




LIFE FORCE®

**GARDENER'S
GUIDE**


**Nutrition
Gardening®**

FOR OPTIMUM PLANT AND SOIL NUTRITION

LIFE FORCE® HOME GARDEN RANGE

CONTENTS

The Life Force® Three-Step Nutrition Gardening® System.....	2
Nitrogen (N) – understanding the number one nutrient.....	4
Life Force® Gold™ Pellets	
Dry mineral fertiliser	4
How nutrients are stored in your soil.....	5
Colour me phosphorus (P)	6
Life Force® Instant Humus™	
Granular humus	6
Soil pH guide.....	7
Selecting compost and manures.....	8
Life Force® Micro-Force™ home pack.....	8
The calcium (Ca) connection	10
Life Force® Microbe Brewer™	10
Getting your pH right	11
Mastering magnesium (Mg)	12
Life Force® Organic SeaChange™	
Kelp, fish and chelating agents	12
Feed the soil and feed the plant.....	13
Retaining moisture in your garden	14
Potassium (K) supplying the spark plug ...	14
Life Force® Organic Boost™	14
Essential oxygen (O).....	15
Sulfur (S) – soil health and your health....	16
Life Force® Organic Blooms™	16
Managing micro-nutrients.....	17
Total Cover™ fortified mineral fertiliser....	18
Good soil bugs – make them feel at home ..	19
Monthly fertiliser calendar.....	20
Trio™ calcium, magnesium and boron.....	20

KEY



KEY ELEMENTS FOR SOIL AND PLANT NUTRITION



USEFUL INFORMATION

Minerals and micro-organisms are the basis for soil health, plant health and human health and they are the essence of satisfying, problem-free productivity in the home garden.

It's not just about throwing on some nitrogen, phosphorus or potassium to feed up the plants, but rather it is a question of mineral balance. Similarly, the soil life equation involves more than applying lawn clipping compost to regenerate your microbe workforce. Poor yield, unhealthy plants as well as pest and disease pressure are invariably symptoms of imbalance.

From a mineral perspective, imbalance is most commonly linked to a lack of calcium and some of the key trace minerals, or it can be related to an excess of phosphorus and potassium from over-application of chicken manure fertilisers.

Nutri-Tech Solutions (NTS) is a world leader in balance-based, biological agriculture and we have utilised these skills to develop a revolutionary group of natural problem solvers called The Life Force® Home Garden Range. This product range contains cutting-edge

components that have previously only been available in large-scale agriculture.

The Life Force® system was essentially developed to ensure success for even the most inexperienced gardener. When it comes to vegetable gardening, it is common to see first-timers produce straggly, substandard plants that are dogged by disease and inundated with insects. The novice invariably decides that it is all too hard and an important opportunity has been lost. We want that first effort to be so exciting that you become a lifelong gardener, producing healthy, nutrient-dense, medicinal, delicious food for yourself and your family.

However, the Life Force® Three-Step Nutrition Gardening® System offers more than just sure-fire success for novices. It offers sensational results for the most seasoned gardeners while delivering a pesticide-free backyard and superb food, shrubs, lawns and flowers for the enjoyment of all.

The home garden is the ultimate wellness tool. Access to nutrient-dense, pesticide-free food, which can be consumed immediately following harvest, is something of incredible value for our health.

We can spend a lifetime achieving financial security and perhaps develop a taste for fine food and wine along the path. However, nothing compares with the forgotten flavours and extended shelf life linked to the “champagne food” we can produce in our own backyards. There are many other benefits associated with home food production, including the following:

- There is nothing more relaxing than communing with nature in your garden. We live in a stress-filled society and the cliché “stress kills” is profoundly true on so many levels.
- Food security is becoming increasingly important in uncertain times and the home garden is the essence of self-reliance.
- Food prices are rising and destined to continue escalating in line with increased production costs, linked to oil prices. The home garden can prove a big cost saver.
- There is no greater gift to your child than to inspire a love of gardening and nature. They can escape the digital entertainment and get some exercise and sunshine therapy, punctuated with healthy vegetable or fruit snacks direct from the garden.
- Building the levels of organic matter (humus) on your property can be your biggest personal contribution in terms of combating global warming. A 1% increase represents 20 tonnes per hectare of CO₂ that is now stored in the soil, rather than in the atmosphere.
- Every 1% of organic matter that you can build in your soil equates to an increased water-holding capacity of 17 litres per square metre. Building humus is the secret to drought-proofing your garden and reducing your water consumption.



Graeme Sait, CEO of NTS, with his Life Force® vegetable garden

THE LIFE FORCE® THREE-STEP NUTRITION GARDENING® SYSTEM



STEP 1: BED PREPARATION

- Apply Life Force® Gold™ Pellets at 200 grams (1 cup) per 1 m².
- Now add 2 teaspoons of Life Force® Instant Humus™ to a 9 L watering can, full of water.
- Apply to 4 m².



Life Force® Gold™ Pellets are a complete composted fertiliser featuring all of the major nutrients and the full suite of trace elements. It also contains a range of soil life stimulants. See page 4 for more details.



