FAQs about Klasmann products

KLASMANN

General questions about Klasmann peat products

Questions about Klasmann substrates prior to use

Questions during crop cultivation?

General questions about Klasmann peat products

1. Sometimes the price of the raised bog peat is considered to be high by growers, why should I choose raised bog peat?

The combination of economical, chemical, physical and biological properties of raised bog peat offers a medium with the most advantageous benefits in comparison to any other available growing media.

For growers, the uniformity of the material and its perfect properties are most important for reaching optimal crop results and maximum security for the crop. In modern crop cultivation, staff follow standard operations (e. g. fertilisation, irrigation, spraying pesticides) thus keeping the substrate stable (especially in regard to structure, nutrient supply and pH value) supports a successful crop.

2. What are the differences between raised bog peat and fen bog peat/local peat?

Peat raw materials differ much between fen bog peat and raised bog peat. Fen bog peat is taken from so called “eutrophic peat bogs”. This peat is based on many different varieties of grasses, sedges, birch and pine trees as well as reed. Its age varies a lot, the nutrient content is complex and irregular. Fen bog peat usually provides high salt levels in combination with an unstable and mostly high pH level. It is very often inhomogeneous.

Raised bog peat on the other hand originates from oligotrophic or raised peat bogs. It is mainly based upon sphagnum peat moss varieties. Peat forming takes place under waterlogged conditions (oxygen deficit environment) ensuring long humification processes. It shows different stages of decomposition, from a very low decomposed white peat to a more strongly decomposed frozen through black sphagnum peat. The structure of the sphagnum plants still exists and cell structures work in order. The nutritional level as well as the pH level of sphagnum peat moss are low and stable. Due to this, all plant requirements regarding nutrition and pH can be controlled optimally with specially developed and optimised fertiliser and lime stone (calcium carbonate). Uniformity and physical properties are extremely consistent as it is mainly based on pure sphagnum moss.
Raised bog peat provides a high concentration of humic acids which stimulate root growth. It is free from weeds, plant pathogenic nematodes or other plant pathogenic germs.

3. Are there any nematodes in Klasmann products?

Klasmann products do not contain any plant pathogenic nematodes. They may contain saprophytic nematodes which do not have a mouth sting and therefore can not harm living plants. Saprophytic nematodes can be found worldwide in each peat moss. Klasmann peat raw material is controlled very strictly in laboratory analysis. The quality management for products is based on RHP quality norms being the strictest regulation for substrates worldwide. Moreover, national import and export examinations are executed and phytosanitary certificates confirm that the products are free from any pathogenic nematodes.

4. Why is there no need to disinfect raised bog peat?

Raised bog peat products do not need disinfection as it is a very clean material due to its development process. Raised bog peat provides only very low nutrition and a low pH level. Moreover, a peat bog is waterlogged and only adapted plants are able to grow under these specific conditions. As no ordinary field crop is able to grow on peat fields, there are no pests and diseases around in the peat bog. This ensures, that there is no need for disinfection. Disinfection is needed for peat moss extracted from agricultural fields.

It is also one of the major economic and ecological benefits of raised bog peat. Pest and diseases are frequently monitored by KD’s quality management and are certified by phytosanitary certificates.
One may say that disinfection is even harmful because it destroys beneficial microorganism activity. Disinfected peat loses its beneficial microorganism protection, the suppressive effect, against pathogenic plant diseases.

5. Why does peat store more water and nutrients and provides more air capacity than other growing media?

The sphagnum moss is a water plant with large cells, an internal sponge-like cell structure. The pore volume ensures the balanced ratio between air and water capacity. The special capillary structure of sphagnum moss guarantees that there is still sufficient air provided to the crop plant.

The high water retention combined with high air capacity are major benefits of peat. Both parameter can be controlled by specific structures of different raw materials. Peat can therefore be optimised according to the crop plants requirements as well as to the growers requirements.

Peat as purely organic material does provide a high buffering capacity (CEC = cation exchange rate). The humic acids of peat can absorb nutrients and release to crop plants continuously when necessary. Additives like clay can even increase the CEC and nutrient buffer. Peat moss is also an excellent buffer for pH-value to keep it stable during the cultivation time.

6. What are the differences between sod peat and surface milled peat?

Different harvesting methods are used to create raw materials with specific physical properties. This allows us to choose from different kinds of peat to provide a controllable air and water ratio within the substrate and create the optimum media for each crop.
Surface milled peat is harvested by milling the top layer of the white peat directly from the bog. This is the main harvesting method and creates homogenous material which is afterwards screened in grades of 0–5 mm and 0–25 mm. These grades provide an air capacity of 10–15 vol.-%.

