



# Marigold Herbarium Visuals As Scarf Motifs Created Using Screen Printing Technique



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### ABSTRACT

*Making a herbarium is one of the science supports used to introduce the flora diversity. This herbarium is not only used in the field of taxonomy, but several artists have used the herbarium as a work of art. Various types of plant herbarium are used as basic concepts in creating works of art, one of which is the diversity of essential plants. This paper discusses an art creation inspired by a herbarium of one of the essential plants cultivated in Indonesia, i.e. one of the marigold specieses, namely *Tagetes erecta* L.. The visualization of the herbarium of the Marigold *Tagetes erecta* L. plant was done on scarfs using screen-printing technique. The aims of this research were to provide a new visual alternative for scarf motifs and to introduce marigold *Tagetes erecta* L. as a plant with essential oil.*

*Kata Kunci:*  
Herbarium, Marigold,  
scarf, cetak saring

### ABSTRAK

Pembuatan herbarium merupakan salah satu langkah yang digunakan untuk menunjang ilmu pengetahuan dalam pengenalan keanekaragaman flora. Herbarium ini tidak hanya digunakan pada bidang taksonomi saja, tetapi beberapa seniman sudah menggunakan herbarium sebagai karya seni. Berbagai macam jenis herbarium tumbuhan digunakan sebagai konsep penciptaan karya seni salah satunya keragaman tumbuhan atsiri. Penciptaan ini mengangkat salah satu jenis tumbuhan atsiri yang dibudidayakan di Indonesia yaitu tumbuhan Marigold jenis *Tagetes erecta* L. Pengolahan visual dari herbarium tumbuhan Marigold *Tagetes erecta* L. ini direalisasikan dalam produk scarf dengan teknik cetak saring. Gagasan dari penelitian ini mencoba memberikan penawaran visual baru pada produk scarf dan sebagai media pengenalan tumbuhan Marigold *Tagetes erecta* L.

## INTRODUCTION

Indonesia is gifted with abundant biodiversity. For the sake of knowledge and technology advancement, this biodiversity is classified based on characteristics. One of the grouping methods is making herbaria. A herbarium is a medium used to collect data about various plants. It is a collection of plant specimens that are already preserved using particular techniques, completed with identity labels, and are commonly used for scientific purposes (Risky & M., 2019). These dried plants can be kept for a long time.

There are a number of ways in collecting herbaria depending on their sizes. Small plants like grasses, herbs, and shrubs are collected in their complete parts (root, stem, leaf, flower, and seed). While big plants such as trees, lianas, and big bushes are collected partially yet representatively. The common size is more or less 30 centimeters.

Nowadays, herbaria benefit not only the scientific world but also visual arts. Herbaria visuals can be a rich source for art inspirations. Many artworks are ideated from it. It is not something odd that a scientific finding becomes an inspiration for artists due to the correlation between science and art. Arts contain scientific nature too so that it can be explained scientifically. Science and art are similar in the way that they share certain methods such as observation, research, and experimentation (Putri & Raharjo, 2017: 26).

The themes used can also be various. One of them is plant that produces essential oil. This class of plants has been known to have many advantages since the Dutch colonization era in Indonesia. The benefits from these plants have attracted attention of people coming from both inside and outside the country to look for and study them. This great interest is proven by the fact that there are 40 out of 80 kinds of this class of plants found in Indonesia and traded in the world market. (Tirta & Wibawa, 2016:12)

One of those essential oil plants is marigold. The essential oil content can be found in the flowers and leaves. The leaf extract can be used to speed up wound recovery process and is a good antioxidant. Extract of the leaf and flower is also a good anti germ agent. (Edy & Parwanto, 2019:79).

In this research, marigold *Tagetes erecta L* was taken as the creative idea source. This plant has unique appearance so that it is interesting to be visualized as a textile motif. The chosen type of marigold has more petals. When the petals are completely grown, the flower will be round-shaped like a pompom. This pompom shape differentiates this type from the others. The visual exploration of marigold resulted in the decision to visualize the flower herbarium's bold character. This visual concept was aimed to offer a new alternative of textile motif.

