HYDRO Infopaper

Everything you always wanted to know about cultivation on inert substrates

Growing tips

Facts are important

Advantages of growing on inert substrates

History of growing on inert substrates

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Growing on substrates

The term growing on substrates is often used incorrectly. A substrate is synonymous with everything that a plant can grow in or even on. The substrate, or growing medium, therefore serves to keep the plant in place. Examples of substrates are potting compost, coco and rockwool.

There are basically two methods of cultivating with substrates; run-to-waste and recirculation. In a run-to-waste cultivation system the feed water passes the roots just once and is then disposed. This is in contrast to other systems where the drainage water is reused, for example in the so-called recirculation systems.

In run-to-waste systems we make a distinction between substrates that interact with and substrates that don't. A well-known feeding substrate is potting compost. Other substrates can retain nutrients. coco coir is such a substrate, its feeding and nutrient retention properties differ from potting compost.

CANNA has developed the CANNA TERRA range for cultivating on potting compost. CANNA COCO is for cultivating on coco. CANNA HYDRO is for substrates that retain or release almost no substances: the so-called inert substrates.

Tip

CANNAZYM extends the life-span of Clay Pebbles and other growing mediums because it breaks down dead roots.

Run-to-waste with inert substrates

If you choose to cultivate in a run-to-waste system in combination with an inert substrate, you are choosing a growing method that guarantees high yields. After all this – in combination with rockwool as inert substrate – is the most widely used cultivation method in professional horticulture in the Netherlands. However, this is certainly not the easiest growing method, and you will only be able to achieve high yields with the same professional approach.

The advantage of this growing method is that you know the exact composition of the feed water and so you know exactly what your plants are being fed. However, the drainage water goes directly into the environment, so it is very important that the nutrition you choose is designed for this growing method. Only then you can be sure that the minimum possible residue materials will enter the environment (more about this on page 6). CANNA HYDRO has been specially designed for this method of growing.

Advantages and disadvantages of hydro cultivation

The advantages of hydro cultivation include being able to accurately manage the nutrients, the amount of water given and the pH. But there are many more advantages. You will experience almost no problems with potting mix related diseases or weeds; the substrates used for hydro cultivation are weed and disease free, and this is why they are often referred to as sterile. Additionally measuring the pH and the electrical conductivity (EC) in the growing medium is simple. The electrical conductivity gives an estimate of the total amount of dissolved salts.
A disadvantage of hydro cultivation is that the substrate used is not always reusable or recyclable. Other disadvantages include the higher initial costs for the substrates themselves and the equipment required. But you can be sure to earn this back in the yields you achieve.

Table 1: Overview of advantages and disadvantages of run-to-waste with inert substrates:

	Open system (run-to-waste)	Closed systems (recirculating)
Advantages	Plants receive continuously fresh nutrients Also suitable for cultivation with 'poor' water quality (EC of 0.75 or higher)	No need to dispose via drainage Plenty of air available to the roots
Disadvantages	More loss of water and nutrients Need to dispose the drainage water	Diseases can spread throughout the system via the feed water pH and EC values in the nutrients have to be monitored more closely
Nutrients	CANNA HYDRO	CANNA AQUA

Substrates

CANNA HYDRO nutrient is specially formulated to provide the best possible results when used in combination with inert substrate. Of all the inert substrates, rockwool is the most commonly used. Rockwool is widely used in Dutch horticulture because, of all the inert substrates, rockwool ensures the rapid development of good root systems and in addition it is easily managed and it also has good supportive properties. Plants grown in rockwool remain upright without extra support.
Besides rockwool there are many other inert substrates. In this section we will discuss some of these, but considering the popularity and suitability of rockwool we will discuss cultivating on rockwool in more detail.

