

## Review

# The introduction of extinct endemic vegetables of Iran

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Plant breeding in certain situations may lead to the domestication of wild plants. Domestication of plants is an artificial selection process conducted by humans to produce plants that have more desirable traits than wild plants, and which renders them dependent on artificial (usually enhanced) environments for their continued existence. On the other hand, breeding new crops is important for ensuring food security by developing new varieties that are higher-yielding, resistant to pests and diseases, drought-resistant or regionally adapted to different environments and growing conditions. For these reasons using endemic and wild plants is necessary and it is vital to save the extinct varieties. Due to these reasons, this review tries to introduce the extinct endemic vegetable of Iran with explanation of their anatomy, distribution, and local consumption for future usage of plant breeders.

**Key words:** Endemic plant, extinct vegetable, domestication, wild vegetable.

## INTRODUCTION

Iran region with different environments is cradle of many plants with nutritional consumptions in native regions. But some of them have not recognized and have not planted widely yet. The aim of this study is to introduce some of this plants and diffusion areas of them in Iran and consumption way of them in area that recognition of them will be useful for studies of Biotechnology scientists for evaluation of this domestic groups and horticulture and agriculture scientists for reason of mass production and nutritional industry specialists for procreation and use of them in food cycle.

### *Ferulago angulata* (Apiaceae)

**Morphological characteristics:** It is a vertical, perennial plant with height of 60 to 150 cm having massive pistil clusters as well as long flower stems. It has small yellow flowers, without hair or to some extent rough.

**Use in traditional medicine and food:** Leaves and stems will be used as smelling agent in oil jars and it's fruit's powder is used as food smelling and good remedy for digestion disorders and it is used for perfumes and

creams producing also, it is a strong preservative for daily products (Johnson et al., 1995) (Figure 1).

### *Allium canadens* (Alliaceae)

**Morphological characteristics:** It is a plant with onion-like smell, long and thin leaves and accumulated flowers on top of the flowering stem. Its seeds produce in capsules (Mozafariyan, 2009).

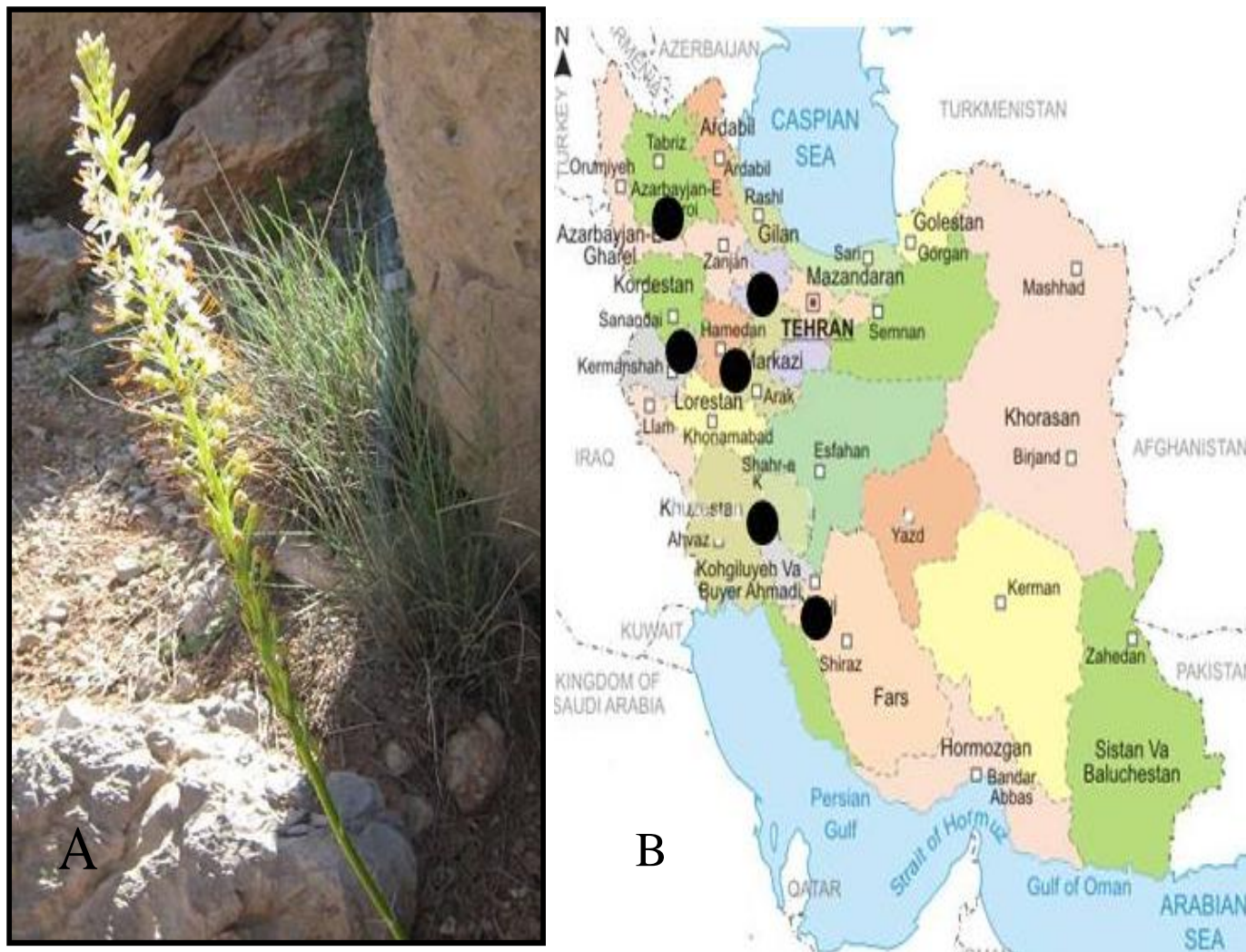
The narrow, grass-like leave originate near the base of the stem, which is topped by a dome-like cluster of star-shaped, pink or white flowers. These flowers may be partially or entirely replaced by bulblets (Figure 2).

**Use in food:** Its leaves are used in rice cooking. This plant can cause gastroenteritis in young children who ingest parts of this plant. Chronic ingestion of the bulbs reduces iodine uptake by the thyroid gland, which can lead to problems. No specific treatment is suggested other than to prevent dehydration (<http://www.marysrosaries.com>).

### *Malva sylvestris* (Malvaceae)

**Morphological characteristics:** It is a biennial or perennial plant with cotyledon heart like leaves, long stem and hairy veins and stem, accumulated flowers,

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**Figure 1.** (A) The picture of *Ferulago angulata* was taken from Yasoj province of Iran. (B) Distribution of *Ferulago angulata* in Iran (Ghahreman and Attar, 1999).

grayish brown seeds with delicate shears (Ghahreman, 2009) (Figure 3).