Life Force® Instant Humus™ involves soluble humic acid granules. Humic acid is an organic humus concentrate that promotes plant growth and also feeds soil life. See page 6 for more details.



STEP 2: PLANTING

- Immediately after planting (seeds/seedlings/transplants), apply brewed Life Force® Micro-Force™ at a 1:10 dilution i.e. 1 L of brewed concentrate into 10 L of water.
- Include Organic SeaChange™ to help feed the newly introduced workforce and promote earthworms in your garden.



Life Force® Micro-Force™ is a blend of soil microbes and microbial food sufficient to make 2 x 15 L of microbe concentrate in a bucket, overnight. These microbes promote a highly productive soil with benefits such as nitrogen fixation, nutrient solubilisation and plant growth promotion. See page 8 for more details.



Organic SeaChange™ contains a combination of kelp, fish, chelating agents, soil conditioners and growth promotants. These natural plant and soil foods are renowned for their capacity to kickstart seedlings and improve seed germination and plant establishment. See page 12 for more details.



STEP 3: NUTRITION

- Dilute 2 capfuls (30 mL) **Life Force® Organic Boost™** into a 9 L watering can and wet leaves and soil. Repeat every 2 weeks.
- For 'potassium-hungry' fruit, vegetable and flower production, dilute 1 capful (15 mL) **Life Force® Organic Blooms™** into a 9 L watering can. Repeat every 2-3 weeks.



Life Force® Organic Boost™ offers a wide range of nutrients, including organic nitrogen, trace elements, kelp and natural plant growth promotants, in a concentrated liquid suitable for all gardens. See page 14 for more details.



Life Force® Organic Blooms™ offers a highly available form of potassium that plants and trees can easily access. See page 16 for more details.

FORTIFIED FOLIAGE FERTILISERS

For home produce with exceptional nutrition, consider including **Nutrition Gardening® Foliage Fertilisers** in your program. **Life Force® Total Cover™** and **Life Force® Trio™** are both available in convenient Ready to Spray formulations and Refill Concentrates.



Life Force® Total Cover™ is a high-performance blend of minerals and plant growth promoters. It includes luxury levels of selenium, which is seriously deficient in Australian soils and produce. See page 18 for more details.



Life Force® Trio™ is an essential supplement for quality fruit and vegetables, containing calcium, magnesium, boron, organic chelating agents and kelp. See page 20 for more details.



IMPORTANT NOTE: The **Life Force® Three-Step Nutrition Gardening® System** will deliver superb, nutrient-dense vegetables with forgotten flavours and extended shelf-life. This is the ideal approach, but even adopting 1 or 2 of these steps will dramatically improve your garden.

The following pages contain more detailed information about the nutrients required to help create and maintain a healthy, nutritious garden.

At the base of each page are specific details for products in the Life Force® Home Garden range.

KEY



KEY ELEMENTS FOR SOIL AND PLANT NUTRITION



USEFUL INFORMATION

E NITROGEN (N) – UNDERSTANDING THE NUMBER ONE NUTRIENT

Nitrogen is the nutrient required in the largest amount for plant growth. In the natural scheme of things, nitrogen is largely sourced from the atmosphere, where 74,000 tonnes of nitrogen gas hovers above every hectare. Soil bacteria are responsible for the conversion of this gas into plant-available nitrogen, but they need good levels of calcium, sulfur and molybdenum to perform this role. The aim of Nutrition Gardening® is to optimise conditions for natural nitrogen fixation while supplying supplemental nitrogen in a natural form. Nitrate nitrogen is the form most commonly used in commercial home garden fertilisers, however excessive nitrates are not conducive to the production of nutrient-packed, insect resistant crops. In fact, it encourages the exact opposite! Nitrates are taken into the plant with water and this dilutes all other nutrients. This mineral-deficient plant then becomes a calling card for insect pests and disease.

- **Plants:** This element is the basis of vigorous growth, as it is needed to build plant protein, hormones and enzymes. Along with magnesium, it is the main mineral in chlorophyll, the green pigment that produces glucose through photosynthesis. The best sources of natural nitrogen include compost, manures and fish fertilisers.



LIFE FORCE®
GOLD™
PELLETS
DRY MINERAL
FERTILISER

- **What:** Life Force® Gold™ Pellets are a complete fertiliser and soil conditioner with multiple ingredients that have been composted in a high carbon base. The broad range of minerals are correctly balanced and billions of beneficial microbes are present to ensure optimal delivery of the nutrients. All major minerals and micro-nutrients are included in this living, synergistic formulation. It supplies perfect food for the soil, the microbes and the plants and is the ideal pre-plant option for your home or school gardens.
- **Why:** This is the best balanced foundation fertiliser on the market and it can serve to condition your soils, or create a functional mineral base and promote your soil life.

However, it is essential that your plant foods contain molybdenum, so you have access to the “free gift” from the atmosphere.

- **Plant Deficiency Symptoms:** A nitrogen deficient plant is often a thin straggly plant with fewer stems and poor vigour. The leaves are uniformly pale and yellow (including the veins).

little clay or humus, so there is very little storage capacity. That is why these soils need spoon-feeding, i.e. little amounts of fertiliser often.

