

# Cassava Resist Dyeing: Traditional Dyeing Techniques in a New Environment




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## Adire Eleko

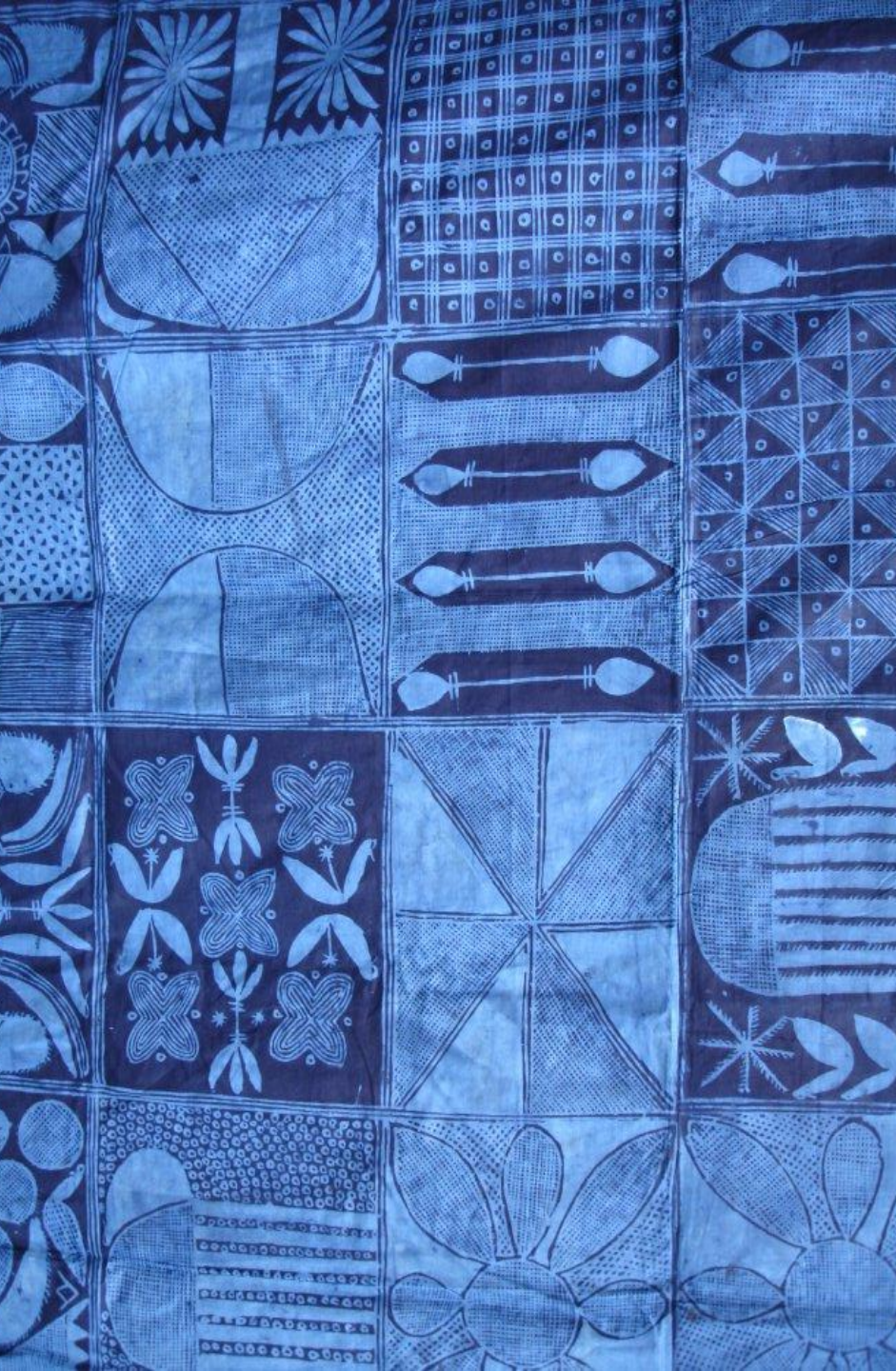
In several cultures around the world, paste resist has been traditionally used in the dyeing of textiles. In Nigeria, adire eleko is a method which uses cassava as the base for the paste.



