



NATURAL DYE 101

Indigo

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NATURAL DYE 101: Indigo

IS THERE ANOTHER NATURAL DYE that holds such deep, almost magical, powers as indigo? One that is called by so many names, such as ai (Japan), landian (China), chàm (Laos and Vietnam), nila (India), gara (Africa), or añil (Central America)? One that beckons the spirits or causes mutinies?

In this collection of articles, learn about the natural dye indigo—an overview of its history and science, and places to visit with rich indigo cultural roots. Meet a few artisans who work with indigo and sustain its traditional roots, learn some tips for dyeing and care, and learn more from additional resources.

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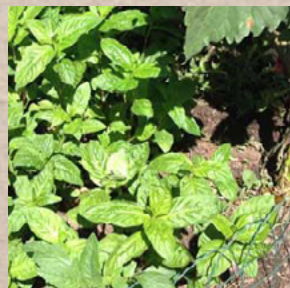




Explore the World of the Natural Dye Indigo

by Judy Newland

OUR JOURNEY through the ancient and mysterious world of the natural dye indigo begins with an overview of this dye deeply embedded in cultures around the world--one that is both art and science and touches the disciplines of botany, chemistry, economics, fashion, medicine, politics, as well as textile and social history.



SCIENCE IN THE DYE POT

Many species of indigo grow all over the world. *Indigofera*, *Polygonum*, *Isatis*, and *Lonchocarpus* are four well-known groups. With the exception of *Isatis tinctoria* (woad), most indigo-bearing plants thrive in tropical climates. *Polygonum tinctorium*, also known as Japanese indigo, is a frost sensitive annual, but my friend was able to grow a small crop here in the high altitude of Colorado. Indigo dye can produce a wide variety of colors by combining it with other natural dye materials, and it dyes cloth without needing a mordant – magical indeed.

MULTIPLE DYE TECHNIQUES AND PROCESSES

Let's look at my fresh leaf indigo experiment. Using plants from my friend's garden, I removed the leaves from stems and added them to a blender half full of very cold water. I blended them for one minute, strained the mixture into a small bucket, then immersed wet silk fabric into the bath for 3-5 minutes moving it through the indigo the entire time. The sample

TOP: Indigo resist sample by Judy Newland, "Enter Through the Blue Door". MIDDLE: Wool yarn in the indigo bucket after one dip. BOTTOM, LEFT: Create your indigo world. BOTTOM, RIGHT: Japanese indigo growing in Colorado.



was exposed to the air and then rinsed in cool water and laid out to dry. You can see the result is a wonderful aqua.

Let me give you a simplified version of the dye process: Once the dyebath is prepared, it becomes a lovely shade of teal green. After dipping the cloth into the bath and removing it, the air starts to oxygenate the cloth, turning it blue. The more dips into the bath, the darker the cloth becomes.

HISTORY IN THE DYE POT

Natural indigo is an ancient dye and has been used continuously for thousands of years. It's mentioned in the histories of Herodotus around 450 BC; it was a staple on early trade routes; and became a commercial force around 1500 AD. Although it was once believed that the dyeing process spread throughout the world



LEFT, TOP: Fresh leaf indigo sample. LEFT, BOTTOM: Roll an indigo leaf to create blue hands. BELOW: The more you did the cloth, the darker it becomes.



from India, it is now accepted that indigo dyeing was discovered and developed independently in cultures worldwide. Many cultures guarded their indigo secrets, which were layered with significance and symbolism. One can see why indigo is valued as an exceptional universal dye.

CULTURAL CLOTH

How in the world did ancient artisans discover this unusual dye? No one knows for sure, but leaves crushed on the ground may have come into contact with urine or ash from a fire and produced the telltale blue. Many cultures describe the origins of indigo in myths and stories, and, often ceremony surrounds the process with social significance that reveals indigo dyeing as much more than technique. One could travel the world seeking the magical transformation that happens to cloth and self. Or one could explore it in the backyard, following the continuous thread that extends back in time and links us all through cloth; cloth that carries history, memories, and stories to share.

