
## Get Better Results with a Targeted, Cost Effective and Easy to Use Agronomic Fertiliser Solution Engineered to Increase Yield and Improve Quality

### About XFoliar. The Next Step in Targeted Crop Nutrition

**How a targeted nutrition program used at different stages of crop growth and development can benefit the crop.**

**XFoliar** is a specially developed and targeted agronomic foliar fertiliser program for broadacre crops. It features 2 differently formulated foliar products – the first for use during vegetative growth phase (weeks 2-6), and the second for use during the reproductive growth phase (weeks 7-12).

**XFoliar** gives the crop the targeted nutrition it needs at the most crucial phases of growth and development – in effect, it gives the crop the key macro nutrients and the required micro nutrients when the crop best needs them.

**XFoliar** is a flexible and cost effective fertiliser program that is designed to deliver higher crop yields and better quality outcomes. It gives more control to the farmer over fertiliser and budgetary input decisions.

To achieve increased foliar uptake **XFoliar** utilises RLF's Nutrient Delivery System (NDS) in **XFoliar-1** and the uptake benefits of acetate formulation in **XFoliar-2**. This efficiency gives **XFoliar** the ability to use less product to achieve more nutrient uptake.

**XFoliar** is easy to apply and fits into farmer base practice. Utilising the most current science-based thinking to deliver the required major elements supported by key trace elements – at the right times of crop growth.

**XFoliar** has been developed with wheat, rice and most other crops in mind, and is suitable for farming enterprises of all sizes and in all growing locations.

### XFOLIAR1 Vegetative

**Focused source of nitrogen and phosphorus for rapid growth and plant development.**

**Balanced trace elements required to support plant establishment.**

**With a pH of 2.8 this product uses RLF's NDS (Nutrient Delivery System) technology to deliver a high-analysis, broad spectrum product safely to the plant. Uptake efficiency is substantially increased.**

### XFOLIAR2 Reproductive

**High potassium with phosphorus for the latter stages of grain-set and grain-fill. Vital for yield.**

**Balanced trace elements required for flowering and fruiting support.**

**Optimally balanced pH of 6.8 and acetate-based meaning superior foliar absorption of potassium with a 5X improved uptake rate.**

# XFOLIAR1 Fertiliser with High N, P + Trace Elements


## When to Use

**XFoliar-1** is for plants in the **establishment**, **or vegetative growth phase**. It is to be applied to the crop during weeks 2 – 6 after sowing by way of foliar application.

## What it Provides to the Plant

It contains a high level of nitrogen plus all minor and major critical elements in an acidic pH of 2.8. It is a beneficially low pH solution, and the high level nitrogen supports increased root growth during vegetative phase.

High levels of nitrogen and phosphorus are particularly important for establishing strong and healthy plants, and **XFoliar-1** is focused on providing these elements directly to the plant through the leaf. Bypassing the soil hurdles at this early stage strengthens the developing root system. Importantly, **XFoliar-1** includes Molybdenum to assist with nitrogen utilisation, which is critical during crop establishment.

## Why this is Important

Science demonstrates that the use of nitrogen, phosphorus and sulphur as an early foliar application, supported by appropriate trace elements, leads to demand for cation uptake by the root. This stimulates the citric acid passive and active exudation that feeds bacteria as it builds more humus within the root rhizosphere. This early physiological process delivers added benefits in crop health and nutrition. By stimulating rhizosphere activity, it unlocks the phosphorus and trace elements in the soil. This in turn increases nutrient uptake by the root to drive canopy growth.

The citrate component of **XFoliar-1** benefits the crop in cold season as a source of energy, whilst it's translocation in phloem tissue to the root acts as an added force for root exudation and unlocking soil-based phosphorus and trace elements.

## Role Key of Elements

XFOLIAR1

## Analysis

**pH 2.8**

**N** High **Nitrogen** improves plant top growth and develops healthy plant canopy, a process that can be limiting by nitrogen and that it needs to establish for maximum energy transfer and conversion of light energy to chemical energy.

**P** **Phosphorus** is needed throughout the entire plant life cycle as an element needed FOR energy transfer in both respiration and photosynthesis. It is also crucial as a structural entity in many macro and smaller molecules such as ribonucleic (RNA) and deoxyribonucleic acids (DNA), phospholipids and smaller metabolites such as ATP, ADP and sugar phosphates. These are all important metabolites involved in cell metabolism and growth.

