

## Study of Iran soil methods

**Hamid kheyrodin**

Assistant professor semnan university-Iran

Mail:hamid [kheyroidin@semnan.ac.ir](mailto:kheyroidin@semnan.ac.ir)

### ABSTRACT

Knowledge of soil types and their properties is highly important in determining constraints and potential as well as better utilization of soils. For example clay minerals are important fractions of the soil solid phase and many soil physical and chemical characteristics are controlled by clay minerals. Too many Iranian soil surveys need to be updated. Conventional soil survey methods are expensive and timeconsuming. In Iran en general digital soil mapping (DSM) can be used for updating soil surveys. Many sampling and modeling techniques exist for DSM. The Soil Profile Database of Iran, consisting of 4250 profiles, was used to test different soil-class interpolators. The target variables were soil texture classes and World Reference Base soil groups Soil compactibility which basically depends on soil texture, organic matter and soil water content during farm machinery trafficking are major factors affecting soil conservation.

**Keywords:** soil, profil, farm, moleding techniques

### 1. INTRODUCTION

Soil patterns vary widely. The abundant subtropical vegetation of the Caspian coastal region is supported by rich brown forest soils. Mountain soils are shallow layers over bedrock, with a high proportion of unweathered fragments. Natural erosion moves the finer-textured soils into the valleys. The alluvial deposits are mostly chalky, and many are used for pottery. The semiarid plateaus lying above 3,000 feet (900 metres) are covered by brown or chestnut-coloured soil that supports grassy vegetation. The soil is slightly alkaline and contains 3 to 4 percent organic material. The saline and alkaline soils in the arid regions are light in colour and infertile. The sand dunes are composed of loose quartz and fragments of other minerals and, except where anchored by vegetation, are in almost constant motion, driven by high winds.

#### Climate

Iran's climate ranges from subtropical to subpolar. In winter a high-pressure belt, centred in Siberia, slashes west and south to the interior of the Iranian plateau, and low-pressure systems develop over the warm waters of the Caspian Sea, the Persian Gulf, and the Mediterranean Sea. In summer one of the world's lowest-pressure centres prevails in the south. Low-pressure systems in Pakistan generate two regular wind patterns: the shamāl, which blows from February to October northwesterly through the Tigris-Euphrates valley, and the "120-day" summer wind, which can reach velocities of 70 miles (110 km) per hour in the Sīstān region near Pakistan. Warm Arabian winds bring heavy moisture from the Persian Gulf. Elevation, latitude, maritime influences, seasonal winds, and proximity to mountain ranges or deserts play a significant role in diurnal and seasonal temperature fluctuation. The average daytime summer temperature in Ābādān in Khūzestān province tops 110 °F (43 °C), and the average daytime winter high in Tabrīz in the East Āzarbāyjān province barely reaches freezing. Precipitation also varies widely, from less than 2 inches (50 mm) in the southeast to about 78 inches (1,980 mm) in the Caspian region. The annual average is about 16 inches (400 mm). Winter is normally the rainy season for the country; more than half of the annual precipitation occurs in that three-month period. The

northern coastal region presents a sharp contrast. The high Elburz Mountains, which seal off the narrow Caspian plain from the rest of the country, wring moisture from the clouds, trap humidity from the air, and create a fertile semitropical region of luxuriant forests, swamps, and rice paddies. Temperatures there may soar to 100 °F (38 °C) and the humidity to nearly 100 percent, while frosts are extremely rare. Except in this region, summer is a dry season. The northern and western parts of Iran have four distinct seasons. Toward the south and east, spring and autumn become increasingly short and ultimately merge in an area of mild winters and hot summers.

## Plant and animal life

### Flora

Topography, elevation, water supply, and soil determine the character of the vegetation. Approximately one-tenth of Iran is forested, most extensively in the Caspian region. In the area are found broad-leaved deciduous trees—oak, beech, linden, elm, walnut, ash, and hornbeam—and a few broad-leaved evergreens. Thorny shrubs and ferns also abound. The Zagros Mountains are covered by scrub oak forests, together with elm, maple, hackberry, walnut, pear, and pistachio trees. Willow, poplar, and plane trees grow in the ravines, as do many species of creepers. Thin stands of juniper, almond, barberry, cotoneaster, and wild fruit trees grow on the intermediate dry plateau. Thorny shrubs form the ground cover of the steppes, while species of *Artemisia* (wormwood) grow at medium elevations of the desert plains and the rolling country. Acacia, dwarf palm, *kunar* trees (of the genus *Ziziphus*), and scattered shrubs are found below 3,000 feet (900 metres). Desert sand dunes, which hold water, support thickets of brush. Forests follow the courses of surface or subterranean waters. Oases support vines and tamarisk, poplar, date palm, myrtle, oleander, acacia, willow, elm, plum, and mulberry trees. In swamp areas reeds and grass provide good pasture.

