

Specialty fertilizers for professional growers

Ornamental Horticulture 2018



ICL Specialty Fertilizers, focus on fertilizer performance in ornamental horticulture

At ICL Specialty Fertilizers we are committed to bring you, the grower, proven performance. Performance in our top-end products such as Osmocote and Peters and quality in the outstanding service provided by our technical advisors who work closely with you and for you in the field.

We understand the challenges you face and strive to provide you with innovative products that help you solve any issue. Whether you are dealing with a challenging cultivation situation involving sensitive crops or issues with irrigation water, our skilled sales force and our R&D department is continuously looking for solutions to help you grow better plants and make your life easier.



ICL Specialty Fertilizers' key drivers for quality in ornamental horticulture are:

- **Proven performance in fertilizers**
Achieved through continuous research, years of experience and stringent quality control.
- **Expert advice**
Our teams of technical advisors offer recommendations tailored to your individual needs to help you make the most out of your fertilizer plan.
- **Grow green**
Osmocote, the green choice, allows you to grow more with less.
Use our coated fertilizers to comply with regulations and decrease fertilizer usage and run-off.

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Section I

ICL Specialty Fertilizers products for ornamental horticulture

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1.1 Osmocote ICL Coated fertilizers



1.1.1 Osmocote Product development for growers

Osmocote revolutionised the fertilizer market in 1967 with the first generation of Osmocote coated fertilizers. In the 50 years since its launch, Osmocote has become a trusted product that is used by thousands of growers around the world. ICL Specialty Fertilizers is proud that the essence of coated fertilizers is more relevant today than ever. At the same time, new technologies have been fully embraced to make new release patterns and other unique features a reality so that we can continue to meet the needs of growers. Now and in the future.

Whatever your needs as a professional grower, you'll find an Osmocote solution to match your situation and your crops.

Ornamental horticulture

Osmocote proven performance, highest safety for plants

<p>Osmocote®</p> <p>Osmocote coating technology</p> <ul style="list-style-type: none"> ✓ 100% coated NPK ✓ Full range of longevities available: 3-4M, 5-6M, 8-9M & 12-14M <p><i>The original</i></p> <p>Controlled release fertilizer</p> <p>1st Generation Coated Fertilizer</p>	<p>Osmocote® Pro</p> <p>Additional to Osmocote:</p> <ul style="list-style-type: none"> + Trace element package included in the granules + Orange and white colour tracer for easy recognition <p><i>Proven performance</i></p> <p>Controlled release fertilizer</p> <p>2nd Generation Coated Fertilizer</p>	<p>Osmocote® Exact</p> <p>Additional to Osmocote Pro:</p> <ul style="list-style-type: none"> + Pre-defined release patterns + Designed to perform in every situation + Meets highest quality standards + Highest safety for plants + Premium trace element package included + Colour tracer for each longevity for easy recognition <p><i>The safest Osmocote ever</i></p> <p>3-4 5-6 8-9 12-14 16-18 Standard</p> <p>Patterned release fertilizer</p> <p>3rd Generation Coated Fertilizer</p>	<p>Osmocote® Exact DCT®</p> <p>Additional to Osmocote Exact:</p> <ul style="list-style-type: none"> + DCT (Double Coating Technology) included. DCT <p>Innovative technology which enables programmed release patterns.</p> <p>Especially suitable for challenging growing conditions.</p> <p><i>Taking fertilizers to a higher level</i></p> <p>Hi-End Protect High K</p> <p>Programmed release fertilizer</p> <p>4th Generation Coated Fertilizer</p>
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The **Green** choice



The 8 guarantees of Osmocote Exact

The safest Osmocote ever!

Trust in proven performance

Choosing Osmocote coated fertilizers means choosing proven performance for the best results for your crops. A coated fertilizer must do what you expect from it. It needs to be predictable and consistent in its performance for good results. Over decades, Osmocote has proven to be worthy of your trust. Our years of experience, tried and tested coatings, pure and best quality raw materials used in our products and continuous quality control are the pillars of this trust. This is what you can expect from us at ICL Specialty Fertilizers: guaranteed high-quality crops and the best return on investment for your business.

The quality of your plants is guaranteed thanks to optimum growth. Plants grow better because Osmocote provides them with the nutrients they need exactly at the moment they need them. This gradual nutrient supply ensures that plants experience less disease pressure and

can grow into vital, healthy specimens. The plants even keep their vitality and health when they are delivered to the consumer. This is yet another benefit that comes from the continued release of nutrients from Osmocote fertilizers... customer satisfaction!

Be in control of your plants
Rely on Osmocote Exact

Osmocote Exact Standard

- Continuous nutrition during the growth season.
- All-round application: suitable for all crop types and many situations.
- Available in longevities: 3-4M, 5-6M, 8-9M and 12-14M.

Osmocote Exact Lo.Start

- Longevity 16-18M.
- Relatively low nutrient release during first months after application.
- Suitable for sensitive crops.

Osmocote Exact Hi.End

- Less nutrition at the start of the growth cycle, more nutrition after postponed start.
- Ideal for plants with higher nutrient demands in the later growth phases.
- Very efficient thanks to perfect match of nutrient availability and the plants' needs.
- Available in longevities: 5-6M, 8-9M and 12-14M.

Osmocote Exact Protect

- Up to three months postponed start of nutrient release, depending on the longevity.

- Specially developed for autumn and winter pottings.
- Ideal for situations where low EC levels are required after potting.
- Available in 12-14M.

Osmocote Exact High K

- Steady and efficient NPK release during the season.
- N:K ratio potassium-based.
- For compact plant growth or in case of irrigation water containing nitrogen.
- Available in longevities: 5-6M, 8-9M.

1 Consistency

Osmocote Exact's longevities and nutrient release patterns are guaranteed year by year, month by month, bag by bag. You know exactly what you buy and what your plants receive. As a grower, you are in control and can rest assured that the fertilizers will not cause surprises during the season.

2 Safety in release

What's in Osmocote, also comes out. Not all fertilizers release trace elements sufficiently, but Osmocote gets each and every element where it needs to act.



Osmocote Exact



Other CRF - disintegrates when in contact with wetting agent

3 Safety against chemicals

Osmocote's resin coating is resistant against all kinds of plant protection products and wetting agents.



Trial setup: base dosage of coated fertilizer (3.5g/l) + additional water-soluble fertilizer (target dosage 7.5g/m²/week).
Conclusions: there is no compensation for growth lost during the growing season. Plants grown with Osmocote Pro show much better quality.



4 Safety in high and low pH levels

A special process in the production of Osmocote secures the availability of trace elements for your crops, even when pH levels in the growing medium rise during the growth cycle.

5 Safety through colour coding

Each Osmocote Exact longevity has its own colour for easy recognition. About 4% of the granules in a bag are colour coded according to

longevity: red for 3-4 months, brown for 5-6 months, blue for 8-9 months and yellow for 12-14 months. This colour coding system avoids mistakes and makes it easy to tell if the right product has been added to the substrate.



6 Safety in plant hole dibbling

Osmocote Exact granules are uniform in size, which makes them perfect for dibbling with dosage machines. Less abrasion and bruising ensure longer operational times and interference-free function of the equipment.



7 Low release rate during the first stage of cultivation

Our patented Osmocote coating technology and the use of only the best raw materials ensure even granules and a safe release of fewer nutrients during the first stage of

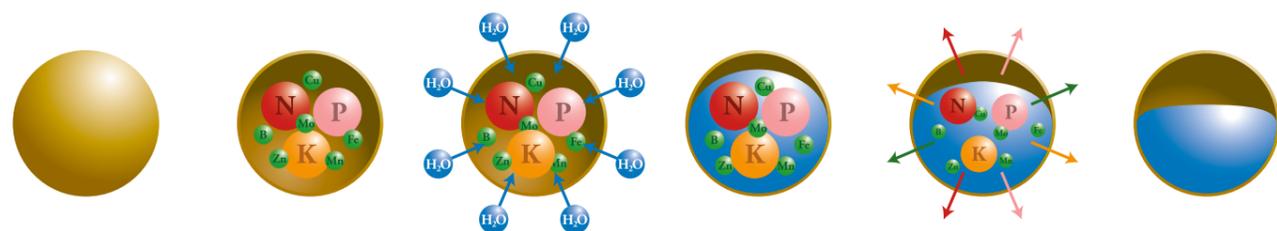
cultivation. Thanks to Osmocote Exact's low initial release rate it is suitable for numerous cultures, even ones grown in greenhouses or tunnels.

8 Safety in heat

Osmocote Exact has even proved its performance in extremely difficult circumstance. With temperatures reaching 40 degrees Celsius, Osmocote Exact's nutrient release remained secure and controlled. The laboratory trials from spring 2000 support the manufacturer's claims according to a research article on Osmocote's nutrient release published by the Fachhochschule Osnabrück in Germany. 'All Osmocote Exact product types release the nutrients gradually and evenly, even in severe temperature fluctuations. (Prof. Dr. Schacht 5/2003).

The Osmocote working principles

Osmocote are coated fertilizers containing nitrogen, phosphorus and potassium.



Every granule is covered by an organic resin coating that regulates the daily release of nutrients to the plant.

Granules contain NPK, B, Cu, Fe, Mn, Mo and Zn.

Water penetrates the coating and dissolves the nutrients inside the granule.

Osmotic pressure releases the dissolved nutrients through the granule coating.

Influenced by temperature, the nutrients are released at a constant, regular and controlled rate during the longevity. Effective and efficient!

Once empty, the coating eventually breaks down.

Osmocote fertilizers are available in five different longevities: 3-4, 5-6, 8-9, 12-14 and 16-18 months. So there is an Osmocote for every situation and crop type. The colour coding on the packaging indicates the longevity. Osmocote Exact and Osmocote Exact DCT products also contain colour tracers for easy recognition. This ensures you always add the fertilizer with the correct longevity to your substrate!



The fertilizer ingredients and the thickness of the coating determine the longevity. The longevities in turn apply to an average temperature of 21°C. Higher temperatures accelerate the nutrient release, while lower temperatures slow it down.



Average temperature influence on longevity

16°C	21°C	26°C
6-7 months	5-6 months	4-5 months

Other factors such as salt levels, pH of the substrate, microbial activity, water quality and rainfall do not influence the nutrient release, making Osmocote the most reliable coated fertilizer.





1.1.2 Osmocote Exact DCT - 4th generation
Osmocote Exact Hi.End, Protect and High K

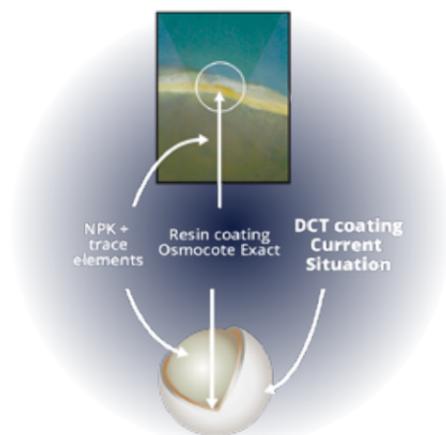
4th generation Osmocote: Powered by DCT
Taking fertilizers to a higher level

Our 4th generation Osmocote features the biggest innovation in coated fertilizers to date: Double Coating Technology. DCT for short, this technology allows for Programmed Nutrient Release. DCT is a second coating, of a different composition to the resin coating, applied around an Osmocote Exact granule. The DCT coating on the granules postpones the start-up of the nutrient release: instead of immediate start-up after application of the product, nutrient release is postponed for up to three months (depending on the longevity).

DCT - unparalleled possibilities!

Revolutionary release patterns can be realised by adding more or less DCT granules to a product. These release patterns are the answer to challenging growing circumstances that you may face at your nursery, such as the use of coated fertilizers in tunnels and greenhouses, or potting in the autumn or winter.

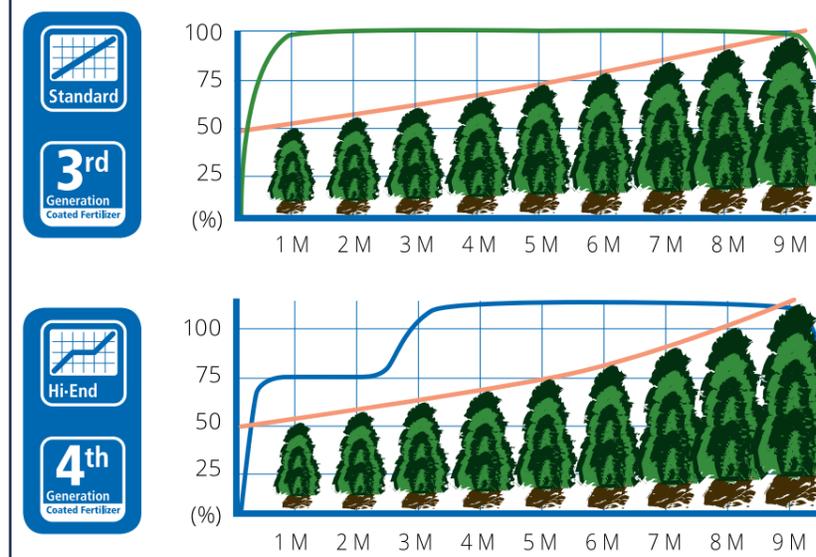
Find out more about the Osmocote Exact products powered by DCT on page 13-15.



Osmocote Exact Hi.End:
programmed nutrient release for
ultimate plant nutrition

A quarter of Osmocote Exact Hi.End granules are DCT granules*. A second coating layer on the DCT granules postpones the release of nutrients in the first months after application. This keeps EC values lower in the first months than when Osmocote Exact Standard is applied at the same rate. This feature makes Osmocote Exact Hi.End ideal for plants that benefit from low ECs at the start of the growth cycle while also benefitting from increased nutrients in the second growth phase.

Daily nutrient release of 3rd generation Osmocote Exact Standard compared to 4th generation Osmocote Exact Hi.End

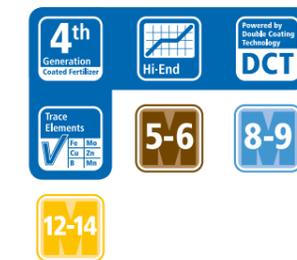


Osmocote Exact Hi.End's programmed release nutrient supply is developed especially to fulfill the plant's needs optimally during its growth. This means it delivers nutrients when the plant needs it. Part of the release is postponed until later in the growing season, exactly meeting the plant's requirements.

Osmocote Exact Hi.End grower benefits

- 1 Best value for money: highest efficiency thanks to programmed release. Less nutrients released at the start and more in the second phase of the growth cycle
- 2 Ideal for crops grown in elevated temperatures, such as in tunnels and greenhouses
- 3 Safe and reliable: based on proven Osmocote Exact technology
- 4 Time and cost effective: in many cases Hi.End's integrated nutrient boost eliminates the need to apply additional fertilizers during the growing season
- 5 Plants with greater vitality
- 6 Higher return-on-investment thanks to more quality class 1 plants

*40% in Osmocote Exact Hi.End 12-14M



Ornamental horticulture



Osmocote Exact High K: Containing high potassium for compact growth



Osmocote Exact High K with high potassium content has been specially developed to support compact plant growth and for use in situations where irrigation water contains high nitrogen levels.

Thanks to our innovative technology, the Osmocote Exact High K range shows higher efficiency and ultimate performance.



Osmocote Exact High K grower benefits

- 1 Compact plant growth, thanks to a new potassium source and low phosphorus, which makes this the ideal product for CNS crops which should grow compact pot plants, bedding plants and perennials
- 2 Perfect branching and healthy roots, thanks to maximum efficiency in nutrient release
- 3 Full trace element package for beautiful leaf shine and leaf colour
- 4 Boosts performance and continues to positively enhance quality, even after plants are sold to consumers
- 5 Maximum safety for plants, even in demanding cultivation conditions
- 6 Can be used in combination with irrigation water containing high nitrogen levels



Ornamental horticulture



Osmocote Exact Protect: specially for autumn and winter potting

Osmocote Exact Protect is powered by DCT and developed for container nursery stock crops potted in autumn and winter seasons.

Designed to be used in situations when plants are dormant, it contains only double coated granules. This means that nutrient release is postponed with hardly any release during the winter, so EC in the

growing media consequently remains low during the first two to three months. Mix Osmocote Exact Protect into the growing medium. Topdressing is not recommended.



Osmocote Exact Protect grower benefits

- 1 Fits exactly with plant need, because it is specially designed for container nursery stock potted in autumn and winter
- 2 Programmed nutrient release for providing the nutrient requirements of the plant. Ideal in situations where low EC is required in the first period after application
- 3 Highly effective: release is postponed until the plant is able to take up the released nutrients
- 4 Safe and reliable: based on proven Osmocote Exact technology
- 5 Time and cost effective: Osmocote Exact Protect satisfies the plant's nutrient need in just one application. Refertilization in spring is often not required
- 6 Improves plant quality and ultimately your return on investment

For autumn potting it is recommended to ask your ICL Fertilizer advisor for detailed advice.



1.1.3 Osmocote Exact Standard – 3rd generation

Osmocote Exact Standard, Mini, Tablet

**Osmocote
Exact**

Osmocote Exact: the safest Osmocote ever

Osmocote Exact was the first and is still the only 3rd generation fertilizer to be introduced. It provides nutrient release at a constant rate during the growing season. The nutrient release is consistent and matches the plant's needs closely, making Osmocote Exact very efficient and safe for plants.

The advantage of Osmocote Exact is that it is suitable for almost every growing situation and that you can count on its reliable performance. Thanks to our special production process and stringent quality control, each bag of this product

contains the same high quality fertilizer with a guaranteed release pattern. For plants with a higher requirement of nutrients in later growing phases it is recommended to use Osmocote Exact Hi.End (4th generation).



Osmocote Exact grower benefits

- 1 The most reliable coated fertilizer: the best performance guaranteed
- 2 Very user-friendly and suitable for all ornamental horticulture crops
- 3 Efficient and environmentally sustainable
- 4 Unique colour coded granules in product for each longevity provide easy recognition in the growing medium



Osmocote Exact Mini: mini granules, big advantages for small volumes

Osmocote Exact Mini has been specially developed for applications in small substrate volumes, such as plugs and trays. The granules are between 0.85 and 2.0mm in size and this ensures optimum dispersion of the nutrients in the substrate. These mini granules produce maximum results in volumes as low as 20ml. Osmocote Exact Mini is compact in size, but big in results!

Osmocote Exact Mini can be applied by mixing it into the growing medium or by topdressing once the roots have developed. It is ideal for bridging the period from rooting to re-potting because substrate used for cuttings is generally very low in nutrients and applying fertilizer via sprinklers is inconvenient.

Even though the granules are smaller than Osmocote Exact, this mini version still performs just as mightily and contains a complete package of trace elements and magnesium. The product is packaged in resealable 10kg buckets and is very economical in use!

Use Osmocote Exact Mini after rooting for slow-rooting and sensitive young plants to ensure healthy growth.

**Osmocote
Exact
Mini**



Osmocote Exact Mini grower benefits

- 1 Perfect for use in pots with small substrate volumes, such as plugs or trays
- 2 Strongly reduced leaching in small pot volumes: the nutrients stay in the growing medium
- 3 Uniform plant growth thanks to optimum dispersion of the granules
- 4 Optimized plant growth: 100% coated and 100% safe for plants
- 5 Each granule contains all the nutrients
- 6 Nutrition and irrigation can be seen as separate systems
- 7 Very easy to apply

Ornamental horticulture

Osmocote Exact Tablet: the power packs

Osmocote Exact Tablets provide an easy and effective way for you to administer exceptionally accurate doses of nutrients. The tablets are easy to push into the growing medium because of their cone shape. Osmocote Exact Tablets are available in two longevities.



Osmocote Exact Tablets feature a unique patented water-soluble glue system. The tablets disintegrate after the plants are watered, prevents roots from pushing the tablet out of the pot. This makes Osmocote Exact Tablets a very environmentally friendly solution.

When drip irrigation is used, push the tablet in the growing media under the drippers for optimum nutrient dispersal.

Care about your customer

Osmocote Exact Tablets are frequently applied to container plants and hanging baskets just before delivery in order to take care of nutrition for the consumer.



