

Underutilized leafy greens: contribution to daily health promotion and enhance biodiversity

Underutilized leafy greens which have a high nutritional value, can now be incorporated into existing cultivations to contribute to more nutritious food for the consumer while at the same time making alternatives available to producers and the market as well as can enrich biodiversity

Leafy greens consumption



- ✓ **Antioxidant compounds**
- ✓ **Vitamins**
- ✓ **Phenolic compounds**
- ✓ **Flavonoids**
- ✓ **Anticancer properties**
- ✓ **Antibacterial properties**



Group of *Sonchus* plants in Central Macedonia in autumn. (Photo by A. Koukounaras)



Group of *Silybum* plants in an uncultivated field in Central Macedonia. (Photo by A. Koukounaras)

Urtica dioica



Description

- Biennial native, spiny plant reaching 1.5 m tall. Its green leaves are distinguished by white lines. It thrives near grasslands.

Cultivation

- Aeroponic technology could be a powerful tool for the cultivation
- Autumn and winter months since it can withstand low temperatures as -15 °C
- The new fresh leaves are harvested from autumn to spring before flowering.

Nutritional properties

- Source of carotenoids, vitamins, polysterols, proteins with most promising application in the food/feed, medicinal and cosmetic sectors
- Water extract has powerful antioxidant activity

Distribution

- Native to Europe, much of temperate Asia and western North Africa.

Uses

- The root and fresh leaves can be cooked; they resemble spinach
- The fresh leaves are eaten boiled in a salad or sautéed with other herbs
- With its leaves and other herbs, amazing nettle pies are made
- Used in cosmetology due to its antioxidant activity
- Antimicrobial activity, antiulcer activity, and analgesic effect
- Antidiabetic and anti-inflammatory activity

Portulaca oleracea



Description

- Annual plant reaching 20 cm tall. It is said that if you put a few slippery leaves under your tongue, you quench your thirst (perhaps that's how the phrase for the chatterbox came about, because feeling relieved of thirst, he starts a non-stop monologue).

Cultivation

- The tender tops are harvested from the beginning of summer until the autumn

Nutritional properties

- Famous for its vitamin C and iron content
- It is the plant with the most omega-3 fats
- Low fiber content

Distribution

- Native from North Africa and Southern Europe through the Middle East and the Indian subcontinent to Malesia and Australasia

Uses

- Eaten raw in a salad with olive oil and onions and can replace lettuce as a green vegetable
- It is cooked in a casserole dish

Amaranthus blitum



Description

- Annual plant that reaches 80 cm tall.

Cultivation

- Its seed can germinate even after ten years
- It must be pruned frequently so that it has time to produce seeds
- The tender tops are harvested from early summer to autumn
- It is a major weed in crops because it multiplies very easily and quickly

Nutritional properties

- Source of proximate, phenolics, minerals, flavonoids, vitamins
- High in protein

Distribution

- Native to the Mediterranean region, it is naturalized in other parts of the world, including much of eastern North America, much of tropical Africa, Western Europe and Japan.

Uses

- The leaves eaten boiled with vinegar or lemon and combined with garlic or sautéed with various other vegetables such as pumpkin seeds
- They are used in pies with other leafy greens

Sonchus oleraceus



Description

- Annual plant reaching 40-80 cm tall. Its leaves are light green and contain milky sap.

Cultivation

- The leaves are harvested from early autumn until the end of spring

Nutritional properties

- Reduces serum cholesterol level
- Reduces high blood pressure disease

Distribution

- Native to Europe and Western Asia

Uses

- The leaves taste a little sweet and are eaten boiled with plenty of lemon and are also used in herb pies along with other greens and herbs

Lactuca serriola



Description

- Biennial plant that can reach 1 meter. It has a thick central stem with thorns.

Cultivation

- It can be grown under cover (glasshouse), under controlled conditions of 32/25°C day/night and 14 hours of light with supplementary lighting.

