Medicinal Plants on S & S Homestead Farm

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Background

Since the dawn of human kind, plants have been used to cure, heal and prevent disease. Plants with medicinal properties, i.e. herbal medicines, are surrounding us everywhere in nature. Despite urbanization, industrialization and the coming of powerful pharmaceuticals, the use of herbal medicines has not subsided. However, most of herbal medicines sold in western countries today are in forms of pills and tablets bought from a shelf. Most people can no longer identify the plants with medicinal value growing in our backyard.

Used in the right way, herbs are an important resource for curing minor ailments and diseases, tonifying the body and preventing disease. As a local source of medicine, the use of herbs is inexpensive and sustainable. Used as self-medication for minor and non-acute ailments herbs also have the potential to cut down health care costs as well as to make us healthier.

Medicinal plants can serve many different purposes on small-scale farms like S & S Homestead Farm. In this paper I will discuss the qualities of herbs as valuable medicines and tonics for humans and animals including their practical use, their companionship to other plants in the garden, their use for repelling pests, their palatable qualities that bring excellence to cooking and their phytochemical and nutritional qualities.

In the herb garden and in various beds around the farm, 24 different perennial and annual medicinal herbs are cultivated. Moreover, there are many useful herbs growing wild in the close surroundings. In the right climate, soil and time, most herbs are growing vigorously. Many of our most common weeds are in fact also valuable medicinal plants. Dandelion, mustard, chamomile, stinging nettle and comfrey are only some examples. In this report I have included the herbs that I consider be of most importance to the farm and small-scale farms in general. For a comprehensive list of all the herbs cultivated at the farm and some of the most interesting wild ones, see appendix 1.

As for any use of medicines, the use of herbal medicines has to be done with some respect and caution. While some mild medicinal herbs can be taken as any food, there are also those that should be taken only under the supervision of an herbalist and/or under a confined period of time. Herbs should be taken for the right indication, in the correct dosage and at an appropriate length of time.

Practical work with herbs

A few generations ago most people knew how to collect, prepare and use medicinal plants. This knowledge is now diminishing in a culture where we are more and more frequently using dietary supplements and pharmaceuticals. One way of revitalizing the common knowledge of herbal medicines is to bring it back to the every day life of a

farm. Organic, small-scale farms can have great benefits from this knowledge. Organic farms are often surrounded by a diversity of plants so that they can find most, it not all medicines they need. Instead of using a chemical vermifuge for sheep for instance, herbal treatments can be used.

One of the main benefits with an herbal garden is of course that the medicines are available whenever you need them. However, it might be convenient to store some of your favourite herbal medicines as preparations. Preparations store longer than fresh herbs and since they are prepared in a large batch, they are ready to use when needed the most. Depending on the intended use and the particular properties of the herbs, there are different ways of preparing them. This summer I have made infusions, tinctures and syrups.

The first step before making any preparation is, of course, to harvest the herbs. If possible, herbs should always be harvested in the morning just after the dew has disappeared. This is the time when the content of volatile oils (containing most active ingredients) are highest during the day and since the dew has disappeared no extra water comes with the plant material. For drying herbs, making tinctures or oils, it is desirable that the herbal material contains as little water as possible.

The medicinal quality in herbs often varies throughout their lifecycle. If so, they are preferably harvested in certain times of the year and stored either as preparations or dried. Stinging nettle is such an herb that should be harvested before going to bloom (in spring or autumn) since old plants develop a liver toxic compound. During the summer I found that the best place for drying herbs was in the straw bale house, especially when the wooden stove was heated up. Hanging in buckets up side down, the herbs were fully dry and crisp within two weeks. I also tried to dry some herbs in the barn. However, I left them for too long and when I took them down, they were not totally dry and crisp and spider mites had found them. Most likely, the barn has not the most preferable conditions for drying herbs.

An infusion is made in a similar way like tea and it is the easiest way to prepare delicate aerial parts of an herb, such as leaves or flowers. When I made infusions I used 20 grams of herbal material and allowed it to steep for 5-15 minutes (depending on desired concentration) in 500 ml water. The standard dosage for infusions from mild and tonic herbs such as chamomile and mints is 3-4 cups a day (i.e. 500 ml). In order to keep their medicinal values, infusions should be kept for a maximum of 24 hours.