**Use in food:** This plant's cooked leaves are being used or they will be eaten with yoghurt.

#### ***Rumex crispus* (Polygonaceae)**

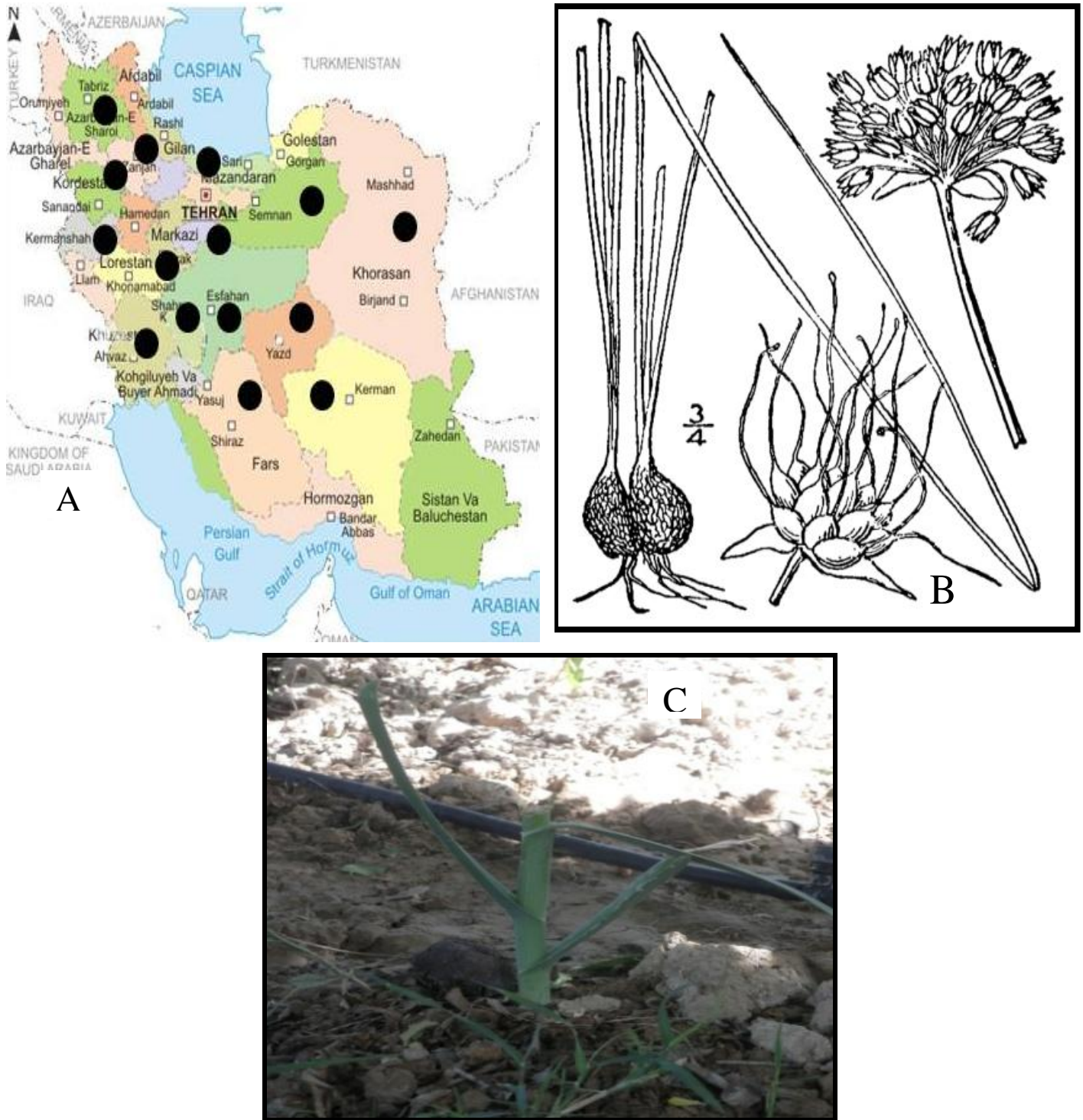
**Morphological characteristics:** The mature plant is a reddish brown color, and produces a stalk that grows to about 1 m high. It has smooth leaves shooting off from a large basal rosette, with distinctive waved or curled edges. On the stalk, flowers and seeds are produced in clusters on branched stems, with the largest cluster being found at the apex. The seeds are shiny, brown and encased in the calyx of the flower that produced them. This casing enables the seeds to float on water and get

caught in wool and animal fur, and this helps the seeds to spread to new locations. The root-structure is a large, yellow, forking taproot. It can be used as a wild leaf vegetable. It is an herb with tubular stem and sometimes woody stem, wavy-edged leaves and small flowers that will be reddish brown after ripening (Ghahreman, 2009) (Figure 4).

**Use in traditional medicine:** It is a good source of vitamin C. It has sufficient amounts of iron and phosphorus. Also, it is a good appetizer, purgative and digestive agent (Johnson et al., 1995).

#### ***Teucrium polium* (Lamiaceae)**

**Morphological characteristics:** Its flowers are small and range from pink to white, and its leaves are used in



**Figure 2.** (A) Distribution of *Allium canadense* in Iran (Ghahreman and Attar, 1999). (B) Morphological characteristics of *Allium canadense* (<http://www.wikipedia.org>). (C) The picture of *Allium canadense* was taken from Meymand, Fars province of Iran.

cooking and for medicinal purposes, particularly for the treatment of stomach ailments. It has also shown some promise in the treatment of visceral pain. In traditional

Persian medicine, *T. polium* (locally called 'kalpooreh') is used as an anti-hypertensive, anti-bacterial, carminative, anti-nociceptive, anti-inflammatory, anti-diarrhea,



Figure 3. (A) The picture was taken from Meymand, Fars province of Iran.

anti-diabetes and anti-convulsant agent. It is a yellow bitter plant (Ghahreman, 2009) (Figure 5).

**Using in traditional medicine and food:** Its flowers are be used as medicine for heat stroke and as antiparasite. Also, it can be used to decrease blood sugar level of diabetic patients. It is a good plant for making some drinks and it could be used as spice (Johnson et al., 1995).

#### ***Allium jesdianum* BOISS (Alliaceae)**

**Morphological characteristics:** This has to be one of the finest of the large ball headed *Allium* species. Stems from 6 to 75 cm tall hold a huge – 15 cm – ball of violet

flowers. Each bloom has white styles and a white centre, giving a superbly contrasted, two-tone effect. As a bonus, the leaves remain green during flowering, a rare but useful garden feature (Ghahreman, 2009).

**Use in traditional medicine and food:** It is a pungent, good smelling plant that can be used freshly or dry in rice or pottage. It is a good medicine for kidney and urinary bladder stones (Figure 6).

#### ***Prangos ferulacea* (Apiaceae)**

**Use in traditional medicine and food:** This plant is used for curing kidney disorders. It has diuretic and nerve tonic effects. It is crushed leaves and extract is a good