### Fauna

Wildlife includes leopards, bears, hyenas, wild boars, ibex, gazelles, and mouflons, which live in the wooded mountains. Jackals and rabbits are common in the country's interior. Wild asses live in the *kavīrs*. Cheetahs and pheasants are found in the Caspian region, and partridges live in most parts of the country. Aquatic birds such as seagulls, ducks, and geese live on the shores of the Caspian Sea and the Persian Gulf, while buzzards nest in the desert. Deer, hedgehogs, foxes, and 22 species of rodents live in semidesert, high-elevation regions. Palm squirrels and Asiatic black bears are found in Baluchistan. Tigers once inhabited the forests of the Caspian region but are now extinct.

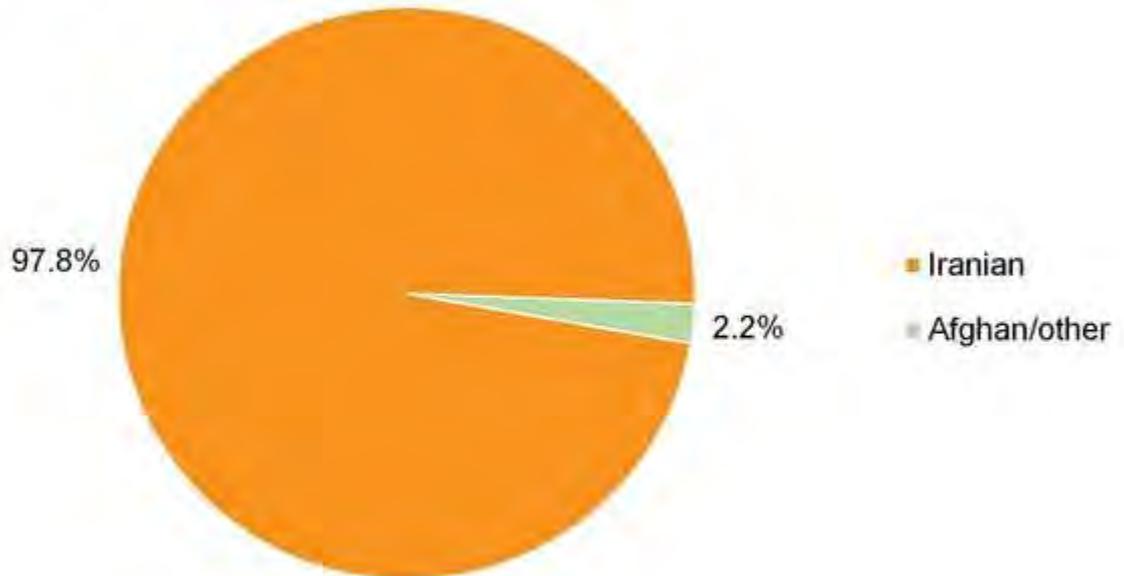
Studies made in Khūzestān province and the Baluchistan region and along the slopes of the Elburz and Zagros mountains have revealed the presence of a remarkably wide variety of amphibians and reptiles. Examples are toads, frogs, tortoises, lizards, salamanders, racers, rat snakes (*Ptyas*), cat snakes (*Tarbophis fallax*), and vipers.

Some 200 varieties of fish live in the Persian Gulf, as do shrimps, lobsters, and turtles. Sturgeon, the most important commercial fish, is one of 30 species found in the Caspian Sea. It constitutes a major source of export income for the government, in the production of caviar. Mountain trout abound in small streams at high elevations and in rivers that are not seasonal.

The government has established wildlife sanctuaries such as the Bakhtegān Wildlife Refuge, Tūrān Protected Area, and Golestān National Park. The hunting of swans, pheasants, deer, and a number of other animals and birds is prohibited.

Iran are descendants of the Aryan tribes that began migrating from Central Asia into what is now Iran in the 2nd millennium bce. Those of Turkic ancestry are the progeny of tribes that appeared in the region—also from Central Asia—beginning in the 11th century ce, and the Arab minority settled predominantly in the country's southwest (in Khūzestān, a region also known as Arabistan) following the Islamic conquests of the 7th century. Like the Persians, many of Iran's smaller ethnic groups chart their arrival into the region to ancient times.

