Hydrocrop

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HydroSol®

Complete plant nutrition for liquid feeding

HydroSol is an advanced water soluble balanced plant feed consisting of two parts; HydroSol-A and HydroSol-B, that has been specially developed for use in soil-less cultivation systems. With an elevated profile of high quality nutrients and trace elements that is ideal for crops grown hydroponically, in inert media or coco coir, HydroSol is suitable for virtually any plant capable of being grown without soil. HydroSol is, however, also an excellent multinutrient feed for soil-grown plants in environments where nutrients are quickly depleted, such as glasshouses and container/pot plants.

The HydroSol dry mixes are used to prepare two separate highly concentrated stock solutions, which are then further diluted and combined to produce the feed solution that is delivered to the plants. HydroSol has a fully dissolving formulation that helps prevent blockages in irrigation lines, drippers and sprinklers and can be applied by either inline fertigation, nutrient tank dosing or hand watering. With 1kg of HydroSol-A and HydroSol-B making up to 2000 litres of feed-strength solution, HydroSol is not only a versatile, but also an extremely economical alternative to ready mixed liquid feeds.

Benefits of HydroSol

- ✓ Promotes healthier crops with optimal growth, flowering and fruiting
- ✓ Versatile and economic for all types of hydroponic cultivation
- ✓ Simple to use, ideal for both experienced and novice growers
- ✓ Suitable for feeding adult plants, seedlings, transplants and clones
- ✓ Allows adjustment of nutrient ratios for different stages of growth
- ✓ Hydrogen ion buffered to prevent pH swings in the feed solution
- ✓ Stable chelated micronutrients for more efficient uptake by plants
- ✓ Fully water soluble with no residue to block drippers and sprinklers
- ✓ Free of any excess salts that can damage plant roots and foliage
- ✓ Formula nutrient analysis provided for transparency and reference
- ✓ Strong resealable bags for easy handling and long product shelf life

HydroSol-A

Nitrogen/Calcium/Magnesium
(NPK: 15-0-0+20CaO+4MgO)
Chloride and PGR free

Nitrogen total (N)	15%
Nitrate nitrogen ($N\text{-}NO_3$)	14%
Ammoniacal nitrogen ($N\text{-}NH_4$)	1%
Phosphorus (P_2O_5)	0%
Potassium (K_2O)	0%
Calcium (CaO)	20%
Magnesium (MgO)	4%

HydroSol-B

Nitrogen/Phosphorus/Potassium/Magnesium/
Sulphur/Trace Elements
(NPK: 5-17-36+4MgO+14SO_3+TE)
Chloride and PGR free

Nitrogen total (N)	5%
Nitrate nitrogen ($N\text{-}NO_3$)	5%
Ammoniacal nitrogen ($N\text{-}NH_4$)	0%
Phosphorus (P_2O_5)	17%
Potassium (K_2O)	36%
Magnesium (MgO)	4%
Sulphur (SO_3)	14%
Boron (B)	0.028%
Copper (Cu) chelated	0.006%
Iron (Fe) chelated	0.150%
Manganese (Mn) chelated	0.057%
Molybdenum (Mo)	0.004%
Zinc (Zn) chelated	0.029%

Directions for use

NOTE: *To avoid unwanted precipitation in the nutrient solution, do not mix HydroSol-A and HydroSol-B together until fully diluted.*

CAUTION: *The HydroSol dry mix/powders can cause skin irritation and severe eye irritation. Take care when handling the dry mixes to avoid any prolonged skin contact and contact with eyes. Avoid breathing in product dust and wash hands after use. Store in original packaging and keep away from children.*

Preparing the concentrated stock solutions

The concentrated stock solutions are prepared by dissolving HydroSol-A and HydroSol-B in two separate opaque plastic containers of water. The recommended concentration for each stock solution is 10% (i.e. for each 1 litre of water add 100g of HydroSol dry mix). The HydroSol dry mixes will dissolve most rapidly in lukewarm water.

Shake the packages before use to ensure the contents are well mixed.

Example: To create 2 litres of each concentrated stock solution at 10% concentration -

- Add 2 litres of lukewarm water to a 2.5 litre opaque plastic container with a tight filling lid.
- Carefully pour in 200g (i.e. 100g per litre) of HydroSol-A dry mix.
- Stir for 2-3 minutes until HydroSol dissolves.
- Place lid on container and label the container 'HydroSol-A'.
- Repeat the above steps, using a separate container of water, for HydroSol-B. Label the container 'HydroSol-B'.

