



GANDOM

GANDOM, the New Persian word for wheat designating both the plant and the grain. All New Iranian names of wheat derive from Av. *gantuma-*. The middle consonant is unstable (Bal. *gandim*, Ṭālešī *gandəm*, Par. and Orm. *ganom*, Kurd. *ganim*, Khot. *ganama*), Yaghnobi (*gantum/amtun* < Sogd. *γnt[w]m: γantom*) being the only New Iranian language to have retained the Av. -t-. Initial *g->ḡ-* in most Eastern Iranian languages (Pash. *ḡanəm*, but Wanetsi *ḡandəm*, Eškašmī *ḡundəm*, Sanglechi *ḡōndəm*, Munjī *ḡo[n]dəm*, Yid. *ḡādəm*, Wakhi *ḡ[ə]dīm*), and *ž-* in the northernmost Pamir languages (Shugh., Bartangī, and Rōšanī *žindam*, Sar. *žandam*). Local names for some of the numerous varieties of wheat cultivated in the Pamir and Hindukush region are listed in Steblin-Kamenskii (pp. 20 ff.; see also Morgenstierne, ss.v.; Bailey, *Dictionary*, p. 79; Mayrhofer, *Dictionary I*, pp. 347-48).

Wheat bread has been the staple of local diets throughout Iranian plateau for millennia, except in the southern Caspian lowlands, where it is replaced by rice (see [BERENJ](#)), in the Solaymān Mountains, where maize bread is dominant, and in Nūrestān, where everyday bread is made from a mixture of millet and maize flour, millet and pulse, or barley and peas (Edelberg and Jones, p. 54; see figs. 1-3 for the comparatively low level of wheat cultivation in Gīlān and eastern Afghanistan). It is, however, not unusual to mix the flour of wheat with that of barley or maize to make bread, especially in times of scarcity. In Persia, wheat may also be consumed as *balḡūr* (Turk. *bulgur*, boiled pounded wheat, totally unknown in Afghanistan). According to nutrition surveys, wheat consumption diminishes along with urbanization and



westernization: while it furnishes 55 to 86 percent of the daily adult calorie intake among peasant families in Persia and Afghanistan respectively, the proportion drops down to 18 and 51 percent respectively among provincial urban middle classes (Bazin, 1973; Fischer, pp. 51 ff.; Oberlin-Faure, p. 83). On the other hand, wheat consumption hardly differs among settled wheat-producing villagers and their pastoral nomadic non-wheat-producing neighbors: it amounts to 87 percent of the daily calorie intake among the nomads of western Afghanistan (Casimir, p. 100). Only in the case of peripatetic nomads does it drop down to 50-64 percent (Rao and Casimir, p. 373). Moreover, many pastoral nomadic groups actually do grow wheat, either near their summer pasture lands or on both their winter and summer quarters.

Cytogeneticists consider that bread wheat (*Triticum aestivum* ssp. *vulgare*) has no wild counterpart in nature. It would have appeared by hybridization of cultivated emmer wheat (*Triticum dicoccum*), a “Mediterranean” cereal largely unsuitable for bread-making whose center of dispersion lies in the upper Jordan basin, and a wild goat-face graminea. *Aegilops Tauschii* (= *Ae. squarrosa*), widespread in the cold continental steppes from the Caucasus to Central Asia and especially frequent in north Persia, Transcaspia, and north Afghanistan below 2,000 m, where it is also a successful and aggressive weed in cereal fields (Zohary, pp. 60 ff.). Therefore, in contrast to emmer wheat, which was probably domesticated on the Mediterranean side of the Fertile Crescent and had already reached the western part of the Iranian plateau by the 8th millennium B.C.E. (Flannery, p. 82) but seems to have never reached its eastern part where only the naked *T. durum* is recorded in archaeological sites (Willcox, p. 183), bread wheat is likely to have appeared in the northern Iranian plateau. This probably spontaneous hybridization process cannot be located or dated with precision and may well have taken place in various sites at various dates. Anyhow, the most probable cradle of bread wheat lies at the interface of the respective areas of diffusion of *T. dicoccum* and *Ae. squarrosa*, perhaps “near the southwest corner of the Caspian Sea” (Zohary, p. 63). The earliest mentions of bread wheat on the western Zagros piedmont (Dehlorān, q.v.) date back to the 6th millennium B.C.E. (Flannery, p. 90). Due to its hybridization, bread wheat was far more adapted to extreme continental conditions than emmer wheat, which easily accounts for the large dissemination of the former towards Central Asia and the almost disappearance of hard wheat (*T. durum*), now restricted to a few isolated places in eastern Afghanistan, Kurdistan, and Fārs (Roemer and von



Rosenstiel, pp. 77 f.; Bor, p. 208).