RIGHT, TOP: You can dye your hair with indigo. RIGHT, MIDDLE: Indigo blue nails. RIGHT, BOTTOM: Concentrated balls of indigo. BELOW: Ancient Chiribaya (Peru) fragment with indigo.





A Place to Visit: Lao Traditional Culture and Education Center in Vientiane, Laos

by Marilyn Murphy

WHY IS IT THAT EVERY TIME I think of an indigo vat, the lyrics “Can’t you smell that smell?” pop out of my mouth? Assuredly, Lynyrd Skynyrd was not referring to indigo in his song. But here I was at the Lao-Japan Traditional Cultural Education Center in Vientiane, Laos, and out it comes. That smell guided me right to the indigo studio where the Textile Museum Studio’s Director, Bouasonkham Sisane, stirred away at the fermenting pot. (The swirling scum on the surface was a sure sign the vat is ready for dyeing and the source of the disagreeable smell.)



THE LAO TEXTILE MUSEUM

It was late April, and the rainy season was just ending. The Center’s grounds were verdant providing a rich contrast to the deep, carved teak of buildings, a throwback to the French Colonial era. The Traditional Cultural Education Center was established as a home for preserving and teaching languages, music, traditional customs, and other arts, especially those related to weaving. The Lao Textile Museum sits here too—one building, a raised village house, and the other housing the museum’s artifacts of Lao baskets, clothing, photos, woven silk textiles and tools.



WEAVING STUDIO

Upon entering the weaving studio, I encountered my first Lao loom. This was no small

TOP, LEFT: The Center’s primary building is of French Colonial style with carved teak ornamentation. TOP, RIGHT: Ms. Sisane of the Lao Textile Museum stirs the fermenting indigo dye bath. BOTTOM: The Lao Textile Museum is part of the Lao-Japan Traditional Cultural Center in Vientiane.

piece of equipment--the warping and tensioning system was different from my simple jack loom, and the mechanics of raising the pattern threads for weaving baffled me. Perhaps that's why, when I saw this simple, striped beauty of indigo cotton cloth being woven, it called to me--it was such a contrast to the intricate silk, supplementary weft fabrics. What was this cloth used for, and why was it the width and length? Answer: curtains, coverings for household items, wrappings.

LAO WEAVING

Ms. Sisane served us our morning tea in a room filled with traditional-style Lao weaving before

heading to the upstairs shop. She posed wearing the beauty of Lao silk against an indigo-dyed, supplementary weft silk piece while I purchased the simple, striped indigo cloth that was being woven earlier.



1: Weaving a traditional fabric using indigo-dyed silk. **2:** Ms Sisane surrounded by exquisite Lao traditional supplementary weft silk weaving. **3:** Traditional Lao weaving adorns the rooms at the Center. The indigo studio is just across the grass. **4:** The simple cloth is woven of organic cotton; the blue warp and weft is naturally-dyed indigo.



Meet Ms Mai Suxiong, An Artisan of Hmong Batik Indigo Cloth

by Marilyn Murphy

THE SMELL OF hot wax rises from the grass-covered hut every morning. A petite elder woman, dressed in a traditional sarong, walks slowly down the stone-covered path, the Mekong river her backdrop. She carries a roll of hemp cloth, and once at the hut, she sets up her demonstration area for the day.



This is Ms Mai Suxiong, Ock Pop Tok's resident Hmong batik artist. She is the oldest practicing Blue Hmong artist creating the intricate patterns made from wax at the Living Crafts Centre in Luang Prabang, Laos DPR. Ms Suxiong does not follow any pattern—she draws freeform with an incredibly steady hand, never wavering, even during the intense heat of the day. Her drawing is made with a tjanting tool—a tool made of wood with a small metal receptacle at the end for holding the hot, melted wax and the nib through which the wax flows.