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- *The name, Adire eleko, refers to a cloth produced by Yoruba textile artists using a resist-dye technique. The dye that is most commonly used is indigo--a deep-blue vat dye derived from the indigo plant (*Indigofera*). Designs are produced by painting or stenciling a starch made from cassava flour on the surface of the cloth before dying. The starch is made of the flour mixed with water that is boiled and then strained; a small piece of copper sulfate is added while the mixture is boiling to make the solution last longer. \**

# History

- From the 1920s and 30s adire was a main local craft in cities like of Abeokuta and Ibadan; the dye pits of Kano are well known. The old technique of starch resist designs reached its peak in popularity up to the early 1970s, it is still practiced with a few adaptations.



# Adaptations |

- In latter years the starch was applied through lace fabrics and dyed in synthetic dyes.



# Traditional Processes |

The starch is very carefully applied to the cloth and allowed to dry. When immersed in the dye the starch resists/repels the penetration of the pigment into the fabric. After the dye has been set and the process is completed, the starch is washed out of the cloth.



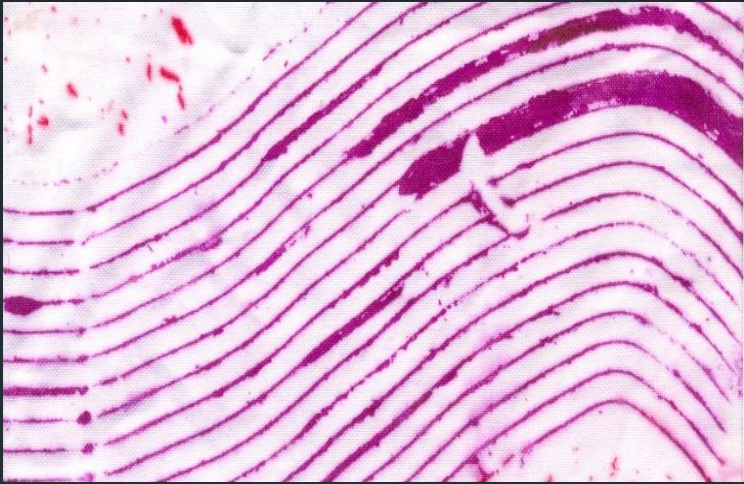
- This experimental research seeks to ascertain whether Cassava, an indigenous product of the Caribbean region, is an appropriate local substitute in the resist dyeing of cotton and silk fabrics. Three recipes using Cassava in its various states were developed to test the hypothesis.



- Experiments were run on three different states of cassava; the tuber, reconstituted bammies and cassava flour. The results showed that each state had different abilities to resist the dye.