To increase air capacity and long term structural stability sod peat is used but is obtained with a different harvesting method. So called peat “sods” are cut from the bog, dried down and crushed in special mills in the factory. This raw material is then screened into grades of 1–7 mm, 5–15 mm, 10–25 mm and 25–45 mm ensuring a very low content of fine particles and therefore maximum air capacity. The grades of 10–25 mm and 25–45 mm provide air capacities of up to 35 vol.-%.

7. What are the properties of fine structured peat, sod peat and peat fibres?

Fine structured peat:
Fine structured peat stores water and water-soluble fertiliser better than coarser structures, whereas coarser structures provide more air capacity than finer ones. The use of surface milled peat and sod peat depends on the crop and cultivation method. Whereas seedlings can be grown in a product with fine structure, pot plants should be grown in a media combining surface milled and sod peat to create optimal physical properties and to increase drainage.

Sod peat:
Sod peat provides air capacity and stable structure. Together with peat fibres it creates a structural frame within the substrate. It also stores water and fertiliser as the cell structure is completely un-destroyed. Its increased air capacity improves the drainage of water and thus supports the root system of sensitive plants to grow.

Peat fibres:
Fibres originate from partly degraded Eriophorum providing very good stability of the structure and good water transport. They are part of the substrates backbones/ structural frame supporting water distribution and increasing the draining efficiency.

8. If the fibre content is high, is the air capacity also high?

Peat fibres transmit water and therefore provide drainage. If the fibre content is too high, the substrate looks soft and airy in the beginning. As drainage is high, finer particles will cumulate at the bottom of the pots – silting occurs. A high fibre content can therefore not replace sod peat in a proper growing media.

9. Does Klasmann add black peat to their products? Does black peat cause the Klasmann products to look darker?

Most Klasmann products are white peat products. Specific products with added black peat are available, too. Selection depends on plants to grow and irrigation systems. Peat material is divided into degrees of decomposition of H1–H10 (von Post scale). Low decomposed white peat from Klasmann is judged to be H2–H5. Moderately decomposed white peat (H4–H6) is used as raw material for specific applications, e.g. vegetable young plant propagation. This raw material has a darker colour but also high water retention. Finally, black sphagnum peat, finally, is more decomposed (H7–H10) and only used for very specific products needing very high water retention. The different colours of peat are related to the degree of decomposition. Geologically older bogs do have a darker colour even if the degree of decomposition is similar. The general benefit of older peat bogs is better regarding the stability of the peat structure itself.

RHP

10. There are many brands of raised bog peat available: Why should I choose Klasmann products? What are the advantages of Klasmann products compared to others?

The Klasmann product quality is very reliable due to the raw material originating from our own peat fields. Recipes are used internationally used and their quality is proven by many customers and crop circles. Well controlled and tested additives, substitutes and fertilisers are used.

- High quality products for ensured crop security
- Production is based on strict quality schemes of ISO and RHP
- Laboratory controls of each production batch are carried out before dispatch and full traceability is guaranteed for every batch and order
- Reliable supply all year round
- Distribution/logistics via worldwide network of sales partners
- Technical support and the international technical network of Klasmann provides information, support in case of questions, new crop segments or crop problems
- Highly effective fertiliser solutions, specific trace element fertiliser and the Klasmann's Hydro S wetting agent provide highest crop security


Certificate


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DIN EN ISO 14001:2005

11. The size of Klasmann packages seems quite small: How do I know the volume of this package is 200 litres?

The new Klasmann 200L bag is optimised for improved handling and transport. It provides much more convenience to workers and growers. The substrate volume measurement follows the official European Norm EN 12580. The volume of the bag is continuously controlled during filling process in the factory. The volume is stated on the bags.

12. There are many recipes for Klasmann products: What are the criteria to choose the right one?

Information about the standard range of recipes and typical applications is provided in the Klasmann product leaflets. Our sales partners' staff will recommend recipes after discussing specific requirements with growers.

13. If a special recipe is needed, how does one proceed?

For specific crops or new segments and for special questions, the grower may directly contact KD sales partners about their request. In case of further questions KD sales partners can contact the Technical Department of Klasmann-Deilmann in Germany to get ideal recommendations for each crop and cultivation method.

