A Harvester’s Handbook to Wild Medicinal Plant Collection in Kosovo.

Jolie Lonner$^1$ and Michael Thomas,$^2$ PhD.

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St. John’s Wort - *Hypericum perforatum*

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$^1$ Medicinal Plant Specialist, Arcata, California, USA.

$^2$ Botanist, CIEER.org, Honolulu, Hawaii, USA.
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We hope this handbook will serve as a useful resource to the thousands of individuals harvesting wild medicinal plants within Kosovo and the Kosovo herbal industry as a whole. During our time in Kosovo, we have met with many of the industry representatives and are grateful for your personal time, input and support of this project.

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Disclaimer

This book is an educational handbook on wild harvest of medicinal plants in Kosovo. While medicinal uses of plants are given, this work does not purport to be, nor is it intended to be, any kind of a recommendation or self-treatment guide for the use of herbs. Nothing should be construed to represent an attempt to diagnose, prescribe or administer in any manner to any physical ailments or conditions. In matters of your personal health care, it is recommended that you consult a qualified health care practitioner and not attempt self-treatment based on information in this book.
Preface

The use of medicinal plants has been a strong tradition in the Balkans for centuries. Kosovo Business Support (KBS), a United States Agency for International Development (USAID) - funded organization in Kosovo, is facilitating the development of this re-emerging industry based on the collection, processing and export of cultivated and native herbs that grow naturally in Kosovo.

Medicinal plants and their derivatives are being increasingly used in pharmaceutical, food, cosmetics and other industries. Kosovo has ideal conditions for medicinal herb vegetation due to specific soil and climate conditions. It is estimated that the flora of this area comprises more than 2500 plant species, which accounts for 20% of the entire Balkan flora. In Kosovo the bulk of local medicinal herbs are wild harvested.

During the Communist era, most Yugoslavian companies working in the herb industry were vertically integrated with large centralized procurement departments that organized contract growing and collection of wild raw materials. Government laboratories responsible for quality control and quality assurance were located in Serbia’s regional cities. Belgrade, as the Yugoslav capitol, legislated and monitored herbal drug laws and policy. This city was also the home of some of Yugoslavia’s most important pharmaceutical companies. During this era, Kosovo was an important supplier of raw materials for these industrial giants.

In the early 1990s, Montenegro, along with Kosovo, supplied around 20% of Federal Republic of Yugoslavia’s (FRY) total herbal raw materials. With the fragmentation of Yugoslavia and the subsequent conflicts, the trading relationships between Kosovo and the countries of FRY have eroded, and the importance of medicinal herbs to Kosovo’s economy has diminished dramatically.

Since December 2002, Kosovo Business Support along with financial support from USAID, has been working to re-vitalize the herb industry in Kosovo. Our objective is not simply to help re-establish Kosovo as a supplier of raw herbs – instead, our mission is to assist in the creation of a viable herbal industry based on the further processing of Kosovo herbs into value-added products, and in this manner to increase employment and export revenues.

Providing support and encouragement for the sustainable wild harvesting of Kosovo’s botanical treasures is a key element in the creation of a viable herbal industry. This handbook provides essential information on how to collect wild plants for commercial purposes, while protecting the plant species for future generations. We at KBS sincerely hope that it serves you well.

Tom Easterling
Agribusiness Advisor
Kosovo Business Support
Guidelines for Harvesting

Determine if there is market for your product before you harvest. Know what parts of the plant the buyer wants and gather only those parts.

Make sure you positively identify plants. Many plants look alike. Don’t waste time and effort collecting the wrong plant. Some poisonous plants look similar to marketable species.

Be aware of your impact on the land. Avoid trampling plants and compacting soils; do not gather when the ground is wet. When harvesting the leaves of bushes or trees pick from the outsides of the plants leaving the center of plant to regenerate. Use one entry to a harvesting site and work uphill. Avoid unnecessary walking along stream banks.

