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GILAN XVIII. RURAL PRODUCTION TECHNIQUES

GILĀN

xviii. Rural Production Techniques

In general, a considerable range of techniques is used to produce such diversified commodities as rice, silk, tea, tobacco, vegetables, olives, and wheat. One can, however, speak of a distinctly Gilāni technical system. On the one hand, several tools and other original means of acting upon matter are common to various types of activities; on the other hand, techniques used in the various sectors of production are closely interrelated, either because some have served as a model for others (as for example, the shape of a sickle used for harvesting), or because they depend on one another (such as a particular technique for drying rice which is related to a singular shape of rooftop).

Basic tools and singular means of acting upon matter. The Gilāni peasant's basic set of tools for various farming activities includes the spade (*ḵelik, gerbāz, čelāru, bil*) (Among the various means of acting upon matter (hammering with a tool, water, air, fire; see Leroi-Gourhan, pp. 47-113), smoke holds, in this humid area, a privileged and original place in the Iranian world. It is traditionally used for drying rice (see below), tea, or tobacco leaves, to stifle silkworm cocoons and to preserve fish and to protect houses from mosquitoes by setting rice chaff on fire in the courtyard; chaff produces a

great amount of smoke and was once used to punish miscreants (Rabino and Lafont, 1911, p. 35) or disobedient children who were locked up in the *dud otāḡ* (literally "smoke room," where sheaves of rice were dried and cocoons stifled). This punishment was called *fal-a dud* ("the smoke from the rice chaff").

Techniques in symbiosis. Rice growing and sericulture engendered the development of local rural techniques and provided models for other sectors of activities. For example, when tea culture was new in the Caspian region, following its introduction in 1902 by Kāšef-al-Salṭana, the Persian consul in India, the first structures used as tea processing plants were *telembār* or silkworm nurseries. Similarly, the telembār was the location for the first step in curing tobacco, a culture introduced in Gilān in 1875. The foot-activated pestle (*pā-dang*) employed for husking and polishing rice was used at one time, in the area of Rudbār, to crush the olive pomace from which pomace oil was extracted. Potters using that same *pā-dang* to crush the glass contained in the green glazing (*laʿāb*) of bowls (*gamaj*) is yet another example of how this tool is used. Whereas rice-growing techniques were used elsewhere in local production, they were themselves influenced, at the provincial limits, by the traditions of peasants from the neighboring mountains and plateau. Thus, in the area of Rostamābād as well as in the northern part of the province, the first plowing of the rice fields was traditionally done with an ard (*ḵiš*) generally used to plow wheat and rye fields. This ard is made of a suitably trimmed tree fork, the main branch forming the long beam and the hook forming the sole (Figure 5). The second process of drying the paddy grains in containers placed on racks or trays halfway up the walls takes less space, so houses have lower hip roofs. The "choice" between one drying method or the other affects the use of straw and has to be linked to the rooftop covering techniques. When drying after threshing, the stems (*kulaš*) are left intact to be used as roof covering. The two techniques coincide (see Bazin and Bromberger, maps 14, 23). On the other hand, straw dried before threshing is unsuitable for roof covering; in the Safidrud delta area, where this process is used, houses are covered with rush (*gāli*), growing in abundance in the marshes and more resistant than straw; straw, once blackened and broken up, is used to smoke the nurseries and as tree mulch in the winter. These techniques for drying rice and covering roofs are also connected to the stockbreeding practices. In the interior plain, oxen are used to plow and harrow the rice fields (Bromberger, 1997, pp. 122-24) and rice straw is used as fodder. In the delta area, where the ground is deeper and wetter, horses perform those tasks; they are fed barley, low quality paddy, and a smaller

proportion of rice straw. Thus, the differing techniques for drying rice, the roofs shapes and the stockbreeding are connected functionally and form a coherent system of differences.

Technical style and differentiations. If it is necessary to highlight the interrelation of the systems, it is also necessary to insist on the singular style of Caspian region agricultural and pastoral production techniques. Growing rice in small paddy fields, a practice related to horticulture, the cultivation of herbs and vegetables in enclosures, the feeding of silkworms in nurseries, the raising of one or two oxen or of a horse in sheds located under or behind the houses, these are delicate, meticulous activities which contrast with the more impersonal cultivation of wheat and rye, and even more with the large sheep droves characteristic of the Iranian plateau. In this miniaturized world, working postures and the use of tools differentiate the masculine from the feminine techniques. Women perform the majority of their tasks (such as transplanting and weeding rice or picking tea leaves) with bare hands, bending over. Men generally work in upright positions with more or less complex tools (such as spades, swing-plows, harrows). There are, however, exceptions to this general rule: in order to feed the silkworms with branches of mulberry trees, men must crawl on the floor of the nursery (Plate I); in Ṭāleš, women sometimes handle axes. Finally, some activities can also be shared between men and women (such as garden weeding using grubbing-hoes, the preparation of paddy seedlings and, to a certain extent, the harvest; see Gilān: Gender relations).