A very broad range of bread wheat varieties has traditionally been grown in the Iranian lands, especially in Afghanistan, where N. I. Vavilov and D. D. Bukinich (pp. 238 ff.) have recorded the unusually high number of sixty varieties of soft wheat (*T. aestivum*) and fifty of club-wheat (*T. compactum*; *gandom-e kalak*), several of them endemic. While the latter are restricted to an altitudinal belt of 1,700 to 2,300 m, the former are ubiquitous up to 3,400 m above sea level (Vavilov and Bukinich, p. 272; Kussmaul 1965, p. 44). In the 1960s and 1970s, foreign improved, high-yielding and rust-resistant varieties, such as Mexipak, Chenab, etc., have been introduced in Persia and Afghanistan (Djalali; Étienne, pp. 68 ff.). They soon hybridized with indigenous varieties, thus contributing to enhancing the botanical differentiation of local wheats.

Wheat has always been the dominant crop in the Iranian lands. However, the areas devoted to it have been evolving under the effect of contradictory factors: While demographic growth favored their increase, agricultural diversification and the progression of state-fostered industrial crops contributed to their decrease. Nowadays, wheat is grown on 49 percent of the cultivated land of Persia (6,209,000 ha out of a total of 12,580,000 in 1370 Š./1991-92; only 18 percent of all farmers producing none), 59 percent in Afghanistan (1,670,000 ha out of 2,839,000 in 1369 Š./1990-91), but only 17.5 percent in Tajikistan (144,000 ha out of 821,000 in 1991). Such contrasts are quite recent. They stem from three divergent evolutions at the national level: a steady expansion in Persia (1942-44: 1,600,000 ha), a structural decline in Tajikistan as a consequence of heavy emphasis put on cotton cultivation (410,300 ha, 51 percent of cultivated land in 1940), and a conjectural war-caused decline in Afghanistan (2,348,000 ha, 61 percent of cultivated land in 1978; see [Table 1](#) and [Figure 1](#)).

[Figure 3](#). Geographical distribution of wheat production in Afghanistan by province, 1983.

[Figure 4](#). Wheat production in Afghanistan by province, 1983.

Wheat is grown both as an irrigated and rainfed crop, with techniques quite similar to those for barley (q.v.; see also Beckett; Wulff). The proportion of irrigated (*ābī*; q.v.; see also *ĀBYĀRĪ*) wheat fields varies from 35 percent in Persia to 96 percent in Tajikistan (56 percent in Afghanistan: Koenig and



Hunter, p. 6; see also Gentelle, pp. 103 f.), but these figures are only rough estimates since areas of unirrigated agriculture are poorly registered. Dry-farmed (*deymī* in Persia, *lalmī* in Afghanistan, *bogarī* in Tajikistan) wheat is restricted to areas receiving more than 210-230 mm of precipitation in the year (see *BĀRĀN*), where it occupies the slopes up to 3,400 m in the Hindukush (Kussmaul 1965, p. 44). Irrigated wheat is grown in the valleys or at the mouth of subterranean channels (*kārī/ēz*, *qanāt*) and does not seem to be cultivated at elevations above 3,150 m (Grötzbach, p. 111).

Rainfed wheat is sown in autumn in Persia (mid-October to mid-November), but in spring (mid-March to mid-April, or even May) in more continental Afghanistan and Tajikistan (*gandom-e bahārī*) and in higher elevations in Persia (Mortensen, p. 213). Fields are plowed with various kinds of traditional plows (Wulff, pp. 262-65; Bazin and Bromberger, p. 24 and map 6; Digard, pp. 80-84; Mortensen, pp. 206-13), or more rarely with imported disk-plows pulled by a tractor. The weight of wheat seeds needed to sow a field is the traditional way of estimating its surface (e.g., see Bazin, n.d., p. 41). Wheat is harvested from June to October, according to elevations (Pikulin, p. 122), mainly with a sickle (*dās*) since the use of combines remains strictly limited to a few large estates located on a flat topography. Threshing was traditionally performed by flails, draught animal treading or threshing boards or wains, depending on the location; nowadays, however, it is more and more done with a threshing machine or a tractor pulling a disk-plow. Rainfed wheat being an unfertilized crop, one or two years of its cultivation must be followed by a long fallow which can last from two to ten years, depending on the availability of land (Kussmaul 1965, pp. 46f.); sometimes, however, barley or pulses (lentils, chick-peas) are sown in spring in rotation with rainfed wheat.

Irrigated wheat, on the other hand, is a typical winter crop sown in autumn and harvested from April (in *Īzestān*) up to the late August at higher elevations; above 2,800 m, however, only spring wheat can be cultivated on irrigated fields (Grötzbach, p. 111). Irrigated winter wheat is sown on fertilized fields and in rotation with various summer crops (maize, beans, cotton, etc.) whenever the cropping season is long enough and shortage of water not a frequent problem (see typical rotation schemes in Bazin, n.d., pp. 46 ff.). Fields are divided into small quadrangular patches of land separated by low dikes and watered from three to ten times according to climatic conditions and the availability of water.