This practice is very old and is traditional to the Blue Hmong hill tribe of the northern province of Laos. It's used to decorate the pleated skirts and other articles of dress. Not having had a written language, the Blue Hmong created symbols from their surroundings and these symbols are used throughout their batiked cloth. The ones Ms Suxiong uses in this cloth, are primarily geometric but change in size and form throughout the piece.

*LEFT, TOP: Ms Mai Suxiong demonstrating batik.
LEFT, BOTTOM: Batik indigo and other products at Ock Pop Tok.*

The cloth is made of hemp handwoven by the weavers at Ock Pop Tok and is used for pillows and panels, small bags, or insets into table and bed linens. The hemp is locally cultivated and is widely regarded as the crop of the future because it has such a low environmental impact. It can be grown and processed without any chemical treatments and yields three times more raw fiber as cotton.

Once Ms Suxiong's roll of cloth is covered with batik drawing and all the wax has dried, it is dyed in a natural indigo vat, dipped many times to achieve the dark blue coloring. Then the wax, which is a resist and therefore resists indigo from penetrating in the areas where the wax has been applied, is removed by boiling the cloth in water. From here, these lengths are dried in the fresh, open air, looped between the drying the lines.

*BELOW: Batik wax design.
BOTTOM: Batik indigo cloth drying.*





In Country: Indigo and the El Salvador Story of Grace Guirola

by Judy Newland

WHAT CAN BE ACCOMPLISHED by passing on the techniques of creating cloth and sharing stories of artisans? Travel can offer a bridge to understanding textiles and their place in our lives. Much of my travel has focused on the cultural study of textiles, both ancient artifacts and contemporary cloth. One such trip to El Salvador stands out because I discovered the many layers of meaning that indigo can bring to a place where history, politics, and people are enveloped in the blue of indigo.



In 2007, after a long journey from Guatemala to El Salvador, my traveling group arrived at Hacienda San Juan Buena Vista and heard Grace Guirola's personal story, one that spans generations and seemed destined for a bright blue future. Grace's great grandparents had produced and processed indigo in the distant past, but her family fled to the safety of the United States during the civil war in El Salvador (1979-92), the land taken by cooperatives during the agrarian reform. Years later, she was able to buy some of her family's land from the cooperative, return it to a landscape shaped by the mystique of indigo, and begin a long journey of restoring her ancestral home and building a life based on indigo.



We walked the ground where she had planted two varieties of indigo, shared stories over a meal and delightfully dyed yarn in her indigo vats after dark. It was a memorable experience that resulted in a small treasure trove of dyed

LEFT, TOP: El Salvador countryside. LEFT, BOTTOM: On the grounds of Hacienda San Juan Buena Vista.

items to carry home. But the indigo had penetrated more than cloth, it had created a memory to carry, one more woven story in my mind.

I have been fortunate to travel many places around the world, and these international experiences have completely reshaped the way I think about our global environment. The exhilarating experience of being thrown into the unpredictable miasma of a world market—be it the plaka, the souk, or the plaza—will change a person. And everywhere in these world markets there are textiles, dye plants, and the stories and memories of women.

This is what I now believe. The textiles in our lives are so much more than beautiful objects, they are woven histories that can promote understanding of culture, reveal bits of society, and unravel a continuing story to share through structure, pattern and colors – including the deepest, darkest indigo blue.



This is one story, one person, one culture, one country, but stories like this are part of cultures around the world. Indigo is a powerful agent of change in many regions. *Blue Alchemy: Stories of Indigo*, a video by Mary Lance delivers multiple stories that reach across continents to explore the transformative nature of a powerful natural dye, indigo, a universal color that can change the world. No matter how many times I've watched it, I learn more about the dye that has captured the human imagination for millennia, and about the remarkable people who are reviving indigo to improve their lives, preserve cultural integrity, and bring beauty to the world.

