

GROUNDNUT

The humble Peanut provides heroic Opportunities for Asia Region Agribusiness

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02

Spotlight On Series

WHAT OUR CUSTOMERS SAY

Foliar Product on Peanut | Ultra Foliar V Control

"The larger root mass is clearly seen in this image – which supports the strong and healthy plant in accessing soil nutrients and greater access to soil applied fertilisers."



Foliar Product on Peanut | Ultra Foliar V Control

"The end result is clear in this image. More peanuts per plant and looking bigger. The mass of the leaf is easily distinguished between the two items."

Foliar Product on Peanut | Ultra Foliar V Control

"This is one of the most clear indications of how an Ultra Foliar product sorts out and handles the effects of nutrient deficiency. By the time the yellowing of the control crop would have been seen, it is most likely that no actions taken (at this late stage) would have fixed the problem in time to achieve the crop result of the Ultra Foliar."



OVERVIEW

Groundnut – or peanut – is commonly called the poor man's nut.

It is an important domestic oilseed and sustainable food crop for many developing countries. Globally, it has ready access into developed countries for a wide range of food types and confections.

Groundnut is native to South America, (in fact the oldest known archaeological remains of groundnut pods found in Peru have been dated to about 7,600 years old). But today peanut is widely grown across many other regions of the world, particularly Asia and Africa. It is generally distributed in the tropical, sub-tropical and warm temperate zones where it grows equally well as a runner or small shrub.

Groundnuts, especially those produced in developing countries, have been used traditionally since the origin of humanity. It is rich in oil and protein, and has a high-energy value.

- developing countries account for nearly 95% of world production
- the Asia region alone accounts for approximately 70% of this amount, where the major producers India and China together, represent over two-thirds of global output

Groundnuts are predominately processed for oil – although in many growing regions it also finds uses as a primary food or in confectionery products. The residual cake following oil extraction, is largely used as a protein supplement in animal feed. In most developing countries it provides high quality cooking oil and is an important source of protein for both human and animal diets.

It also provides much needed foreign exchange through the exportation of the kernels and cake. It is an important cash crop, and an important food crop, providing economic and food self-sufficiency returns to many subsistence farmers. The value of this, to these developing economies however is not particularly well documented.

The quality attributes that are important for end uses of groundnut vary among the developed and developing countries.

In developed countries things such as peanut butter, confectionery and roasted nut snacks are important.

In developing countries it is oil for heating and cooking.



RISKS AND OPPORTUNITIES FOR PEANUT PRODUCTION

Even though it is a good protein source, the cake obtained after oil extraction is not utilised to the best advantage.

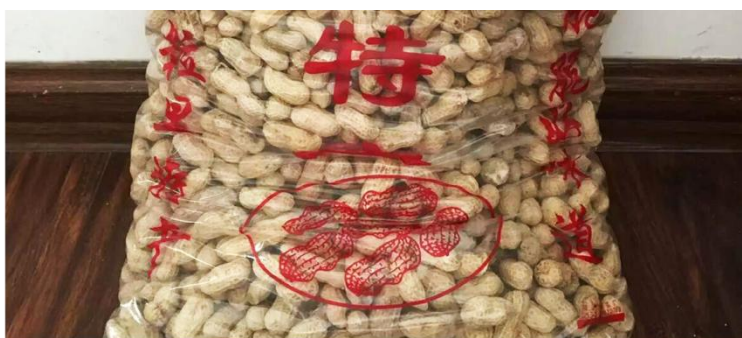
Production of aflatoxin due to the invasion of the fungus *Aspergillus flavus* to groundnut pod/kernel is a serious problem for trade of the product in the international market. Ultimately this seriously damages the export business of many developing countries, and they can no longer rely on monoculture in order to support their growing economies. New plant varieties, and new fertiliser practices are therefore needed to overcome some of these setbacks if the crop is to survive as a predominant source of income.

Under current conditions, crop dependency has made producers vulnerable to losses because of the lower prices paid for the pods and kernels.