The origins of growing on substrates

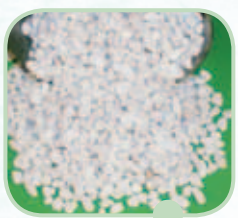
Even though the first farmers quickly discovered that plants grew better on the remains of other plants and dung, it was thousands of years before people understood exactly why. Research into plant food began many moons ago, long before our time, but only recently, about 150 years ago researchers found out exactly which substances in the dung actually feed the plants. And as a result of these discoveries, the artificial fertiliser industry was born. Shortly before the dawn of this era, in the Netherlands Napoleon introduced monoculture, where one crop per field is cultivated. The combination of these new systems increased farming production to new levels. Initially the new developments produced tremendous results, but this success was quickly reversed. No one was familiar with these cultivation methods and they were certainly unaware of the drawbacks. The damage in the cultivation of vegetables was particularly noticeable. Year after year an excess of artificial fertilizers was applied creating problems in the potting mix structure and in the fertility of the ground. The same crops were grown year in year out in monoculture on the land. In turn the monocultures brought on a multitude of plagues. Potting mixes bound plagues were particularly difficult to counteract. A good solution was required urgently. Growers began placing the crops in separate compartments and cultivating them on growing medium instead of in the open ground, and this was the beginning of growing on substrates.

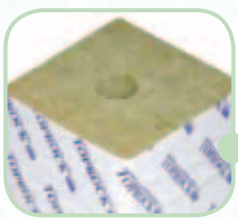
Growing on substrates was put into practice for the first time in the first half of the 20th century. As plastic containers became available growing on substrates made considerable progress. Production could be scaled up and automated. In practice it turned out that growing on substrates generated up to 25 percent greater yields compared to cultivating in the open ground. This is because the nutrients can be adjusted directly to the circumstances at any particular time.

When CANNA HYDRO was introduced in the 1980s serious small scale cultivation became possible on inert media and rockwool in particular. This CANNA HYDRO formula has been used successfully worldwide for many years and even though many have attempted to copy the formula, no slabch has yet been developed.

Clay Pebbles

Clay Pebbles are made by forming clay into pellets and then firing these in a hot kiln. This causes the clay to expand and become porous. Clay Pebbles are available in various shapes and sizes and with two types of surface; smooth and coarse. Clay Pebbles have been used in horticulture since 1936. They have the advantage that, as long as they are well cleaned, they can be reused for up to five years. The greatest disadvantage of Clay Pebbles is that they can absorb almost no moisture, making them unsuitable as a run-to-waste substrate. However, they are widely used in recirculation systems where the nutrients continually pass by the roots. This is because Clay Pebbles have good supportive properties and are heavier than water and therefore do not float. In addition Clay Pebbles are used extensively as in potting mixes and as a drainage layer at the bottom of pots when growing in coir or in potting mixes.





Perlite

Perlite is a glassy, volcanic rock that is ground and then baked at high temperature. Perlite is also inert, but due to its poor supportive properties it is relatively vulnerable as a growing medium itself. However, it can be used as a potting mix improver and particularly to increase the air ratio in the potting mix; though, these days there are environmentally friendlier methods for this, such as adding white peat.

Mapito

Mapito is a very light medium with limited water retention capacity. This means that the substrate will dry out faster and so it needs to be watered more frequently. Mapito is a mixture of Polyurethane (PU), rockwool and sometimes coco or even perlite. Most types of Mapito are not "clean", in that they often have a higher EC and a lower pH than the ideal growing medium; this is the great disadvantage of Mapito. So it is always essential to determine the exact pH and EC values of the Mapito and to rinse it thoroughly before use!

History of rockwool

How rockwool was discovered is not exactly known, one story goes as follows:
Rockwool was discovered by accident in 1840. After climbing a volcano in Hawaii researchers saw long, white threads hanging from the trees. The local inhabitants believed that these were God's hairs which he pulled out of the volcano when he was displeased. However, investigation showed that the hairs of God were in fact Diabase, a liquid volcanic rock that was cooled and blown apart by the wind after leaving the volcano.