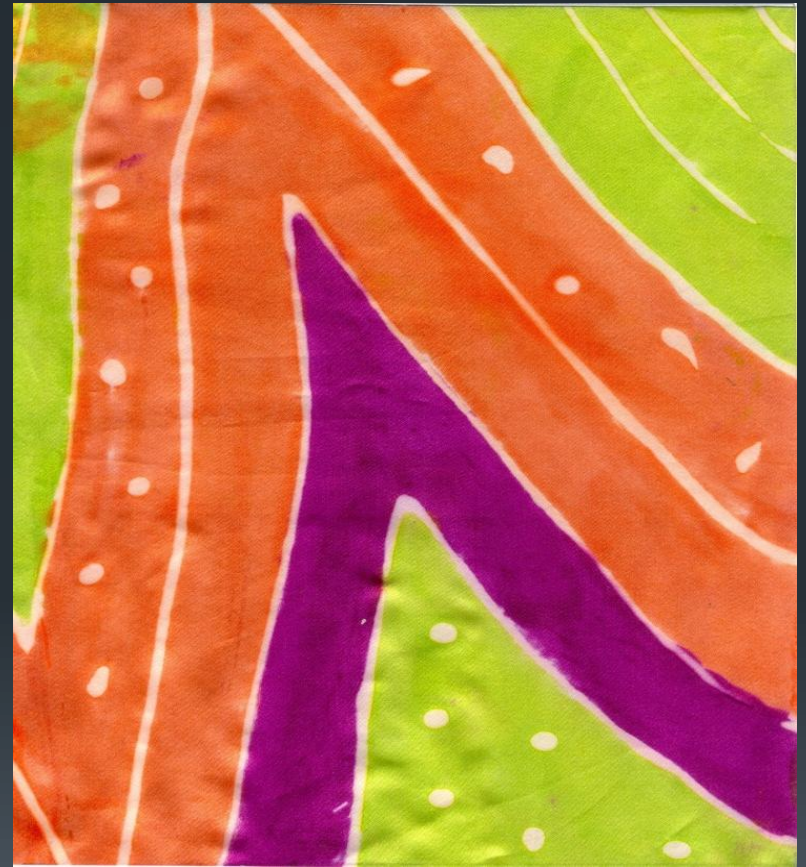
# 3 Techniques for Applying the Paste



Stamping into Paste



Stenciling



Squeeze Bottle

# The Tuber

- In Recipe 1 the tuber was peeled, diced and the centre woody section removed and then steamed. The tuber was then put through a food processor until smooth. Commercial liquid starch was added to achieve a paste consistency.
  - Batch 1: No Chemicals added
  - Batch 2: Salt Added
  - Batch 3: Urea added
- Salt and Urea were added to slow the drying process.
- Commercial liquid starch contains preservatives which help with the shelf life.

# Cassava Bammie

- In Recipe 2:

The cassava bammies were broken up and soaked overnight and then put through a food processor. Liquid starch was added to improve consistency. The mixture was then cooked until translucent. The batch was divided in three:

- Batch 1: No Chemicals added
- Batch 2: Salt Added
- Batch 3: Urea added

# Cassava Flour

- Recipe 3:

Hot water was added to the cassava flour and mixed. Paste was strained to remove lumps. The batch was divided and salt was added to half.

- Recipe 4:

Flour & water were mixed together; then cooked until thickened. Paste was strained. If paste is too thick return to blender and add liquid starch. The batch was divided and salt was added to half.

It was discovered that not all bammies are alike:

I prepared a batch using a different brand of bammie which was very thin. It did not stand up to dyeing or immersion; therefore, cassava flour was added to the next batch using this type of bammie. This was Recipe 5.



# Methodology

Each recipe was assessed through a rating scale according to the following criteria:

- Cracking in the Paste
- Adherence of the paste to the fabric
- Ability of the paste to retain its shape.
- Ability of the paste to resist the dye in covered areas.
- Separation of water from the paste
- Ease of Preparation of Paste
- Ease of Washing out of Paste
- Availability of Cassava Products
- Ability of Cassava Products to stand up to immersion
- Shelf Life

- Each criteria was rated individually.
- Cracking in the Paste: Background Textures & Combing ( 1 – refers to few and 5 – refers to many)

Cassava Tuber – No Chemical	Cotton	1	2	3	4	5
	Silk	1	2	3	4	5
Cassava Tuber – with Salt	Cotton	1	2	3	4	5
	Silk	1	2	3	4	5
Cassava Tuber with Urea	Cotton	1	2	3	4	5
	Silk	1	2	3	4	5
Total:						11