It is, therefore, imperative for them to diversify their production and create added value through processing. This action will reduce risks and potentially open new local and export markets. There is also a distinct case for investigating new opportunities for the use of groundnut as both food and confectionery. Most of the developing countries have poor drying and storage facilities, and under these conditions the seed very rapidly loses its quality and viability, so there are many issues to be addressed.

Therefore one of the major points to arise from this dilemma is the importance of the post-production system in developing countries, and to state the importance of suitable curing, drying, storage and processing technologies. If these challenges are addressed the small-scale farmers, who currently rely on peanuts as a source of income, will grow their businesses and remain viable players in trade. Attending to crop nutrition needs is also an imperative because strong, healthy plants produce better quality product.

Source : [FAO of the UN](#)



SNAPSHOT OF WORLDWIDE PRODUCTION AND TRADE



China and India represent two-thirds of global output



Developing countries account for 90% of world exports

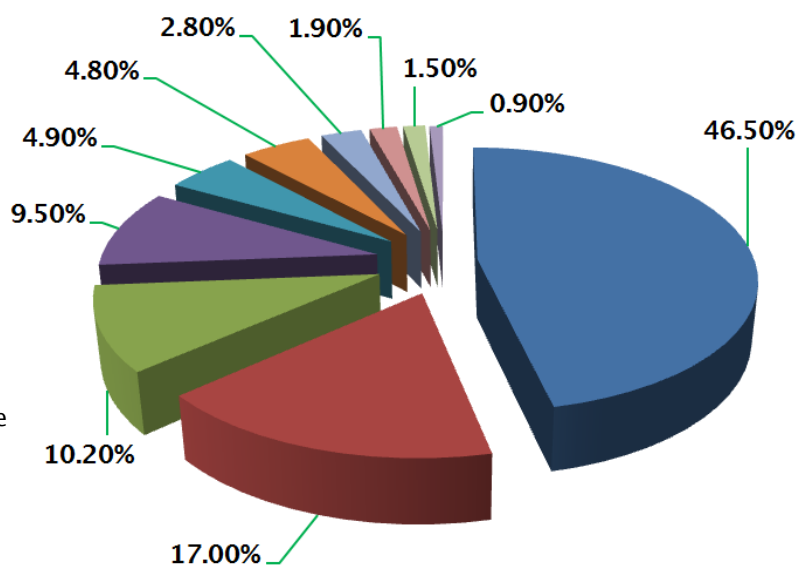
China and India together are the world's leading groundnut producers.

They account for just over 60% of world production with nearly 60% of the total agricultural land area globally dedicated to this crop.

The following chart shows the world's top 10 producers of groundnut in 2015.

Country (by ranking)	2015 (by million tonnes)
China	18.7
India	6.8
United States of America	4.1
Nigeria	3.8
Myanmar	2.0
Indonesia	1.9
Argentina	1.1
Chad	0.8
Senegal	0.6
Ghana	0.4

Rank Country/Region Groundnut Production



Most developing countries have production constraints when compared with the productivity and output of the third ranked USA for instance. These are due mainly to :

- the cultivation of the crop on marginal lands that rely totally on natural systems and rainfall conditions
- prevalence of drought stress due to the vagaries of the monsoon season
- higher incidence of disease and pest attacks
- low levels of crop nutrition or crop protection inputs
- factors related to affordability and socio-economic infrastructure