### Iran ethnic composition (2016)\*



© Encyclopædia Britannica, Inc.

\*By citizenship.

**Iran: Ethnic composition** *Encyclopædia Britannica, Inc.*

Fig 1: Iran ethnic composition

been both urban and rural (with a significant portion of the latter at times nomadic), and they are concentrated in the western mountains of Iran. This group, which constitutes only a small proportion of Iran's population, has resisted the Iranian government's efforts, both before and after the revolution of 1979, to assimilate them into the mainstream of national life and, along with their fellow Kurds in adjacent regions of Iraq and Turkey, has sought either regional autonomy or the outright establishment of an independent Kurdish state in the region.



**Kurdish settlement** Areas of Kurdish settlement in Southwest Asia. *Encyclopædia Britannica, Inc.*

Fig 2: Areas of Kurdish iran , Iraq ,Syria and turkey

Also inhabiting the western mountains are seminomadic Lurs, thought to be the descendants of the aboriginal inhabitants of the country. Closely related are the Bakhtyārī tribes, who live in the Zagros Mountains west of Esfahān. The Baloch are a smaller minority who inhabit Iranian Baluchistan, which borders on Pakistan.

The largest Turkic group is the Azerbaijanians, a farming and herding people who inhabit the border provinces in the northwestern corner of Iran. Two other Turkic ethnic groups are the Qashqā'ī, in the Shīrāz area to the north of the Persian Gulf, and the Turkmen, of Khorāsān in the northeast.



Cloth being woven by Qashqā'ī women in the area of Shīrāz, Iran. © R. & S. Michaud/Woodfin Camp & Associates

Fig 3: Work woman in the area of shiraz

The Armenians, with a different ethnic heritage, are concentrated in Tehrān, Eṣfahān, and the Azerbaijan region. A community of Georgians is centred on and around the city of Fereydūnshahr, in Eṣfahān province. A few isolated groups speaking Dravidian dialects are found in the Sīstān region to the southeast.

Semites—Jews, Assyrians, and Arabs—constitute only a small percentage of the population. The Jews trace their heritage in Iran to the Babylonian Exile of the 6th century bce and, like the Armenians, have retained their ethnic, linguistic, and religious identity. Both groups traditionally have clustered in the largest cities. The Assyrians are concentrated in the northwest, and the Arabs live in Khūzestān as well as in the Persian Gulf islands.

### Languages

Although Persian (Farsi) is the predominant and official language of Iran, a number of languages and dialects from three language families—Indo-European, Altaic, and Afro-Asiatic—are spoken. Roughly three-fourths of Iranians speak one of the Indo-European languages. Slightly more than half the population speak a dialect of Persian, an Iranian language of the Indo-Iranian group. Literary Persian, the language's more refined variant, is understood to some degree by most Iranians. Persian is also the predominant language of literature, journalism, and the sciences. Less than one-

tenth of the population speaks Kurdish. The Lurs and Bakhtyārī both speak Lurī, a language distinct from, but closely related to, Persian. Armenian, a single language of the Indo-European family, is spoken only by the Armenian minority.

The Altaic family is represented overwhelmingly by the Turkic languages, which are spoken by roughly one-fourth of the population; most speak Azerbaijani, a language similar to modern Turkish. The Turkmen language, another Turkic language, is spoken in Iran by only a small number of Turkmen.