Preparing the feed strength solution from the stock solutions

The feed strength nutrient solution is prepared by further diluting the two concentrated stock solutions together in water. The recommended combined concentration for a feed strength solution for mature plants is between 1% and 2% (i.e. for each 1 litre of water add between 5ml and 10ml of HydroSol-A stock solution and an equal volume of HydroSol-B stock solution).

Each 1ml of stock solution added per litre of water will raise the EC (Electrical Conductivity) of the feed solution by approximately 0.1mS/cm / 100µS.

Example: To create 50 litres of feed strength solution at 1.7% concentration for use in a hydroponic system -

- Add 50 litres of water to the system nutrient feed tank.
- Add 425ml (i.e. 8.5ml per litre) of HydroSol-A stock solution and stir to mix.
- Add 425ml (i.e. 8.5ml per litre) of HydroSol-B stock solution and stir to mix.

The above procedure will create a feed strength solution with an EC of approximately 1.8mS/cm / 1,800µS (in addition to the background EC of the source water). This is a good ‘general purpose’ feed strength suitable for growing a wide range of plants hydroponically.

In recirculating grow systems, check the EC of the feed solution periodically (at least every other day) and add additional HydroSol stock solutions as required to maintain the desired strength. Use a ½ strength feed solution for young plants.

Example: To create 10 litres of feed strength solution at 1% concentration for hand watering of plants in soil/compost -

- Fill watering can with 10 litres of water.
- Add 50ml (i.e. 5ml per litre) of HydroSol-A stock solution and stir to mix.
- Add 50ml (i.e. 5ml per litre) of HydroSol-B stock solution and stir to mix.

Apply the solution around the root area at the base of plants at a rate of approximately 2.5 litres per $1m^2$, as a normal watering on a 1 to 2 week basis. You may need to adjust the mixture and volume applied to suit your own plants and soil conditions. Use a ½ strength feed solution for young plants.

Maintaining the pH of the feed solution

Plants grown in soil-less cultivation systems require a mildly acidic environment around the root zone. The pH of the feed solution should always be maintained between 5.6 and 6.4 (ideally 5.8 to 6.2), as values outside this range will adversely affect plant nutrient uptake. Higher pH levels may also cause precipitation of some of the nutrients in the solution. HydroSol is pH buffered so, although somewhat dependent on the source water, feed solutions typically require little pH maintenance once the desired pH level is achieved.

It is recommended to use a 'pH down' product based on phosphoric acid to lower the feed solution pH.

Adjusting nutrient ratios for different stages of growth

When used together in equal volume, HydroSol-A and HydroSol-B provide complete nutrition for the entire crop life cycle. Plants have the ability to remove nutrients from the feed solution selectively as required, so the concentrations of individual nutrients need not be monitored and controlled.

Nutrient requirements of flowering plants do, however, change as they mature and in environments where the entire crop is at a similar stage of growth, and optimum productivity is sought, it may be desirable to adjust the balance of applied nutrients accordingly. In particular, since nitrogen promotes leafy growth, it is common practice to reduce nitrogen input at the start of fruiting to discourage profusive leaf development.

HydroSol application can be adjusted for different growth stages by preparing the feed solution as follows:

For flowering/fruiting crops, use the HydroSol-A and HydroSol-B stock solutions in a 60/40 ratio (i.e. 60% HydroSol-A and 40% HydroSol-B, or 1.5 to 1) during the vegetative growth stage, then transition to equal volumes of both stock solutions from the time of first flowering, then to a 40/60 ratio (1 to 1.5) from the time of first fruit development.

For leaf vegetative crops such as salad greens, use the HydroSol-A and HydroSol-B stock solutions either in a 60/40 ratio (1.5 to 1), or in equal volume, for the entire grow.

You may need to alter the relative proportions to suit your own plants and growing environment.

Renewing the feed solution in recirculating grow systems

In systems where the feed solution is continuously recirculated (e.g. NFT hydroponic systems), the nutrients remaining available to plants can become progressively out of balance. This is particularly evident where plants of a single type and age are growing in the system and removing the same nutrients from the feed solution at similar rates. If left unaddressed, nutrient lockout and deficiencies or toxicities may eventually occur. It is therefore recommended that the nutrient feed tank is periodically drained and refilled with a fresh feed solution.