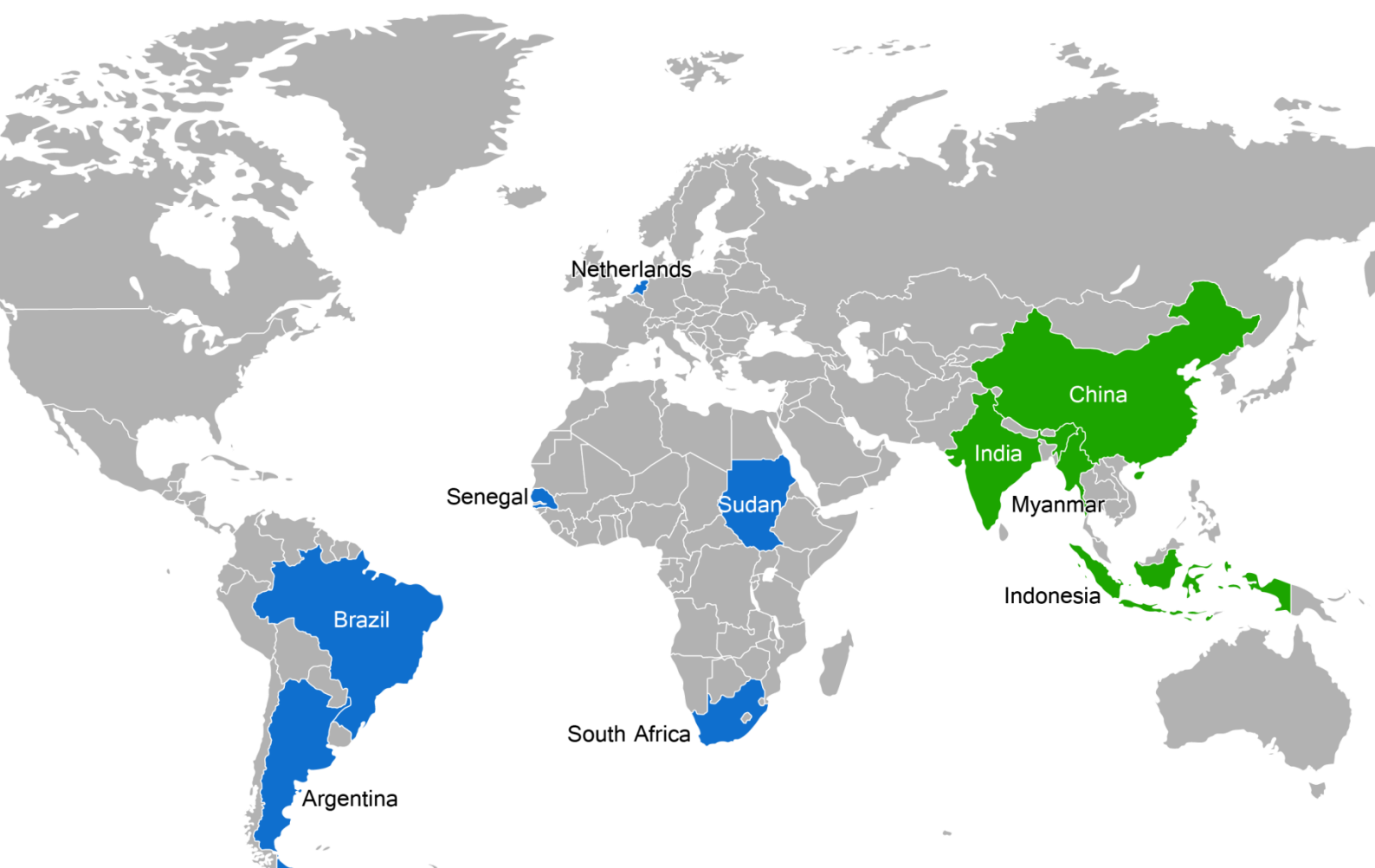
THE EXPORT MARKET

Developing countries account for approximately 90% of export trade in groundnut products.

Of the world's top ten exporting countries :

1. China
2. India
3. Argentina
4. South Africa
5. Netherlands
6. Indonesia
7. Brazil
8. Sudan
9. Senegal
10. Myanmar

China, India, Argentina, Brazil and Indonesia combine to corner the majority of the export market.



IN THE ASIA REGION

These markets, and particularly those in the Asia Region, are continuing to grow, going from strength to strength because of concerted efforts in harnessing farming efficiencies, modern crop nutrition and protection practices driven by the higher economic returns for the produce and a greater share of agricultural land being given over to the growing of peanut.

However a important fluctuating trend is now being noted in Asian economies.

More and more of the peanut production is remaining at home, with imports increasing sharply in countries such as Indonesia, Thailand, Malaysia and China because of the demand from the growing livestock sectors for groundnut meal as supplement to stock-feed.

