

RAW VEGETABLE MATERIAL

GOOD PRACTICES FOR STORAGE IN WAREHOUSE

Dried vegetable herbs originate in open fields where there are natural dangers for their correct conservation. Despite good agricultural practices, the permitted natural treatments have a reduced effectiveness on the presence of insects. Furthermore, it is necessary to take into account the natural origin of these products and a normal variability of parameters within a large plant mass (e.g. residual humidity).

Martin Bauer's industrial processes (where applied) tend to minimize these aspects but do not completely eliminate .

Therefore, the customer must apply a rigorous sampling plan, strict pest control and in general check the storage conditions that allow rapid reporting of anomalous events.

Below is a broad (but not exhaustive) list of recommendations to adopt:

1. EXAMINATION OF INCOMING GOODS:

All goods packaged by Martin Bauer are protected against external break-ins and fraud by proprietary adhesive tape and customized bag sewing thread. Pallets leave intact and in good condition. There are no cuts, openings or presence of brown adhesive tape.

Upon receipt of the goods, please check these conditions and promptly report any anomalies on the delivery note.

2. SAMPLING PLAN

The representative sample of the batch must be taken according to a significant sampling plan that refers to official standards or guidelines.

3. STORAGE

As indicated in the Martin Bauer S.p.A technical Data Sheet dried plant herbs must be kept in closed containers to avoid the accidental entry of pests, foreign bodies, dust, etc.

The warehouse must be free from dust and dirt to avoid contamination and free from insects, spiders and other animals that could contaminate the herbs.

They must be stored also away from:

- heat sources (temperature),
- humidity
- and light.

The reasons for this indication will be provided in detail below.

3.1 Temperature/heat sources:

Dried herbs, by their nature, are generally stable to heat, having already been subjected to drying systems. To preserve the aroma of some flavouring herbs containing essential oils or volatile components, it is advisable to keep the goods in a cool place (15-20°C).

The storage temperature of herbs is, however, very important as *is one of the main factors that influence the proliferation of insects in food.*

Here are the main effects of temperature on this phenomenon:

- *High temperatures (>40- 50°C)*

Can be lethal for many insect species. For warehouse operations and the difficult economic sustainability, these temperatures are practically not used in the daily storage of herbs. Thermotherapy (e.g. heat treatments of silos or cereals) is not used for the storage. Is an disinfection.

- *Temperature 25°-35° C - "optimal for insect development"*

Most insects that infest food (such as beetles, moths and midges) have an optimal temperature range between 25°C and 35°-40°C. Under these conditions:

- Eggs hatch more quickly.
- Larval development accelerates.
- Adults live longer and reproduce more quickly.

Therefore, *similar temperatures can encourage the proliferation of insects and the degradation of herbs.*

The transportation of dried herbs during the summer season/high temperature climate periods must also be considered in the pest control risk analysis (see next paragraph).

- *Temperature about 10-20° C*

The optimal temperature for herbs storing is between 10 and 15° C . At temperature >15°C some insects can proliferate but lifecycles are less quick that the above-mentioned higher temperatures (25-35°C).

- *Low temperatures (<10°C)*

Slow down or completely stop the life cycle of insects.

At temperatures below 0°C for a prolonged period, many insects die or enter a state of diapause (a sort of "hibernation").

For this reason, *cold is an effective food preservation strategy.*

3.2 Humidity

It is advisable to avoid humidity because, in addition to causing the formation of moulds harmful to human health and the deterioration of the goods, an higher water content in the goods encourages the proliferation of insects. A humid environment is a breeding ground for insects. The ideal humidity for storing herbs should be less than 60%.

However, some insect species are adaptable and can survive even seasonal variations.

3.3 Light

Prolonged exposure of dried herbs to light, especially sunlight, can cause the degradation of essential oils and pigments, compromising the flavour and appearance of the herbs.

During storage it is also very important to carry out “checks” on the goods and in particular:

3.4 Periodic checks:

It is important to periodically check the herbs in storage to make sure that there are no deterioration processes in progress for the goods.

3.5 Pest control

There must be a pest control based on a risk analysis and modulated according to the climate trend, also for the reasons detailed above.

Take all possible measures to prevent insect infestation: light traps, fermonic attractives, massive capture system, etc...

Environmental disinfection treatments are particularly important and must adopt authorized methods and substances that do not leave residues.

Monitoring of the infestation conditions of the goods storage warehouse must be constant, periodic and carried out with times that allow for rapid remediation and reporting.

Nichelino, 14-05-2025

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This statement is transmitted electronically and is valid without signature.

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