Questions about Klasmann substrates prior to use

1. After opening the packing there was fungus on the surface: What needs to be done?

Pure peat provides an organic matter content of up to 98 %. Organic matter attracts fungi. Peat is enriched with lime and fertiliser to make it a growing medium. These additives improve living conditions for microorganisms. Saprophytic fungi (and bacteria) living on dead plant material as well as airborne spores, always present in the environment, are able to enter the peat at this stage. Substrate packagings showing fungal growth should be opened up and mixed thoroughly in order to aerate as much as possible. After aeration, the fungus mycelium collapses quickly. The fungal mycelium provides no harm to the crop at all as the fungi are purely saprophytic.

Fungal growth on substrate surfaces in the greenhouse is supported by moist conditions and usually originates from airborne spores. All measures, preventative and curative, should therefore create a drier surrounding and ensure good aeration of plants and substrate. Implement a dry crop cultivation to allow the surface of the substrate to dry down. If possible, reduce relative humidity inside the greenhouse. There is no effective fungicide available on the market against saprophytic fungi. Fungicides against soil-borne pathogenic fungi show very little effect.

2. After opening the packing, the peat had an unusual smell. What needs to be done?

It may happen that smell occurs in compressed peat products. This can be the case after long transport in unfavourable hot climatic conditions. The smell is comparable to rotten eggs or ammoniac. It is a sign for anaerobic microbiological processes in the compressed substrate and is supported by hot temperature and low levels of oxygen. Smell is quite difficult to prevent and also difficult to investigate, as a lot of factors influence this situation:

- Microbiological life in the peat
- Temperature during transport
- Lead times of the cargo
- Storage conditions after arrival

Not everything is known about the specific processes so far, but it is expected that biological processes of microbes cause the reduction of nitrate and sulphate. The result is the smell and sometimes a decrease of available nitrate nitrogen in the substrate.

This does not imply that the substrate is of bad quality. In many cases the substrate can be used without limitation if following steps are considered prior to use:

If products show fungi or smell, the substrate should be loosened up immediately to aerate the material. Existing gases can diffuse and oxygen comes back into the substrate and stops the processes. If possible, store as bulk material for a day or two and turn at times. The smell disappears during aeration.

1. For substrates with medium, coarse and coarse-fibrous structure for potting and transplanting (e. g. Base Substrates 2, 3, 4, TS 1, TS 2, TS 3, and TS 4 medium or coarse, etc.) and where the smell has gone and the substrate has dried a little it may be used for potting plants without any further checks. After sufficient aeration there is no harmful influence on plant growth as the young plants used for growing on have already rooted and developed.

2. Substrates for young plant production/seedlings (fine structured, e. g. TS 1, TS 2, TS 3 fine; Plug Mix, Base Substrate 1, etc.) should be tested in a bio test with a chemical analysis to ensure optimal growth after aeration. Plants may need to be fertilised with sufficient liquid feed based on nitrate nitrogen at an early stage to balance any potential nitrogen losses.

3. How to loosen up Klasmann products?

Prior to use the compressed substrate from Big Bale or bales needs to be loosened up with great care to ensure the peat’s structure is not destroyed. This is especially important for the coarse structured substrates as excessive loosening up or mixing may destroy the coarseness and the structure becomes too fine for its intended purpose. High speed mixers and the power of grinding and mixing equipment is very destructive to peat.

The grower needs to choose a suitable machine to carefully loosen up carefully the compressed peat.

Using a fork or large shovel is ideal to manually loosen the material on a clean concrete surface.

(please find further info in Klasmann's manual "General guidelines for use of peat based substrates")

4. What needs to be considered while potting?

1. For the potting process, it is important to consider a certain compaction of the substrate. As the substrate is a soft material, it should be slightly compressed to allow good compaction and contact to the plant's roots.

2. After potting/transplanting initial irrigation needs to be carried out immediately to allow compaction of the substrate ensuring good contact of the peat to the roots of the plants.

3. During potting, it is important to consider not to put the young plants too deep into the pot. After compaction during transplanting and after initial irrigation, the plant might sink too deep and suffer from lack of air and light as well as increased pressure from soil borne diseases.

(please find further info in Klasmann's manual "General guidelines for use of peat based substrates")

5. To increase the air capacity and drainage within the substrate, what is the optimal additive / substitute to choose?

First of all, the optimal choice of substrate composition is essential to meet the specific crop requirements. The combination of sod peat and surface milled peat ensures a controlled ratio of air and water capacity.