Harvest from healthy populations, and leave many strong, mature and seed-producing plants untouched. Assess the relative health of the stand. Decide whether this is an appropriate place for commercial harvest. Any stand of native plants to be harvested commercially should cover at least one third of the given area.

Collection must be carried out in compliance with existing regional and/or national species conservation legislation. Collection methods must not damage the growth environment ensuring optimum conditions for regeneration of medicinal plant harvested.

Medicinal plants that are listed as sensitive, threatened or endangered (CITES, Convention of International Trade in Endangered Species of Wild Fauna and Flora; EU Council regulation (EC) No. 338/97) must not be collected unless the relevant competent authority has given its authorizations.

Harvest only during the optimal season (see Appendix A)

Harvest in unpolluted areas. Make sure the area hasn’t been sprayed with agricultural chemicals. Do not harvest downstream from any mining or chemically laden agricultural business. Harvest 50 to 100 meters from public roads as pollution from cars can be damaging to medicinal plants.

Choose the right day. If it has rained recently the product will be more difficult to dry properly and you may cause unnecessary soil compaction. Dryer days are better for harvesting.

To avoid cross contamination of herbal materials, harvesting tools must be cleaned thoroughly between collections.

Harvested herbal material must not come in direct contact with the soil.

Check harvested material for insects and disease on sight so that you can remove contaminated material.

Collection containers used during harvesting must be clean and free of contamination from previous herb collection. When containers are not in use they must be kept in dry, pest free conditions that are inaccessible to mice, rodents, livestock and domesticated animals.

Bags should not be completely filled nor placed on top of other bags. Mechanical damage and compression of fresh herbal material that results in changes of quality should to be avoided.

Herb Drying Recommendations

With most herbs it is easy to gather a large quantity but it usually takes considerably longer to process these plants. Drying herbs must be kept in the shade and out of direct contact with sunlight. Optimal drying temperature is between 30-40 °C. Shaded, dry heat with good air circulation creates the most favorable condition for dehydrating fresh herbs. If herbs are dried too quickly by using too much heat, they roast and lose their potency. When herbs are dried too slowly, they can mold and be damaged by enzymatic actions that seriously impoverish their quality. Dried herbs should be protected at night from the evening’s moist air. The water in this air can re-hydrate the drying herb and decrease quality.

Bundling herbs

Bundling herbs and hanging them in a shaded location amidst circulating warm air is a simple inexpensive method to dry plants. Use rubber bands for bindings because as plants dehydrate they shrink and often fall out of string bindings. It is important that the circulating heat move the plant moisture away from the plant. Bundles that are too large might be cut off from adequate airflow leading to mold, and enzymatic activity that will decrease quality.

Drying rack method

This method involves a series of screened shelves stacked in layers at suitable distance from each other and placed in large well-ventilated housings. Upon these racks the herbs are carefully arranged so as to overlap as little as possible. Be sure to use food grade screens in your dryer. It is best that the warm air circulates below as well as above the drying plant parts.

Processing, storage and transport

When adequately dried all plant parts must snap crisply when bent. Large roots should be cut to examine if centers are completely dry. As soon as they are thoroughly dry, herbs should be processed. Dried herb that is left too long can collect dust and therefore lose quality and value. Break down bundles and strip leaves and flowers from stems, separate out the usable parts of the herb from the non-useable. Discard the discolored, dead leaves and extra twigs etc. Damaged herbal material must be either excluded from the herbal raw material that will be placed on the market, or separated for sale as second quality material.

Dry herbs should be placed in breathable sacks, bags or boxes with plenty of air circulation between containers. Avoid exposure to direct sunlight. To avoid contamination bags should not be stored on the ground or floor. Using pallets to raise products from the floor is recommended. Herbs should be transported to market as soon as possible.

Barpezmi (Yarrow)

**Family:** Asteraceae (Sunflower Family)

**Scientific name:** *Achillea millefolium*

**Other names:** Yarrow, Nosebleed Weed

**Distribution:** Broadly distributed globally. Grows below 3000 meters in meadows, pastures, and along roadsides. It thrives after disturbance such as fire.