If one can speak of Gilāni technical culture, one must also note spatial differences in regional practices. Some differences arise from geographical constraints: the wet rice-growing zone of Gilān contrasts with the ʿAmmārlu, Deylamān, and Rudbār highlands, where the agricultural and pastoral techniques are, with few exceptions, similar to those used in the Iranian plateau. Other, less obvious differences are the result of history. A cultural boundary running through the rural districts of Kučeṣfahān and Leštenešā west of Safidrud, divides the plain of Gilān into two nearly symmetrical areas, Biapas and Biapiš, each dominated by a city, Rašt and Lāhijān respectively (Rabino, p. 453). The division, both linguistic and cultural–(Bromberger, 1979, p. 169), is evidence of the old historical division of the province before its unification in the 16th century (though Biapas and Biapiš have continued to be ruled by separate governors). It left its mark on cultural traditions, including technical practices and vocabulary, as we shall see later. Finally, the ability to

adopt innovative techniques was not the same in all areas of the province; mechanized techniques spread quickly through the central plain, while the Gāleši mountains (to the south of Lāhijān) and the southernmost part of Ṭāleš, less prosperous and more mountainous, have remained repositories of more archaic methods.

A particular techno-economic context. Considering the many production and transformation techniques which have developed since the 19th century, another singular characteristic becomes obvious: rudimentary domestic methods still exist next to industrial facilities equipped with mostly imported, high quality machinery, often in the same rural areas and serving the same purpose. The contrast is particularly obvious in the fields of sericulture and tea production, two commercial crops that are largely controlled by the State.

Since the middle of the 19th century, raw silk threads have been produced in two distinct but neighboring areas: (1) small farms where tasks associated with the stifling of cocoons in a smoke room (*dud otāq*), the degumming, sorting, and reeling (*abrišam-keši*) on large wheels were carried out by the peasants themselves; (2) facilities specializing in the processing of cocoons, equipped with machines imported from France and Italy and employing an important labor force (about a hundred such facilities existed on the plain of Gilān at the beginning of the 20th century). At the same time, European-style silk mills were set up (Rabino and Lafont, 1910b, pp. 145-46, 1911, p. 48; Marollo, p. 7; Bromberger, 1989a, pp. 80-86, provides a synthesis). The large state-controlled silk mill in Rašt, under the authority of the *Edāra-ye nowḡān o kerm-e abrišam* (Sericulture Administration) was created in 1937 to replace the foreign-built industrial facilities, but the practice of domestic reeling remained, even longer in the eastern part than in the western part of the province.

Tea is also processed using two different techniques, one industrial, the other domestic, which frequently coexist within the same community. For local consumption, or when farms are too far removed from processing plants, tea growers pluck and process the tea leaves themselves. First they let them dry and wither (*palāsidan*), then they roll them and cut them in wooden trays (*lāk*); they then let them evaporate (*tabḵir*) and ferment (*taḵmir*) in a cool and airy place before drying them either by heating on metal plates or by placing them in the wire mesh drawers of a special purpose chest of drawers (The bulk of the tealeaves is, however, processed industrially in the many factories (the first one was created in 1932) spread here and there in the areas of

production (Lāhijān, Langarud, Fuman). A large number of these settlements (60 to 65 out of 127 in the 1970s, see Van Puymbroeck, p. 17) were controlled until recently by the Iran Tea Company, a government organization that rented them yearly. Since the year 2000, the state has initiated a policy of liberalization, which has brought about a serious crisis (Allaverdian). In these factories, the various processing operations are mechanized—the machines are originally from England or were built after English models—and the categories of teas are thoroughly selected. The leaves are first placed on stacked shelves made of long strips of fabric (*palās*), and dehydrated at room temperature or with hot air; they are then rolled and cut in electric machines (an operation called *māleš*), and put through sieves (*ḡarbāl*). The sifting allows for selection of the best grades—those resulting from the first rolling (*māleš yek*)—that include the fine point of the golden (*zarrin*) bud (*ḡonče*) at the tip of the plant. This top quality tea is itself graded into three categories according to the size of the tips, in descending order of value: the *ḡālam* “the excellent one” (the equivalent of Golden Flavoury Orange Pekoe, according to international classifications), the *šekaste* “the broken one” (Golden Flavoury Broken Orange Pekoe) and the *baruti* “the dusty one” (Golden Flavoury Broken Orange Pekoe Fanning). The remaining leaves are rolled and sifted twice again (*māleš do*, *māleš se*), and sorted into three categories after each sifting. Fermentation then takes place in a special room where the temperature must be warm and humid. Finally, the tea is dried in a high temperature oven. The bulk of the production processed in these factories was, until recently, shipped to Tehran where it was tested, sorted and mixed under the control of the Iran Tea Company.