To increase air capacity and drainage further within the substrate, the best choice is Perlite. As Perlite is pH neutral, it does not absorb water and does not contain any nutrition it may be used safely.

Wood fibre is another optimal solution to increase drainage and air capacity in substrates. Currently, limitations for deliveries overseas exist and therefore it is mainly used in European countries. Klasmann-Deilmann has been producing its own wood fibre since 2010 and the production process is completely controlled in-house, ensuring the highest quality substitute. The brand name is Klasmann GreenFibre and provides full PEFC certification.

(please find further info in Klasmann's product info "Klasmann GreenFibre – the green benchmark")

Coco fibres are also a stable consituent but may provide high salt and chloride levels as well as pathogenic pests and tropical weeds. Coco fibres support drainage and water movement in the media if a good quality is chosen.

Coir could also be used, but is limited due to high pH, salt and chloride levels. Harmful pests also need to be considered. If not processed well, coir has the adverse effect to the crops because of its high content of sodium and potassium. Calcium deficiencies and foliage damage may be the result.

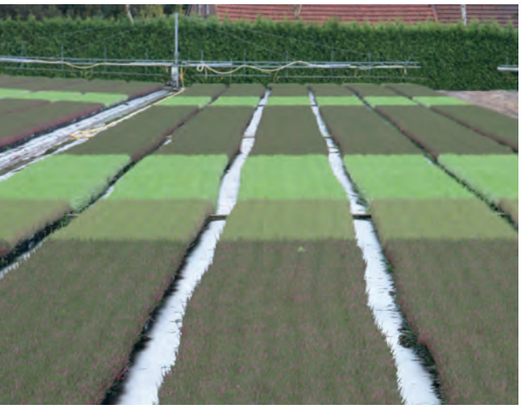
6. What is the best suitable condition for the storage of peat?

- Never stock in direct sunlight – try to stock below 25 °C
- Protect pallets with black nets against sunlight (UV stable)
- If possible, please stock inside (no sun, no rain)
- Follow strictly "Fi-Fo" > First in, first out
- Bulk deliveries stored inside or protected by clean plastic film
- Propagation substrates use "as fresh as possible"
- Never stock bulk substrates inside the greenhouse
- In case of overstocking or fungal growth in stocked substrate, please run a chemical analysis and Chinese cabbage test (laboratory control)
- In general please do not stock substrates for more than 3–4 months (please find further info in Klasmann's manual "General guidelines for use of peat based substrates")

7. What needs to be done if the structure of the substrate seems to be too coarse / too fine?

Klasmann provides many different product recipes for each specific requirement. Choosing the correct recipe for each crop and each nursery is the base for an optimal crop cultivation. In case of a recipe being too coarse or too fine for the application in the nursery, please contact the Klasmann-Deilmann sales partners in your country. They will assist you to find the best solution in the Klasmann-Deilmann product range.

According to the varieties of crops, size of pots and growing conditions a suitable recipe will then be recommended.



Questions about the use of Klasmann products

1. On substrate surfaces in pots algae grow: What needs to be done?

Algae spores are always present in the environment (ubiquity).
Possible sources are:

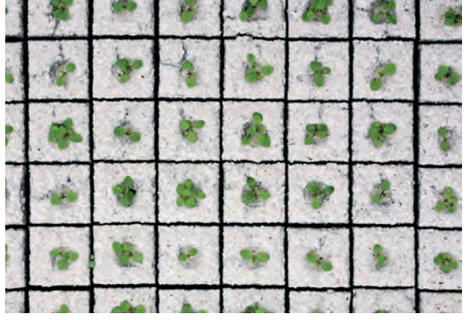
- Irrigation water
- Hose and pipes
- Greenhouse furniture and construction
- Wind (surrounding environment)

Requirements of growth for algae are:

- pH level of 5–7 (algae will die at pH 4)
- Presence of Nitrogen (NO_3), Phosphate (P) and CO_2 required
- Free water (especially on horizontal surfaces)
- Warm conditions
- High relative humidity
- Shady areas

How to counteract algae growth:

- Cover rainwater containers
- Add O_2 to rainwater (driving CO_2 out)
- Use filters for irrigation water
- Keep crop as dry as possible (consider a coarser structure for the substrate to allow more drainage and air)
- Use as little water as possible inside the greenhouse
- Ventilate as much as possible
- Reduce relative humidity
- Reduce shade where possible
- Decrease risk of condensation
- Repair leaks to roofs, pipes etc.
- Check greenhouse hygiene
- Apply algaecide (Mind it is toxicity!)
- Cover the seeds with sand or Vermiculite, if possible in the specific crop



2. What is the reason for fungus gnat in the substrate? Is the substrate itself containing eggs of fungus gnat? What measures are there to prevent the occurrence of fungus gnat?