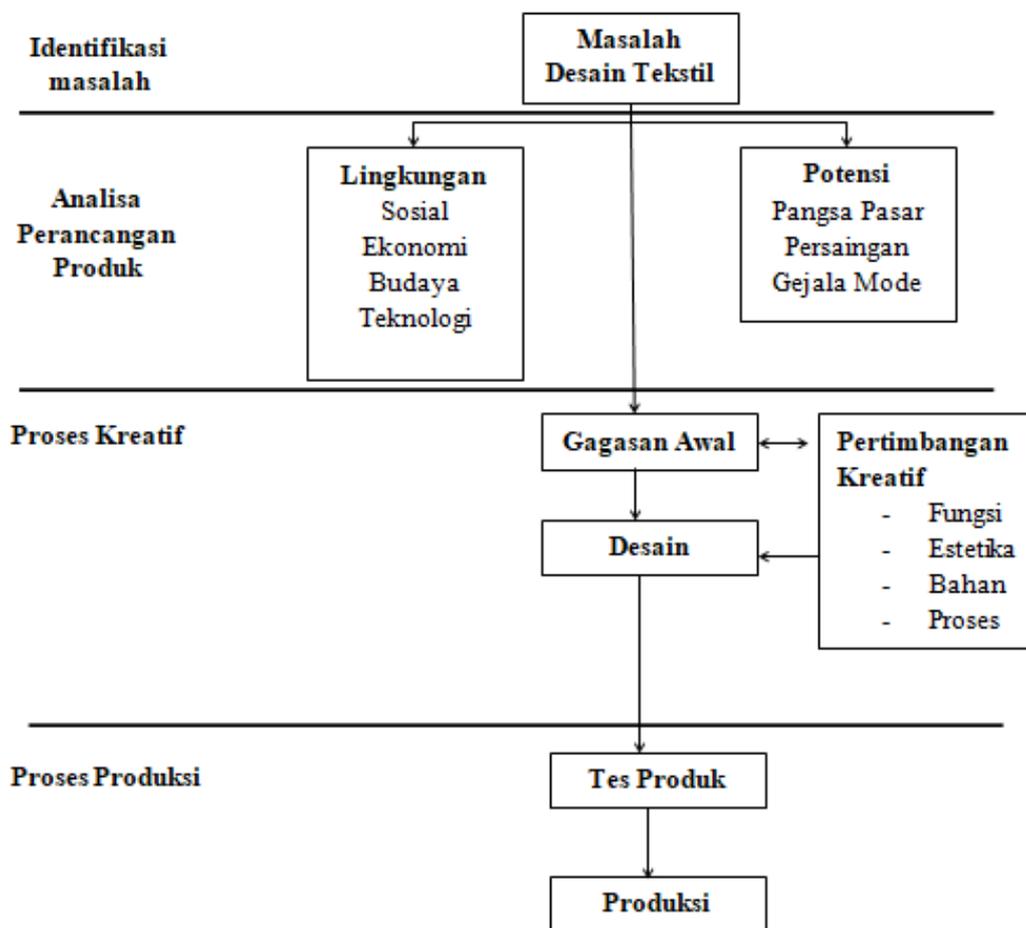
However, the exploration was not only carried out to create new motifs, but also to study how screen-printing technique would be used in the visualization process. This technique was popular in 20th century, especially in advertising field. On its progress, artists got more and more interested in screen printing and applied it when created arts with numerous media, majorly textile. To create decorative motif, this technique was applied by printing the patterns on fabrics using various dye combinations and coloring technique manipulations.

The basic notion of this textile motif creation was to propose the visuals of marigold herbaria to be used as an inspiration in creating scarf motif as an outfit by focusing on innovation and uniqueness or differentiation considering that motifs and colors are the main aspects and point of interests on a textile work (Rizali, 2013: 34). The ideas were not only to highlight the aesthetical

elements but also to use the designed motif as a media to introduce marigold as one of the plants producing essential oil in Indonesia.

**METHODS**

This creation practice employed textile design methods proposed by Prof. Dr. Nanang Rizali. He (2012) defined the method as a process and stages in designing textile to fulfill the pre-identified needs. The stages covered all orders and disciplines in designing by means of personal approach toward (art, craft, design) textile problems. Being personal would be the property differentiating one work from another meaning that it would characterize the created work. The process consisted of three phases namely formulating the creative concept, conducting the creative process, and producing the artwork.