Nowadays rockwool is manufactured in factories. The volcanic rock is ground and pulverised to grit. This grit is then heated to 1500 °C, at this temperature it melts. This viscous substance is then poured onto a rapidly rotating sheet. This forms droplets and each droplet is stretched into a long fibre. These fibres are cured in a kiln and then consolidated into slabs of rockwool. Any shape finished product can then be cut to size. In this process 1 m3 of raw slaberial becomes no less than 90 m^3 rockwool. Besides the applications for thermal, fire and sound insulation, in the early 1970s it was discovered that rockwool could also be used as a good growing medium for plants. It was first used on a large scale for cultivation in the Netherlands in 1975.
The rockwool used in construction for thermal and sound insulation is not suitable for cultivating plants. This is because mineral oil is added to make the slaberial water-repellent.

A rockwool variant has been specially developed for horticulture which can actually absorb and retain large quantities of water. This rockwool has considerable capillary capacity, in other words, rockwool can retain large volumes of water. This type of rockwool can retain up to 80% water and still contain 15% air. The remaining 5% is the rockwool itself.

Because each crop has different requirements, different types of rockwool have been developed. The main differences are in the structure of the fibres, horizontal or vertical, their thickness and density. Rockwool is available in various shapes and sizes; for example small plugs or cubes, for germination and propagation, in which seeds or cuttings can take root. These cubes fit into blocks where the young plants can continue to grow. There are also slabs in all imaginable dimensions. These are also known as slabs on which you can place the blocks with young plants.
Many plants don't like having "wet feet". A rockwool slab that is too soft will retain too much water, and one that is too hard will provide too much resistance to the growing roots. A hard slab means that the plant spends a great deal of its energy developing roots – energy that the plant can better use for growing above ground. Therefore the ideal rockwool slab is not too hard and has a horizontal structure so that there is ample volume available for root growth. The quality of a plant is largely determined under the ground, in fact 50%, so the bigger the root volume, the healthier the plant and the higher the yield.

Most rockwool slabs are wrapped in plastic, which makes them easy to pre-soak. The patches that remain dry during the pre-soak will not get any wetter during cultivation; so it is important to work carefully in the pre-soaking phase.
More about this on page 5.

Make sure the rockwool slabs are horizontal.
If they are not truly horizontal the moisture will run to one end of the slab.
This could mean that some plants become too dry and others too wet.

Hard or soft water?

The fertilisers in the CANNA HYDRO range are available in two versions, for hard water and for soft water. If the hardness of your water is 6 dH or more, use the hard water variant. If the hardness of your water is less than 6 dH, then the soft water variant is recommended.

CANNA PRODUCT	SUBSRATE	SYSTEM	WATERTYPE	WATER QUALITY	PLANT PHASE	PRODUCT
CANNA HYDRO	All forms of rockwool	Run-To-Waste	SOFT	<8 dH	Grow	CANNA Hydro Vega Soft A&B
					Bloom	CANNA Hydro Flores Soft A&B
	Mapito		NORMAL/HARD	8><16 dH	Grow	CANNA Hydro Vega Hard A&B
					Bloom	CANNA Hydro Flores Hard A&B
	Clay Pebbles			dH = German Degrees		
	Perlite					

Your local water company will be able to tell you the exact hardness of your tap water. In some areas the quality of the water changes regularly, so if you live in one of these areas it would be wise to purchase your own water testing set.
In this way you will ensure that you always start with the best possible materials so that you have an even better chance of achieving top results with a minimum quantity of residual nutrients! This precise balance of nutrients also ensures that the least possible quantity of nutrients is wasted and drains away into the environment. So you see, there are advantages on both sides; a healthy product for the grower and the consumer and the least burden for the environment.

Soaking rockwool before use

Before you put any plants in your new rockwool slab you must ensure that it is thoroughly wet, this process is known as pre-soaking. You should soak your rockwool before use for two reasons:
First of all, to optimise the capillary working of the rockwool. If there are dry patches in the slab these will remain dry during cultivation, and the slab will never reach its theoretical maximum water-retention capacity. And consequently the plants will be less able to absorb sufficient water and nutrients. A chamois works in the same way: when it is bone dry it is difficult to get it properly wet; once it is a little bit wet then it can absorb much more water. Incorrect soaking, or worse still, no pre-soak at all can have disastrous effects: it might even mean that many of your cuttings die within the first few days.

