batik Aulya Kediri and Retno Aji Jombang with Batik Lumintu and Batik Kidang Mas Lasem is in the coloring application. Batik Aulya and Retno Aji use a lot of natural dyes that they take from plants that they grow themselves around their house. They continue to produce while testing natural dyes. Batik Lumintu and Batik Kidang Mas, although they also tried using natural dyes, are still using synthetic dyes to obtain sharp colors to meet the tastes of their customers. They also added that the coloring process with natural dyes takes too long while the market demands faster production.

RESULT AND DISCUSSION

Inherited Culture

Since the dawn of human civilization, natural dyes have been used and one of the pieces of evidence is the colored clothing found at the Mahenjo Daro site in the Indus river valley of Pakistan 3500 BC (Rahayuningsih, 2022). Similarly, in other areas, such as the Ancient Egyptians 5000 years ago they have produced natural dyes from plants which were later also used in Greece, Rome, Persia, and India. Natural dyes for silks in China have been made since 2600 BC (Rahayuningsih, 2022).

Indonesia's ancestors have also utilized plants for textile dyes. It can be said that natural dyes have become part of local wisdom. The current use of natural dyes is one of the valuable heritages that must be preserved, considering that our

archipelago is blessed with many types of plants that can be used as coloring materials. They are easy to obtain because local endemic plants grow around where the people live.

The skills of the ancestors in producing natural dyes for textiles from plants have actually been passed down to this day. In the past they have also taken steps on how to produce dyes, such as the extraction process using solvents such as water, organic solvents, oils, acids; the fermentation process for plants that require this process, one of which is indigofera; the binding or mordant process using alum, tannin from plant extracts, and acids (Nanoparticles et al., 2022).

Natural Dyes as Part of Local Wisdom

The making of natural dyes is closely related to traditional knowledge that has been passed down from one generation to another. Naturally, the people who make natural dyes have an excellent knowledge of plants, minerals, or other resources that can be used for coloring materials. This includes the knowledge of how to prepare the raw materials, process them into dyes, processing them into dyes, as well as properly implementing the dyeing technique according to the established method (Rajagukguk et al., 2020).

By utilizing natural dyes, it demonstrates the communities that are behind the making and using of natural dyes have a strong relationship with the surrounding nature. They have a deep understanding of the environment they live in, including understanding the importance of maintaining ecological balance, preserving the sustainability of natural resources, and minimizing the negative impacts on the environment that occur due to the use of synthetic dyes.

Natural colors in traditional crafts are an integral part of the cultural identity of the community. Natural dyes characterize craft products that reflect the cultural heritage and traditional wealth of the community. By using natural dyes, the community helps maintain its cultural identity and creativity that is passed down from one generation to another. This also applies to other cultural aspects, such as customs, traditional clothing, and so forth [Hamidin, 2010].

Tiga Negeri Batik

Judging from the production location, Tiga Negeri batik falls into the coastal batik category. Apart from being made for commercial purposes, it is also a batik with a pattern that derives its ideas from several ethnic and cultural groups who reside in the northern coastal areas of Java (Saddhono, 2016). In principle, Tiga Negeri batik was made to incorporate new patterns geared towards fulfilling the batik demand in Lasem. The style is influenced by foreign cultures such as China and the Netherlands. This can be seen in the main motifs used, including phoenix flowers, hong birds, and several animal forms that are a myth originating from China such as turtles, butterflies, dragons. All of which carries meaning and hope for a long and prosperous life (Wedasuwari, 2020). The shape of these main motifs has not changed to this day. Some variations are made with the aim of giving consumers wider choices. In principle, however, the mythical form with good wishes continues to adorn Tiga Negeri batik.

In the late 19th century, Tiga Negeri batik began to be made by Chinese descent batik makers in Lasem. The pattern depicts diversity that merges into one type of Nusantara wastra that continues to be produced and even developed to this day. Since 1361 AD, Lasem has been part of the Majapahit Kingdom. A long history brought Lasem to be part of the Pajang Kingdom. This red thread causes one of the colors of Lasem batik to use sogan as typical color of inland batik (Lukman et al., 2022). The combination of coastal and inland batik has given Tiga Negeri Batik its own uniqueness. In addition, since its inception, Tiga Negeri batik has been colored with natural dyes. Therefore, the name Tiga Negeri actually means three cities, in which are Lasem, Pekalongan, and Surakarta where this batik is colored. However, the introduction of synthetic dyes into Indonesia around the beginning of the 20th century, causes Tiga Negeri batik to no longer be colored with natural dyes. Synthetic colors have inded made Tiga Negeri batik become more vibrant in color, however, it has also caused damage to nature due to the waste of synthetic dyes.