Osmocote Pro: lowest cost in use

1.1.4 Osmocote Pro
2nd Generation

Osmocote Pro is the best 2nd generation controlled release fertilizer with high NPK content. It contains all necessary trace elements and is available in four different longevities. These products are allrounders, mostly applied as a base fertilizer. Whatever choice you make, Osmocote Pro will deliver good results.

Osmocote Pro at base rates can be combined with water-soluble fertilizers in a fertilizer plan.

Ask your ICL Specialty Fertilizers advisor for tailored advice for your personal situation.



Osmocote Pro grower benefits

- 1 Complete nutrition (high NPK + trace elements) for optimum plant growth
- 2 100% coated: safe and reliable
- 3 Guaranteed longevity and composition
- 4 Orange / white colour coding in all Osmocote Pro longevities to ensure that your growing medium contains the best 2nd generation coated fertilizer
- 5 Very efficient in use: all nutrients are released to the plant



Important: ICL recommends Osmocote Exact, especially in the following circumstances:

- In case of salt-sensitive crops
- In case of high-value crops
- When applying coated fertilizer via plant hole dibbling
- If trace elements are essential
- In challenging circumstances, i.e. difficult to manage pH of growing medium
- In greenhouses or in covered areas
- When compact growth is required
- When applying full rates of controlled release fertilizers

Ornamental horticulture

ICL TIP

Osmocote Pro Low P

Osmocote Pro Low P: Safe and reliable



Osmocote Pro Low P is a 2nd generation controlled release fertilizer with a specific NPK ratio.

The granules are fully coated and contain NPK, magnesium and all necessary trace elements. Osmocote Pro Low P has a pre-defined longevity and can be used in

specific low phosphorus situations and phosphorus sensitive crops.

Osmocote Pro Low P grower benefits

- 1 Low P content for low phosphorus demanding crops/cultivations
- 2 Full trace element package, elevated level of trace elements
- 3 100% coated NPK, Mg and trace elements, plants are supplied with required nutrients during the whole crop cycle
- 4 Good value for money
- 5 Safe and reliable
- 6 Easy to use



1.1.5

Coated fertilizers for special purposes

Osmocote BlueMax, Osmocote Bloom, Osmocote Start, Osmocote Iron, Osmocote CalMag

Ornamental horticulture

Osmocote BlueMax: Specially formulated for use in the production of blue variety Hydrangeas



Blue-Max™ features controlled release Aluminium Sulphate (Al) to create and maintain the desired blue colour of hydrangea flowers.

With this coated approach, growers can deliver a sustained supply of Al to the plant in a safe and reliable manner. And unlike with drenches, the consistent

release within specified longevities eliminates the need for repeated applications, saving time, labour and ultimately dollars.

Osmocote BlueMax grower benefits

- 1 100% coated to limit exposure to overdoses; minimizes root burn
- 2 Consistent release eliminates repeated applications; saves time, labour and money
- 3 Risk of phytotoxicity is significantly reduced compared to drenches
- 4 Lasting colour inspires retailer/consumer satisfaction

Osmocote® Bloom

Osmocote Bloom: designed especially for bedding plants



Osmocote Bloom is ICL Specialty Fertilizers' specially-designed controlled release fertilizer for bedding plants such as petunias, geraniums and many others.

It improves the quality of the plants by delivering maximum nutrition throughout the crop cycle, selling and early consumer stages. Osmocote Bloom can also help

contribute to save on labour costs because only one application is needed in many cases.

Osmocote Bloom grower benefits

- 1 Specifically designed to achieve optimum results in bedding plants
- 2 Healthy, compact and uniform plants. Improved shelf life for consumer phase
- 3 Sustainable through lower emissions to surface and ground water. Complies with MPS regulations for nitrogen and phosphate emissions
- 4 Helps save on labour costs: only one application is needed
- 5 Easy to apply – designed for mixing into the growing medium. Osmocote Bloom's mid-size granules are perfect for mixing into smaller pots and packs
- 6 Lower EC value in the potting soil leads to better growth. Less fertilizer inputs and better results. It is not necessary to use a starter fertilizer



Osmocote Start: The short-track Osmocote

Osmocote® Start

Osmocote Start is designed to provide efficient nutrition to crops with a short cultivation cycle or for refertilization of crops during a period of approx. six weeks.

Thanks to the Osmocote coating, the nutrients are released to the plant gradually and evenly, whilst ensuring low EC values in the growing medium. This creates optimum conditions for the root development of your crops.

Use Osmocote Start in salt-sensitive vegetable crops and cuttings that have difficulty rooting. In contrast to traditional fertilizers, Osmocote Start avoids risks of excessive salt levels and nutrient leaching.

With Osmocote Start your crops always get the right nutrients. The high potassium level in Osmocote Start ensures compact growth.

Osmocote Start can be mixed into the substrate. It is also possible to apply the fertilizer on the crops, as long as you ensure that no granules remain on the leaves.



Osmocote Start grower benefits

- 1 Specialty product for compact-growing plants with a short cropping cycle
- 2 Promotes improved root growth and plant colour
- 3 Fully coated fertilizer with uniform release
- 4 Efficient nutrition thanks to greatly reduced leaching
- 5 Safe to use – low EC combined with optimal nutrient supply

Osmocote[®] Iron



Osmocote Iron: for long-lasting leaf colour and optimal photosynthesis

Osmocote Iron is a fully coated iron-releasing fertilizer. This product is unique as it ensures a controlled release of iron. It offers growers new opportunities to supply on a daily basis small portions of iron to the plants.

Osmocote Iron is ideally suited for use in iron-demanding potted plants, bedding plants, perennials, and container nursery stock. It can be mixed into the potting soil and is suitable for use with other

Osmocote products, Micromax Premium and water-soluble fertilizers (Peters). The mini granules ensure that the product can be used in small pots as well.



Osmocote Iron grower benefits

- 1 Controlled release of small quantities of iron on a daily basis and high availability in the root zone
- 2 Sustainable iron application method that results in good leaf colour and optimum photosynthesis for healthy crops
- 3 Osmocote Iron allows you to apply additional iron during cultivation on top of the recommended dose of other Osmocote products or water-soluble fertilizers
- 4 Osmocote Iron allows you to separate your irrigation from your iron fertilization! This means the iron fertilization is possible during cold and wet periods as well
- 5 By adding Osmocote Iron to your potting soil, the product does not lessen the effectiveness of other UV disinfectants. As a result, iron is always available for plants
- 6 Selected raw materials make Osmocote Iron effective even at high pH values
- 7 Osmocote Iron is extremely versatile: it can be used for potted plants and bedding plants, perennials, and container nursery stock

Iron-demanding crops:

Azalea, Berberis, Buxus, Calluna, Chaenomeles, Chamaecyparis (Blue varieties), Citrus, Cytisus, Hydrangea, Viburnum, Vinca Anthurium, Begonia, Dipladenia, Petunia, Primula, Viola.....

Osmocote CalMag: for quality and colour improvement

Osmocote CalMag is a fully-coated fertilizer that contains calcium, magnesium, and nitrogen. The advanced coating method releases the product over a period of three to four months.

This is ideal for bridging the entire growing cycle of potted plants and bedding plants. For container nursery crops and potted perennials, Osmocote CalMag offers the option of adding additional calcium during the first few months of cultivation.

Osmocote CalMag was developed for mixed applications in potting soil. The product produces excellent results when combined with other Osmocote products, especially Osmocote Exact High K, or water-soluble fertilizers.

Osmocote[®] CalMag



Osmocote CalMag grower benefits

- 1 Delivers calcium, magnesium, and nitrogen to plants in a single product, independent of the irrigation techniques used
- 2 The ideal solution for soft water as it contributes to the plant's calcium and magnesium needs
- 3 Osmocote CalMag is an efficient, controlled-release fertilizer that delivers nutrients in the daily portions necessary for immediate uptake
- 4 Ideal for use with other Osmocote products or Peters water-soluble fertilizers
- 5 Delivers calcium for the first few growing months, as is desirable for crops like perennials
- 6 Osmocote CalMag is the ideal product for adding calcium and magnesium in difficult situations (e.g. peat-reduced substrates)

Calcium / magnesium-demanding crops:

- Ericaceae (Calluna), Pieris, Leucothoe, Rhododendron
- Pot plants that grow quickly in autumn or early spring (Primula, perennials)
- Crops with slow root development (Rhododendron, Azalea, Buxus)





1.2 ICL products for topdress and mixing applications

Osmocote Topdress Fusion Technology: all nutrients can be used by the plant



When re-fertilization is required to ensure that plants are kept in good condition.

Osmocote Topdress FT is a partly coated fertilizer developed specifically for these situations in container nursery stock. Mainly the nitrogen has a longevity. When topdressed, it provides plants with a quick green-up effect and sufficient nutrients for four to five months. The unique Fusion

Technology (FT) ensures that the product sticks to the growing medium, so that no fertilizer is lost if pots are blown over in windy conditions.

As the product contains a special sticking compound, it is advised that all applicators should be cleaned and dried prior to each use.

Osmocote Topdress FT grower benefits

- 1 Sticks to the growing medium thanks to Fusion Technology – no loss of fertilizer if pots are blown over. All nutrients stay available to the plants
- 2 Quick plant response. Contains controlled-release nutrients as well as fast and slow-release nitrogen and phosphorus
- 3 Dust-free and fine granule size for even distribution
- 4 Contains extra trace elements for greening effect



4-5

Ornamental horticulture



Osmoform: the slow release fertilizers for a quick colour boost

Osmoform NXT | Osmoform High N.

Start&Gro®

Start&Gro: specialized fertilizer for potted, bedding and all container nursery plants

Start&Gro is the starter fertilizer offered by ICL Specialty Fertilizers for potted, bedding and all container nursery plants. Start&Gro is designed to be premixed in the substrate to fertilize crops for the first weeks of the cultivation.

Start&Gro grower benefits

- 1 Balanced NPK analysis
- 2 Free flowing
- 3 Good mixability
- 4 100% water-soluble
- 5 Not dusty
- 6 High chelated trace elements level

Osmoform® NXT



Osmoform NXT: slow-release nitrogen and potassium

The potassium in Osmoform NXT is released slowly thanks to SilK technology. Potassium and silicon are bound together in a slow-dissolving three-dimensional matrix.

Silicon is important for moisture regulation, protein synthesis, starch storage, and the activation of enzymes. The SilK technology means that a greater amount of potassium is available for the plant in the soil. This improves the strength and structure of plant cells and protects the plant against disease, frost, and drought. SilK also prevents essential nutrients from leaching away.

Osmoform NXT grower benefits

- 1 Slow-release nitrogen and potassium
- 2 Sticks to the potting soil, so it doesn't fall out of the pot
- 3 Rapid start and a rapid greening effect
- 4 Efficient nitrogen, less sensitive to leaching
- 5 NPK, magnesium, and trace elements with a high iron content
- 6 Dust-free and easy to use for in-pot dosing

Top dressing with Osmoform helps to quickly bring colour to container nursery stock. The Osmoform product range are granulated slow release fertilizers that contain NPK, magnesium, and trace elements in most cases. Nitrogen and potassium are available to the plant over a period of 8 to 10 weeks.

Nitrogen is released gradually through the breakdown of methylene urea chains. These chains are primarily broken down by temperature and bacterial activity. In some products also the potassium is slow release.



Osmoform® High N



Osmoform High N: the slow-release fertilizer for nitrogen-fixing substrates

Osmoform is ideal for bark based potting media to provide a sustained nitrogen source to overcome nitrogen drawdown by microbial actions of the media for up to 10 weeks.

The components that substitute peat in substrates often demand more nitrogen, to off-set nitrogen fixation. Osmoform High N only contains slow-release nitrogen, which makes this the ideal product when using (partly) peat-reduced substrates. Furthermore the high nitrogen content ensures a good start-up supply for your crops. Osmoform High N granules have a 0.5 - 1.4 mm diameter and spread easily in the growing medium.

Osmoform High N grower benefits

- 1 Quick start for a quick greening effect
- 2 Slow-release nitrogen, compensates the nitrogen-fixation of the non-peat components in the substrate
- 3 Excellent price-quality ratio
- 4 Fine granules for optimal dispersion in the substrate

Ornamental horticulture

1.3 ICL Water-soluble fertilizers



Definition of soft and hard water		
Water quality	mg/L HCO ₃	mg/L CaCO ₃
Soft water	0-60	0-50
Normal water	60-150	50-125
Hard water	>150	>125

Water-soluble fertilizers

Starting point to determine the best water-soluble fertilizer in your growing circumstances: water quality. The importance is often underestimated.

Fertilizer and water have to work in perfect harmony so the fertilizer will contribute in the best possible way to produce high quality plants with a high sales price. Irrigation water quality is the root cause of many crop and growth problems. That's why you need to have your water analyzed so you can pick the right fertilizer for your particular crop and growing situation. This is crucial because salts in the irrigation water impact EC and pH levels in the potting soil, which in turn affects the crop.

- Step 1** Have your irrigation water analyzed (irrigation water is the water you use to water and feed your plants). Don't just test the pH and EC values: the level of bicarbonate (HCO₃) as well as the composition (the different elements) is also key
- Step 2** Determine whether acidification of the water is needed. We recommend acidifying the water if the bicarbonate levels are higher than 2.5mmol/litre (=152.75g/litre). The right way to acidify depends on a number of factors. Please contact your ICL Specialty Fertilizers advisor for tailor-made advice. Remember that the quality of the water can change when you mix spring water with rainwater. It is also important to remember to change your fertilization plan if your rainwater supply is replenished
- Step 3** Select the right Peters fertilizer for your situation

Consult your ICL Specialty Fertilizers advisor for tailor-made advice during every step of this plan to ensure the most ideal water-soluble fertilizer.

Why choose Peters?

Why should you choose Peters fertilizers? And what are the advantages of using Peters products? Here are 3 reasons:

1. **Peters takes account of your water quality**
2. **Peters leads the way technically and is of the highest quality**
3. **Only Peters fertilizers contain M-77**



You can choose the right Peters formulation for your water – hard, neutral or soft. Peters has high levels of purity and solubility. But the Peters fertilizer concept goes beyond the provision of nutrients. Only Peters uses the 'M-77' ingredient.

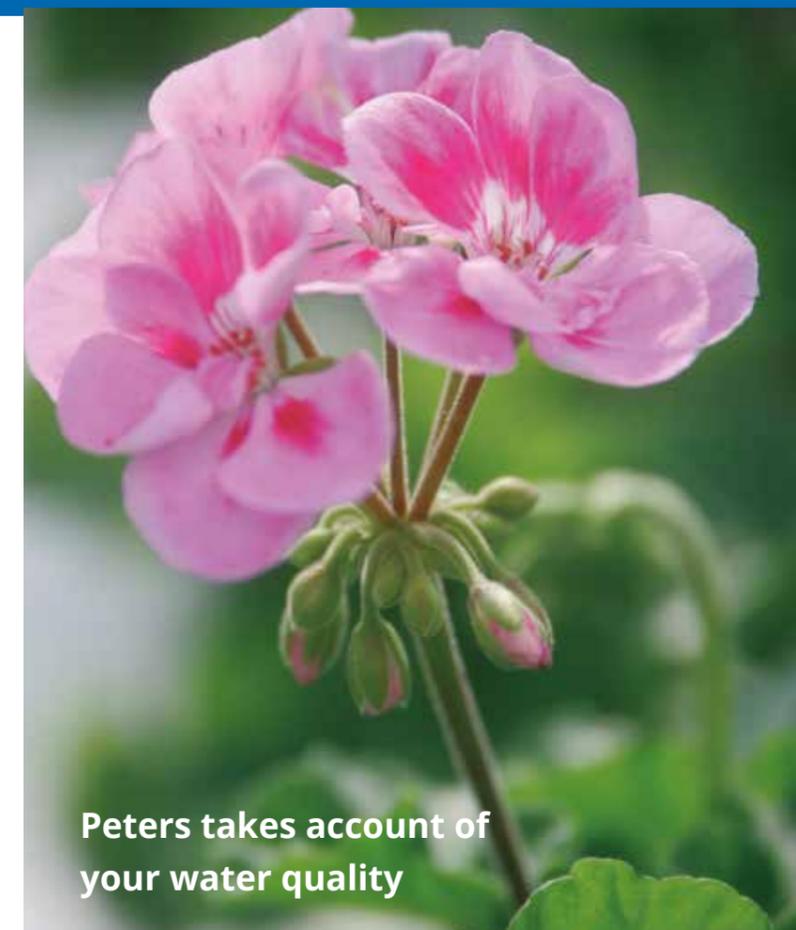
This gives you maximum certainty that the nutrients end up where they are needed: in the plant. The result is a fast response following application and a perfect crop! You can see the effects instantly.

Water quality is of crucial importance: Peters has the answer!

The influence of the quality of the irrigation water is often underestimated. In fact, the composition of the water serves as a starting point for a fertilization plan.

Hard water requires correction for the bicarbonate present in the water; soft water contains insufficient calcium and magnesium, essential elements for healthy plant growth.

Peters responds to these factors and improves the results of your fertilization plan.



Peters takes account of your water quality

Choose the right Peters on the basis of the composition of your water

Peters Professional gives good results regardless of the composition of your water. If you want the best for your plants and you have particularly hard or soft water, choose Peters Excel.

Peters[®] Excel
'CalMag'

Peters[®] Professional
For every water quality

Peters[®] Excel
'Acidifier'



Optional



Optional



Soft water?
Use Peters Excel 'CalMag' to add calcium and magnesium in one go (1-tank-mix).

Hard water?
Use Peters Excel 'Acidifier' to avoid problems caused by a rising pH level in the soil.

- Know your water quality to avoid problems! Analyze your irrigation water quality on a regular basis (or at least once a year)
- Optimize the interaction between fertilizer and water. Your ICL advisor is glad to make a tailor-made fertilizer plan

1.3.1 Peters Fertilizers
Peters Professional, Peters Excel



Peters® Peters: perfect results every time

Peters is the world's leading water-soluble fertilizer range. It features a well-balanced combination of NPK, trace elements and special additives to ensure optimum results, even under the most challenging conditions. Peters is the only fertilizer to contain M-77 technology that optimizes the availability and absorbability of nutrients.



Everything stems from optimum absorption

Maximum absorbability sets Peters apart. Peters contains special ingredients that help plants absorb trace elements at the roots. M-77 'unlocks' the roots for optimum uptake of nutrients. Maximum absorption is at the heart of the Peters philosophy: Not only the availability of nutrients matters, how plants absorb these nutrients is equally important.

Peters has a solution for every situation

The Peters range includes formulations designed especially for a particular growth phase or growing situation. There are formulas for soft water (with calcium and magnesium) and for hard water (reducing bicarbonates). Peters formulas ensure you always have the right product composition for your specific cultivation situation. This prevents deficiencies and excesses and

ensures your irrigation systems always stay clean.

The choice of professionals

Peters has been developed for pot plant and bedding plant crops. Using peat-based substrates in pots places special demands on your fertilizer. Peters harnesses vast research and development to fulfill these distinctive needs for optimum results. That's why Peters is the choice of professional growers.

Top of the line

The Peters range's unique combination of qualities makes it the pinnacle of water-soluble fertilizers. Outstanding water solubility, an optimum combination of trace elements, unrivalled absorption, the power of M-77 and a choice of formulations to solve growers' challenges make Peters the cream of the crop.

Solutions for every growing phase and every situation



Peters Professional grower benefits

- 1 Quickest plant response after application
- 2 Highest purity, fully water soluble
- 3 Contains our unique M-77 technology for maximum nutrient uptake
- 4 The best solutions for plants



Allrounder

20-8.7-16.6+TE

Allrounder has a balanced NPK formula which contains urea. It is particularly suited for use in spring and summer months. It also acts as foliar feed and encourages healthy plant growth.



Plant Starter

10-22.7-8.3+TE

High phosphate levels and a balanced N:K ratio. This is the ideal initial fertilizer for stimulating the development of a good, uniform root system and flower buds. Use just before potting young plants for optimum rooting.



Foliar Feed

27-6.5-10+TE

Foliar Feed contains a high percentage of urea and comes with a specially adapted trace element package. This unique combination is the ideal foliar feed for pot plants and bedding plants. Fast plant reaction makes it a perfect solution for quick greening before sale.