LEFT: Grace Guirola working in dye house. (Photo by Mary Lance.) RIGHT, TOP: Harvesting indigo in El Salvador. (Photo by Mary Lance.) RIGHT, BOTTOM: Indigo variety growing on Grace's land—Guatemalensis.

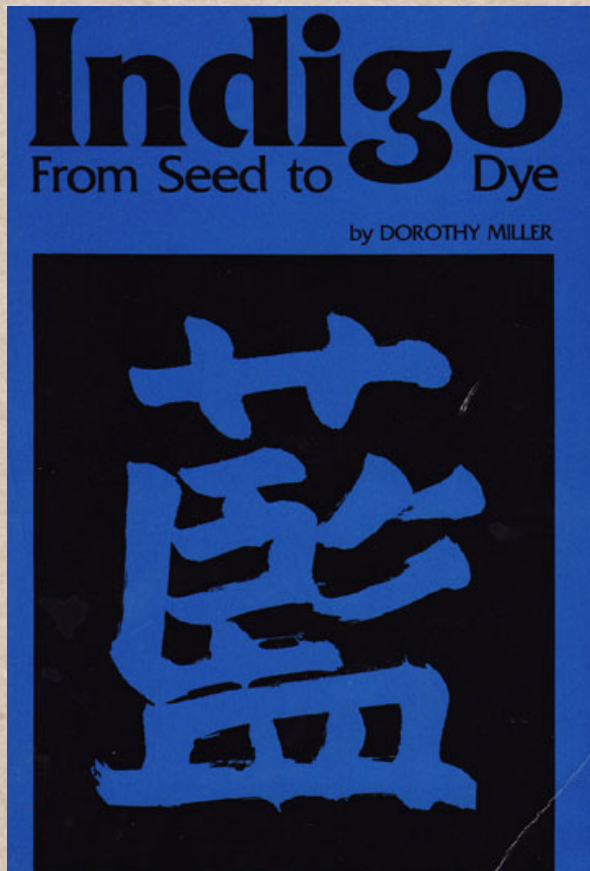




An Ode to Indigo and Dorothy Miller

by Marilyn Murphy

WHILE VISITING WITH Dagmar Klos, natural dye expert and teacher, our conversation turned to indigo and who first introduced it to us. Dorothy Miller's name tumbled from our lips. She taught any number of workshops on indigo, safflower dyeing, and shifu (paper spinning) at the Textile Arts Centre in Chicago. But it wasn't just what she imparted to us on these arts, she was an inspiration for living, for always having a curious mind no matter what the age.



ABOVE: This small book by Dorothy Miller is still a go-to source for planting, growing, harvesting and dyeing indigo.

Dagmar recalls, "One summer, when she was coming to teach an indigo workshop using a naturally fermented indigo vat, a few of us were to get it started per her instructions before she arrived so that it would be ready to go. Although we followed her instructions carefully, we didn't think we got the fermentation process going.

Dorothy arrived, and we carefully explained everything we did and our concern that it wasn't going as planned. She responded that we needed to switch to what she called a faster acting vat (which is more commonly known as a chemical vat). This worked, but as we spent time dyeing with this wonderful blue dye we continued to discuss and ask Dorothy why the natural fermentation vat didn't work. She finally looked at us and said, "Indigo is a smelly, scummy, mess-making vat dye. Unpredictable results emerge, blue stains cover the ground, the vat functions one moment and dies the next. Why shout about it?"

She helped us realize that indigo always has a mind of its own no matter how precise we are. Now when I teach the indigo process to others, I share this wisdom with them and tell them not to give up—just keep at it, and with practice

they too will deepen their understanding of this elusive color.”

Dorothy gathered information on indigo dyeing over most of her life after first seeing the process while living there in the 1950s. In 1973, after almost 25 years, she returned to Japan and studied indigo in earnest. In 1975, she brought back seeds to the U.S., from Mr. Kitajima of Ibaragi-ken who grew indigo of the *Polygonum tinctorum* variety, a member of the buckwheat family. Many indigo growers/dyers here in the U.S. are probably using seeds that are direct descendants of these.