Secondly, rockwool remains an inert growing medium, it contains nothing to provide a warm welcome for your precious cuttings. By a warm welcome we are referring to the root environment with an EC of about 1.3 and a pH value of 5.6. If rockwool is soaked with ordinary tap water, depending on your water supply, the EC and the pH will be about 0.5 and 7.5 respectively; not really an ideal start for young plants!

We recommend soaking the starting blocks a few days before you soak the slabs; the roots of the plants must have grown through the blocks before you can start with the slabs. So you see that the slabs are only used when the root balls of all the plants are sufficiently developed.

The initial soaking values for the blocks and slabs are the same; an EC of about 1.3 and a pH of about 5.6. In this example the starting point is tap water that has an EC of about 0.5 and a pH value of about 7.3. These values can be determined with pH and EC meters, which are an indispensable aid to growers cultivating on rockwool.
For your pre-soak you will need to make a solution of water with an EC of 1.3 and a low pH – adjust the pH of your soaking solution to 5.1.

NOTE: You will only need to adjust the pH so drastically once!

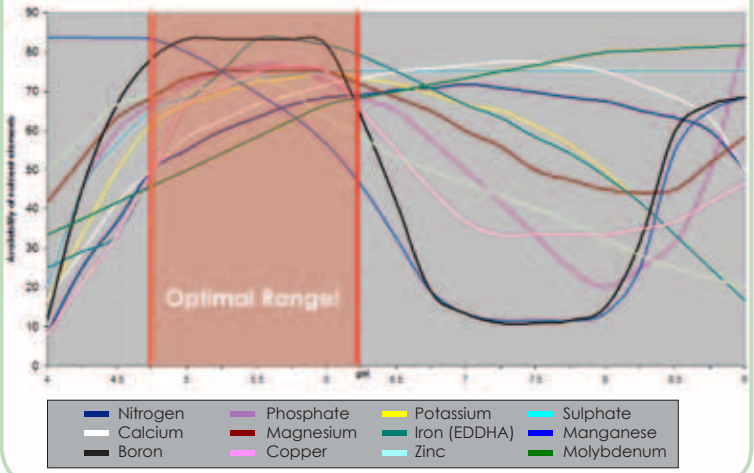
Next, make a whole in the plastic covering the rockwool slab, just large enough to fit a garden hose through. Attach the garden hose to an immersion pump and fill the rockwool slabs with at least 10 litres of this solution. Leave the solution to stand in the slab for at least 12 hours; preferably 24 to 48 hours.

The EC is fixed, but due to the effect of the water on the rockwool, initially the pH value will drop to about 6.2 only to settle at about 5.8. Rockwool has a continual active influence on the pH value, so it is essential to check it regularly. Now that the slab has soaked for up to 48 hours it's time to cut a slit in the plastic covering so that the excess water can drain away. Make slits in the bottom of the slab and at the lowest point in the cultivating container.

Tips

1. Never use raw rockwool! The pH is too high. Always soak rockwool before using it for the first time. Soak the rockwool with water or with a nutrient mixture with the pH adjusted to 5 and with an EC of about 1.3.
CANNA Start has been specially developed for this purpose. As well as correcting the pH and EC, the pre-soak also means that the nutrient solution will distribute itself evenly throughout the slab during cultivation.

2. If you are using CANNA RHIZOTONIC always add this to the feed water before you adjust the pH; CANNA RHIZOTONIC is a natural pH plus product.



Continually changing pH in the slab

Before you mix up a tank of nutrient always check the EC and pH of the slabs. You can do this quite easily by extracting some nutrient from the slab with a measuring syringe. The pH in the slab will change continually, so you need to check this regularly and take corrective measures when necessary. We recommend maintaining the pH in the nutrient tank between 5.2 and 6.2. Once the nutrient in the tank is correctly mixed you can start feeding your plants. Water the slab copiously so that about 20% drains away on the underside through the slits you made earlier.