Blossom Booster

10-13.1-16.6+1Mg+TE

Blossom Booster is a classic formula, still going strong. Its high phosphate levels and an N:K ratio of 1:2 make the Blossom Booster the ideal product for improving bud formation and flower development.





Combi-Sol

6-7.9-29.9+1.8Mg+TE



Combi-Sol has enhanced levels of trace elements which deliver perfect results, even if diluted with other fertilizers. This formula can be used in two-tank systems with calcium nitrate. The N:K ratio of 1:6 promotes excellent, compact plant growth. The ideal solution for when irrigation water contains high levels of nitrogen and can also be used as a complete fertilizer.



Pot Plant Special

15-4.8-24.1+TE



Ideal for flowering pot plants and bedding plants, the N:K ratio of 1:2 ensures good colour, compact growth and high-quality plants. Contains a high proportion of nitrate and an elevated trace element level for quick results.



Winter Grow Special

20-4.4-16.6+TE



Winter Grow Special is specially designed for application in cold weather conditions to support plant growth during the winter season. This formula has a balanced N:K ratio and contains high levels of nitrate. Quick plant reaction.



Peters Excel: A real problem solver, as it takes your irrigation water quality into account

Our Peters Excel range features unique formulations that deliver complete plant nutrition using one tank to prepare the stock solution! Peters Excel improves your water quality. It offers special products for soft water and for hard water. All products are of superior purity and feature the best chelated trace element packages. The unique M-77[®] is included in all products. Peters Excel will help to improve the irrigation water quality by lowering bicarbonates present in hard water and by adding calcium / magnesium in soft water. You will see immediate and long-term effects on your plants.

Many times it's underestimated: the impact of the water applied. Growers often use water they do not fully know or understand. What impact does this water have on their plants and the uptake of nutrition?

Peters Excel ensures your plants grow smoothly. In soft water (i.e. rain water) you just have to use one single product to supply your plants with all elements required for good growth (NPK, calcium, magnesium and trace elements). Easy and convenient for you. In hard water with bicarbonates, in many cases there is no need to add additional acids in the stock solution. Peters Excel Acidifier for hard water will do the job in a safe and reliable way. Peters Excel for hard water will improve the quality of water by taking out bicarbonates. Less bicarbonates reaching the growing medium means

less increase of the growing medium pH. The best possible uptake of phosphates, manganese and iron delivered by Peters Excel is guaranteed. Applied in hard water the acidifying Excel types will dissolve more easily as they decrease the water pH. You will enjoy shorter dissolution times and easier work. Calcium stains on leaves will be prevented by the strong action of Peters Excel.

The range of Peters Excel covers products to generate growth and for compactness of plants. Products within a group (hard water types or soft water types) can be mixed to achieve other NPK analyses. Never mix hard and soft water types together, as this might cause precipitation.

You see, Peters Excel is taking your water quality into account. It will help you to grow better and easier.



Peters Excel CalMag for soft water

Peters Excel CalMag grower benefits

- 1 Specially designed for use in soft water
- 2 Healthy growth thanks to continuous supply of calcium and magnesium. These two essential elements often lack in soft water.
- 3 Made from the best raw materials and trace elements
- 4 Chelated trace elements encourage growth and perfect colour
- 5 Including unique M-77 technology



CalMag Grower

15-2.2-12.5+5.0Ca+1.8Mg+TE

Peters Excel CalMag Grower has been specifically engineered to promote healthy growth. This single-tank mix formula has a balanced N:K ratio and contains all necessary nutrients. CalMag Grower is compatible with calcium nitrate.



CalMag Finisher

13-2.2-16.6+5.0Ca+1.2Mg+TE

Peters Excel CalMag Finisher provides plants with all the essential nutrients. Often used as a follow-up to CalMag Grower, this premium high-potassium fertilizer leads to compact and condensed growth. CalMag Finisher can be used in combination with calcium nitrate.



Peters Excel Acidifier for hard water

Peters Excel Acidifier grower benefits

- 1 Specially developed for use in hard water containing bicarbonates
- 2 Keeps growing medium pH level stable thanks to buffering effect on HCO₃ (bicarbonates) in the applied irrigation water
- 3 Improves irrigation water quality
- 4 Prevents blockage of drippers and keeps irrigation systems clean
- 5 Perfect colour and growth thanks to chelated trace element packages
- 6 Including unique M-77 technology

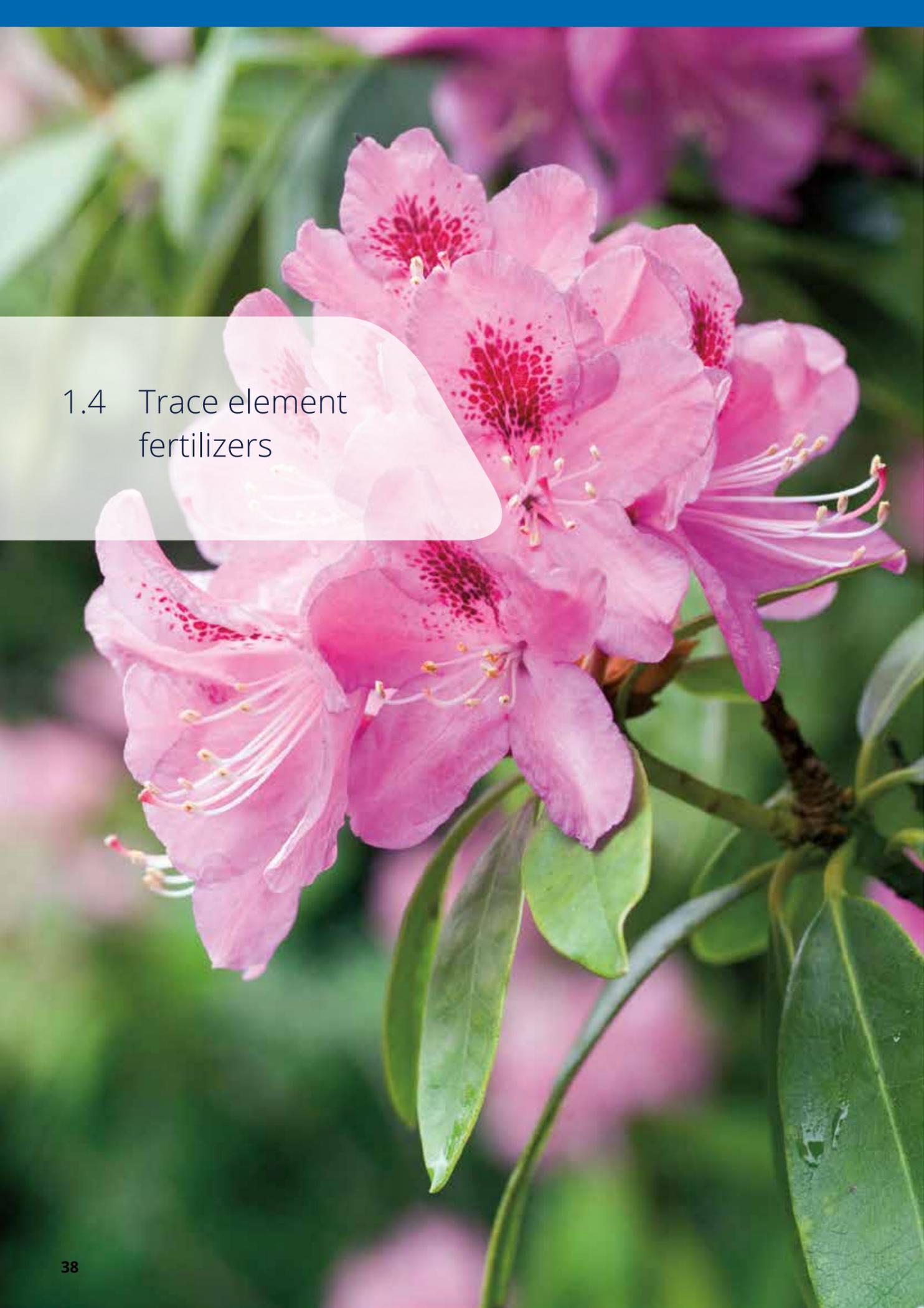


Hard Water Grow Special

18-4.4-14.9+1.2Mg+TE

Hard Water Grow Special delivers balanced growth where hard irrigation water is used.





1.4 Trace element fertilizers

Magrimax: The answer for magnesium deficiencies in your crop

Magrimax[®]

Magrimax is a unique blend of immediately available and slow release magnesium.

Magrimax provides magnesium sulphate and magnesium oxide. This can prevent

magnesium deficiency for up to 12 months.



Magrimax grower benefits

- 1 Prevents magnesium deficiency for up to 12 months
- 2 Contains magnesium sulphate & magnesium oxide
- 3 Improves availability of higher Ca / K levels
- 4 Ideal for Mediterranean perennial plants, Camellia, Rhododendron and Citrus trees
- 5 Should be used in addition to a full nutrition programme

Ornamental horticulture





Micromax WS Iron: soluble, pure iron, solid basis for growth

Micromax WS Iron is a water-soluble trace element fertilizer with iron EDDHA. It also contains X3, a biostimulant that facilitates the absorption of nutrients and enhances an effective uptake of iron by the roots and leaves.

Micromax WS Iron is easy and safe to apply and can be used to prevent or correct iron deficiency in various horticultural crops. When applied as

foliar feed, expect to see quick results within one to two days, and when applied through fertigation you'll notice the difference in your plants within a week.

Micromax
WS Iron



Ornamental horticulture

Micromax
Premium

Micromax Premium: essential trace elements for incorporation in growing media

Micromax Premium provides your plants with all essential trace elements and works for a full season, up to 16 months. Optimum availability of trace elements is guaranteed, even at high pH values (> 6.5).

Trace elements are essential for optimum growth. A shortage of trace elements can affect plant growth in many ways. This is a problem that is often underestimated. To be able to grow, the availability of sufficient amounts of magnesium, copper, zinc, iron, manganese, boron

and molybdenum is just as important as the use of a soil amendment that supplies nitrogen, phosphorus and potassium (NPK). If any of the trace elements is lacking, this will affect the speed at which the plant will attain its mature size (growth rate).



Micromax Premium grower benefits

- 1 All essential trace elements in one application - easy and effective!
- 2 Encourages rooting and provides the ideal basis for healthy plant growth
- 3 Perfect start-up effect. Long-lasting supply of trace elements for up to 16 months
- 4 Improved crop colour thanks to its high iron and magnesium content
- 5 Easy and safe application by mixing the product into the growing medium

Micromax WS TE-Mix: soluble trace element mix for maintenance or quick correction

This water-soluble mix contains all essential trace elements in high-quality chelates.

The added biostimulant X3 ensures a quick uptake of nutrients deep within the leaves. Apply Micromax WS TE-mix via fertigation or as foliar feed for best results. Expect to see quick results within one to two days through foliar application, and when applied through fertigation you'll notice the difference in your plants within a week.

Micromax
WS TE-Mix



Benefits of Micromax WS Iron & Micromax WS TE-mix

- 1 Contains X3 biostimulant for optimized uptake through leaves and roots
- 2 Improves the growth of fine roots
- 3 Increases plant vitality
- 4 Fully water soluble
- 5 Can be mixed with fertilizers and most plant protection products



1.5 Wetting agent

Hydraflo®

Advanced dual action technology

A new generation wetting agent in granular and liquid form for better nursery, turf and landscape results.



For immediate and long term response

The improved dual-action formulation of Hydraflo 2 and the easy-to-use granules deliver immediate action as a topdress application and improved efficacy incorporated in soils and potting mixes over a longer period of time. Hydraflo L is a liquid soil wetting agent that is as safe for use on delicate ornamental flowering plants as it is on turfgrass greens, sportsfields and lawns.

The ideal summer rewetter

Hydraflo effectively decreases water surface tension aiding the successful rewetting of soils in dry summer periods, eliminating localised dry spots and increasing the uniformity of wetting throughout the soil profile. By allowing for better water penetration and absorption, Hydraflo helps grow deeper stronger roots.

- Improves Cation Exchange Capacity (CEC) of soilless potting mixes.
- Low rate of use significantly reduces cost per cubic metre.

Hydraflo L

Liquid soil wetting agent

- Uniform wetting to avoid summer dry patch.
- Long term performance enables rewetting of dry soils.
- Aids infiltration and drainage for deeper stronger roots.
- Safe for use on all ornamental plants including turfgrasses.
- Available in 20L and 200L containers.

(Graphical representation)

Not treated with Hydraflo

Application of coloured water demonstrates uneven water distribution and lack of moisture and nutrient retention in the root zone.



Treated with Hydraflo

Treatment with ICL Specialty Fertilizers Hydraflo ensures an even matrix flow retaining moisture and nutrients in the root zone.



The ideal winter drainer

Hydraflo encourages free drainage from water logged soils in winter and during heavy rainfall. This inhibits surface moss, algae growth and soil borne pathogens. When water logged soils drain, air is allowed into the root zone enabling the plant to take up valuable nutrients.

Made in Australia for varied conditions

Hydraflo 2 can offer real help for overcoming extremes in weather, as well as hydrophobic soil conditions.

Retains moisture and nutrients in the root zone

Hydraflo 2: Granular Soil Wetting Agent

Nursery potting soils application method

Hydraflo 2 is an ideal additive to both peat and wood waste based nursery potting media, to aid in rewetting of dried mixes, and drainage in water logged mixes.

Rates of application

- For general nursery and greenhouse potting mixes – incorporate at the rate of 1kg per cubic metre of soil
- Propagation and plug mixes – incorporate at the rate of 0.3kg per cubic metre of soil

Turf application rates		
Application timing	Application rate (per m ²)	Water
Season long	20-25g/m ²	4-6 mm
Bi-monthly	10-15g/m ²	4-6 mm

Hydraflo L: Liquid Soil Wetting Agent

Nursery and horticulture application rates		
Situation	Rate	Application frequency
Propagation and plug potting mixes 75mL Hydraflo L diluted in sufficient water to evenly distribute through 1m ³ .	1 : 1000 10mL Hydraflo L to 10 litres water	4 months or as required
Nursery and greenhouse potting mixes 150mL Hydraflo L diluted in sufficient water to evenly distribute through 1m ³ .	1 : 500 20mL Hydraflo L to 10 litres water	6 months or as required
Prepare sufficient solution of Hydraflo L with water (at the specified dilution rate) to treat the intended volume of growing media. Use this solution to thoroughly soak the soil media. No extra irrigation is required beyond initial drenching, other than normal irrigation practices.		

Turf and amenity application rates		
Situation	Rate	Application frequency
Greens and fine turf, lawns and landscapes	0.125-0.375L/100m ²	3 months or as required
Fairways, sports turf, lawn turf and landscapes	0.375-0.625L/100m ²	8 months or as required
Apply in advance of expected dry patch formation. Hydraflo L is a polymeric wetting agent that rewets readily after treated soil has been dry for extended periods.		
Application through boom spray should use a minimum dilution of 1 part Hydraflo L to 200 parts water (1.0 litre of Hydraflo L in 200 litres of water). Additional irrigation (3-6mm) should be applied to ensure the Hydraflo L is thoroughly watered into the soil profile.		

1.6 Plant protection



Rout, Tried, True, Tested



Rout has eliminated your weeding problems for over 25 years, providing the confidence you desire to prevent weed germination in your pots. No guessing, no gimmicks, just the trusted formula you know and rely on.

The most cost-effective pre-emergent herbicide on the market

Rout is a safe, effective and economical pre-emergent herbicide that controls a broad spectrum of broadleaf and grassy weeds. With Rout, valuable nutrients can be used by your plants, not wasted on weeds. Your plants will be stronger, greener and healthier.

Rout pre-emergent herbicide is specifically designed for nurseries and landscaping to control weeds around:

- container-grown ornamental trees and shrubs
- contained garden beds and pots
- field-grown ornamental plants

Broad control

Rout combines the action of two proven herbicides in one granule. This unique combination results in broader spectrum pre-emergent weed control of both broadleaf and grassy weeds, controlling

five times as many weed species as its main competitor*. One application controls sixty five weeds for up to three months.

Save time and money with Rout

Weed control with Rout costs less than alternative control measures. The correct use of Rout saves you time and labour costs by drastically reducing the need to handweed containers and garden beds. With the time saved by not needing to weed, you are free to do what you do best: caring for and nurturing plants and gardens. Rout's effectiveness at half the application rate of its main competitor* brings additional economic benefits.

Note: Ideally when applied over the top of the crop, Rout should be applied when foliage is dry to prevent granules sticking to the plant. If necessary wash off leaves after Rout application.

Tips for optimum Rout performance

1. Avoid applying when small plants are putting on a flush of growth or breaking dormancy
2. Ensure there is plenty of air movement around the plant
3. Apply at least two weeks before moving plants to a greenhouse
4. Low growing soft annuals and perennials may experience leaf scorch

* Competitor formulation Active Constituent - Oxadiazon 20g/20KG.

Rout application

1. For best results, water plants before application to settle and firm down the soil.
2. When foliage is dry, evenly distribute granules at the correct application rate over the entire soil surface.



Locks out weeds for longer

Combines the action of two herbicides in one granule resulting in broad spectrum, pre-emergent weed control of broadleaf and grassy weeds.

Application made easy

ICL Specialty Fertilizers provide the tools to determine the correct rate and distribution and to increase accuracy and efficiency of application. The Rout Calibrator and Rout Shakers are available free from your local ICL Specialty Fertilizers Distributor.



ICL Specialty Fertilizers HandyGreen spreader applies Rout to larger areas quickly and evenly.

The Rout Shaker enables application around sensitive plants avoiding granules catching on foliage.



The Application Rate Calibrator assists in determining correct rate and distribution.

This tag is designed to help keep track of when Rout was applied and when to reapply.



Proven through trials

Trials prove that Rout prevents seed germination and subsequent weed growth. In the trial below Rout was applied to centre area. No herbicide was applied to the outer area.



Rout controls more than 65 weeds

Controlled per Australian and New Zealand labels	Controlled per Australian label	Controlled per New Zealand label
Amaranth (redroot)	Amsinckia	Annual poa
Barley grass	Bladder ketmia	Bittercress
Barnyard grass	Burr grass	Broad-leaved dock
Black nightshade	Caltrop	Calandrinia
Chickweed	Capeweed	Cornbind
Creeping buttercup	Flickweed	Creeping willow herb
Creeping oxalis	Giant pigweed	Dandelion
Crowsfoot grass	Liverseed grass	Groundsel
Deadnettle	Love grass	Inkweed
Fat hen	Mimosa	Liverwort
Fleabane	Pigeon grass	Montia
Mallow	Pigweed	Narrow-leaved plantain
Ryegrass	Prickly lettuce	Pearlwort
Shepherd's purse	Red caustic creeper	Pennyroyal
Sowthistle	Rhodes grass	Portulaca
Subterranean clover	Soursob	Speedwells
Summer grass	Staggerweed	Spurge
Thornapple	Starr burr	Spurrey
Wild mustard	Stink grass	Tall willow herb
Wild radish	White eye	Twincress
Willow weed	Willowherb	White clover
Winter grass		Yorkshire fog
Wireweed		

Some species of weeds are known by different names or share names with others. If in doubt, please contact your local ICL Specialty Fertilizers representative.

Technical information

Pack Size	Formulation	Active Constituents	Mode of Action Group		Poison Schedule	Application Rates	
			AU	NZ		Rout Qty	Area
22.68kg	Granular pre-emergent herbicide	20g/kg Oxyfluorfen 10g/kg Oryzalin	Group D G Herbicide	Group E K1 Herbicide	Not a scheduled poison	10g 1kg 100kg 40.5kg	1m ² 100m ² ha acre



Sierraron® 4G

Sierraron 4G Cutting weeding time, time after time



Sierraron 4G is a proven pre-emergent weed controller that continues working for up to six months. Sierraron 4G is recommended for use on such areas as fence lines, paths, driveways, and field, park & production area perimeters.

Sierraron 4G is about saving you time

Recurrent weeds need recurrent attention, and it's well known that most organizations whose job it is to maintain the appearance and health of industrial and community grounds and parks find weed control a time consuming and endless task.

Sierraron 4G is a proven pre-emergent weed control solution that continues working for up to six months when applied correctly.

Sierraron 4G boasts minimal potential for run-off or leaching, and because of its granular form is easy to apply, without the risk of spray drift. Sierraron 4G should become part of your preventative weed maintenance programme.