There is a great future for peanut in the Australia and Asia Region



IN AUSTRALIA

Early Days

Peanuts first arrived in Australia with the gold rush and were planted near Cooktown (QLD) in the 1870s. They were brought by Chinese prospectors using seeds and clippings that accompanied them from China. It is said that Australian agriculture took very little interest in the peanut as a crop at first, with the total amount grown in the country by 1900 estimated at less than 11 acres. However, over the next 20 years peanut crops slowly began to expand. By 1920 the acreage had expanded to 272 acres (again all in Queensland) and total annual production estimated at 123 tonnes per year.

Present-day

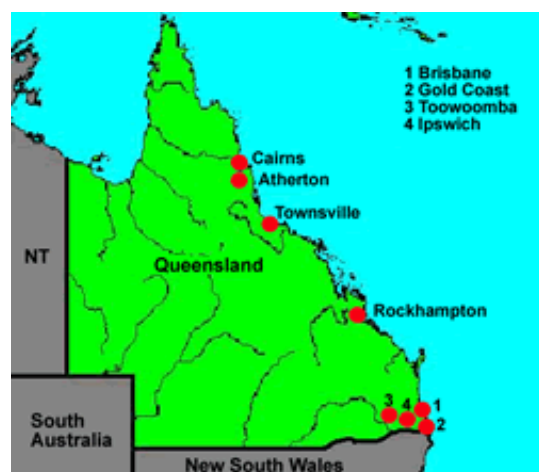
Because of the fluidity of the current economic markets for peanut, considerable opportunity exists for Australian peanut growers.

Australia's production statistic by global comparison – at about 48,000 tonnes annually is quite small. The industry is however, well established in several growing regions throughout Queensland, and concerted efforts are being made to extend and reinvigorate the crop into the Northern Territory. As a crop it also grows well in parts of northern New South Wales. Trials have previously been held in parts of Western Australia and South Australia with indeterminate success.

As a percentage of world production Australia is very small indeed, at about 0.3%.



**Opportunity
knocks for
peanut growers
in Australia**



Facts & Figures about Location and Operations

- almost all of Australia's peanut crop is grown in Queensland – est. 98%
- the main growing regions are on the Atherton Tablelands near Cairns (north QLD), Emerald (central QLD), Bundaberg and Childers (south QLD)
- although in recent years areas closer to Brisbane and the Gold Coast have been cultivated
- three main varieties are grown in Australia, being Virginia (large kernels generally for snackfoods), Runner (medium kernels usually for biscuits and confectionery) and Spanish (small kernels generally for peanut butter and oil)
- harvesting is a staged process involving several phases including cutting and digging, threshing, drying and curing, then blanching and sorting
- the peanut bush is fully utilised, there is no wastage at all
- approximately 120 manufacturers in Australia use peanuts for snackfoods, biscuits, confectionery and peanut spreads

Acknowledgement :

<https://www.daf.qld.gov.au/plants/field-crops-and-pastures/research/peanut-improvement-and-evaluation-research>

OPPORTUNITY COMES WITH HIGH QUALITY PRODUCE

Most developing countries have not, up until this point in time, given much attention to the quality of the produce, its main use being only for oil and burning. However, the value-adding qualities, together with the trading values of this product are now being recognised. As such, the quality parameters fixed by importer countries for the international trade of groundnut kernels and cake need to be applied, with only the highest, healthiest quality nut being acceptable.

For example, the general guidelines for the quality of groundnut pods and kernels include things like :

In-shell Pods	Kernels
<ul style="list-style-type: none"> • colour and type • size and texture • cleanliness • damage free pods • absence of blind nuts 	<ul style="list-style-type: none"> • graded for size • quantity and shape • skin colour and condition • oil content and flavour • resistance to splitting and cleanliness

Australia's sophisticated processing plants and technical knowledge have been developed over many years, and this places it in a good position to compete at the high-quality end of the international market.

