

Paper can be made from any kind of vegetable matter as long as cellulose is present.

Hemp was the oldest material used to make true paper. Decline in making it because it was too rough.

Mashi, hemp paper is still made but methods + material are different. It is considered sacred in Japan.

Major Japanese paper-making fibers come from deciduous trees. Wood pulp come from conifers imported from U.S.S.R., U.S., Canada. Wood pulp fibers are weak, short + replete with chemical residue.

Rice straw (Wara)

"Rice paper" is a Western misnomer. It is not entirely true that Washi has nothing to do with rice straw. It has been used in making an inferior type of Japanese paper as filler with wood pulp. It is short fibered, brittle, weak but cheap & absorbant, is practical for Wara-banshi. Used for practice paper for Calligraphy & Chinese brush painting. It is too weak to stand on its own. Combined with bamboo, mitsumata recycled paper, cotton it makes a very fine gasenshi.

Bamboo

Its use in papermaking in Japan is to-day very rare.

Miscanthus (kaya)

A reed used to thatch farmhouse roofs. Sometimes used as filler in paper making, similar to straw. Most commonly used to form papermaking screens & other tools.

Other less important fibers used in papermaking are, cotton kuwa (white mulberry) and baname (Chinese hawthorn)

Tororo-aoi (*Abelmoschus*
manihot, Medicus)

A sort of murelage from the root of *Abelmoschus* of the Mallow family. Grows wild & is cultivated. Viscous substance from the root & added to the paper solution the fibers float upward & evenly throughout the vat. It looks like white of raw eggs. Other varieties of Tororo-aoi & related plants are used.

Noni-utsugi (*Hydrangea*
floribunda; *Hydrangea*
paniculata)

Some soft area of inner bark fraction in the same manner as Tororo-aoi. Preferred by makers of hosho used for wood block printing.

Technique

planting

Cultivating

Harvesting

steaming

peeling dark bark from inner^{bark},
washed in running water

picked of impurities

boiled in alkali

rinse in running water

Bleached in wood ash. or by
deposition in water to rinse
beaten.

Technique

All true paper, hand or machine made is basically made in the same way, raw fibers are separated from the plant, the fiber is reduced to its cellulose content by heat & chemical process, the reduced material is beaten to soften, separated and hydrated the fibers. The pulp is formed into sheets by a sieving process the sheets are dried & finished.

Kozo:

Tree shoots are harvested, steamed + black bark stripped from the shoots.

The black skin is scraped from the inner white bark which is washed in running water, boiled in alkali, washed again and bleached in some manner. Then small impurities are picked off.

The fibers are beaten by hand or by machine to become pulp to which is added mucilage. A screen is dipped into this solution. The sieve is moved from side to side & back & forth forming a even film of pulpy fibers on the screen. This wet sheet is stacked & water pressed from it. Sheets brushed on boards to dry in the sun.

Kozo. continue

Kozo grow wild or is cultivated in wet or dry fields. The cultivated yields better bark. Farmers grow the crops for paper-makers. The seedlings are planted 2 ft. apart in spring. It takes 2 or 3 years for the bark to thicken & mature for use in paper making. The plant grows seven or more shoots annually; only the shoots are used. After 10 or 12 years the bark is no longer usable.

It is harvested between Nov. & Dec. called akikowa "autumn bark" a second crop in Feb. or March is known as harukawa "spring bark"

Only shoots are cut at base to uniform size 15 inch. to 4 ft. & tied in bundles of 45 lbs & hauled off to steaming area.

Mitsumata + Gampfi

Mitsumata is sown on hill side in June. Does not yield good bark until 3 years old. Harvested in the late fall.

Shoots are cut several inch above ground, bound into faggots & placed upright in a stream to preserve until paper maker is ready to steam them.

Gampfi grows wild. refuses to be domesticated. Harvested in spring bet. Feb. + March when plant contains more liquid. At this time is it possible to peel the bark from the shoot.

Gampfi cannot be steamed. Is becoming scarcer.

Technique

Boiling the fibers in water.

Temperature, pressure & cooking time vary. Traditionally lye or buckwheat ash, slack lime or other mild alkalis are used, have been used for past 60 years. Caustic soda is being used, it is cheaper, easier to rinse away but weakens fibers. Many purists do not use it. The fibers are boiled 1 to 2 hrs. or until the fibers break between the fingers. Alkali is added $\frac{1}{10}$ the weight of dry white fibers. This breaks down the fat, starch and astringent juices. Fibers remain in pot one to eight hours after boiling. Put into baskets & rinsed thoroughly.