If roots, barks or twigs are prepared, an infusion is not enough to extract their medicinal constituents. A decoction is then a more appropriate way of preparation. 20 grams of dried plant material or 40 grams of fresh material is then mixed with 750 ml cold water. The mixture is brought to boil and then simmered for 30-40 minutes. The herbs are then strained and the liquid is stored in a cool place for maximum 48 hours. The standard dosage for decoctions is 3-4 doses (500 ml) per day.

In the process of making herbal preparations, it is important to keep all the equipment very clean. All jars used should be sterilized and it is important to work in an overall clean environment. A syrup is a blend between an herbal infusion and a sugar base. The syrup I made consisted of one part highly concentrated infusion (steeped for 30 minutes instead of 15) and one part honey that is mixed together while infusion is still warm. Stored in a cool and dark place, syrups can be kept for 6 months. This preparation is

especially suitable for children and for cold remedies since the honey have a soothing effect on sore throats.

To preserve the medicinal qualities of an herb for more than 6 months, alcohol tinctures are made. For the tinctures I used three parts 40% vodka to one part of herb (by weight 200 g dried plant material or 300 g fresh herbs to 1 litre of alcohol). The herbal material was chopped finely into small pieces and put into a sterilized jar. The alcohol was then poured over the herbs. It is important to assure that all the herbal material is covered by alcohol in order to prevent oxidization of the herbs. The jar was shaken for 1-2 minutes, labelled with name, date and strength and then stored in a cool dark place for 10-14 days. The jar was shaken 1-2 minutes every day. When tinctures are ready it is ideal to have a winepress in order to extract all the alcohol from the plant material. However, it is also possible to press out most liquid from the herbs by hand using a strainer (which I did since we did not have a wine-presser). The tincture can then be stored for two years in a cool dark place. Tinctures are the strongest kind of herbal preparations and it is therefore recommended to carefully check appropriate dosage for each preparation.

Phytochemicals

While the practical knowledge about herbs is the most essential for making herbal medicines, it is also useful to know some things about their chemistry. Most of the medicinal and common properties including the flavor and color of herbs and plants are due to the presence of *secondary metabolites*. Secondary metabolites, also called *phytochemicals*, are substances that are not part of the metabolism of a plant and are therefore not essential for its survival. Secondary metabolites are however, helpful to the plants in other ways. Some of them are for instance acting as insect repellents and others are poisonous.

Herbs include many phytochemicals. Unlike many vitamins, most phytochemicals do not appear to be destroyed by cooking or other processing (Balch). By knowing the main groups of phytochemicals and their main pharmacological actions, much can also be learnt about different groups of medicinal plants.

Phenols are a group of compounds that are antiseptic and reduce inflammation when taken internally. Salicylic acid found in White willow (*Salix Alba*) and thymol found in Garden thyme (*Thymus vulgaris*) are two examples of phenols.

Tannins are compounds present in most plants. The harsh, astringent taste of *tannins* disencourage animals to eat them. *Tannins* contract the tissues of the body and have a positive effect on the immune system.

Coumarins are found in a wide variety of plants and are responsible for many different biological actions. Bergapten, a *coumarin* present in lovage and celery, can be used as a sunscreen.

Flavonoids are found in many plants and have a wide range of actions. Generally, flavonoids have anti-inflammatory properties and maintain healthy blood circulation. Moreover, flavonoids are thought to prevent cancer by keeping cancer-causing hormones form latching onto cells.

Anthocyanins are pigments that give flowers and fruits a blue, purple or red colour. This group of substances helps to keep the blood vessels healthy.

Glucosilinates are found exclusively in the mustard family (Cruciferae). They have an irritant effect on the skin but applied as external poultices to painful or aching joints, they increase blood flow and helping to remove the build-up of waste products. *Glucosilinates* are present in mustard and radishes.

Volatile oils are extracted from plants to produce *essential oils*. This is a very important and versatile group of medicinally active components in herbs. Volatile oils often contain tens and hundreds of volatile compounds. The volatile oil of German chamomile (*Chamomilla recutita*) for instance contains the anti-inflammatory sesquiterpene azulene.

Saponins (triterpenoid and steroidal saponins). Triterpenoid saponins are often strong expectorants and may also aid in the absorption of nutrients. Many of the steroidal saponins have a hormonal activity. Certain saponins may also prevent cancer cells from multiplying.