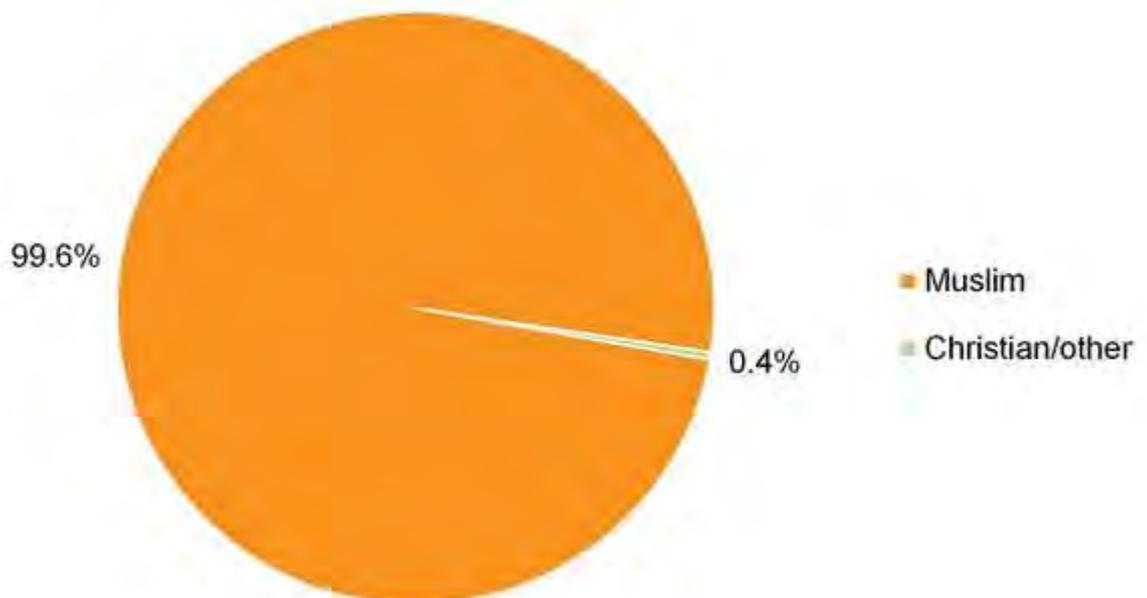
Of the Semitic languages—from the Afro-Asiatic family—Arabic is the most widely spoken, but only a small percentage of the population speaks it as a native tongue. The main importance of the Arabic language in Iran is historical and religious. Following the Islamic conquest of Persia, Arabic virtually subsumed Persian as a literary tongue. Since that time Persian has adopted a large number of Arabic words—perhaps one-third or more of its lexicon—and borrowed grammatical constructions from Classical and, in some instances, colloquial Arabic. Under the monarchy, efforts were made to purge Arabic elements from the Persian language, but these met with little success and ceased outright following the revolution. Since that time, the study of Classical Arabic, the language of the Qur'ān, has been emphasized in schools, and Arabic remains the predominant language of learned religious discourse.

Before 1979, English and French, and to a lesser degree German and Russian, were widely used by the educated class. European languages are used less commonly but are still taught at schools and universities.

## Religion

The vast majority of Iranians are Muslims of the Ithnā 'Asharī, or Twelver, Shī'ite branch, which is the official state religion. The Kurds and Turkmen are predominantly Sunni Muslims, but Iran's Arabs are both Sunni and Shī'ite. Small communities of Christians, Jews, and Zoroastrians are also found throughout the country.

### Iran religious affiliation (2016)



### Iran: Religious affiliation *Encyclopædia Britannica, Inc.*

Fig 4: Religious affiliation In Iran

The two cornerstones of Iranian Shi'ism are the promise of the return of the divinely inspired 12th imam—Muhammad al-Mahdī al-Hujjah, whom Shi'ites believe to be the mahdi—and the veneration of his martyred forebears. The absence of the imam contributed indirectly to the development in modern Iran of a strong Shi'ite clergy whose penchant for status, particularly in the 20th century, led to a proliferation of titles and honorifics unique in the Islamic world. The Shi'ite clergy have been the predominant political and social force in Iran since the 1979 revolution.

There is no concept of ordination in Islam. Hence, the role of clergy is played not by a priesthood but by a community of scholars, the ulama (Arabic *'ulamā*). To become a member of the Shi'ite ulama, a male Muslim need only attend a traditional Islamic college, or madrasah. The main course of study in such an institution is Islamic jurisprudence (Arabic *fiqh*), but a student need not complete his madrasah studies to become a faqih, or jurist. In Iran such a low-level clergyman is generally referred to by the generic term mullah (Arabic *al-mawlā*, "lord"; Persian *mullā*) or ākhūnd or, more recently, rūhānī (Persian: "spiritual"). To become a mullah, one need merely advance to a level of scholarly competence recognized by other members of the clergy. Mullahs staff the vast majority of local religious posts in Iran.

### The Arabesque dome of the Māder-e Shah madrasah, Eṣfahān, Iran. *Ray Manley/Shostal Associates*

An aspirant gains the higher status of mujtahid—a scholar competent to practice independent reasoning in legal judgment (Arabic *ijtihād*)—by first graduating from a recognized madrasah and obtaining the general recognition of his peers and then, most important, by gaining a substantial following among the Shi'ite community. A contender for this status is ordinarily referred to by the honorific hojatoleslām (Arabic *hujjat al-Islām*, "proof of Islam"). Few clergymen are eventually recognized as mujtahids, and some are honoured by the term ayatollah (Arabic *āyat Allāh*, "sign of God"). The honorific of grand ayatollah (*āyat Allāh al-'uẓmā*) is conferred only upon those Shi'ite mujtahids whose level of insight and expertise in Islamic canon law has risen to the level of one who is worthy of being a marja'-e taqlīd (Arabic *marja' al-taqlīd*, "model of emulation"), the highest level of excellence in Iranian Shi'ism(7).

