

PRODUCER - HERB COLLECTOR

Lesson 1

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Herbs due to their aromatic properties are widely used. The number of recipients is constantly increasing, including pharmaceutical and herbal companies producing herbal medicines and teas. The food industry producing, among others, dietary supplements, fruit teas and spices. The cosmetics industry offering a wide range of cosmetics based on medicinal herbs. The spirits industry producing liqueurs and herbal vodkas. Animal feed factories producing food for animals.

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Herbs consumption is the largest in Asia (China, India, Thailand). In European countries, their consumption is increasing, which is due to the changing eating habits of the population. Around 2,000 different herbs are obtained worldwide, of which about 130 species are grown in Europe. On European farms, field herb cultivation can be an important source of income, and it can also stimulate the creation of new, environmentally friendly jobs.

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The area of herb plantations in Europe is increasing every year. The vast majority of growers believe that the profitability of these crops is satisfactory and even high. Growing herbs is profitable, but also very demanding, especially when it comes to knowledge and experience.

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The most profitable for growers is cooperation with the pharmaceutical industry, which offers the highest prices for herbs, demanding quality in return. Unfortunately, about half of the herb growers do not use consultancy in the process of growing them and sell their product many times cheaper to the food industry.

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In the case of herbs, more than other crops, the emphasis is mainly on quality, not on the yield of the raw material. The high content of active substance determines its medicinal, spice and usefulness in the cosmetics industry.

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Ostropest plamisty

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Factors affecting the quality of herbs

1. the selection of plants depending on their genetic variability (selection of the appropriate strain or variety, best suited to local conditions),
2. habitat conditions (sunlight, temperatures, humidity, amount of precipitation, winds, soil class, soil pH),
3. agrarian treatments (loosening, fertilizing, pest and disease control,
4. crop rotation,
5. harvesting in the right way, at the right time and at the right maturity,
6. proper drying,
7. proper packaging and storage.

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Stages of growing herbs

1. analysis of the possibility of selling the raw material,
2. soil preparation,
3. sowing seeds or seedlings,
4. mineral or natural fertilization,
5. irrigation and weeding,

6. collection

7. drying and packaging

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Especially sought after by producers and recommended for growing herbs;

1. Archagelica officinalis Hoffm.
2. Plantago lanceolata L.
3. Ocimum basilicum L.
4. Artemisia abrotanum L.
5. Satureja hortensis L.
6. Hypericum perforatum L.
7. Echinacea purpurea L.
8. Foeniculum capillaceum Gilib.
9. Valeriana officinalis L.
10. Origanum majorana L.
11. Althaea rosea Cav.
12. Melissa officinalis L.
13. Mentha piperita L. (Huds.)
14. Silybum marianum [L.] Gaertn.
15. Calendula officinalis L.
16. Salvia officinalis L.

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Purple Echinacea

Lesson 2

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Growing and obtaining medicinal herbs in the light of the requirements of the GACP system

Good Agricultural and Collection Practice

The condition for the purchase of herbs by a pharmaceutical or herbal company is compliance with pharmacopoeial recommendations. Often, companies buying herbs introduce their individual requirements, such as:

- compliance with the GACP system,
- distance from large cities and industrial centers (e.g. 10 kilometers),
- distance from roads with heavy traffic (e.g. 100 meters),
- minimum plantation area (e.g. 5 hectares).

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GACP – *Good Agricultural and Collection Practice*

The GACP system has been in force since 2006 and has been developed by the European Medicines Agency. It constitutes the basic set of guidelines for growers and herb collectors.

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Its main task is to ensure patient safety by establishing appropriate quality standards in the production of herbal raw materials. Health safety aspects are particularly important:

- hygienic manufacturing to reduce microbial contamination,
- reducing the risk of harmful effects of herbal raw materials so that they are not dangerous due to improper collection, cultivation, processing and storage.

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The GACP system pays special attention to hygiene rules for people working in the cultivation, harvesting and pre-processing of herbs. It prevents people suffering from infectious diseases and people with open wounds, inflammations and skin infections.

The GACP system defines protection against contact with toxic or allergenic raw materials by means of protective clothing. This problem particularly applies to lovage, causing many people to have very severe allergies during harvesting.

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Storage

The GACP system also specifies the requirements to be met by buildings in which we store and dry herbs. Such buildings should be clean and well ventilated. They should effectively protect stored and dried herbs against rodents, birds, insects, farm and domestic animals. At all stages of herb storage and processing, repellents and pest control agents must be supplied, operated and maintained by professionally qualified personnel or specialized companies.

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It is recommended to store packaged herbs indoors;

- with floors easy to clean,
- in boxes or on pallets,
- at a suitable distance from the wall,
- well separated from other herbs.

Organic farming products must be stored separately.

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Marigold

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Marking

All batches of herbs must be marked with the exact geographical location, country of origin and grower's data.

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Cultivation

The GACP system describes how to maintain and calibrate devices and machines for growing and processing medicinal herbs.

All stages of cultivation (type, size and date of harvest, chemicals, fertilizers, pesticides, herbicides and growth stimulators should be documented in writing. In addition, we should provide the exact location of the crop and information on previous crops and plant protection products used).

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It is also necessary to document unusual circumstances during the growing season of medicinal herbs that may affect their properties (e.g. occurrence of pests, extreme weather conditions).

Meeting the GACP System guidelines should be recorded in the GACP documentation, i.e. contracts and attestations (e.g., each sprinkler calibration or installation of rodent poison traps).