Cardiac Glycosides can be found in various herbs, for instance foxglove (*Digitalis Purpurea*) From a small-scale farmer's perspective it is important to be aware of which plants contains cardiac glycosides since they are poisonous.

Cyanogenic Glycosides are based on cyanide that is in itself very poisonous. However, the cyanogenic glycosides have some valuable medicinal properties. Such substances can for instance be found in the flowers of Elder (*Sambucus Nigra*) and are helpful to suppress coughs.

Bitters are a wide group of compounds linked to each other solely because of their pronounced bitter taste. Generally bitters stimulate secretions by the salivary gland and the digestive system. Thereby bitters can improve appetite and strengthen the function of the digestive system. Following increased digestive "power" is an enhanced absorbance of nutrients.

Alkaloids have four common characteristics. They are found in plants, they contain an organic ring and nitrogen and they are biologically active (Chevallier).

The Herbgarden at S & S Homestead Farm

Below I have listed the herbs that I find most interesting for the farm in terms of their medicinal value. I have listed stinging nettle as the only wild herb. This is not because of less importance of wild herbs in the close farm surroundings, rather because of space and time constrictions of this paper.

Thymus vulgaris (Labiatae), Garden Thyme

Garden thyme is a variety of wild thyme (*Thymus serpyllum*), native to southern Europe. Garden thyme is cultivated worldwide. The aerial parts are used for their

Box 1. Phytochemical and nutrient content of garden thyme

Volatile oils (thymol, borneol, methylchavicol, cineole)
Flavonoids (apigenin, luteolin)
Tannins
B-complex vitamins
Chromium
Fluorine
Iron
Silicon
Thiamine
Vitamin C
Vitamin D

Source: (Chevallier, Balch)

excellent culinary qualities as well as their medicinal properties. The green leaves contain vitamin B, C and D.

Research has validated the traditional use of thyme as an antiseptic. Garden thyme has also been traditionally used for eliminating gas and reducing headaches and mucus. Herbalists prescribe thyme for asthma and hay fever. This summer I have been making thyme syrup and thyme tincture. Thyme is an excellent expectorant used for colds or allergies. The syrup is mild and tastes good in tea or hot water. The recommended dosage is 20 ml (4 teaspoons) 3 times a day. Thyme tincture is stronger and the recommended dosage 5 ml (one teaspoon) of 2-3 times a day. An infusion of thyme should be taken for the same complaints in a dosage of 50 ml, 3 times a day (Chevallier).

Rodale suggests planting thyme here and there in the garden. It deters cabbage worms and whiteflies. (Rodale) The literature also indicates that thyme has general insecticidal properties (de Bairacli).

Thyme is also though to treat all kinds of digestive complaints in animals. One handful of plant, brewed and finely cut is recommended mixed in with the food (de Bairacli). Thyme is also known for its qualities as a worm-expellant, an anti-septic, and an insecticidal.

Since the literature suggested using thyme infusion as an insecticidal spray, I once tried this on Loveday in order to get rid of the flies on her body. However, the flies did not seem to care at all.

Rosmarinus officinalis (Labiatae), Rosemary

Growing particularly in areas of sandy, rocky places, mountain hills or sea cliffs, this herb was named after the sea, Rose Marinus, Dew of the sea. Rosemary is known as a valuable herb that "raises the spirits". It has bitter and astringent properties. Teas, tinctures and oils made from Rosemary leaves have been used traditionally as important tonics. Rosemary is believed to improve and strengthen memory and sooth the nervous system. Rosmaricine, one of the key constituents in the leaves, has been proved to be a stimulant and a mild analgesic. Traditional and current medicinal indications also include headaches and migraine, poor circulation, and poor function of the adrenal glands (Chevallier).

Box 2. Phytochemistry and nutritional value of Rosemary.

Volatile oil 1-2% (borneol, camphene, camphor, cineole)
Rosmarinic acid
Rosmaricine
Diterpenes
Tannins
Flavonoids (apigenin, diosmin) *Source: (Chevallier)*

Rosemary is a good companion to cabbage, bean, carrots, and sage. This perennial herb also deters cabbage moth, bean beetles and carrot fly (Rodale). A strong brew of Rosemary or the infused oil, functions as an insecticidal (de Bairacli).