**Reproduction:** Grows vegetatively from rootstock or seed.

**Description:** Perennial herb, up to one meter tall. The stem is angular and rough. Leaves are 8 to 9 centimeters long and 3 centimeters broad. Leaves have a feathery appearance. Many white to pale lilac flowers are in flat-topped clusters. The whole plant has white, silky hairs.

**Part(s) collected:** Flower heads

**Harvest time:** June – August

**Suggested harvest method:** Cut flower heads when in full bloom, leave plenty of heads behind for reseeding. Dry loose in the shade.

**Use(s):** The leaves are used topically to reduce bleeding; medicinal tea of flower heads is good for colds; to stimulate sweating in acute fevers and to regulate menstruation; used in cleansing lotions for skin (Tierra, 1990).
Bliri Gjethvogël (Linden)

Family: Malvaceae

Scientific name: Tilia cordata

Other names: Little leaf linden

Distribution: Linden grows in temperate climates below 1500 meters. It is common in Eastern Europe and grows amidst ash-maple, oak, ash-rowan and oak-birch woods.

Reproduction: Plant regenerates from seed.

Description: Large deciduous tree that can grow to 30 meters and live up to 1,000 years. Linden has an oval crown of dense foliage. Leaves are heart shaped and measure 5-8.5 cm. Fragrant flowers are yellowish and arranged in hanging bunches containing 5-7 flowers each. Fruits are dry and hard and measure about one centimeter.

Part(s) collected: Clusters of flowers

Harvest time: May – July. Two thirds of flowers should be in bloom.

Suggested harvest method: Ladders should be employed in collecting flowers. Flowers should be collected by hand. Do not tear branches or hit tree with sticks. Leave at least 30% of flowers on trees to allow for regeneration and bee habitat. Do not gather in urban areas due to contamination of plant materials from pollution (Denji_ and Pe_anac, 2003).

Use(s): Colds, cough, fever, infections, high blood pressure and headaches. It is a diuretic and used to relieve spasms (Tierra, 1990).

Figure 2. Illustration of Linden (Gilman, 1994).
Boronica (Bilberry)

Family: Ericaceae

Scientific name: Vaccinium myrtillus

Other names: Bilberry

Distribution: Bilberry grows in cold, humid mountain heaths and woods of northern and Central Europe and western Asia at 1500-2000 meters in elevation. It is native to the Balkans region including Kosovo.

Reproduction: Bilberry reproduces by seed and underground stems.

Description: Bilberry is a relative of blueberry. It is a small shrub with wiry branches measuring 30 to 50 cm in height. The oval-shaped leaves measure 2 – 3 cm and have a waxy surface. The blackish-blue berries are 5-7 mm in diameter and contain several seeds. Bilberry flowers bloom in May or June, but are easily damaged by late spring frosts. The fruits are ripe from July to Sept.(www.northberry.com/berry_en.html).

Part(s) collected: Both berries and leaves are harvested but at different times.

Harvest time: The leaves should be collected on dry days in May and June when the plant is flowering. Berries can be harvested in July - September.

Suggested harvest method: Bilberry will accumulate heavy metals and other contaminants from the soil and air. Harvest bilberry only from clean environments.

Leaves: Leaves should be collected with clippers. Only 30% of the leaves should be collected, leaving the rest untouched. Do not pull plants out of ground. Avoid compacting soil around the plant.

Fruits: The fruit should be collected manually or with a berry picker. If using a berry picker, do not to tear off the leaves while harvesting the berries. To ensure reproduction, harvest no more than 80% of berries on the plant. The average yield from a conventional land plot that is fully covered with bilberry shrubs is approximately 100 kg per hectare.

Use(s): Bilberry is commonly used to make juice. Medicinally, the fruit and leaves are used to improve vision by increasing blood circulation to the eyes. Bilberry also contains pectin, a soluble fiber that counteracts simple diarrhea (Blumenthal, 1997).