The main objective of this research is to explore the possibility of restoring Tiga Negeri batik to using environmentally friendly natural dyes. There have been many efforts to achieve this goal by the crafters, both those living in coastal as well as inland areas. The presence of Warlami in providing assistance is very helpful for crafters to be able to further enhance their knowledge about natural dyes and all their problems.

Switching from artificial dyes to natural dyes is not easy in terms of the end result. Artificial dyes are able to provide a variety of color alternatives and gradations, while natural dyes have very limited color alternatives. Time needed to produce batik with artificial dyes is also relatively faster, especially when the craftsmen are busy with handling many orders at the same time. This makes crafters reluctant to return to using artificial dyes mainly because the processing time takes longer and the results are less vibrant.

Wiwin Munawaroh, a crafter living in Kediri, started using natural dyes by utilizing plants around her house especially after she became a member of Warlami. Through her participation in workshops, Wiwin continues to try to produce her batik using natural dyes. The results can be seen in the figure below.

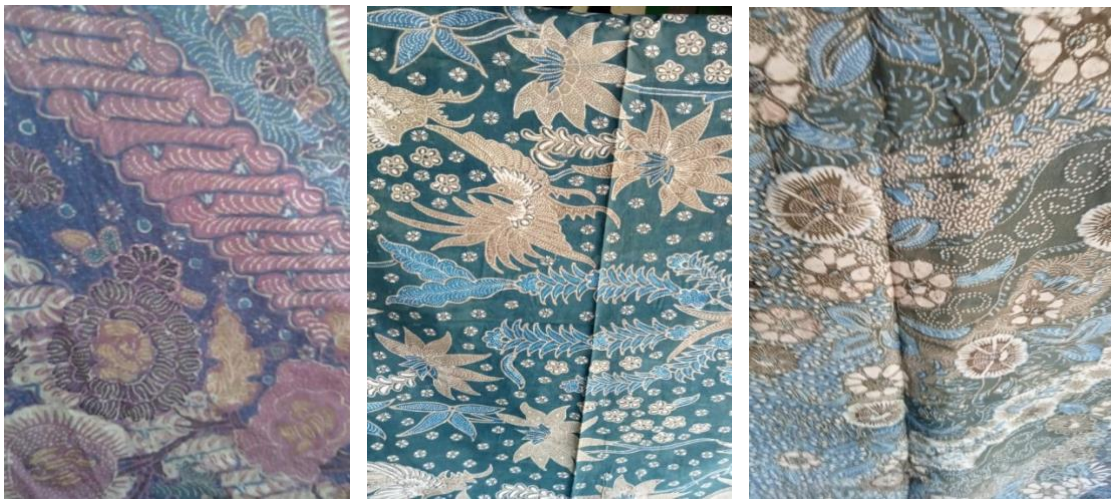

Figure 8 Product of Batik Tiga Negeri by Wiwin Kediri with natural dyes

The color obtained was indeed not as sharp as the result of dyeing with artificial dyes. The red from mengkudu root, jalawe, and secang, in particular, the one that has undergone tembokan and pelorodan, will not turn into bright red but rather purplish indigo. As for the blue color, it was taken from indigofera and was reinforced with lime, alum, arbor, and palm sugar.

Yudiaji is a craftsman from Jombang who is an active member of Warlami as the research and development officer, as well as a Warlami natural dye instructor. His batik production, including the Tiga Negeri batik, uses natural dyes as can be seen in Figure 2 above. His business consistently uses natural dyes. The production of his natural dye batik can be seen in the following figure:

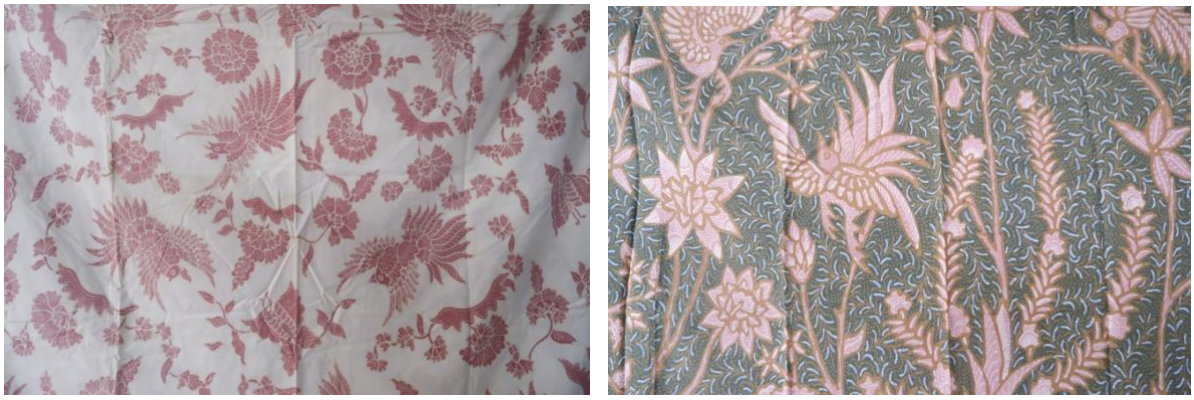

Figure 9 Blangko batik (left) and 4-colored batik by Yudiaji Jombang (right)