For animals, a hot strong brew of Rosemary is used externally for body and limb massage treating rheumatic/arthritic problems (de Bairacli). The herb is also used traditionally for problems involving the heart, fits, epilepsy, chorea, paralysis, impure blood, gastritis, diarrhoea, dysentery, obesity, and torpid liver. However, I have not been able to found any more specific information concerning this use.

Origanum majorana syn. Majorana hortensis, Sweet Marjoram

Sweet Marjoram has stimulant and antispasmodic properties. It has been used to treat flatulence, colic and respiratory problems. Moreover, it makes a good general tonic, helping to relieve anxiety, headaches and insomnia. However, the herb should not be taken as medicine during pregnancy and the essential oil should not be taken internally (Chevallier).

Box 3. Phytochemistry and nutritional value of Sweet Marjoram.

3% volatile oils (sabinene hydrate, sabinene, linalool, carvacrol and other terpenes) Favonoids
Cffeic and rosmarinic acid
Titerpenoids

Source: Chevallier

Sweet marjoram is good to plant here and there in garden since it improves flavor of most vegetables. The fresh leaves can be harvested as needed all summer.

Origanum vulgare, Oregano/Wild marjoram

Although very similar in appearance, Oregano and Sweet marjoram are quit different in their chemical constitution. Oregano has been more widely used as a medicinal in the history. Medicinally oregano can be described as a hot and dry herb. Research has proved the antibacterial and antifungal properties of thymol and caryopyllene. Oregano is strongly antiseptic and can therefore treat respiratory conditions such as coughs. The diluted oil can be applied to toothache or painful joints Oregano should not be taken as medicine during pregnancy and the essential oil should not be taken internally (Chevallier).

Box 4. Phytochemistry and nutritional value of Oregano.

Volatile oils (carvacrol, thymol, beta-bisabolene, caryopyllene, linalool and borneol)
Tannins
Resin
Sterols
Flavonoids Source: Chevallier

When planted here and there in garden it improves the flavor of vegetables. The fresh leaves can be harvested as needed all summer.

Levisticum officinale (Lovage)

Lovage is a warming and tonic herb for the digestive and respiratory systems. It treats indigestion, poor appetite, wind and colic and bronchitis. It promotes menstruation and relieves period pain. It also improves poor circulation. The phthalides have sedative and anticonvulsant properties (Chevallier). However, lovage should not be used as a medicine during pregnancy.

Box 5. Phytochemistry and nutritional value of Lovage.

Volatile oils (70% phthalides)
coumarins (inlcuding bergapten, psoralena, umbelliferone)
Plant acids
Resins
Gums
Beta-sitosterol Source: Chevallier

The leaves are harvested leaves as needed for fresh use. In fall, bunch foliage and stems and hang to dry. Lovage enhances flavor and health of plants if planted here and there (Rodale).

Melissa officinalis (Lemon balm)

Lemon balm, belonging to the mint (*Labiatae*) family, has a long tradition of use as a tonic that raises the spirits and comforts the heart. It is a calming herb and it relieves cold sores and reduces the chance of outbreaks. The aerial parts can be used fresh or dried and make a delicious evening tea. The juice from the leaves is also used as a first-aid remedy to soothe cuts and insect stings (Chevallier).

As other herbs in the mint family, lemon balm is a good companion to cabbage and tomatoes since it improves the health and the flavor of these vegetables. Lemon balm also deters white cabbage moth.

Box 5. Phytochemistry and nutritional value of Lemon balm.

Volatile oils (citral, caryophyllenen oxide, linalool and citronellal)
Flavonoids
Triterpenes
Polyphenols
Tannins Source: Chevallier

Hyssopus officinale (*Hyssop)*

As a celebrated shrub in the bible, the flowering tops of this beautiful perennial shrub have been traditionally used for lung problems such as chronic coughs and asthma. It has a dual action encouraging the production of more liquid mucus and acing as an expectorant. The leaves and flowers make an excellent tea with calming and tonic properties. (Chevallier)

Planted in the cabbate bed, hyssop will deter the cabbage butteflies. (Riotte)

Hyssop has traditionally been used in the Nordic countries as a worma fudge for delicate lambs and kids (de Bairacli)

Box 6. Phytochemistry and nutritional value of Hyssop.