Thus, the technical system of Gilān is a striking example of the coexistence in Iran of archaic methods and modern industrial technology. The contrast is due to the singular economic history of the area where, along with food crops providing daily needs, commercial or speculative crops were initiated and developed by the State or by entrepreneurs to meet extra-regional or international needs.

In the rest of this entry, we will not return to the sericulture or tea production techniques mentioned above which are the subject of specific articles (see ABRIŠAM; ČĀY). Rather, we shall study in greater detail the techniques of rice production (for a brief outline of these, see BERENJ), as well as wheat and barley culture and oil processing, all of which illustrate, each in its own way, the various facets of the above-mentioned technical parallelism.

Rice-growing techniques. Because of the winter cold (here the climatic conditions for rice growing are extreme; see Gourou, p. 51) and because of insufficient water resources, the work cycle is concentrated over a short period of time between spring and fall. Within six months, the irrigation canals are cleaned, the fields are plowed and harrowed, the small flood banks between the paddies are repaired, the seedbeds are prepared and supervised, the crop is transplanted, weeded, harvested and threshed. Growing rice, more than other cereals, requires a great number of technical operations and a significant investment in labor. In 1963, before agriculture became mechanized, the number of days necessary to cultivate one hectare was estimated at 244 (ʿAṭāʾi, p. 113). In 2004, it was estimated at 119 (Allaverdian, p. 39)

The varieties cultivated in Gilān belong to the *Oryza Sativa L.* type. At the beginning of the 20th century, Rabino and Lafont (1910b, pp. 145-54) identified five major varieties classified according to the shape and the size of the grain: *čampā* (short and thick), *rasmi* (longer and wider) and, by ascending order of length, thinness and quality, *ʿanbar-bu, mawlāʾi, ṣadri*. The čampā variety, high yield and resistant but of poor quality, has almost entirely disappeared though it was at one time the basic food of rural families. Several intermediate varieties were introduced since the beginning of the 20th century: *ḥasansarāʾi, ḡariba, āqāʾi, binām* and the number of varieties has continued to increase for the past thirty years with the introduction of higher yield, poorer quality varieties (such as 1033) or, on the contrary, varieties close to the *ṣadri* (*ṭārom, hāšemi, kāẓemi, qanbari*), which is a more fragile and less productive variety which commands a higher price because of an increasingly hard-to-please market demand. Farmers have identified sub-varieties of these types of rice using three main criteria: color of the chaff (black, white, red, or yellow); the presence or the absence and color of the tassel on the spikelet and, finally, the time of maturation which varies between 110 and 150 days after transplanting. Therefore early (*zudras*) or warm (*garm*) rice varieties are opposed to late (*dirras*) or cold (*sard*) rice varieties. The former require watering four or five times during the farming cycle, the latter, more productive, seven or eight times. Using these criteria it is possible to single out each sub-variety; therefore, for example, the *sorḵ mawlāʾi domdār* “the red *mawlāʾi* with tassel,” is opposed to the *mawlāʾi sard bidom* “the cold *mawlāʾi* without tassel” (on these classifications, see Rabino and Lafont, 1910b, pp. 145-54; Bromberger, 1979, p. 162). Farmers grow between three and six sub-varieties chosen according to several factors: water resources, the need for

new investment, proportions of the crop intended for sale and for family consumption, harvest timing, all elements which lead them to combine, in variable proportions, cold and warm rice varieties, and higher, lower or intermediate qualities. In the delta, where irrigation is better, production is oriented towards rice monoculture of higher quality, while the piedmont farmers grow warmer and more rustic rice varieties.