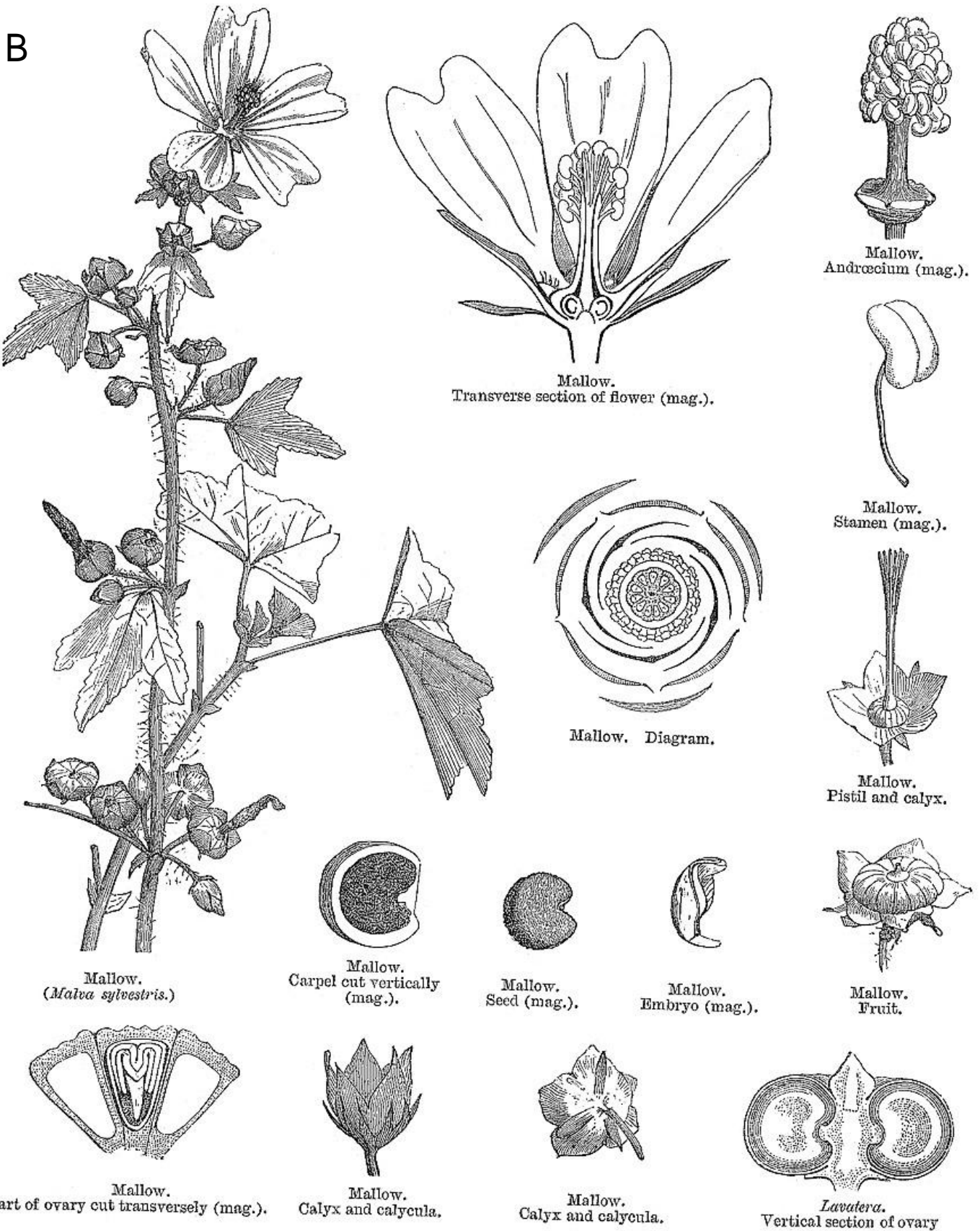
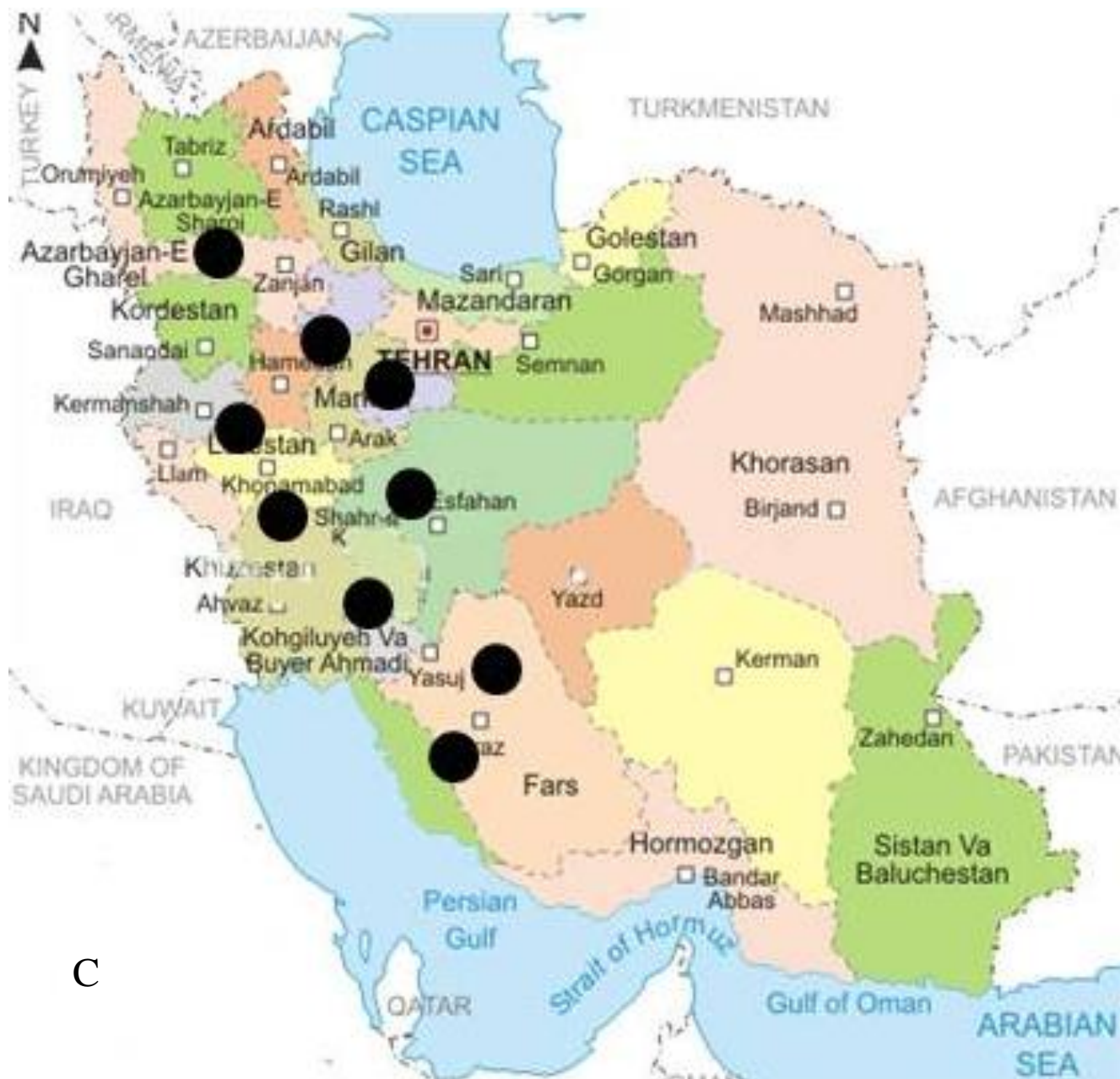


Figure 3. (B) Morphological characteristics of *Malva sylvestris* (<http://www.bgflora.net>).



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Figure 3. (C) Distribution of *Malva sylvestris* in Iran (Ghahreman and Attar, 1999)

remedy for toothache. Its root extract has industrial uses for producing cosmetics and soothing agents. Young stem heads may be used as vegetable (Figure 7).

#### ***Dorema aucheri* (Apiaceae)**

**Morphological characteristics:** *D. aucheri* is a plant that grows in Iran. In Persian it is called Bilhar. It is the first umbelliferae plant found to produce exudates flavonoids. It is a wild, pungent plant that could be finding

in cold snow covered mountains (<http://www.marysrosaries.com>).

**Using in food:** It could be used in yoghurt and some kinds of pickles (Figure 8).

#### ***Lepidium draba* (Brassicaceae)**

**Morphological characteristics:** It is a perennial herb with initial spoon like leaves and rectangular stem leaves, white flowers and grips like flat egg like or heart like fruit.



**Figure 4.** (A) Morphological characteristics of *Rumex crispus* (Ghahreman, 2009).

It could be used in rice as cooked plant. Infusion of its leaves and seeds has purgative and expectorant effects (Ghahreman, 2009).

**Use in traditional medicine and food:** It can be found in most parts of Iran, in fields and adjacent to water resources and also, in gardens and bare lands (Figure 9).

#### ***Tragopogon pratensis* (Asteraeae)**

**Morphological characteristics:** It starts flowering during June to October and its flowers have a diameter of 3 to 5 cm. The root and buds are edible, and it has milky

latex. It grows 30 to 100 cm tall. The lower leaves are 10 to 30 cm long, lanceolate, keeled lengthwise, grey-green, pointed, hairless, with a white midrib. The upper leaves are shorter and more erect. It is the only United Kingdom dandelion type flower with grass-like leaves. The flower heads are 5 cm wide. They only open in the morning sunshine (Ghahreman, 2009; Mozafariyan, 2009) (Figure 10).

**Use in food:** It has long, thin leaves and special taste. It could be used as raw vegetable with vinegar and salt and in rice cooking and so, as a cooked vegetable mixed with yoghurt (or with spinach) and it can be used in pottage (Johnson et al., 1995).

