AgNOVA TECHNOLOGIES

AgNotes

Innovation. Quality. Solutions.

Optimising Post-harvest Nutrition to Maximise Returns

Deciduous fruit crops such as vines, pome and stone fruit rely on stored nutrients to kickstart growth in the following spring. Therefore it is important to optimise nutrient levels in the plant soon after harvest. Neglecting post-harvest nutrition could leave you playing catch up throughout the season. But careful planning with the right products can put you in prime position to maximise future returns.

Nitrogen (N)

- The most important nutrient and required in the greatest amounts
- Needed for active growth
- Approximately 50% of the leaf tissue nitrogen levels are remobilised before leaf drop
- About 30% of stored nitrogen is used by the plant in the following season
- Low levels result in poor bud break and fruit set and problems with biennial bearing

Phosphorus (P)

- Phosphorus levels in the plant are much lower than the other macronutrients but adequate levels are essential for many plant processes
- Efficient recycling in most crops
- Approximately 50-70% of the leaf tissue phosphorus levels are remobilised before leaf drop
- About 30% of the stored phosphorus is used by the plant in the following season

Potassium (K)

- Not extensively stored over the dormant period, its availability is driven extensively by active soil uptake in proportion to vegetative growth
- Approximately 15 - 30% of the leaf tissue potassium levels are remobilised before leaf drop
- About 15% of the stored potassium is used by the plant in the following season
- Potassium tends to compete with calcium and magnesium for uptake
- High potassium leads to low magnesium

Calcium (Ca) and Magnesium (Mg)

- As little as 5% of leaf tissue calcium and magnesium levels are remobilised before leaf drop
- About 20% of the stored calcium and magnesium are utilised by the plant in the following season, making stored levels of these two nutrients important to maintain
- Calcium is not highly mobile in the plant and cool conditions can limit uptake from soil
- Calcium sprays are most effective when applied at petal fall and continued throughout the season
- Magnesium applications are typically required at least once per season
- High levels of potassium or low levels of available phosphorus in the soil can result in poor magnesium uptake

Zinc (Zn)

- Essential but is often neglected as a nutrient
- Important in the formation and activity of chlorophyll, and in the functioning of several enzymes and the growth hormone auxin
- Low levels encourage blind wood and bourse leaves formation; the latter never fully expand resulting in less carbohydrates available for flowers and developing fruit
- Soil applications of zinc can be made unavailable by organic compounds and other minerals
- Foliar zinc sprays can russet fruit; post-harvest applications prevent this issue

Manganese (Mn)

- Particularly important in orchards grown on soils with a high pH and an accumulation of soluble salts

Copper (Cu)

- Like zinc, applications during the season can russet fruit, so use post-harvest applications instead

Boron (B)

- Required for pollen tube formation and fruit set
- Relatively immobile in plants and like calcium, moves in the xylem tissue
- As a result, periods of drought or waterlogging of soils can result in boron deficiency in the plant due to poor uptake from the soil
- Boron is most effectively applied immediately post-harvest

AgNova's nutrition portfolio provides several options for post-harvest application, depending on your situation.

Trees that have had a heavy crop can benefit significantly from post-harvest foliar nutrient sprays. Nitrogen should be the key ingredient of these sprays and, among the trace elements, this is the key time to apply boron and zinc.

Boronia Mo™

- Highly effective foliar uptake
- 100% soluble foliar fertiliser that is ready to use
- Boron and molybdenum delivered by foliar application is more efficient than application via the soil
- Flexible and economical, easily tank mixed
- Multi use, can be used on a wide range of crops

SITUATION	RATE / HA	MINIMUM DILUTION	COMMENTS
Avocado, mango, olive, almond	1 - 1.5 L	1 : 300	Apply to new fruit growth flush prior to flowering and as required through fruit development. Post-harvest application may also be required
Bananas	0.5 - 2 L	1 : 150	Apply as required but at least 7 - 14 days pre-flowering
Canola, wheat	2 - 2.5 L	1 : 50	1 - 2 applications from 2 - 3 leaves as required prior to flowering
Citrus	0.5 - 2.5 L	1 : 300	In deficient situations, regular applications may be necessary prior to flowering
Cotton	1.5 - 2 L	1 : 50	Split application required: 1st: at 6 leaf, 2nd: at flowering / boll set
Lucerne	2 L	1 : 50	Apply when sufficient leaf cover pre-flowering
Paw paw	2.5 L	1 : 150	Apply 7 - 14 days pre-flowering
Pea	2 - 2.5 L	1:150	1 - 2 applications from 5 - 6 leaves as required prior to flowering
Pineapple	1 - 1.5 L	1 : 150	Apply pre-flowering to ensure adequate boron levels for pollination
Pome & stone fruit	1 L	1 : 1000	3 applications required: 1st: at early spur burst, 2nd: at complete petal fall, 3rd: at post-harvest @ 2.5 L / ha
Poppies	1 - 2 L	1 : 150	Apply as regular applications prior to flowering
Sorghum, soybean	1.5 - 2 L	1 : 50	Apply 3 to 4 weeks after emergence
Strawberries	1 - 2 L	1 : 150	2 applications required: 1st: at initial flowering, 2nd: 14 days later
Sunflower	1 - 2.5 L	1 : 100	Apply at 5 - 8 pairs of leaves. 2 applications may be required at 2 weeks between sprays
Turf	2 - 4 L / ha, 20 - 40 mL / 100 m²	1 : 150	Apply to correct deficiencies. Use lower rate for bent grass.
Vegetables	1.5 - 3 L	1 : 150	Apply at 4 - 6 true leaf stage (well-developed foliage) or before and after flowering
Vines: table and wine grapes Foliar	1.5 L or 150 mL / 100 L	1 : 300	3 applications required: 1st: at clusters visible, 2nd: at flower buds separated, 3rd: at fruit set
Soil applications: all crops	5 - 8 L	1 : 100	Before sowing or planting

