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KANAF

KANAF (*Hibiscus cannabinus* L.), English "kenaf," an annual herbaceous plant of the Malvaceae family, yielding a soft fiber from the stem. The word kanaf is of Persian origin (Dempsey, 1975, p. 206). Production of kanaf in Persia has been limited to the Caspian littoral from Rašt to Sāri, at about latitude 37 degrees N. It is planted in late April/early May and harvested for fiber in October (Grami, 1968). Kanaf fiber is very similar to jute fiber and is often referred to as "jute substitute," although jute belongs to genus Corchorus and family Tiliaceae (Grami, 1981, p. 1).

Kanaf seed is broadcast, and plants grow under dry farming to 3-4 m in height. The crop is cut near the ground at the early flowering stage and placed in loose bundles for a few days. The bundles are shaken to defoliate them, tied with raw kanaf ribbons, and put in canals or ponds for retting. Higher temperatures, sunny days, and an abundance of aerobic bacteria in the water enhance the retting process, by which the bast fibers are loosened from the other, non-fibrous tissues of the plant stem. After two to three weeks, the stems are hand-ribboned—that is, the bast is stripped off the plant core, and any remaining bark is removed; and the fibers are washed, dried, and carried to the mills (Dempsey, 1964; Grami, 1968). The soft bast fiber makes up 20-25 percent of the dry weight of the stem (Grami 1981, p. 1). The dry fiber yield in the Caspian region is about 1.5 to 2 tons per hectare.

Annual production of kanaf fiber in Persia decreased from a maximum of over 5,000 tons in 1958 to less than 800 tons in 1964. To remedy this situation, in 1964 an American expert, James M. Dempsey, was called in through US/AID.

The significant decrease in production was attributed to a heavy infestation of the local variety of kanaf by the fungal disease called “root rot,” caused by *Fusarium* sp. (Dempsey, 1964, 1975; FIGURE 1). As a result of screening numerous germ plasms under greenhouse and field conditions, cultivar Cuba 2032 was identified as resistant to the disease. This cultivar could not produce seed in the Caspian region due to its photoperiod requirement, and thus every year fifty to sixty tons of kenaf seed of this cultivar were imported from El Salvador and distributed among growers (Grami, 1968; Dempsey, 1975). A few tons of seed of this cultivar were also produced in Dārāb (Fars) and Dezful (Ḵuzestān; Grami, 1968, 1985; FIGURE 2).

Kanaf fiber is used primarily for making gunnysacks and burlap. The first gunny mill (*guni bāfi*) in Persia was established in 1933 in Rašt by the private sector. This mill was shut down in 1961 and reopened in 1966 under government ownership. The second and third gunny mills were built next to each other by the government in Šāhi (currently called Qāyem Šahr) in 1938 and 1958 (Dempsey 1964; Grami, 1981, p. 7), and the two units operated as one. A fourth mill was built in Maḥmudābād in 1959 by the private sector. In 1935, about 2,600 tons of kanaf fiber were produced in Gilān and less than 200 tons in Māzandarān (Grami, 1981, p. 3). However, due to the shutdown of the Rašt mill in Gilān and the establishment of new mills in Māzandarān, this ratio was almost reversed; that is, during the 1960s and 1970s, over 80 percent of the kanaf was grown in Māzandarān, and less than 20 percent in Gilān (Grami, 1968).

Annual kanaf production subsequently decreased and stayed at about 3,000 tons for a decade, before it was practically discontinued in the early 1980s. The purchase price of kanaf fiber from growers was always kept low by the one or two mills in the region that bought it, compared to the price of other crops. The gunny mills would profit through the importation of the fiber; they preferred to import fiber even at a higher cost than buy fiber of the same quality from growers. The average annual import of kanaf fiber during the period 1965-71 was 3,760 tons, compared to 7,280 tons between 1972 and 1978 (Grami, 1981, p. 21). In addition, every year substantial amounts of kanaf products, that is, bags and cloth, were imported by merchants. The corresponding figures for these imported kanaf products during the periods 1965-71 and 1972-78, were 14,370 tons and 25,100 tons, respectively. In 1979, a total of 61,400 tons of kanaf products and fiber were imported (Grami, 1981, p. 21). This huge spike was due to the fact that in 1979 (the year of the revolution)

there was a lack of central control to enforce the law, and most merchants disregarded the regulations. This figure decreased in subsequent years.

Various products are made of kanaf: (1) Gunnysacks are large 100 kg bags, 70 cm × 110 cm, fine-textured with 1,100-1,150 g weight for sugar, and coarse-textured bags with 800-850 g weight for rice. Both types use the same warp, but sugar bags use a thicker weft. Bags of 60, 30, 20, and 15 kg sizes are also made for different uses. (2) Burlap (Hessian cloth, *čatāi*) is coarse-textured, light-weight cloth with a variable weight of 400-500 g for an area of 100 cm × 117 cm. Burlap is often used to make bales for cotton and tobacco and for insulation in construction. (3) Twine (*naḵ-e qand*) is strong string of 2, 3, or 4 strands twisted together, used for packing and interlacing. The warp and weft of twine are different from those used in making bags and cloth (Dempsey, 1965; Grami, 1981, pp. 8-10).

Kanaf is known to be the most suitable non-woody plant fiber for making pulp and paper (Miller, 1968; Dempsey, 1975; Grami, 1983). In 1972 the Pars Paper Mill (*kārḵāna-ye kāgaḏ sāzi-e pārs*) in Khuzestan made pulp using the entire kanaf plant (without extracting the fiber). The crop was produced in the Ahvāz Agricultural Station. Kanaf pulp was blended with sugarcane bagasse as its main input, replacing the imported long-fiber hardwood pulp in the blend. About 40 percent of the dry weight or 11.5 percent of the fresh weight of kanaf plant was made into pulp. The mill ran a short shift with the new blend, and the results showed that the quality of kanaf pulp was superior to bagasse and comparable to imported hardwood pulp (Grami, 1983, pp. 4-5).

Kanaf is no longer commercially produced in Persia for industrial use. It is grown in small plots for domestic use, such as making rope. All four of the above-mentioned gunny mills have been closed permanently, and no kanaf products are manufactured in Persia.

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The figures given in the text for the dry fiber yield and annual kenaf production are taken from the author’s unpublished notes based in his direct observations.