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Calcium

The Product

Wuxal® Calcium Xtra Uptake, a proven formulation containing nitrogen, calcium, magnesium and trace elements, is a suspension concentrate specifically designed for foliar application to crops for the prevention of calcium deficiency. The new Xtra Uptake technology offers an advanced penetrant and surfactant, enhancing rapid foliar nutrient absorption which increases efficiency, especially on plants with hard-to-wet foliage and under suboptimal weather conditions.

Calcium Deficiency and Disease in Grapes

Inadequate levels of calcium have long been associated with the development of physiological disorders in many types of fruits and vegetables. Nutrient levels may also exert secondary influences on the growth and yield of plants by causing changes in chemical composition, plant morphology and anatomy which may affect their resistance to pests and diseases.

Research indicates that applications of calcium to fruit crops can affect disease incidence and, in particular, reduce damage caused by *Botrytis*. Calcium may show an impact in several different ways. Firstly, by direct effects on the growth and development of the fungus and, secondly, by increasing the resistance of the host. Calcium can also enhance the efficacy of biocontrol agents.

Wuxal Calcium Xtra Uptake is recommended for the control of physiological conditions caused by calcium deficiency in a range of crops, and may reduce severity of diseases such as those caused by *Botrytis cinerea* by increasing calcium levels in grapes. It has been shown the higher the calcium content of grape berry cell walls, the less susceptible they are to attack from *Botrytis cinerea*.

Timing the application of Wuxal Calcium in viticulture for optimal effect is important. The calcium content of the skin of Cabernet Sauvignon berries increases threefold between fruit set and 46 days after flowering and then doubles up to veraison. However calcium content in the pulp remains constant. Therefore the most important time to supply additional calcium to grapes is between fruit set and veraison.

Winter and Nicol (1998) undertook a study assessing the impact of Wuxal Calcium[†] on *Botrytis* in Chardonnay grapes in the Hunter Valley. The block had a large carryover of the disease from the previous year. Four applications of Wuxal Calcium at 5 L/ha were applied at fortnightly intervals from fruit set to veraison.

In the important early stages of development, calcium content in grape berries was higher in the Wuxal Calcium-treated block than in the untreated block (Figure 1).

Figure 1. Wuxal Calcium increases Calcium Content in Grape Berries

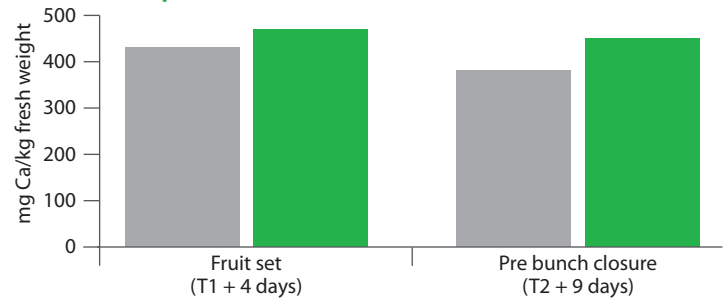
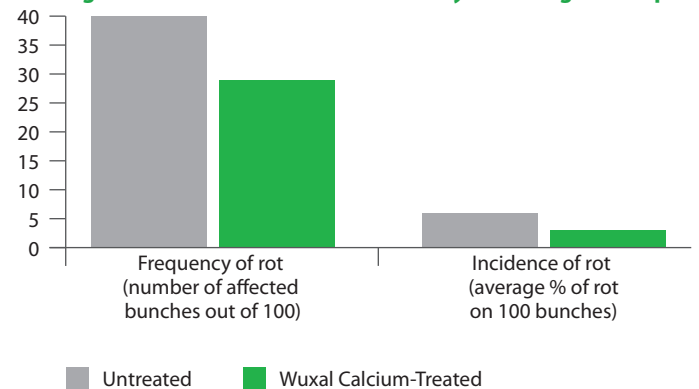


Figure 2. Wuxal Calcium reduces Botrytis Damage in Grapes



There was a lower frequency and incidence of *Botrytis* damage in the Wuxal Calcium-treated block compared to the untreated block (Figure 2).

The inclusion of Wuxal Calcium Xtra Uptake in spray programs early during grape berry development may help with control of frequency and incidence of *Botrytis* at harvest.