There is no real religious hierarchy or infrastructure within Shi'ism, and scholars often hold independent and varied views on political, social, and religious issues. Hence, these honorifics are not awarded but attained by scholars through general consensus and popular appeal. Shi'ites of every level defer to clergymen on the basis of their reputation for learning and judicial acumen, and the trend has become strong in modern Shi'ism for every believer, in order to avoid sin, to follow the teachings of his or her chosen marja'-e taqlīd. This has increased the power of the ulama in Iran, and it has also enhanced their role as mediators to the divine in a way not seen in Sunni Islam or in earlier Shi'ism.

### **Religious minorities**

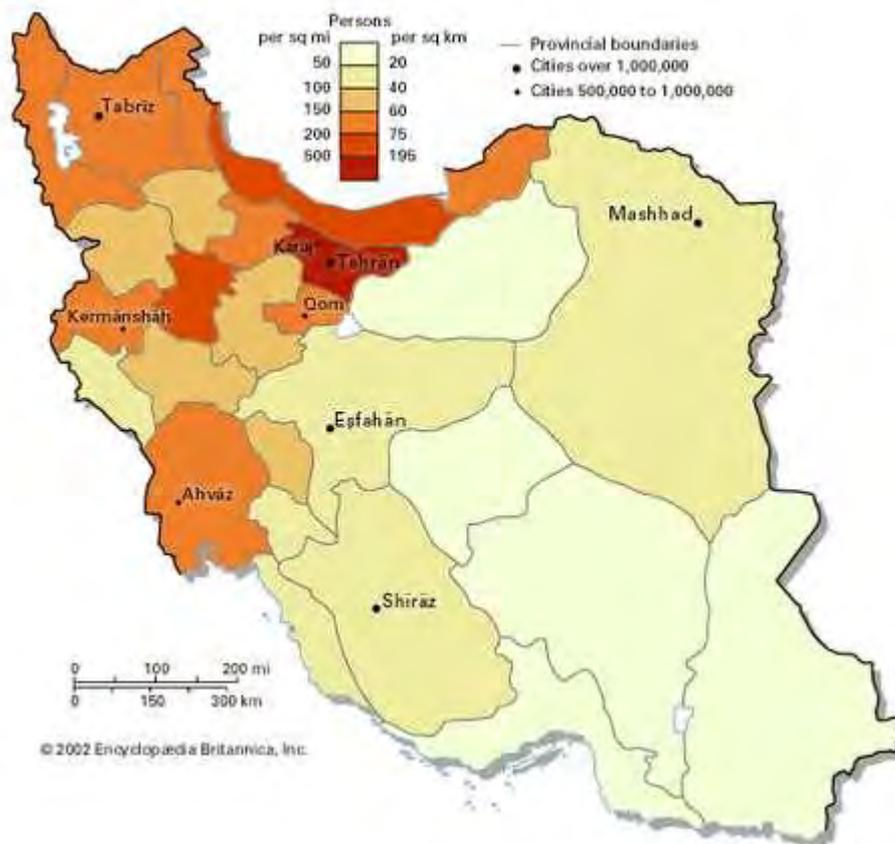
Christians, Jews, and Zoroastrians are the most significant religious minorities. Christians are the most numerous group of these, Orthodox Armenians constituting the bulk. The Assyrians are Nestorian, Protestant, and Roman Catholic, as are a few converts from other ethnic groups. The Zoroastrians are largely concentrated in Yazd in central Iran, Kermān in the southeast, and Tehrān.

Religious toleration, one of the characteristics of Iran during the Pahlavi monarchy, came to an end with the Islamic revolution in 1979. While Christians, Jews, and Zoroastrians are recognized in the constitution of 1979 as official minorities, the revolutionary atmosphere in Iran was not conducive to equal treatment of non-Muslims. Among these, members of the Bahā'ī faith—a religion founded in Iran—were the victims of the greatest persecution. The Jewish population, which had been significant before 1979, emigrated in great numbers after the revolution(8).