Picture 1. Diagram of Textile Creation Process  
Source: Nanang Rizali, *Tinjauan Desain Tekstil*

The used method was supported by Clipson definition saying that designing was translating the needs, goals, and ideas by considering the spesification of technology, society, environment, and product use. An important stage in textile creation process is studying the function, aesthetics, materials, and process.

**a. Problem Formulation**

There were two problems formulated: 1)how marigold visual can be processed to become textile motifs; and 2) how to print the motifs on cloths using screen printing technique.

### b. Data and Product Designing Analysis

The data was collected from the prior researches, in forms of facts and arguments, concluding that marigold was one of plants with essential oil that had interesting appearances. Before starting the creation process, an in-depth observation was needed to be carried out. Marianto (2019: 79) in his Quantum Theory stated that observation on objects would trigger visual potentials. A visual potential can be observed directly and can be identified through certain properties.



Picture 2. Moodboard  
Source: Andina Febrasari

The characteristics of marigold could be described morphologically. *Tegetes erecta* L had more petals and would be in pompom form when it completely bloomed. In this creation, the focus was the marigold's morphological forms that were applied on its herbarium visuals.

The application of marigold herbarium visualization was executed in a way that the morphological shapes of the flower were maintained in order to attain another objective, i.e. to educate people about marigold morphology. The character of herbarium visual tended to be rigid however still exhibited its details. The presented visuals were parts of marigold in three most favorite color variations: yellow, orange, and deep gold.

The observation was conducted not only to get the marigold visuals but also to learn the experimental conditions during the visualization process. In Quantum Theory, it was explained that the objects under observation were integral parts of a research. Experiments became the differentiation factor of one artist from the others because each of them underwent unique empirical experience and experimental condition. Some scarfs with herbarium motifs created by artists and designers were selected to be used as comparative objects.



The collected data from the observation then were analyzed to strengthen the idea. The created marigold herbarium motifs were applied on scarf in various sizes and layouts. The scarfs were made of silk and were added motifs by means of screen-printing technique. Silk was the chosen material since it was considered as the most appropriate material for scarf due to its 'easy to be folded' characteristic. Screen-printing was chosen in order to maintain the rigid and bold features of a marigold herbarium. In terms of color, the selected shade was marigold's yellow shade i.e. yellow and orange.

## RESULT AND DISCUSSION

### Herbarium

A herbarium is a preserved plant or its parts and a place to keep a collection of preserved research objects. The collection should include complete vegetative and generative organs as well as its biological properties. The making of herbarium specimens aims to support researches on morphology (colors, smells, shapes, and plants' parts) and taxonomy (plants' types) (Syamswisna, 2011:2).

The method used in making herbarium depends on the plants' habit and sizes. Small plants are collected completely (roots, stems, leaves, flowers, fruits, and seeds). Big plants such as trees, lianas, and big bushes can be collected partially- more or less 30 cm long- that can represent the whole plant.



Picture 3. Herbarium of essential oil plants in *Museum Rumah Atsiri Indonesia*  
Source: [www.instagram.com](http://www.instagram.com)

### Marigold as An Essential Oil Plant

Essential oil serves many benefits. This thick liquid can be got from the extract of leaves, flowers, fruits, seeds, stems, roots, or rhizomes and be stored in room temperature. According to Rusli, the most overt characteristic of essential oils is that they easily evaporate and produce typical

fragrance so that they were used as raw materials of perfumes and cosmetics (in Setyoko, 2011:1). Marigold is one of the plants producing essential oils. The oil comes from its flowers and leaves. The leaves extract can close wound faster and is a good anti-oxidant. Other than that, the leave and flower extracts are good anti bacterial agents (Edy & Parwanto, 2019:79).

The gold color of marigold is considered resembled the color of Aryan people, the noble men. Marigolds are arranged in a wreath and presented to Gods and respected guests. In eastern part of India, marigolds are dried and pulverized to produce yellow dye that is used to decorate houses in countryside areas. (Kaur & Kaur, 2013: 480).

