



**Rural Liquid
Fertilisers**

Zinc Report

A World-wide Problem for our Soils
Special Report 2018



Zinc



Rapid
Delivery System



Multi
Dentate Chelation



Low pH
Technology



High-Analysis
Formulation

Trust. Grow. Yield.

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Introduction

Zinc is a trace element found in varying concentrations in all soils, plants and animals and is essential for all forms of life.

Zinc is needed in small but critical concentrations and if the amount available is not adequate, plant and animal life will suffer from the physiological stresses brought about by the dysfunction of enzyme systems and metabolic functions in which zinc plays an important part.



Relatively speaking, this is only a recently discovered scientific fact – with it first being established in the 1940's – however acceptance of this deficiency by many affected countries has only grown since the discovery of widespread zinc deficiency problems in the global rice crop, although wheat and corn crops are known to be similarly affected. This has only been within the past 30 years or so.

Some key points linked to the discovery of widespread zinc deficiency were that it appeared:

- to be linked to the intensification of farming in many developing countries
- to have been brought about by the change from traditional agriculture, which relied upon locally-adapted crop varieties with low inputs of nutrients, to more modern and higher yielding plant varieties that used relatively large amounts of farm fertilisers and agricultural chemicals, especially the macro-nutrients
- that many of the newer crop varieties were more susceptible to zinc deficiency, and with the increase in use of phosphorus this soil deficiency was more likely to occur
- that the sequential cropping of rice and wheat on the same land, (a new style of farming) introduced into both South and East Asia, and made possible by new crop varieties and agronomic expertise has also contributed

In marketplaces such as China, India, Pakistan, Bangladesh and the Philippines for instance, where the need to maximise food production is at its greatest, land uses for rice and other cereal crops need to seriously address the issue of zinc deficiency as it is preventing crops from attaining their full yield potential.

However, it should also be noted that zinc deficiency is not just a problem in developing countries. It occurs widely in most parts of the USA, throughout Europe and across Australia – all technologically advanced countries.

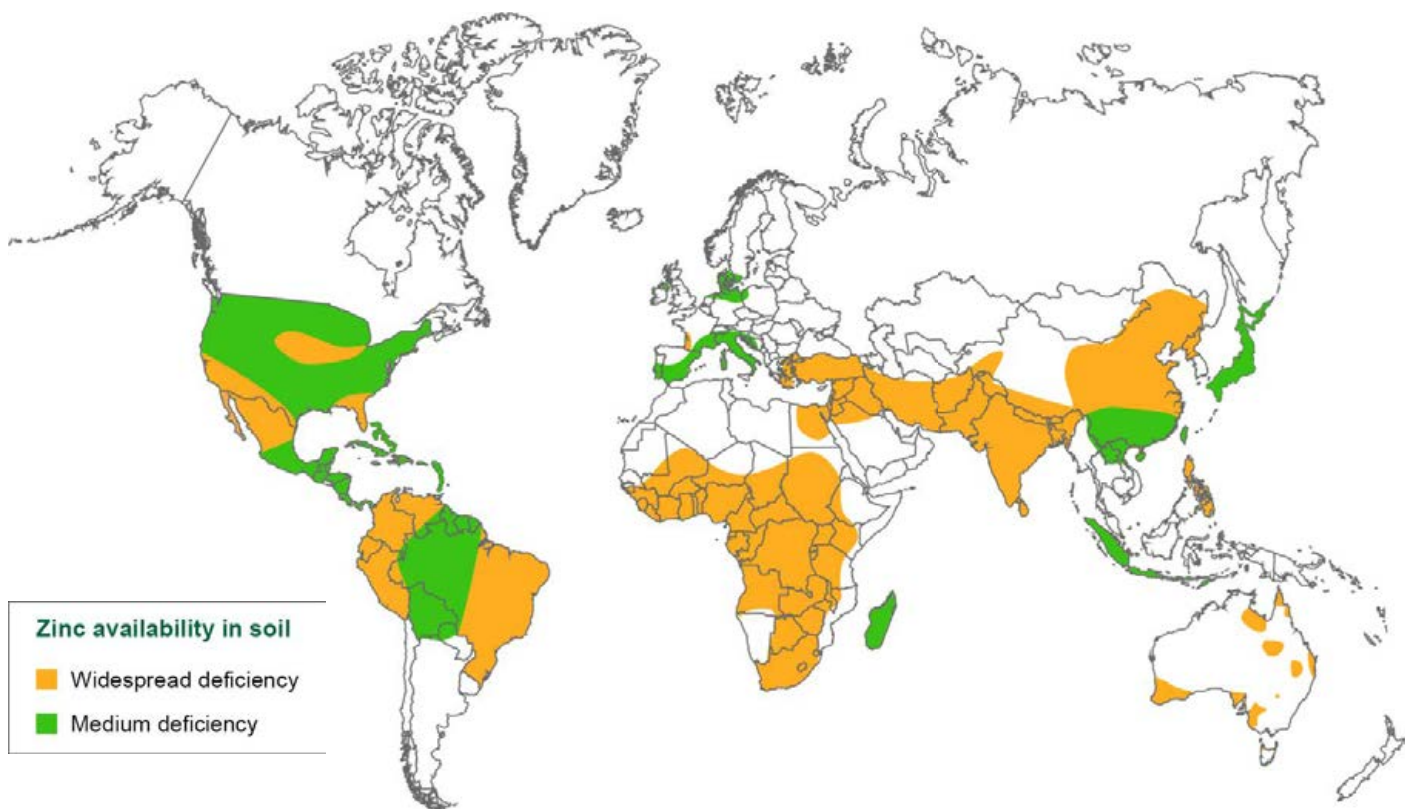
It is a global issue and must be addressed with a high sense of priority.