The mineral storage capacity of a soil can be likened to a fuel tank. A light, sandy soil is like the small fuel tank of a motorbike, while a heavy clay soil is like that of a V8 gas guzzler.

* HOW NUTRIENTS ARE STORED IN YOUR SOIL

Soils consist of clay, humus, silt and sand. It is the clay and humus that serve to store minerals in your soil. They form tiny particles called colloids that are electrically charged. Both clay and humus are negatively charged, but humus also has positive charges. This is important because it will help you understand mineral storage in your soil. Dissolved soil minerals are either positively or negatively charged. The positively charged minerals are called cations, while negatively charged minerals are anions.

Cations are attracted to the negatively charged clay colloid and they can also stick to the humus colloid. However, anions can only be stored on the positively charged humus colloid. If you have no humus in your soil then you will struggle to store anions like nitrate nitrogen, sulfur and boron and they will leach readily. Sandy soils contain very



This composted fertiliser also introduces an army of new beneficial organisms to look after your garden.

- **How:** Apply at a rate of 200 grams (or 1 cup) per square metre. Sprinkle around tree crops and existing plantings. Blend the fertiliser into the topsoil for new planting areas. Blend 15 grams of Life Force® Gold™ Pellets per litre of potting media.
- **Where:** Life Force® Gold™ Pellets are ideal for your vegetable gardens, fruit trees, lawns, exotic or ornamental gardens and pot plants. Avoid over-application on natives.
- **When:** Fruit trees and ornamentals will benefit from a spring feed, while vegetable and flower crops may require more

frequent feeding. These hungry crops respond well when they receive a light feed every 3 months. Top dress lawns in spring. In summer rainfall districts, an application after the wet season will replenish the leached nutrients.

Packaging:
3 kg and 25 kg

Product Code:
LFGP



E COLOUR ME PHOSPHORUS (P)

- **Soil:** By world standards, Australian soils are generally low in phosphorus (P). Many native plants have adapted to this by efficient uptake of any available P, however exotic food crops and many ornamental plants require supplementing of this essential nutrient. P is most available to plants in a 6 – 7 pH range.
- **Plants:** This energy mineral is used in virtually every aspect of plant growth, including photosynthesis and the formation of plant sugars and starches. P promotes vigorous early root growth (good for root vegetables), stem growth and flower initiation. The colour intensity of flowers, fruit and vegetables is determined by phosphorus.
- **People:** P is needed by every cell in the body and, together with calcium, is essential for bone structure, pH balance and membrane structure in cells. This mineral is part of the co-enzyme ATP, which is critical for energy production and is also closely linked to reproductive health.
- **Animals:** As with people, P is essential for bone structure and must be balanced with calcium and vitamin D for maximum benefit. It is essential in the production and mobilisation of energy and is required for reproductive efficiency.

- **Plant Deficiency Symptoms:** Plants are usually stunted with a reduced capacity to produce fruit. Leaves can take on a dull green to purple hue, often affecting older leaves first. Purple lower leaves are a classic sign of P deficiency. Reduced flowering on fruit crops can sometimes be associated with P deficiency.
- **Interesting point:** Old farming lands often have a good store of P locked away in their soils from years of superphosphate applications. Home gardeners can tap into this frozen reserve using inoculums of phosphate-solubilising organisms like those found in Life Force® Micro-Force™.

HANDY TIP

Soil pH is a powerful guideline to nutrient uptake and it has been determined that a pH of 6.4 is ideal for most food crops. At that level, the best balance of availabilities is found (as you can see on the following chart), so you will be getting the highest nutrient density for the health of you and your family. People often think of pH as an indicator of calcium levels in the soil but magnesium is just as important, particularly in lighter soils. In these soils it is advised to use dolomite rather than limestone, as you will require both calcium and magnesium. An acid soil is equivalent to an empty pantry because it is dominated by the element hydrogen, which is the acid element and is not a plant food.



LIFE FORCE®
INSTANT
HUMUS™
GRANULAR HUMUS

- **What:** Humus is the dark-coloured organic matter that is the essence of soil fertility. Composting is the best way to build humus. However, all humus contains humic acid and it has been found that this natural acid can be extracted from ancient plant materials and used as a substitute for compost. Life Force® Instant Humus™ is a concentrated soluble humic acid granule that can confer the many benefits of humus in soils with low levels of organic matter.
- **Why:** Humus is the home base for beneficial biology in your soil and it also governs moisture retention. Humic acid is like a humus concentrate in itself, but

SOIL pH GUIDE

STRONGLY ACID	MEDIUM ACID	SLIGHTLY ACID	VERY SLIGHTLY ACID	VERY SLIGHTLY ALKALINE	SLIGHTLY ALKALINE	MEDIUM ALKALINE	STRONGLY ALKALINE					
NITROGEN												
PHOSPHORUS												
POTASSIUM												
SULFUR												
CALCIUM												
MAGNESIUM												
IRON												
MANGANESE												
BORON												
COPPER AND ZINC												
MOLYBDENUM												
4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0

6.4
Ideal pH level
(best balance
of availabilities)

it also serves to boost production of stable humus via beneficial soil fungi. Humic acid is the most powerful known promotant of these creatures and when these organisms are activated, they increase their humus-building activity. Humic acid also promotes root growth and mineral retention, and neutralises toxic residues and heavy metals.