*Rumah Atsiri Indonesia* has planted *Tagetes erecta* L. Marigold. This kind of marigold is very common in Indonesia known as herbs with very strong smell. It has different names according to the area: in Central Java it is called *tahi ayam* and in West Java *tahi kotok* (both means chicken dirt), *gumitir* or *mitir* in Bali, and many more (Marini et al., 2018: 54). Balinese people's need for marigold is quite big because it is a must to use this flower to make *canang sari* (an offering used in traditional procession and worship). In addition to it, people tend to have various color preferences. There are some favorite colors such as orange, yellow, and golden bloom (Yunike, 2020: 44).

Marigold has a compact flower meaning that it has many petals, has a pompom like shape, with approximately 1-2 centimeters long diameter. It is quite heavy for a flower. The leaves are rare, 5-10 centimeters long, pointed end, and jagged. It grows fast to reach thirty centimeters until one meter (Brickell, 2011: 706-707)

The exploration of marigold herbarium visuals was then realized as textile motifs. This visual concept was chosen in order to create new visuals to be used as textile motifs and to educate people about the flower. The created visuals were based on the bold characteristics of herbarium.

### **Screen Printed Motifs**

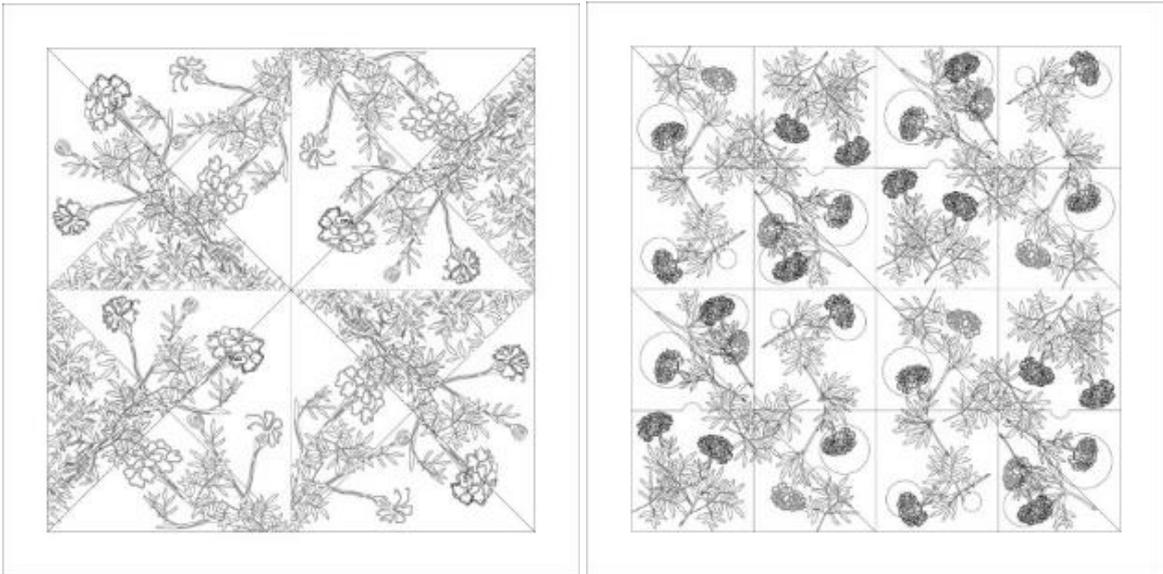
On textile design, motifs and colors are two main elements in attracting the users' interests. Printed motifs on textile are limitless. Their basic idea or theme may come from the naturalistic-styled floral shape, panoramic motifs, and geometrical shapes. Floral motifs often change due to the different visualization techniques applied.

Printed textile is an effort to create alternatives on decorative motifs through printing process using framed gauze. This technique may be carried out by hand or machine. One of the printing techniques is flat screen printing (Rizali, 2013: 38-39). The use of silkscreen technique has become more and more popular since it was found. Anthony Velonis in 1935 conducted a project using silkscreen for the first time. His project attracted significant attention from many artists because silkscreen had been considered more commercial rather than artistic (Tunnikmah, 2017: 46).