### **Settlement patterns**

## Rural settlement

The topography and the water supply determine the regions fit for human habitation, the lifestyles of the people, and the types of dwellings. The deep gorges and defiles, unnavigable rivers, empty deserts, and impenetrable *kavirs* have all contributed to insularity and tribalism among the Iranian peoples, and the population has become concentrated around the periphery of the interior plateau and in the oases. The felt yurts of the Turkmen, the black tents of the Bakhtyāri, and the osier huts of the Baloch are typical, as the tribespeople roam from summer to winter pastures. The vast central and southern plains are dotted with numerous oasis settlements with scattered rudimentary hemispherical or conical huts. Since the mid-20th century the migrations have shortened, and the nomads have settled in more permanent villages.



Population density of Iran. *Encyclopædia Britannica, Inc.*

Fig 5: population density of Iran

The villages on the plains follow an ancient rectangular pattern. High mud walls with corner towers form the outer face of the houses, which have flat roofs of mud and straw supported by wooden rafters. A mosque is situated in the open centre of the village and serves also as a school.

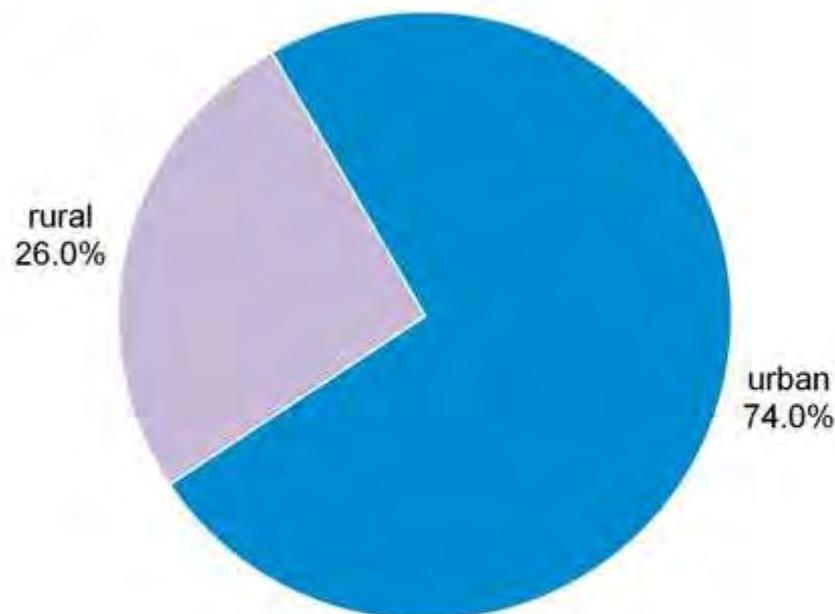
Mountain villages are situated on the rocky slopes above the valley floor, surrounded by terraced fields (usually irrigated) in which grain and alfalfa (lucerne) are raised. The houses are square, mud-brick, windowless buildings with flat or domed roofs; a roof hole provides ventilation and light. Houses are usually two stories high, with a stable occupying the ground floor.

Caspian villages are different from those of both the plains and the mountains. The scattered hamlets typically consist of two-storied wooden houses. Separate outbuildings (barns, henhouses, silkworm houses) surround an open courtyard(3,5)

### Urban settlement

Most of Iran's population is urban. After a period of rapid urbanization from the 1960s into the first decade of the 2000s, about three-fourths of Iran's population lived in urban areas, compared to just one-third in the 1950s. Causes of this rapid shift in settlement distribution included industrialization, social and political transformations, and the Iran-Iraq War (1980–88).

### Iran urban-rural (2016)



© Encyclopædia Britannica, Inc.

**Fig 6: Iran: Urban-rural** *Encyclopædia Britannica, Inc.*

Tehrān, the capital and largest city, is separated from the Caspian Sea by the Elburz Mountains. Esfahān, about 250 miles (400 km) south of Tehrān, is the second most important city and is famed for its architecture. There are few cities in central and eastern Iran, where water is scarce, although lines of oases penetrate the desert. Most towns are supplied with water by qanāt, an irrigation system by which an underground mountain water source is tapped and the water channeled down through a series of tunnels, sometimes 50 miles (80 km) in length, to the town level. Towns are, therefore, often located a short distance from the foot of a mountain. The essential feature of a traditional Iranian street is a small canal(2).