- **How:** Dilute 2 teaspoons into a 9 L watering can and wet soil thoroughly.
- **Where:** Apply to lawns, flowering plants, vegetables, shrubs and fruit trees.
- **When:** Apply at bed preparation. Repeat monthly.

Packaging:
1 kg

Product Code:
LFIH





* SELECTING COMPOST AND MANURES

Manures and composts come in many forms. In choosing to use any of them you should consider what you aim to achieve. Mushroom compost has great levels of carbon and is terrific for building soil profile, while not having much impact on nutrient levels. Animal manures will have differing mineral analyses depending upon the source. Chicken manure contains good levels of phosphorus, for example, while cow manure contains a greater overall mineralisation. All animal manures are a good source of the important minerals – nitrogen, potassium and phosphorus – and chicken manure is also a good source of calcium.

All animal manures need to be used sensibly to avoid imbalance and nutrient run-off into the surrounding environment. Remember to strike a balance in garden inputs, if you oversupply nitrogen via manures you risk unhealthy nitrate contamination of your vegetables.

If you compost manures or purchase them in composted form you do not run the risk of leaching or oversupplying nitrates because the nitrogen has been complexed and stabilised. Composting can increase the availability of the nutrients, introduce beneficial soil microbes and break down organic matter into humus, making it



LIFE FORCE®
MICRO-
FORCE™
HOME PACK

- **What:** A complete production kit for the home brewing of microbes to enhance plant growth and soil health. Contains a blend of beneficial microbes.
- **Why:** A highly fertile soil can contain many thousands of species of bacteria, fungi, protozoa, beneficial nematodes and algae. This is commonly referred to as the Soil Foodweb and is the essence of Nutrition Gardening®. As part of their normal life cycle, beneficial soil microbes are able to fix atmospheric nitrogen, increase phosphorus availability, produce vitamins and hormones needed by the plants, and increase breakdown of cellulose to name a few benefits.

more effective in terms of water and mineral retention in the soil. Overuse of un-composted manure can lead to serious mineral imbalances and lock-up of trace elements. There is also the potential issue of weed seed and disease contamination. Nitrogen in fresh manures is volatile and easily escapes into the atmosphere. Incorporating into a compost pile or digging the manure into the soil can help slow down this mineral loss.

Chicken manure is considered 'hot' when fresh. This means it's likely to burn delicate and sensitive plant roots and some soil microbes. It is a good strategy to compost this manure if possible. This manure has a fairly low carbon content unless it contains sawdust or straw. It does, however, have high phosphorus levels.

Mushroom compost has a high carbon content but it is generally low in overall nutrients. The pH of mushroom compost can range from 6.8 – 8. Preferably select a product with a pH below 7.

Cow manure has good levels of carbon and nitrogen. Watch out for weed seeds.

Horse manure has great levels of carbon and breaks down quickly. Compost worms love horse manure, but care needs to be taken to avoid manure straight after the animal has been wormed or vaccinated if you are feeding your compost worms. Watch out for weed seeds.

Green manure is what you grow during the off-season or when resting beds in a rotation. Green manure crops build your humus levels while feeding your beneficial soil microbes and earthworms. In warm areas try oats, Japanese millet, buckwheat or mung bean. In cooler areas try fava bean or fenugreek.

“ Animal manures will have differing mineral analyses depending upon the source. ”



→ **How:** These microbes can be applied brewed or unbrewed. Brewing is preferable (using the Life Force® Microbe Brewer™) as this multiplies the microbes significantly. This pack is sufficient to produce 2 x 15 L brews. Dilute the brewed concentrate at a rate of 1 L to 10 L of water and apply to soil and foliage with a watering can.

→ **Where:** As beneficial microbes are needed throughout the garden, Micro-Force™ microbes can be applied to all vegie beds, orchard trees, undercover plants, ornamentals and indoor plants. Micro-Force™ can also be added to compost heaps.

→ **When:** Apply as part of bed preparation, then two applications, 4-6 weeks apart in both spring and autumn will encourage beneficial microbe activity. Regular fertilising with Organic SeaChange™ and Instant Humus™ will feed soil microbes.

Packaging:
20 g Life Force®
Micro-Force Microbes
300 mL Life Force®
Liquid Microbe Food

Product Code:
LFMF



“ If you have acreage, a soil test can be worth its weight in gold. It is common to waste huge amounts of precious time driving blind in an acreage gardening project, when a soil test would immediately clarify options and strategies. ”

E THE CALCIUM (Ca) CONNECTION

- **Soil:** Ca opens up (flocculates) the soil, improving structure and allowing plant roots, earthworms, oxygen, water and microbes to move freely through the soil. Ca is a critically important nutrient for the health of all life in the soil and it is also an important key to achieving the ideal soil pH of 6.4 (where nutrients are most available).
- **Plants:** Ca is often referred to as “the trucker of all minerals” in relation to its role in mobilising other nutrients. Ca sponsors cell division and hence it promotes root, stem

and leaf growth. Ca is also a major mineral governing cell strength and associated disease resistance. This mineral often determines the quality of your fruit and vegetables and if you are seeking a problem-free garden then it should always be a first priority to address any Ca deficiencies.

