

# Cultivation Manual: Medicinal and Aromatic Plants in the Nordic and Baltic Region



NordGen



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Top photo: *Chelidonium majus* (greater celandine).

## Preface

Following cultivation manual is the result of a cooperation project named "Networking and knowledge exchange in seed production of medicinal- and aromatic plants (MAP)". This network included several countries in the Baltic Sea Region and was granted by the Swedish Institute (SI) for two consecutive years (2020 and 2021). The aim was to enhance networking and give the different countries a possibility to learn from each other's species specific experiences and broaden their knowledge in seed production of MAP. Members from the Nordic countries, Latvia and Poland, both scientists, genebanks and botanical gardens were represented in the project.

No authors, nor any of the project collaborators, are responsible for potentially harmful effects from the use of the medicinal and aromatic plants presented in this manual. Before using a plant medicinally, seek professional guidance.

### Genebanks

NordGen is an organization under the Nordic Council of Ministers, dedicated to conservation and sustainable use of plants, farm animals and forest. NordGen's primary aim is to secure diversity of genetic resources linked to food, agriculture and forestry. The main task for most plant genebanks is to collect seeds, to provide long-term storage and to distribute collected material. In addition, they serve as knowledge centers for plant genetic resources. To manage this, genebanks regularly need to multiply seeds in order to keep the material alive and ensure sufficient number of seeds for distribution. Medicinal and aromatic plants include several species that often are difficult and challenging to germinate and cultivate. The genebanks' seed collections are therefore often both incomplete and difficult to maintain, and botanical gardens often have only

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Seed harvest from **greater celandine** in NordGen's garden.

small demonstration plots of medicinal plants.

## MAP

Medicinal and Aromatic Plants (MAP) have been of interest and importance to mankind for centuries. Wild native species in the Baltic Sea Region as well as naturalized species from foreign countries have been utilized as traditional medicine. During the 20th century importance of medicinal plants decreased gradually as knowledge to purify the active compounds and synthesize them chemically was gained. Nevertheless, interest for medicinal plants has by no means slowed down. More knowledge about medically active substances is still requested and the search for new compounds in wild material continues.

Large scale cultivation of MAP for production of medicinal components as well as spices has comparatively low impact on the environment as the crops require a low amount of fertilizers and will not contribute to overfertilization. In addition, for most commercial cultivation of MAP no pesticides are approved, which also contributes to making them environmentally friendly crops.

## Seed Regeneration of MAP

Many seed samples in medicinal plant collections need to be multiplied because the germination capacity is low and/or the seed amount is limited. Within agricultural production MAP is a niched group of plants and the methods for their cultivation, seed production, and seed testing are very little known or non-existent. The problem is complex and requires international collaboration to solve.

Today total knowledge on seed production of MAP in the Baltic Sea Region is insufficient as it, to a large extent, focuses on specific species different for the different countries. However, each country needs to have knowledge on seed production of a large number of species to be able to efficiently secure their collections, keep a high genetic diversity as well as utilize the material on larger scale. All countries within this project have similar geographic and climatic conditions and it has therefore been possible to develop methods for efficient multiplication for the whole region.



The seed pods give off a sticky colored liquid.



Seeds of *Bryonia cretica ssp. dioica* (red bryony).

## Manual for Seed Production and Cultivation of MAP

Cultivation of 21 different species of MAP were conducted in Latvia (Salaspils and Jelgava) and Poland (Plewiska) in 2020 and 2021. At NordGen in Alnarp, Sweden, regeneration of accessions of number of various MAP species in the genebank collection are carried out annually. This manual is a result of the experience gained during cultivation of a number of species at all four sites with focus on seed production. The species are mentioned in alphabetical order using the taxonomical names. The cultivation process is illustrated by photos mainly from the Latvian and Polish sites. In the manual tray substrate refers to a substrate with relatively low nutritional value, and the pot substrate has a nutritionally higher value.



Seed harvest of *Malva sylvestris* (**common mallow**) in Polis Plewiska.



[Click here](#) to see the video of seed harvest at the Polish cultivation site in Plewiska.

## Pollination

It is often very difficult to find information about pollination strategy for MAP species but many of them are with the greatest certainty cross-pollinators. When cultivating several different populations (accessions) within the same species they must be isolated from one another to avoid cross-pollination. Minimum 100 meters is a recommended distance between the populations. An alternative is physical isolation in the form of isolation cages with an insect/pollen proof net or using different greenhouses. When using nets or greenhouses it is important to provide suitable pollinators like bumblebees, bees, flies etc. depending on the preferences of the species.



Bumblebee on *Malva sylvestris* (**common mallow**).



## *Achillea millefolium* (yarrow)

**Yarrow** is native to the Northern Hemisphere in Europe, Asia and North America, but is spread in other parts of the world as well. It grows up to 50–100 cm. **Yarrow** is a perennial widely used in herbal medicine; one of the most used and oldest medical plants in the world. It is used in the treatment of a wide range of disorders, both internally and externally. **Yarrow** is especially valuable for healing wounds, stopping blood flow, treating colds and fevers etc. It is also used for curing hemorrhoids, toothache and complications in the respiratory system. **Yarrow** flowers in white from June to August. The species has both male and female organs pollinated by insects. It is best harvested when in flower, and the whole plant is used, both fresh and dried. The flavour is rather bitter but young leaves can be used in mixed salads and aromatic tea can be made from both flowers and leaves.

### **Cultivation**

Cultivate in April to May in a broadcast tray under light conditions, approximately 20-23 °C. Sow the seeds in tray substrate and cover the seeds minimally, 0.5 cm, with substrate. When plants are large enough to handle transplant into small individual pots in pot substrate. The pots can be placed in an unheated greenhouse, or outside when the risk of frost is over. When fully rooted in the pots, plant outside in field. Position: semi-shade to sunny.