**TE** Balanced trace elements all have an important role to play but especially molybdenum to support nitrogen metabolism, and zinc for keeping photosynthesis and metabolism in balance.

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|---|---|---|---|
| **Macro Nutrients** | | | |
| Nitrogen (N) | 220 g/L | 22.0 %w/v | 16.1 %w/w |
| Phosphorus (P) | 60.2 g/L | 6.0 %w/v | 4.4 %w/w |
| *Phosphorus ($P_2O_5$)* | *138 g/L* | *13.8 %w/v* | *10.1 %w/w* |
| Potassium (K) | 23.8 g/L | 2.4 %w/v | 1.7 %w/w |
| *Potassium ($K_2O$)* | *28.7 g/L* | *2.9 %w/v* | *2.1 %w/w* |
| Magnesium (Mg) | 8.1 g/L | 0.81 %w/v | 0.59 %w/w |
| **Micro Nutrients** | | | |
| Sulphur (S) | 11.5 g/L | 1.2 %w/v | 0.84 %w/w |
| Zinc (Zn) | 30.7 g/L | 3.0 %w/v | 2.2 %w/w |
| Manganese (Mn) | 10.2 g/L | 1.0 %w/v | 0.75 %w/w |
| Copper (Cu) | 2.0 g/L | 0.20 %w/v | 0.15 %w/w |
| Molybdenum (Mo) | 0.51 g/L | 0.051 %w/v | 0.037 %w/w |

# XFOLIAR2 Fertiliser with High K, P + Trace Elements


## When to Use

**XFoliar-2** is for plants in their **reproductive growth phase**. It is to be applied to the crop during weeks 7 – 12 after sowing by way of foliar application.

## What it Provides to the Plant

It contains a high level of potassium and phosphorus as well as seven other essential nutrients. Potassium is particularly beneficial during this second phase of growth and is present in **XFoliar-2** as potassium acetate. Potassium in this form typically has a five times more effective absorption rate. This enables much quicker uptake of this nutrient compared to other forms of foliar potassium. It is maintained at maximum uptake by a neutral pH of 6.8.

Boron is present at safe levels to trigger flowering.

## Why this is Important

Science tells us that the use of high level potassium during the reproductive phase of crop growth is essential to keep the stomata open to enable photosynthesis for grain set and fill.

Maintaining high phosphorus supply, plus trace elements is also important during this growth stage as it is needed to assist with energy transfer in both respiration and photosynthesis.

The use of EDTA chelate enables the mobility of metallic trace elements to assist with grain set and fill because these minor elements can often be suboptimal during the reproductive phase of the crop due to transient drought. Leaf yellowing is also prevented by **XFoliar-2** and it allows for photosynthesis to 'hang-on' during transitional drought.

## Role Key of Elements

XFOLIAR2

## Analysis

**K** **Potassium** has a major role in the transition from vegetative to reproductive growth stage since it often becomes limiting during maturation due to the soil drying up, or because of the rapid growth and high demand for the fruit and grain. Potassium is also needed to maximise the metabolic reactions that are involved in building up yield, as it is essential in many functions such as phloem mobility, keeping the stomata open and for cell turgidity which is precursor for cell growth and cell division.

**P** Maintaining phosphorus together with the value adding nutrition supplied by all of the other elements in **XFoliar-2** continues the important role and functions played by this key nutrient.

**TE** In addition to the continuing roles of molybdenum and zinc, boron is important to trigger flowering and the development of sexual organs, with copper firmly helping with grain set.

**pH 6.8**

| | | | |
|---|---|---|---|
| **Macro Nutrients** | | | |
| Nitrogen (N) | 10 g/L | 1.0 %w/v | 0.8 %w/w |
| Phosphorus (P) | 30.2 g/L | 3.0 %w/v | 2.4 %w/w |
| *Phosphorus ($P_2O_5$)* | *69.2 g/L* | *6.9 %w/v* | *5.5 %w/w* |
| Potassium (K) | 161 g/L | 16.1 %w/v | 12.8 %w/w |
| *Potassium ($K_2O$)* | *194 g/L* | *19.4 %w/v* | *15.4 %w/w* |
| **Micro Nutrients** | | | |
| Zinc (Zn) | 5.04 g/L | 0.50 %w/v | 0.40 %w/w |
| Copper (Cu) | 1.97 g/L | 0.20 %w/v | 0.16 %w/w |
| Boron (B) | 2.03 g/L | 0.20 %w/v | 0.16 %w/w |
| Molybdenum (Mo) | 0.20 g/L | 0.020 %w/v | 0.016 %w/w |

## Why an XFoliar Program Delivers Nutrients More Efficiently

By fully understanding plant physiology and the other sciences involved in growing food crops, the nutrient needs of the plant can be better targeted. This means that the crop can be given the nutrients it needs at the time that they are most needed, and therefore most beneficial to drive all growth spheres, (i.e. the root, the shoot and plant top growth, and the flowering and grain fill functions that deliver greater yield).