Plowing is done at the end of winter and the beginning of spring. Before the introduction of tillers in the 1960s, and later, at the turn of the century, of tractors, the only tool used on the plain was an ard (i.e. a short, light swivel plow with a symmetrical plowshare, called *kāvol* to the west of Safidrud and *gājeme* to the east) with a short beam, drawn by an ox or a horse. Although its general shape is the same everywhere, the ard has several variants depending on the area and the nature of the work (see Bazin and Bromberger, pp. 18-23 and maps 6, 7). In Ṭāleš, it is made by peasants of a single piece of wood (In border areas where rain fed crops and rice are grown side by side, for the first plowing of the rice fields, farmers use, as mentioned earlier, a so-called Ṭāleši ard, with a long beam (*ḵiš*) (The short beam ard is drawn by an ox fitted with a single yoke (*lap* in the west of the province, *jet* in the east) tied with traces to the swingletree. Such a single ox yoke (The second plowing is immediately followed by the repair of the dikes which separate the paddies (*kale*). This operation, called *marzbandi* (lit. “demarcation”), is accomplished with long spades (*gerbāz, ḵelik, čelāru*). Harrowing takes place immediately after the third plowing to homogenize the mud and level the paddy. An ox (or a horse in the delta area) is harnessed, with the kind of yoke described above, to a curved board (*piškavol* in the west of the province, *lat* in the east) fitted with a handle (While the plowing and harrowing take place, rice seeds are allowed to germinate and sown in nurseries. These operations generally begin in the plain on *sizdah bedar* (13 Farvardin, or 3 April) and a little later (around 15 Ordibehešt = 5 May) in the border areas. Germination can be done in a number of ways: in the old days the seed grain, presoaked in lukewarm water over three days, was placed in bags (*guni*) or baskets (*čipi*) hung from the beams of the house veranda. Nowadays, in the farms of the plain, the presoaked seed grain (*jo*) is placed on a sheet of fabric or plastic which is itself placed on a layer of straw; then it is covered with branches of the heat producing elder tree (*Sambuccus ebulus*, locally called *šund, pulḵom*; Plate IV), and then with fabric, manure, or a sheet of plastic. In other instances seed grain is placed in a bag covered by a rug and frequently sprinkled with hot water.

Once germinated, the seed grain is sown in nurseries (*tumbijār*) which are meticulously prepared and carefully watched, in order to avoid excessive cold, poorly controlled irrigation, or lack of manure, all likely to compromise the growth of seedlings and cause them to yellow. The task is carried out with much care and is accompanied by propitiatory rites (see GILĀN xvi. FOLKLORE) to ensure good performance. The men use spades to plow, and women complete the task with small hoes, embankments are heaped to demarcate the nurseries, animal and vegetable fertilizers are carefully spread, and, a few days before sowing, the soil of the *tumbijār* is trampled and leveled manually by women. They also sow seed grain on water-covered mud; after the water has filtered in and evaporated, the seedlings are covered with charcoal and ash (*suḵte, sute*) and watered again in three days' time. After three weeks, in good weather, the seedlings are ten centimeters high and ready to be transplanted. During that time, scarecrows with cow heads or the din of metal utensils hung above the nurseries keep the sparrows away. That particular risk disappeared, in the 1980s, with the use of plastic sheets placed over hoops to cover the nurseries. Less time is needed to grow seedlings (about fifteen days) but constant and careful supervision of nurseries is always necessary and includes, for example, checking twice a day the waterlevel and airing the seedlings.

After they have been delicately removed from the *tumbijār*, the seedlings are transferred in large trays (*tabāg*) to the *bijār* where women replant them (About ten days after transplanting (*nešā*), the weeding operations begin (first *vijin*, and two weeks later, *dobare*), in the temporarily drained rice plantations. Under a blazing sun, women then bend over to tear off with bare hands the *suruf*, a kind of *Panicum*, the *čikevāš* (*Asperula humifosa*), the *qāšoq-ḡāš* (*Sagittaria sagittifolia*), which are harmful to the growth of rice. To avoid burns and to soothe the wounds on their fingers, they cover them with elder tree (*pulḵom*) sap. The only thing left for men to do afterwards is to clean the dikes which separate the paddies with billhooks (*dās*).

Those are the last major technical operations before harvest but it is still necessary to irrigate the *bijār* two or three times depending on the rice varieties cultivated, to repair or rebuild the hedges (*čapar, parčin*) which protect from animal intruders (particularly wild boars). In the areas close to forests, a watchman is hired to stay on a covered platform (*kutam*) in the middle of the fields and drive away visiting wild boars.

A lengthy operation requiring significant labor, the harvest (*berenjbini*) takes

place between the end of July and the beginning of November depending on the microclimate and the cultivated rice varieties. The harvest is done by men, occasionally by women, using sickles (*dāre*) with short (20-25 cm), serrated, and slightly curved blades. The harvesters grab handfuls (*mošte, qabze* in Gilān, *čanga* in southernmost Ṭāleš) of stems with their left hands and cut them by rubbing them with sickles held in their right hands. In the border areas, rice is harvested using sickles with curved, smooth and long blades, called *urāg*, ordinarily used to cut wheat. The latter operation is done in three steps rather than two: the harvesters gather a great number of stems with the blades and seize them with their hands before cutting them. Intermediate formulae are used in Ṭāleš where sickles have medium-size serrated blades (ca. 30 cm) for the harvest of rice and corn (on the typology of sickles, see Sigaut, pp. 34-39). The stems are cut at various heights depending on the needs for straw. In central Gilān where straw is used to make ropes, brooms, to cover roofs, to feed cattle… the haulm is cut short. Elsewhere the haulm may be cut longer (for cattle fodder as well as fertilizer once tilled).