This [Zinc Report](#) explores the issue of zinc deficiency in a logical and practical way, and provides information about RLF products that can help combat this crop-inhibiting problem.

It will also demonstrate how RLF is making the same services of knowledge and understanding, ready access to expert technical advice and to a range of scientifically engineered liquid fertilisers readily available in today's developed agricultural economies, accessible to marketplaces all over the world. Whether our customers grow in large industrial scale enterprises or farm on small-scale holdings, the same level of expertise and access to appropriate world-leading products is always available.

The Global Perspective

The following world map shows the zinc deficiency zones, in two measures (widespread and medium), across the globe.



What this shows is:

- that a considerable area of the world's arable lands already suffer widespread zinc deficiency
- that almost a further 50% of agricultural lands are considered as having a medium deficiency risk, which could well progress into widespread deficiency in future years

This presents farmers and growers with a range of problems, and is particularly prevalent in the mid-west region of the USA, large parts of the South Americas and Africa. It is especially widespread throughout Asia. A large percentage of Australia's agricultural soils are also subject to some level of zinc deficiency, keeping pace with this increasing world-wide trend.



Essential for Life

Zinc is essential for life – in all its forms – whether soil, plant, animal or human.

Zinc for Humans

Zinc deficiency in humans results primarily from reduced dietary intake, and it is reported that as much as 25% of the world's population is at risk.

By increasing the amount of zinc in the soil, and thereby passing it to productive, healthy and attainable crops, is an effective preventative measure to ensure greater human health. Zinc plays an essential role in numerous biochemical pathways within the body and is important for the skin, the gastrointestinal tract, the central nervous system, plus the immune, bone and reproductive systems.

Zinc for Crops

Soil zinc is an essential micronutrient for plant growth and development and is heavily involved in enzyme systems that regulate the early growth stages. It is vital for fruit, seed and root system development, photosynthesis, formation of plant growth regulators and crop stress protection. Zinc is also a team player with nitrogen (N), phosphorus (P) and potassium (K) for many of the plant's development processes.

Soil however requires zinc in very small amounts compared, for instance, to nitrogen or potassium. Yet, lack of zinc can seriously limit plant growth.

- zinc is required in protein synthesis and growth regulation
- zinc-deficient plants exhibit delayed maturity
- zinc is not mobile in plants, therefore these deficiency symptoms occur mainly in new growth, and this lack of mobility suggests the need for a constant supply of available zinc for optimum growth
- zinc is required in small amounts and high yields are impossible without it

Zinc requirements vary amongst crops, but it is considered that almost half of the world's cereal crops are deficient, and this often leads to poor crop yield. Rice is a crop significantly effected as it remains the staple cereal crop for millions of people.

By having a basic knowledge of the dynamics of the soil, and by understanding the uptake and transport of zinc in crops better, a response to overcoming soil zinc deficiency can begin to be implemented in the effort that is needed for sustainable solutions to this problem.



**Half of the world's
cereal crops are
zinc deficient**



What We Know

Farmers and growers know that both yield and financial return are effected significantly by the under performance and yield losses that can be associated with soil and paddock variability.

It is also typically known that yield potential of all crops and varieties is heavily dependent on the availability of zinc in order to achieve increased outcomes.

Some of the difficulties farmers and growers are confronted with are:

- that every square metre of soil is different
- the quality and nutrient values in the soil are inconsistent
- the loss of organic matter from the soil
- that whilst macro-nutrients may be easier to find a solution for, dealing with the mirco-nutrients which are measured in much smaller quantities (ppm) pose a lot more problems with soil variability
- the soil mass of the areas they work is so large, that it is almost impossible to fix the micro-nutrient requirement of the soil in any sensible economical or physical way through generally accepted (or current local practice) soil application methods
- that attempting to 'fix the soil' is increasingly more unachievable because of the economic constraints, and that it is not commercially viable to continue practising the same old methods of dealing with the issues associated with soil and paddock variability

RLF Ultra Foliar products are specifically engineered to eliminate the effects of soil and paddock variability by adding broad-spectrum high concentrations of the required nutrient directly to the plant. This action therefore, bypasses any soil deficiency – including that of zinc deficiency. RLF's **IntelliTrace Zinc** supplies fully chelated zinc that is 100% sodium free, instead replacing this with valuable potassium.