Check regularly that sufficient water drains away from the container. If not, increase the amount of water given.
What plant feed should you use at this stage? Well, for the initial phase when the cuttings are still in the starting blocks CANNA has developed CANNA Start to use in combination with CANNA RHIZOTONIC and CANNA AkTRIvator. This forms an ideal basis for starting off seed and cuttings. As soon as the plants are placed on the slab, or another growing medium, we recommend using the Vega variant for that grow method, in this case the CANNA Hydro Vega.

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Impact on the environment

One aspect of growing that is often forgotten is the waste feed water that drains into the sewerage system. The drainage water from CANNA HYDRO nutrients does not contain any serious pollutants, so the burden on the environment is minimal. Another significant difference between CANNA HYDRO nutrients and other products for run-to-waste cultivation is the raw slaberials used. Because CANNA carefully selects the purest possible raw slaberials for its products there are considerably fewer heavy metal particles in the drainage water. Another important difference with other run-to-waste products is that the CANNA HYDRO nutrients recipe does not contain any red iron. The notion that red iron is more easily absorbed by plants is only valid at higher pH values; the pH range maintained in run-to-waste cultivation systems is too low. Large quantities of red iron are added to many products to ensure that there is sufficient iron for the plant to absorb, but much of this iron is not taken up by the plant. So instead of red iron, CANNA uses a special yellow variant in its HYDRO products. This yellow iron variant is absorbed well by the plant at the pH in the root environment. So considerably less yellow iron is needed than of the widely-used red iron. The idea that run-to-waste systems are more harmful to the environment than recirculation systems is therefore not entirely correct. There is waste water in both systems;
a constant trickle in run-to-waste systems and in recirculation systems a relatively large amount from time to time. The amount of waste water depends on the watering system and the dryness of the substrate, a dry substrate requires more feed water than a wet substrate, and thus not on the type of cultivation system.

Watering and feeding plants: fertigation systems

Fertigation systems are systems that irrigate the plant with water containing the necessary nutrients. Fertigation comes from the words irrigation and fertilisation, or giving water and fertilizers simultaneously. Irrigation systems are not new; we find narratives of them in the ancient manuscripts. But the practice of adding mineral fertilizers to the irrigation water is only about two hundred years old. There are many different ways of fertigating plants. The most common method used with rock wool slabs is run-to-waste via drippers.

Tip

The products designed to adjust the pH are concentrated products. It is sometimes difficult to adjust the pH correctly in one go. To make life easier for yourself, dilute one part pH adjuster with ten parts water and use this to adjust the pH in your nutrient tank. When you dilute an acidic product, always add the acid to the water, never add water to the acid, if it splashes it will cause burns on your skin or in your eyes!

Fertigating via drippers

Sometimes one plant looks poorly compared to the rest. There can be many causes for this, but more often than not the problem is related to one of the drippers releasing a widely differing amount of nutrient solution than the others. As a result the plant gets either too much or too little water and the amount of nutrients varies too. So it is advisable to check regularly for blocked drippers and inspect them carefully every time you start a new crop. A good method is to put each dripper into the neck of an empty bottle and switch on the system. After a while check to see that all bottles have more or less the same amount of liquid. In any case, we recommend cleaning the drippers after each crop. What should you use to clean your drippers? That will depend on the slaberials they are made from. A simple method to clean your drippers is to add about 250 ml CANNA pH- Grow to 10 litres of water and to rinse the drippers with this solution.

Deposits in the drippers during the grow can be mostly prevented by adding CANNA D-block to the feed water during cultivation.