Figure 3. Illustration of Bilberry (Foster, 2003).
Dëllinja e Zezë (Juniper)

**Family:** Cupressaceae  
**Scientific name:** *Juniperus communis*  
**Other names:** Common Juniper  
**Distribution:** *Juniperus communis* is the most widespread of the juniper species. It occurs in mountainous regions from 500-1000 meters in W & N Asia, N America, Europe, and N Africa. Juniper is native to the Balkans region including Kosovo.

**Reproduction:** Plants reproduce by seed.

**Description:** At high elevations Dëllinga e zezë is found as a bush about 1 meter tall, but at lower elevations this plant takes the form of a tree up to 10 meters tall. The bark is dark brown and comes off in thin strips from larger branches. Individual trees have a pyramidal crown, however trees growing together in clumps have a shapeless crown. Needle-shaped leaves are green but sometimes appear silver. Juniper has male and female plants. Only the females produce berries. Ripe berries become blue after two years. Some plants have been reported to live up to 600 years old.

**Part(s) collected:** Ripe blue berries  
**Harvest time:** August – October depending on altitude.

**Suggested harvest method:** Gather berries only when ripe. Berries can be collected manually or shaken from the bush on already prepared flax, jute or other similar surface (e.g. an umbrella). When shaking the branches do not shake so hard as to remove green berries. Leave 20% of the ripe fruits on the plant for regeneration. Avoid breaking branches and stepping on roots as much as possible. Because juniper regenerates poorly, if not at all after fire, take precautions to avoid fire such as disposing of cigarette butts appropriately.

**Uses(s):** The essential oil is used topically as an antiseptic, anti-parasitic, anti-inflammatory and analgesic. Berries are used for treatment of urinary problems as they stimulate the kidneys and adrenals to remove acidic toxins from the body. This plant can be used to help with gout and rheumatic ailments. The berries are also used to flavor gin  Avoid use during pregnancy (Tierra, 1990).

**Identification concerns:** Other species of juniper grow in Kosovo. Some are have no commercial value and others are poisonous. Make sure you positively identify the plant before harvest. One similar species is:

*Juniperus oxycedrus* – The berries of this plant are larger (12 mm) than *Juniper communis* and have a dark red color (Dunji_ and Pe_anac, 2003).
Figure 4. Illustration of Juniper.

Figure 5. Illustration of Nettle.
Hithra (Nettle)

**Family:** Urticaceae (Stinging Nettle Family)

**Scientific name:** *Urtica dioica*

**Other names:** Stinging Nettle, Nettles

**Distribution:** Originally from the colder regions of northern Europe and Asia. Today, nettles grow in wet, wooded areas all over the world. Nettle grows at elevations from 500-1000 m.

**Reproduction:** Plant reproduces by seed and underground rootstock.

**Description:** The finely toothed, heart-shaped leaves have tapered ends and are arranged opposite of one another on the stem. The entire plant is covered with tiny stinging hairs, mostly on the underside of the leaves and stem. The tiny flowers, which bloom from May to September, are yellow to greenish-yellow and are arranged in drooping clusters.

**Part(s) collected:** Leaves. Sometimes buyers will want roots. Make sure you know what part of the plant the buyer wants before you harvest.

**Harvest time:** Leaves are harvested from May to September. Roots are harvested in early spring or fall (April or October).

**Suggested harvest method:** Because contact with this plant can irritate skin, use gloves and wear a long sleeve shirt when harvesting. Never collect near orchards or vineyards that have been sprayed. Do not harvest when soil is wet.

Compacting soil could hinder next year’s growth.

Leaves: Using scissors or a sickle cut stem of plant leaving about 30% of the nettle patch remaining. Young leaves are the best. Do not harvest old, brown or deteriorating leaves

Root: Using shovel, dig for roots leaving 80% of roots in the patch undisturbed. Replace dirt and fill any holes you made.