Soil variability is a widespread condition and can only be addressed by the use of specialised products, and RLF products have been consistently demonstrated to bring about considerable improvement in this regard. Through its rigorous research and development processes RLF has developed some unique and highly developed products to address problems associated with soil deficiencies and paddock variability.





WE KNOW THAT historically most farming budgets are invested in N, P and K – the three macro nutrients, all being applied as granular fertilisers.

WE KNOW THAT farm management practices are sometimes reluctantly reviewed and changed, even though the body of evidence is steadily building to show the vital role that the micro-nutrient 'community' plays in the establishment and healthy growth of crops and market produce.

WE KNOW THAT micro-nutrients such as zinc are not available to the plant in the quantities that it needs directly from the soil, and that the traditional method of treating an identified zinc deficiency is with a single nutrient foliar spray. RLF can provide these products as required to the farmer – but there is a better way, especially for broadacre or large-scale enterprises.

WE KNOW THAT much more attention is being focused on the minor elements and the essential role that they play in the life and cycle of plant and soil development.

WE KNOW THAT through research and development programs undertaken by scientists (including RLF's technical team of professional soil and plant scientists), the same ground-breaking technology used to produce Broad-spectrum High-analysis fertilisers that ensure that the NPK-inputs achieve maximum gain, can also be modelled to provide many of the same benefits for crops growing in zinc deficient soils.

WE KNOW THAT zinc was one of the first micro-nutrients recognised as essential for plant development and growth.

WE KNOW THAT zinc plays a key role in the many enzyme systems in plants and it controls the production of important growth regulators that influence new growth and development. Therefore, one of the first indications of zinc deficiency is the presence of stunted plants resulting from a shortage of these recognisable growth regulators.



The Three Most Effected Cereal Crops

Corn (maize), wheat and rice, three of the world's most important cereal crops, are all affected by zinc deficiency. Clearly, everything that grows in zinc depleted soils will suffer, but of these three major crops, rice will be looked at a little more closely.

Corn (Maize)

Corn (known as maize in many parts of the world) is the crop species which is understood to be most susceptible to zinc deficiency. Corn generally accounts for the highest use of zinc fertiliser per hectare, more than any other crop. With the increase in demand for corn in addition to human food supply, for livestock feed and biofuel production the mitigation of zinc deficiency in this crop is going to remain an important crop nutrition priority.



Wheat

Wheat is less sensitive than corn, but it is still severely affected by zinc deficiency in many parts of the world, especially the larger broad-scale farming enterprises in Australia, North America, Europe and the countries of Russia and Eastern Europe. Low available zinc concentrations in chalky soils, with a relatively high phosphorus status tends to be the most widely found cause of zinc deficiency in wheat.



Rice

Rice is known to be crucially effected by zinc deficiency, and probably attributed to the way in which it is farmed. Approximately two-thirds of the crop is currently produced in flooded paddy systems and while this has many advantages, it is relatively inefficient in its use of water. Alternative, more water efficient rice growing systems are however being developed in some countries.



It is known that flooding the soil reduces the availability of zinc to the crop, whilst increasing the concentrations of soluble phosphorus which contributes to zinc deficiency problems. It has been recorded that possibly as much as half of the paddy rice soils are affected by zinc deficiency. When you consider how important this crop is for Asia alone, it could actually involve up to 35 million hectares of its rice producing land. Even though many areas of lowland paddy rice production are being replaced by more water-efficient production systems, it appears that these new systems could also be susceptible to zinc deficiency, still requiring the application of zinc fertilisers.

- zinc deficiency is the most widespread micro-nutrient disorder in rice
- zinc deficiency has actually increased with the introduction of modern crop varieties and crop intensification strategies

Signs of Zinc Deficiency

Some of the tell-tale signs of zinc deficiency in rice begin to appear between two to four weeks after the transplanting has been done. One or more of the following symptoms will appear:

- dusty brown spots on the upper leaves of the plants showing stunted growth
- uneven plant growth
- increased spikelet sterility in rice
- signs of anaemia, particularly near the leaf base of younger leaves
- leaves lose turgor and turn brown as blotches and streaks appear on lower leaves, then enlarge and coalesce
- a white line may appear along the leaf mid-rib
- the leaf blade will be reduced in size



Under severe zinc deficiency, the tillering stage decreases or can stop completely, and time to crop maturity increases significantly.

What We Can Do

Soil and foliar applications of zinc fertilisers can effectively address this problem. But, our knowledge of the cycle of life held within the soil should also be at the forefront of decision-making to ensure a sustainable future.