**Family: Asteraceae**

**Swedish: röllika**

**Finnish: siankärsämö**

**Norwegian: vanlig ryllik**

**Danish: almindelig røllike**

**Icelandic: vallhumall**



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Sow the seeds in tray substrate and cover the seeds minimally, 0.5 cm, with substrate.

**Yarrow** can produce flowers the first year of cultivation whereas seeds are usually not produced until second year. Flowering time is from June to September and harvest time is August/September. Always harvest in dry conditions and when the inflorescence and the stem underneath are brownish and dry. Use scissors and cut just below the inflorescence.





## *Aethusa cynapium* (fools parsley)

**Fools parsley** grows wild in most of Europe, and further on to Caucasus and North Africa. The species grows up to 80 cm and has white umbel flowers. The plant is most often an annual, rarely perennial. As the name indicates, the plant looks a bit like parsley. The whole plant is poisonous, especially the seeds, and can cause burning and pain in mouth, throat, stomach and muscles as well as nausea and vomiting. Although poisonous, it has been used in folk medicine to treat problems such as diarrhea, cholera and convulsions. The species has also been used as an intellectual stimulant.

### **Cultivation**

Sow the seeds in April in a broadcast tray under light conditions, approximately 20-23 °C. Sow the seeds in tray substrate. Cover seeds with compost to a depth of 0.5-1 cm. When large enough to handle transplant the plants into small individual pots in pot substrate. The pots can be placed in an unheated greenhouse, or outside when risk of frost is over.

When fully rooted in the pots, plant outside in field. Position: semi-shade to sunny. The flowering time is normally in July-August and harvesting of the seeds will take place in September. This will of course vary with geographical position and weather. Always harvest in dry conditions. When harvesting, cut the umbel just below the inflorescence and put in a bag.

**Family: Apiaceae**

**Swedish: vildpersilja**

**Finnish: hukanputki**

**Norwegian: hundepersille**

**Danish: hundepersille**

**Icelandic: villisteinselja**

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The whole plant is poisonous, especially the seeds, and can cause burning and pain in mouth, throat, stomach and muscles as well as nausea and vomiting.



## *Arctium lappa* (greater burdock)

Top photo by Rutger Barendse /Saxifraga.

**Greater burdock** is a biennial native in large parts of Europe, India, Western Asia and China. The plant is also cultivated, mainly for its roots used raw or cooked as a vegetable, but other parts are edible as well. The dried roots are also used in Western and Chinese herbal medicine where the plant is considered to be one of the foremost plants with detoxifying properties. **Greater burdock** is antibacterial and antifungal, the plant is for example supposed to be good for treating different types of skin diseases, burns and bruises. The plant can grow up to 200 cm high and is in flower between July to September. The species is a self-fertile hermaphrodite pollinated by insects such as bees and butterflies. The plants usually self-sow freely.

### **Cultivation**

Sow the seeds in May in a broadcast tray, in tray substrate under light conditions, approximately 20-23 °C. Cover seeds to a depth of 1-2 cm. Germination can be erratic. When large enough to handle, transplant the plants into small individual pots in pot substrate. The pots can be placed in an unheated greenhouse, or outside when the risk of frost is over.

When fully rooted in the pots, plant outside in field, in semi-shade or sunny settings. **Greater burdock** succeeds in most well-drained soils but prefers a moist neutral to alkaline soil for partial shade and heavy soil for no shade.

**Family:** Asteraceae

**Swedish:** stor kardborre

**Finnish:** isotakiainen

**Norwegian:** storborre

**Danish:** glat burre

**Icelandic:** krókalappa



Photo by Jan Nijendik/Saxifraga.

The seeds are best sown *in situ* during autumn, but this can also be carried out during spring. The seeds need minimum 10 °C to germinate. If cultivating in order to harvest the roots, it's a good idea to get the young plants in the ground before the taproots develop. To gain long and straight roots, grow the burdock about 15 cm apart or in rows 30 cm apart with the plants five to eight cm apart in the rows. Harvest time is usually from September to October and the seeds are ripe when both the seeds pods and the stems below are brownish and dry. Always harvest in dry conditions. Use a pair of scissors to cut just below the seed pod. Be careful when harvesting the seeds, tiny hairs from the seeds can cause allergic reactions when inhaled.

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When fully rooted in the pots, plant outside in field, in semi-shade or sunny settings.



Photo by Willem van Kruijsbergen /Saxifraga.



## *Arctium minus* (lesser burdock)

**Lesser burdock** is a biennial that grows up to 100-150 cm with similar characteristics like the greater burdock. It is native to Europe and considered invasive in Australia, North- and South America. It has been used in Western and Asian herbal medicine for detoxifying traits, even if greater burdock is more commonly used. The roots of *Arctium minus* can be used raw or cooked as a vegetable, but other parts are edible as well. **Lesser burdock** is antibacterial and antifungal and, the plant is considered good for treating different types of skin diseases, burns and bruises. The fibers from the plant have historically been used for making paper. It is in bloom between July to September.

### **Cultivation**

Sow the seeds in April in a broadcast tray in tray substrate under light conditions, approximately 20-23 °C. Cover seeds to a depth of 1-2 cm. When large enough to handle transplant the plants into small individual pots in pot substrate. The pots can be placed in an unheated greenhouse, or outside when the risk of frost has passed. When fully rooted in the pots, plant outside in field in a semi-shade or sunny position. The plant can be grown in most soils.

**Family:** Asteraceae

**Swedish:** liten kardborre

**Finnish:** pikkutakiainen

**Norwegian:** småborre

**Danish:** liden burre

**Icelandic:** dverglappa



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Sow the seeds in April in a broadcast tray in tray substrate under light conditions, approximately 20-23 °C.