Benefits of Sierraron 4G

- 1 Eliminates most annual and perennial broadleaf weeds and grasses
- 2 A single application provides season-long weed control
- 3 Easy to apply ready to use granular formulation
- 4 Active ingredient binds strongly to the soil, minimising the potential for run-off or leaching
- 5 Classified as a non-hazardous chemical
- 6 As long as soil is present, Sierraron 4G goes to work after watering in

A much needed extra hand for weeding

Sierraron 4G is an extra resource for weed control to be used in conjunction with current weed management systems. Sierraron 4G extends your weeding effort – simply weed, and then apply Sierraron 4G for 6 months protection from weed growth.

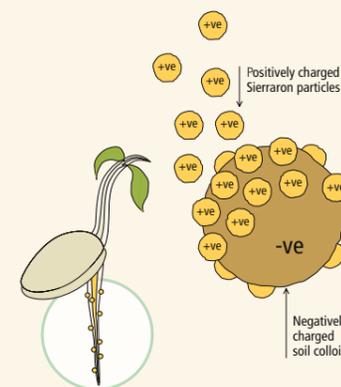
It should be noted that Sierraron 4G is not ideal for every situation. As Sierraron 4G works close to the surface, it has little or no impact on deep-rooted and established trees, however Sierraron 4G should not be used near young, recently planted or shallow-rooted plants and shrubs.

Ideally, it should be applied in Autumn, Winter and early Spring when lower temperature conditions assist in Sierraron 4G's effectiveness.

How it works

Positively (+ve) charged Sierraron particles are attracted to negatively (-ve) charged soil colloids and adsorbed on contact. This process ensures there is minimal run-off into waterways.

Sierraron is absorbed by weed roots and prevents cellulose biosynthesis at the root growing points, causing death.



Application areas

Councils

- Public playgrounds and community areas
- Established gardens
- Roadside and paved centre strips
- Sporting field perimeters

Landscape contractors

- Community grounds maintenance
- School playgrounds and fence perimeters
- Tennis court perimeters
- New home display centres

Other locations

- Plant Nurseries – in non-growing areas
- Exterior paved shopping walkways
- Stadium seating areas where concrete expansion joints can support weed growth
- Can be applied before paths and paving are laid down to prevent weeds emerging
- Industrial areas

Eliminates most annual and perennial broadleaf weeds and grasses

The hidden weed manager

For most other herbicides to be effective, weeds have to first emerge. Spraying them results in unsightly dead weeds and alerts the public that a herbicide has been used, such as in the case when trucks spray road-side weeds.

The advantage of Sierraron is that after the initial weeds are eliminated, it works below the surface, unseen.

Extensive testing by ICL Specialty Fertilizers in Europe has shown conclusively that Sierraron works more effectively to control most common weeds than the treatments used traditionally by councils and commercial landscape contractors.

Consequently, Sierraron has become a standard addition to the weed maintenance programme of many European councils for over a decade.

Sierraron also fits perfectly into the Australian federal, territories and state governments' Australian Weeds Strategy.

Technical information					
Pack Size	Formulation	Active Constituents	Mode of Action Group	Poison Schedule	Application Rates
10kg 22.7kg	Granular pre-emergent herbicide	40g/kg Dichlobenil	Group O Herbicide	S6	Rates are situation specific, refer to label





Proven disease protection

Deliver dependable, long-lasting control of damping off and root and stem rot soil pathogens on a wide range of bedding, foliage and container plants.

Proven disease protection available to Australian and New Zealand growers

Banrot delivers dependable, long lasting control of damping off and root and stem rot soil pathogens on a wide range of bedding, foliage and container plants. Banrot has proven itself to be the single most effective broad spectrum soil fungicide product in the USA providing both systemic and contact activity. Where broad spectrum soil pathogen control is needed, Banrot provides proven protection you can count on.

At planting and potting-up time

Although Banrot 400WP can be used as a drench anytime throughout the crop cycle, it is especially important to apply Banrot at the time of initial planting and when potting-up. Treatments can be made either as a drench or incorporation with Banrot 400WP (Wettable Powder) or by incorporating Banrot 80G (Granular) directly into the growing medium.

Banrot offers protection at these critical times and allows plants to develop new and active root growth quickly, so important in getting plants established.

Benefits of Banrot

- 1 Banrot is fungicidal, not fungistatic. It kills rather than suppresses target pathogens
- 2 Broad spectrum eliminates the need for separate fungicides
- 3 Significantly less soluble than other fungicides, reducing potential problems from leaching
- 4 Application flexibility with the WP formulation suited for drench application whilst the G formulation allows for incorporation, side-dressing and broadcast application
- 5 Provides systemic and contact activity on target pathogens, root and stem fungi for up to 8 weeks

Technical information

	Pack Size	Formulation	Active Constituents	Mode of Action Group	Poison Schedule	Application Rates
Banrot 400WP	907g	Wettable Powder (WP) Fungicide	250g/kg Thiophanate-Methyl 150g/kg Etridiazole	Group 1 14 Fungicides	S5	Incorporating 60g/m ³ Drench 4-8g/m ² in up to 10L of water
Banrot 80G	12kg	Granular Fungicide	50g/kg Thiophanate-Methyl 30g/kg Etridiazole	Group 1 14 Fungicides	S5	Pre-plant soil mix additive - 300g/m ³ Post-plant broadcast treatment - 2-4kg/100m ²

For further information refer to product labels and Safety Data Sheets (SDS).





Targeted insect control, soft on many beneficial insects

A systemic insecticide that works both on contact with target pests and systemically through root and leaf uptake.

Crown is designed for quicker and more effective control of sucking insects and fungus gnats. In trials with fungus gnats, Crown exceedingly outperformed other conventional formulations.

Crown is exclusively developed for use in ornamental horticulture and highly effective on sucking pests; acting on eggs, larvae and adults. It is best to apply Crown in the spring when plants start new growth and insects begin to emerge.

Puts pests in their place

Crown is easy to mix and even easier to apply. For the best results, use Crown in Spring, when your plant begins new growth and insects start to stir.

Crown is relatively soft on many beneficial insects¹ e.g. 300x less toxic via contact and 2000x less toxic via oral than its closest competitor on honey bees².

Benefits of Crown

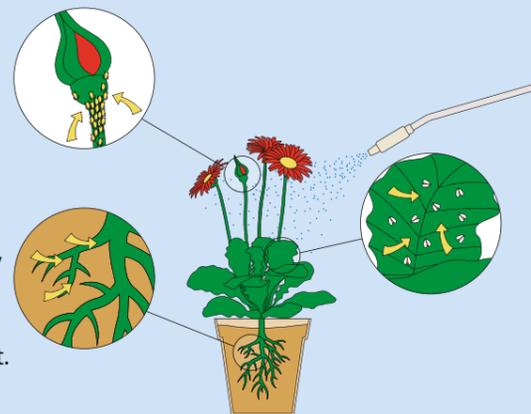
- 1 Completely systemic through root and leaf uptake
- 2 Also works on contact with the target pests
- 3 100% knockdown within 50 minutes on many target pests
- 4 Provides effective control even at low application rates
- 5 Can combine with older insecticides to prevent resistance build-up
- 6 Use Crown as a drench for effective fungus gnat control. Refer to label for complete directions for use.

Triple action control

Crown works both on contact with the target pests and systemically through root and leaf uptake. The result is faster knockdown for longer.

Additionally, very low concentrations are required for effective control.

Being a new technology formulation, Crown will be useful in rotation with other older insecticides to prevent resistance build-up in the target pest.



¹ Public Release Summary on 'Evaluation of the new active Acetamiprid in the new product - Supreme 225 SL Insecticide', NRA (National Registration Authority - for Agricultural and Veterinary Chemicals) May 2003. Page 22.

² Beneficial Insects - Nisso Field Trials Presentation, 2005.

Targeted to nursery crops

Application

Crown 225SL is a water soluble concentrate requiring dilution with water prior to use. Applications should be made with equipment calibrated to deliver a fine spray quality in a suitable volume to ensure thorough coverage of leaf surfaces.

Use suitable application equipment and preferably cone-nozzle combinations to deliver appropriate spray volume and a droplet size VMD of 150 to 200 microns.

Do not apply as a fog or mist. Crown 225SL is compatible with commonly used fungicides, miticides and insecticides. If in doubt, test the mixture before treating large scale areas.

Make sure to store in closed original containers, in a cool and well ventilated area away from children, animals, food and feedstuffs. Do not store for prolonged period of time in direct sunlight.

Target pest species	
Pest	Rate
Rose Aphid	11mL/100L
Greenhouse Whitefly	11-22mL/100L
Silverleaf Whitefly	11-22mL/100L
Citrus Mealy bug	22-44mL/100L (AU) 24mL/100L (NZ)
Azalea Lace bug	11-16mL/100L
Greenhouse thrips	11-16mL/100L
Plague thrips	22mL/100L
Psyllids	11-22mL/100L
Scale insects*	11-22mL/100L
Pulvinaria scale	22mL/100L
Leafhoppers	11-22mL/100L
Fungus gnat	Light potting mix - 5-10mL/10m ²
Shore fly	Heavier potting mix - 10-20mL/10m ²

* Except white wax scale

Technical information				
Pack Size	Formulation	Active Constituents	Mode of Action Group	Poison Schedule
200mL 1L	Soluble Liquid Systemic Insecticide	225g/L Acetamiprid	Group 4A Insecticide	S6

For further information refer to product labels and Safety Data Sheets (SDS).





Procide®

Broad range insect & mite control



An advanced, very broad spectrum contact and residual suspension insecticide and miticide, safe for all ornamental plants.

Procide is an advanced, contact and long residual suspension concentrate insecticide and miticide for use on all ornamental plants.

A smarter weapon against insect and mite pests

Due to the fast knockdown activity of Procide it is a lower cost alternative to systemic insecticides, enabling you to monitor pest levels and deliver a fast acting knock down application to targeted areas.

Procide is ideal as a preventative application during known higher insect activity times. A fortnightly application ensures full protection against target pests.

Longer residual activity

Procide uses an advanced pyrethroid chemistry that is light stable. This provides

significantly longer residual activity; reducing spray frequency and therefore the total amount used to completely protect your crop. Less sprays needed means lower overall costs of insect control and less pesticide entering the environment.

Faster acting

The pyrethroid chemistry in Procide has more insecticidal activity than other classes of insecticides, such as organophosphates and carbamates. Procide acts faster to control target insects, even at low rates.

Safer on plants

Procide is formulated as a Suspension Concentrate (SC) without harsh solvents. This means that Procide is safe to apply to plant foliage with a minimal risk of burning.

Benefits of Procide

- 1 Ideal preventative
- 2 Less pesticide into the environment
- 3 Low risk of plant phytotoxicity
- 4 Fewer spray applications needed
- 5 Monitor pests and use as a knockdown as needed
- 6 No additional surfactants needed

A smarter weapon against insect and mite pests

Cautions for use

Do not use in situations where predatory mites are established and are already providing effective mite control.

Do not apply if rainfall is expected before spray deposits dry on leaf surfaces.

Smart in use

Procide contains an effective surfactant to aid in wetting of foliage and complete contact with target pests.

Target pest species		
Crop	Pest	Rate
All nursery and cut flower ornamental plants	Two Spotted mite (<i>Tetranychus urticae</i>)	35-50mL/100L
	Aphids	25mL/100L
	Caterpillars and loopers including heliothis (corn ear worm, native budworm) <i>Helicoverpa</i> spp, light brown apple moth (<i>Epiphyas postvittana</i>), and geranium plume moth (<i>Sphenarches anisodactylus</i>)	25mL/100L
	Whitefly (<i>Trialeurodes vaporariorum</i>), Pointsettia white fly (<i>Bemisia tabaci</i> Biotype B)	25mL/100L
	Mealy bug (<i>Pseudococcus longispinus</i>)	25mL/100L
	Plague thrips (<i>Thrips imaginis</i> , <i>Thrips simplex</i> and <i>Thrips hawaiiensis</i>)	25mL/100L
	Cutworm (<i>Agrotis</i> spp.) in beds, containers and pots	1.5L /ha 15mL/100m ² 7.5mL/100L

Apply at first sign of pest infestation and before pest populations build up to damaging levels. Repeat as necessary on 10-14 day interval. Best results are obtained from preventative rather than curative applications. Where indicated, use the higher dosage for knockdown of established pest infestation or when longer residual activity is required. Spray to run off using a spray volume of 10-15 litres per 100m².

* Except white wax scale

Procide 80SC applicable APVMA Permits		
Target	Rate	Permit
Identified quarantine pests	25mL/100L	PER10043 - All States
Spiralling Whitefly (<i>Aleurodicus dispersus</i>)	50mL/100L	PER10564 - QLD only

Technical information				
Pack Size	Formulation	Active Constituents	Mode of Action Group	Poison Schedule
1L	Liquid Suspension Concentrate contact and residual Insecticide/Miticide	80g/L Bifenthrin	Group 3A Insecticide	S6

For further information refer to product labels and Safety Data Sheets (SDS).



Fast acting, contact insecticide for immediate control of problem insects

MaxGuard[®] 2G



The most advanced weapon in the fight against surface feeding insects.

MaxGuard delivers fast acting, contact pyrethroid insecticide for immediate control of problem insects, such as Lawn armyworm, Sod webworm, Argentine stem weevil adults, African black beetle adults, Billbug adults, Cutworms and Ants, including Stinging ants.

MaxGuard is a cost effective alternative to preventative systemic insecticides that enables you to monitor pest populations, identify a damage threshold and deliver a targeted treatment that works immediately. Always keep MaxGuard handy when emergency treatment is required to act quickly.

Safer to apply

MaxGuard 2G is not a scheduled poison. With minimal contact when applying the granular formulation, it is extremely safe for users. Additionally, there are no restrictions on transport and storage as MaxGuard is not classified as a dangerous good on land.

Smarter chemistry

MaxGuard uses an advanced pyrethroid chemistry that is uniquely light stable. This provides significantly longer residual control (dependant on application rate) than conventional pyrethroids. MaxGuard is very effective even at low application rates.

Faster to act

MaxGuard chemistry has more insecticidal activity than other classes of insecticides such as organophosphates and carbamates, therefore requiring less active ingredient to control pest problems. MaxGuard acts faster to combat target insects at low rates.

Benefits of MaxGuard 2G

- 1 Effective on a variety of insects, including Red imported fire ant (see off label permit)
- 2 The application method is easy using a spreader
- 3 High safety margin / low toxicity
- 4 Quicker turf recovery
- 5 Requires less active ingredient to control pest problems than other classes of insecticides

Technical information				
Pack Size	Formulation	Active Constituents	Mode of Action Group	Poison Schedule
22.7kg	Granular Insecticide	2g/ kg Bifenthrin	Group 3A Insecticide	Not scheduled

Application		
Target	Rate	Critical comments
Lawn armyworm (<i>Spodoptera mauritia</i>)	60kg/ ha (0.6kg/100m ²)	Broadcast MaxGuard 2G with suitable application equipment to ensure uniform coverage over the treated area. To ensure optimum control, irrigate the treated area with up to 4mm of water soon after application. Inspect the treated areas for continuing activity. Reapply as required. Where a rate range is indicated use lower rates under lower insect pressure and higher rates under higher insect pressure.
Sod webworm (<i>Herpetogramma licarsisalis</i>)	60kg/ ha (0.6kg/100m ²)	
Cutworm (<i>Agrotis sp.</i>)	60kg/ ha (0.6kg/100m ²)	
Argentine stem weevil adults (<i>Listronotus bonariensis</i>)	60-120kg/ ha (0.6 -1.2kg/100m ²)	
African black beetle adults (<i>Heteronychus arator</i>)	120-180kg/ ha (1.2 -1.8kg/100m ²)	
Billbug adults (<i>Sphenophorus brunnipennis</i>)	60-120kg/ ha (0.6 -1.2kg/100m ²)	
Black ant, Coastal brown ant, Funnel ant, Meat ant, Sugar ant and Stinging ant only.	60-220kg/ ha (0.6 -2.2kg/100m ²)	Apply granules to areas where ants are active. Where possible, apply granules directly to the nest. Use the low rate for maintenance treatments or to control light infestations and the high rate for heavy infestations and for maximum residual control. The elimination of Funnel ants from a particular site will generally require more than one application. Initial applications should be broadcast over affected areas. As the initial numbers of active colonies is reduced, application should shift to targeting active mounds. Apply granules directly to the mound and in the area immediately surrounding active mounds (300mm radius).

For further information refer to product labels and Safety Data Sheets (SDS).

MaxGuard 2G applicable APVMA Permits				
Target	Protection Period (mths)	Dose Rate (ppm)	Potting Mix Rate	Permit
Red imported fire ant	0-12	12	3.9kg/m ³	PER10536 – NSW only PER10562 – QLD only (standard potting mix with bulk density of 0.65)
Identified quarantine soil pests susceptible to Bifenthrin	Potting Mix	Bulk Density	Product Rate g/L	PER9796 – All states
	25% sand / 75% peat	0.85	2.7	

See permit for detailed application rates. For more permit info: <https://portal.apvma.gov.au>





Section II ICL Specialty Fertilizers products for gardeners and landscapers

Professional Landscape Formula Maintenance



**20-0-6+12S+2.1Ca+1.8Mg,
longevity: 2-3 months. 15kg bag**

A controlled release fertilizer providing the lawn with all essential nutrients for a fast start to the season. Added magnesium provides for good leaf colour.

- Ideal first application follow up 3-4 times per year.
- Fast start, quick green-up.
- Revitalises worn lawns.
- Suitable for all lawn species including buffalo, all couch grass types, kikuyu and cool season grasses such as rye and fescues.
- Includes natural polysulphate for Cal, Mg, S+K delivery

Suggested Application Rate: 35g/m²
(3.5kg/100m²)

Bag coverage: 420m²

Professional Landscape Formula New Grass & Renovation



**20-8.7-6.6,
longevity: 3 months. 15kg bag**

Ideal fertilizer when laying new turf or re-sowing. Nitrogen release is controlled thanks to the Poly-S coating. This ensures balanced growth and good root development.

- The high phosphorus content promotes root growth.
- The fine granule is ideal for even nutrient distribution.
- Safe for young grass, minimal risk of scorching.

Suggested Application Rate: 35g/m²
(3.5kg/100m²)

Bag coverage: 420m²

Professional Landscape Formula All Round



**24-2.2-6.6+1.2Mg,
longevity: 4-5 months. 15kg bag**

Nutrients in the All Round formula are released gradually through the Poly-S and PACE coating technologies used. The steady release of nutrients ensures balanced growth and good root development. The added magnesium improves grass colour. Perfect for use after moss or weed treatment.

- Mini granule for perfect distribution, simple to combine in maintenance programmes.
- Stimulates the development of young grass into a strong sward.
- Contains magnesium for added grass colour.

Suggested Application Rate: 45g/m²
(4.5kg/100m²)

Bag coverage: 330m²

Professional Landscape Formula Flora



**14-1.3-14.9+1.8Mg+TE,
longevity: 8-9 months. 15kg bag**

Specifically developed for fertilising garden beds, borders, pots and hanging baskets in a landscape situation. Nutrients are gradually and evenly released throughout the season using PACE technology. Ensuring balanced, healthy plant growth with maximum flowering.

- A single application for the entire growing season.
- Even growth for healthy plants and profuse flowering.
- Added magnesium for good leaf colour.
- Low phosphorus formula suitable for Australian and New Zealand natives.

Suggested Application Rate: 40-80g/m²
(4-8kg/100m²)

Bag coverage: 375m²

Professional Landscape® Formula

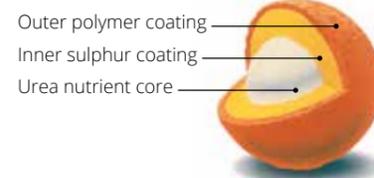


Poly S Coated granule technology

Poly-S is a controlled release Nitrogen source that delivers nutrients gradually over the required longevity. Nutrient release is primed by moisture permeating through the outer polymer channels, through micro-channels in the sulphur layer and into the nutrient core where the urea is solubilised.

Once the urea is solubilised, it then travels back through the same pathways where it is released and made available for plant uptake.