At times, Australia imports somewhere in the vicinity of 5,000 – 8,000 tonnes per year to backfill supply, but with good seasons it can support the domestic market. However with consumption of peanuts growing at the rate of 3% each year, a niche in the market could exist for growers that is worthwhile considering.



OUTLOOK FOR THE REGION

Trends and outlooks for the major Asia region markets and Australia are as follows :

Country	Outlook
India	Expected to flourish and increase over coming years. This is due in large part to a rise in the amount of land area being allocated and planted. Much of this has come about because of a downturn in cotton crop, with farmers moving to groundnut as it is perceived as being less difficult to grow and manage, with greater economic returns. Economically it could increase by as much as 16-20% annually.
China	Expected to increase over coming years. The outlook for the coming season is forecast to rise to 16.9 million tonnes, up 2.4% on the previous growing season. Increased land area is driving some of this growth, together with a shift from corn to peanut because of trade opportunity, higher economic returns, better understanding the management of the crop and better uses for what was previously considered by-product.
Indonesia	Expected to increase at a rate of approximately 5% annually over the next five years. Currently approximately 500,000 million tonnes of unshelled groundnut for human consumption is produced. Strategies are afoot to elevate peanut to a major crop status. Much work still needs to be done to improve and support the scientific adaptability of local plant varieties plus better education and understanding of appropriate and targeted crop nutrition and protection practices.
Myanmar	Expected to remain steady for the foreseeable future at about 2.0 million tonnes annually. It has important status as an economic crop and accounts for approximately 60% of GDP. Groundnut agriculture employs almost two-thirds of the current workforce, many of these women. Farming methods are still largely traditional (slash/burn/reclamation cycle) and modern fertiliser methods have been slow to enthuse, however education and scientific understanding is becoming more accessible.
Australia	Expected to remain steady with a slow and slight upwards trajectory over coming years. There is declining land area being allocated to peanut, even though the domestic market is still generally satisfied by local production. Prices are expected to remain at the current 'above the average' level. When imports are needed for the AU market, Argentina is the main supplier, although this could change with new trade agreements with Asia. The potential for Australia is with the high oleic peanut oil market.



RLF UNDERSTANDS THE IMPORTANCE OF PEANUT TO ASIA

RLF's agronomic teams in Australia and China regularly conduct education and demonstration seminars showing growers how to achieve a high yielding fertiliser management program for peanut.

In China, in particular, RLF has been joined by several agrichemical companies so that the dual pathways of crop nutrition and crop protection can be addressed. Pest, fungal disease and weed infestation remain a high crop management issue for growers of groundnut. Momentum is building for this type of information and understanding the science of the plant better, and these programs are being replicated in all major growing regions across Asia.

The groundnut occupies an extremely important position in Asia's crop and oilseed production.

It not only guarantees the safe supply of oil for both human consumption and fuel, but also is one of the most important trading crops for Asia. There is strong international competitiveness for this crop, so opportunity for successful trade outcomes exist. With the recent improvement of many of the region's aspirational and lifestyle qualities, the demand for peanut oil and peanut products increases with every year.

Groundnut is generally perceived as a hardy crop.

It is characterised as having great adaptability, it endures drought well, has water-logging and barren tolerance and delivers a relatively high economic benefit.

Beyond that, the shift from more traditional crops such as rice, maize (corn) and cotton in some countries – because of pricing downturns and/or crop management issues – has made peanut a viable alternative crop investment for small-scale growers. Therefore, expansion has recently been noted in the agricultural land area being allocated for the planting of the peanut crop.

But RLF understands too, the factors that impact this crop.

Things such as the ageing of peanut varieties, the unreasonable use of pesticide and fertiliser, the destruction or degradation of natural soil fertility and ecosystem, all coupled with the effects of climate and/or natural disasters have added to the factors that endanger the long-term production of peanuts. In many ways, unless irrigated systems are readily accessible all peanut growers rely heavily on natural conditions and rainfall.

So, to achieve stable yield, higher yield and a good sale price has therefore become the top priority for the current 'crop' of peanut growers who are all very keen to address these new challenges.