- **Plant Deficiency Symptoms:** Stunted root systems and a lack of vegetative vigour. Blossom end rot in tomatoes, capsicums and zucchini. Internal browning or blackening of celery, potatoes and Brussels sprouts.
- **People:** Ca is one the major minerals linked to bone health and skeletal strength but needs to be balanced with magnesium. It is also a key player in cell function and it regulates the uptake of minerals into our cells, just like it influences plant uptake of minerals. Ca is an electrolyte important for cellular messaging and the electric life of cells.
- **Animals:** Ca is a key element in maintaining good growth and bone health in animals. It is also important for healthy hormonal function and reproduction.
- **Common Forms:** Limestone contains 40% Ca and the finer ground the lime, the faster the response. Dolomite contains 20% Ca and 10% Mg. Gypsum (calcium sulphate) contains 20% Ca and 15% S and Guano contains ~30% Ca and 12% P.



LIFE FORCE®
MICROBE
BREWER™

- **What:** Part two of the NTS complete production kit for the home brewing of microbes to enhance plant growth and soil health. The pack includes a 20 litre bucket with lid, double outlet aerator, air stones and pipes.
- **Why:** Brewing the Micro-Force™ increases the potential numbers of microbes to one billion per millilitre of brew. This substantial increase maximises the opportunity for these microbes to colonise your soils.
- **How:** Sanitise the bucket/pipes/stones with boiling water. Add 15 L of lukewarm water to the bucket. If using chlorinated water, bubble for at least one hour to remove chlorine,

*** GETTING YOUR pH RIGHT**

The first step involves measuring your soil pH. This is as simple as making a 50/50 mixture of soil and deionised water, waiting for 5 minutes and then dipping a pH strip into the mixture. These inexpensive strips are available from NTS in a form that measures finer graduations than normal. You are seeking a pH of 6.4 for optimal growth for most plants. It is always important to try to understand why your soil is acidic or alkaline.

The best option is a soil test, so there is no guesswork involved. If you have acreage, a soil test can be worth its weight in gold. It is common to waste huge amounts of precious time driving blind in an acreage gardening project, when a soil test would immediately clarify options and strategies.

If you can't justify a soil test, these guidelines may assist you to diagnose the source of your pH imbalance. If you have a light, sandy soil that is acidic, you probably need a mixture of calcium and magnesium (dolomite) to correct the imbalance. If it is a heavier clay soil with a low pH, you probably need limestone to alkalis the soil and you may also choose to include some gypsum to help break up the clay. If the soil is heavy and alkaline, there is probably too much magnesium and sodium – gypsum is likely to be the best choice here.



or until the smell of chlorine dissipates. Add inoculum and food source and aerate for ~ 24 hours. Dilute inoculum and apply at recommended rates – include Life Force® SeaChange™ to give the microbes a little extra food before applying to the foliage and soil.

→ **When:** Spring and autumn are ideal times to apply microbes because of the milder temperatures. The extreme heat of summer in most parts of the country is too harsh for the microbes. Winter in the tropics and even subtropics is ideal but too cold in many of the southern areas.

Packaging:
1 x 20 litre bucket with lid.

1 x dual outlet aerator and air stones/pipes.

Product Code:
LFMB





E MASTERING MAGNESIUM (Mg)

- **Soil:** Magnesium tends to tighten soils, so it can be used to improve the loose structure of sandy soils. However, if there is too much magnesium in a heavy clay, it makes the soil sticky and can tighten it up with an associated restriction of oxygen and soil-life. Gypsum is the best tool to reduce a magnesium excess.
- **Plants:** Magnesium is the central molecule in chlorophyll, the green pigment that fuels photosynthesis. If you are missing magnesium, you are lacking the lifeblood of the leaf and that loss of chlorophyll will be clearly visible. It is a little like the anaemia associated with an iron deficiency in humans, as magnesium is to plant sap as iron is to blood. Mg is an essential enzyme activator of all minerals, so it impacts many different aspects of plant growth and health.
- **Deficiency Symptoms:** Interveinal mottling (pale blotches between the veins) occurring on the older leaves. There may also be premature leaf drop in some species. Older citrus leaves may turn yellow and develop a distinctive inverted "V" of green at the base.
- **People:** Mg is the single biggest deficiency in the western world. It is the "master mineral" responsible for 350 different enzymes. This missing mineral is needed for a healthy immune and detoxification system and is the most important mineral for heart health. It is as important for bone health as calcium, but often ignored.