Fungus gnat develops within 21 days over four stages: egg, larvae, pupa and adult with many generations per year. They all occur around damp, decaying vegetation, algae growth and fungi.

Moist organic material and especially a moist substrate surface creates optimal surroundings for the flies to lay their eggs. Flies can occur in or around buildings and may also be a problem in greenhouses, nurseries and interior plant spaces. Physical and cultivation methods, primarily screening windows and doors as well as reducing moisture and organic debris, are recommended for managing all kind of flies.

Most of the insects' lifespan is spent as larvae and pupae in organic matter or soil, so most control methods target the immature stages, not the mobile and short-lived adults.

How to control:

- Fungus gnats thrive under moist conditions especially in abundance of decaying vegetation and fungi
- Avoid over watering – improve drainage
- Allow for sufficient drying up
- Clean up free-standing water and eliminate water leaks
- Moist and decomposing grass clippings, immature organic compost, organic fertilisers and mulches are favourite breeding places
- Use yellow boards to control population
- Treat with a combination of Steinernema nematodes and Bazillus thuriengensis

3. For how long is wetting agent effective in substrates?

The effectiveness of the wetting agent changes under storage conditions. In cases of the product being stored in direct sunlight and/or the temperature differences between day and night are high, the chemical composition of the wetting agent deteriorates easily.

Generally speaking, the effectiveness is between 6–8 months depending on the storage conditions. Beyond 6 months, the effectiveness of wetting agent may have gone completely. As the main focus for using wetting agent lies in supporting the re-wetting over the first weeks of cultivation, its performance has to concentrate on this period. A wetting agent operates in a way that it breaks the surface tension of the water easing the moisture to pass and enter the media's structure.

4. During cultivation, at the bottom of the pot fine particles accumulate. What is the reason?

This phenomenon is often related to the grade of the chosen recipe and also the amount of irrigation.

If too fine a substrate composition are used in large pots they are prone to develop this problem called "silting", with fine particles < 1 mm accumulating at the bottom of a pot and leading to oxygen deficiency of the roots.
If the substrate is used for long term crops, it is suggested to use a product with an increased amount of sod peat fractions and a reduced amount of surface milled peat to avoid this effect.

In coarse structured substrates also increased irrigation may lead to quicker decomposition and wash down the finer particles to the bottom of the pots causing a muddy base. It is therefore always recommended to produce plants in drier crop cultivation. This will - in general - ensure good aeration for roots, less pressure of pests and diseases and a more stable peat structure in the long term.

5. After irrigation the substrate dries up quite slowly. What is the reason?

Generally speaking, the finer the substrate the more water is stored, the coarser the substrate less water but more air is stored. Make sure your irrigation system matches the substrate. An adjustment of the substrates structure may also be considered. Please contact our sales partner for further recommendations. Please do not irrigate too much after potting, wait until the root system has established.

6. What does proper irrigation look like?

- Watering should be carried out in the early morning.
  Thus, the substrate and the leaves may dry again in the daytime.
- The leaf itself should be dry overnight in order to reduce plant diseases occurring.
- Do not water at noon (under the strongest light). This may cause leaf scorch due to the water drops acting as a lense and increasing intensity.
- Some plants are very sensitive to cold water (e. g. African violet).
  For these plants, the difference of the temperature of the irrigation water and the surrounding temperature should not surpass 5–10 °C.
- Make sure the substrate is completely moistened and does not have dry parts (check it in the pot). Please take also care not to apply excessive water.

(please find further info in Klasmann's manual "General guidelines for use of peat substrates")

7. Sometimes weeds occur in pot plants. Are they originating from the peat fields?

This is most unlikely due to working process and safety measures in the peat bog. Klasmann peat fields are prepared very carefully for excavation. A large top layer is removed and the borders of peat fields are thoroughly monitored and weeded.

Regular inspections by the quality control organization of RHP are carried out. Raw materials are frequently checked for weeds. Additionally, due to the low pH level and with no nutrients in the natural peat, only specific plants are able to grow in peat fields (sphagnum, certain sedges). No ordinary field crop is able to develop and spread its seeds in pure peat. Therefore, the peat is free of seeds by nature, which is one of the major benefits for the use of peat in horticulture.