Her little book, *Indigo from Seed to Dye* (Indigo Press, 1984), takes you through the stages of growing, making, and dyeing with indigo. It was one of the very first English-language books

on the subjects and is still used by many dyers. In remembrance to Dorothy Miller, here’s a poem she wrote in 1981.

ODE TO INDIGO

Leaves of green what does your future hold?
Blue of the sky for baby’s robe?
Blue of the sea for the coat of the lamb,
waiting to be carded and spun?
Blue of indigo, deep as the blue of the
woods at night.
Leaves of green with holes tinged with blue,
the insects bite,
what does your future hold?

BELOW: Cloth being dyed in fermented indigo vat. The scum is carefully moved aside and care taken not to introduce oxygen into the vat.





Natural Fermentation Vat

by Dagmar Klos

NATURAL FERMENTATION can be challenging because it requires that natural materials be allowed to ferment and achieve the proper balance for the indigo to work. Synthetic dyes have only been in existence for about 150 years, so all the blue you see in old textiles is natural indigo or woad and required natural fermentation.

A completely naturally fermented vat is best done in warm weather. The length of time it takes depends on variables such as ambient temperature and how quickly the organic matter starts to ferment. This could be a few days or a few weeks.

Start with safety measures: Protect your eyes with safety goggles, your skin with rubber gloves and long sleeves, and your nose and mouth with a respirator or dust mask.

STEP 1: Make a lye alkaline solution. Place ashes from a fireplace into a heavy duty bucket and add as much water as the volume you will ultimately need for your indigo dyepot.* Allow it to sit for a day, then check the pH using a pH paper. The alkaline solution is ready when the pH is 11 (or as low as 10 for protein fibers). The ashes will have settled to the bottom; be careful not to disturb them as you carefully ladle this water into the indigo dyepot. *If you don't want to hassle with making your own lye alkaline solution, you can use soda ash instead using the same amount of water but omit the wood ash and add 1 ½ pounds (680g) of soda ash to your dyepot.

STEP 2: Add about 4 ounces (114g) of wheat bran, rice cereal, or oatmeal along with 4 ounces (114g) of chopped or crushed madder root. These organic materials will decompose and begin to ferment, causing oxygen reduction. At the same time, add about 8 ounces (228g) of indigo powder to a small amount of warm water to make a paste, then add it to your vat and stir well.

STEP 3: Each morning, stir the vat well. When a bluish iridescent scum or "flower" forms, the vat should be ready. Using a gloved hand, push aside the scum to see if the liquid is green or dip a small white container into the vat to see the color. A disagreeable odor may also develop. The indigo vat is now ready for use.