Diosmine
Volatile oil
Flavonoids
Marrubin
Tannins Source: Balch

Allium Sativum (Garlic)

Widely known for its use in the kitchen, garlic is also good for a various medical conditions. It fights many infections of the throat, nose and chest and lowers blood sugar levels. Furthermore, it reduces cholestrol, prevents strokes and lowers blood pressure. And, it is safe to use in large dosages! Externally, it is useful for itching bites and rashes. A fresh clove is split and the juice is rubbed on the spot (Chevallier).

To protect trees from borers, garlic (or nasturtiums) should be planted around the trees. This is best done when the

Box 7. Phytochemistry and nutritional value of Garlic.

Volatile oil (alliin, alliinase, allicin)
Scrodinins
Selenium
Vitamin A, B, C and E *Source: Chevallier*

trees are young and newly planted. Garlic also repels aphids Any *Allium* species will repel rabbits. (Riotte).

The health benefits of garlic are also widely known in the animal kingdom! Gorillas frequently plant garlic where they have their colonies. Intuitively cows and sheep also know that garlic is health food jewel. If garlic is planted in the pastures, both cows and sheep will eat it with delight! If rejected by animals when given as medicine, it is recommended to blend small amounts with salt or other additional feed in order to get the animals used to the taste. After being used to eating garlic, most animals will eat with delight. As for humans garlic is used externally for it's antiseptic properties and wound healing qualities. The raw juice is directly applied to infected wounds, bites and stings. Furthermore, garlic is an important component in worm fudge (see mixed herbal remedy on page...).

My experiences with garlic on the farm concerned its use as a repellant for aphids and insects on peppers and Loveday respectively. For the peppers, a recipe containing mineral oil was use.

Garlic spray as an insect repellent

Add 3-4 ounces of chopped garlic to 2 TS of mineral oil. Keep the mix refrigerated for 24 hours. Add one pint of water and one TS of fish emulsion. Stir well. Strain and store in a glass container (No metal!). Before using, dilute with water to a concentration of 1:20. Spray on infested plants.

The anti-insect spray for Loveday was prepared as an infusion and sprayed directly on her skin. However, this experiment was not more successful than the thyme infusion.

Foeniculum vulgare (Fennel)

Fennel is an aromatic perennial herb with feathery leaves. An infusion of the leaves is used to increase digestion and is therefore an excellent after meal tea. Fennel was once a very popular herb among dairy farms because the herb increases the yield of milk and gives it a sweet, nice taste. In the garden, fennel is not very popular among other plants. Since most plants dislike it, it should be planted in a separate pot or away from other herbs or crops.

Box 8. Phytochemistry and nutritional value of Fennel.

Volatile oil
Coumarins
Sterols
Oleic acid
Flavonoids
Vitamin A and C
Source: Balch, Chevallier

Matricaria chamomilla syn. Chamomilla recutita (German chamomile)

The flowerheads of German Chamomile has been used for digestive problems ever since 1st century AD. Used fresh or dried it also promotes

Box 9. Phytochemistry and nutritional value of German Chamomile.

Volatile oil
Flavonoids
Bitter glycosides
Tannins
Calcium
Iron
Magnesium
Manganses
Potassium
Vitamin A Source: Balch, Chevallier

sleep and relieves irritability caused by allergies. It is therefore useful for hayfever and asthma. Also externally it can be used to reduce irritation on skin such as eczema (Chevallier). In the old times, bunches of chamomile were put up in barns to deter flies (de Bairachi). The powdered plant has also been used as a flea repellant (Balch). Chamomile improves the growth and flavor of cabbages and onions (Rodale).

Calendula officinalis (Pot Marigold)

The flower petals of this amazingly intense orange/yellow herb have anti-inflammatory properties and are often used as a skin soother. External application of calendula helps to prevent the spread of infection and speed up the rate of healing. It is antiseptic and antifungal.

Pot marigold should not be confused with Marigold (*Tagetes*) that does not have the same medicinal properties.

In Rodale's Herbal Garden, pot marigold is called the workhorse of the pest detergents. The plant repels Mexican beetles, nematodes, and other insects. It is therefore ideal to plant throughout the garden and under trees and bushes that might be targets for these pests. For a colorful winter garden, it can also be planted in fall.

Box 10. Phytochemistry and nutritional value of Pot Marigold.