LIFE FORCE®
**ORGANIC
SEACHANGE™**
KELP, FISH AND
CHELATING AGENTS

- **What:** A biological activator containing kelp, fish, chelating agents, soil conditioners and growth promotants.
- **Why:** Soil health is about mineralisation and the greatest source of broad-spectrum minerals can be obtained from ocean plants and creatures. Organic SeaChange™ promotes root growth and flowering. It can be used as a "rescue remedy" in times of stress (frost, transplant shock, hail damage, heat stress etc). Organic SeaChange™ is also a favoured food source for earthworms and soil microbes. Earthworms appear out of nowhere at the first whiff of this soil-life promotant.

- **Animals:** Mg plays a major role in neuro-muscular health and bone density in animals. Grass tetany in ruminant animals is directly related to a magnesium deficiency.
- **Common Forms:** Magnesium carbonate (magnesite), dolomite and magnesium sulfate (Epsom salts).

* FEED THE SOIL AND FEED THE PLANT

After you have addressed mineral balance with lime, dolomite or gypsum and a complete fertiliser like Life Force® Gold™ Pellets, it then becomes time to feed the soil life and feed the plant. Mineral uptake is determined by mineral balance and soil microbes. The best way to build soil microbes is with a champagne food source like Organic SeaChange™ and/or to apply compost. You may be quite content with the response from balancing and feeding the soil, but if you are keen to achieve exceptional, problem-free growth, then you might also consider foliar feeding the plant.

Foliar feeding is a direct route into the plant, which bypasses any problems in the soil. Stomata are tiny little mouths mainly on the underside of plant leaves, which are actually designed to capture carbon dioxide for photosynthesis and for moisture transpiration. Stomata are, in effect, the gateway between the outside and the inside of the plant. When nutrients are supplied

to the leaf and enter via the stomata, it is actually 12 times more efficient than applying those nutrients to the soil. Apart from this increased efficiency, there are other reasons to foliar feed. Soil-based lock-ups, where too much of one mineral antagonises the uptake of another, are common – foliar feeding bypasses these lock-ups and delivers directly to the plant.

Soil feeding is ideal for dry minerals such as Life Force® Gold™ Pellets or any of our other Dry Mineral products. Some plants will respond better to a soil application of liquid minerals, while others prefer foliar applications.

“ You may be quite content with the response from balancing and feeding the soil, but if you are keen to achieve exceptional, problem-free growth, then you might also consider foliar feeding the plant. ”

- **How:** Dilute 2 capfuls (30 mL) into a 9 L watering can and wet leaves and soil thoroughly.
- **Where:** Organic SeaChange™ can be used on all vegetable, fruit crops and flowering plants as well as natives and indoor plants.
- **When:** Apply at planting and repeat every 3-4 weeks or as desired.

Packaging:
1 L

Product Code:
7LFOSC7



* RETAINING MOISTURE IN YOUR GARDEN

Moisture retention is becoming more important as the cost of water increases and the availability decreases. Climate change is likely to exacerbate these issues. Building humus in your soil becomes the most rewarding strategy to reduce water loss.

Humus improves soil structure and seriously increases your moisture-holding capacity. If you can increase your humus levels by just 1%, every square metre of your soil can now retain 17 litres more water.

Composting is an excellent way of building humus, but you might also consider green manure crops whenever there is a chance. When you dig these back into your soils, the organisms convert the organic matter into humus. The other strategy is to use Instant Humus™ to encourage humus production.

The most successful commercial composting system in the world is called CMC composting and there are some lessons here for the home gardener. It has been found that the addition of 10% clay has proven to produce a form of stable humus that can continue offering benefits for up to 35 years. If you can't access a friable clay, then you might add some soil or NTS Soft Rock™. This is a clay form of phosphate that creates a mineralised, fertilising, long-life compost.

E POTASSIUM (K) SUPPLYING THE SPARK PLUG

- **Soil:** Light sandy soils contain very little clay, the storage medium for potassium. In these soils K is easily leached, so it is a good idea to spoon-feed (little amounts applied often). Heavier soils have much better K storage, but they still need recharging from time to time. Organic Blooms™ is an ideal liquid corrective when potassium needs recharging.
- **Plants:** Potassium acts like a spark plug that triggers over 50 enzymes within the plant. There is a higher requirement for potassium during the filling of fruit and seed. This is where Organic Blooms™ can be an invaluable input. Potassium also helps to build disease resistance, strengthens cells, buffers temperature extremes and regulates the opening and closing of stomata. Potassium also increases fruit-set on some fruit trees and is influential on flowers and fruit size, colour and flavour.
- **People:** Potassium is an important electrolyte that plays a critical role in muscles, heart, kidney and nerve function. The ratio between sodium and potassium in the diet has a big impact upon kidney health and associated issues with high blood pressure. Those suffering hypertension should increase their potassium input while reducing sodium



LIFE FORCE®
**ORGANIC
BOOST™**

- **What:** For those looking for a general liquid fertiliser look no further than Organic Boost™. A moderate analysis all-purpose fertiliser, Organic Boost™ is ideal for vegetable, lawns, fruit or flower production.
- **Why:** Many soils lack the nutrients required to produce and maintain healthy plants, trees and lawns. Organic Boost™ offers a wide range of nutrients, including organic nitrogen, trace elements, kelp and natural plant growth promotants, in a concentrated liquid which is suitable for all gardens.

intake. Potatoes, bananas, avocados and apricots are foods rich in potassium.