Yudiaji's Lasem-style Blangko uses dyes made from noni root and jirek. The resulting red color is quite sharp for natural dyes as it does not have to go through the process of tembokan and lorod many times. Unlike the 4-color batik on the right, its red becomes pink due to having to go through the tembokan process several times. Visually, the colors produced by natural dyes are not as vivid as the results of artificial dyes (Setyoningrum et

al., 2019), yet they have their own uniqueness and market share, including foreign consumers.

Unlike Batik Tiga Negeri Lasem produced by Batik Lumintu, which uses natural dyes mixed with artificial dyes as shown below:

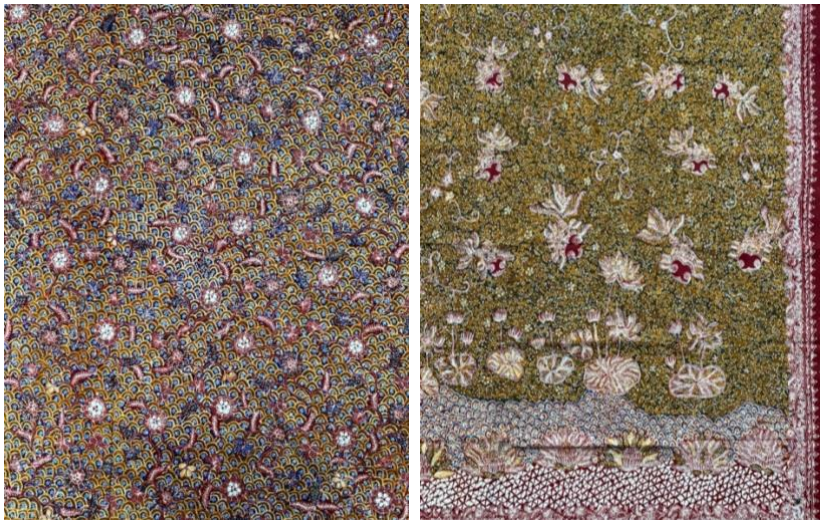

Figure 10 Tiga Negeri Batik by Batik Kidang Mas Lasem (left) and Batik Lumintu Lasem (right)

Both Batik Lumintu and batik Kidang Mas in Lasem use a combination of natural dyes and artificial dyes to keep the color from being too pale, as batik consumers in Lasem and several other big cities still prefer vibrant and sharp colors based on artificial dyes. Due to the quicker process which is necessary to fulfill the market demand, many businesses have yet to fully embrace the use of natural dyes. The process of fully reverting to natural dyes still takes some time especially since the market share of artificial dye batik has not yet accepted the natural dye batik.

Continuous trials are carried out by batik craftsmen on various plants that can be used as natural dyes and their reinforcing materials. The natural potential in Indonesia in general, Jombang and Kediri as cities located in inland areas, and Lasem located in coastal areas in particular is remarkably extraordinary. Many plants that can be used as natural dyes thrive there. Some of them are deliberately cultivated, and some of them simply grow naturally. The craftsmen's steps in finding the best dyes are also by learning on what is available in other regions. Each local wisdom across the archipelago uses natural materials to provide its own input for crafters [Widyasti, 2017].

In the long past, the closeness between humans with nature was very strong. Our ancestors used what was available in nature for many uses, ranging from medicine, food ingredients, to the need to dye fabrics. Unfortunately, the chain has been broken between the ancestors and the next generation. As a result, the knowledge that is part of local wisdom is lost to history. Through various research and trials, this lost link is expected to become the solution. The results of published research through various writings as well as socialization in the form of seminars and workshops may assist in recognizing the types of plants, either as the main ingredient for the dye, or its reinforcement materials.

Natural dyes for batik do have their own weaknesses. One of them lies in its inconsistent and non-standard color result (Kasim et al., 2017). Craftsmen are unable to produce batik products with the exact same color. As mentioned above, the color becomes kind of faded as a result of the repeated tembokan and pelorodan process (Rajagukguk et al., 2020). This usually happens to the red color. Although a similar process is also being carried out for both blue and brown color, it is the red one that tends to have issues. All crafters experience this, as a result, their red doesn't exactly look like red but rather pink, indigo, or even reddish-purple. Therefore, an attempt is made to add additional color from artificial dyes to keep the vibrant red color (Leki et al., 2023).