Poly-S technology

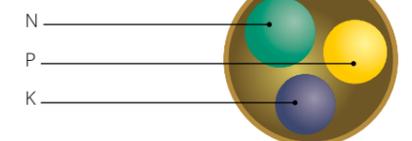


PACE Resin coated technology

PACE is a controlled release fertilizer with a unique vegetable-based resin membrane that ensures plants receive a steady dose of Nitrogen, Potassium and Phosphorus. Depending on the thickness of the coating, nutrients are released over different lengths of time – from 2-3 months up to 8-9 months. The release is not influenced by soil moisture levels, pH or bacterial activity, so remains consistent over a wide range of environmental conditions.

PACE technology

Nutrient is combined within each granule





Landscape created and image supplied by Humphreys Landscaping
www.humphreyslandscaping.co.nz

Fertilizer tablets

Agriform Fertilizer Planting Tablets

20+4.3+4.1+TE, longevity up to 12 months (10g tablet)
20+4.3+4.0+TE, longevity up to 12 months (21g tablet)
Available in: 10g - 1000 tablets/carton
21g - 500 tablets/carton

An easy to use slow release fertilizer planting tablet that meets the nutritional requirements of a wide variety of plants. Agriform delivers enough nutrition to feed the plant for up to 12 months which in turn drastically reduces labour and material costs of reapplication.

- Placement near the root zone ensures surface weeds and grass receive no nutrition.
- Leach resistant properties protect ground water pollution.
- Ideal for re-vegetation, landscape plant out and heavy soils.

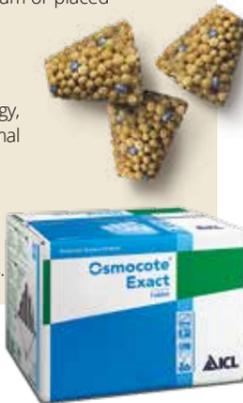


Osmocote Exact Fertilizer Planting Tablets

14-3.5-9.1+1.2MG+TE, longevity 8-9 months
14-3.5-8.3+1.2MG+TE, longevity 12-14 months
5g tablet - 1500 tablets/carton

Flexible controlled release fertilizer planting tablet offering the possibility of giving very accurate dosages of fertilizer in a simple manner. With a clever conical shape, the tablets can be pushed into the growing medium or placed in the planting hole.

- Safe to apply in the planting hole.
- Convenient & easy to use.
- Patented Osmocote Exact technology, safe for the environment with minimal leaching.
- Ideal for use in re-vegetation and landscaping.
- Safe for use in planting out of Australian and New Zealand natives.



Sustainability in practice

Greenery brings new life; in fact, greenery is life!

The beating heart in urban areas is without doubt the green space. The creation and maintenance of a lawn is therefore one of the pillars of sustainable interaction with our environment.

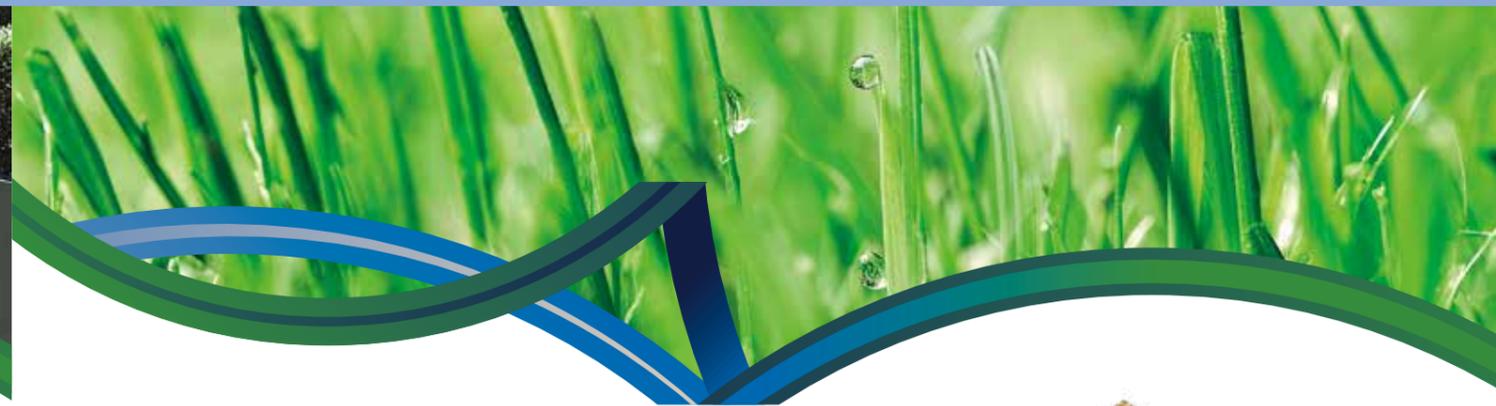
The lawn is a source of diversity; it might not occur to many people, but a lawn is a complex community of different varieties of grass and various soil organisms.



What makes a lawn so special?

- A lawn is a much better noise buffer than steel or concrete
- A lawn filters particulate matter
- A lawn has a cooling effect on hot days
- A lawn produces essential oxygen
- A lawn absorbs CO²
- A lawn is water-permeable
- A lawn has an attractive and natural look; concrete does not
- Healthy turf and gardens are of tremendous benefit to our environment and our mental and physical health

There are plenty of reasons to cherish and care for the lawns that we have!



Application Rates

ICL spreaders are durable, easy to use, and offer turf managers the very best in application efficiency.

Suggested planting out rates for landscapes

Pot size		5g Osmocote Exact Planting tablets or 10g Agriform Planting tablets	21g Agriform Planting tablets	Landscape Flora	
mm	litres			(g)	Spoon Size No.
Well rooted tube stock		1	n/a	5	1/2 of 1
140	1.3	1	n/a	5	1/2 of 1
180	3	2	1	9	1
200	5	3	1	15	3
250	8	5	2	24	3
300	12	7	3	36	4
400	24	14 or use Flora	7 or use Flora	72	6
500	45	27 or use Flora	14 or use Flora	135	7+4
Larger pot sizes/ Established plants		For each 30cm of plant height or spread, or for each 1.25cm of tree trunk diameter, use:			
For slow growing plants		2	1	10	1
For fast growing plants or poor soil situations		4	2	20	3



Gardeners & landscapers

Hydraflo 2: Granular Soil Wetting Agent

Application timing	Application rate (per m ²)	Water
Season long	20-25g/m ²	4-6mm
Bi-monthly	10-15g/m ²	4-6mm

Hydraflo L: Liquid Soil Wetting Agent

Turf and landscape application rates

Situation	Rate	Application frequency
Greens and fine turf, lawns and landscapes	125-375 mL /100m ²	3 months or as required
Fairways, sports turf, lawn turf and landscapes	375-625 mL /100m ²	8 months or as required

Apply in advance of expected dry patch formation. Hydraflo L is a polymeric wetting agent that rewets readily after treated soil has been dry for extended periods. Application through boom spray should use a minimum dilution of 1 part Hydraflo L to 200 parts water (1.0 litre of Hydraflo L in 200 litres of water). Additional irrigation (3-6mm) should be applied to ensure the Hydraflo L is thoroughly watered into the soil profile.

Section III
Expert advice: ICL Specialty
Fertilizers is there for you

Content

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3.1 Expert advice is the key to a good crop

ICL Specialty Fertilizers advisors understand grower practice

Every growing situation is different. That's why you need the right specialized fertilization programme to achieve optimum results. But choosing the perfect fertilizer isn't always easy. You've got to select one that gives your crops the ideal set of nutrients for healthy growth, which will pay off for you in the form of higher yields and better profit. ICL Specialty Fertilizers is here to help. We have unrivalled expertise in the field of fertilization and we're pleased to share this knowledge with you – tailor-made and in the field.

Your ICL Specialty Fertilizers advisor will work with you to select fertilizers that will achieve the very best growing results.

Advice that yields results

Our specialists in the field provide you with a tailor-made and personalised service that makes all the difference. This added-value advice is always:

- Up to date and aligned to the needs of your crop, with the option of making adjustments at any time during the growing season
- Tailored to your specific growing method
- Designed to allow you to make adjustments at any time during the growing season
- In line with the composition of your growing medium and irrigation water
- Focused on helping you select the fertilizer that is perfect for your crop



Information is key to making the right choice

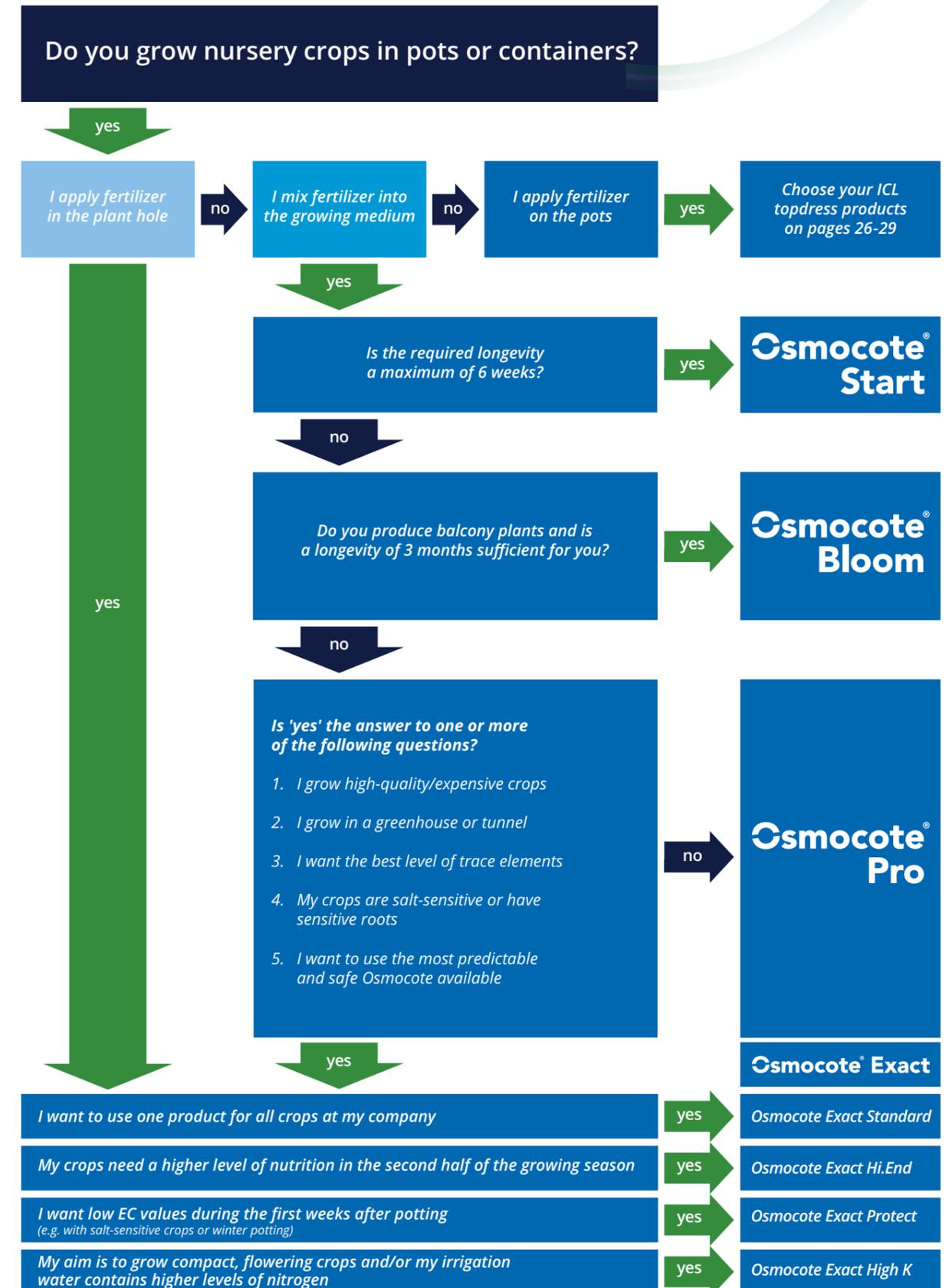
The more information you have on fertilizers, the better your decision will be. It's important to have a clear vision on the objective of fertilization and know which product will work best for your crop. Our advisors will be happy to help you find answers to the following key questions:

- 1 What does the coated fertilizer contain?
- 2 What does the fertilizer actually release?
- 3 Does it fulfill your customers' demands concerning sustainable cultivation?
- 4 When are the nutrients released and does this match your crop's needs during the season?
- 5 How reliable is the release of nutrients during the growing stage?
- 6 Is the product safe for your crop?
- 7 Does it produce the same results in different years under different weather conditions and crop needs?
- 8 When using a basic dosage in the growing medium, how much extra fertilizer do you need when you're using the rainwater supply and what are the differences in growth?
- 9 What's the fertilizer's cost-benefit ratio for the entire growing period?

Answering the above questions in consultation with your ICL Specialty Fertilizers advisor will pay off in improved efficiency, effectiveness, greater sustainability and higher yields, at competitive costs.

With ICL Specialty Fertilizers you receive the professional advice, clear information and useful insights you need to achieve growing success. A good crop which brings you profit.

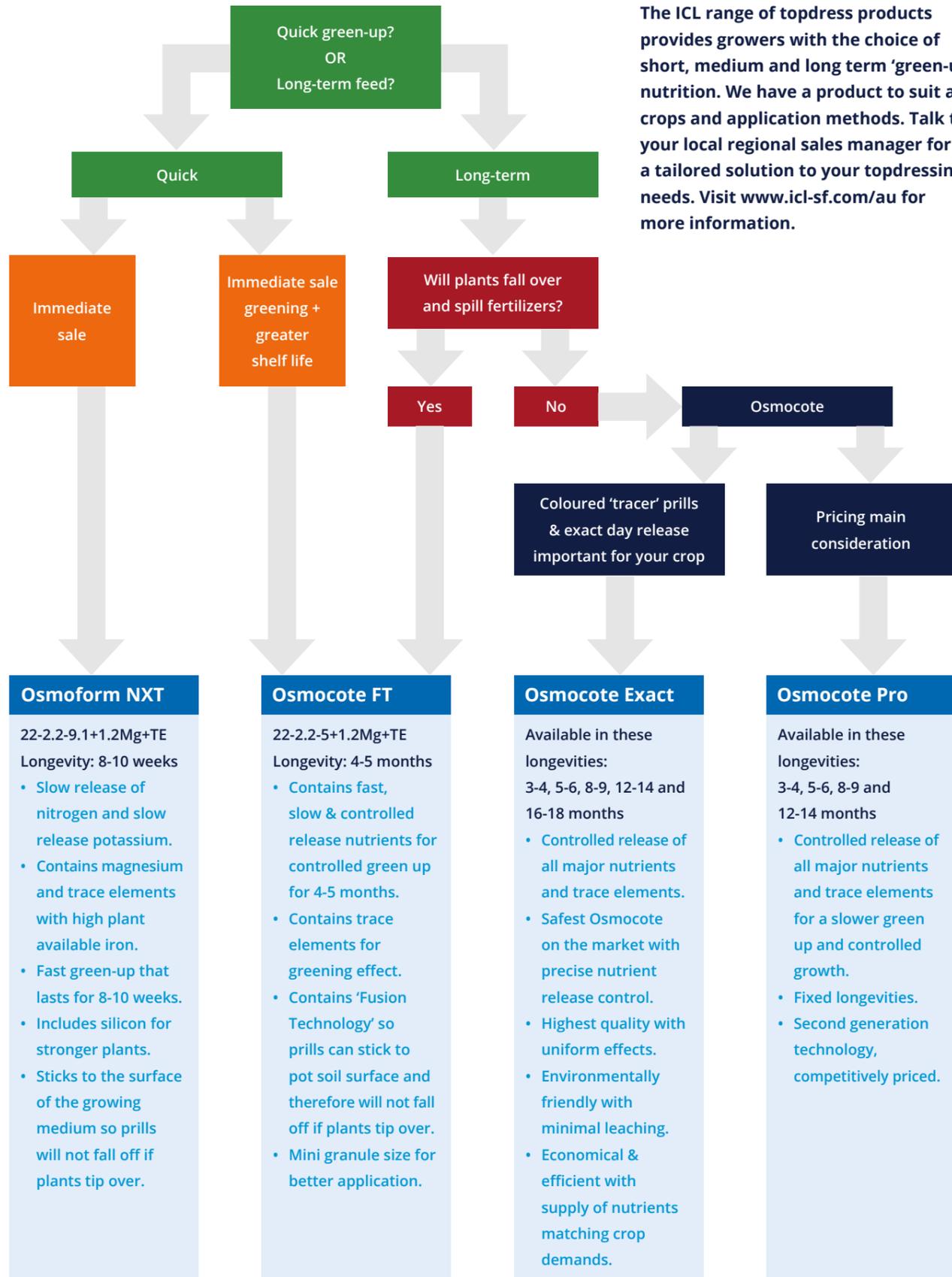
3.2 Select your preferred coated fertilizer in a few steps



Expert advice

▼ BEGIN HERE ▼

Follow the flow of your requirements to determine the best topdressing option for your crops.



3.3 Topdressing user guide

The ICL range of topdress products provides growers with the choice of short, medium and long term 'green-up' nutrition. We have a product to suit all crops and application methods. Talk to your local regional sales manager for a tailored solution to your topdressing needs. Visit www.icl-sf.com/au for more information.

3.4 Spoon Rate Guide

For accurate measurement use an Osmocote yellow rate spoon

The following table provides suggested rates as a general guide for the incorporation and topdress application of all Osmocote Exact DCT, Osmocote Exact and Osmocote Pro products along with topdress application of Osmocote Topdress FT and Osmoform NXT.

- ▶ Step 1: Select pot size (using your discretion as to pot L/mm that best represents your crop)
- ▶ Step 2: Select your recommended ICL fertilizer and applicable rate

Pot size		Osmocote Range					Osmoform NXT & Osmocote Topdress FT
Pot size litres	Pot size mm	3-4 mths grams (Full rate = 4g/L)	5-6 mths grams (Full rate = 5g/L)	8-9 mths grams (Full rate = 6g/L)	12-14 mths grams (Full rate = 7g/L)	16-18 mths grams (Full rate = 10g/L)	Grams (Full rate = 3g/L)
0.5L	100mm	2g	2.5g	3g	3.5g	5g	1.5g
1.3L	140mm	5g	7g	8g	9g	13g	4g
2L		8g	10g	12g	14g	20g	6g
3L		12g	15g	18g	21g	30g	9g
4L		16g	20g	24g	28g	40g	12g
5L	200mm	20g	25g	30g	35g	50g	15g
7L		28g	35g	42g	49g	70g	21g
8L	250mm	32g	40g	48g	56g	80g	24g
14L	300mm	56g	70g	84g	98g	140g	42g
27L	400mm	108g	135g	162g	189g	270g	81g
35L		140g	175g	210g	245g	350g	105g
50L	500mm	170g	205g	240g	275g	380g	180g
100L		270g	305g	340g	375g	480g	255g
200L		470g	505g	540g	575g	680g	405g

Note: Full application rates are recommended up to a 35L pot size. For each additional litre the full rate is reduced to 2g/L for all Osmocotes except Osmocote Topdress FT & Osmoform NXT, where the rate for pots >35L is reduced to 1.5g/L. All longevities are based on an average soil temperature of 21°C.

- ▶ Step 3: Calibrate your dibbler to the recommended rate or use the Osmocote yellow spoons applicable for your rate of application (Spoon gram capacity by product)

Spoon Number	Osmocote Range	Osmoform NXT & Osmocote Topdress FT
1	10g	9g
2	15g	13g
3	20g	17g
4	35g	30g
5	50g	43g
6	80g	69g
7	100g	86g

Spoon feeding your plants

The best method for accurately adding fertilizer to potting media is to use a calibrated dibbling machine. The least reliable method is by handful guessing.

In between is a simple, yet reliable way and that is to use Osmocote yellow spoons. The spoons are graded for accuracy and it is worth asking an ICL regional manager for a set and advise on how to use them. Underfeeding will necessitate topdressing later, which has high labour costs, so get your fertilizer rates spot on by spooning in.



When potting up, ensure the mentioned rates are present in the whole pot. The dilution effect should be compensated for to apply the correct dosage.

Example: Quality of fertilizer per pot = 12g



Contact an ICL Specialty Fertilizers regional manager to determine the appropriate rate for your crop.