Wuxal® Ca Xtra Uptake

- Highly concentrated foliar fertiliser with a significantly higher calcium uptake efficiency than the single calcium salt sprays
- Has bio-effective additives for weather independent uptake of calcium and all other nutrients
- Has very high crop safety and none of the disadvantages of the single calcium salt sprays such as phytotoxicity at certain stages of growth, temperature dependency or unsatisfactory compatibility with pesticides
- Is compatible with most commonly used fungicides and insecticides (except lime sulphur and Bordeaux mixtures)
- Can be applied with high and low volume spraying equipment

CROP	SITUATION	STATE	RATE / HA			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.
Apple (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.
Brassicas	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.
Mango	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.
Tomato	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. Apply from the beginning of berry softening onwards, thoroughly spraying fruit bunches. Repeat at 14-day intervals.

Wuxal® Liquid

- Well-balanced supply of macro- and micronutrients that are readily available to plants
- High rate of nutrient uptake due to additives in the formulation
- Regulates pH of the spray solution and the superchelation reduces the water hardness
- Suitable for use on all crops and in all climates
- Improves growth, flowering, yield and quality, in particular under stress conditions of drought, heat or waterlogging
- Has excellent crop safety and can be applied with all usual high and low volume spraying equipment
- Is compatible with most commonly used fungicides and insecticides (except lime sulphur and Bordeaux mixtures)
- Leaves no unsightly residues and is suitable for the improvement of the leaf colour and shine of ornamental plants shortly before they are sold

CROP	RATE / HA		CRITICAL COMMENTS
	/HA	/100 L	
Cereals	5 - 10 L		Apply with post-emergence herbicide sprays as a source of trace elements and to improve growth.
Citrus	2 - 4 L	100 - 200 mL	Apply shortly before blossom, at petal fall and again one or more times at 4 weekly intervals.
Field Crops: cotton, hops, linseed, peanut, peas, potato, safflower, soybean, sunflower etc	2 - 3 L		Apply in combination with normal pesticide sprays beginning before flowering. Suitable for aerial as well as ground applications.
Fruit, especially berry crops, strawberries	2 - 4 L	100 - 200 mL	Apply one spray before blossom, then a further 2 to 4 sprays in combination with normal pesticide applications.
Fruit trees such as pome fruit, tropical fruit	2.5 - 5 L	100 - 200 mL	Apply one spray before blossom, then a further 2 to 4 sprays in combination with normal pesticide applications.
Grapevines	2 - 4 L	200 - 400 mL	Apply at least once before flowering, then several times at regular intervals with post-flowering pesticide sprays.
Ornamentals		125 - 250 mL	Apply weekly to roots and foliage.
Tobacco	1 - 2 L	100 - 200 mL	Apply when growth has stopped, in combination with normal insecticide or fungicide sprays.
Tree nurseries		soil drench: 100 - 300 mL or foliar spray: 50 - 200 mL	Apply at weekly intervals, either to the soil or as a foliar spray.
Turf		50 mL/25 L spray/100 m^2	Apply weekly.
Vegetables	4 - 6 L	400 - 600 mL	Use 3 to 5 applications in combination with normal insecticide or fungicide sprays.

DeltaMicro® Combi 2

- Innovative microgranule formulation manufactured to be dust free and free-flowing
- Low boron content – does not require the signal word "Caution" on the label, whilst still providing protection against boron deficiencies
- K-EDTA chelate to be sodium-free and provide the highest solubility
- Nine macro- and micronutrients in every granule to provide the best protection for trace element deficiencies under Australian conditions

CROP	NUMBER OF APPLICATIONS PER GROWING PERIOD	APPLICATION RATE KG/HA	MAXIMUM CONCENTRATION IN %
Citrus	2 - 4	0.7 - 1.0	0.2
Pome fruit, grape	2 - 3	0.5 - 1.0	0.1
Stone fruit, aggregate fruit	2 - 3	0.5 - 0.7	0.1
Coffee, cocoa, tea	2 - 3	0.5 - 1.0	0.2
Bananas	5 - 8	0.5 - 1.5	0.2
Pineapple	4 - 6	0.5 - 0.7	0.2
Tobacco	2 - 3	0.3 - 0.7	0.05
Cotton	2 - 4	0.7 - 1.0	0.3
Sugar beet	1 - 3	0.5 - 1.0	0.2
Rice, wheat, barley	1 - 3	0.5 - 1.0	0.3
Maize, sorghum, pearl millet	1 - 3	0.5 - 1.0	0.3
Soybean, peanut, beans, lucerne	1 - 3	0.5 - 1.0	0.2
Peas, other grain legumes	1 - 3	0.5 - 0.7	0.1
Potato, sweet potato	2 - 5	0.5 - 1.0	0.3
Tomato, pepper, eggplant	2 - 5	0.5 - 1.0	0.2
Cucumber, melon	2 - 4	0.5 - 0.7	0.2
Cabbages, cauliflower	3 - 6	0.5 - 0.7	0.2
Onion, garlic	2 - 4	0.5 - 0.7	0.2

Recommended post-harvest program

TIMING	PROGRAM 1	PROGRAM 2
Immediately after harvest	DeltaMicro @ 1 kg/ha	Boronia Mo @ 2.5 L/ha
2 weeks later	Wuxal Calcium Xtra Uptake @ 6 L/ha	Wuxal Liquid @ 4 L/ha

Program 1 suggested to be used in situations where multiple trace element deficiencies have been noted in the crop.

Program 2 suggested to be used in situations where boron deficiencies are the main target.

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 AGNOVA PRODUCTS

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