However most importantly, fertilising with zinc not only increases zinc content in zinc deficient crops, it also increases crop yield.

Balanced crop nutrition by supplying all the essential nutrients, is a recognised, cost effective management strategy. Even with zinc-efficient crop varieties, zinc fertilisers are needed when the available zinc in the topsoil becomes depleted, and we already know that the world's soil is under serious strain in this regard.



But for all the reasons already discussed, and what science and research has already taught, we know that a new way of fertilising is needed to deliver the required results in an efficient and sustainable manner.

The world's agricultural sector must transition to more efficient, productive and restorative practices to ensure continued safe food supply and sustainable soils.

One important positive message that farmers and growers can embrace is to ensure 'that the plant has access to all of the nutrients it needs, all of the time'.

And this can be rapidly and sustainably achieved through the use of RLF liquid foliar solutions.



The Experience of Our Customers

Rapid Zinc on Vegetable Crops in Bangladesh

[Click here to view in full](#)

During January 2015 to April 2015 several trials were conducted at the Research and Development Farm in Bashon, Gazipur, Bangladesh. These trials were carried out by RLF's partner in Bangladesh, and the map plots the location of the R & D Farm. This area historically receives approximately 90mm rainfall during these four months from an approximate number of 10 rain days.

Design of the Trial

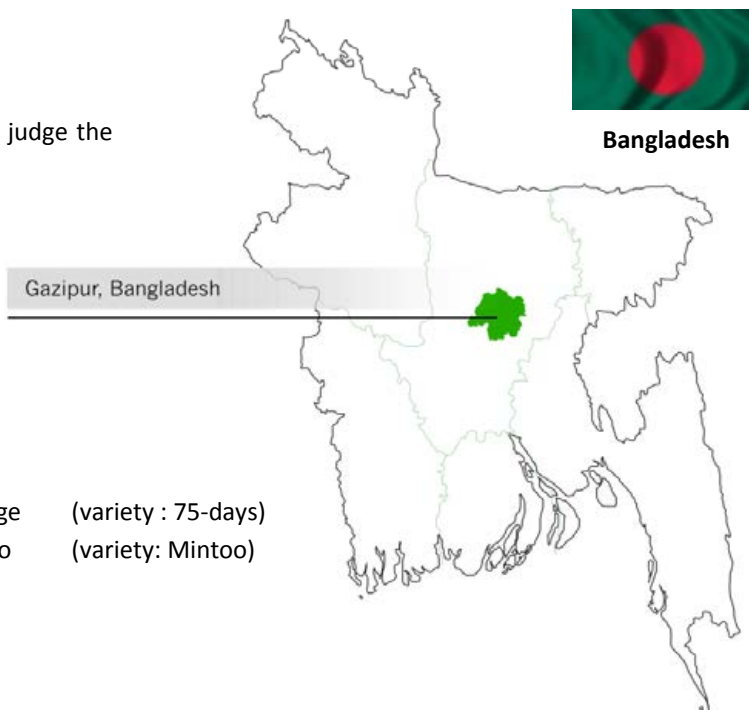
The field trial was specifically designed and conducted to judge the effectiveness of four RLF foliar products.

The fertilisers were :

- RLF Ultra Foliars Broadacre Plus, Fruits & Veggies, and Pasture Plus
- RLF Rapid Foliar, Rapid Zinc

The vegetable crops trialled were :

- | | |
|-----------------------------------|-------------------------------|
| • Red Amaranth (variety : Lolita) | • Cabbage (variety : 75-days) |
| • Spinach (variety: Sathi) | • Tomato (variety: Mintoo) |



1. Spinach

Results

Rapid Zinc Rapid Foliar + Conventional Practice



3. Red Amaranth

Results

Rapid Zinc Rapid Foliar + Conventional Practice



2. Cabbage

Results

Rapid Zinc Rapid Foliar + Conventional Practice



4. Tomato

Results

Rapid Zinc Rapid Foliar + Conventional Practice



Rapid Zinc on Tea Crops in Sri Lanka

[Click here to view in full](#)

The major tea growing areas in Sri Lanka are :

- Location-1 Kandy and Nuwara Eliya in Central Province
- Location-2 Badulla, Bandarawela and Haputale in Uva Province
- Location-3 Galle, Matara and MulKirigala in Southern Province
- Location-4 Ratnapura and Kegalle in Sabaragamuwa Province



Sri Lanka



Baddegama, Sri Lanka



In addition there are six main principal regions that plant tea. These are Nuwara Eliya, Dimbula, Kandy, Uda Pussellawa, Uva Province and Southern Province.

RLF's partner in Sri Lanka in conjunction with Rural Liquid Fertilisers (RLF) conducted a field trial in the Baddegama area of Galle District in Southern Province to trial the effectiveness of a new fertiliser product to the Sri Lankan market – RLF's **RAPID ZINC**.