**Use(s):** Nettle leaf is a spring tonic and helps the body to clear out waste products. It is used as a remedy against allergies and hay fever. Nettles are helpful in cases of gout, rheumatism and arthritis. The plant is a diuretic and can help with high blood pressure. Nettles are also a useful remedy in for anemia. A strong tea of the plant is good for diarrhea. This herb promotes flow of breast milk. Nettle root is used for benign prostate inflammation and some urination problems for men (Green, 2000).
Kamomili (Chamomile)

**Family:** Asteraceae (Sunflower family)

**Scientific name:** *Matricaria chamomilla*

**Other names:** German Chamomile, Chamomile

**Distribution:** Global. Chamomile grows at 500-1000 meters in elevation.

**Reproduction:** Plant reproduces by seed.

**Description:** Kamomili is an annual plant with flower heads about 2 centimeters broad. Flower centers are yellow and are surrounded with about fifteen white, strap shaped petals that are turned down from center. The leaves are dissected and feathery.

**Part(s) collected:** Flower heads

**Harvest time:** May - August

**Suggested harvest method:** Gather plants when in bloom. Leave 20% of plants in the area undisturbed to allow for regeneration by seed.

**Use(s):** Chamomile is good for digestive complaints. This herb is widely used to relieve mental stress and tension (Tierra, 1990).

Figure 6. Illustration of Chamomile.
Lulja e Ballsamit të Shpuar (St. John’s Wort)

Family: Clusiaceae (St. John’s Wort family)

Scientific name: *Hypericum perforatum*

Other names: St. John’s Wort

Distribution: This plant is broadly distributed globally and is native to Europe. It grows in meadows, open woodland and forest edges at elevations from 500 to 1000 meters.

Reproduction: Plant reproduces by seed and also sprouts from rootstock.

Description: St. John’s Wort is an erect perennial herb, one-half to one meter tall; leaves are arranged opposite from one another on stem and are less then 3 cm long. When the leaves are held against a light source, one can see many small dots of light that are glands. This plant has yellow flowers with five petals and many stamens. Flowers turn red when bruised.

Part(s) collected: Flower heads and leaves are collected from the top 12 centimeters of the plant.

Harvest time: June – July

Suggested harvest methods: Harvest by cutting the top 10 centimeters of flower stems with a sickle or scissors soon after blooming. At least 30% of St. Johns Wort plants in the harvest area should remain undisturbed. After harvesting, stems with leaves and flowers, or simply flowers (depending on the buyer), should be dried in a thin layer, under shade, in a well-ventilated place. Damaged, darkened leaves, or leaves without flowers, have no commercial value.

Use(s): The plant can be made into medicinal tea, tincture, or herbal oil. These three derivatives can be taken internally as an antidepressant, as antibacterial and antiviral treatments, or as astringents. They provide relief from nerve stimulation and the resulting pain, and they can be used as treatment for gastritis and stomach ulcers. The oil may also be used externally for abrasions, burns, skin ulceration, and for muscle and nerve pain.

![Figure 7. Illustration of St. John’s Wort.](image-url)
Murrizi Jobërthamor (Hawthorn)

Family: Rosaceae (Rose Family)

Scientific name: *Crateagus monogyna*

Other names: Hawthorn, Single-seeded Hawthorn, Common Hawthorn

Distribution: Hawthorn is found in Europe, North Africa, and Western Asia. This plant grows in woods, hedges, thickets on most soils except wet peat and poor acid sands. Hawthorn grows at elevations from 500-1000 meters and is native to the Balkan region including Kosovo.

Reproduction: Plant reproduces by seed.

Description: Small deciduous tree with many branches composing a dense rounded crown. Tree height ranges from 2-10 meters. Tree bark is orange-brown to pink-brown and cracked into rectangles. Hawthorn leaves are 2.5-5 cm long have 3-7 lobes that are often slightly toothed. The white flowers measure between 10-15 mm wide with five white (or pinkish) petals. Flowers are born singly on the plant. The round red fruits measure between 8-10 mm and contain one seed (Audubon, 1980).

Part(s) collected: Fruit

Harvest time: July – September

Suggested harvest method: Using scissors or clippers collect the fruit without the stem when it is red and mature. Leave 20% of the fruits on tree to foster regeneration. Avoid gathering near hedges, fences and inhabited areas because of possible chemical contamination.