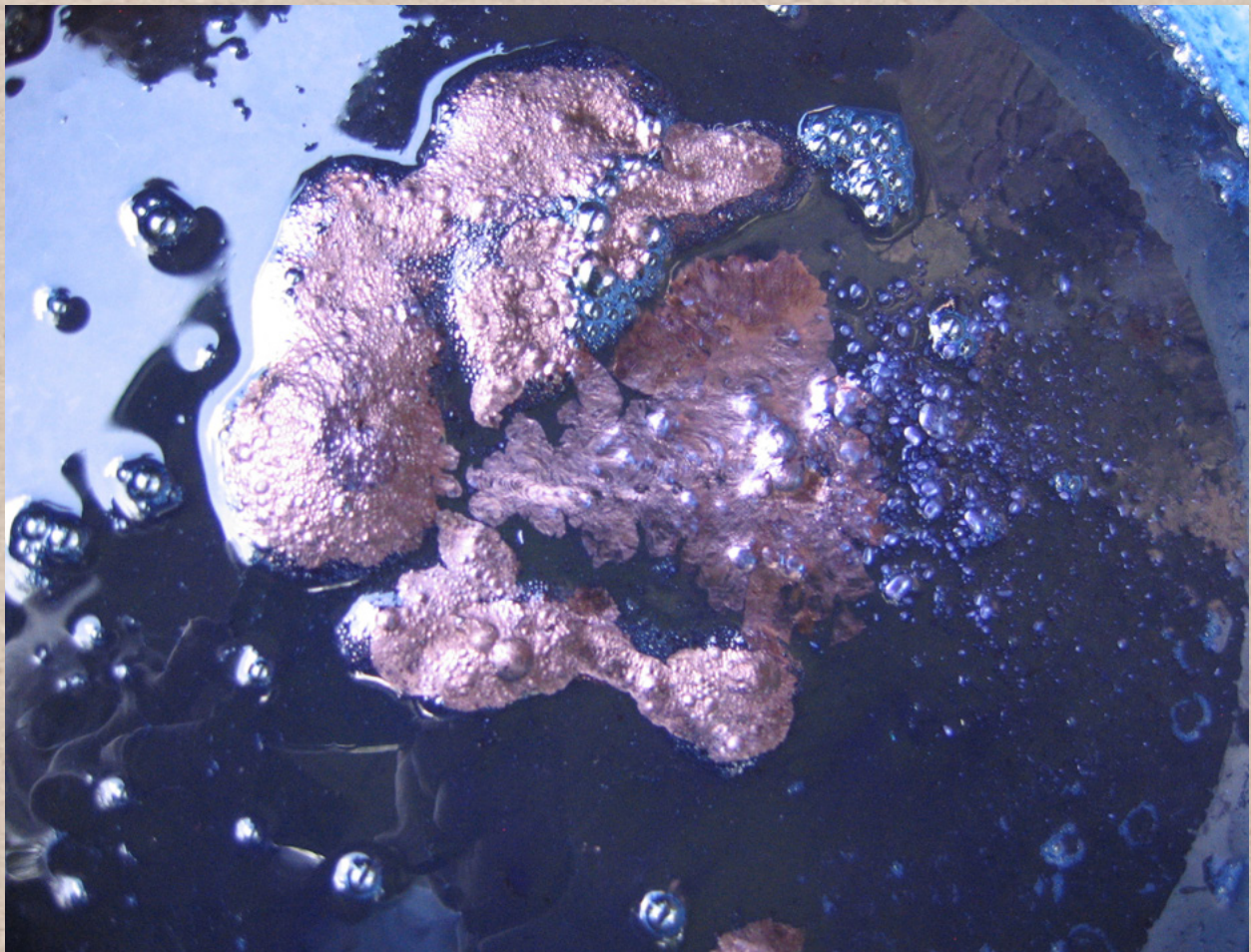
DAGMAR KLOS is a master dyer, fiber artist, and teacher. From 1995–2006, she served as co-publisher and coeditor of the Turkey Red Journal, a newsletter dedicated to natural dyes. She has released two workshop videos through Interweave, [Natural Dyeing](#) and [Overdyeing with Natural Dyes](#).



A Care Tip: Washing Excess Indigo Dye Particles

HAVE YOU EVER picked up an indigo-dyed fabric, garment, or yarn and after holding it or working with it, you notice your hands have turned blue? This excess blue comes from unattached particles that have not been dissolved. These particles do not dye permanently but rewashing of the cloth is necessary. Dagmar Klos recommends washing indigo-dyed fabric in really hot water with a neutral or mild soap. The hot, soapy water should remove most of the excess indigo. But, if in doubt, repeat again or wash your indigo fabric with your blue jeans!

BELOW: Indigo in a natural fermentation vat.





Contemporary Artisan Cloth and Indigo Projects

by *Judy Newland*

AMAZING INDIGO PROJECTS are underway around the world. One to take notice of here in the United States is Sea Island Indigo. Donna Hardy is working on establishing a sustainable indigo culture in the Lowcountry of the United States, using the same indigo plants grown in that area for more than 250 years.