This is where the scientific research and engineered technical solutions of the RLF product range can play a significant role in bringing about the efficiency and economic changes needed.



WORKING TOGETHER IN THE FIELD



RLF TECHNICAL ADVICE FOR THE PEANUT GROWER

A generalised foliar program for peanut is considered very beneficial – and if other relevant information such as paddock history, soil test and leaf analysis is made available to an RLF agronomist or technical team member, the program can be modified for an even better response.

Key Characteristics and Requirements






Peanut (*Arachis hypogaea* L) belongs to the pea (legume) family.

It has adapted to warm climate that requires around 600mm rainfall annually, or 6 mega litres of irrigation per hectare. In dry seasons, irrigation needs to be applied weekly at 30mm to 40mm. The plant growth can be either upright or prostrate depending on the variety, and has a long root system. Peanut leaves have 4 leaflets (tetrafoliate). Some varieties of peanuts are perennial and are used for groundcover or feed.

Inoculation of nuts by Rhizobia at planting, ensures that roots form an adequate number of nodules to fix atmospheric nitrogen, making peanut optimum pH at around 6.

As the species name hypogaea (meaning underground) indicates, pods develop under the soil. The soil should be friable or light with good levels of calcium and boron in the topsoil. This ensures that after fertilisation when the elongated ovary (peg) enters the topsoil, it is able to extract much needed calcium and boron for pod and nut development.

Why a Foliar Program Improves Yield

-  Boron improves the quality of nuts, and if it is deficient it results in low yield and poor nut quality (with deformed cotyledons and hollow heart).
-  As calcium is immobile in phloem, it needs to be applied to the soil as lime (when soil pH is lower than 6) or as gypsum when pH is above 6. In calcium-deficient soils, shells form few or no nuts – a symptom referred to as 'Pops'.
-  Vegetative growth continues to around 40 days after planting, with flowering and pegging extending some 50 days after first flower. Pod filling and maturity takes a further 60 days following pegging. In the peanut plant, vegetative and flowering pattern is indeterminate, meaning that the plant's green canopy grows and produces flowers at the same time.
-  Peanut contains around 50% oil with about 35% protein and is a rich source of food.
-  Peanut crop yields 2 to 4 tonnes per hectare (e.g. in low and high rainfall area respectively).

Example Program

An example foliar program for an Australian yield of 2 tonnes per hectare would be recommended as follows :

1. Apply 2–3 litres of **RLF Crop Specific Foliar Legume Plus** per hectare in about 150 litres of water some 40 days after planting or at first flower. **RLF Foliar Boron Plus** could be added to the above mix at 1 litre per hectare or **RLF Foliar Boron Blue** at 2 litres per hectare. Boron foliar sprays can be safely applied with fungicides or insecticides.

NOTE : Sample the upper part (stem and leaves) of plants at early pegging for nutrient analysis. The information from this test can be used to modify the next foliar composition as well as monitoring the fertiliser program of the crop.

2. Apply 3–4 litres of **RLF Crop Specific Foliar Legume Plus** in about 200 litres of water per hectare some 2 to 3 weeks after the first foliar spray. This coincides with the onset of pod fill (about 60 days after planting). This application can also be modified based on leaf analysis result. Boron addition as with the first foliar spray is beneficial if boron is suboptimal.



RLF PRODUCTS ESPECIALLY FOR GROUNDNUT

Generally it is accepted that a foliar program with an RLF Ultra Foliar product will enhance the quality of the crop significantly and lift yield, and the following foliar products can be used with confidence :

Crop Specific Foliar Legume Plus

Legume Plus is a Crop-Specific Fertiliser with a nutrient delivery system (NDS) that increases the efficiency in product uptake through the leaf.

It delivers 12 essential nutrients all contained within a High-analysis Broad-spectrum Solution (HBS). It is the latest in crop-focused nutrition and is designed specifically for legume crops.

This means that it will work better and provide greater results for legume crops. Developed using plant science, RLF has engineered a special range of Ultra Foliar products and **Legume Plus** is one of these, giving maximum benefit to legume crops.