Use(s): Hawthorn is used mainly for treating disorders of the heart and circulation system. It is especially indicated in the treatment of weak heart combined with high blood pressure.

Figure 8. Illustration of Hawthorn.
**Shtogu (Elder)**

**Family:** Caprifoliaceae (Honeysuckle Family)

**Scientific name:** *Sambucus nigra*

**Other names:** Black Elderberry

**Distribution:** Shtogu grows in by the river and springs at elevations from 500-1000 meters. Elder is native to the Balkan region including Kosovo.

**Reproduction:** Plant reproduces by seed.

**Description:** A shrub to small tree that can grow to the height of 6 to 8 meters. The serrated leaflets are arranged opposite of one another. Shtogu has masses of cream-colored umbrella-shaped flowers arranged in a flat-topped cluster. Individual flowers are 10 – 20 mm wide. Shtogu has bright blue, edible berries measuring 5 to 6 mm in diameter that contain three seeds. The trunk is hollow and filled with porous pith.

**Part(s) collected:** Flowers

**Harvest time:** May – June

**Suggested harvest method:** Cut the entire flower cluster. Do not remove all the flowers. Leave at least 30% of the flowers on tree to bear fruit.

**Use(s):** Tea of flowers is used to relieve hay fever, coughs, sore throats, colds, fevers and flu. Flowers are high in vitamin A and C. It is a mild laxative. Flowers can be eaten or made into beverages (Everett, 1997).

**Identification Concerns:** There are some similar species that can cause confusion:

*Sambucus ebulous* - This plant is an annual bush reaching a height of 2 meters. The fruit is similar to Shtogu but has an unpleasant smell and is poisonous.

*Sambucus racemosa* – The leaves and trunk of this plant resemble Shtogu but this plant produces red poisonous berries (Dunji_ and Pe_anac, 2003).

Figure 9. Illustration of Elder.
Trëndafili i Egër (Dog Rose)

**Family:** Rosaceae (Rose Family)

**Scientific name:** *Rosa canina*

**Other names:** Dog Rose

**Distribution:** Dog rose is commonly found beside forests, hedges, fences and plains at elevations of 1000-1500 m. It is native to the Balkan region including Kosovo.

**Reproduction:** Plant reproduces by seed.

**Description:** Dog rose is a prickly bush growing up to 3 meters tall. Branches are long, thin and arched. Leaves are composed of 5 to 9 serrated leaflets that are arranged opposite each other. The scentless flower, which blooms in May and June, is big and beautiful with five pink or white petals. The fruit grows at the base of the flower and measures 1 to 1.5 cm. Mature fruits are red.

**Part(s) collected:** Fruits

**Harvest time:** September - October

**Suggested harvest method:** Using scissors or clippers collect the fruit without the stem when it is red and mature. Leave 20% of the fruits on bush to foster regeneration. Harvested fruit should be dried intact or cut in half. Avoid gathering near hedges, fences and inhabited areas because of possible chemical contamination.

**Uses:** Rose hips are extremely high in vitamin C and are good for sore throats, colds and fever (Felter and Lloyd, 1898).

**Identification Concerns:** There are numerous species that can cause confusion including:

*Rosa dumetorum* – A bush that grows to a height of 1 to 1.5 meters. It is similar to the dog rose but the leaves are light green and have hair on both sides. This species grows in warmer climates than dog rose.

*Rosa rugosa* – A bush with barbed thorns that are widened in the base. It grows 1 to 2 meters high. The fruit of this plant is more oval than dog rose.

*Rosa acicularis* – This bush ranges from 0.5 to 2 meters high. Unlike the dog rose the flower of this plant are red. The fruit is 20-25 mm and is longer than the dog rose. This plant can be found at altitudes up to 2000 meters (Dunji_ and Pe_anac, 2003).

![Figura 10. Illustration of Dog Rose.](image-url)
References