The ‘spent’ feed solution, which still has nutritional value, may be used as a general liquid fertiliser for garden plants and shrubs.

Preventing nutrient build-up in coco coir and inert media

In coco coir and inert media such as rockwool, unused nutrients are left behind in the substrate by growing plants. The leftover nutrients can build up to levels that are toxic to plants over time, particularly in warm conditions when plants take up more water and fewer nutrients. Coco coir also creates a slightly higher pH (more alkaline) environment around the root zone if feed solution is left to stand in the media, which can lead to iron and manganese deficiencies in the crop.

To prevent excess nutrient accumulation and maintain an appropriate pH, it is recommended to irrigate to excess so that 15-20% run off is achieved with each feeding. Alternatively, the media may be periodically flushed with a ⅓ - ½ strength feed solution before recommencing the usual feed schedule.

Product storage

Store the HydroSol dry mixes sealed in the original packaging in a cool dry place away from direct sunlight. The HydroSol dry mixes are hygroscopic (i.e. they will absorb moisture if left exposed to air). The nutritional performance will, however, not be affected if the product becomes damp due to air moisture.

Store prepared HydroSol stock solutions in opaque containers away from direct sunlight. Storage in transparent containers will encourage microbial growth in the nutrient-rich liquid.

Guide to hydroponic EC ranges for common crops

The broad range feed solution EC values given below are for guidance only and specific plant requirements will vary with seasonal and regional climatic conditions. Plants require a higher nutrient concentration in the feed solution during the cooler winter months and a lower concentration during the hotter summer months.

During the vegetative growth stage, it advisable to maintain the EC of the feed solution at the lower end of the plant's range. A ½ strength solution should be used for seedlings and very young plants. Where plants of different types are grown together in the same system, acceptable productivity will generally be achieved using a feed solution with a 'middle-ground' EC value.

pH should always be maintained between 5.6 and 6.4, as values outside this range will adversely affect plant nutrient uptake.

Plant Type	EC Range mS/cm
Aubergine	2.4 - 3.4
Basil	1.0 - 1.6
Bean	1.8 - 2.4
Beetroot	1.4 - 2.4
Broccoli	2.8 - 3.4
Brussel sprout	2.4 - 3.0
Cabbage	2.4 - 3.0
Carrot	1.6 - 2.0
Cauliflower	1.4 - 2.0
Celery	1.8 - 2.4
Chicory	2.0 - 2.4
Chilli	1.6 - 2.8
Chives	1.8 - 2.4
Courgette	1.8 - 2.4
Cress	1.2 - 2.4
Cucumber	1.6 - 2.4
Endive	2.0 - 2.4
Fennel	1.0 - 1.4
Garlic	1.4 - 1.8
Leek	1.4 - 1.8
Lettuce	0.8 - 1.2

Plant Type	EC Range mS/cm
Marjoram	1.6 - 2.0
Melon	2.0 - 2.4
Mint	2.0 - 2.4
Okra	2.0 - 2.4
Onion	1.8 - 2.4
Pak-choi	1.4 - 2.0
Parsley	0.8 - 1.8
Parsnip	1.4 - 1.8
Pea	0.8 - 1.8
Pepper	2.0 - 2.8
Potato	2.0 - 2.4
Pumpkin	1.8 - 2.4
Radish	1.6 - 2.2
Sage	1.0 - 1.6
Spinach	1.8 - 2.4
Squash	1.8 - 2.4
Strawberry	1.6 - 2.0
Swiss chard	1.8 - 2.2
Thyme	0.8 - 1.6
Tomato	2.0 - 3.4
Watercress	0.4 - 1.8

Disclaimer

The information in this document is provided in good faith, however product application and use are the absolute responsibility of the buyer. It is recommended to trial first on a small scale before any changes to rate, application or other changes in your usual cultivation practices are implemented. As usage circumstances can differ and the application of our products is beyond our control, Hydrocrop cannot be held responsible for any negative results.

Irritant

Irritating to the skin. Risk of serious damage to eyes. Wear protective gloves and eye protection. Avoid breathing in product dust. Wash hands after use. Keep out of reach of children.

In case of contact with eyes rinse immediately with plenty of water and seek medical advice.

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