Legume Plus ensures that the NPK-inputs (nitrogen, phosphorus and potassium) – together with other farm practices such as herbicide and fungicide use – achieve maximum gain. Legume Plus gives the plant the resources it needs to grow strong. The complete, specially formulated Broad-spectrum nutrient package it delivers directly to the plant, supports the crop's growth and strength by ensuring that NKP fertilisers and other herbicides and fungicides are buffered during uptake.



Crop-Specific Foliar



Ultra Foliar Broadacre Plus

Ultra Foliar **Broadacre Plus** is a High-analysis Broad-spectrum Solution (HBS) that applies nutrient delivery technology to deliver its nutrient package through the leaf. It can successfully be used in a wide range of crops. It is highly concentrated and applies the optimum amount of 12 nutrients with a single application. Because of this, **Broadacre Plus** endows the plant with the ability to guard against soil nutrient variability and deficiency and ensures greater plant protection, increased growth and improved yield qualities.

It is a very efficient product as the formulation is absorbed directly through the leaf cell walls and into the plant for immediate use. Unlike other foliar products it is not inhibited by the need to access the plant via the stomata.

Broadacre Plus also delivers another significant benefit for broadacre businesses. The most effective and cost efficient method of building organic matter in cropping soils is through the enrichment of the crop waste materials and root mass. **Broadacre Plus** delivers a root mass that has greater size and volume allowing it to return more matter to the soil.



Ultra Foliar



The advantages that these RLF foliar products bring are considerable. They are based on plant nutrient removal science. They can :

- **Transfer** nutrients safely via the specially engineered nutrient delivery system (NDS) of 12 optimally balanced nutrients directly through the leaf to the cells.
- **Increase** yield as independent trials in Australia have consistently demonstrated.
- **Reduce** granular NPK costs when used as part of an integrated fertiliser program.
- **Solve** soil variability problems as it bypasses the micro-nutrient requirements from the soil, instead delivering them through the leaf.
- **Improve** NPK uptake through increased agronomic uptake of NPK fertilisers by improving NPK mobility, resulting in greater fertiliser effectiveness and less toxicity.
- **Handle** environmental conditions better because it gives the plant more energy to deal with environmental stresses associated with inadequate rainfall, changing weather patterns, variations in soil, pests and other external conditions.
- **Deliver** higher yields and better quality and value with consistent crop results.
- **Buffer** the effects of herbicides, fungicides and pesticides as it provides a substantial boost of nutrition, as needed, to buffer against the toxic effects of chemicals.
- **Invest** greater strength to the plant enabling it to resist infection and disease.

A SIGNIFICANT SECONDARY BENEFIT

Foliar spraying a peanut crop with either **CSF Legume Plus** or **UF Broadacre Plus** gives a healthy return for the future because of a **very significant** secondary benefit.

Building organic matter in cropping soils is achieved through the enrichment of the crop waste and root mass.

RLF Broad-spectrum foliar products deliver a root mass and necrotic plant matter that has greater size and volume. This means that it returns more matter to the soil – and this is good news for the future – because at harvest time the plant returns all the nutrient contained in the root mass to the soil. Foliar spraying helps achieve all of this, and more, because larger volume plants, larger root structure and mass, and higher nutrient values all add up to a healthy return for the future in both natural soil fertility and economic terms.

These are excellent products.



EVEN MORE VALUE

Even more value can be added to any peanut crop with a fully integrated fertiliser program.

Recently in China Dr Mike Lu (CEO RLF China) presented a seminar to a large gathering of peanut growers. He spoke about the RLF nutritional concept of 'breakfast, lunch and dinner' for the peanut crop. Essentially, this is the RLF Integrated Fertiliser Management (IFM) program that advocates utilising the three nutritional fertiliser pathways for plant growth – seed, soil and leaf.



Seed Priming

By first of all priming the seed with RLF's **BSN Seed Primer**, the important outcomes of higher quality and higher yield can be better supported.