Carotenes
Flavonoids
Glycosides
Triterpenes
Volatile oil
Lycopine
Saponin
Resin
Sterols

Source: Balch, Chevallier

Borago officinalis (Borage)

Borage is a hairy annual with intense blue flowers that attract numbers of bees. Borage contains toxic pyrrolizidine alkaloids that are toxic in large amounts. Because of it's potential toxicity, use of this herb as a medicine is discussable. However, the small flowers have a cucumber like taste and are beautiful decorations for salads. Borage is a good companion to tomatoes, squash and strawberries. Moreover, borage deters tomato worm.

Box 11. Phytochemistry and nutritional value of Borage.

Mucilage
Pyrrolizidine alkaloids
Tannins

Source: Balch, Chevallier

Salvia officinalis (Labiatae), Sage

The name salvia comes from *salvare*, meaning "to cure" in Latin. Sage is an evergreen bush cultivated all over the world. It thrives in sunny conditions. Although most famous today for its culinary use, sage is also an important medicinal herb with astringent, antiseptic and relaxing properties. There are a number of varieties of the herb, the purple sage, *S. officinalis purpurascens*, being the one preferred for medicinal use. It is widely used in gargles for sore throats and as a digestive tonic and stimulant. The fresh leaves are useful for reducing pain from stings and bites. Containing esterogen like substances, sage is also helpful for menopause problems, reducing sweating and help the body to adapt to the hormonal changes

Sage is supposed to be popular among grazing animals. Given the herbs to a milking cow, the yield increases and makes the milk refreshing and tonic (de Bairacli).

Box 12. Phytochemistry and nutritional value of Sage.

Volatile oil (50% thujone)
Diterpene bitters
Flavonoids
Phenolic acids
Tannins
Esterogeic substances

Source: Balch, Chevallier

Sage is a companion to cabbage, carrots and rosemary. Sage also deters cabbage moths and carrot flies. It is best kept away from cucumbers since they have an antagonistic relationship.

Valeriana officinalis (Valerian)

Dioscirdes, who rote De Materia Medica in 40-90 AD., named valerian *Phu*, indicating the unpleasant smell of the herb. The use of valerian as a relaxant is increasingly popular in our times. The parts used are the roots and rhizome, which both have sedative, relaxant properties. Research from Switzerland confirms that the herb promotes better sleep quality and lowers the blood pressure.

Box 13. Phytochemistry and nutritional value of Valerian.

Volatile oil (bornyl acetate, beta-caryphyllene)
Iridoids (Valtrate, Isovaltrate)
Alkaloids
Magnesium Source: Balch, Chevallier

Verbena officinalis (Verbenaceae), Vervain

Box 14. Phytochemistry and nutritional value of Vervain.

Volatile oil
Bitter Iridoids
Alkaloids
Mucilage
Tannins
Source: Balch, Chevallier

Vervain was a favorite of Hippokrates and the Druids. (farm and stable) It has been used traditionally in both Europe and China. The aerial parts used medicinally, are harvested in the summer when the flower is in bloom. Vervain is often used as a restorative herb for the nervous system and for relieving tension. Also, it can be taken as a digestive tonic.

Lavendula officinals syn. *L. angusitfolia (Lavender)*

Lavender is an important relaxing medicinal but is more widely known for its pleasant, sweet-scented aroma. The flowers are picked in the high summer and often dried or distilled to produce essential oil. The essential oil has very low toxicity and is used externally for headaches, insect bites and for relieving pain. A few drops of the oil is massages into the area of pain (massage with oil of temples eases headaches). The oil stimulates blood flow and relives muscle spasms. For insomnia 1/2 -1 teaspoon of lavender tincture is taken internally with water at night.

Echinacea angustifolia & E. Purpurea (Echinacea)

The Echinacea is native to North America, thriving in the climate of the North West. Research has proven its abilities to raise the body's resistance to bacterial and viral infections by stimulating the immune system. In western herbalism it is the most important immune stimulant. It is also good for allergies such as asthma. Traditionally it has also been used by the Native Americans as a remedy for toothaches and sore throats. The roots are the parts most commonly used medicinally. However, some preparations are made from a combination of roots, flowers and leaves. The flowers are gathered in full bloom and the roots in autumn when the plants are 2-4 years old.