# Results

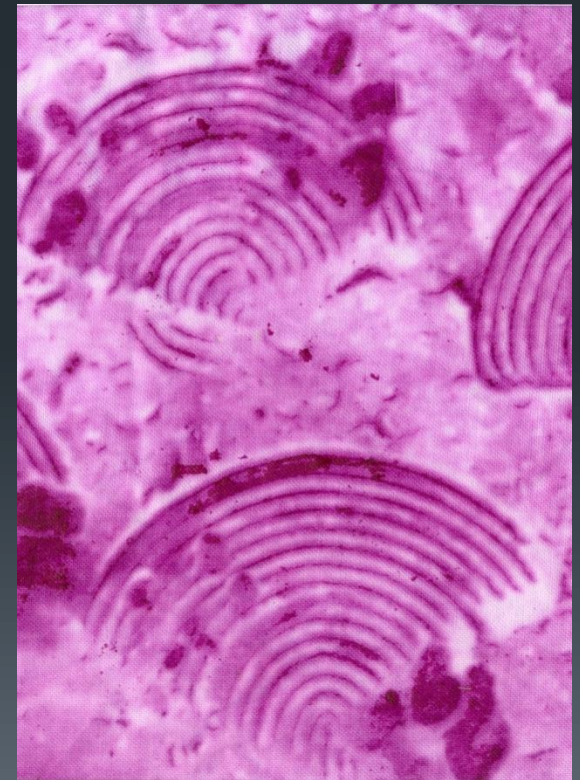
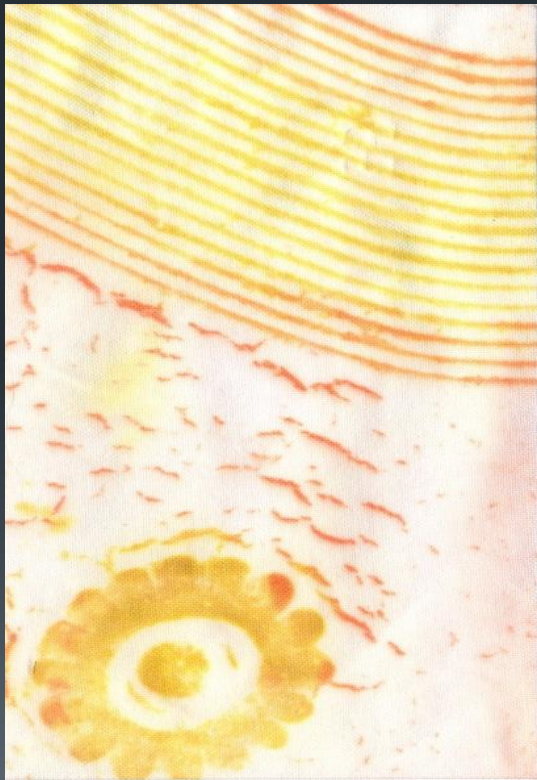
	1. Cracking in the Paste	2. Adherence of the paste to the fabric.	3. Ability of the paste to retain its shape.	4. Ability of the paste to resist the dye in covered areas.	5. Separation of water from the paste	6. Ease of Preparation of Paste.	7. Ease of Washing out of Paste	8. Availability of Cassava Products	9. Ability of Cassava Products to stand up to submersion	10. Shelf Life	Totals:
Cassava Tuber	11	20	22	21	12	6	26	5	24	5	152
Cassava Bammies	10	28	24	26	24	9	24	14	28	14	201
Cassava Flour – Recipe 3	10/ 15	16/ 24	8/ 12	12/ 18	16/ 24	15	12/ 18	12	4/ 6	20/ 15	159
Cassava Flour – Recipe 4	8/ 12	16/ 24	12/ 18	16/ 24	16/ 24	12	8/ 12	12	12/ 18	20/ 15	171



# Interpretation

- This research is intended for use by artists and artisans and as such the results can be interpreted a number of ways. The user would select the material according to desired effect.

Bammie- No Chem. Flour – No Chem. Tuber - Urea



## Exciting Results

- One of the most exciting discoveries in this research is the ability of the cassava paste to withstand immersion in the dyeing practice. The ability of this cassava to withstand immersion is in keeping with the adire eleko of Nigeria.



# Teaching Opportunities

- This ability to withstand immersion extends the use of the paste to other teaching opportunities. The paste can be used as a substitute for wax used in batik. Although the visual results will differ from the results obtained when using wax, the paste offers other opportunities:
  - No heating element is used in applying the paste, this method can be taught to younger students.
  - The paste is an organic substance and does not give off the fumes that melted wax releases and therefore is a safer product to use in the classroom.

# Opportunities for Teaching Design Objectives

- Using line in design

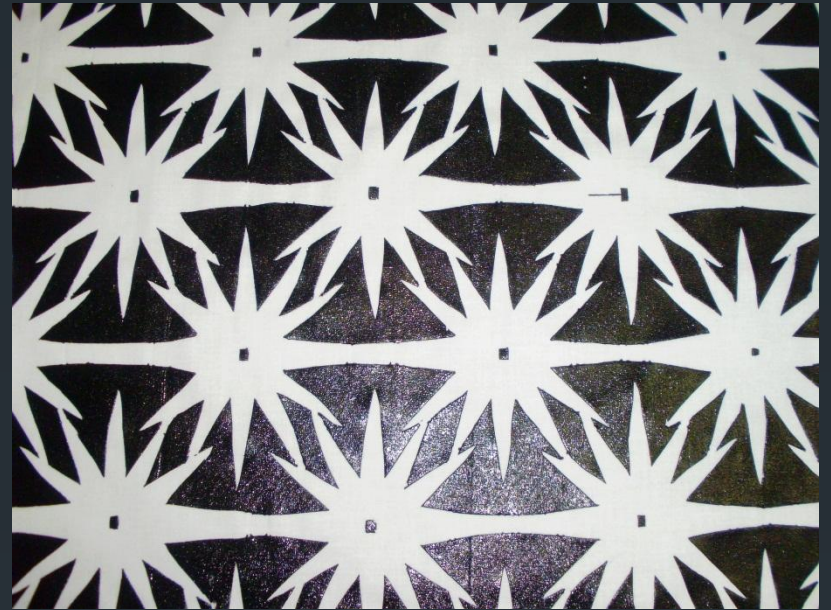


- Using shape in design



# Other Design Concepts |

- Designing the stencil



- The same design objectives taught in batik can be taught using the cassava paste; colour mixing and cross dyeing can be taught through serial dyeing.