**XFoliar-1** can render high level nitrogen together with phosphorus, because these elements are successfully delivered to the plant in a **low pH formulation** using RLF technology NDS (specialised Nutrient Delivery System). By applying them during the vegetative, or establishment stage of crop growth, these two important nutrients supported by optimally balanced trace elements drive the growth and development of the root system to enable the plant to grow strongly and quickly. These nutrients give the crop the best chance of success at this early stage.

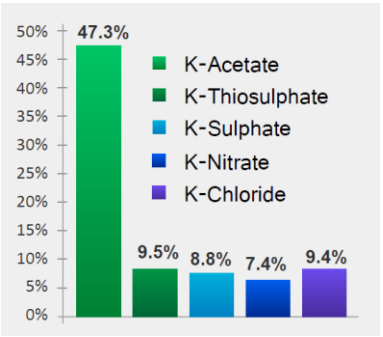
**XFoliar-2**, applied during the reproductive, or flowering stage of crop growth delivers high level potassium together with a continuing supply of phosphorus as the principal nutrients. They too are supported by the optimally balanced trace elements required at this time. Potassium cannot be delivered in the quantities needed by the crop for this growth stage in a low pH formulation. This is why **potassium acetate** is the chosen K-source for getting the required levels of this vital nutrient to the crop. It is this high level of available K that enables the crop to achieve its full yield potential.

Potassium Acetate has superior foliar absorption over traditional forms of potassium because of its small molecular size, coupled with the plant's natural attraction for organic acids. It has been shown to have up to **5X the foliar uptake** of the traditional forms of potassium such as potassium nitrate, potassium thiosulphate, potassium sulphate and potassium chloride. It is the most rapid source for uptake of potassium since it is absorbed as both ionic (potassium ion and acetate ion) as well as molecular form (having no charge) that enters the cell in a downhill gradient due to its utilisation inside the cell. This ensure the downhill gradient is sustained.

Potassium Acetate is an excellent foliar source of potassium that provides the energy needed during rapid growth periods, especially as fruit develops its size and quantity. This is the basis of the second-phase of the **XFoliar** product, and it is an **essential fruiting food**.

Recent studies out of the Department of Horticultural Sciences, Texas A&M University show that Acetate-based nutrients generally give superior foliar availability to a crop over more traditional nutrients. Lower use rates are often achieved, and more efficient nutrient utilisation delivered. The chart shows the documented comparative % uptake results of this study.

**Efficiency of Potassium Sources**




## Benefits of XFoliar 2-Part Targeted Crop Nutrition Program

The advantage of a two-part foliar strategy is that nutrients are applied based solely on the specific needs of the crop during either vegetative or reproductive cycle. An **XFoliar** Targeted Crop Nutrition is economical, easy to use and achievable. The flexibility of having two foliars – and two foliar spraying opportunities – offers peace of mind for farmers. This allows them to be confident that they are applying their crop's nutrient needs as and when it suits the crop. **XFoliar** 2-part targeted crop nutrition program generates greater efficiency for both the crop and the farmer's fertiliser budget.

### XFOLIAR1

- ✓ Excellent source of nitrogen and phosphorus for rapid growth
- ✓ Balanced supporting trace elements required for plant establishment
- ✓ Beneficially low pH of 2.8
- ✓ Greater generation of root exudation that contributes to building more humus
- ✓ Stimulation of rhizosphere activity to unlock phosphorus and trace elements in the soil
- ✓ Increased nutrient uptake to drive crop canopy growth

### XFOLIAR2

- ✓ Superior foliar absorption of potassium with 5X greater uptake rate
- ✓ Balanced supporting trace elements required for grain set and grain fill
- ✓ Optimum pH of 6.8
- ✓ Lower use rates compared to other forms of potassium crop nutrition
- ✓ Highly compatible form of potassium suitable for tank mixing
- ✓ Demonstrated increased benefits that come with late season foliar spraying