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Lovage

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Seed

According to the GACP System recommendations, seed should;

- come from a known source,
- be free from pests and diseases,

Where possible, it is best to use local species that are naturally resistant to diseases.

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Crop rotation

The GACP system recommends the use of crop rotation, prohibits the cultivation of medicinal herbs on soil contaminated with heavy metals and residues of plant protection products or other chemicals.

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Fertilization

Fertilizers are used according to the GACP system sparingly, in accordance with the needs of individual species and in a way that minimizes their leaching. The manure used must be thoroughly composted and not contain human excreta.

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Irrigation

Irrigation should be carried out in accordance with the needs of plants, while water used for irrigation must meet water quality standards for economic purposes.

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Cultivation of herbs on a field

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Plant protection products

Both pharmacopoeial and GACP requirements allow the use of approved pesticides. The GACP system emphasizes that "avoid them whenever possible" and use only when necessary and at a minimum effective level. According to the GACP system, spraying should be carried out by qualified personnel using approved equipment. The minimum interval between such treatment and harvest time must be in accordance with the recommendations of the plant protection product manufacturer. Statistically, in 2018 only 13% of growers used plant protection products. The use of plant protection products is also limited for another reason: the number of permitted preparations used on medicinal herbs decreases every year.

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Collection

The GACP system accurately describes the collection of medicinal herbs. Medicinal plant parts (e.g. flower, leaf, root) are harvested in the period, when they provide the highest quality for their required use.

Recommendation;

- remove damaged plants,
- do not overfill the bags,
- carry out the harvest in the best possible conditions, avoiding wet soil, dew, rain or high humidity,
- the collected herbs should not have direct contact with the soil (we collect it for e.g. clean sheets, and then transport it in dry, clean conditions),
- remove weeds at the harvesting stage,

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Processing

Buildings where medicinal herbs are processed must have changing rooms, toilets, and devices for non-contact hand washing and clothing disinfecting.

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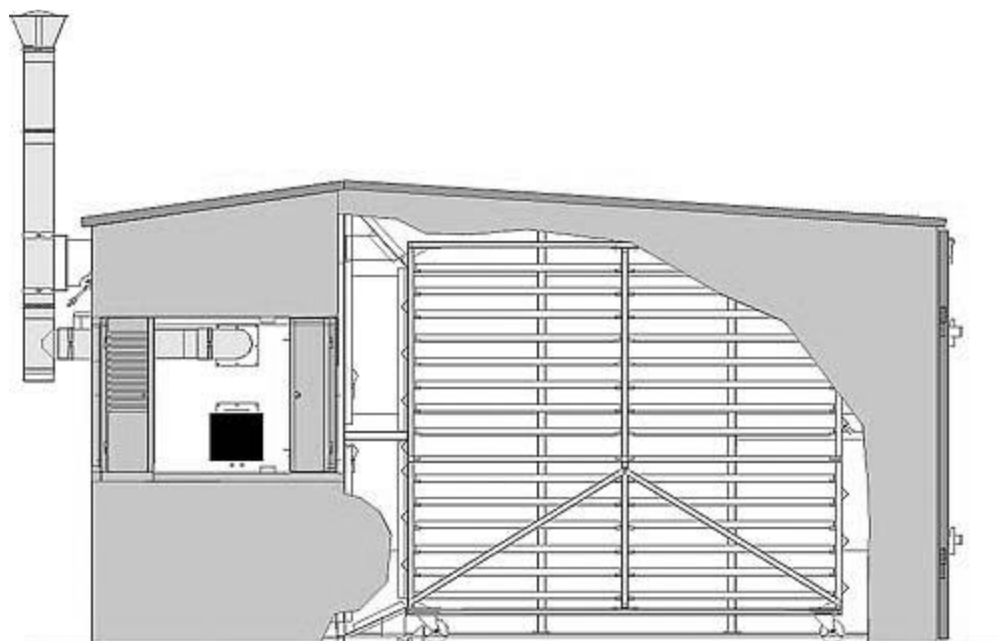
Processing - drying

Herbs can be sold fresh or dried. The GACP system determines what drying conditions should be in terms of hygiene. When drying in the open air, keep in mind;

- herbs should not be exposed directly to the sun,
- they should be protected against rainfall and insects,
- they must be spread out in a thin layer,
- drying directly on the ground is not allowed,
- herbs should be dried evenly and mold must be avoided.
- sometimes herbs should be sifted,

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Figure 1. Diagram of herbs, vegetables and fruit drying room M-803/O



Source: http://www.hamech.pl/suszarnia_warzyw_owocow_ziol_M803,p,33.html

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Grate dryer (Figure 1), in which practically all types of herbs obtained can be dried. The screen area is approximately 70 m². The cost of buying such a dryer is about 15,000. euro. Additional costs are the purchase of two prams (price around 2.5 thousand euros) and sieves (cost around 500 euros) Drying parameters are regulated by an automatic control system, which positively affects the quality of the final product. Drying conditions are recorded and documented in detail.

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Etap końcowy

Po pozytywnym zweryfikowaniu przez laboratoria kontrolne firm zielarskich lub farmaceutycznych pobranych próbek, zioła są pakowane w czyste i suche, nowe papierowe worki lub torby, opatrzone etykietą.

Final stage

After positive verification of the samples by the control laboratories of herbal or pharmaceutical companies, the herbs are packaged in new, clean and dry paper sacks or bags which are labeled.

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