Weeds in crop cultivation usually originate from the surroundings of the nursery. Therefore, weed-free cleanliness inside and around greenhouses/cultivation areas is essential to keep weeds out of your crop.

8. If the pH level of the substrate drops during cultivation, is it a quality problem of the product?

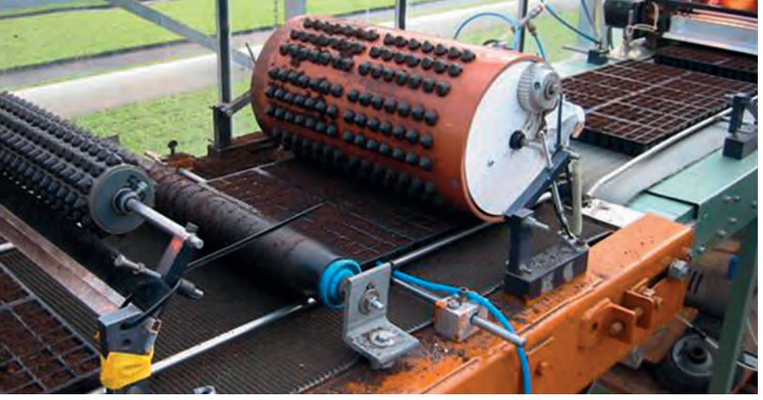
Dropping of the pH level in the substrate has nothing to do with the substrate itself as peat is known as very stable compared to other growing media, e. g. in coir the pH-value usually drops much more quickly as the buffering capacity is low. The most important influences are the quality of the irrigation water (soft water = low carbonate content) and the nitrogen type in the fertiliser used. There are special fertilisers in the market which support pH stability with its nutrient composition.

In general, nitrate based fertilisation and hard water increase the pH level of growing media, ammonium based fertilisation and soft water decrease the pH level of growing media during cultivation. This effect is based on the chemical exchange processes between plant and growing media.

9. What needs to be considered when taking samples for measuring pH-value and EC level of a substrate?

The proper way of taking samples is very important for measuring the pH-value and EC level.

The correct way is as follows:
For one batch of crops, choose 10–15 pots of substrate. Dispose of the upper 20 % of the substrate of the pot. Remove carefully the roots and the plant. Sample material might be cut like a piece of cake from the root ball. From packed substrates make sure to use material from top, centre and bottom of each bag and pallet. After uniform mixing a representative sample should be obtained.



10. When sowing into trays, one sometimes finds cells being too dry or sometimes too wet or some are dry on top and wet at the bottom. What has happened?

The filling process and compaction should be carried out very homogenously to have the same amount and composition of substrate with the identical compaction in every cell. Standard working practises and possibly automated filling will increase homogeneity. Equal filling and compaction of the substrate leads to homogenous germination, even water management and finally a uniform crop growth. To support homogenous filling further, there are Klasmann recipes available with increased sod peat amounts to answer to this problem.
In fully automated systems it is advised to control the weight of trays after filling to make sure a very regular filling of the trays.

11. What is the duration effect of the incorporated fertiliser? What is the right time for further fertilisation?

The effect of the basic fertilisation incorporated into the substrate depends on the recipe, the crop and its nutrient demand as well as on the age of the product itself. Therefore, a standard answer cannot be given.
In general, the fertiliser used by Klasmann is considered to be effective for the first 10–14 days after germination in fine propagation substrates with a basic fertilisation of 1 kg/m³. Crops with strong development over the first days and strong nutrient demand might require initial fertilization already after 8–10 days, slower growing crops might require initial fertilization after 13–15 days.
Most important is to monitor the crop and the colour of the leaves in order to properly steer the liquid feed. The roots are also a good indication. Once the root tips reach the walls of the pots, liquid feeding should start. A balanced NPK fertiliser including trace elements should be used as a liquid feed. Older products from stock may have a reduced nitrogen level. With older substrate (stored for more than 6 to 8 months after production) liquid feeding may start earlier in order to balance any losses of nitrogen.

For any further question please contact your local distributor for Klasmann products.

All information which we provide has been prepared by us to our best knownledge and belief. Our information documents therefore make no claim to completeness and correctness. In particular, we reserve the right to make changes.

All application and usage recommendations must be understood as non-binding guidelines and must be adjusted to meet local circumstances and code of practice.

Store product in a cool place, protected from direct sunlight and precipitation, otherwise guarantee is rescinded.

Any liability for the presence of saprophytic organisms and related effects, e. g. development of mycelium, cannot be accepted.

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we make it grow