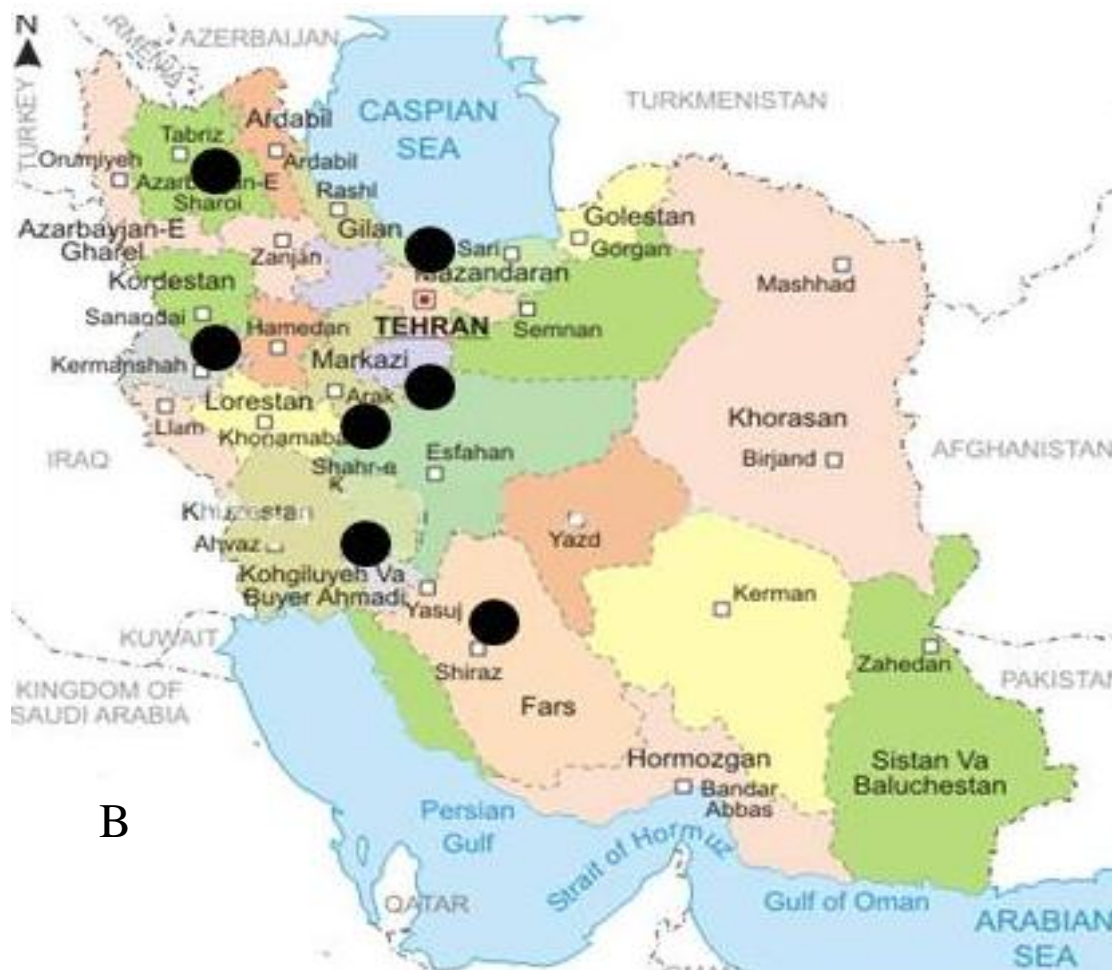


Figure 4. (B) Distribution of *Rumex crispus* in Iran (Ghahreman and Attar, 1999).

**Use in traditional medicine:** This plant prevents stomach bleeding and it is a good remedy for rotarism. Its root extract is a good cure for warts. It is a strong appetizer. Zakaria Razi used this plant's roots as poison antidote and its extract is a good remedy for boldness and skin scars (Johnson et al., 1995).

#### *Heracleum Persicum* (Apiaceae)

**Morphological characteristics:** *H. Persicum*, commonly known as Golpar or Persian Hogweed, is a flowering plant in the family Apiaceae, native to Iran. It grows wild in humid mountainous regions in Iran, as well in some adjacent areas. Golpar plant has also been spotted in Sweden namely Jönköping, but it is not seen as a spice plant so it is not used by the locals (Ghahreman, 2009) (Figure 11).

**Use in traditional medicine:** Its plant's seeds are good appetizer and digestive tonic. Its infusion is a good

remedy for hemorrhoid and it could be used for sherbet and infusion making.

**Use in food:** The seeds are good smelling agent for pickles.

#### *Arctium lappa*(Asteraceae)

**Morphological characteristics:** Greater Burdock is rather tall, reaching as much as 2 m. It has large, alternating, cordiform leaves that have a long petiole and are pubescent on the underside. The flowers are purple and grouped in globular capitula, united in clusters. They appear in mid-summer, from July to September.

The capitula are surrounded by an involucre made out of many bracts, each curving to form a hook, allowing them to be carried long distances on the fur of animals. The fruits are achenes; they are long, compressed, with short pappuses. The fleshy tap-root can grow up to 1 m long (Ghahreman, 2009) (Figure 12).





**Figure 4.** (C) The picture of *Rumex crispus* was taken from Meymand, Fars province of Iran.

**Use in traditional medicine:** It is a cold temper plant with leaves contain Arktiopikerin. It has soothing, blood purgative, increasing respiration effects and its infusion is good remedy for dizziness and general debility. Its seeds have anti parasitic effects (Johnson et al., 1995).

**Use in food:** This plant's stem is edible and its young leaves could be used in some kinds of foods.

#### ***Amaranthus retroflexus*(Amaranthaceae)**

**Use in traditional medicine and food:** Its fresh leaves are edible as fresh vegetable and could be used in salads and some kinds of foods. It has hot temper and sufficient amounts of carotene and vitamins and Skvalen as an anti cancer agent and has one of the best kinds of oils. It is an efficient remedy for high cholesterol and skin disorders. It could be found in most parts of Iran (Johnson et al., 1995) (Figure 13).

#### ***Sinapis arvensis* (Brassicaceae)**

**Use in traditional medicine and food:** This plant has hot temper and sufficient amounts of protein and lipids. Its fresh leaves could be used as fresh vegetable and in salads. Its seeds have mucilage and glaze and have laxative and smoothing effects. Infusion of its leaves and stems is good remedy for skin disorders and eczema and so, is a strong appetizer (Johnson et al., 1995) (Figure 14).

#### ***Chenopodium album* (Chenopodiaceae)**

**Morphological characteristics:** Stinging nettle is a dioecious herbaceous perennial, 1 to 2 m (3 to 7 ft) tall in the summer and dying down to the ground in winter. It has widely spreading rhizomes and stolon, which are bright yellow as are the roots. The soft green leaves are 3 to 15 cm (1 to 6 in) long and are borne oppositely on an



**Figure 5.** The picture of *Teucrium polium* was taken from meymand, Fars province of Iran.

erect wiry green stem. The leaves have a strongly serrated margin, a cordate base and an acuminate tip with a terminal leaf tooth longer than adjacent laterals. It bears small greenish or brownish numerous flowers in dense axillary inflorescences.

The leaves and stems are very hairy with non-stinging hairs and also bear many stinging hairs (trichomes) (Ghahreman, 2009). The leaves and young shoots may be eaten as a leaf vegetable or cooked, but should be eaten in moderation due to high levels of oxalic acid (Miles, 1978). Each plant produces tens of thousands of black seeds. These are high in protein, vitamin A, calcium, phosphorus, and potassium (Omid Baigi, 1995) (Figure 15).

**Use in traditional medicine:** It has balanced temper and sufficient minerals, specially iron. It has laxative and febrifuge effects and is a good remedy for anemia and has strong soothing effects. It could be found in fields and adjacent to rivers (Johnson et al., 1995; "<http://en.wikipedia.org>").