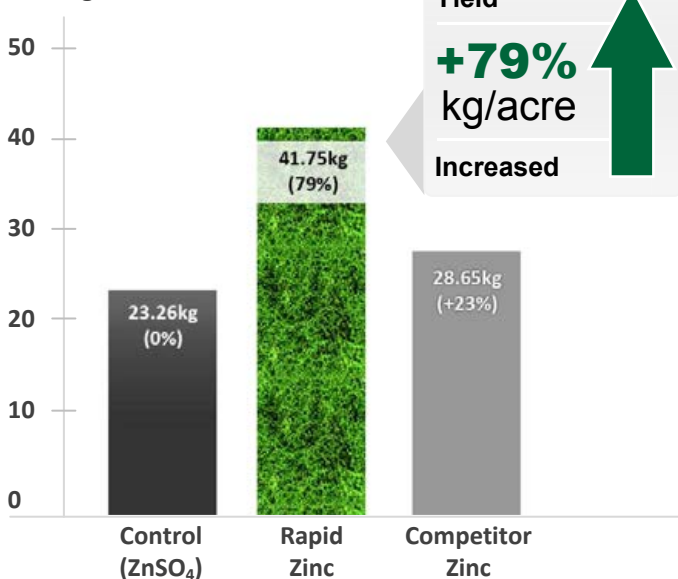
The map opposite shows the trial field location.

Raw Trial Data Results

Average Yield Increase per Acre

Control (ZnSO ₄)	+ 23.26kg per Acre (0%)
Rapid Zinc	+ 41.75kg per Acre (+79%)
Competitor Zinc	+ 28.65kg per Acre (+23%)

Yield kg/acre

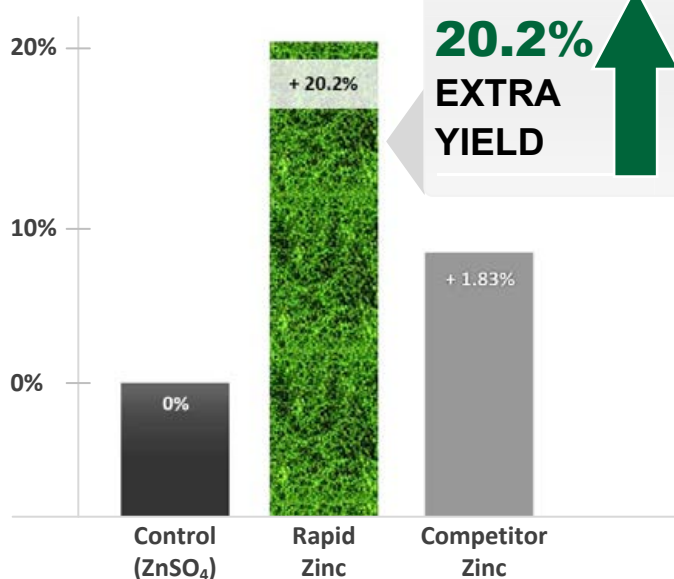


Dr. H. Nassery Analysis of Trial Data Results

Average Yield Percentage

Control (ZnSO ₄)	0.0% Baseline
Rapid Zinc	+ 20.24% ↑
Competitor Zinc	+ 1.83% ↑

% Yield Increase



RLF Products Designed to Help

RLF has developed a special range of liquid crop nutrition products that concentrate on the micro-nutrients required for plant growth and development – specifically zinc, but also for manganese and copper.



Zinc



RLF's focus on trace elements in liquid fertiliser formulations is recognised world-wide and considerable technical expertise and analysis has been applied to bring these products – with a new approach – to the market.

The Rapid products apply the RLF technology of NDS (nutrient delivery system) combined with a blend of high-quality ETDA chelating agents, creating a delivery system that is both rapid and targeted. Each of these products delivers zinc and a complement of supporting nutrients to the plant with extreme efficiency and effectiveness. The IntelliTrace range is 100% fully chelated and sodium free, instead replacing this with valuable potassium.

RLF specialty crop nutrition fertilisers are all based on plant science. The physiology of the plant is what informs our Technical Team as they work to develop an increasing number of specialised fertiliser options for farmers and growers. When the needs of the plant, and the needs of the soil are fully considered, greater yield potential and crop quality outcomes can be experienced.

This is the case with **Rapid Zinc**, **Rapid Max** and **IntelliTrace Zinc**, as zinc deficiency is addressed and a balanced (Rapid) or potassium (IntelliTrace) supply of valuable nutrients is applied.



Zinc



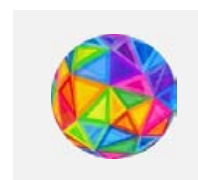
Rapid
Delivery System



Multi
Dentate Chelation



Low Ph
Technology



High-Analysis
Formulation



What Makes Rapid Products Special

The Rapid products have an impeccable pedigree. They have benefited from the technological advances learned from RLF's Ultra Foliar Range of product.