In other places such as Sumba, natural dyes for red produce a vibrant red color, because they do not have to go through a process that uses hot water as in batik.

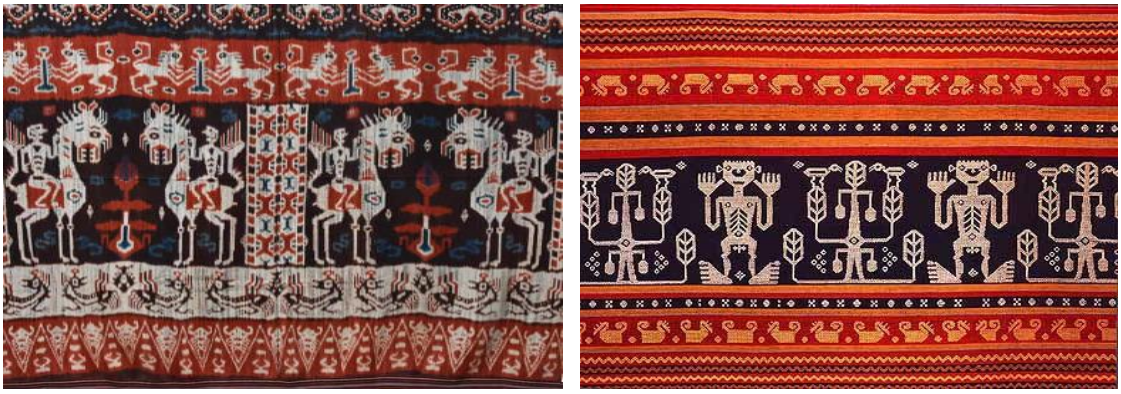

Figure 11 Sumba fabric, part of the tradition of Sumba made using natural dyes

The red dyeing is done on the yarn before the weaving process begins. Without having to be washed with hot water, the red color on the Sumba traditional fabric will still appear as red. In batik, the red color that has been dipped must then go through the pelorodan process. Batik with more than one color must also go through the process of tembokan. Thus the intensity of the red color decreases, resulting in a lighter red color or a purplish indigo red. This then becomes a problem for batik crafters who need to produce a vibrant red color. As opposed to blue from indigo and brown from soga.

A solution is needed so that natural dyes can re-exist just like in our ancestors' time. In the past, batik making was only made for self-use, while today batik has become a trade commodity that requires a shorter production time while at the same time being able to produce a large quantity of batik to meet market demand (Yuliati, 2010). Experimental efforts to obtain a natural dye formula that could accelerate the manufacturing process continue to be carried out, both by Warlami and the craftsmen. This is an effort to protect the archipelago's nature which has been too polluted by hazardous waste caused by synthetic dyes.

CONCLUSION

Natural dyes offer a safe and environmentally friendly environment for humans, as the production process uses natural materials that can help reduce dependence on artificial or chemical dyes. Natural dyes are biodegradable, thus reducing the negative impact on water. In contrast, artificial dyes are prone to be difficult to decompose naturally and its waste causes pollution not only to water but also soil and air and can potentially damage ecosystems and living organisms.

This research aims to revive the use of batik dyes using natural materials. Many parties, especially batik businesses and crafters, have carried out various activities related to the use of natural dyes. They are demanded to continuously conduct trials in order to obtain natural dye formulas that are not only environmentally friendly, but also easy to manufacture. So far, batik crafters have been made comfortable with the existence of artificial dyes. In order to return to nature, patience is needed to eventually find dyes that are easy to use.

Through Tiga Negeri batik which consists of three main colors, namely red, blue, and soga brown, trials using natural dyes have been and are continuously being carried out in order to obtain unique colors typical of natural dyes. Indigofera blue color and soga brown color have been widely used because of the satisfying results. Unfortunately, the red color from mengkudu root is still constrained by its weak color strength, especially when it has to undergo the batik process, namely nembok and lorod.

Efforts to find a natural dye formula must be carried out continuously until it can reach the expected standard. Assistance from related parties is needed so that efforts to restore the environment to a healthier state can be achieved as hoped. The destruction of the soil ecosystem and the decrease in oxygen content in water due to waste streams containing chemicals derived from artificial dyes have impacted human health. Therefore, the effort to return to nature should not only stop at mere reminders to be aware of the environment but should be consistently practiced so that the local wisdom of the past can be maintained.

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