The harvested rice is carefully sheaved and stacked following strict rules specific to each locality; usually 12 handfuls make a sheaf (*darz*) and 50 sheaves a stack (*kuva*); sometimes a stack is the size of a load (*bār*) carried by a horse as, for instance, when it is made of 25 sheaves of 12 handfuls each or 30 sheaves of 10 handfuls each. Such precise accounting once facilitated crop sharing between tenants and landlords. After those tasks are completed, rice is carried to the farms either on horseback or by men using shoulder sticks (*čānču*).

The sheaves are stored in various structures (for more on the morphology and the distribution of such structures, see Bromberger, 1979, pp. 165-67; idem, 1989b, pp. 87-94). The form most generally found in the north of the province and in the central plain to the west of the Sefidrud is a long, low barn built directly on the ground (called *kuruj* or *telembār*) (Of all of these structures found side by side in the central plain, only the storehouses on pilings, hence raised above the damp ground and protected from pests, are an efficient means of storage. A central flue (*havākeš*) is left in the middle of the mow to ventilate and dry the sheaves; thus the crop can be stored as inventory for several months or even years in anticipation of favorable market conditions, usually in the spring. In many areas of central Gilān only the wealthier farmers, who work more than two hectares of paddy field, own raised storehouses, which is thus a sign of social differentiation.

A practice peculiar to the Caspian provinces is to complete the drying process by smoking (*dud dādan*) the rice; this, it is said, facilitates storage, gives the rice an unmistakable aroma, and keeps the grains from sticking together during cooking. As previously mentioned, there are two methods of rice smoking: (1) Sheaves may be hung in a place heated by the slow combustion of a mixture of wood and rice chaff; they may be either placed over the poles or beams which connect the different sides of the roof or of a room (a method frequently used in the area of the Safidrud delta), or placed horizontally on trays covered with cob, located halfway between the ground and the roof (a preferred formula in the north of the province); (2) The paddy (*jo*), once separated from the stalks, is spread out on racks covered with daub or placed in vessels (*kālevi*) made from cow manure and then smoked. Smoking is usually done in the main room of the house though a specific structure (called *garm-a ḵāne, bojḵāne*) is sometimes built for that purpose.

Once out of the shed or drying room, the sheaves are threshed to separate the rice seed from the panicles (*gūša*). The most common method consists in threshing rice with flails (*jāku, gučin, lasku*) (Figure 18), a task performed by men or women on the gallery of the house, under the *kanduj* or in the *telembār*; trampling by cattle (horses, bovines) on a surface (sometimes covered) is a method practiced only in the northern and eastern parts of the province (see Bazin and Bromberger, map 13), in areas close to the territories where the prevailing crop is wheat. At the end of the threshing or trampling operation, some grains still remain on the panicles; the women of the house complete the grain removal by pushing the panicles between the tips of a split reed. Lastly, the women winnow rice in order to get rid of sterile and empty grains.

To husk (*pust kandan*) and polish (*sefid kardan*) rice, various more or less complex processes were used in the old days. The simplest method, used for small quantities, consisted in striking the paddy in a mortar (*hāvan*) or a hollow trunk (*nāv*) with a handheld pestle (*jānse, jangasar*) resembling a small dumbbell. Rice intended for family consumption was processed with a foot-activated pestle (*pā-dang*) made of a beam acting as a seesaw lever and tipped with iron points. A man, sometimes a woman, perched on the beam, would use his feet to alternatively lower and lift the pestle which came down into a mortar crushing the rice paddy mixed with a little meerschaum as a polishing agent. A third, more productive method, using hydraulic pestles (*āb-dang*) and practiced by commercial millers, made it possible to process larger quantities

intended for both owner and for sale. A vertical wheel with pallets fitted with metal blades was activated from below by water from a mill race; it drove a shaft (*tir*) mounted with cams (*kutinā*) each lifting a pestle (for further description and diagrams of *pā-dang* and *āb-dang*, see Rabino and Lafont, 1911, pp. 20-23; Wulff, pp. 290-91; Mohebbi, pp. 177-82, who noted that there is no confirmed evidence of the use of *āb-dang* until the 17th century). Whatever the method used (or combination of methods, such as *āb-dang* followed by *pā-dang*; see Faḵrāʾi, p. 127), husking and polishing were divided into three phases, each one ending with a winnowing; the first two poundings produced rice types called *gāče* and *dobare*, clear of outer glumella but still containing bran (*sup, puf, kapak*). At the end of the third pounding, rice, now polished, was said to be *vataš* and passed three times through a sieve (*alak*); the first sifting produced whole grains (*berenj*), the second grains split in two (*miāndāne*), the third, fragments (*čekār*).