It is also important to prevent algae from growing in the nutrient tank. Algae will also block the drippers. You can prevent algae from growing by eliminating light from the tank, so use a lid. Capillary drippers are the least accurate of all drippers; plants seldom get the same amount of water. An excellent solution to this problem is to use drippers that only release water at a certain pressure; pressure compensating and self-closing drippers. In this type of system all drippers start irrigating at the same time and all plants get the same amount of feed water. Another advantage is that a system with pressure compensating drippers does not have to be circular, linear systems work well too. These are the most advanced drippers currently available. Besides capillary drippers and pressure compensating drippers there are also labyrinth drippers. The accuracy of the amount of water released by labyrinth drippers is somewhere between that of capillary drippers and pressure compensating drippers. Just as pressure compensating drippers, labyrinth drippers are also less prone to blockages compared to capillary drippers.

Why CANNA?

There are, of course, plenty of good reasons to choose CANNA. CANNA's high reputation stems from its endeavour to be continually leading its field with new developments. After all, CANNA fertilisers are the most commonly used worldwide! The quality of CANNA fertilisers and growing mediums is consistent and these products meet the highest quality requirements. Growers are guaranteed good results because CANNA monitors the production process from raw materials to finished product: quality proves itself!

CANNA HYDRO fertilisers

Since their launch CANNA Hydro Vega and CANNA Hydro Flores are used worldwide by many satisfied growers. The composition of the products in the HYDRO product range is adapted to the needs of fast growing plants. CANNA Hydro Vega and CANNA Hydro Flores contain all the elements a plant requires in a form that can be absorbed directly, guaranteeing an optimal uptake as soon as the plant begins to grow. This results in maximum yield and full flavour. When growing in hydro culture the plant is 100% dependent on the nutrients provided in the irrigation water. And because this irrigation water is usually based on tap water CANNA has optimised its products for different types of tap water. The products are designed to prevent salts accumulating which are damaging to the environment.

CANNA products basically distinguish between two key phases in the development of the plant. Initially the plant will gain height and grow many leaves in its growth or vegetative phase. CANNA has de- veloped the plant nutrient CANNA Hydro Vega es- pecially for this phase. The plant then moves into the flowering or generative phase. As the plant's requirements change it requires different nutrients: CANNA Hydro Flores.

CANNA Hydro Vega

CANNA Hydro Vega is a complete nutrient for the growth phase, specially developed for cultivation on inert media. Fast and healthy growth is characterised by vigorous shoots and good development of the root system and this forms the basis for achieving top results. CANNA Hydro Vega contains all the nutrients a plant needs in this phase. You will need to apply the nutrient solution 1 to 3 times a day.

You must also ensure that the drainage is such that 10 to 20 percent of the irrigation water with nutrients leaves the mat again! Under normal circumstances you will need 3 to 5 litres of nutrient solution per square metre per day.

CANNA Hydro Flores

CANNA Hydro Flores is specially developed for use during the flowering phase. During the plant's exuberant flowering phase all nutrients must be available quickly and in the right quantities for the plant to absorb directly. So again, when using CANNA Hydro Flores, ensure that the drainage is such that about 10 to 20 percent leaves the mat. This usually means applying 4 to 6 litres per square metre per day.

This will ensure that all elements are directly available to the plant when the plant actually needs them.

Tip **Keep note of the amounts of nutrients and additives you add to each tank of nutrients you mix. You then have a good starting point for the next time!**

Switch from Vega to Flores

How do you know when to switch nutrients? Well, during their first two weeks the plants will grow vigorously and then they will need considerably more water. When the first flowers begin to form, is the right time to switch from CANNA Hydro Vega to CANNA Hydro Flores, and this is usually 1 to 3 weeks after starting the 12 hour light period.

"Flush?"

To prevent fertilisers accumulating and therefore also any excess or shortage of specific elements occurring in the plants, the mats should be flushed. If it has not yet been necessary to flush the rockwool mats, then it is advisable to do so in the third week. In extreme circumstances flushing with CANNA FLUSH achieves a better cleansing result than flushing with plain water.

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Mixing Hydro nutrients

Half the work is in the preparation. Ensure that you have all the things you will need readily available before you start mixing a tank full of nutrient. Check you have the right fertilisers ready, Vega or Flores, Hard or Soft and an A and B component.