Rapid Zinc and **Rapid Max** are both in ionic form which makes up-take in nutrient delivery far more efficient.

By working with granular fertilisers, zinc deficiency in the soil can be addressed.



As with other Ultra Foliar products, the Rapid products are packed with important nutrients necessary for plant development. It does this by delivering a multi-spectrum nutrient package – directly to the plant – that supports plant growth, strength and physiology thereby ensuring that NKP fertilisers and herbicides/fungicide are buffered during uptake for better opportunity for maximum gain.

Plant-available phosphorus in **Rapid Zinc** and **Rapid Max** is particularly effective for the uptake of trace elements. Both of these products maintain this – as well as a strong backgrounding of other micro-nutrients, particularly manganese, copper, sulphur, and magnesium.

In fact, if a foliar spray doesn't have plant-available forms of phosphorus it is potentially less effective.

One of the strengths of the Rapid products is that they help unlock previously unavailable phosphorus, giving greater access to the plant and helping achieve greater yield. This process ensures plants are protected from the problems of soil nutrient variability and provides the plant with the extra resilience to better handle the extremes of soil and other environmental conditions when confronted with them.

Being low pH and partially chelated supports better the 'safe entry' to the leaf, and increases leaf uptake of the nutrients. Once delivered the nutrition is readily available as the chelate in it breaks down much faster.

Now, specifically formulated products with all of 'the hero' elements, such as those contained in **Rapid Zinc** and **Rapid Max** can be delivered with utmost safety in one single, stable and effective solution.

The key benefits of the Rapid products are that they:

- overcome plant nutrient deficiencies due to soil or seasonal factors
- assist the plant metabolise nutrients more effectively
- maximise the efficiency of granular fertiliser programs
- utilise the common nutrients pathways and mechanisms of both root and leaf
- recognise that roots do not satisfy plant demand for nutrients at all times or in all soil types
- save time and plant energy by bypassing the soil and root system for a rapid utilisation of nutrients through the leaf
- make sound farm management sense because of its complementary nature and ability to support and co-exist with all other fertiliser programs
- ensure that all of the nutrients are available to the plant all of the time



Rapid Zinc is the new generation in available zinc nutrient products. By using the RLF-developed RDS (Rapid Delivery System) it ensures that the maximum level of nutrient is delivered to the plant rapidly and more effectively.

This is because it is buffered at the correct low pH to deliver the safe and rapid uptake of nutrients that eliminate leaf burn often experienced with the foliar application of other products.



[Click here to view full Product Brochure](#)

Rapid Zinc:

- improves the soil for the next season because of the direct impact it has on the increase of soil organic matter left at season's end
- is easier to use, and has excellent handling abilities and compatibilities and is rain-safe within 2 hours
- hard to compare to other zinc products currently on the market because of all the technological features contained within it and its performance features

The ionic form of zinc and copper used in **Rapid Max** is rapidly taken up by the leaves and is rain-safe within hours. **Rapid Max** goes to work quickly and effectively. The EDTA chelate components facilitate zinc and copper mobility and transport within the plant to ensure that the plant can utilise the zinc, copper and phosphorus as and where required.

When applied at 1/L per hectare **Rapid Max** supplies enough zinc for 5t/ha of grain and enough copper for 10t/ha of grain. It also supplies enough phosphorus for an extra 30kg of yield.



[Click here to view full Product Brochure](#)

Rapid Max:

- keeps the zinc and copper balance of new growth
- stimulates metabolic reactions and increases the crop response beyond that of the trace element effect because of the phosphorus it contains
- improves the soil for the next season because of the direct impact it has on the increase of soil organic matter left at season's end

What Makes IntelliTrace Zinc Special?

The major difference is that it is SODIUM FREE.

Most EDTA chelated trace element powders, and many chelated liquids are derived from sodium salt. Whilst the trace elements may be chelated, these products often deliver unwanted sodium to the plant. The **IntelliTrace** product range, which includes **IntelliTrace Zinc** fixes this sodium problem in chelates. They are successfully formulated 100% EDTA chelated liquid fertilisers, where the metals of zinc, copper, manganese and iron are fully chelated whilst replacing the unwanted sodium with valuable and beneficial potassium in each of the **IntelliTrace** formulations.



[Click here to view full Product Brochure](#)

The **IntelliTrace** range of products are particularly versatile and can be used as a foliar spray or in fertigation or irrigation systems.

IntelliTrace Zinc is a high performing chelate for foliar and fertigation. The sustainability effect of the product in correcting zinc deficiency and facilitating trace metal mobility makes it ideal for horticultural crops and economical for broadacre crops.