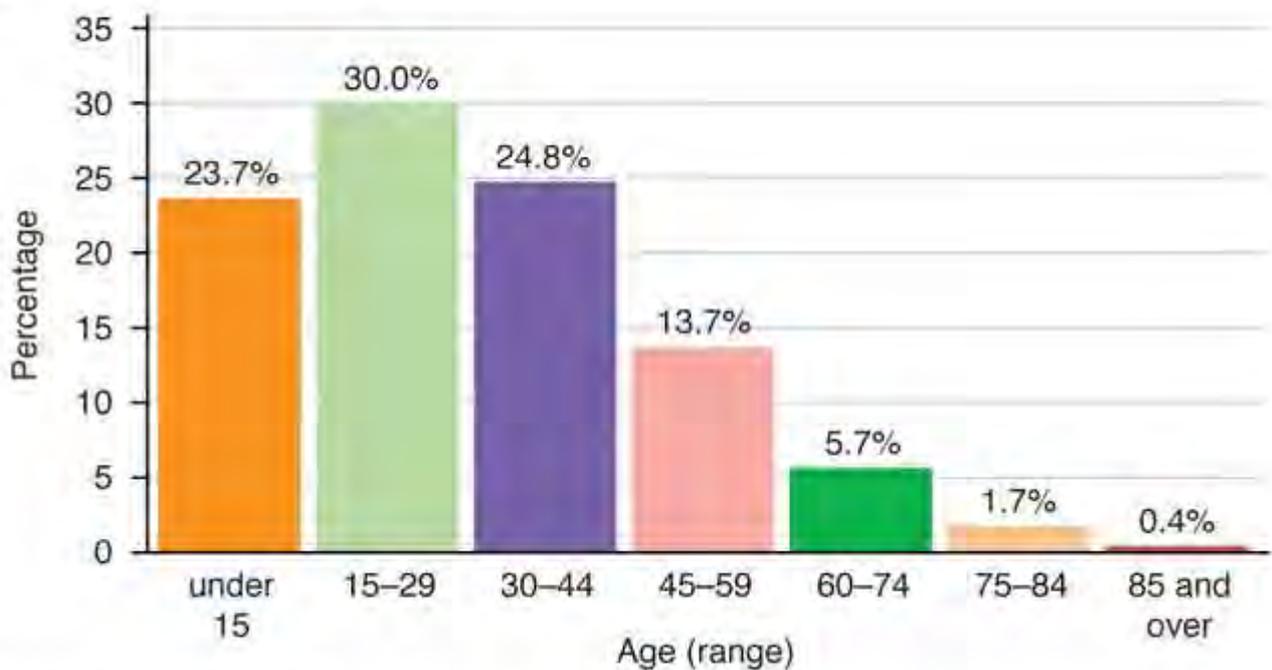
City layout is typical of Islamic communities. The various sectors of society—governmental, residential, and business—are often divided into separate quarters. The business quarter, or bazaar, fronting on a central square, is a maze of narrow arcades lined with small individual shops grouped according to the type of product sold. Modern business centres, however, have grown up outside the bazaars. Dwellings in the traditional style—consisting of domed-roof structures constructed of mud brick or stone—are built around closed courtyards, with a garden and a pool. Public baths are found in all sections of the cities.

Construction of broad avenues and ring roads to accommodate modern traffic has changed the appearance of the large cities. Their basic plan, however, is still that of a labyrinth of narrow, crooked streets and culs-de-sac.

### Demographic trends

Nearly one-fourth of Iranians are under 15 years of age. The country's postrevolutionary boom in births has slowed substantially, and—with birth and death rates lower than the world averages—Iran's natural rate of increase is now slightly higher than the world average. Life expectancy in Iran is some 73 years for men and 76 years for women(1).

### Age breakdown (2014)



© Encyclopædia Britannica, Inc.

**Fig 7: Iran: Age breakdown***Encyclopædia Britannica, Inc.*

Internal migration from rural areas to cities was a major trend beginning in the 1960s, but the most significant demographic phenomenon following the revolution in 1979 was the out-migration of a large portion of the educated, secularized population to Western countries, particularly to the United States. (Several hundred thousand Iranians had settled in southern California alone by the end of the 20th century.) Likewise, a considerable number of religious minorities, mostly Jews and Bahā'īs, have left the country—either as emigrants or as asylum seekers—because of unfavourable political conditions. Internally, migration to the cities has continued, and Iran has absorbed large numbers of refugees from neighbouring Afghanistan (mostly Persian [Dari]-speaking Afghans) and Iraq (both Arabs and Kurds).

