



USE DIRECTIONS

February 2015

Liquifert Lo-Bi

%N	%P	%K	%S
46	0	0	0

ANALYSIS

NUTRIENTS

46 % Nitrogen (N) as Urea

IMPURITIES

Biuret	0.45 %	(max)
Cadmium (Cd)	1 mg/kg Cd	(max)
Lead (Pb)	1 mg/kg Pb	(max)
Mercury (Hg)	0.2 mg/kg Hg	(max)

Liquifert Lo-Bi is low biuret grade of urea, for use as a foliar-applied nitrogen fertiliser in annual and perennial horticultural and other biuret-sensitive crops where urea sprays are applied regularly or at high rates.

Biuret is an impurity that is formed during the manufacture of urea. Biuret is not metabolised in plant leaves. When applied repeatedly in foliar sprays, particularly in long-lived evergreen perennial crops such as citrus, the biuret will accumulate in the plant leaves and may reach toxic concentrations.

Lower-priced grades of urea with a higher biuret content, e.g. Liquifert N, may be used in cereals and cotton where a single spray is made, or only a few foliar applications of urea are made at low rates.

Refer to the "Liquifert N" Use Directions for more detail.

USE DIRECTIONS

Foliar sprays of urea can be used to supplement, but not replace soil applications of nitrogen fertiliser. There are limits to how much fertiliser can be foliar-applied without burning the foliage, which may happen if urea is applied at too high a rate, or too frequently.

In horticultural crops, Liquifert Lo-Bi is typically applied at rates up to 10 kg/ha per application, the dilution rate in water depending on the spray volume.

In vegetable crops, a spray volume of 1 000 L/ha, containing 1 kg/100 L (1% w/v) urea will apply 10 kg/ha urea. Higher spray volumes are used in tree crops.

The following table gives examples of Liquifert Lo-Bi concentrations commonly used in foliar sprays in horticultural crops. A wetting agent should be added to the spray mixture at label recommended rates.

Typical Liquifert Lo-Bi Concentrations for Foliar Sprays in Horticultural Crops.

Crop	Urea Concentration kg/100 L or % w/v
Vegetables	1.0
Trees and vines	0.5

Citrus is a crop in which a significant part of the crop's nitrogen requirement can be met through regular sprays of urea during the growing season, in which Liquifert Lo-Bi should be used.

In **pineapples**, urea concentrations of up to 5 kg/100 L (5 % w/v) are commonly used in high volume sprays, e.g. 4 - 5 000 L/ha. Much of the fertiliser solution fills the hearts of the plants, overflowing into the base leaves and onto the soil, from where it is taken up by the plant roots. As such, this is not representative of foliar sprays in other crops, where most of the spray solution is retained on the leaves. High volume sprays are a convenient and practical way of applying nitrogen and potassium fertilisers in pineapples beds after planting.

Specific district crop advice should be sought on spray programs for citrus and pineapple.

Foliar burn may occur at the concentrations shown in the above table, particularly in sensitive crops such as strawberry and French bean. Spray concentrations may need to be reduced. If burn occurs or past experience indicates it is likely, reduce the concentration, e.g. to half these rates. Higher rates may also be tolerated in some crops and circumstances.

Many factors affect the susceptibility of crops to foliar burn, including the type of crop being grown, its growth stage, prevailing weather conditions, the time of day that the fertiliser is applied, spray concentrations and volumes, frequency of application, water quality and application equipment. Because of the many variables involved, the maximum rate at which urea can be safely applied varies, and cannot be accurately predicted in advance. The expression of symptoms may vary from year to year, week to week, and farm to farm. Burn may occur under both lush and harsh growing conditions.

If applying Liquifert Lo-Bi for the first time, or applying it to a new crop, in combination with other fertilisers, or should application procedures and equipment change, test spray on a few plants or trees first, and observe for three to four days for signs of phytotoxicity, before spraying the rest of the crop.

The best time to spray is usually in the early morning. Sprays can also be applied in the late afternoon or evening, or under cloudy conditions, provided the temperature is low and humidity is high. Do not spray in the heat of the day, particularly in summer, when evaporative conditions are at their highest.

If Liquifert Lo-Bi is used in conjunction with other fertilisers in multi-nutrient foliar sprays, e.g. potassium nitrate, it may be necessary to reduce the amount of (concentration at which) the different fertilisers are applied, to ensure that the combined fertiliser rate is not excessive.

MIXING, COMPATIBILITY IN SOLUTION

Urea is compatible in solution with most other fertilisers.

Fill the tank to near capacity, leaving space for the added fertiliser, which should then be added slowly while agitating. Do not pre-mix, as is the practice with many pesticides, e.g. wettable powders. The fertiliser will not dissolve completely if added to a small amount of water.

Urea solutions are alkaline, i.e. they have a high pH. The final pH of the spray solution will depend on the quality of the water, and what other ingredients are used. Many other fertilisers are acidic.

If necessary, the pH of the spray solution can be adjusted. The ideal pH for foliar sprays is 5.0 - 6.5. Solution grade MAP (monoammonium phosphate) fertiliser may be used as a buffering agent if the spray mixture is alkaline.

Fertiliser solutions should be prepared just prior to use, and not allowed to stand for an extended period of time. This will minimize any biological transformations to the urea while in solution. These are more likely to occur where muddy surface water is used. It also reduces the risk of sediment formation and settling in mixing and spray tanks, due to different fertilisers reacting with one another or salts in the water, e.g. where hard water is used.

In some crops where urea is applied at high concentrations, e.g. pineapples prior to flowering, the use of a bactericide is often recommended to prevent possible ammonia formation (and subsequent crop damage) from the action of bacteria on the urea.

Urea is compatible with most agricultural chemicals, e.g. insecticides and fungicides. However, their compatibility with urea should be checked on the pesticide label before use. If compatibility information is not available, mix a small batch in a glass jar, and observe for signs of stability (settling or phase separation). It may also be necessary to spray a few plants and wait a few days to observe for signs of phytotoxicity and/or efficacy, before spraying the entire crop.

The chemicals should be added to the spray tank first, followed by the fertilisers. This helps minimise any pH changes and exposure of the chemical to high pH. Alkaline conditions affect many agricultural chemicals.

CARE OF EQUIPMENT

Fertilisers can be corrosive to metals. Flush spray equipment after use.

SAFETY DIRECTIONS

Avoid contact with eyes or skin. Wash hands after use. Avoid inhaling spray or dust.

WARNING

Before using fertiliser seek appropriate agronomic advice. Fertiliser may burn and/or damage crop roots or foliage. Foliar burn to the leaves, fruit or other plant parts is most likely to occur when fertilisers are foliar-applied at high concentrations and/or on a regular basis, different products are mixed and sprayed together at cumulatively high rates, the water is of poor quality, or the spray is applied under hot dry conditions, eg. in the heat of the day. Because climatic and soil conditions, application methods, irrigation and agricultural practices are beyond the control of Incitec Pivot Limited and cannot be foreseen, Incitec Pivot Limited accepts no responsibility whatsoever for any commercial damage, loss or other result following the use of this product whether used in accordance with directions or not, subject to any overriding statutory provision and provided that such liability under those provisions shall be limited to the replacement of the goods as supplied or the rendering again of the services that are provided. The buyer accepts and uses this product subject to these conditions.

Agritopics on “Nitrogen”, “Urea” and “Foliar Fertilisers” are available if required, and should be read in conjunction with these “Use Directions”.

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