Application methods



Mixed through the growing medium



The plant hole method



The side-dibbling method



Osmocote injector



Added directly onto the pot



Osmocote Exact tablets

Osmocote® Exact Mini

Osmocote Exact Mini application rates	Mixed in substrate		Broadcast	
	3-4	5-6	3-4	5-6
Longevity				
Bedding plants	1.5-2g/L	-	40-60g/m ²	-
Vegetable young plants	2-3g/L	-	50-70g/m ²	-
Fast growing cuttings	1.5-2g/L	-	30-50g/m ²	-
Fast growing cuttings (pot plants)	-	2-2.5g/L	-	50-70g/m ²
Mini pot plants	1.5-2.5g/L	2-3g/L	30-50g/m ²	50-70g/m ²
Forestry cuttings	1-2g/L	1.5-2.5g/L	30-50g/m ²	40-70g/m ²
Forestry seedlings of species germinating within 2 months	1-2g/L	1.5-2.5g/L	30-50g/m ²	40-70g/m ²
Nursery stock cuttings	1-2g/L	1.5-2.5g/L	30-50g/m ²	40-70g/m ²

Osmocote® Start

6 Weeks	Light feeding	Normal feeding
Container Nursery Stock	0.5-1.5g/L	1.5-2.5g/L
Pot Plants	0.5-1.5g/L	1.5-2.5g/L
Bedding Plants	0.5-1.5g/L	-
Vegetable young plants	0.5-1.5g/L	1.5-2.5g/L

Note: These rates are based on unfertilized substrates and are general recommendations. Contact an ICL Specialty Fertilizers regional manager to determine the appropriate rate for your crop and growing conditions.

Recommended dosage of Osmocote Exact, Osmocote Pro, Osmocote Bloom and other Osmocotes	
Longevity	Recommended rate
2-3	3-4 g/L
3-4	3-4.5 g/L
4-5	3-5 g/L
5-6	4-5 g/L
8-9	5-6 g/L
12-14	6-7 g/L
16-18	8-10 g/L



Expert advice

Section IV
Technical information
on plant nutrition

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4.1 Plant growth and nutrition

Managing nutrients properly is a specialist job. Fertilizers are only effective when applied in the correct way and at the right time. Processes in plants play a fundamental role in the uptake and efficiency of nutrients.

Growth = Photosynthesis – Respiration

Growth

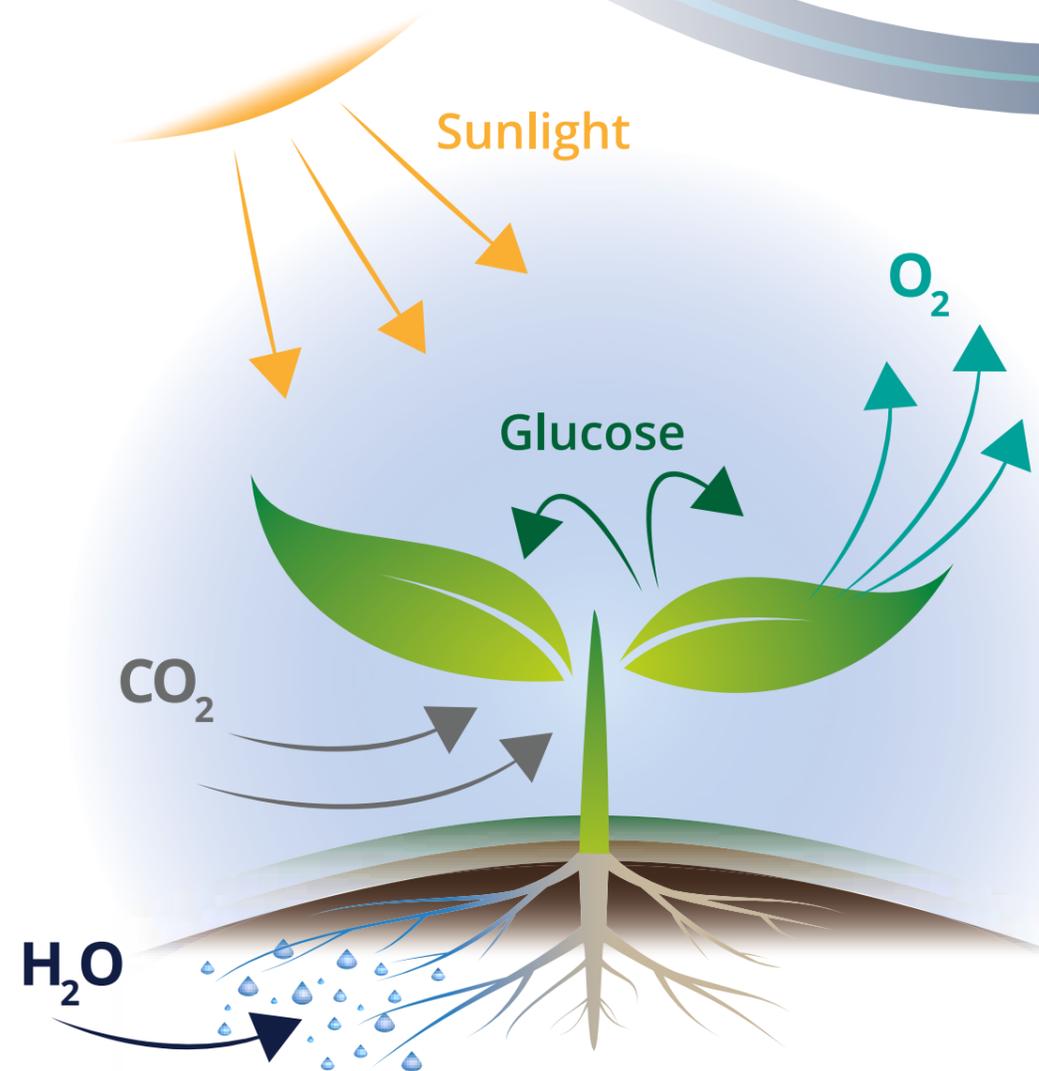
Simply put, the difference between photosynthesis and respiration is growth. If a plant is able to produce more during photosynthesis than it consumes during respiration, it will grow. Growth is in fact an increase in dry matter (mass).

Photosynthesis

A quick recap. Photosynthesis is the name for the complex reaction which plants use to turn energy from the sun into sugars. In other words, the plant takes carbon dioxide from the air and water from the soil and combines them together to form carbohydrates (sugars). Oxygen is released as a waste product. Photosynthesis is dependent on temperature and light exposure. It occurs only during the day.

Respiration

Plants (like humans) burn sugars and produce carbon dioxide in respiration. In addition to sugars, respiration also requires oxygen and water. Unlike photosynthesis, respiration does not require light. Plants can respire all the time, whether they are in dark or in the light.



4.2 Macro, meso and micro elements

Soil nutrients come in three basic categories, macro, meso and micro elements.

- Macro elements are nitrogen (N), phosphorus (P), potassium (K).
- Meso elements are magnesium (Mg), calcium (Ca) and sulphur (S).
- Micro elements or trace elements are iron (Fe), manganese (Mn), zinc (Zn), boron (B), copper (Cu), molybdenum (Mo) and silicon (Si).

In order for growth to occur there has to be a proper balance between these categories. The table gives you an idea of the optimum nutrient element ratios in plant tissue.

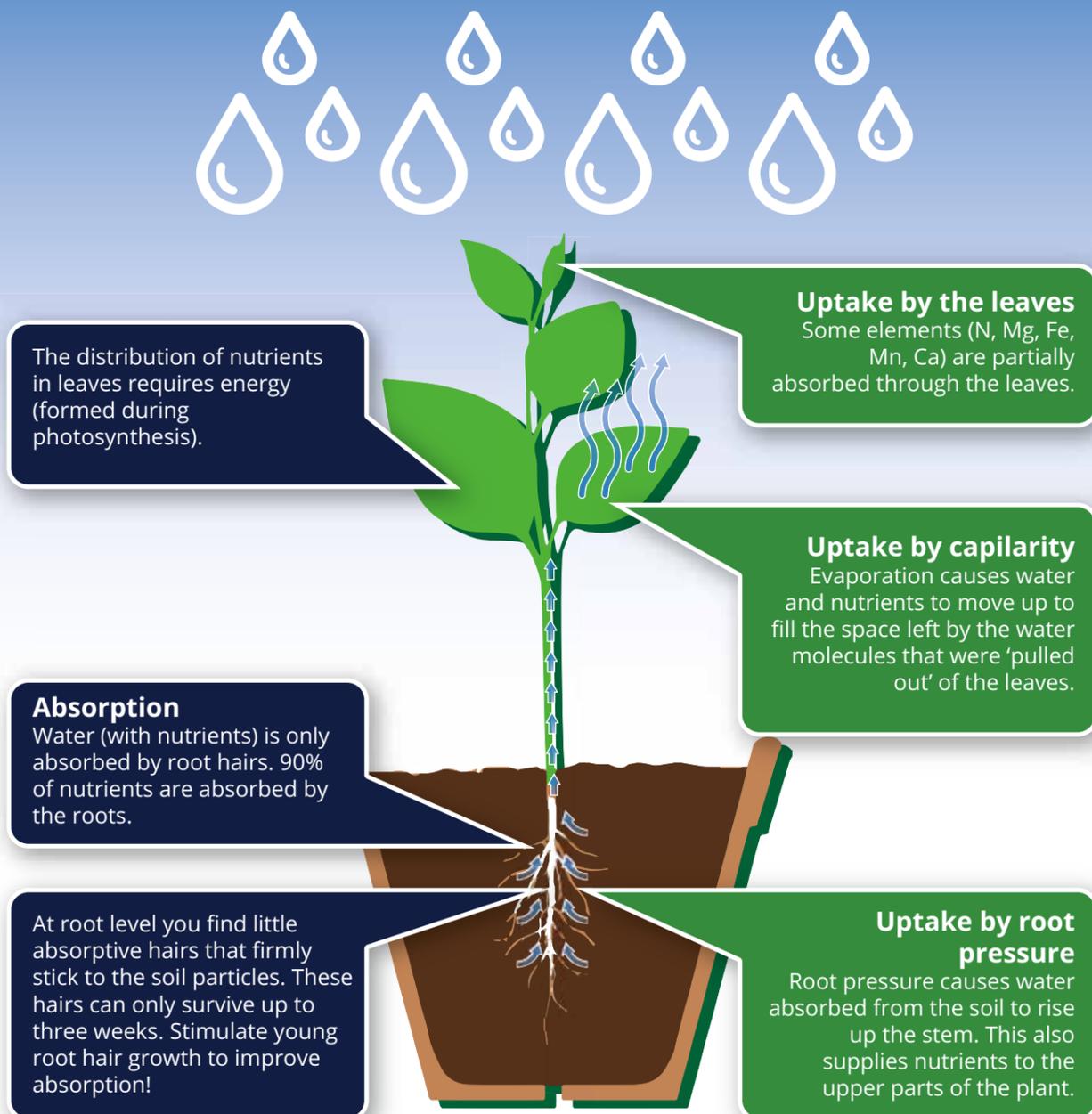
Element	Ratio in plant tissue
Molybdenum	1
Copper	100
Manganese	1000
Calcium	100,000
Nitrogen	1,000,000

4.3 How plants absorb nutrients and the impact on fertilization

Plants need to get enough nutrients to grow well, but it's also important that the nutrients are absorbed at the right places. To gain better insight into this process and the way it affects plants, it is good to start with some basic information about nutrient absorption.

Nutrients are absorbed by plants in the form of nutrient elements. Plants can only absorb elements that are dissolved in water.

How do nutrients get to the right places?



The primary aim of plant cultivation is to ensure the optimal uptake of water and nutrients. Tips and tricks give helpful ideas for increasing plant growth and performance

Tips and tricks for plant growth and nutrition

- Try to **increase photosynthesis** as much as possible (or prevent conditions that limit photosynthesis). The more photosynthesis, the more energy, which allows for more growth.
- A **healthy root system** is continuously growing and should have lots of white tips. Plants absorb the majority of their nutrients (90%) through the roots. So concentrate on developing a healthy root system, for example through the use of Peters Professional Plant Starter with high phosphorus content.
- Consider the effect on photosynthesis and plant growth before any cultivation is carried out. This way you can take the correct measures to prevent plant stress.

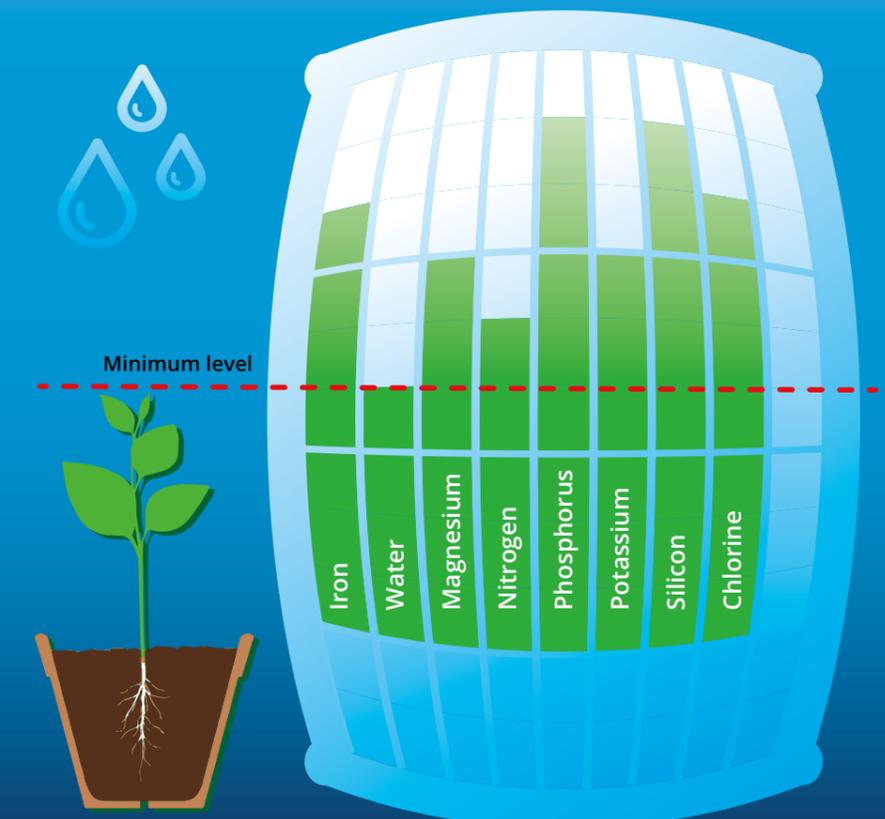


4.4 Plant growth in relation to fertilization

Balance between elements

Plants generate energy from nutrients. Crops require a balanced diet of essential nutrients in order to grow. If there is a lack of nutrient(s), for example in water, crops will show abnormal growth and deficiency, or they may not reproduce. In the 19th century Justus Freiherr von Liebig

developed the Law of the Minimum, a principle which states that growth is controlled not by the total amount of resources available, but by the lowest available nutrient (limiting factor). The image of the so-called Liebig's barrel shows how it works.



Technical information



4.5 Optimizing fertilization and irrigation water

Plants rely on water to transport nutrients to their cells. Water is necessary for good plant nutrition. The quality of water has a major influence on the effectiveness of fertilizers. In the next pages you will find all the information you need to determine the quality of your irrigation water.

Tips and tricks for watering and cultivation

- Analyze your irrigation water on a regular basis (minimum once a year).
- Review your analysis with an ICL Specialty Fertilizers technical advisor.
- The most common parameters used for determining irrigation water quality are acidity (pH), Electrical Conductivity (EC) and hardness (Ca-, Mg-bicarbonate), but look at the other elements in the water as well.
- Determine, together with your ICL SF advisor the need for measures to improve the quality of the water.
- Take into account the differences in water hardness and pH buffering capabilities between the different types of irrigation water (e.g. rainwater vs. bore water).
- If the water is too hard, it may be necessary to decrease the pH in the water by acidifying.
- Soft water may contain low concentrations of calcium. Adjust tank composition accordingly and add calcium.
- Match irrigation to water quality, weather conditions, and crop need at all times.
- ICL Specialty Fertilizers offers products that improve water quality based on advanced technologies. Our goal is to facilitate our customers' fertilizer programmes with our complete fertilization solutions.

The quality of a fertilizer does not only depend on what's in it, but also on what the plant can absorb!

4.6 Water quality

Types of irrigation water and their properties

Rainwater

- Large fluctuation in pH due to lack of pH buffering
- Very low EC levels. Clean water collecting system has great impact on quality
- Algae growth can become a problem and should be prevented

Bore water

- Composition varies per area and depth of the bore
- Constant composition and temperature
- May contain iron, manganese and bicarbonates
- May contain high levels of Ca and Mg

Recirculated water

- Ensure water is disinfected to kill plant pathogens
- Frequent water analysis is required to prevent sodium accumulation/build up
- Recirculated water with high EC levels is usually low in trace elements
- Adjust amount of additional fertilizers according to water analysis

Surface water

- Watch out for potential fungi/bacteria in the water
- Possible high concentration of Na and Cl
- Composition varies per season and area and may fluctuate quickly

Reverse Osmosis (RO) water

- pH neutral, does not contain any salts
- Very clean water
- Does not contain buffers. Buffering capabilities removed through RO
- Expensive method of water purification due to power consumption
- Take note of regulations referring to the disposal of the waste water from the RO system.

Tap water

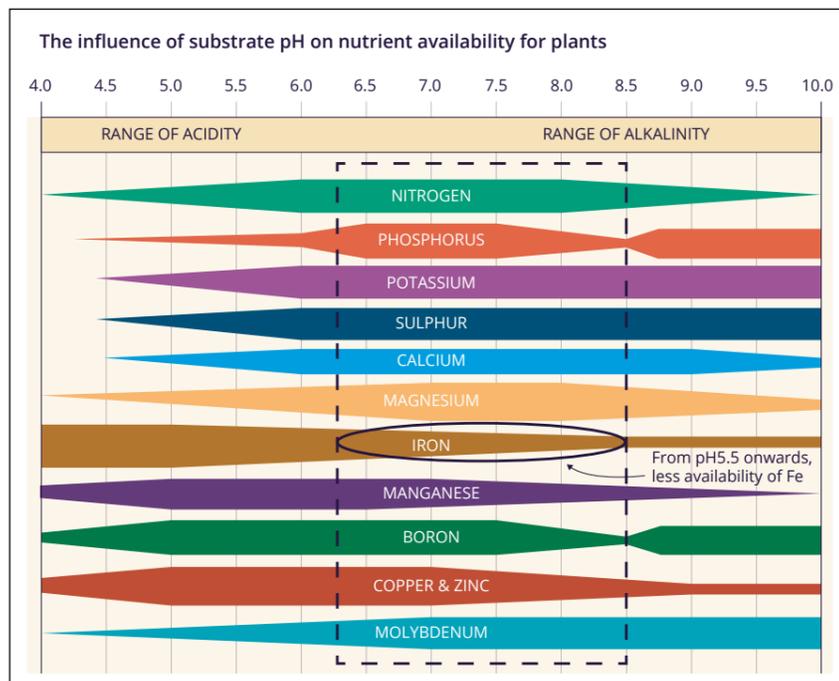
- High pH levels due to buffering effect
- Quality varies per region
- May contain Ca, Mg, Na and Cl
- Take into consideration the levels of HCO₃ (bicarbonate)
- Expensive



4.7 Performance indicators of water quality

pH value

Variations in pH during cultivation will affect the quality of your plants. Low pH levels disturb the uptake of elements such as potassium, calcium, magnesium and molybdenum. Low pH can increase toxicity because some trace elements are absorbed too easily. A pH value that is too high can prevent a plant from absorbing phosphate and trace elements (with the exception of molybdenum).



Water hardness

The simple definition of water hardness is the amount of dissolved calcium and magnesium carbonate ions in the water. Hard water increases the pH in the growing medium. Soft water on the other hand may reduce pH in the root environment when acidifying fertilizers are used. It's essential that growers take measures to improve water quality. Whether the water is hard or soft, ICL Specialty Fertilizers provides expert advice on how to control the quality of your water.