In creating the scarf motif, the technique used in printed batik was borrowed. In arranging the motifs, this technique applied a principle called *lampah* (a Javanese word means the 'route'). The printing route in printed batik was called *mubeng* (Javanese means move in a circling direction). The circling route technique was applied by maintaining one corner of the cast at one point. (S.K Sewan Susanto: 1980)

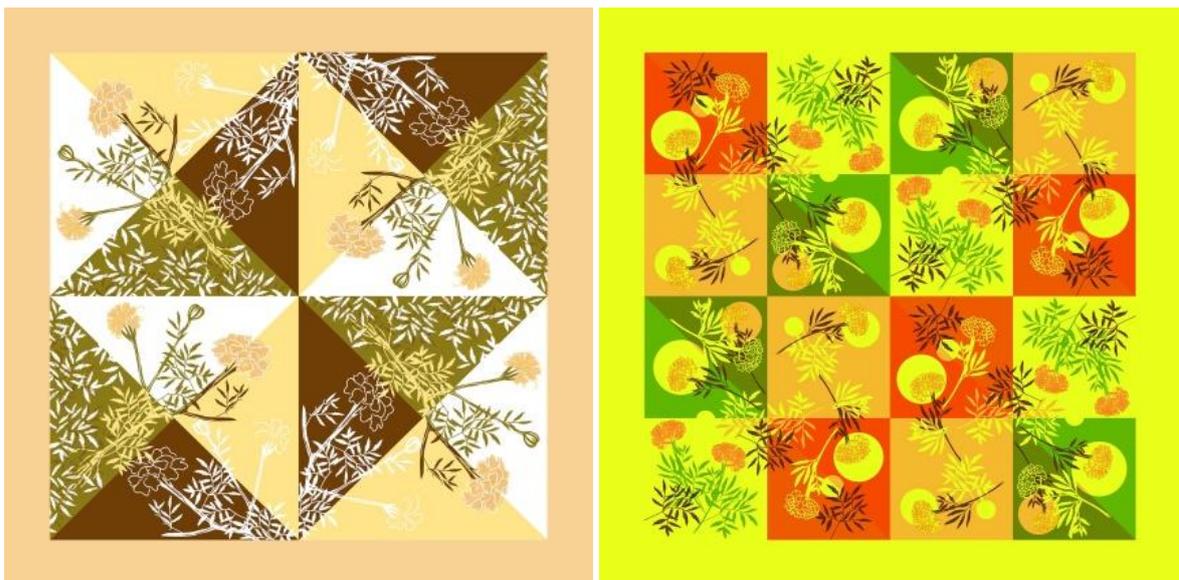


### Sketching



Picture 4. The sketches of marigold visuals  
Source: Andina Febrasari

Sketching initiated the creative process based on the previously collected visual data. The sketches were made based on the idea to transfer herbarium visuals into textile motifs. The stiff and bold characters of herbarium were accommodated in the created motifs. The motifs were arranged following the printed batik principle in order to have effective and efficient process. The benefit was not only in terms of production process but also in terms of the aesthetic values. Using this technique resulted in various compositions or arrangements. The sketches then were processed digitally to get the whole designs presenting the colors and effects that would be appeared on the fabric surface.



Picture 5. Digital Design  
Source: Andina Febrasari

## Dyeing Experiments

In the experiments, the dye was manually applied so that the cloth had to be measured first to fit the size. The experiments showed that the color was better fixed through steaming technique than using waterglass because the later produced overlapping motifs. After the washing stage, a lighter color on the cloth appeared.



Picture 6. Experiment Results of dyeing on silk

Source: Andina Febrasari

## Visualization Process

### 1. Color Splitting Process

At this stage, photoshop application was employed to color the sketches. The colors were separated from each other in channels and were printed in black.



Picture 7. Tracing Process

Source: Andina Febrasari





Picture 8. Prints of Splitted Colors  
Source: Andina Febrasari

## 2. Printing Process

After the motif patterns were printed, the next step was screen-printing. Materials and tool needed were printing emulsion, screen, and motif patterns printed on HVS papers. A mixture of emulsion and sensitizer was poured on to and scraped evenly on the screen area. After dried using a hairdryer, the motif pattern papers were put on it in a mirroring way. Next vegetable oil was smeared evenly on the pattern paper and dried in the sun for 20-30 minutes.