1. Fill a clean nutrient tank with tap water, preferably at about 20-22°C. You can achieve this by running in warm water or by placing a heating element, for example for an aquarium, in the nutrient tank.
2. Then, depending on the EC value of the water, add CANNA Hydro A nutrients to the water; stir the solution thoroughly.
3. Now measure out exactly the same quantity of CANNA Hydro B nutrients and stir thoroughly again.

a. Using an EC meter, check whether the solution contains sufficient nutrient salts. If the EC is too low, add more nutrients. If the EC is too high, add more water. Do this carefully and accurately.

b. The first time you do this note the quantities used, equal amounts of A and B dissolved in tap water. This will make a good starting point for the next time!

4. Then check the pH using a pH meter, the pH must be between 5.5 and 5.8. If necessary you can increase the pH with CANNA pH+ or CANNA pH+ Pro, and you can lower the pH with CANNA pH- Grow or CANNA pH- Bloom . These supplements are concentrated, so try to get the pH right in one go. Adjusting the pH up or down several times is detrimental to the quality of the feed water!
5. Finally we also recommend leaving the freshly mixed nutrient tank to rest before you start to give it to the plants. This pause allows all substances to dissolve evenly and to stabilise.

As the plant gets bigger, it can absorb more nutrients and thus develop even faster. So it is a good idea to increase the amount of nutrients in the water as the plant gets bigger. How much you can give at which stage of the growth is shown in the grow guide below, remember that these amounts are just a guideline. As you become a more experienced grower you can start experimenting to maximise your yield.

Tip **Don't just measure the EC of the feed water and the drainage water regularly, remember to measure the EC of the substrate too.**

Tip **You can easily distinguish between CANNA Hydro A and B products because the A bottle contents is coloured and the B bottle contents is colourless.**

Grow guide

CANNA HYDRO

		Cultivation period in weeks	Light / Day in hours	Hydro Vega ml A/ 10 litres ml B/ 10 litres	Hydro Flores ml A/ 10 litres ml B/ 10 litres	RHIZOTONIC ml/ 10 litres	CANNAZYM ml/ 10 litres	CANNABOOST ml/ 10 litres	PK 13/14 ml/ 10 litres	EC + in mS/cm	EC Total in mS/cm
	VEGETATIVE PHASE										
GROWTH	**Start / rooting (3 –5 days)** Make the substrate wet	<1	18	10-20	-	40	-	-	-	0.7-1.1	1.1-1.5
GROWTH	**Vegetative phase I** Plants develop in volume	0-3[1]	18	15-25	-	20	25	-	-	0.9-1.3	1.3-1.7
FLOWERING	**Vegetative phase II** - Up to growth stagnation after fructification or appearance of the formation of flowers	2-4[2]	12	20-30	-	20	25	20[5]	-	1.2-1.6	1.6-2.0
	GENERATIVE PHASE										
FLOWERING	**Generative Period I** - Flowers or fruits develop in length. Growth in height achieved	2-3	12	-	25-35	5	25	20-40	-	1.4-1.8	1.8-2.2
FLOWERING	**Generative period II** - Development of the volume (breadth) of flowers or fruit	1	12	-	25-35	5	25	20-40	15	1.5-1.9	1.9-2.3
FLOWERING	**Generative Period III** - Development of the mass (weight) of flowers or fruit	2-3	12	-	15-25	5	25	20-40	-	1.0-1.4	1.4-1.8
FLOWERING	**Generative Period IV** - Flowers or fruit ripening process	1-2	10-12[3]	-	-	-	25-50[4]	20-40	-	0.0	0.4

CANNA, a source of information

If this leaflet has been of use to you, you may also find the other sources of information interesting: CANNA General Brochure and the CANNA product leaflets for CANNA HYDRO, CANNA RHIZOTONIC, CANNAZYM, CANNA PK 13/14 and CANNABOOST. Also available online.

www.canna.com

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