# Gallery of Pictures



Sample 47  
Experiment 3a  
(Hot Water added to Flour)

Experiment 3a: Cassava Flour  
Fabric: Cotton  
Dye: MX dyes  
Technique: Stencil  
Cassava Paste: Recipe 3 - No Chemicals



Sample 48  
Experiment 3a  
(Hot Water added to Flour)

Experiment 3a: Cassava Flour  
Fabric: Silk  
Dye: MX dyes - Immersion  
Technique: Stencil  
Cassava Paste: Recipe 3 - No Chemicals

73 samples were produced.

Results were assessed through comparison of the samples

# Gallery of Pictures



# Gallery of Pictures

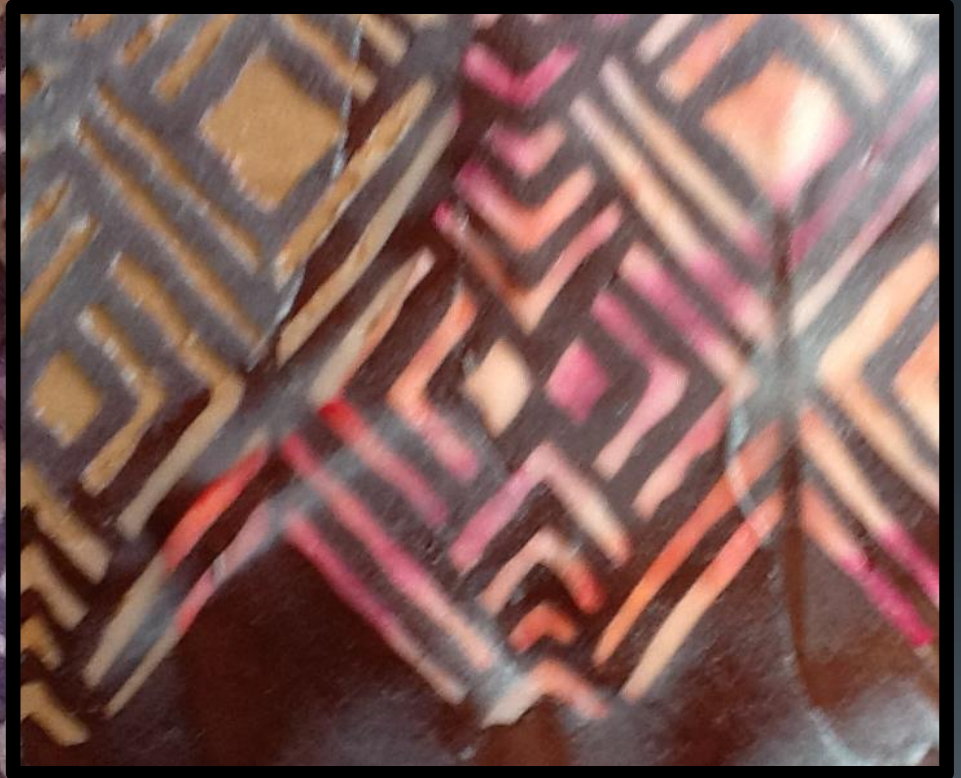




# Gallery of Pictures



# Gallery of Pictures



# Gallery of Pictures



# Further Research |

1. Identification of Types of Cassava; properties of cassava etc.
2. Testing by other artists.
3. Investigation of katazome, the Japanese technique of paste resist using rice bran and adding dye to the cassava paste.
4. Investigation into setting the dyes through steaming.

The image shows a close-up of a quilt with a blue color scheme. The central focus is a vertical strip of pinwheel blocks, which are geometric patterns made of four triangles meeting at a central point. This strip is flanked by two large, light-colored circular motifs. The background consists of various quilt patterns, including a grid of small squares and larger geometric shapes. The overall texture is that of a woven fabric.

**The End**