EC

Electrical Conductivity (EC) is the amount of electrical current water can carry. EC is expressed as milliSiemens per centimetre (mS/cm) at 25°C. The electrical conductivity of water is actually a measurement for salinity. Soil with excessively high salinity, or high EC, can prevent efficient nutrient absorption by the plant. Irrigation water with high EC is also unfavourable for usage on plants, because it limits the possibilities of fertilization and it can harm plants.

4.8 Optimizing the balance between fertilization, natural rainfall and irrigation

In the case of outside grown crops in growing media, it is always recommended to add at least 75% base rate of Osmocote. This will ensure a steady and continuous supply of essential plant feed. On top of the base rate Osmocote, you have sufficient 'space' to steer crop growth based on requirements during every crop stage, by adding WSF.

For this purpose use Peters water-soluble fertilizers to ensure a full package of N, P, K, MgO and trace elements. During the season additional water-soluble fertilizer has to be applied to fulfill the complete plant need. Special attention is required after heavy rainshowers. It can be beneficial to your plants to add temporarily higher amounts of WSF to quickly increase EC levels in the growing medium. Depending on the amount of rainfall in a short time, the WSF rate needs to be determined. Your ICL advisor has the experience to help you.

Tips and tricks for optimizing fertilization, rainfall and irrigation

- Measure the impact of your work by placing rain gauges between crops, preferably in several places spread throughout the nursery
- If frequent watering applications are needed to keep the soil moist, add 0.5 to 1.0 EC worth of nutrition at a time, depending on the crop's needs
- If you are using a fertilizer solution with an EC of 2.0 mS/cm or more, sprinkle briefly with clean water afterwards (one to two minutes)
- Measure how much water you are giving per square meter. Do this by turning on your sprinklers and using cups or rain gauges to measure how much water your plants are getting
- Measure the time it takes for water (with fertilizer) to get from your pumping system to the farthest end of the nursery. You can check this by adding colouring to the water
- Always have insight into the EC value of your irrigation water. Take this value into account when measuring the total EC



4.9 Growing media and pH

What does pH mean?

pH stands for potentiae Hydrogenii.

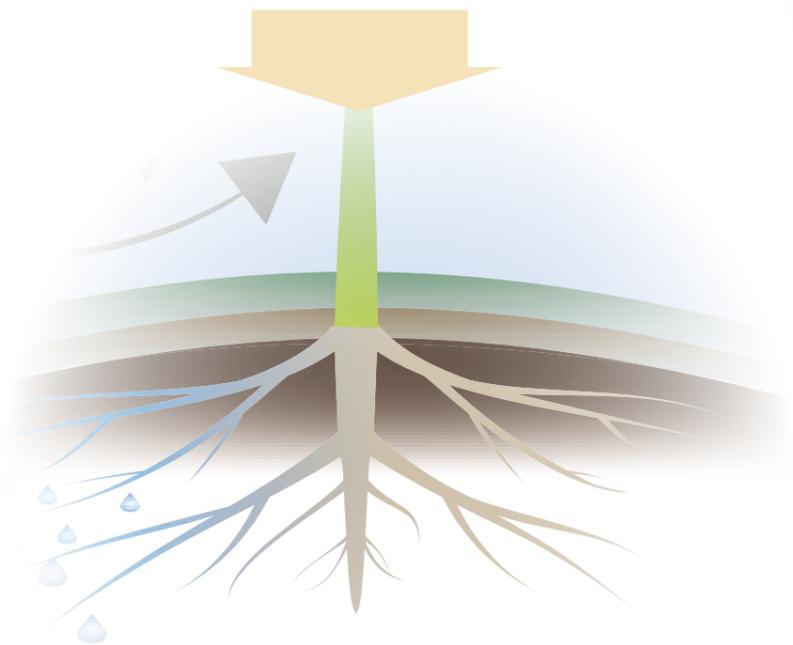
This is the concentration of H⁺ ions in a solution. The pH of potting soil is the level of pH measured in the moisture of the soil.

For example:

- pH 3.0 = 10⁻³ mol H⁺ (=0.001mol/l) pH3.0=10⁻³ mol H⁺ (0.001mol/l)
- pH 7.0 = 10⁻⁷ mol H⁺ (=0.0000001mol/l)

What can influence the pH value of the substrate?

- The composition of the substrate and its pH buffering capacity
- The application of lime and dolomite to the soil
- By the plant:
 - Absorption of cations by the plant: this results in H⁺ ions being delivered to the root environment (lowering pH levels)
 - Absorption of anions by the plant: this results in OH⁻ ions being delivered to the root environment (rise in pH levels)
- More nutrition is available than what the plant is able to absorb: this may affect the balance of cations and anions and lead to changes in the pH level
- Over watering: excessive leaching can drive acidification
- Water quality: high pH water with high alkalinity may raise pH over time





4.10 AngelaWeb2.0

AngelaWeb2.0, designed by ICL Specialty Fertilizers, takes precision nutrition to the next level

This innovative computer programme offers growers the possibility for individual recommendations, tailored to specific pot plants, nursery stock crops, cut flowers, vegetables and fruits. AngelaWeb 2.0 takes into account the crop type, variety, growing media, and growth phase to display the specific nutritional demands. By inputting information regarding the water source and how it is applied, and selecting the fertilizer products of choice, AngelaWeb 2.0 calculates a regime tailored to the exact needs of the crop.

Giving your plants what they need

Many factors have an impact on plant quality, and correct nutrition is among the most important. It not only has a key role to play in preventing plant diseases, it is also vital to healthy growth and, where appropriate, crop yield – and therefore ultimately its financial performance. Plants need the correct nutrients depending on the growth stage, the growing media, and its pH and Electrical Conductivity (EC). Water quality is another key parameter, and this can change at many nurseries over the course of the season when switching between different water sources. How it is applied to the crop also has an impact.

Saving you time and money and helping the environment

While some find manual crop nutrition calculation programmes for different crop stages somewhat daunting, as well as time consuming, AngelaWeb 2.0 looks to save precious management time and decrease any errors in nutrient calculations. With the rising price of mineral raw materials and transport costs, fertilizer is a significant input cost. Apply too little and crop quality suffers, but apply too much and money is wasted, the environment suffers, growers can be affected and water quality is compromised.

Angela WEB2.0

Designed by the experts in precision nutrition for professionals

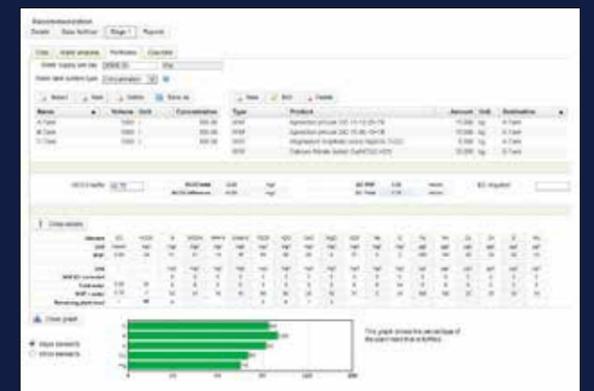
- Give the crop exactly what it requires
- Maximize your return on investment
- Optimize nutrient usage



How it works...

Web-based AngelaWeb 2.0 is straightforward to operate and apply. First the crop, including the variety, as well as the type of growing media and growth phase are selected. This information is then used to calculate and display the crop's specific nutritional requirements, and the option is also provided to create Controlled Release Fertilizer simulations. The next step involves inputting data from a detailed analysis of the water source and how it is to be applied. Next, by selecting from a list of 'straights' or water-soluble fertilizers, the software calculates a fertilizer regime. In support of this, it generates a graph showing the percentage of the plants' nutritional needs being fulfilled at each growth stage, as well as the EC level.

As the season progresses, if certain elements change, such as the water source, the existing data can be retrieved and changes quickly made. The software, having made the necessary tweaks and adjustments to the fertilizer programme, produces new print outs and reports.



AngelaWeb 2.0 generates graphs showing the percentage of the plants nutritional needs being fulfilled at each growth stage.

4.11 Deficiency symptoms

Container Nursery Stock

N Nitrogen		N deficiency in Lonicera Source: LVG Bad Zwischenahn (D)		N deficiency in Cham. laws. 'Ellwoodii' Source: LVG Bad Zwischenahn (D)		N deficiency in Philadelphus Source: ICL Specialty Fertilizers Research (NL)
P Phosphate		P deficiency in Hypericum Source: LVG Bad Zwischenahn (D)		P deficiency in Hydrangea Source: ICL Specialty Fertilizers Research (NL)		P deficiency in Thuja Source: LVG Bad Zwischenahn (D)
K Potassium		K deficiency in Ribes Source: LVG Bad Zwischenahn (D)		K deficiency in Caryopteris Source: PPO Boskoop (NL)		K deficiency in Hibiscus Source: PPO Boskoop (NL)
Ca Calcium		Ca deficiency in Hibiscus Source: PPO Boskoop (NL)		Ca deficiency in Rosa Source: ICL Specialty Fertilizers Research (NL)		Ca deficiency in Taxus baccata 'Hicksii' Source: LVG Bad Zwischenahn (D)
Mg Magnesium		Mg deficiency in Hydrangea Source: PPO Boskoop (NL)		Mg deficiency in Cham. laws. 'Ellwoodii' Source: LVG Bad Zwischenahn (D)		Mg deficiency in Magnolia Source: LVG Bad Zwischenahn (D)
B Boron		B deficiency in Cytisus Source: PPO Boskoop (NL)		B deficiency in Ribes Source: PPO Boskoop (NL)		B deficiency in Lonicera Source: LVG Bad Zwischenahn (D)
Cu Copper		Cu deficiency in Lonicera Source: LVG Bad Zwischenahn (D)		Cu deficiency in Cham. laws. 'Columnaris' Source: ICL Specialty Fertilizers Research (NL)		Cu deficiency in Philadelphus Source: PPO Boskoop (NL)
Fe Iron		Fe deficiency in Hydrangea Source: ICL Specialty Fertilizers Research (NL)		Fe deficiency in Cham. laws. 'Columnaris' Source: LVG Bad Zwischenahn (D)		Fe deficiency in Potentilla tridentata 'Nuuk' Source: LVG Bad Zwischenahn (D)
Mn Manganese		Mn deficiency in Kalmia Source: LVG Bad Zwischenahn (D)		Mn deficiency in Pieris Source: LVG Bad Zwischenahn (D)		Mn deficiency in Chamaecyparis Source: PPO Boskoop (NL)
Mo Molybdenum		Mo deficiency in Ribes Source: PPO Boskoop (NL)		Mo deficiency in Caryopteris Source: PPO Boskoop (NL)		Mo deficiency in Philadelphus Source: PPO Boskoop (NL)

Pot and Bedding Plants

N Nitrogen		N deficiency in Guzmania 'Ostara' Source: Corn. Bak B.V. (NL)		N deficiency in Doronicum Source: LVG Heidelberg (D)		N deficiency in Poinsettia Source: ICL Specialty Fertilizers Research (NL)
P Phosphate		P deficiency in Hydrangea Source: ICL Specialty Fertilizers Research (NL)		P deficiency in Verbena Source: WUR Glastuinbouw, Bleiswijk (NL)		P deficiency in Petunia Source: WUR Glastuinbouw, Bleiswijk (NL)
K Potassium		K deficiency in Primula Source: ICL Specialty Fertilizers Research (NL)		K deficiency in Kentia Source: ICL Specialty Fertilizers Research (NL)		K deficiency in Gerbera Source: ICL Specialty Fertilizers Research (NL)
Ca Calcium		Ca deficiency in Poinsettia Source: ICL Specialty Fertilizers Research (NL)		Ca deficiency in Rosa Source: ICL Specialty Fertilizers Research (NL)		Ca deficiency in Primula Source: LVG Heidelberg (D)
Mg Magnesium		Mg deficiency in Pelargonium Source: USDA (USA)		Mg deficiency in Guzmania Source: Corn. Bak B.V. (NL)		Mg deficiency in Ficus Source: ICL Specialty Fertilizers Research (NL)
S Sulphur		S deficiency in Pelargonium Source: LVG Heidelberg (D)		S deficiency in Poinsettia Source: LVG Heidelberg (D)		S deficiency in Poinsettia Source: ICL Specialty Fertilizers Research (NL)
B Boron		B deficiency in Petunia Source: ICL Specialty Fertilizers Research (NL)		B deficiency in Kalanchoë Source: WUR Glastuinbouw, Bleiswijk (NL)		B deficiency in Hibiscus Source: IFAS (USA)
Cu Copper		Cu deficiency in Chrysanthemum Source: WUR Glastuinbouw, Bleiswijk (NL)		Cu deficiency in Gerbera Source: ICL Specialty Fertilizers Research (NL)		Cu deficiency in Pelargonium Source: USDA (USA)
Fe Iron		Fe deficiency in Rosa Source: ICL Specialty Fertilizers Research (NL)		Fe deficiency in Pelargonium Source: ICL Specialty Fertilizers Research (NL)		Fe deficiency in Calibrachoa Source: LVG Heidelberg (D)
Mn Manganese		Mn deficiency in Kalanchoë Source: WUR Glastuinbouw, Bleiswijk (NL)		Mn deficiency in Spathiphyllum Source: ICL Specialty Fertilizers Research (NL)		Mn deficiency in Pelargonium Source: USDA (USA)
Mo Molybdenum		Mo deficiency in Kalanchoë Source: WUR Glastuinbouw, Bleiswijk (NL)		Mo deficiency in Poinsettia Source: NCSU (USA)		Mo deficiency in Chrysanthemum Source: WUR Glastuinbouw, Bleiswijk (NL)
Zn Zinc		Zn deficiency in Pelargonium Source: USDA (USA)		Zn deficiency in Poinsettia Source: ICL Specialty Fertilizers Research (NL)		Zn deficiency in Poinsettia Source: ICL Specialty Fertilizers Research (NL)

Section V
Product information
& breakdowns

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Osmoform	88
Peters Excel	90
Peters Professional	90
Micromax	90
Micromax WS	90
Magrimax	90
Professional Landscape Formula	92
Maintenance	92
New Grass & Renovation	92
All Round	92
Flora	92

5.1 Breakdown Tables

Osmocote® Exact

Name	Analysis	Longevity in months at 21°C	N %	NO ₃ -%	NH ₄ + %	Urea %	P %	K %	Mg %	S %	Fe % Total	Fe % EDTA	Mn %	Zn %	Cu %	B %	Mo %	Granule size mm
Osmocote Exact Hi.End	15-3.9-10+1.2Mg+TE	5 - 6	15.0	6.6	8.4	0.0	3.9	10.0	1.2	6.0	0.45	0.09	0.06	0.015	0.050	0.02	0.020	2.0-4.5 mm
Osmocote Exact Hi.End	15-3.9-9.1+1.2Mg+TE	8 - 9	15.0	6.6	8.4	0.0	3.9	9.1	1.2	6.0	0.45	0.09	0.06	0.015	0.050	0.02	0.020	2.0-4.5 mm
Osmocote Exact Hi.End	15-3.5-9.1+1.2Mg+TE	12 - 14	15.0	6.6	8.4	0.0	3.5	9.1	1.2	5.6	0.42	0.08	0.06	0.015	0.050	0.02	0.020	2.0-4.5 mm
Osmocote Exact Protect	14-3.5-9.1+1.2Mg+TE	12 - 14	14.0	6.2	7.8	0.0	3.5	9.1	1.2	5.6	0.42	0.08	0.06	0.015	0.045	0.02	0.020	2.0-4.5 mm
Osmocote Exact Standard	16-3.9-10+1.2Mg+TE	3 - 4	16.0	7.0	9.0	0.0	3.9	10.0	1.2	6.4	0.45	0.09	0.06	0.015	0.050	0.02	0.020	2.0-4.5 mm
Osmocote Exact Standard	15-3.9-10+1.2Mg+TE	5 - 6	15.0	6.6	8.4	0.0	3.9	10.0	1.2	6.0	0.45	0.09	0.06	0.015	0.050	0.02	0.020	2.0-4.5 mm
Osmocote Exact Standard	15-3.9-9.1+1.2 Mg+TE	8 - 9	15.0	6.6	8.4	0.0	3.9	9.1	1.2	6.0	0.45	0.09	0.06	0.015	0.050	0.02	0.020	2.0-4.5 mm
Osmocote Exact Standard	15-3.9-9.1+1.2Mg+TE	12 - 14	15.0	6.6	8.4	0.0	3.9	9.1	1.2	6.0	0.45	0.09	0.06	0.015	0.050	0.02	0.020	2.0-4.5 mm
Osmocote Exact Lo.Start	15-3.5-9.1+1.2Mg+TE	16 - 18	15.0	6.6	8.4	0.0	3.5	9.1	1.2	6.0	0.45	0.09	0.06	0.015	0.050	0.02	0.020	2.0-4.5 mm
Osmocote Exact Mini	15-3.9-9.1+1.2Mg+TE	3 - 4	15.0	6.6	8.4	0.0	3.9	9.1	1.2	6.0	0.45	0.09	0.06	0.015	0.050	0.02	0.020	1.0-2.5 mm
Osmocote Exact Mini	15-3.9-9.1+1.2Mg+TE	5 - 6	15.0	6.6	8.4	0.0	3.9	9.1	1.2	6.0	0.45	0.09	0.06	0.015	0.050	0.02	0.020	1.0-2.5 mm
Osmocote Exact Standard High K	11-4.8-14.9+TE	5 - 6	11.0	4.3	6.7	0.0	4.8	14.9	(0.9)	7.2	0.25	0.05	0.03	0.010	0.050	0.01	0.010	2.0-4.5 mm
Osmocote Exact Standard High K	11-4.8-14.9+TE	8 - 9	11.0	4.3	6.7	0.0	4.8	14.9	(0.9)	7.2	0.25	0.05	0.03	0.010	0.050	0.01	0.010	2.0-4.5 mm

Osmocote® Exact Tablet

Name	Analysis	Longevity in months at 21°C	N %	NO ₃ -%	NH ₄ + %	Urea %	P %	K %	Mg %	S %	Fe % Total	Fe % EDTA	Mn %	Zn %	Cu %	B %	Mo %	Weight per tablet gram 5 or 7.5
Osmocote Exact tablet	14-3.5-9.1+1.2Mg+TE	8 - 9	14.0	6.2	7.8	0.0	3.5	9.1	1.2	0.41	0.08	0.05	0.013	0.046	0.01	0.018	0.01	5 and 7.5
Osmocote Exact tablet	14-3.5-9.1+1.2Mg+TE	12 - 14	14.0	6.2	7.8	0.0	3.5	9.1	1.2	0.41	0.08	0.05	0.013	0.046	0.01	0.018	0.018	5

Osmocote® Pro

Name	Analysis	Longevity in months at 21°C	N %	NO ₃ -%	NH ₄ + %	Urea %	P %	K %	Mg %	S %	Fe % Total	Fe % EDTA	Mn %	Zn %	Cu %	B	Mo %	Granule size mm
Osmocote Pro NEW	19-3.9-8.3+1.2Mg+TE	3 - 4	19.0	6.3	8.2	4.5	3.9	8.3	1.2	5.2	0.30	0.06	0.04	0.011	0.037	0.01	0.015	2.0-4.5mm
Osmocote Pro NEW	19-3.9-8.3+1.2Mg+TE	5 - 6	19.0	6.4	8.2	4.4	3.9	8.3	1.2	5.2	0.30	0.06	0.04	0.011	0.037	0.01	0.015	2.0-4.5mm
Osmocote Pro NEW	18-3.9-8.3+1.2Mg+TE	8 - 9	18.0	5.8	8.0	4.2	3.9	8.3	1.2	4.8	0.30	0.06	0.04	0.011	0.037	0.01	0.015	2.0-4.5mm
Osmocote Pro NEW	18-3.9-8.3+1.2Mg+TE	12 - 14	18.0	5.9	7.7	4.4	3.9	8.3	1.2	4.8	0.30	0.06	0.04	0.011	0.037	0.01	0.015	2.0-4.5mm
Osmocote Pro low P	14-1.3-14.9+1.8Mg+TE	8 - 9	14.0	6.3	6.8	0.0	1.3	14.9	1.8	7.2	0.20	0.00	0.03	0.008	0.050	0.00	0.000	2.0-4.5mm
Osmocote Pro low P	14-1.3-14.9+1.8Mg+TE	12 - 14	14.0	5.8	6.4	0.0	1.3	14.9	1.8	6.8	0.20	0.00	0.03	0.008	0.050	0.00	0.000	2.0-4.5mm