#### ***Sonchus oleraceus* (Asteraceae)**

**Morphological characteristics:** It also has been ascribed medicinal qualities similar to dandelion and

succory. Leaves are usually the part which people eat, and they are useful as salad greens, or cooked like spinach. Blanching or boiling removes bitter flavour. Nutritional analysis reveals 30 to 40 mg of vitamin C per 100 g, 1.2% protein, 0.3% fat and 2.4% carbohydrate (Ghahreman, 2009) (Figure 16).

**Use in traditional medicine and food:** It has hot temper with sufficient amounts of protein, latex, lipids, wax and small amounts of arsenic and some kinds of vitamins and minerals. It is a good remedy as blood purgative and for constipation and some other digestive disorders like diarrhea. Its green parts (raw or cooked) could be used in salads or some kinds of foods (Johnson et al., 1995).

#### ***Urtica dioica* (Urticaceae)**

**Morphological characteristics:** *U. dioica*, one of the stinging nettles is a perennial, rhizomatous herb that is from 50 cm to over 2 m high in summer and dying down to the ground in winter. Its inflorescences are panicle and elongate.

Its flowers are very tiny, unisexual, with the staminate and pistillate flowers on same or on different plants, that is, some plants are dioecious. Its fruits are small (around 1 mm) ovoid achenes (Ghahreman, 2009) (Figure 17).



Figure 6. (A) Distribution of *Allium jediaum* Boiss in Iran (Ghahreman and Attar, 1999).

**Use in traditional medicine and food:** It has sufficient amounts of iron and vitamin C. It is a good medicinal plant to prevent hair tonic and shining agent. *Urtica* has diuretic and blood sugar decreasing effect and is a good remedy for anemia (Johnson et al., 1995).

#### *Conringia orientalis* (Brassicaceae)

**Morphological characteristics:** It is an annual herb producing an unbranched erect stem 30 to 70 cm in

height. The thick, waxy leaves are generally oval in shape, up to 9 cm long, and clasp the stem at their bases. The flower is enclosed in pointed sepals and has yellow, clawed petals about a centimeter long. The fruit is a beaded silique up to 13 cm long. The plant is known to be toxic to livestock (Ghahreman, 2009) (Figure 18).

**Use in traditional medicine and food:** It has cold temper and diuretic, digestive tonic, anti convulsion and anti food poisoning effects. Its seeds could be used for hemorrhoid curing and have sleep-inducing effects. It is



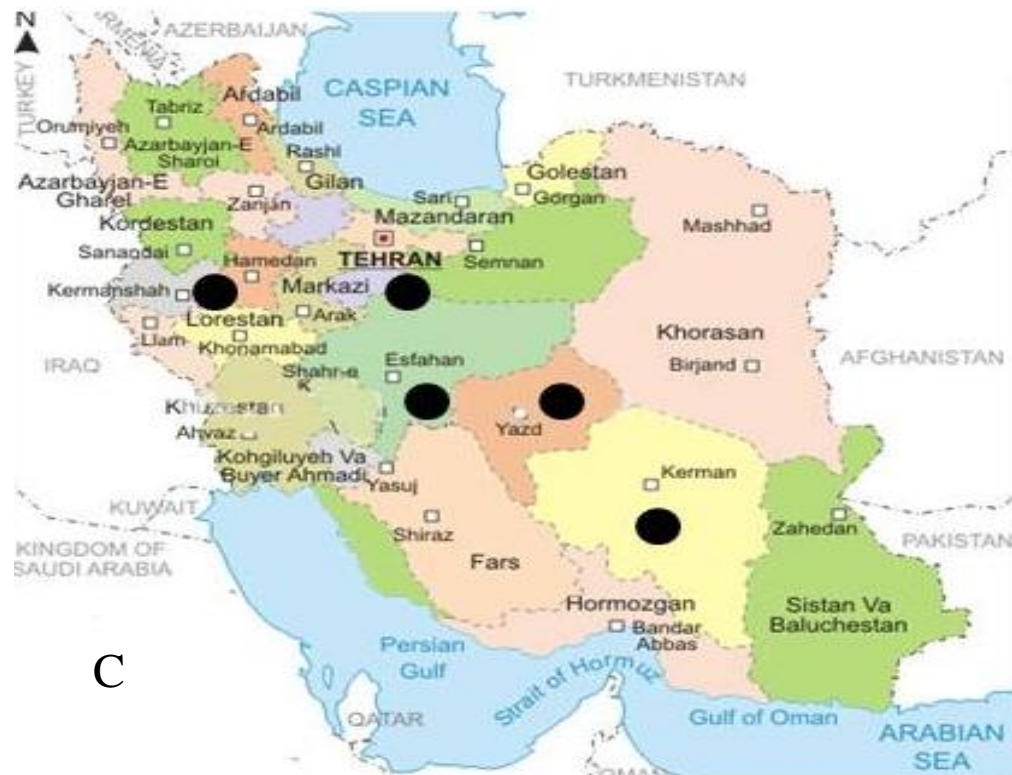
**Figure 6.** (B) The picture of *Allium jesdianum* was taken from Meymand, Fars province of Iran.



Figure 7. (A) Morphological characteristics of *Prangos ferulacea* (<http://www.marysrosaries.com>).



**Figure 7. (B)** The picture was taken from Alborz mountains vegetation, Tehran, Iran by Lotfi Azad. H



**Figure 7. (C)** Distribution of *Prangos ferulacea* in Iran (Ghahreman and Attar, 1999).

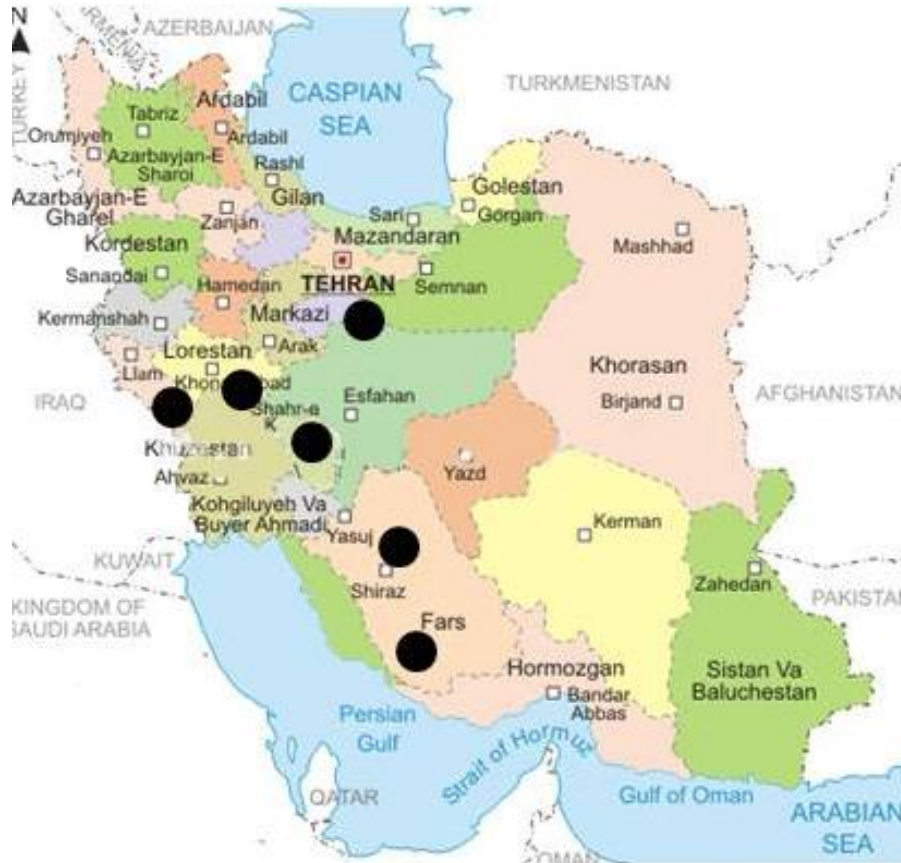


Figure 8. Distribution of *Dorema aucheri* in Iran (Ghahreman and Attar, 1999).