Wuxal Calcium Xtra Uptake

- Highly concentrated foliar fertiliser with a significantly higher calcium uptake efficiency than binary salt sprays. This improves application efficacy and so less applications are required compared to binary salt sprays, reducing freight and handling costs.
- Contains stickers, surfactants, humectants and anti-evaporants which improve the application efficacy and plant uptake, reducing wastage and improving plant performance.
- Has superior crop safety compared to binary salt sprays, which may cause phytotoxicity.
- Has a pH of approximately 6.5. Its buffering capability can make mixing easier and cheaper. Expensive buffering solutions may not be needed with Wuxal Calcium Xtra Uptake and it is compatible with most commonly used fungicides and insecticides (except lime sulphur and Bordeaux mixtures).
- Can be applied with high or low volume equipment.

[†] This study used the original formulation of Wuxal Calcium

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ACTIVE CONSTITUENTS

w/v		g/L	
16.0%	N	Total Nitrogen	160
2.1%		as amide	21
0.3%		as ammonium	3
13.6%		as nitrate	136
17.2%	Ca	Calcium (present as calcium nitrate)	172
1.8%	Mg	Magnesium (present as chloride)	18

This product contains:		% w/w
Water		21.5
Total solids		78.5

TRACE ELEMENTS

w/v		mg/L	
0.0800%	B	Boron water-soluble	800
0.0016%	Mo	Molybdenum water-soluble	16
As EDTA complex:			
0.0640%	Cu	Copper water-soluble	640
0.0800%	Fe	Iron water-soluble	800
0.1600%	Mn	Manganese water-soluble	1600
0.0320%	Zn	Zinc water-soluble	320
0.05		Maximum level of biuret	500

When storing the product, temperatures below +5°C (41°F) and above +40°C (104°F) as well as frequent temperature fluctuations should be avoided.

Directions for Use Table

The following is an extract of the product label and does not constitute the complete directions for use. The product label should be read thoroughly before opening the packaging.

CROP	SITUATION	STATE	RATE			CRITICAL COMMENTS
			L/HA	L/HA/SPRAY	L/HA/SEASON	
All crops	Regular fertiliser	All states	6	-	-	Apply regularly in a tankmix with all normal crop sprays.
Apples (All varieties)	Bitter pit control	Qld, NSW, SA, WA only	-	6	24-42	First post-blossom cover spray, then every second cover spray.
		Tas only	-	6	26-36	First post-blossom cover spray and each subsequent spray.
			-	8 or 12	26-36	Last 2 pre-harvest sprays where potential for bitter pit is high.
Jonathan	Bitter pit control	Vic only	-	8	32	Commence with first post-blossom cover. Spray approximately 2 weeks after petal fall.
Red Delicious Golden Delicious	Bitter pit control	Vic only	-	8	40	Commence with first post-blossom cover. Spray approximately 2 weeks after petal fall.
Granny Smith	Bitter pit control	Vic only	-	8	48	Commence with first post-blossom cover. Spray approximately 2 weeks after petal fall.
Brassicac	Internal browning control	NSW, Vic, Tas, SA, WA only	6	-	-	Apply monthly or with normal crop sprays.
Lettuce	Tip burn control	All States	3	-	-	Apply prior to head formation.
Mangoes	Soft nose control	All States	6	-	-	Apply monthly or with normal crop sprays.
Poppies		Tas only	3-5	-	-	Apply 1-2 times prior to flowering.
Tomatoes	Blossom end rot control	All States	3	-	-	Tankmix with every normal crop spray.
Viticulture		All States	5	-	-	Apply regularly in a tankmix with all normal crop sprays, beginning after blossom.
			5	-	-	Apply from the beginning of berry softening onwards, thoroughly spraying fruit bunches. Repeat at 14-day intervals.

The information provided herein may include extracts from the product label and does not constitute the complete directions for use. READ THE PRODUCT LABEL THOROUGHLY BEFORE OPENING OR USING WUXAL CALCIUM XTRA UPTAKE

AgNova Technologies Pty Ltd
 ABN 70 097 705 158
 PO Box 2069 Box Hill North
 Victoria 3129 Australia
 Ph 03 9899 8100

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