Box 15. Phytochemistry and nutritional value of Echinacea.

Volatile oil (humulene)
Alkamides
Caffeic acid esters
Polysaccharides
Echinolone
Betaine
Potassium
Vitamin A, C and E

Source: Balch, Chevallier

Tropaeoleum majus (Nasturtium)

This colourful plant offers spicy, yet palatable and edible leaves and flowers. Nasturtiums have more value in the garden itself than in the apothecary. However, all parts of the plant appear to have antibiotic actions and the juice from the leaves and flowers makes an effective antiseptic wash for external use (Chevallier). These medicinal uses apply for both humans and animals. However, I have not found any particular instructions on dosages except from the combination formula for intestinal parasites in sheep.

Box 16. Phytochemistry and nutritional value of Nasturtiums.

Glucocyanates
Spilanthol
Myrosin
Oxalic acid
Vitamin C (high content)

Source: Balch, Chevallier

Nasturtiums deters aphids, squash bugs, striped pumpkin beetles and are good companions to radishes and cabbage. They should be planted under fruit trees (Rodale).

Uritica diocia (Stinging Nettle)

We have all been troubled by the stinging sensation of the nettle. What few of us know however is that the plant offers a remedy to that particular sting. The plant juice that comes out of a broken stem will fast cure the stinging sensation caused by the hairy parts of the same plant. The stinging nettle has valuable medicinal as well as nutritional properties. The leaves are high in minerals and vitamins. Traditionally, the leaves have been used for their

Box 17. Phytochemistry and nutritional value of Nettle.

Flavonoids
Amines (histamine, choline, acetylcholine, serotonin)
Glucoquinone
Potassium
Magnesium
Sodium
Calcium
Silicic acid
Iron
Vitamin A & C (high content)

Source: Balch, Chevallier

cleansing properties and both the leaves and the roots are used for their anti-allergenic qualities. Nettles are known to treat allergies such as asthma, hay fever, itchy skin conditions and insect bites. Nettles are particularly suitable as spring tonics because of the cleansing properties. A tincture or infusion of nettles also has diuretic actions, possibly due to the high content of flavonoids and potassium. To use tincture as a tonic, take 5 ml (1 tsp) diluted in water twice a day. If taken as an infusion, drink 200 ml a day.

Herbal Treatment for Internal Parasites in Sheep

To treat sheep with internal parasites or to prevent an infestation, a combination therapy with herbs can be used. Compared to conventional pharmaceutical remedies, this herbal treatment is locally available and milder for the sheep. In the Complete Herbal Handbook for Farm and Stable, Juliette de Bairacli recommends a treatment with a combination of some of the following herbs:

Wormwood
Southerwood
Psyllium Seeds
Whole cloves
Mustard
Garlic
Rue (add half as much as of the other ingredients)
Diatomaceous earth

To make the herbal formula equal amounts of finely chopped fresh or dried herbs are mixed. If for instance garlic and mustard are the only herbs available, these are the only ones added to the formula. One teaspoon of the formula is given to each 130 pound of sheep once a day. The formula can be mixed into the salt and if it is rejected the formula can be mixed together with a little bit of molasses until the sheep get used to the taste. For prevention of internal parasites, it is useful to plant garlic, mustard, comfrey, nasturtiums and other anti-parasitic herbs directly in the pastures. Most sheep will volunteer eating them. I once gave the sheep two full wheelbarrows of nasturtiums this summer. They where gone one hour later.

In order to verify the activity of this herbal formula, one should do microscopic studies on a regular basis to watch differences in the presence of parasite eggs in feces before and after treatment. I planned to try this formula this summer, but the sheep were healthy and did not have any parasites! It seems that rotational grazing is the best medicine!

Bibliography

Juliette de Bairacli (1984) The Complete Herbal Handbook for Farm and Stable, Faber and Faber, Great Britain.

James & Phyllis Balch (1997) Prescription for Nutritional Healing, 2nd edition. Avery Publishing Group, New York.

Andrew Chevallier (1996) The Encyclopedia of Medicinal Plants, Dorling Kindersley, London.

Louise Riotte (1998) Roses Love Garlic- companion planting and other secrets of flowers, Stroey Books, Pownal, Vermount.

Rodale Press (1974) The Rodale Herb Book, Rodale Press Book Division, Emmaus.