<http://www.seaislandindigo.net/>

THE SEEDS for my Colorado indigo growing experiment came from Rowland Ricketts, an associate professor of textiles at Indiana University. Rowland and his wife Chinami produce and process Japanese indigo following ancient methods to produce contemporary textiles. He managed a wonderful community project, Indigo Growing Blue, from 2010-14. Seeds can be purchased each spring from their online store until they run out.

<http://www.rickettsindigo.com/>

ANOTHER INDIGO PROJECT is from the northeast coast of Italy, east of Florence, is producing results. The research has led to historical evidence of its use centuries before and is informing current day use in the manufacturing of textiles.

<http://www.originalmarche.com/people/natural-dyeing-oasicolori-past-present/>

THE GEORGIAN BLUE TABLECLOTHS which have been revived are based on the oldest samples dating to the end of 17th century. They used indigo and a cold vat dyeing method known as lurji supra.

<http://www.folklife.si.edu/talkstory/2015/the-blue-tablecloths-of-georgia-new-life-of-an-old-tradition/>



Additional Resources

CLOTHROADS includes a Natural Dyes Resource section on their website. It includes suppliers, general information, blogs, and teachers/workshops.

<https://www.clothroads.com/resources/natural-dyes-information/?v=7516fd43adaa>

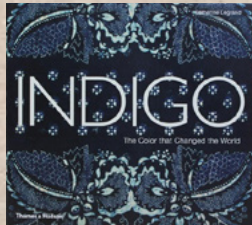


Further Reading



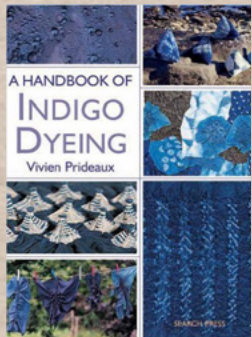
Balfour-Paul, Jenny, 1998, *Indigo*, Archetype Press, London.

Dr. Balfour-Paul's book, *Indigo in the Arab World* was the result of her PhD research and difficult to obtain. Her book, *Indigo*, is the best reference book one can own. She covers the world of indigo and culture in a captivating way. Serious dyers should have this on their shelf.



Legrand, Catherine, 2013, *Indigo: The Color that Changed the World*, Thames & Hudson, Inc.

This lush coffee-table book is loaded with over 500 exquisite examples of indigo textiles. The travelogues of the countries visited, in pursuit of indigo, are rich with images and stories of ceremonial, religious and spiritual significance. The artisans and dye masters portrayed open up their homes and dye studios to explain their lineage, talk of their process of working with indigo (being careful not to divulge their trade secrets), and show off the various types of fabrics they create. While it doesn't have step-by-step, how-to images, if you've done any indigo dyeing and have knowledge of resist techniques, you'll gain plenty of ideas and knowledge to experiment with dyeing processes.



Prideaux, Vivien, 2003, *A Handbook of Indigo Dyeing*, Search Press, Great Britain.

This is a must-have technique book and can get you started on your indigo explorations with confidence.

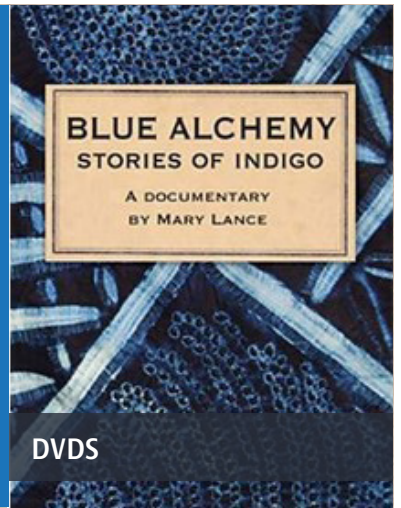


Vatsyayan, Kapila, ed., 2014, *Culture of Indigo in Asia*, Niyogi Books, New Delhi, India.

If you want a beautiful explanation of the cultural and historic significance of indigo in Asia, read this. The preface is by Gopalkrishna Gandhi, grandson of Mahatma Gandhi.



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