For half a century, technical innovations have gradually transformed rice cultivation. Husking and polishing in small factories (*kārḵāna-ye berenjkubi*) were the first mechanized operations (as of the end of the 1940s in the central plain). Mechanical threshing machines (*ḵarmankub-e motori*) were brought in later, at the end of the 1960s. Tillers were introduced during the same decade and were widely used in the 1970s; tractors have only been used since the beginning of the 21st century in some areas (Rostamābād, Lešteneša, and elsewhere) where fields were consolidated and leveled, and the landscape completely transformed. Several operations continue to be done manually (transplanting, weeding, harvesting) because of the small size of the fields, and the lack of capital (mechanical planters and chemical weed killers are expensive) but also, depending on who does the work, in as much as the mechanization of male tasks was given priority (see GILĀN xvii. GENDER RELATIONS).

Wheat and barley growing. Wheat (*gandom*) was grown at one time in the plain and on the Piedmont of Gilān (older inhabitants remember; see also Melgunof, pp. 257, 260; Bazin, I, p. 148), but it was replaced, during the 20th century, by rice and other cultures. Today it is confined to the humid mountains of Ṭāleš, from the Manjil pass all the way to Rostamābād and the arid slopes of Alborz east of Safidrud. With the few exceptions of the areas close to the southernmost borders of the province, wheat is a rain fed crop (*deymi*). From the Caspian slopes to the plateau the systems of crop rotation varies in some ways. On the lower levels of the humid mountain of Ṭāleš, crop

rotation is not customary. Winter wheat and barley (*pāʾize* "fall" is the word used) alternate from one year to the next with maize sown in the spring (Bazin, II, p. 11). At higher altitudes, and generally, on the arid slopes, a biennial crop rotation between winter wheat or barley and fallowing is the rule. Either neighboring fields are alternatively cultivated, or the grounds are divided into two plateaus, one cultivated, the other fallowed (known as *āyeš* or *nābar*) and either left unseeded or planted with chick-peas, lentils, or other late summer crops.

The work cycle for wheat and barley, much less trying than the work required for rice, begins in the spring with a first plowing followed by harrowing; in the fall, a second plowing is done before sowing, followed again by harrowing, and the harvest takes place between the end of June and the end of July. The tools used for the preparation of the fields vary from the west to the east of the province (see Bazin and Bromberger, map 6 and p. 24). In Ṭāleš and all the way to Rostamābād, the ard (generally named *ḵiš*) is made of a single piece of wood, fitted with a plowshare and sleeve, and does not include any device to adjust the angle of ground penetration (Figure 10); in simplicity and shape, if not in size, it is similar to that of the *kāvol*, and is used in border areas, as mentioned before, for the first plowing of the rice plantations. In the east of Safidrud, the ard (*gādār*) is made of two pieces of wood, the beam is tightly fitted inside the sole, the plowshare is held by two nails and a metal sheath is used to adjust the angle of ground penetration (Harvesting is done primarily by men using a sickle with a curved, smooth, and long blade (*urāg*) (cf. *supra*). Before they are threshed, the sheaves are left to dry, away from the cattle, either in the yard of the house (in northern Ṭāleš), or in the middle of the fields under the watchful eye of a guard, or inside a stone enclosure, or in trees (in the eastern mountains of the province). Simple trampling by the cattle is the method used for threshing (Plate VI). A traditional tool of central Iran called *jangal* (the Roman *plaustellum*), a threshing wheel made of two axes fitted with points or blades, is used only in the southernmost border area of the province, near Manjil. The *tribulum* (*vāl*), a board with flint or metal points, is a popular tool in western Iran, but is not found in the province; in fact, its popularity decreases at the border of neighboring Azarbaijan. Once it is winnowed with a pitchfork (*belang*), the grain is sifted, then washed and ground traditionally in mills activated by a horizontal wheel. Since 1970s-1980s such technical devices for the preparation of the fields and processing of the harvest have been replaced by machines: tractors with disk-plows for plowing and hulling or, for the latter, mechanical threshing-

machines and motorized grinding mills. The modern techniques spread faster in the wheat growing regions than in the smaller rice growing areas. Moreover, these two crops are representative of two distinct conceptual worlds. Wheat growing is meant for large spaces, surfaces are evaluated by the weight of the seeds, the process is spread over a long period with only a few operations, harvest is counted by armfuls; rice growing is confined to small spaces, surfaces are evaluated by units of both surface and mass (the *darz* is the sheaf made of 10 or 12 handfuls and equals one thousandth of the *jarib*, or approximately 10 square meters), the farming calendar is short and fast, harvest is counted by handfuls. Although this tendency is more obvious in rice growing areas, in both cases individual forms of land development prevail: there is, for example, no periodic reapportionment of the land as in the *boneh* of the Ṭāleqān or Qazvin regions (Sternberg-Sarel, pp. 211-13), wheat is not threshed in a collective area (the operation is done on the spot or, as in Ṭāleš, in the family enclosure), mills are not owned jointly.