The benefits of **IntelliTrace Zinc** over EDTA sodium salt derived products are:

- 14% potassium - important for grain set and yield potential
- Easy flow formulation that will not block the boomspray
- 100% water soluble
- 100% EDTA trace element chelate
- EDTA is not metabolised within the plant
- Provides a shuttling action for all trace elements absorbed from the soil or as foliar
- Competition from unwanted sodium is removed
- Enables safe use at higher concentrations
- Passive and mass movement in leaf cell wall spaces is faster because sodium is replaced with potassium
- EDTA shuttling action in transporting trace elements is easier with potassium
- Stomatal uptake is better
- Phloem mobility is better facilitated
- The pH of 6-7 is in a suitable pH range for leaf tissue
- Compatible with most AgChem products



Quality Assured Accredited

ISO9001:2008 certification enables RLF to demonstrate high levels of service quality and to show that internationally recognised quality management principles are followed.



Specialty RLF Products

RLF have delivered products to the market that are recognised to contain product innovation. Its technologies are scientifically advanced and provide solutions that support modern farming fertiliser practice in many different cropping environments.

RLF Packaging and Available Sizes

Sizes in Litres

1000 Litres

Description

Intermediate Bulk Container (IBC). Stainless steel frame for the transport and storage of bulk liquid fertilisers.

Dimensions

Height 1160mm
Length 1000mm
Width 1200mm

200 Litres

Description

Drum (Large Size). It is made of UHMWPE (Ultra-High Molecular Weight and High Density Polyethylene). Tamper evident feature.

Dimensions

Height 950mm
Diameter 590mm

110 Litres

Description

(Medium Size). Total opening with screw lid. Water tight closure. Tamper evident feature. HDPE (High Density Polyethylene) material.

Dimensions

Height 770mm
Diameter 485mm

20 Litres

Description

Drum (Small Size). Leak proof, narrow mouth, tight end made with HDPE (High Density Polyethylene).

Dimensions

Height 450mm
Depth 280mm
Width 280mm

5 Litres

Description

Bottle (Large). Leak proof, narrow mouth, tight end made with HDPE (High Density Polyethylene).

Dimensions

Height 295mm
Depth 190mm
Width 140mm

1 Litre

Description

Bottle. Leak proof, narrow mouth, tight end made with HDPE (High Density Polyethylene).

Dimensions

Height 250mm
Depth 85mm
Width 85mm

Sizes in Millilitres (Bottles)

500 Millilitres

Description

Bottle. Leak proof wide mouth rounds with screw cap. Made with HDPE (High Density Polyethylene).

Dimensions

Height 190mm
Width 70mm

250 Millilitres

Description

Bottle. Leak proof wide mouth rounds with screw cap. Made with HDPE (High Density Polyethylene).

Dimensions

Height 135mm
Width 62mm

30 Millilitres

Description

Sachet. A small disposable pouch made from plastic lined foil which contains single-use quantity of the liquid fertiliser product.

Dimensions

Height 770mm
Diameter 485mm

200 Millilitres

Description

Small Bottle. Leak proof wide mouth rounds with screw cap. Made with HDPE (High Density Polyethylene).

Dimensions

Height 125mm
Width 60mm

100 Millilitres

Description

Small Bottle. Leak proof wide mouth rounds with screw cap. Made with HDPE (High Density Polyethylene).

Dimensions

Height 100mm
Width 50mm

10 Millilitres

Description

Sachet. A small disposable pouch made from plastic lined foil which contains single-use quantity of the liquid fertiliser product.

Dimensions

Height 105mm
Width 75mm



Conclusion

Large areas of arable land across the world have soils known to be zinc deficient.

It has been recognised that the use of increased amounts of high quality phosphorus fertilisers along with new, high yielding varieties of rice, wheat and other crops, have contributed to this level of zinc deficiency, especially where the existing plant-available levels of zinc in the soil is marginal.

In Australia, 8 million hectares of zinc deficient land exists in one area alone on the border between South Australia and Victoria. Extensive areas exist in other parts of the country, notably in Western Australia where vast cereal crop environments are established.

Unquestionably this is a global issue, and the same issues with zinc deficient soils exists in every growing and cropping environment across the world. No country, region, or farmer is immune.

Once zinc-deficient soils have been identified however, the problem is easily and cost-effectively rectified by the application of zinc fertilisers, either to the seed or by foliar spray directly onto the crop.

But this problem of zinc deficiency throws up some significant pitfalls, and the following key points are important to understand:

- one of the most insidious aspects to zinc deficiency is that visible symptoms will often only start to show when severe deficiency status has been reached
- if zinc deficiency is more marginal, yields may be reduced and crop quality impaired without the appearance of obvious symptoms in the crop
- these hidden zinc deficiencies may actually be of greater economic importance than the cases of severe deficiency (those accompanied by clear symptoms), because farmers will not be aware that this zinc deficiency problem exists
- only when there are obvious symptoms will farmers seriously take notice, or be aware that something is wrong and seek advice or commence corrective treatment
- hidden zinc deficiencies may go undetected for several growing seasons without farmers realising that their disappointing yield is due to zinc deficiency
- the cost of lost production due to zinc deficiency can be considerable, especially if the farmer has had the added expense of all the other necessary inputs to achieve high yielding harvests



On a global scale, with the need to produce ever larger quantities of staple food, it is simply not acceptable for large areas of agricultural land to be producing poor crop yield outcomes as a result of zinc deficiency.