- **Plant Deficiency Symptoms:** This is the most mobile of all minerals, so deficiency symptoms will appear first on the older leaves. This potassium shortage in lower leaves can trigger disease in many crops. The brown spots that appear on the lower leaves of tomato plants are a symptom of K deficiency. Potassium-deficient leaves often have scorched edges. Fruit and seed will be small and often shrivelled and the fruit will lack flavour.

* ESSENTIAL OXYGEN (O)

Most beneficial micro-organisms require good levels of oxygen to thrive. In fact, it could be argued that oxygen is the most important element in Nutrition Gardening®. Aerobic soils are richly supplied with oxygen while anaerobic soils lack this element. Earthworms create pathways for oxygen to enter the soil and calcium opens up (floculates) the soil to let it breathe. Gypsum can break up heavy clay soils to sponsor better oxygen intake, while compost can improve your soil to create a highly desirable crumb structure. Light tillage with a fork can also help aerate soils. Oxygen is also vital for a healthy, nutrient-rich, aerobic compost.



- **How:** Shake well before use. Dilute 30 mL into a 9 L watering can and mix well. Wet leaves and soil thoroughly. 9 L diluted covers approximately 4 m².
- **Where:** Organic Boost™ is ideal for your vegetable garden, orchard and flower beds.
- **When:** Repeat every 2 weeks. Alternate with Organic Blooms™ for vegetables, fruit and flowers.

Packaging:
1 L

Product Code:
LFOB





E SULFUR (S) – SOIL HEALTH AND YOUR HEALTH

- **Soil:** Sulfur is essential for our detoxification systems and in a world with 74,000 registered chemicals we need all the sulfur we can get. Sulfur is stored in humus, so in soils with low organic matter we need to add sulfur each season. Life Force® Gold™ Pellets contain luxury levels of sulfur, and cow manure is also a good sulfur source. If you have a heavy clay soil then gypsum should be used. It is the sulfur component of this material that bonds with the soil tightening minerals to create leachable compounds. You will also be delivering good levels of sulfur to your garden.
- **Plants:** Sulfur imparts flavour to fruit and vegetables and is the main component of strong-smelling onions and garlic. It is sulfur that makes members of the Allium family so protective for our health. Two essential amino acids contain sulfur and this mineral offers a big boost to all root crops (particularly potatoes).

“ Sulfur is essential for our detoxification systems and in a world with 74,000 registered chemicals we need all the sulfur we can get. ”



LIFE FORCE®
ORGANIC
BLOOMS™

- **What:** A high analysis potassium liquid fertiliser, Organic Blooms™ is the perfect companion product for Organic Boost™. Enhances photosynthesis for optimum plant health.
- **Why:** Plants and trees that bear fruit, flowers and vegetables require potassium. A lack of potassium can reduce the quality, quantity and health of produce and make plants more susceptible to disease. Organic Blooms™ offers a highly available form of potassium which all plants can easily access.

E MANAGING MICRO-NUTRIENTS

IRON (Fe)

- **Plants:** Carrier of oxygen for the essential production of chlorophyll.
- **People:** Central element in haemoglobin and essential in the function of hundreds of enzymes and proteins.

MANGANESE (Mn)

- **Soil:** More available in low pH soils and can be tied up in soils with high calcium or phosphorus.
- **Plants:** Strongly supports seed germination, fruiting and ripening. Important for nitrogen metabolism.
- **People:** Found in mitochondria and is a key component in energy metabolism.
- **Animals:** Needed for normal growth and bone formation. Essential in reproductive health.

BORON (B)

- **Soil:** Humus is the boron storehouse, so if you don't have good levels of organic matter you will probably have boron-deficient soils. Calcium is the "trucker of all minerals" and boron is the "steering wheel" – boron improves calcium's functions.
- **Plants:** Calcium can operate to full effect only if boron is present. Boron is also very important during the reproductive stage,

as it regulates flowering, pollination and the fruit-to-flower ratio. This is particularly important in fruit trees. A foliar spray of Total Cover™ and Trio™ just before flowering will supply boron and all other minerals at this critical time.

- **Deficiency Symptoms:** Hollow stems in broccoli, woody texture in strawberries, flower and fruit drop in the orchard and poor seed set are all symptoms of boron deficiency. You may also see die-back on passionfruit and grapevines.



- **How:** Shake well before use. Dilute 15 mL into a 9 L watering can and mix well. Wet soil thoroughly. 9 L diluted covers approximately 4 m².
- **Where:** Organic Blooms™ is ideal for your vegetable garden, orchard, flower beds, orchids and roses.
- **When:** Apply from flowering onward, repeat every 2-3 weeks.

Packaging:
1 L

Product Code:
LFOBL



LIFE FORCE® HOME GARDEN RANGE

- **People:** Boron also impacts calcium metabolism in humans. It influences the release of calcium into the blood and the absorption of calcium into our bones. Boron deficiency has been strongly linked to arthritis and boron is also important in red blood cell development.
- **Animals:** Boron has been used for over 30 years for the treatment of osteoporosis and osteoarthritis in farm animals and could also be used to treat these problems in pets.