Nutritional properties

- Polyphenolic compounds
- Its shoots and leaves contain milky juice, which is sedative and mood-elevating
- The mature large plant is slightly toxic

Distribution

- It has established populations on all continents and has the most widespread distribution compared to other *Lactuca* species

Uses

- The plant is traditionally used as sedative, hypnotic, cough suppressant, expectorant, purgative, diuretic, vasorelaxant, demulcent, antiseptic and antispasmodic
- Antidote to scorpion and snake venom
- Its tender leaves, when still small, are boiled and eaten alone or with other greens
- Excellent candidate for rubber production

Scolymus hispanicus



Description

- Biennial or perennial plant, which can reach a height of 1 meter. It has a deep, thick root and a thick central stem. The leaves are toothed and spiny.

Cultivation

- The new tender leaves before they become spiny and the tender shoots are gathered from winter to spring. The root and fleshy leaf ridges are gathered in autumn.

Nutritional properties

- Source of antioxidants and phenolic compounds

Distribution

- Native to southern and western Europe, north to northwestern France.
- It flowers in summer and is found everywhere throughout Greece in uncultivated soils at low altitudes.

Uses

- Antibacterial and anticancer properties
- The new leaves and shoots are eaten boiled alone or with other greens.
- The roots and stems are made into soups or cooked with meat. They can also be boiled and pickled with vinegar and oil.

Reichardia picroides



Description

- It is a herbaceous perennial plant growing from a taproot. It forms a basal rosette of leaves with flowering stems that can grow up to 45cm tall.

Cultivation

- Spring installation, floating system in a nutrient solution, 36 plants/m².
- Can be successfully grown in soilless systems with nutrient solutions of varied pH.
- Salinity adapting crop

Nutritional properties

- The leaves are depurative, diuretic, emollient, galactagogue, hypoglycaemic and tonic.
- The roots are used in the treatment of cough, abdominal pains and kidney problems

Distribution

- Native to the Mediterranean and western Asia

Uses

- Leaves are eaten raw or cooked
- Used in medicine

Silybum marianum



Description

- It is an upright herb that can grow to be 30 to 200 cm (12 to 79 in) tall and has an overall conical shape.

Cultivation

- It is grown successfully on a range of soil types, from sandy soils to much heavier clay soils
- It is directly seeded in soils. Sowing occurs in autumn and spring, and row spacing is usually 40–75 cm, with 20–30 cm between plants in the row.
- Nutrient requirements of this crop are low to moderate since it is adapted to poor quality soils and many different growing conditions.

Nutritional properties

- Antioxidants

Distribution

- Native to the Mediterranean region of Europe including Greece (mostly in Crete), east into Iran and Afghanistan

Uses

- Extracts of milk thistle have been used as medical remedies in ancient Greece.
- Renal protection, hypolipidemic and anti-atherosclerosis activities, cardiovascular protection, prevention of insulin resistance, cancer, and Alzheimer prevention.
- It is also used as a food remedy.

Plantago lanceolata



Description

- It is a common grassland and roadside plant.

Cultivation

- Native to Greece, growing in a greenhouse in the summer season
- Nutritional quality is higher in the young and juvenile stages.

Nutritional properties

- Notable phenolic content, as well as antioxidant, anti-inflammatory and cytotoxic activity.
- Iridoid glycosides, flavonoids, and phenylethanoid glycosides

Distribution

- Native to Eurasia, but has been introduced to North America and many other parts of the world with suitable habitats.

Uses

- Its leaves are used in many countries, alone or in combination with other herbal species, for the symptomatic treatment of cold and of mouth and throat inflammations
- Preparation of cooked dishes and mixed salads
- Demonstrates superior bio-potential and its use as traditional remedy and functional food is validated

Crithmum maritimum



Description

- It is a flowering plant in the carrot family Apiaceae.

Cultivation

- Salinity adapting crop

Nutritional properties

- Rich in carbohydrates and antioxidants

Distribution

- Native to Europe, Macaronesia, parts of West Asia and North Africa in the Atlantic, Mediterranean and Black Sea coasts

Uses

- The stems, leaves and seed pods may be pickled in hot, salted, spiced vinegar, or the leaves used fresh in salads.

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