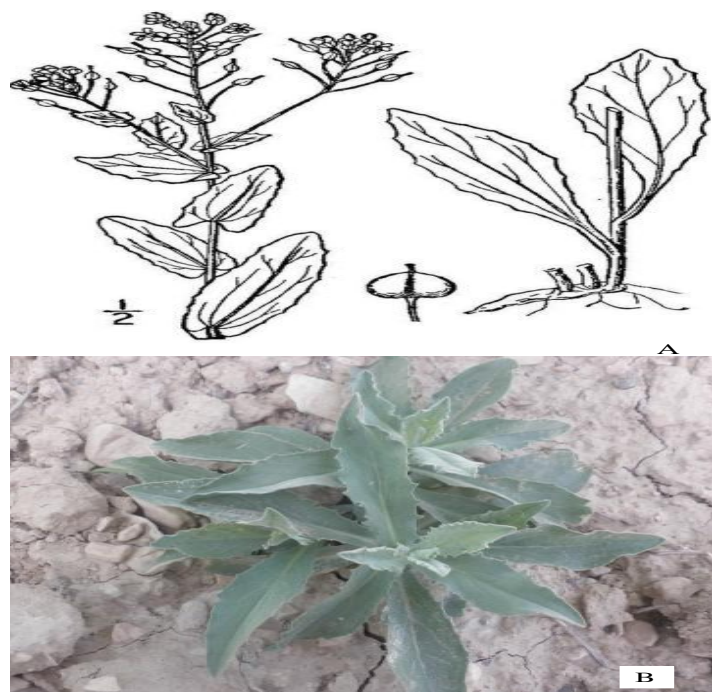


Figure 9. (A) Morphological characteristics of *Lepidium draba*. (B) The picture was taken from Meymand, Fars province of Iran.



**Figure 10.** (A) the morphological characteristics of *Tragopogon pratensis* (<http://www.marysrosaries.com>).



**Figure 10.** (B) The picture was taken from Meymand, Fars province of Iran.



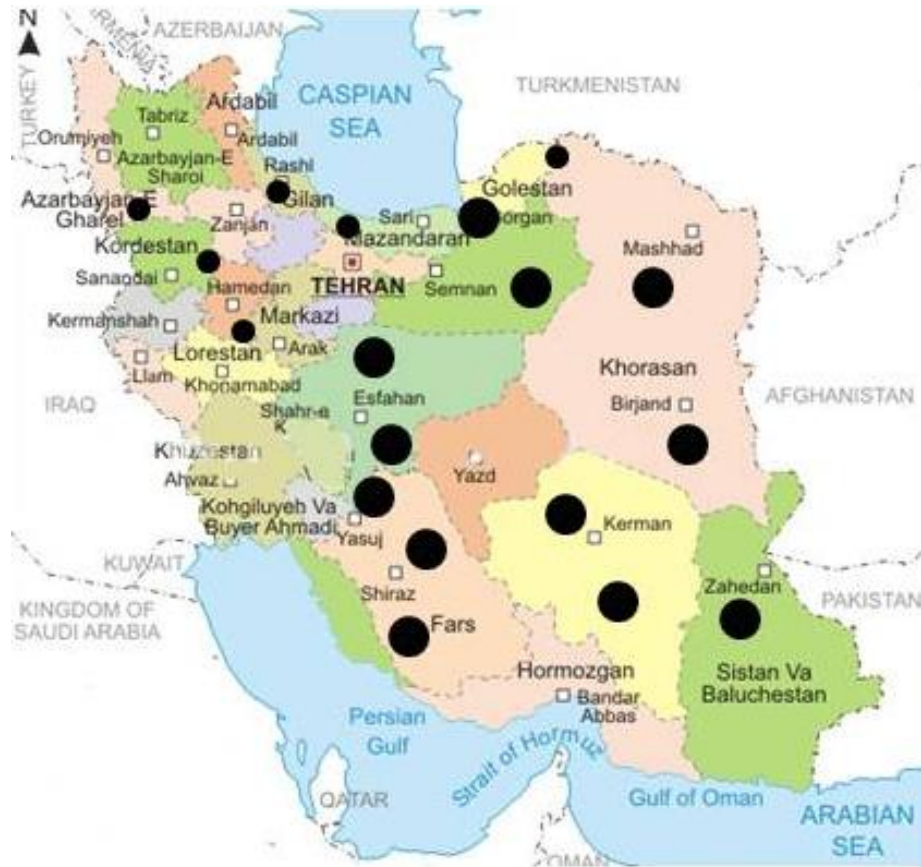
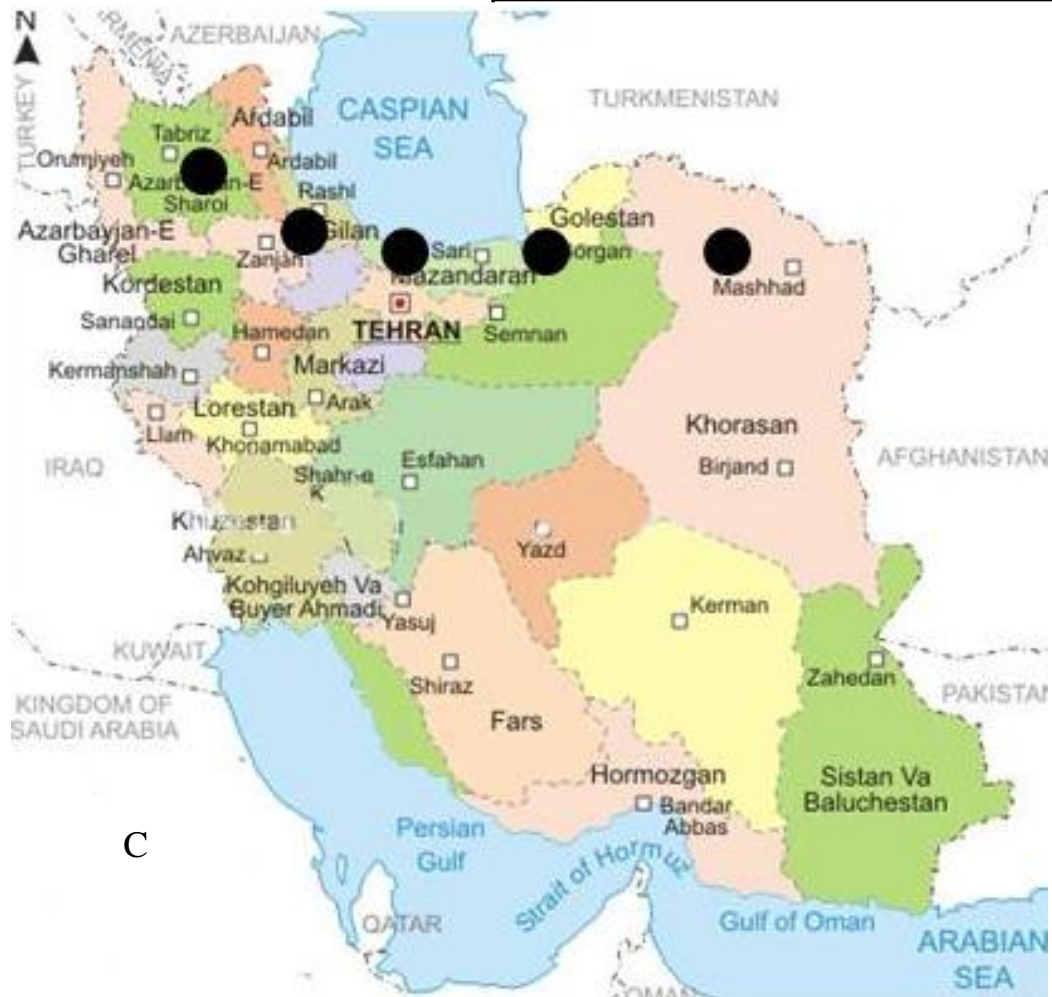
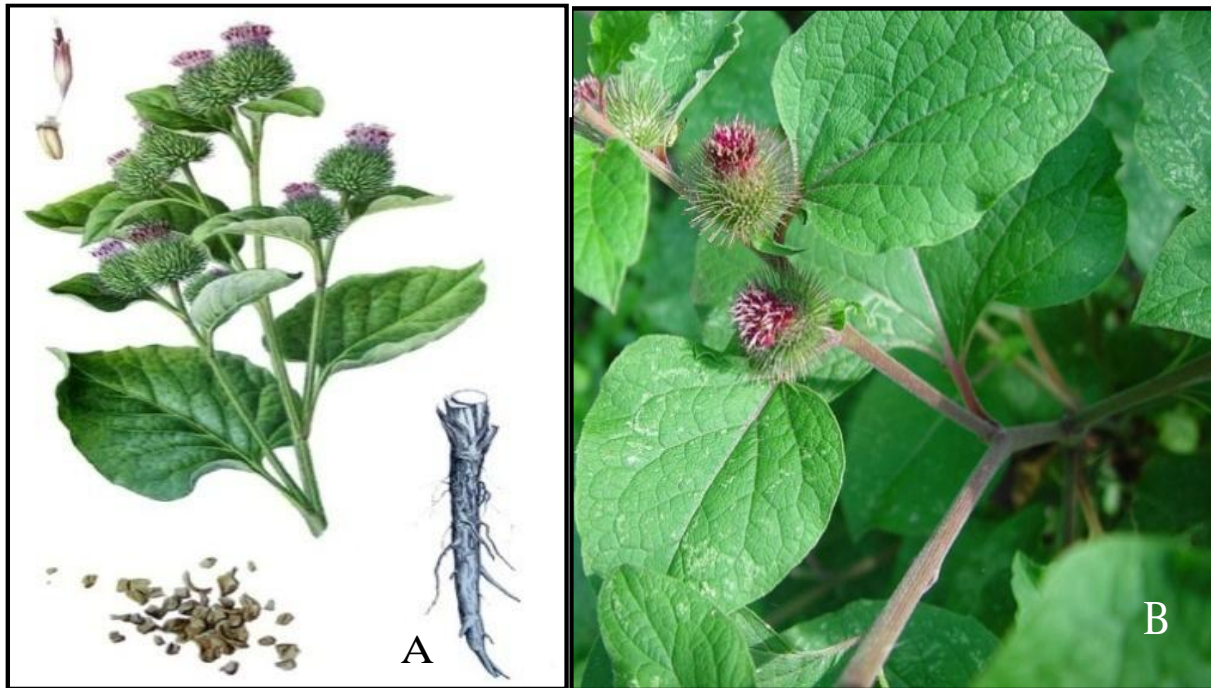