This is because **BSN Seed Primer** :

- **lifts** the status of ALL seed to the highest quality
- **increases** the nutrients inside the seed, so that even the best seed can be improved upon
- **sets** the seed for high yield
- **puts** on a larger, stronger root system because of the high nutrient reserves it carries
- **assists** with germination in difficult conditions
- **initiates** earlier tillering
- **establishes** more primary roots
- **gives** greater access to the base fertiliser and soil-based nutrient reserves because of the stronger developing root system

This is an excellent product that sets the peanut crop for a dynamic start.

These RLF products promote very realistic and easily achievable goals.

This is exactly the type of fertiliser efficiency that the peanut industry is looking for so that it can strengthen the success of the crop.



EXAMPLES OF INNOVATION AND OPPORTUNITY FOR GROUNDNUT

Here are some examples of innovation for peanut.

1. *'peanut industry looks north to meet domestic demand'*

The search for new varieties suited to top end of Australia conditions is being pursued. Trials being carried out near Katherine NT hope to provide some of the answers to reintroducing peanuts to the Territory. It is thought that previous attempts at growing peanut in the NT conditions did not fully appreciate the level of infrastructure needed to manage the vagaries of climate. This is an optimistic story – one that will help meet the growing demand for peanuts in Australia.

Read the full article at the link given.

<http://www.abc.net.au/news/2014-09-04/peanut-industry-looks-north-to-meet-domestic-demand/5717132>



2. *'working for peanuts – the universal nut sheller'*

In many underdeveloped countries or regions where small-scale farming predominates the primary source of income comes from agriculture. Peanuts are therefore an important crop, particularly in Africa and Asia, because they are an excellent sustainable small-scale enterprise for families. In many areas woman form a large part of this workforce and human endeavour. But shelling peanuts is hard manual work and this story highlights the Universal Nut Sheller, an undertaking by The Full Belly Project that provides practical help and easy access to this simple implement.

Read more of the article at the link given.

<http://innovatedevelopment.org/2014/08/10/working-for-peanuts-agricultural-innovations-for-small-scale-farmers>



3. *'seed cleaning in east timor'*

An image of the work involved for many families in small-scale peanut growing businesses across the region.

View it at the link given.

<http://www.abc.net.au/news/2015-06-08/members-of-illimanu-anan-community-seed-production-group-cleani/6518354>



CONCLUSION

Groundnut, also known as Peanut, is 'mother nature's snack food'. It has the highest protein content of any fruit or vegetable, are high in fibre and are cholesterol free. It is a staple for many small-scale farmers, and underpins the health and economic viability of millions of people throughout the world.

Peanuts are the fruit of a legume, meaning they are in the pea and bean family, so technically not a nut at all. It is an annual crop lasting one season only, and nothing from the crop is wasted. In so many ways it is an incredible plant.

Groundnut can be used in the following ways as :

- nut-in-shell
- salted or roasted kernels
- oil for cooking
- fuel for heating
- manufactured in peanut butter
- manufactured in biscuits, cakes and health foods
- stockfeed
- garden mulch (from the shells)
- a seed crop for other growers

Peanuts can be a profitable crop, particularly in adequate rainfall areas or with irrigation.

Generally, under natural, rain-fed conditions the yield is variable and the quality may suffer in adverse seasons. Irrigated crops in some regions can achieve better margins per hectare and more uniform outcomes. However, modern farming methods, involving good crop nutrition practices are having an equalising effect for this crop delivering increased yield with healthier produce.

The outlook for groundnut is positive and the trend across the Asia region to cultivate more land area in many of their growing regions already appears to be taking hold.

We know that the world demand for peanut products is growing at a very fast pace, so modern farming practices will play an important role in driving this industry forward.

It is true, that considerable innovative change will need to be made in some regions with respect to the infrastructure required to support a thriving peanut industry, and to give small-scale growers more ready access to processing plants.

RLF understands the importance of groundnut to the region and has developed highly-specialised crop nutrition products for it. RLF is at the forefront of crop nutrition for legume crops and it places high emphasis on its outreach to peanut growers because of the proven results and the enormous advantages its products bring.

For more information visit www.ruralliquidfertilisers.com.

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