MOLYBDENUM (Mo)

- **Plants:** Supports nitrogen-fixation and nitrate conversion into plant proteins.

COPPER (Cu)

- **Soil:** Copper deficiencies can appear in boggy soils high in carbon (peat), as well as sandy soils where large quantities of nitrogen have been added.
- **Plants:** Essential for chlorophyll production, sugar synthesis, seed and root metabolism.
- **People:** Needed for iron transportation and the formation of haemoglobin.

ZINC (Zn)

- **Soil:** If you have overapplied phosphorus with heavy applications of chicken manure pellets over the years, then you have probably reduced plant availability of zinc. The answer is to use a product like Total Cover™ as a foliar spray to bypass the soil-based lock-up. Zinc is important in the soil for the health of beneficial microorganisms, particularly nitrogen fixers.
- **Plants:** Zinc is often called the “energy micro-nutrient”.
- **People:** Essential for the proper functioning of reproductive organs and for the immune system.



LIFE FORCE®
**TOTAL
COVER™**
FORTIFIED MINERAL
FERTILISER

- **What:** Available in a convenient Ready to Spray formulation and a Refill Concentrate, this specialty liquid foliar fertiliser covers all bases. Almost all of the major minerals and trace elements are included in this formulation, along with state-of-the-art organic technology, which maximises mineral uptake while simultaneously feeding soil life. Seven natural growth promotants are included in this blend, which can be used effectively throughout the complete plant cycle.
- **Why:** For healthy, vigorous growth with improved root structure. Broad-spectrum, balanced minerals address the plants' nutrition needs. Helps to increase yield and give more even fruit size and better colour. Total Cover™ contains substantial levels of selenium to boost the health of you and your family when consuming selenium enriched produce.
- **How:** Shake well before use. Add 5 mL to a clean 750 mL spray bottle (1:150 dilution) and fill with water. Use diluted mixture promptly (within 3 days) and rinse bottle well. Spray foliage fortnightly or as required.

* **GOOD SOIL BUGS –
MAKE THEM FEEL AT HOME**

Often referred to as The Soil Foodweb, a healthy, living soil will be teeming with microbes, both beneficial and pathogenic. Including species of bacteria, fungi, algae, nematodes, protozoa, arthropods and earthworms, soil organisms are all vital in maintaining a healthy soil structure.

Often we hear of a garden that is receiving the best of everything but still not thriving – the problem could be a lack of beneficial soil microbes. How can this happen? There are a number of reasons for a lack of microbes, including indiscriminate use of fungicides, biocides, herbicides, nematicides or fumigated landscaping soils and high-salt fertilisers.

Microbe brewing is easier than beer brewing. In just 24 hours (under ideal conditions) you can brew billions of microbes that will help bring your soils to life. As with all garden inputs, wear gloves and a breathing mask to ensure you don't breathe the microbes into your lungs.

Once you've brewed and applied your microbes, help create a comfy microbe home with regular composting, adding required soil amendments, and feeding the soil with kelp, fish, molasses, humic acid and fulvic acid.



Do not spray this product until plants are established (for first 2-3 weeks use Life Force Organic SeaChange™). Alternate with Life Force Trio™ as a complete nutrition program. Avoid sensitive foliage.

For large areas, dilute 10 mL into a 9 L watering can. 9 L diluted covers approximately 4 m².

- **Where:** Suitable for all vegies, fruits, ornamentals, indoor plants and lawns where broad-spectrum mineral delivery is needed.
- **When:** Can be foliar sprayed every 2-4 weeks. Alternate with Trio™ as part of the complete Nutrition Gardening® system.
- **Don't:** Due to the delicate nature of fruit tree flowers, we suggest that you avoid foliar spraying directly on to these flowers. Not suitable for soil application on phosphate-sensitive natives. Foliar sprays also have the potential to deter pollinators from visiting your fruit trees when flowering.

Packaging:
1 L

Product Code:
?LFOSC?



THE LIFE FORCE® MONTHLY FERTILISER CALENDAR

YOUR CROPS			
JANUARY			
FEBRUARY			
MARCH			
APRIL			
MAY			
JUNE			
JULY			
AUGUST			
SEPTEMBER			
OCTOBER			
NOVEMBER			
DECEMBER			



LIFE FORCE®
TRIO™
**CALCIUM, MAGNESIUM
AND BORON**

- **What:** Available in a convenient Refill Concentrate, this specialty liquid contains luxury levels of calcium and magnesium with complexed boron. This fertiliser also contains fulvic acid and kelp. Trio™ contains the two key minerals missing in Total Cover™ and is designed to be used in conjunction with this product to supply complete plant nutrition.
- **Why:** Although considered secondary nutrients, calcium, magnesium and boron are vital for plant health. Calcium for cell division and strength, magnesium as the central element of chlorophyll and boron as a calcium synergist, essentially 'steering' the calcium where it is needed.



Your closest distributor: