

Growth Technology Twin Pack Nutrients

Growth Technology Nutrient Solutions are formulated by one of the world's leading nutrient chemists. They are calculated to the highest possible standard of accuracy and manufactured from the purest and most soluble mineral salts. Formulations are constantly under review to ensure that new information is taken into account. These solutions bring professional standards to the amateur and hobby grower.

OPTIMUM EUROPONIC



OPTIMUM GROW & BLOOM

OPTIMUM is a general purpose formulation suitable for all types of hydroponic cultivation. It is especially recommended for NFT, Aeroponics and Flood & Drain as well for growing in Perlite and other inert media.



OPTIMUM HW GROW & BLOOM

Formulated specifically for hard water, **OPTIMUM HW** is tailored to the mineral profile commonly found in hard water. It is far more accurate in this water than a normal nutrient solution and it will lower the pH on its own, reducing the amount of acid needed and maintaining a good balance in the tank.



EUROPONIC GROW & BLOOM

EUROPONIC has been developed and fine tuned specifically for RockWool cultivation. Based originally on Dutch research guidelines for RockWool and then refined and fine-tuned with nearly twenty years of hard won experience.



GROW and BLOOM

Growth Technology Twin Pack solutions are available in two distinct formulations, each with a different ratio of the macro elements. The **GROW** formulation is designed to supply the needs of the plant during the vegetative stage of its growth cycle. High levels of nitrate-nitrogen will encourage rapid leaf and shoot growth and maximise the potential of the young plant to produce fruit and flowers later in its life. The **BLOOM** formulations are dedicated to the fruiting and flowering stage of plant growth, containing reduced levels of nitrogen but greatly enhanced levels of phosphorus and potassium, the elements required for the development of heavy buds and flowers.

Hard Water

There are areas of hard water in every country where **OPTIMUM** is sold. This is of concern mainly to hydroponic growers and we recommend **OPTIMUM HW** formulations for

IONIC BOOST

IONIC BOOST is a nutrient supplement designed to be used in the final few weeks before harvest. **BOOST** allows the grower easy control of the extra phosphorus and potassium that can lead to bumper yields. **BOOST** is an ideal addition to **Growth Technology Twin Pack** solutions but can also be used very effectively with any good quality nutrient solution of the **BLOOM** variety.



Ask your retailer for the Growth Technology hard water information leaflet.

all hydroponics in hard water areas. **OPTIMUM HARD WATER** solution is much more acidic than the standard formulation. This is achieved by careful selection of the component mineral salts. A more acidic solution will neutralise bicarbonates on its own. This will reduce the amount of acid needed to control the pH and thus reduce the chance of phosphate accumulation. **OPTIMUM HARD WATER** solution is also specially formulated to take account of the minerals, such as calcium, that are usually present in hard water. This will reduce the problems associated with hard water and allow the grower to maintain his tank for longer periods between changes.

OPTIMUM and EUROPONIC are available in the following sizes:
2 litre 10 litre 40 litre

Designed by professionals ... fine tuned by experience

Instructions for use



Making up a twin pack like **OPTIMUM** or **EUROPONIC** is very easy. It is necessary to know the volume of the tank. This is called *final tank volume*.

For every 10 litres of final tank volume

1. Add 35 ml of solution A to the nutrient tank.
2. Add tapwater to the nutrient tank until it is approximately half full. Stir vigorously.
3. Add 35 ml of solution B to the container.
4. Add tapwater until container is full.
5. Now check the conductivity of your solution using a meter. Suggested values are given below. It may be necessary to add more concentrate. Make sure to add equal amounts of A and B and stir well in between. Use an EC meter to determine the exact conductivity. Make a careful note of the amount of nutrient concentrate needed to get the conductivity right. Write this figure on the wall near the tank. Then add the right amount each time a batch of solution is made up. This will make the job quicker and more efficient.
6. Check and correct pH – see note on pH below. Make a note of how much acid is required to bring pH to desired level. Write this on the wall as well. This information will save you time.

Now make a final check of both pH and Conductivity using meters.

Add IONIC BOOST during the flowering cycle

1. Make up an **OPTIMUM BLOOM** or **EUROPONIC BLOOM** formulation in the usual way.
2. Stir tank thoroughly.
3. Add **IONIC BOOST** to tank at the rate of 1 ml/litre.
4. Stir again then check and correct the pH.
5. Use nutrient in the normal way. **IONIC BOOST** can be added to the tank on a weekly basis for the final six weeks before harvest.

The tank of full-strength nutrient solution is now ready for use.

Remember to give it a stir before using. Keep it covered when not being used.

If half-strength solution is required just mix with an equal volume of tap water in a bucket or watering can.

Conductivity

The conductivity of a solution is usually referred to as the EC or CF of that solution. It is simply a way of measuring the 'strength' of a solution by using a meter that passes a weak electric current through it. It is possible to make up and use these solutions without using a conductivity meter, but the wise grower will always use one for final adjustment. For recirculating systems, such as NFT, the grower will certainly need a meter to monitor the changing conductivity of the nutrient in the tank. Conductivity meters are inexpensive and reliable and can be obtained from a local hydroponic supplier.

Material Safety Data Sheets are available from Growth Technology on 01823 325291 or online at www.growthtechnology.com/safety.htm

pH

pH is a measurement of *acidity* or *alkalinity*. On a scale of 0 to 14 neutrality is expressed as 7. Higher numbers are alkaline, lower numbers are acidic. The ideal pH for these nutrient solutions is 5.5–6.2. pH can be measured with a meter or with indicator solution and is then corrected by adding small amounts of **pH UP** which is an alkaline solution and will raise the pH, or **pH DOWN** which is acidic and will lower it.



Ask your retailer for the Growth Technology pH information leaflet.

Suggested pH and conductivity levels

Application	Nutrient	pH Range	Conductivity
NFT, FLOOD & DRAIN, PERLITE	OPTIMUM	5.5–6.2	1.8–2.5 mS (18–25 CF Units)
AS ABOVE IN HARD WATER AREAS	OPTIMUM HW	5.5–6.2	1.8–2.5 mS (18–25 CF Units)
ROCKWOOL	EUROPONIC	5.5–5.8	1.5–2.0 mS (15–20 CF Units)