American Journal of Botany and Bioengineering
https://biojournals.us/index.php/AJBB
ISSN: 2997-9331

The Significance and Cultivation Technology of the Medicinal Plant Shepherd's Purse

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Received: 2025 14, Apr
Accepted: 2025 15, Apr
Published: 2025 03, May

Annotation: The flora of Uzbekistan includes more than 4,000 plant species. About 20% of these species are endemic (not found anywhere else); most of them grow in mountainous areas. Representatives of the plant Shepherd's Purse (Capsella Bursa-Pastoris L. Medic) are widespread in nature and are distinguished by their medicinal properties. The plant has remarkable characteristics that positively affect the human body

Keywords: Shepherd's purse, medicinal plant, flowers, soil, laboratory, experiment

Common Shepherd's Purse (Capsella bursa-pastoris (L.) Medik.) is an annual plant that reaches a height of 20.0 to 60.0 cm. The plant originates from Southern Europe and parts of Asia Minor. It has a single, upright, and branched stem. The root system is a taproot. The leaves are entire and sharply triangular; the basal leaves are elongated-lanceolate with toothed edges, and the stem leaves are sessile (without stalks), while the basal ones are petiolate (with stalks) and attached to the stem. The flowers are white and arranged in a raceme resembling an umbrella. Each flower is about 0.25 cm long. It has 4 sepals, 4 petals, and 6 stamens arranged in two whorls (4 in one, 2 in the other). There is one pistil formed by the fusion of two carpels. The fruit is a flat, heart-shaped silique, measuring 3–5 mm in length and 5–8 mm in width. The plant blooms from April to May (sometimes until August), and the fruits ripen between May and September. Common shepherd's purse is used for medicinal purposes in folk medicine, official healthcare, and the pharmaceutical industry. It is propagated by seeds sown in early spring. The plant is resistant to drought and can tolerate both short- and long-term soil drying during the summer season. It is not demanding in terms of soil but prefers moderately moist and fertile soils. It can be cultivated in all soil types across the country, except in heavily or extremely saline and waterlogged soils.[1].

Propagation. Common shepherd's purse is propagated by its seeds in early spring (February–March). In this process, the seeds do not require any pre-sowing treatment. When establishing the planting, seeds are sown in rows with a spacing of 70 cm. They are sown at a depth of 1.0–2.0 cm, with a seeding rate of 0.8–1.0 kg per 10 sotkas of land. For propagating common shepherd's purse, primary soil tillage (plowing) is performed in late autumn, and superficial tillage is carried out in early spring. Before the primary tillage, 2.0–3.0 tons of local manure and 0.8 kg of mineral fertilizers (phosphatic fertilizers) are applied to the designated field. Then the soil is plowed to a depth of 20–25 cm. The sowing of seeds is performed in early spring (from the third decade of February to the first decade of March). After sowing the common shepherd's purse seeds, irrigation is carried out based on the condition of the plant and the soil–climatic conditions of the field. After each irrigation, the soil is loosened and cleared of weeds. During the flowering period, local fertilizers are applied with the soil loosening after each irrigation. Over the growing season, the field is fertilized with 5.0–6.0 tons of local manure per 10 sotkas. When the plant is in full bloom (mainly in April–May and occasionally until August), the above-ground part of the plant is harvested. The crop must be harvested in due time because the content of biologically active substances in the raw material may change and decrease. On irrigated lands, an average yield of 0.7–0.9 tons (dry mass of the above-ground part) per 10 sotkas is obtained. When grown on irrigated soils, common shepherd's purse is susceptible to various pests and diseases. To prevent this, it is effective to protect the plants against insects and pests by using biological control methods. This method helps to protect the plants and preserve the main medicinal properties in their composition (which might otherwise be lost due to the use of chemical preparations).

Common shepherd's purse is an annual plant reaching a height of 20.0–60.0 cm. It has a single, upright, branched stem. Its root system is of the taproot type. The leaves are entire and sharply triangular; the basal leaves are elongated-lanceolate with toothed margins, while the stem leaves are sessile, and the basal ones are petiolate and attached to the stem. The flowers are umbrella-shaped and white, arranged in a spike, and measure 0.25 cm in length. There are 4 sepals and 4 petals; 6 stamens are arranged with 4 in the first whorl and 2 in the second, while the pistil is formed by the fusion of 2 carpels, producing 2 ovary lobes. Experiments under laboratory conditions began with determining the germination of the shepherd's purse seeds. This started with laboratory tests on 20.03.2023, followed by field trials on 20.04.2023, and then with the observation of seedling emergence on 01.05.2023 (see Table 5). For this purpose, initially:

Seeds of shepherd's purse (collected in 2023) were selected.

For the experiment, 4 Petri dishes were thoroughly cleaned, and labels were prepared and affixed. Then, filter papers were placed in the Petri dishes and 3–5 ml of water was added. It is important to ensure that the water volume does not become excessive.

Under these conditions, the germination of the seeds was observed. It is necessary to ensure that the dishes do not dry out. The germination capacity of shepherd's purse seeds was monitored at different temperatures. In each Petri dish, 50 seeds were counted for each analysis, and the process was repeated 4 times (see Table 3).

In this experiment, the seeds were placed in Petri dishes in two different variants (in their natural state and pre-soaked in water). In each variant, the initial and final germination rates and the number of seeds were determined separately, and then the average values were calculated and recorded as percentages.The optimal temperature for seed germination in the Petri dishes was +20 to +22°C. At this temperature, the seeds in their natural state began to germinate within 6–10 days, while the water-soaked seeds began to germinate within 3–8 days.

1-figure.The process of observing seed germination under laboratory conditions

Seed Germination of the Shepherd's Purse Plant under Laboratory Conditions (2023)

№	Variants	Number of seeds	Time	germination %	
			Planted	bruise	
1	Seed alone (control)	40	20.03.2023.	25	62,5 %
2	Boiled in water	40	20.03.2023.	31	77,5 %

On April 30, 2023, the experimental field was plowed to a depth of 25–30 cm using specialized equipment. On May 5, 2023, the field plot was prepared for sowing (Table 3). On May 8, 2023, seeds were sown with a row spacing of 60–70 cm and intra-row spacing of 20 cm and 30 cm. The sowing depth was 1–1.5 cm (Figures 6–7). The germination of Shepherd's Purse seeds under different conditions was studied. Seeds sown in the experimental plot on April 24, 2023, began to germinate by May 15. Bud formation was observed by June 22, 2023, flowering started on July 3, and fruiting began on July 23, 2023. The total vegetation period lasted 90–95 days. For home yard plot cultivation, seeds were sown on May 1, 2023, and germination was observed five days later. Bud formation occurred on July 18, flowering was observed on June 26, 2023, and some plants began fruiting around July 30, 2023. The total vegetation period of the plant lasted 90–95 days.

Germination of Shepherd's Purse Seeds (2023)

	seed sowing time	time to bruise	budding	flowering	fruiting	growing season
The house became a place for tomorrow	01.05	06.05	18.07	26.06	30.07	90-95

Germination in front yard conditions.

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