If cultivating in order to harvest the roots, it's a good idea to get the young plants in the ground before the taproots develop. To gain long and straight roots, grow the burdock about 15 cm apart or in rows 30 cm apart with the plants five to eight cm apart in the rows. The seeds ripen from September to October. The seeds are mature when both the seeds pods and the stems below are brownish and dry. Always harvest in dry conditions. Use a pair of scissors to cut just below the seed pod. As with the greater burdock, it is important to be careful when harvesting the seeds since tiny hairs from the seeds can cause an allergic reaction when inhaled.





## *Ballota nigra* (black horehound)

**Black horehound** is a perennial native to the Mediterranean region and central Asia but also found throughout Europe and other parts of the world. The whole plant has a very strong and characteristic smell and grows up to 70-100 cm. Despite its small flowers, pollination is performed by bumblebees and bees.

**Black horehound** has been used widely in traditional folk medicine worldwide. The first documented use of the herb dates back to the 13th century and have differed among regions through history; for external wound-healing, stomach-disorders, as a sedative in cases of nervous disorders, for treating sleep disorders and in cough tinctures. Usually, it has been used in the form of leaf-tea. Studies show that **black horehound** has antidepressant, antibacterial, anti-inflammatory, antifungal and antibacterial effects.

**Family:** Lamiaceae

**Swedish:** bosyska

**Finnish:** tummaporro

**Norwegian:** hunderot

**Danish:** tandbæger

**Icelandic:** hundarót

### **Cultivation**

Start cultivation in April in a broadcast tray under light conditions, approximately 20-23 °C. Initially sow the seeds in tray substrate. Cover seeds to a depth of 1 cm. If seeds do not germinate at room temperature, try a cooling period in fridge for a month and put the tray back in room temperature for germination. When large enough to handle, transplant the plants into small individual pots in pot substrate. The pots can be placed in an unheated greenhouse, or outside when the risk of frost is over. When fully rooted in the pots, plant outside in field. **Black horehound** prefers semi-shade or sunny settings.



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Mature seeds of *Ballota nigra* is black and very shiny. The best way to harvest is to shake the plant, in this way only mature seeds will fall out.

Flowering time for *Ballota nigra* is quite long, from June to September. Due to the extended flowering period, seeds of *Ballota nigra* will mature gradually and unevenly. Flowers may occur during the first year, but harvest of seeds will normally have to wait until second year (usually August). Always harvest in dry conditions. Mature seeds of *Ballota nigra* is black and very shiny. The best way to harvest is to shake the plant, in this way only mature seeds will fall off. There are different ways to do this; either shake individual plants with a big plastic box prepared where the seeds can be collected, or if many plants; put some white fabric between the rows, on both sides of the plants. When shaken, the seeds will now fall onto the fabric and can easily be collected. By using this method, you will end up with not only the seeds, but insects, flowers and other parts of the plant. Subsequently cleaning the seeds can be a bit tricky and sometimes must be carried out manually.





## *Bryonia alba* (white bryony)

**White bryony** is native to Europe and western Asia. All parts of the **white bryony** are poisonous, especially the roots. The plant grows fast, with climbing tendrils, and can reach up to four meters in height. The species is perennial and flowers from May to June with small white or greenish-white flowers. **White bryony** was historically used to treat kidney stone since the plant is highly diuretic.

This plant is monoecious at northern latitudes, meaning individual flowers are either male or female but found on the same plant. **White bryony** is beepollinated and can grow in semi-shade or shade and neutral or slightly alkaline, moist but well drained soils.

### **Cultivation**

The seeds are best sown as soon as they are ripe, or in late winter in a cold frame or a tray outdoors. The seeds might need a cold period to germinate. Initially sow the seeds in tray substrate and cover the seeds slightly. When large enough to handle transplant the plants into small individual pots in pot substrate.

The pots can be placed in an unheated greenhouse, or outside when the risk of frost is over. When fully rooted in the pots, plant outside in field. The vine produces a berry fruit, initially green, that blackens when it ripens. Always harvest in dry conditions. Seed harvest will probably be obtained August/September during the second year of cultivation. Harvest the berries when they are fully black.

**Family:** Cucurbitaceae

**Swedish:** hundrova

**Finnish:** mustakoiranköynnös

**Norwegian:** svartgallbær

**Danish:** enbo galdebær

**Icelandic:** gigtarber

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The plant grows fast, with climbing tendrils, and can reach up to four meters in height.





## *Bryonia cretica ssp. dioica* (red bryony)

**Red bryony** is native to central and southern Europe, as well as northern Africa and western Asia. All parts of the **red bryony** are toxic. The plant is fast growing, with climbing tendrils, and can reach over three meters in height. It is a very deep-rooted plant. The species is perennial and flowers from May to June with white or greenish-white, quite small flowers. The **red bryony** was historically used to treat rheumatic conditions and has antiviral effect but is due to its toxicity advised to be avoided nowadays.

This plant is dioecious, meaning individual flowers are either male or female. Both male and female plants must be cultivated when producing seeds. **Red bryony** is not self-fertile, and insect pollinated. It can grow in semi-shade or sunny settings and neutral or slightly alkaline, moist to well drained soils.

### **Cultivation**

The seeds are best sown as soon as they are ripe, or in late winter in a cold frame or a tray outdoors. The seeds might need a cold period to germinate. Initially sow the seeds in tray substrate and cover the seeds slightly. When large enough to handle transplant the plants into small individual pots in pot substrate.

**Family:** Cucurbitaceae

**Swedish:** röd hundrova

**Finnish:** punakoiranköynnös

**Norwegian:** raudgallbær

**Danish:** tvebo galdebær

**Icelandic:** klifurber



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The **red bryony** were historically used to treat rheumatic conditions and has antiviral effect but is due to its toxicity advised to be avoided nowadays.