Osmocote® BlueMax

Name	Longevity in months at 21°C	S %	Granule size mm
Osmocote BlueMax	2 - 3	13.3	1.0 - 2.5mm

Osmocote® Bloom

Name	Analysis	Longevity in months at 21°C	N %	NO ₃ -%	NH ₄ + %	Urea %	P %	K %	Mg %	S %	Fe % Total	Fe % EDTA	Mn %	Zn %	Cu %	B %	Mo %	Granule size mm
Osmocote Bloom	12-3.1-14.9+TE	2 - 3	12.0	5.3	6.7	0.0	3.1	14.9	(0.9)	7.6	0.35	0.07	0.05	0.013	0.045	0.01	0.017	1.0 - 2.5mm

Osmocote® Start

Name	Analysis	Longevity in months at 21°C	N %	NO ₃ -%	NH ₄ + %	Urea %	P %	K %	Mg %	S %	Fe % Total	Fe % EDTA	Mn %	Zn %	Cu %	B %	Mo %	Granule size mm
Osmocote Start	11-4-8-14.1+1.2Mg+TE	6 weeks	11.0	4.5	6.5	0.0	4.8	14.1	1.2	6.8	0.38	0.17	0.05	0.01	0.09	0.01	0.01	1 - 2.5 mm

Osmocote® Mini

Name	Analysis	Longevity in months at 21°C	N %	NO ₃ -%	NH ₄ + %	Urea %	P %	K %	Mg %	S %	Fe % Total	Fe % EDTA	Mn %	Zn %	Cu %	B %	Mo %	Granule size mm
Osmocote Mini	18-2.6-9.1	5-6	18.0	8.4	9.6	0.0	2.6	9.1	1.2	6.8	0.38	0.17	0.05	0.01	0.09	0.01	0.01	1 - 2.5 mm

Osmocote® CalMag

Name	Analysis	Longevity in months at 21°C	N %	NO ₃ -%	NH ₄ + %	Urea %	P %	K %	Ca %	Mg %	S %	Fe % Total	Fe % EDTA	Mn %	Zn %	Cu %	B %	Mo %	Granule size mm
Osmocote CalMag	10-0-0+12.2Ca+3Mg	3 - 4	10.0	9.2	0.0	0.0	0.0	0.0	12.2	3.0	0.0	0.00	0.0	0	0.0	0.000	0.0	0.000	2.0-4.5 mm

Osmocote® Iron

Name	Analysis	Longevity in months at 21°C	N %	NO ₃ -%	NH ₄ + %	Urea %	P %	K %	Mg %	S %	Fe % Total	Fe % EDTA	Mn %	Zn %	Cu %	B %	Mo %	Granule size mm	
Osmocote Iron	0-0-0+17.8Fe	3 - 4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1-2.5 mm

Osmocote® Topdress | Fusion Technology

Name	Analysis	Longevity in months at 21°C	N %	NO ₃ -%	NH ₄ + %	Urea %	P %	K %	Mg %	S %	Fe % Total	Mn %	Zn %	Cu	B %	Mo %	Granule size mm
Osmocote Topdress FT*	22-2.2-5.0+1.2Mg+TE	4 - 5	22.0	4.9	5.8	11.3	2.2	5.0	1.2	7.2	0.800	0.300	0.100	0.050	0.000	0.000	1.0-2.5mm

*products contain partly uncoated granules for immediate nutrient availability

Osmoform®

Name	Analysis	Longevity in months at 21°C	N %	NO ₃ -%	NH ₄ + %	Urea %	Ureaform % total	% soluble at 20°C	% insol. sol. 100°C	% insoluble 100°C	P %	K %	Mg %	S %	Fe % Total	Fe % EDTA	Mn %	Zn %	Cu %	B %	Mo %	Granule size mm
Osmoform High N	38-0-0	8 - 10	38	0	0	7.5	30.5	9.7	9.7	11.1	0.0	0.0	0.0	0.0	0.0	0.00	0.000	0.020	0.00	0.000	0.0	0.5-1.7 mm
Osmoform NXT	22-2.2-9.1+1.2Mg	8 - 10	22	0	3	7.5	11.5	3.8	3.8	3.9	2.2	9.1	1.2	5.6	0.5	0.00	0.100	0.020	0.02	0.000	0.0	1.0-2.5 mm

Peters® Excel

Name	Analysis	N %	NO ₃ ⁻ %	NH ₄ ⁺ %	N-Urea %	P %	K %	Mg %	Ca %	S %	Fe % DTPA	Mn % DTPA	Zn % DTPA	Cu % EDTA	B %	Mo %	EC mS 0mg/l HCO ₃	EC mS 50mg/l HCO ₃	EC mS >150mg/l HCO ₃	Solub g/l (25°C)	Acidity mg/l HCO ₃ ⁻	A/B kg/kg CaCO ₃
Peters Excel CalMag Grower	15-2.2-12.5+5Ca+1.8Mg+TE	15.0	11.5	1.4	2.1	2.2	12.5	1.8	5.0	0.0	0.12	0.06	0.015	0.015	0.02	0.010	1.3	1.0		460	45	0.058
Peters Excel CalMag Finisher	13-2.2-16.6+5Ca+1.2Mg+TE	13.0	11.0	0.0	2.0	2.2	16.6	1.2	5.0	0.0	0.12	0.06	0.015	0.015	0.02	0.010	1.3	1.0		320	46	0.120
Peters Excel Hard Water Grow Special	18-4.4-14.9+1.2Mg+TE	18.0	10.3	3.6	4.1	4.4	14.9	1.2	0.0	0.0	0.12	0.06	0.015	0.015	0.02	0.010			0.9	350	88	-0.155

Peters® Professional

Name	Analysis	N %	NO ₃ ⁻ %	NH ₄ ⁺ %	Urea %	P %	K %	Mg %	Ca %	S %	Fe % DTPA	Mn % DTPA	Zn % DTPA	Cu % EDTA	B %	Mo %	EC mS >150mg/l HCO ₃	Solub g/l (25°C)	A/B kg/kg CaCO ₃
Peters Professional Combi-Sol	6-7.9-29.9+1.8Mg+TE	6.0	6.0	0.0	0.0	7.9	29.9	1.8	0.0	2.8	0.25	0.06	0.015	0.015	0.02	0.010	1.1	300	0.124
Peters Professional Blossom Booster	10-13.1-16.6+1.2Mg+TE	10.0	5.2	4.8	0.0	13.1	16.6	1.2	0.0	1.6	0.12	0.06	0.015	0.015	0.02	0.010	1.0	300	-0.181
Peters Professional Plant Starter	10-22.7-8.3+TE	10.0	0.0	7.6	2.4	22.7	8.3	0.0	0.0	0.0	0.12	0.06	0.015	0.015	0.02	0.010	0.8	350	-0.452
Peters Professional Pot Plant Special	15-4.8-24.1+TE	15.0	8.6	2.0	4.4	4.8	24.1	0.0	0.0	0.0	0.12	0.06	0.015	0.015	0.02	0.010	1.0	375	-0.039
Peters Professional Winter Grow Special	20-4.4-16.6+TE	20.0	12.1	7.9	0.0	4.4	16.6	(0.6)	0.0	0.7	0.12	0.06	0.015	0.015	0.02	0.010	1.2	450	-0.206
Peters Professional Allrounder	20-8.7-16.6+TE	20.0	4.5	2.4	13.1	8.7	16.6	(0.4)	0.0	0.6	0.12	0.06	0.015	0.015	0.02	0.010	0.8	400	-0.285
Peters Professional Foliar Feed	27-6.5-10+TE	27.0	3.6	2.9	20.5	6.5	10.0	0.0	0.0	0.3	0.15	0.07	0.070	0.070	0.03	0.001	0.6	490	-0.466

Micromax®

Name	S %	Mg %	Fe %	Mn %	Zn %	Cu %	B %	Mo %
Micromax Premium	16.0	7.2	15.0	2.5	1.0	1.0	0.2	0.04

Micromax® WS

Name	Fe % total	Fe % EDTA	Fe % DTPA	Mn % EDTA	Zn % EDTA	Cu % EDTA	B %	Mo %
Micromax WS Iron	6.0							
Micromax WS TE-mix	7.8	5.4	2.4	2.6	1.3	0.5	0.7	0.32

Magrimax®

Name	Analysis	Mg %	S %
Magrimax	9S+27Mg	27.0	9.2

Product name Elemental analysis	Technology/ Longevity	Product notes	Nutrient breakdown									Bag sizes (kg)	Application rate (g/m ²)	Nutrient levels applied (kg/ha)			Bag coverage (m ²) per 15kg bag	Granule size mm	Granule dispersal	Turf response
			Nitrogen			Total P (% coated)	Total K (% coated)	S	Ca	Mg	N			P	K					
			Total N (% coated)	N-NO ₃	N-NH ₄											N-Urea				
Maintenance 20-0-6+12S+2.1Ca+1.8Mg		Strong initial boost coupled with longevity is ideal for maintenance applications	20 (25%)			20	0	5.8	11.6	2.1	1.8	15	35g/m ² (3.5kg/100m ²)	70	0	20.3	420	1.3-2.5	8 days (visually dispersed from surface)	7 days
New Grass & Renovation 20-8.7-6.6		Controlled release base feed is ideal for laying new turf or re-sowing	20 (80%)		4	16	8.7	6.6	8.4			15	35g/m ² (3.5kg/100m ²)	70	30.5	23.1	420	0.85-2.0	7 days (visually dispersed from surface)	7 days
All Round 24-2.2-6.6+1.2Mg		Steady release of nutrients ensures balanced growth and good root development	24 (80%)	5.3	6.3	12.4	2.2 (45%)	6.6 (65%)	7.9		1.2	15	45g/m ² (4.5kg/100m ²)	108	9.9	29.7	330	0.85-2.0	8 days (visually dispersed from surface)	7 days
Flora 14-1.3-14.9+1.8Mg +TE		Season-long nutrition for garden beds, pots and high-mown turf	14 (100%)	7.3	8.7		1.3 (100%)	14.9 (100%)	6.5		1.8	15	40-80g/m ² (4-8kg/100m ²)	64	5.2	36.4	375	2.0-4.0	10 days (visually dispersed from surface)	10 days





Section VI
People & organization

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6.1 Our vision

The vision of ICL Specialty Fertilizers is to harness our assets and capabilities to be a leader in the development of innovative and creative solutions that address the essential needs of humanity in an ever-changing world.

ICL Specialty Fertilizers is committed to excellence in quality assurance, research & development, sustainability and corporate social responsibility. These areas are interrelated because they all entail providing the very best for people and the planet. Our dedication to quality assurance extends across the entire process from the supply of raw materials to delivery.

In addition, we are relentless in our efforts to improve our environmental, health and safety performance. We have implemented EMS (Environmental Management System) and gained ISO 14001 for our factory location in

Heerlen, The Netherlands, as key steps in our CSR (Corporate Social Responsibility) programme. Maintaining an effective EMS in full compliance with ISO 14001 reflects our firm commitment to minimise the environmental effects of our activities and to continually improve our environmental performance. We proudly carry the RHP certificate, the leading quality hallmark in horticulture, which proves that our products meet the highest safety and quality standards. We partner with our customers to fulfill our vision and live up to our commitment of creating a better and greener world.





6.2 For a greener future

ICL Specialty Fertilizers is a leading global specialized fertilizer manufacturer. In this role we fully recognize the importance of responsible environmental protection and sustainable practice.



ICL is a member of the Responsible Care® Program that is dedicated to achieving improvements in environmental global health, safety, and environmental performance. ICL is a signatory to the principles of the Responsible Care Global Charter of the International Council of Chemical Associations.

The principles cover:

- Product stewardship
- Responsibility for environmental risk management
- Increased transparency across the supply chain
- Contribution to sustainable development
- Increased dialogue with stakeholders and external controls

Environmental Policy

ICL Specialty Fertilizers believes in working together for a greener and more sustainable future. We embrace our responsibility to promote a sustainable environment and have established an environmental policy based on three core values.

1 Protecting the environment

ICL avoids processes that generate gaseous pollutant emissions and installs closed circuits for waste water recycling. We have also made a commitment to providing all our employees with the required training and tools to operate in an environmentally-responsible manner. It is our duty to protect the environment and we aim to reduce energy and water consumption.

2 Monitoring environmental impact

In our policy, we are committed to assessing the environmental impact of all our processes. We also actively invest in new cleaner and safer technologies to improve production efficiency and reduce energy consumption.

3 Promoting best agronomic practices

ICL promotes best agronomic practices in order to ensure the safe and optimum use of fertilizers. We promote tailor-made application methods so that the dose precisely matches the plant's specific needs. We also advise our customers on the best way to transport, store, and handle our products with consideration for the environment.

ICL Specialty Fertilizers & GLOBALG.A.P.

ICL Specialty Fertilizers is an Associate Member of GLOBAL G.A.P., supporting this worldwide organization with its crucial objective: the promotion of safe and sustainable agriculture practices to make this world a better place for our children.

GLOBALG.A.P. is a product of a network of partnerships that extends around the globe. By complying with a single harmonized global standard for safe and sustainable food production, producers can demonstrate their commitment to Good Agricultural Practice.



ICL's mission regarding sustainable plant nutrition



Efficiency

- ✓ Improving nutrition delivery and efficiency

Economy

- ✓ Reducing fertilizer, labor and resource input
- ✓ Generating optimal yield per season

Ecology

- ✓ Minimizing nutrient loss through the optimal location of the fertilizer

6.3 Grow more with less

Less fertilizer per hectare, greatly reduced emissions!

Since the first development of Osmocote products in 1967, our goal has been to provide plants with all essential nutrients throughout the growth cycle while minimising leaching and loss of fertilizer. Today, this goal is more relevant than ever. The European Water Framework Directive was established in 2000 to clean up lakes, rivers and groundwater. For the agriculture and horticulture industries this means strict rules for the amount of nitrates and phosphates that factories can release into bodies of water or the ground.

When water-soluble fertilizers are administered via a sprinkler system, part of the nutrients miss the pots

and are absorbed by the surrounding soil. They eventually move into the surface water. A portion of the nutrients also drain out of the pots. 70% of water-soluble nutrients are wasted in total because they don't end up where they need to be.

Osmocote is mixed into the growing medium or applied directly into plant holes. The nutrients get where they need to go and significantly less fertilizer is leached and wasted. Osmocote releases the nutrients exactly where and when they are needed. You will see a noticeable difference and your plants will benefit greatly.



6.4 ICL Specialty Fertilizers R&D – Working on future fertilizer technology

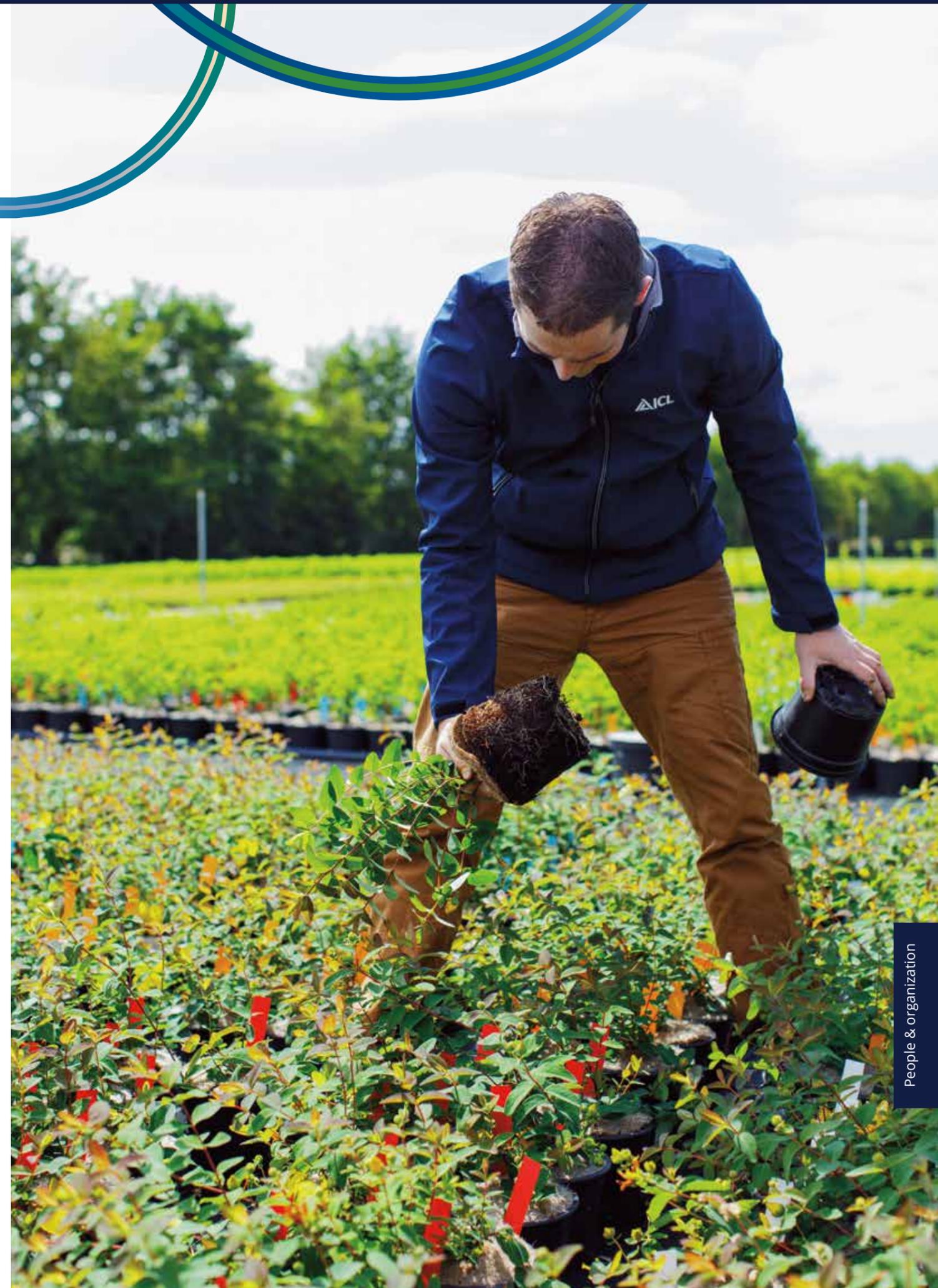
ICL Specialty Fertilizers' research & development facilities are among the world's best. Our research teams are dedicated to developing new products and innovative technologies that improve the environmental profile of our plant nutrition and maintenance products and services.

ICL Specialty Fertilizers invests in research and development each year as well as in the training of our employees. Over 60 years of experience in the development and application of specialty fertilizers has enabled us to evolve into a leader in plant nutrition and a professional partner for the green sector. ICL Specialty Fertilizers trials its products extensively in different cultivation situations and climates in Europe and overseas. The insights gained from the results form the basis for the safe use of our products and for the further development of existing and new technologies and solutions.

The rewards of ICL Specialty Fertilizers' research and development activities are twofold: maximising customers' returns on investment while respecting the environment.

ICL Specialty Fertilizers' technical advisor teams bring this knowledge and expertise to you. Our local teams are at your service throughout the year for advice tailored to your situation. Our optimal fertilizer plans ensure you can grow quality plants with the best return on fertilizer investment.

Our experts work with customers to develop best fertilization practices which enable them to use our products in an optimum and environmentally friendly way. In keeping with our pledge to sound environmental stewardship, we implemented the Environmental Management System in compliance with the international standard ISO 14001.





The ICL Specialty Fertilizers controlled release fertilizer factory in Heerlen, The Netherlands.

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6.5 ICL Specialty Fertilizers around the globe

Our commitment to a greener world spans the globe. Every day and around the world, our experts in the field work with end users to optimize plant nutrition and provide advice, know-how and expertise on location. This combination of technology and a down-to-earth personal touch are the seeds of ICL Specialty Fertilizers' success.





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Everris International B.V. (UK, Netherlands, Germany) is certified according to ISO - 9001.
Everris International B.V. Heerlen is also certified according to ISO - 14001 and OHSAS - 18001.
Everris International B.V. is a legal entity under ICL Specialty Fertilizers.