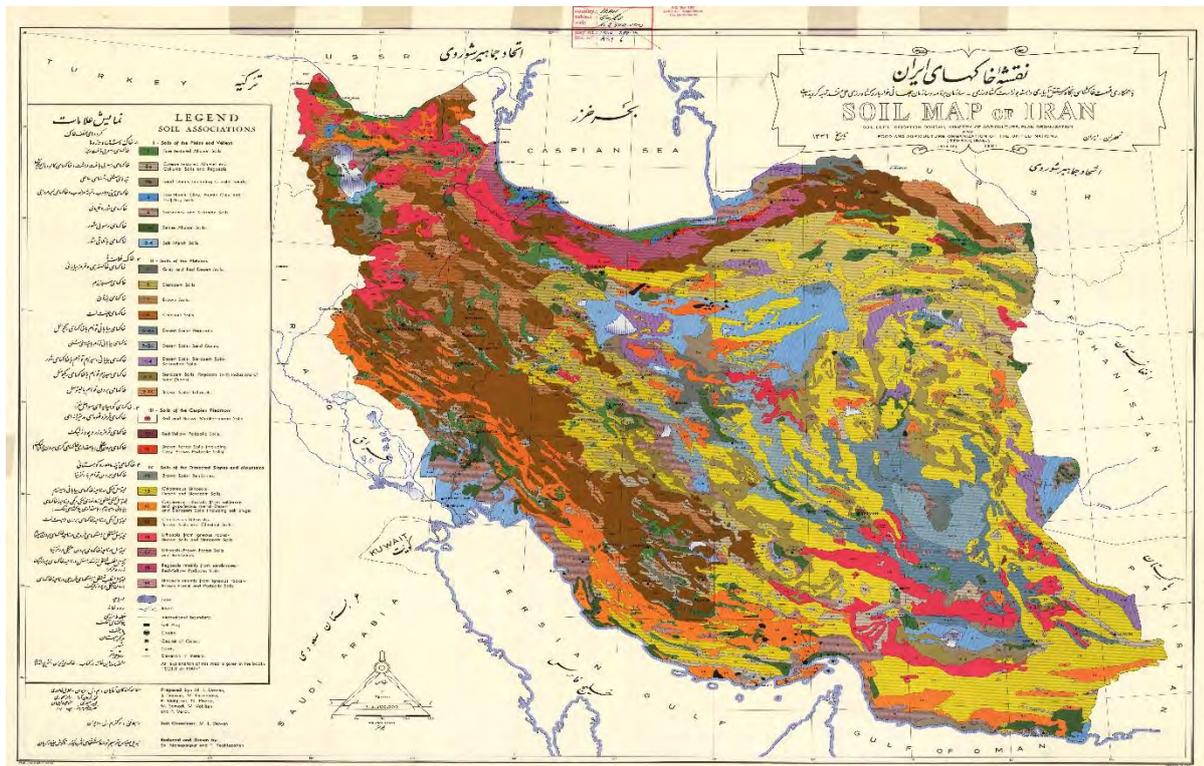


Fig 8: Iran soil map

### Acknowledgement:

We thank directure semnan university cause they collaboration helping.

### References

- 1-Ahuja LR (2003) Quantifying agricultural management effects on soil properties and processes. *Geoderma* 116:1–2 [CrossRefGoogle Scholar](#)
- 2-Amacher MC, O'Neill KP, Perry CH (2007) Soil vital signs: A new Soil Quality Index (SQI) for assessing forest soil health. Research Paper RMRS-RP-65WWW. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station [Google Scholar](#)
- 3-Barre P, Velde B, Abbadie L (2007) Dynamic role of “illite-like” clay minerals in temperate soils: facts and hypothesis. *Biogeochemistry* 82:77–88 [CrossRefGoogle Scholar](#)
- 4- Barre P, Berger G, Velde B (2009) How element translocation by plants may stabilize illitic clays in the surface of temperate soils. *Geoderma* 151:22–30 [CrossRefGoogle Scholar](#)
- 5-Başaran M, Erpul G, Tercan AE, Çanga MR (2008) The effects of land use changes on some soil properties in İndağ Mountain Pass—Çankırı, Turkey. *Environ Monit Assess* 136:101–119 [CrossRefGoogle Scholar](#)

6-Corwing DL, Kaffka SR, Hopmans JW, Mori Y, Van Groenigen JW, Van Kessel C, Lesch SM, Oster JD (2003) Assessment and field-scale mapping of soil quality properties of a saline-sodic soil. *Geoderma* 114:231–259 [CrossRef](#) [Google Scholar](#)

7-Cotching WE, Kidd DB (2010) Soil quality evaluation and the interaction with land use and soil order in Tasmania, Australia. *Agric Ecosyst Environ* 137:358–366 [CrossRef](#) [Google Scholar](#)

8- Day PR (1966) Particle fractionation and particle-size analysis. In: Black CA (ed) *Methods of soil analysis. Part I.* ASA-SSSA, Madison, pp 545–566 [Google Scholar](#)