Figure 10. (C) Distribution of *Tragopogon pratensis* in Iran (Ghahreman and Attar, 1999).



Figure 11. (A) Morphological characteristics of *Heracleum Persicum* (<http://www.marysrosaries.com>).



**Figure 12.** (A) morphological characteristics of *Arctium lappa*. (B) The picture was taken from Rasht, Iran. (C) Distribution of *Arctium lappa* in Iran (Ghahreman and Attar, 1999).

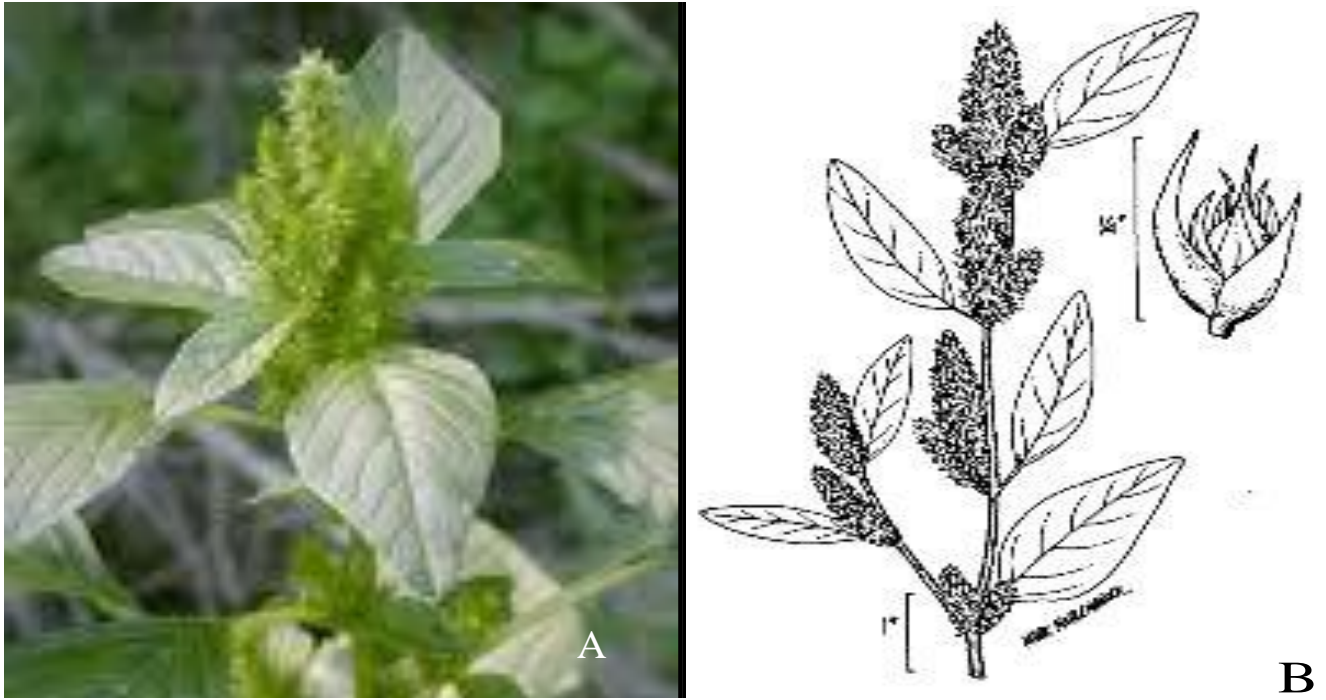
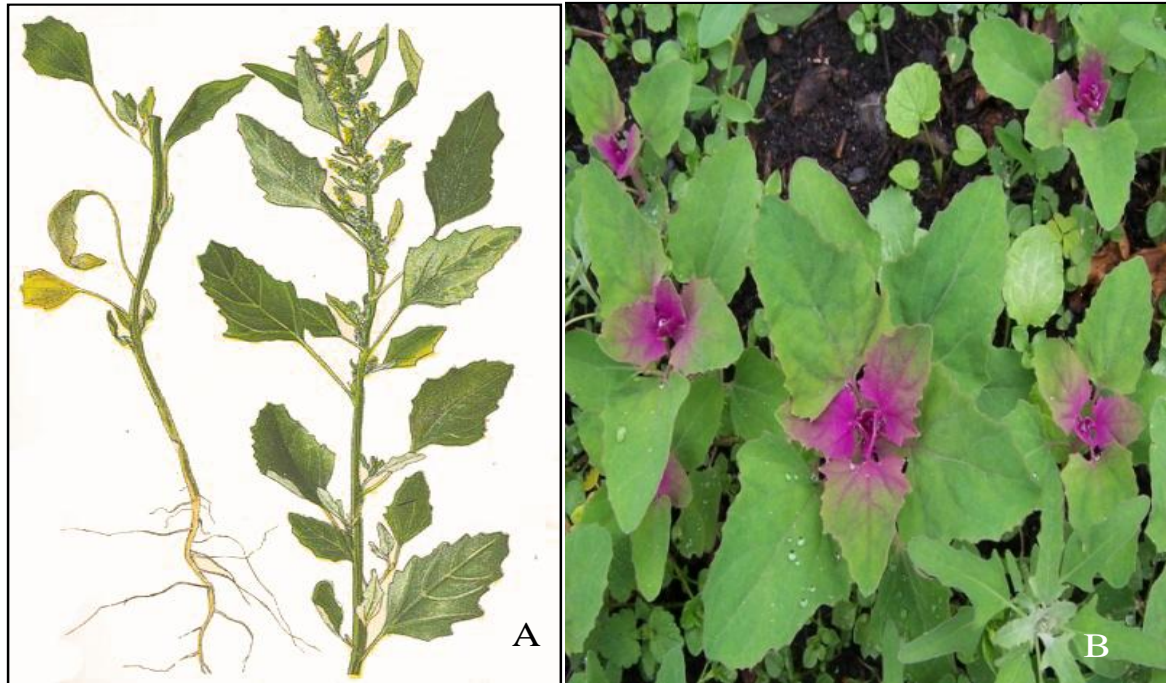


Figure 13. (A)The photo was taken from Tabriz province of Iran. (B) The morphological characteristics of *Amaranthus retroflexus*.