The pots can be placed in an unheated greenhouse, or outside when the risk of frost weather is over. When fully rooted in the pots, plant outside in field. The vine produces a berry, initially green, then turning yellow and when red, the berries are mature. Always harvest in dry conditions. Seed harvest will probably be obtained August/September during the second year of cultivation. Harvest the berries when they are fully red.





## *Chelidonium majus* (greater celandine)

**Greater celandine** is native to most of Europe and western Asia and introduced in North America. The species is perennial, and although flowers can occur first year, seeds will probably not develop until second year. The plants grow up to 40-60 cm. The whole plant is moderately toxic and when damaged the plant excretes a bright orange-yellow sap which can be irritating and allergenic. *Chelidonium majus* can easily self-sow and is in several regions and countries considered invasive.

**Family:** Papaveraceae

**Swedish:** skelört

**Finnish:** keltamo

**Norwegian:** svaleurt

**Danish:** svaleurt

**Icelandic:** svölujurt

Traditionally, it's been used as a drug to improve eyesight and the yellow sap from the plant has been used externally to treat warts and skin irritation like eczema. The species also has a mild sedative effect and relaxes the muscles, thus treating coughs, bronchitis, and asthma. Unlike some of the other medicinal species described in this project, *Chelidonium majus* is no longer used as a medicinal plant, except as an ingredient in some homeopathic medicines.

### **Cultivation**

Sow the seeds in April/May in a broadcast tray under light conditions, approximately 20-23 °C. Initially cultivate in tray substrate. Cover seeds to a depth of 1 cm. The seeds tend to initially germinate unevenly. When large enough to handle transplant the plants into small individual pots in pot substrate. When no risk of frost, the pots can be placed in an unheated greenhouse, or outside. When the plants are fully rooted in the pots, transplant in field. It's also possible to sow the seeds in August and plant them in field September/October. These plants will flower and produce seeds the following year. Position: shade, semi-shade or sunny.



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Remember to use gloves when handling the plants since the sap of the plants can be irritating to your skin.

Flowering time for *Chelidonium majus* is in May and quite short. Seed harvest will normally take place in June/July the second year. Always harvest in dry conditions. Note that the long, cylindrical capsules housing the seeds will burst and spread the seeds on the ground when mature. Even if the plant produces many seeds, do not wait too long harvesting the seeds to avoid spreading. The best way to harvest the plants is to cut the stem with a pair of scissors below the cylindrical capsules when mature. Both the stem and the capsules should be dry and brownish. Remember to use gloves when handling the plants since the sap of the plants can be irritating to your skin.





## *Conium maculatum* (hemlock)

**Hemlock** is native to Europe and North Africa. As the name indicates, this whole plant is highly poisonous and even a small amount can be deadly to humans and animals. It is biennial and belongs to the carrot family and has an unpleasant smell.

**Hemlock** preferably grows in damp habitats avoiding heavy shade and acid soils. The plant is hermaphroditic, self-fertile and insect pollinated and can grow up to two meters. **Hemlock** flowers from June to July with white umbels. This herb has a wide history as medical plant but due to the extreme toxicity it is rarely used nowadays and only under expertise guidance.

**Hemlock** tends to be invasive and can be of serious threat to humans and livestock when growing in the wrong place.

### Cultivation

In the wild, the species often germinate in late summer/autumn. Therefore, sow in late summer *in situ*, or in a broadcast tray under light conditions, approximately 20 °C. Initially sow the seeds in tray substrate and cover the seeds slightly. It is also possible to sow in spring. When large enough to handle transplant the plants into small individual pots in pot substrate.

The pots can be placed in an unheated greenhouse, or outside when the risk of frost is over. When fully rooted in the pots, plant outside in field. **Hemlock** prefers semi-shade or sunny settings. The plants can start flowering either the first year after winter or the second year. The seeds are harvested in the late summer. Always harvest in dry conditions and use gloves when handling the plant and seeds. Harvest when both the umbels and the stems underneath are brownish and dry. Use a pair of scissors to cut just below the inflorescence.

**Family:** Apiaceae

**Swedish:** odört

**Finnish:** myrkkukatko

**Norwegian:** giftkjeks

**Danish:** almindelig skarntyde

**Icelandic:** óðjurt



**Hemlock** tends to be invasive and can be of serious threat to humans and livestock when growing in the wrong place.





## *Leonurus cardiaca* (motherwort)

**Motherwort** is a perennial plant that grows up to 50-100 cm. It is native to the southeastern part of Europe and central Asia but is spread throughout the world. The species has upright, four-angled stems and small, pink to lilac flowers blooming from June to August. **Motherwort** is insect pollinated, often grows along roadsides and waste-dumps, and can easily self-sow if well-sited. The leaves are aromatic, leaving a scent that some people may find unpleasant.

*Leonurus cardiaca* has a long history of serving as a medical herb and has been cultivated for this purpose. The Latin name *cardiaca* refers to the formal use of the plant as a heart stimulant, used for nervous heart conditions. The English name comes from the historical use of the herb as a remedy for different female disorders, including problems associated with childbirth, menstruation and menopause. The herb is said to have a sedative effect. Other internal medical uses include relieving digestive disorders and bronchial asthma. It has also been used externally to sooth wounds and skin inflammations.

### **Cultivation**

Sow the seeds in April in a broadcast tray. Use tray substrate and put in light conditions, approximately 20-23 °C. Only cover the seeds slightly, maximum 0.5 cm. If the seeds do not germinate during the first month, put the tray in a refrigerator and keep in there for an additional month. Thereafter put the tray back into room temperature. When large enough to handle transplant the plants into small individual pots in pot substrate.