Rainfed and irrigated wheat varieties differ from one another. Bread made



form the rainfed wheat flour is considered of higher quality and more tasty than that made out of irrigated wheat flour which contains less gluten. This used to be a reason for smuggling rainfed wheat from Afghanistan into Pakistan (Koenig and Hunter, p. 35). On the domestic markets, rainfed wheat flour also sells higher than irrigated wheat flour (in Afghanistan the gap reaches 3-5 percent). In areas with extensive dry-farming, many peasants take this opportunity to sell their rainfed wheat and buy irrigated wheat instead for their own consumption (Kussmaul, 1965, p. 46).

Wheat yields are low according to world standards: in the early 1990s they ranged from less than 10 q/ha in both Afghanistan and Tajikistan to less than 15 in Persia (Table 1). Such average yields at the national scale have only limited value, however. Rainfed wheat actually produces about three times less than the irrigated one: in Afghanistan 5 against 13.3 q/ha in the decade 1963-72 (Koenig and Hunter, p. 7); and in Persia 4.7 against 14.5 q/ha in 1973, and 7 against 18.3 q/ha in 1988 and 23 q/ha in 1991. Moreover, rainfed is a risky crop, totally dependent on highly variable rainfall. Exceptionally good years with unusual high yields may therefore succeed exceptionally bad ones with crop failures which also affect the irrigated wheat, though to a more limited extent. In Afghanistan, for example, a severe drought in 1970-71 caused famine in some of the country's most remote areas (Rathjens).

Given sporadic irregularities, wheat yields have slowly increased over the last decades (Table 1; Grötzbach, p. 109), a trend which has been, however, almost entirely restricted to irrigated lands and has lately reversed in Afghanistan on account of the war and subsequent interruption of support services such as distribution of selected seeds, chemical fertilizers and pesticides; in northern Afghanistan, outbreaks of once-eradicated locusts (*malak*) and senn bugs (*kafšak-e gandom* "stinkbug," *Eurygaster integriceps*) have been resurgent since 1988, causing losses in wheat crops and food shortages (Agricultural Survey of Afganistan).

Increases in yields explain that the overall productions of wheat have actually grown faster than the lands devoted to it (Table 1). Despite subsidies to producers, including a guaranteed purchase price, the domestic supply of wheat per head has nevertheless decreased, putting an end to the long-established self-sufficiency in wheat in each country. Before mid-century, imports of wheat were only occasional in Persia and Afghanistan, and aimed at smoothing crop failures of drought or pestilence origin. They became more and more regular during the 1950s-60s, and finally emerged as a permanent



and more or less important item of foreign trade since 1957 in Afghanistan and 1973 in Persia. For the decade 1971-80, the Afghan annual production averaged an estimated 2,648,000 metric tons (out of which about 75 percent was from irrigated wheat), and imports 79,000 metric tons (mostly from the United States and the Soviet Union, including quantities received under aid), therefore accounting for some 3 percent of the national supply of wheat. During the following decade 1981-80, official figures have been respectively 2,164,000 metric tons (-18 percent) and 213,000 metric tons (+170 percent), with imports accounting then for 9 percent of the total supply, and even 14.5 percent in 1990, the highest percentage ever recorded (own calculation). In Persia, where domestic output supplied 129 kg per head in 1986 against 178 kg a decade earlier, wheat imports doubled between 1980 and 1984 to 3.2 million tons, and has since remained in the 1.5 to 5 million range (McLachlan, pp. 230 ff.; Amuzegar, p. 278). Similar developments also occurred in Tajikistan, although they used to be concealed behind the economic integration of the republic within the Soviet Union.

On a regional basis, some regions are normally surplus producers, serving as breadbaskets for deficit areas and towns. In Persia, four provinces have significantly improved their contribution to the national production: Kūzestān, in spite of the war with Iraq; Māzandarān, thanks to the vigorous development of the southern Turkmen Steppe; Khorasan, due to the progressive *waqf* estates of the Āstān-e qods-e rażawī (q.v.; Hourcade); and Fārs (q.v.), which experienced the sharpest increase in yields from 7.6 q/ha in 1973 to 26 in 1992 (Figure 1 and [Figure 2](#)).

Grain is obviously the most important product of wheat. It is sold, either rough or more usually milled into flour (see [ĀSĪĀ](#)), in special areas of the traditional urban markets called *manda(w)ī-e ārd* (often abridged to *manda[w]ī*) in Afghanistan, where a total of 48 were recognized in 1973 (Koenig and Hunter, p. 17; see examples in Centlivres, p. 71; Hakimi; Haider, pp. 151 ff.). Besides grain, however, chopped straw is a noteworthy by-product of wheat well cared for. It is used both as a winter fodder and as a temper added to clay to get building bud (*kāh-gel*). It is frequently piled up on the flat roofs of the houses (Kusmaul, 1971).



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