Figure 14. (A) The picture was taken from Meymand, Fars province of Iran. (B) Morphological characteristics of *Sinapis arvensis* (<http://www.marysrosaries.com>).



**Figure 15.** (A) Morphological characteristics of *Chenopodium album* (Ghahreman and Attar, 1999). (B) The picture of *Chenopodium album* was taken from Meymand, Fars province of Iran.



**Figure 16.** (A) The picture of *Sonchus oleraceus* was taken from Meymand, Fars province of Iran. (B) Morphological characteristics of *Sonchus oleraceus*.



Figure 17. (A) The photos was taken from Tabriz province of Iran.

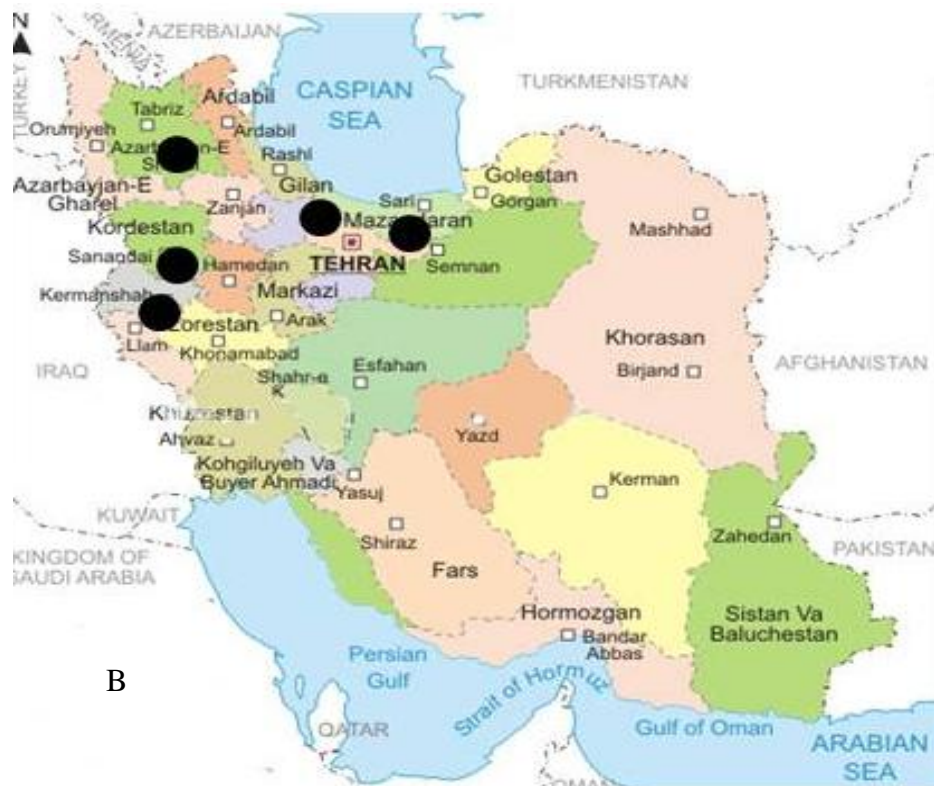
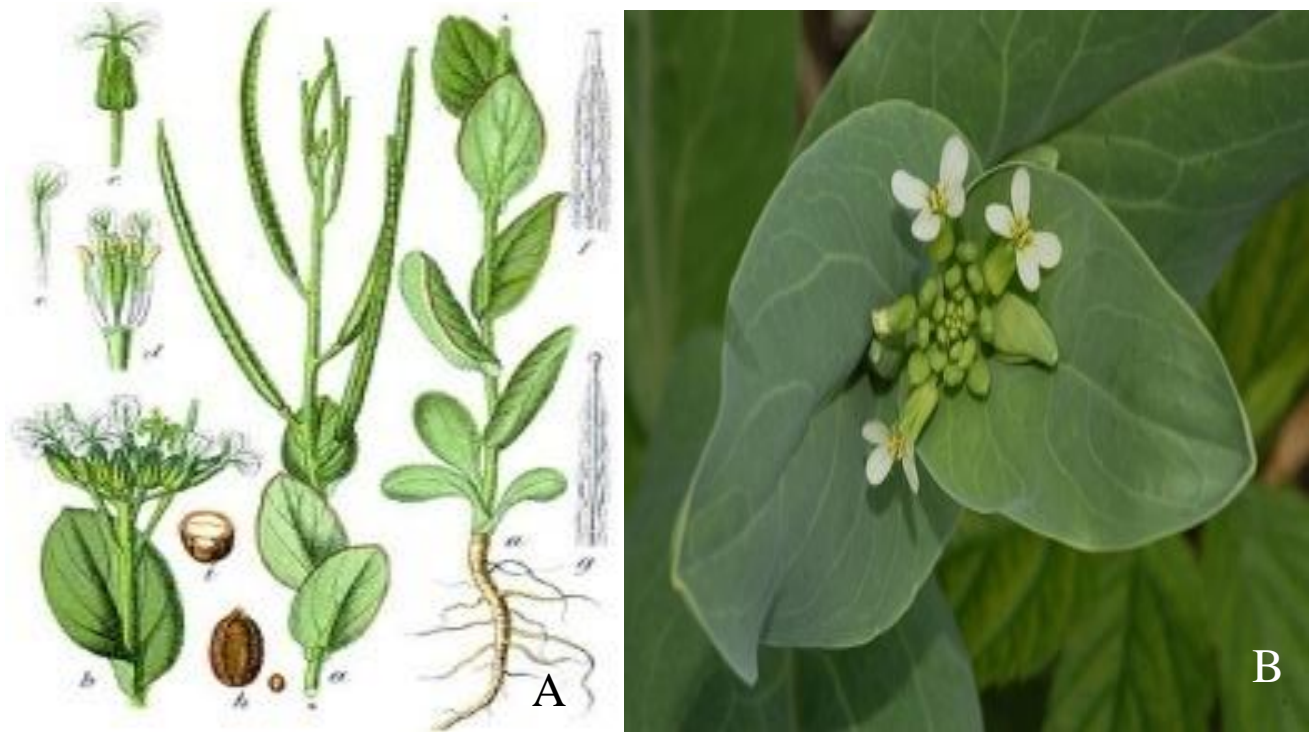


Figure 17. (B) Distribution of *Arctium lappa* in Iran (Ghahreman and Attar, 1999).



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Figure 17. (C) Morphological characteristics of *Urtica dioica* (<http://www.marysrosaries.com>).



**Figure 18.** (A) Morphological characteristics of *Conringia orientalis* (<http://www.marysrosaries.com>). (B) The photos was taken from Meymand, Fars province of Iran.

young, fresh leaves in spring could be used for cooking some kinds of foods (Johnson et al., 1995).

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