Olive-growing. Olive culture is said to have been introduced to Gilān by a colony sent from Syria by Timur (Rabino, p. 210). Concentrated around Rudbār-e zeytun (Rudbār of olives), a site made famous by ʿAbbās Kiārostami's movies, it covers a small territory with some Mediterranean characteristics. The dry climate, however, requires irrigation: "the water allowance varies between seven or ten to thirty days depending on the soil and seasons" (Bazin, II, p. 113). In spring, farming methods include tilling with a hoe (*tarašt*), fertilizing with animal manure into trenches (*čāle*) around the base of the trees. Olive-trees are not pruned and olive picking is done with long thin poles (*kater*); the fruits are gathered and carried in baskets woven out of willow (*bid*) branches. Picking goes from the end of October to December depending on the varieties picked and on their destination (table olives, *ḵorāki*, used to prepare *zeytun parvarde* [see GILĀN XXI. COOKING] are eaten green whereas olives intended for oil are picked black at the end of maturation). Olive growers distinguish ten varieties of *zi* (local name of olive) according to their shape, shades of coloration, even according to the aspect of the tree. For home consumption, the best kind is *mārizi* ("in the shape of a snake"), long and narrow, and, just below, the shorter *šangizi* or *šankizi*; to make oil, as its name indicates, the *roḡāni* or *roḡānzi* variety has a high yield (one liter of oil for each five kg of olives). Other varieties, used as table olives or for oil, are less valued: the *sefid* (white), large olives with a russet shade and whitish tree trunk; the *zard* (yellow), a little darker than the *sefid*; the *saḵtezi*, of the same color as the *zard* but with tough skins; the *siāh* (black); the *gerde* (round).

To make table olives edible, various traditional processes are used: olives may be allowed to macerate in ashes, to remove their bitterness, then soaked in fresh water during one week, washed carefully, pitted and preserved in brine (Chodźko, p. 77). Another technique consists in sprinkling olives with salt after crushing them. Whatever the technique used, the olives are preserved in earthenware jars (*ḵomre*) or, more frequently nowadays, in large plastic containers (*boške*).

Compared to those used in the Mediterranean world (Casanova), the techniques of oil processing in the area of Rudbār have very specific characteristics which have not been mentioned in historical analyses such as Mohebbi's (pp. 167-68) for example, based only on the study of texts. In Gilān, presses for a long time did not use a screw, a system missing from the repertory of traditional rural techniques. They were usually made of two beams, forming a kind of vice, between which a bag filled with olives was placed and on which pressure was applied by manpower only.

But, before the pressing operation, several steps were taken to soften the olives and remove their vegetation water. Generally, the olives were first boiled in a container (*tiān*) to become softer (Churchill, p. 3; these data are confirmed by contemporary local accounts). Then they were dried and allowed to settle on the flat roofs of the houses, in attics, in bags, in a stone pit covered with cob fitted with an opening to drain the vegetation water (*āb-e zard*). After those steps were completed, olives were placed in a hollow trunk (*nāv*) or in a large tray (*ṭašt*), to be treaded underfoot or crushed with a wooden pestle.

Pressing could be reduced to the simple treading or crushing of olives, possibly placed in a bag (*kise*) made of sheep wool or goat hair. To avoid falling while treading, people could hold on to a cord tied to the ceiling. The oil obtained flowed into a tray or was directed to a barrel filled with water; because of its lighter weight, it stayed at the surface, while the water including that which still came out of the olives, was evacuated by an opening at the base of the barrel.

Another basic technique (see Parain, pp. 270-71) consisted in pressing olives between two stones: Chodźko (p. 76) speaks of two grinding stones, Townley (p. 2) of two "flat stones", which seems more probable and was again recently found to be used for domestic production.

But the most frequent method identified is that of pressing between two horizontal beams, one fixed, and the other mobile; such a process was mentioned as early as in the 16th century (according to a manuscript [Persan 727] in the Bibliothèque Nationale in Paris, quoted by Mohebbi, pp. 221-22). This generic technique of pressing with a lever has had several variants and modifications in the area of Keleštār, Rudbār, and Rostamābād. The simplest method consisted in placing a bag filled with olives on a board and to lower a large horizontal beam (*alvār*) with one end driven into a wall. Men would sit on the high beam to exert the necessary pressure. The oil flowed into a container (*lāk*) placed under the bag. A more elaborate variant, combining the principles of leverage and of tightening, consisted in dropping a vertical beam (*čāneču, taram*), tightly fitted inside a thick wooden bench (*pil-a ču*, lit. "large wood"), on the mobile board of the vice which in turn pressed the bag of olives wedged against the fixed board, itself fixed inside the bench. An individual, perched on a block of wood where the bench was secured, pulled the vertical beam with a cord (*lāfen*); he was held fast by a wooden bolster (*kun-a taḵta*, lit. "root board"), acting as a strap.