This is a problem that can be easily and cost-effectively rectified.

RLF's specialised range of crop nutrition products has been designed for this exact circumstance and provides the exact risk mitigation service for this very common micro-nutrient deficiency.

Consider **Rapid Zinc**, **Rapid Max** or **IntelliTrace Zinc** for your specific needs.

Every plant cell they touch gets absorbed. Therefore, the uptake of the micro-nutrients needed to support the macro-nutrients to do the job that they need to do, is very fast.

These balanced and easy approaches are quite different from other fertiliser applications.

- They are very fast and very efficient
- They move around the plant as, and where, it is needed
- They provide all of the nutrients, all of the time

Acknowledgment

*Based on a 2015 Special Report on Zinc Deficiency Zones written by Carol Phillips,
RLF Executive Consultant Communications and Media.*



RLF Product Range

Seed Priming

BSN Superstrike
BSN Ultra
BSN-10
BSN Rice

Ultra Foliar

12 Nutrients
Broadacre Plus
Fruits & Veggies Plus
Plasma Fusion
Ultra12 Foliar
K-Komplex
Field Crop Plus

Rapid Foliar

Rapid Max
Rapid Zinc
Rapid Copper
Rapid Manganese

Crop-Specific Foliar

Canola Plus
Cereal Plus
Cereal Plus Zinc
Cotton Plus
Horticulture Plus
Legume Plus
Viticulture Plus

Pasture

Pasture Plus

NPK Foliar

PowerN26
PowerN39
PowerN42
PowerNP
PowerPK35
PowerPK42
PowerPK35+Zn+B
PowerPK42+Zn+B
PowerPK35+Cu
PowerPK42+Cu
PowerPK50
PowerPK60
PowerPK50+Zn+B
PowerPK60+Zn+B

Fertigation

Almendra Plus
Fertigation Plus
Plasma Furrow Inject
Nutricover
Ground Force
Dynamo High-N
Dynamo High-P
Dynamo High-K
Plant Milk High-N
Plant Milk High-K
PowerPK38
PowerPK46

Bulk Liquids

AdBlue®

Foliar

AcetaK25
Boron Plus
Boron Blue
Boron Plus Moly
Calcium Plus 5
Calcium Plus 17
Caltro High Calcium
Tetrachel Tiller
KC30
Nitrogen Plus
Plasma Power
Potassium Plus
Silica Plus
SprayN34
XFoliar1
XFoliar2
Zincuman Plus

Nutrient Charger

Unidip
Canedip

Root Boost

Interceptor XS
Interceptor XF

Hydroponics and Gardens

HYDRIX FLORIX A+B
HYDRIX VEGIX A+B
GardGro Home Garden

IntelliTrace

Product Range

Intellitrace Zinc
Intellitrace Copper
Intellitrace Manganese
Intellitrace Iron
Intellitrace Insync

JOEY Product Range

JOEY Fertigation
JOEY Field Crops
JOEY Fruits & Veggies
JOEY Nitrogen
JOEY Nutrient Charger
JOEY Pasture Plus
JOEY Potassium
JOEY Rapid Max
JOEY Rapid Zinc
JOEY Seed Priming

KING Product Range

Cane King Billet Charger
Cane King Foliar
Grow King Nutrient Charger
Grow King Foliar
Grow King Potassium
Rice King Seed Primer
Rice King Foliar Part1
Rice King Foliar Part2
Seed King Seed Primer
Turf King Foliar
Turf King Silica



Rural Liquid Fertilisers

RLF is a specialised agricultural company producing specialty crop nutrition liquid fertilisers.

Farmers and growers around the world, and in all cropping environments use these innovative products and comprehensive solutions to address crop production limitations. RLF products work in tandem with the farmer to achieve continuous improvement of on-farm practices and routines.

As a result, RLF success is directly linked to the success of its customers.

The tools of modern plant physiology and science are used to support RLF's commitment to agriculture and to the business of its farmer and grower customers.

RLF's leading liquid fertiliser products promote efficiency in use. They protect and increase yield and deliver improvements in crop health and quality. Researched and developed by accredited experts in the field of plant science, the entire RLF product range is supported by a team of experienced sales and support members with the professional expertise to provide practical in-field help.

Every day, RLF works side by side farmers to deliver better on-farm profits and healthier food to the world.



**RLF, the Australian
in Global Fertiliser**

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