**Family:** Lamiaceae

**Swedish:** hjärtstilla

**Finnish:** rohtonukula

**Norwegian:** hjerteurt

**Danish:** almindelig hjertespan

**Icelandic:** ljónshali



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If the seeds do not germinate during the first month, put the tray in a refrigerator and keep in there for an additional month.

The pots can be placed in an unheated greenhouse, or outside when the risk of frost has passed. When fully rooted in the pots, plant outside in field in semi-shade or sunny position. Normally, the plants will not flower the first year. Flowering time for *Leonurus cardiaca* is July to August the second year. Harvesting of the seeds will normally take place in August to September, after flowering. Always harvest in dry conditions. When both stems and seeds are brownish and dry, harvest using a scissor to cut the stems just below the inflorescence. The seeds are usually quite stuck in the inflorescence and will not fall easily to the ground.





## *Malva moshata* (musk mallow)

*Malva moshata* is a perennial species native to Europe and southwest Asia. It grows up to 60 cm and is widely cultivated as an ornamental plant because of its showy, scented flowers. The flowers blossom for an extended period during summertime. It is possible to prolong the flowering by cutting the stems when they are finished flowering, the plants will then flower once again. Perennial plants can be quite short-lived, but frequently self-sow in favorable settings. The leaves have a mild flavor and can be used in fresh salads. The seeds are small and edible with a nutty taste. The medical use for **musk mallow** is similar to that of the more widely used marshmallow and common mallow. Use includes external treatment of bruises, insect bites, internal treatment of diseases of the respiratory system and inflammation of the urinary- and digestive systems. Leaves and flowers are the most used parts and can be eaten as they are or used for tea.

### **Cultivation**

Sow the seeds in early April in a broadcast tray. In best case scenario, some mature seeds can be harvested the first year. Sowing in late spring will result in seed production the second year. The outcome is dependent on geography and weather. Use tray substrate and put under light conditions, approximately 20-23 °C. Cover seeds to a depth of 0.5-1 cm.

Transplant the plants into small individual pots in pot substrate when large enough to handle. The pots can be placed in an unheated greenhouse, or outside when no risk of frost.

**Family:** Malvaceae

**Swedish:** myskmalva

**Finnish:** myskimalva

**Norwegian:** moskuskattos

**Danish:** moskuskatost

**Icelandic:** moskusstokkrós



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All *Malva*-species are prone to rust, weakening the plants and in severe cases damaging the seeds.

Plant outside in field when fully rooted. **Musk mallow** prefers semi-shade or sunny settings. All *Malva*-species are prone to rust, weakening the plants and in severe cases damaging the seeds. Make sure to use suitable crop rotation to moderate the disease. Flowering time for *Malva moschata* is June to September and seed harvest will normally take place between July and September, either the first or second year. Due to the extended flowering period, seeds can mature gradually and unevenly. The seeds forms a round “cheese” and when mature they can easily be separated from each other. Harvest when seeds are brownish and dry and always under dry conditions.





## *Malva neglecta* (dwarf mallow)

*Malva neglecta* is a low-growing, ground-covering annual species that grows up to 30-60 cm. It is spread from Europe to Asia and north Africa. The species has quite showy white or pink flowers and is a good plant for pollinators. It is common to find the species on disturbed grounds and in some parts of the world it is an invasive species. The plant is edible and has a pleasant mild flavor. Both leaves, shoots, flowers and seeds can be eaten, either raw or cooked. Leaves and roots boiled in water will thicken the water, and when whipped the residue can be used as egg-white substitute. The medical uses for common mallow are like other mallow species and the more widely used marsh mallow. Uses include external treatment of bruises, insect bites, diseases of the respiratory system and inflammation of the urinary- and digestive systems. Leaves and flowers are the most used parts, and these can be eaten as they are or used in tea.

### **Cultivation**

Seeds are sown in early April in a broadcast tray. Use tray substrate and put under light conditions, approximately 20-23 °C. Cover seeds to a depth of 0.5 cm and transplant the plants into small individual pots in pot substrate when large enough to handle. The pots can be placed in an unheated greenhouse, or outside when the risk of frost is over. When fully rooted in the pots, plant outside in field in semi-shade or sunny settings.

**Family: Malvaceae**

**Swedish: skär kattost**

**Finnish: katinjuustomalva**

**Norwegian: småkatost**

**Danish: rundbladet katost**

**Icelandic: leynistokkrós**



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Leaves and flowers are the most used parts, and these can be eaten as they are or used in tea.

All *Malva*-species may have problem with rust, weakening the plants and even damaging the seeds. To prevent rust, make sure to use a suitable crop rotation. Flowering time for *Malva neglecta* is June to September and seed harvest normally take place in August and September the first year. Due to the extended flowering period, seeds of *Malva neglecta* can mature gradually and unevenly. Harvest when seeds are brownish and always in dry conditions. The seeds forms a round "cheese", when mature they can easily be separated from each other.





## *Malva pusilla* (low mallow)

*Malva pusilla* is an annual/biennial plant originating in Eurasia, where it traditionally has been used as a medical herb. The species grows up to 30 cm high. The whole plant is edible, and flowers are decorative with a mild flavor and a color varying from white to purple or pink. It may also be used as a garden flower. Dyes in green or yellow can be obtained from both plant and seed. Mallow is easily grown, preferably in rich soils with sunny setting. The plant is frost tolerant and self-fertile, pollinated by bees and flowers from June to September. The medical uses for **low mallow** are the same as for other mallow species, although *Malva pusilla* is less active than for example common mallow and marsh mallow. Uses include external treatment of bruises, insect bites, diseases of the respiratory system and inflammation of the urinary- and digestive systems. Leaves and flowers are the most used parts, and these can be eaten as they are or used in tea.

### **Cultivation**

Start the sowing in early April in a broadcast tray under light conditions (preferably in greenhouse at 20-23° C). Initially tray substrate should be used. Cover the seeds to a depth of 0.5 cm. Transplant the plants into small individual pots in pot substrate when large enough to handle. The pots can be placed in an unheated greenhouse, or outside when no risk of frost. Plant outside in field when fully rooted.

**Family: Malvaceae**

**Swedish: vit kattost**

**Finnish: kylämalva**

**Norwegian: dvergkattost**

**Danish: liden katost**

**Icelandic: dvergastokkrós**



**Low mallow** tolerates a wide range of soil types and prefers a sunny setting. As with several other mallow species, **low mallow** is highly susceptible to rust. Make sure to use suitable crop rotation to moderate damages. Depending on the growing conditions, some years some plants will provide seeds the first season, other years not until the second season. The outcome is dependent on geography and weather. Seed harvest will normally take place in August/September. Due to the extended flowering period, seeds can mature gradually and unevenly. The seeds forms a round "cheese" and when mature they can easily be separated from each other. Harvest when seeds are brownish and dry and always in dry conditions. The seeds are known to be very resilient and can remain dormant for many decades.

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The seeds are known to be very resistant and can remain dormant for many decades.





## *Malva sylvestris* (common mallow)

*Malva sylvestris* is a biennial or perennial native to Europe, Asia and North Africa but now spread throughout the world. As the name implies, it is one of the tallest mallows, growing to approximately 80-120 cm. The species has been cultivated as an ornamental because of its attractive pink-purple flowers with dark stripes, flowering for quite a long period during summertime. The flowers are a good source of nectar for pollinating insects. If sown in early spring, plants will most likely start flowering the first year, while sowing in late spring can result in flowering the second year.

The plant is edible and has a pleasant mild flavor. Both leaves, shoots, flowers and seeds can be eaten, either raw or cooked. When leaves and roots are boiled in water, they will thicken the water, and when stirred, the water can be used as an egg-white substitute. Plant parts and seeds from *Malva sylvestris* have been used for obtaining green-, yellow- and cream dye. The medical uses for *Malva sylvestris* are similar to other mallow species including the more widely used species marsh mallow. Historically the plant was used to treat bruises, insect bites, internal diseases of the respiratory system and inflammation of the urinary- and digestive systems. Leaves and flowers can be eaten as they are or as tea. It is said to be a good remedy for coughs and tonsillitis, is a mild laxative and ease heartburn.

### **Cultivation**

Sow the seeds in early April in a broadcast tray. Scarification of the seed can be advantageous for germination. Some mature seeds may be harvested the first year, but also the following year depending on geographical position and weather. Use tray substrate and place in light conditions, approximately 20-23 °C. Cover seeds to a depth of 0.5-1 cm. When large enough to

**Family: Malvaceae**

**Swedish: rödmalva**

**Finnish: kiiltomalva**

**Norwegian: apotekarkattost**

**Danish: almindelig katost**

**Icelandic: skógarstokkrós**

handle transplant the plants into small individual pots in pot substrate.



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*Malva sylvestris* flower in June to September and seeds are normally harvested in July to September, either the first or second year.

The pots can be placed in an unheated greenhouse, or outside when the risk of frost is over. When fully rooted in the pots, plant outside in field in semi-shade or sunny settings. All *Malva*-species described in this manual are prone to rust, weakening the plants and in difficult cases damaging the seeds. Make sure to use a suitable crop rotation to prevent rust. *Malva sylvestris* flower in June to September and seeds are normally harvested in July to September, either the first or second year. Harvest should always be conducted in dry conditions. Due to the extended flowering period, seeds of *Malva sylvestris* may mature gradually and unevenly. Harvest when seeds are brownish and dry. The seeds forms a round "cheese" and when mature seeds can easily be separated from each other.





## *Melissa officinalis* (lemon **balm**)

**Lemon balm** is a perennial plant native to southcentral Europe, north Africa and central Asia. It grows to around 40-70 cm and the whole plant has a pleasant, mild lemon scent and taste. The flowers, blooming in July to September, are white and small, rich in nectar and bee pollinated.

Today **lemon balm** is cultivated as an ornamental or herb. Its leaves are used for flavoring food, fruit dishes and sweets, but also for tea and its oil used in perfumes. The species has been used as a medical plant for at least 2000 years. It has a long tradition as antidepressant, treating weak stomachs and strengthening the heart. It is said to help against insomnia, headaches, fever and colds. **Lemon balm** has also been used externally to soothe wounds, gout and insect bites, as well as an insect repellent.

### **Cultivation**

Sow the seeds in April in a broadcast tray. Use tray substrate and put in light conditions, approximately 20-23 °C. Do not cover the seeds, or at the most 0.2 cm, since lemon balm needs light to germinate. Germination can be irregular and/or slow. Transplant the plants into small individual pots in pot substrate when large enough to handle.

**Family:** Lamiaceae

**Swedish:** citronmeliss

**Finnish:** sitruunamelissa

**Norwegian:** sitronmelisse

**Danish:** hjertensfryd

**Icelandic:** hjartafró



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Do not cover the seeds, or at the most 0.2 cm, since **lemon balm** needs light to germinate.

The pots can be placed in an unheated greenhouse, or outside when the risk of frost weather is over. When fully rooted in the pots, plant outside in field in sunny setting. The plants may bloom during the first year, but seed production will be more abundant the second year. This varies with geographical position and weather though. Flowering time for *Melissa officinalis* is from July to September and harvesting of the seeds will normally take place in August/September second year. Always harvest in dry conditions.





## ***Myrrhis odorata* (sweet cicely)**

*Myrrhis odorata* is a perennial, native to the mountains of central- and southern Europe but introduced in other places. The species can grow up to 100–200 cm and will flower and produce seeds the second year, focusing on leaves its first year. The flowers are cream-white forming large umbels. The name *odorata* meaning scented in Latin, is a good description of the plant. Leaves are softly hairy and pleasantly aromatic when crushed. The whole plant is edible and has a sweet taste of aniseed and licorice and has been used as a vegetable or herb.

The inflorescence should be cut down for obtaining the best flavor if harvesting leaves. The species has also been used as a medical plant, and the whole plant is carminative and expectorant, thus used to ease stomach problems, improve digestion and treat cough. In addition, it has been used to remedy gout and soothe wounds. The root is antiseptic. In the past, seeds and leaves were used to polish and perfume wood and wooden furniture.

### **Cultivation**

Seeds from *Myrrhis odorata* are best sown directly after harvest as the seeds tend to age quickly, thus losing their germination. The seeds often need a cold period to germinate. Sowing in November or December, in pots and tray substrate outside, gives the seeds a natural winter period. Cover the seeds with substrate to a depth of 2 cm.

**Family: Apiaceae**

**Swedish: spansk körvel**

**Finnish: saksankirveli**

**Norwegian: spansk kjørvel**

**Danish: spansk kørvel**

**Icelandic: spánarkerfill**



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The seeds normally germinate in spring but can take time, sometimes several months, so be patient.

The seeds normally germinate in spring but can take time, sometimes several months, so be patient. When large enough to handle transplant the plants into small individual pots in pot substrate. The pots can be placed in an unheated greenhouse, or outside when the risk of frost is over. When fully rooted in the pot, plant outside in field. *Myrrhis odorata* is best grown in fertile soils in light shade to shade but will tolerate a sunny position if the soil is moist.

Flowering time for *Myrrhis odorata* is May to June. Harvest of the seeds will normally take place in July/August the second year. The large seeds are dark brown when mature and before you harvest, the stem underneath should be brown as well. Always perform harvest in dry conditions.





## *Onopordum acanthium* (cotton thistle)

*Onopordum acanthium* is native to Europe and West Asia but is naturalized in other parts of the world as well. The biennial **cotton thistle** grows up to 150 cm at a slow rate. The species is bee pollinated and has both female and male organs. This thistle is known to attract wildlife and is self-fertile. It flowers with pink to purple flowers in July to September and the seeds ripen about a month later. The plant can grow in nutritionally poor soils that may be sandy or chalky, and prefer well drained, sunny settings. Both stems and flower buds can be cooked, and the petals can be used as an alternative to saffron, coloring the food yellow. Oil from the seeds have traditionally been used in cooking and as lamp oil. The species has also been used in folk medicine as an anti-inflammatory, anti-tumor and cardiotoxic agent.

### **Cultivation**

Sowing in April to May in a tray under light conditions, preferably in greenhouse at 20-23° C. Initially tray substrate should be used, cover the seeds to a depth of 0.5 cm. Probably some seeds will germinate, and others will not. For the ones that doesn't germinate at room temperature, try a cooling period in fridge for one month and put the tray back in room temperature for germination.

**Family: Asteraceae**

**Swedish: ulltistel**

**Finnish: sitruunamelissa**

**Norwegian: eseltistel**

**Danish: æselfoder**

**Icelandic: okakruunuohdake**



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The plant can grow in nutritionally poor soils that may be sandy or chalky, and prefer well drained, sunny settings.

When large enough to handle, transplant the plants into small individual pots in pot substrate. The pots can be placed in an unheated greenhouse, or outside when the risk of frost is over. When fully rooted in the pots, plant outside in field. **Cotton thistle** grows very well in normal to dry soil and sunny settings. The seeds will ripen in August/September the second year. Always harvest in dry conditions. Harvest when both the inflorescence and the stem underneath is brownish and dry. Due to an extended flowering period, seeds can mature gradually and unevenly.





## *Sanguisorba officinalis* (great burnet)

*Sanguisorba officinalis* is a self-fertile perennial native to the Northern Hemisphere in Europe, northern Asia and North America. The species grows up to 60-100 cm and flowers from June to August with dark red flowers. The plants are pollinated by insects and are hermaphrodites (have both male and female organs). The roots of **great burnet** have traditionally been used to slow or stop blood flow. The species has also been used to treat eczema, wounds and burns. In nature you can find *Sanguisorba officinalis* in meadows and bog-like areas, but it is also a beloved ornamental growing outside in pots or field.

### **Cultivation**

Start cultivation in April/May in a broadcast tray under light conditions, approximately 20-23 °C. Initially sow the seeds in tray substrate. Cover seeds very thinly. If seeds do not germinate at room temperature, try a cooling period in fridge for one month and put the tray back in room temperature for germination. When large enough to handle transplant the plants into small individual pots in pot substrate.

**Family: Rosaceae**

**Swedish: blodtopp**

**Finnish: punaluppio**

**Norwegian: blodtopp**

**Danish: kvæsurt**

**Icelandic: blóðkollur**



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If seeds do not germinate at room temperature, try a cooling period in fridge for one month and put the tray back in room temperature for germination.

The pots can be placed in an unheated greenhouse, or outside when the risk of frost is over. When fully rooted in the pots, plant outside in field. The plant is suitable for most soils and can grow under highly alkaline conditions. It prefers sun or semi-shade with moist or wet soil.

**Great burnet** will focus on leaves and roots its first year and even if flowers might occur first year, flowering will be more extensive the second year. The seeds will normally ripen in August/September. Always harvest in dry conditions, and harvest when both the inflorescence and the stem underneath are brownish and dry.





## *Tanacetum parthenium* (feverfew)

**Feverfew** is a perennial growing into small bushes up to a height of 70 cm. The plant is native to Eurasia, in particular the Caucasus and the Balkan Peninsula, but has spread to many parts of the world. It can potentially become invasive outside its native areas. **Feverfew** is a self-fertile hermaphrodite flowering from July to August. The plant has been used in flavoring pastries and as bitters in food, essential oils from the plants is used in perfumery. **Feverfew** is also a common medicinal herb, for example to treat migraine headaches and rheumatism. Tea from the dried plant has been used as a cure for colds and, as the common name suggests, for fevers.

Use with caution; the fresh leaves can cause inflammation of the skin and mouth ulcers. Medicinal use should be avoided during pregnancy or by persons with coagulation problems.

### **Cultivation**

Sow the seeds in early April in a broadcast tray. Use tray substrate and put in light conditions, approximately 20-23 °C. Cover seeds to a depth of 0.5 cm. When large enough to handle transplant the plants into small individual pots in pot substrate. The pots can be placed in an unheated greenhouse, or outside when the risk of frost is over. When fully rooted in the pots, plant outside in field.

**Family:** Asteraceae

**Swedish:** mattram

**Finnish:** reunuspäivänkakkara

**Norwegian:** matrem

**Danish:** matrem

**Icelandic:** glitbrá



**Feverfew** is easy to grow, thrives in semi-shade to full sun and is suitable for most kinds of well-drained soils. The plant can even succeed climbing on walls. It is a short-lived perennial but it usually self-sows freely. Some mature seeds may be harvested the first year, otherwise wait for the following year. This will vary with geographical position and weather. The seeds ripe from August to September. Harvest when both inflorescence and stems are brownish and dry. Use a pair of scissors and cut just below the inflorescence.

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**Feverfew** is easy to grow, thrives in semi-shade to full sun and is suitable for most kinds of well-drained soils.





## *Thymus praecox ssp. arcticus* (wild thyme)

*Thymus praecox ssp. arcticus* is an evergreen, ground-covering shrub growing up 10 cm. It derives from central-, southern- and western Europe, but is naturalized elsewhere in the world. Thyme grows best in sandy or well-drained soils and tolerates drought once established. Flowers of **wild thyme** are small, pink-purple and valuable for pollinators. Thyme, mostly the species *T. vulgaris*, is widely used as herb, either raw or dried, and often used flavoring cooked food. The leaves should be harvested before flowering.

As a medicinal plant, **wild thyme** has been used for many purposes. People have been drinking thyme-tea to sooth sore throats, cough, asthma, and bronchitis, as well as using it against stomach issues and kidney stone. In addition, it has been associated with women and gynecological issues; against illnesses in the uterus, while giving birth, to increase breast milk production and regulate menstruation. Other uses include pain relieve and wound healing. An essential oil from thyme is used in perfumes and soaps.

### **Cultivation**

Sow the seeds in April in a broadcast tray under light conditions, approximately 20-23 °C. Sow the seeds in tray substrate. Avoid covering the seeds; wild thyme needs light to germinate. When large enough to handle transplant the plants into small individual pots in pot substrate. The pots can be placed in an unheated greenhouse, or outside when the risk of frost is over. When fully rooted in the pots, plant outside in field.

**Family:** Lamiaceae

**Swedish:** backtimjan

**Finnish:** harmaa-ajuruohoa

**Norwegian:** norsk timian

**Danish:** skotsk timian

**Icelandic:** blóðberg



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Cut the inflorescence with scissors or shake the plant, and let the mature seeds fall into a bag.

**Wild thyme** prefers dry, sandy or rocky soil and thrives in full sun. It requires good drainage and is rather tolerant to frost and drought. A layer of gravel on the soil can be helpful to prevent wet soils, especially during the winter. Seed harvest will not be obtained until the second year. Flowering time for **wild thyme** is between May and July and harvesting of the seeds will normally take place in July to August. Always harvest in dry conditions. The seeds are ripe when they start to fall out of the inflorescence. Cut the inflorescence with scissors or shake the plant, and let the mature seeds fall into a bag.





## *Thymus vulgaris* (common thyme)

**Common thyme** is a perennial evergreen originating in southern Europe and northern Africa. The plant is low-growing, normally up to 30 cm. **Common thyme** prefers dry-, sandy- or rocky soil and thrives in full sun. It requires good drainage and is rather tolerant to frost and drought. The leaves are aromatic, and the flowers are rich in nectar attracting honeybees. The plant is grown primarily as an aromatic and culinary herb, but it is also used as a medicinal plant, especially for its antiseptic- and antioxidant properties. **Common thyme** has been used to treat respiratory diseases such as dry coughs, whooping cough, bronchitis and, asthma, but also diarrhea. Medicinal use is not suitable for pregnant women and all essential oils are very concentrated and may be harmful in large doses.

### **Cultivation**

Propagated by seeds, cuttings or by division. Start cultivation in April/May in a broadcast tray under light conditions, approximately 20 °C. Initially sow the seeds in tray substrate. **Common thyme** needs light to germinate, sow on the surface or let the seeds be barely covered. Germination may be uneven. When large enough to handle transplant the plants into small individual pots in pot substrate. The pots can be placed in an unheated greenhouse, or outside when the risk of frost is over. When fully rooted in the pots, plant outside in field. If the plants are still small, let them grow in a greenhouse the first winter.

**Family:** Lamiaceae

**Swedish:** kryddtimjan

**Finnish:** tarha-ajuruoho

**Norwegian:** hagetimian

**Danish:** timian

**Icelandic:** garðablóðberg



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**Common thyme** needs light to germinate, sow on the surface or let the seeds be barely covered.

Divide plants in spring or autumn. A layer of gravel on top of the soil can prevent wet soils, especially during winter. Plants may start flowering the first year, but seed harvest will not be obtained until the second year. Always harvest in dry conditions. The seeds are ripe when they start to fall out of the inflorescence. Cut the inflorescence with scissors or shake the plant, and let the mature seeds fall into a bag.



# Cultivation Manual: Medicinal and Aromatic Plants in the Nordic and Baltic Region

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