Once the first cold-press oil was extracted, the process was generally repeated: the pomace was heated and pressed again. Sometimes another process was used after the second pressing, or even directly after the first: residues (*perz*) were placed in a trench (*čāle*) set up as a mortar and crushed with the foot-activated pestle (*pā-dang*) normally used to husk and polish rice. The resulting paste was then cooked in boiling water and the rising oil skimmed off with a spoon. Whatever the process used, oil was frequently boiled to eliminate the remaining water.

These various, clever, and rudimentary techniques were used at home or in small oil mills owned by notables. Great changes took place during the 20th century, depending on the type of operation. In small oil mills, screws or capstans were introduced as early as 1940, resulting in increased productivity. The pressure exerted by a metal screw passing through both the fixed and mobile boards replaced the pressure created by the weight of bodies. The first board was held by two vertical beams leaning against the wall (thus the name of the device: *divārku*) and anchored in the ground and the ceiling. The second board was secured, at one end, to the first board by means of a large peg, which also passed through the vertical beam. At the other end, the boards had screw holes for tightening (Well before the latest improvements to the local presses, more efficient mechanisms had been installed in the large oil mills of

the valley. In 1890, a monopoly of olive buying and processing was granted to Messrs. Kousis and Theophilactos, two Greek traders from Baku, under Russian protection (Churchill, p. 1), who established a factory in Rudbār and installed presses imported from Marseilles (Townley, p. 2). Although the project was directed at exporting oil to Russia, it failed due to high customs duties (Rabino, p. 51). Beginning in the 1930s, crushing with a revolving vertical millstone (*dastgāh-e pičī*) (If four-fifths of the production of olives is destined to oil extraction, and the remainder reserved for table use, a considerable part of second quality oil is reserved for the production of soap, a specialty of Keleštār. In addition to olive oil (12 parts), the ingredients are: alkali (*qalyāb*), found in saline plants, lime (*āhak*) and salt, 10, 4, and 1 parts, respectively. The mixture is heated to a boil three times in succession, resulting in an emulsion where the ether contained in the fat is broken up by the alkali. A salted detergent is added to purify the soap, which is then poured into cases where it becomes solid.

The example of olive oil making illustrates once again the paradoxical complexity of the technical system of Gilān, characterized as it is by the coexistence of local rustic techniques and imported machinery. Since the 1850s, the province has been the setting for experimentation and industrial innovation in rural areas, while at the same time simple forms for acquiring and processing goods for home consumption or small-scale marketing were maintained. Studied over a longer period of time, a study of the history of the local production techniques in Gilān is by and large informative. Material and farming limitations require comparable solutions everywhere throughout the world: ards harnessed to oxen with single yokes, shoulder sticks to carry sheaves, foot-activated and hydraulic pestles are all part of the equipment used by rice traditional farmers almost everywhere. The leveraging and tightening technique used to press olives is acknowledged in most Mediterranean societies. But, against a backdrop of technical similarities, specific techniques emerge: rice in Gilān is traditionally smoked, an exceptional technique throughout the world; the combination of tightening, and use of a lever and capstan to process olives is unique. Finally, it is important to note that cultivated resources are not always naturally occurring local resources. The majority of crops (tobacco, tea, peanuts, citrus fruits and among them the newly introduced kiwi) have been imported from other areas over the course of history—including rice, silk, olives a long time ago—whereas plants originating in the area, like the grape vine, have never been cultivated.

PLATES

Plate I. Keeping one's balance when feeding the silkworms with branches of mulberry trees, Langarud area, 1996. (Courtesy of the author).

Plate II. An old *form* lying on a *kura* (brazier) used to dry tealeaves, Lāhijān area, 1996. (Courtesy of the author).

Plate III. Harrowing the rice field with a *piškāvol*, Safidrud delta area, 2000. (Courtesy of the author).

Plate IV. Covering the seed grain with branches of elder tree, Safidrud delta area, 2000. (Courtesy of the author).

Plate V. Transplanting (*nešā*) the seedlings, Amlaš area, 1993. (Courtesy of the author).

Plate VI. Two oxen, joined by a collar yoke, thrashing the harvest, Deylamān area, 1972. (Courtesy of the author).

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