The following step was spraying it with high-pressure water right on the pattern area. This treatment was done in order to remove the emulsion remnant so that it did not stay and clog the screen.



Picture 9. Printing Process  
Source: Andina Febrasari

### 3. Making the Paste

The paste making was initiated by mixing thickener agent (sodium alginate), color brightener agent (dicyandiamide), baking soda, and water. After the paste was formed, brewed dye substance was added as much as it was needed.



*Picture 10. Paste Making*  
Source: Andina Febrasari

### 4. Dyeing

The silk was unfolded and glued on a table. The screens were arranged starting from the lightest to the darkest. After the first screen was set, the dye paste was spread on the printing area using a squeegee. This step was repeated until the wanted color shade occurred. The next screen was colored using the same steps after the first screen was dried using a hairdryer. This process was redone based on the number of the colors wanted.





Picture 11. Coloring Process  
Source: Andina Febrasari

## 5. Fixing

The dyed cloth was steamed in a steaming pot for 12 minutes. In the previous experiment, it had been proven that fixing using waterglass did not work effectively when it was applied to a pile of colors. Steaming technique was much more effective.

## 6. Visualization



Picture 12. Scarf "Senyawa Marigold"  
Source: Andina Febrasari

The first scarf motif was given title '*Senyawa Marigold*' (Marigold Compound). This title was chosen because the compound contained by marigold was beneficial for human's health. As can be seen in Picture 12, the motif depicts the flower, stem, and leaf combined with geometrical shapes to present a well-arranged composition. The motif repetition borrowed a technique applied in printed batik called '*mubeng*' (circling technique). To visualize the motif, screenprint technique was applied and paste dye was used. The colors were light orange, dark orange, green, peach, and brown so that five screens were needed. Compared to the digital design previously made, the created motif exhibited some differences in colors and composition.

The resulted colors were brighter. In this technique, the output colors could not be predicted. An additional dark orange appeared. This color matched the color concept. The edges of the scarf were changed from whole white into white and dark orange. It was done because there was a quite wide white space around the marigold motifs. To suggest a narrower sense, a color variation was put on this edge area.



Picture 13. Scarf "*Aroma Marigold*"  
Source: Andina Febrasari

The second one was entitled "*Aroma Marigold*" (Marigold's Scent). The unique smell of marigold flower inspired this title. Similar to the first design, this motif depicted the flower, leaf, and stem that were visually presented in a nice composition involving geometrical shapes. The motif was repeated using other printed batik technique called '*tubruk*'. In this technique, the batik



motif is made by make one at the right side of the first one and make another in front of it and so on. The motif was imprinted on the silk cloth by using screen-printing technique combined with dyeing technique using color paste

Four screens were used to print light orange, dark orange, green, and brown. Dyeing was done once to get yellow. As with the first scarf, some differences were also occurred if compared to the digital design version. Some colors were brighter than the digital design version. Some other color did not appear as expected so that the process should be repeated several times and the cloth was also steamed until the wished colors occurred. There was an error in the steaming process that affected the end result. The cloth that should have been rolled together with another cloth was rolled with a paper so that the motifs appeared in different color intensities colors because some of the color was absorbed by the paper.

## CONCLUSION

There were two research aims formulated. The first one was to explain how the visuals of marigold herbarium were adapted to become textile motifs. The adaptation was conducted by adding some geometrical shapes inspired by one of the batik patterns called *tambal* and arranging the motifs using two printed batik techniques: *mubeng* and *tubruk*. The other modification was to simplify the marigold structure in order to highlight the bold feature of herbarium. The used colors were mostly the real marigold flower color variants such as yellow, gold, and orange. The size of the created scarfs was 90 x 90 cm

The second aim was to find the best visualization process. The research validated that the effective technique could be employed was screen-printing because this technique was considered to be the best to facilitate the visualization of the herbarium character. Color paste was used in the dyeing process to get the desired colors and motif composition by repeating the dye application process.

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