



**AGRITOPIC**  
March 2005 - 2

# Cal-Gran Blends For Ratoon Sugarcane

## Cal-Gran Blends

**Cal-Gran** Blends contain both **Cal-Am** (Calcium Ammonium Nitrate) and **Gran-am** (Granulated Ammonium Sulfate), in addition to phosphate and potash where required. They are specifically formulated to contain less than 45% ammonium nitrate, above which concentration fertilisers are classified as SSAN (Security Sensitive Ammonium Nitrate).

Cal-Gran Blends will replace existing Nitram (Ammonium Nitrate) and Cal-Am blends that are classified as SSAN. Cal-Am contains 80% ammonium nitrate.

## SSAN

Licenses and security plans are required to store, transport and use Security Sensitive Ammonium Nitrate (SSAN). These are not necessary with Cal-Gran blends.

Above concentrations of 45% Nitram and 56% Cal-Am, blends containing these products are classified as SSAN.

The use of Nitram or Cal-Am in blends at these concentrations results in the blend containing either too much phosphorus (P) and/or potassium (K) relative to nitrogen (N), as illustrated in Tables 1 and 2. Typically, most crops, including sugarcane, require about ten times more nitrogen than phosphorus, and about one and a half times more nitrogen than potassium.

**Table 1. Analyses of Nitram Blends (Maximum of 45% Nitram)**

Ingredient (%)			Analysis (%)		
Nitram	DAP	Muriate of Potash	N	P	K
45	10	45	17.1	2	22.5
45	15	40	18.0	3	20.0
45	20	35	18.9	4	17.5

**Table 2. Analyses of Cal-Am Blends (Maximum of 55% Cal-Am)**

Ingredient (%)			Analysis (%)		
Cal-Am	DAP	Muriate of Potash	N	P	K
55	10	35	16.7	2	17.5
55	15	30	17.6	3	15.0
55	20	25	18.5	4	12.5

## Cal-Gran Blend Formulations

Cal-Gran Blends are formulated with a maximum of 55% Cal-Am. Additional nitrogen, other than that present as DAP (diammonium phosphate), is added as Gran-am. This allows a range of products with varying N:P:K concentrations to be offered, none of which are classified as SSAN.

The analyses of the Cal-Gran Ratoon Sugarcane Blends are shown in Table 3.

Each blend contains about 18 - 20% nitrogen (N).

The blends are formulated to contain 0, 1, 2 or 3% phosphorus (P), while potassium is present at 10, 12.5 and 15% K.

Cal-Gran Blends also contain useful amounts of sulfur and calcium.

Sulfur is most likely to be required on sandy soils that are low in organic matter.

Calcium is also likely to be low on sandy soils, and in high rainfall areas. A recent review of commercial soil tests showed that 20 - 60 % of sugarcane soils were low in calcium (soil test values less than 1.25 meq/100 g Ca) in Queensland in districts other than the Burdekin.

For reference, Table 4 shows the amount of the major nutrients, including sulfur and calcium, present in the above ground parts of crops of sugarcane.

**Table 3. Cal-Gran Blend Analyses**

Product	Analysis (%)				
	N	P	K	S	Ca
Cal-Gran 50/50	17.9		15	3.6	4.4
Cal-Gran Nitra King	18.9		12.5	4.8	4.4
Cal-Gran 130	18.8	1	12.5	3.7	4.4
Cal-Gran 140	18.7	2	12.5	2.6	4.4
Cal-Gran 150	18.6	3	12.5	1.4	4.4
Cal-Gran 160	19.7	2	10	3.8	4.4

Cal-Gran Blends will replace existing Nitram and Cal-Am Blends that are classified as SSAN. These blends will no longer be listed on the Incitec Pivot Product Range.

Blends containing more than 55% Cal-Am will only be able to be ordered by SSAN licensed customers as Custom Blends.

**Table 4. Nutrient removal (kg/ha) in Cane, Tops and Trash.**

	Burdekin	Other Districts
Yield (t/ha)	119	74 - 100
kg/ha N	154	122 - 150
kg/ha P	37	15 - 23
kg/ha K	276	139 - 260
kg/ha S	47	25 - 48
kg/ha Ca	55	27 - 51

Source: BSES "Australian Sugarcane Nutrition Manual".

Product comparisons between the new Cal-Gran range and existing Nitram and Cal-Am blends are shown in Table 5.

**Table 5. Cal-Gran Blends, and equivalent Cal-Am and Nitram Blends**

Cal-Gran Blend	Equivalent Cal-Am Blend	Equivalent Nitram Blend
<p><b>Cal-Gran 50/50</b> (17.9%N - 0%P - 15% K)</p>	<p><b>Cal-Am 50/50</b> (17.6% N - 0% P - 17.5% K)</p>	<p><b>Nitram 50/50</b> (20.4% N - 0% P - 20% K)</p> <p><b>Nitram K</b> (22.1% N - 0% P - 17.5% K)</p> <p><b>Nitram 50/50 (S)</b> (20.4% N - 0% P - 16.4% K)</p>
<p><b>Cal-Gran Nitra King</b> (18.9% N - 0% P - 12.5% K)</p>	<p><b>Cal-Am Nitra K</b> (20% N - 0% P - 13% K)</p> <p><b>Cal-Am Nitra King</b> (20.3% N - 0% P - 12.5% K)</p> <p><b>Cal-Am K (S)</b> (19.4% N - 0% P - 13% K)</p> <p><b>Green 5</b> (19.8% N - 0% P - 12% K)</p>	<p><b>Nitram K (S)</b> (22.1% N - 0% P - 16.4% K)</p> <p><b>Nitram SOP</b> (22.1% N - 0 P - 14.4% K)</p>
<p><b>Cal-Gran 130</b> (18.8% N - 1% P - 12.5% K)</p>	<p><b>Cal-Am 140</b> (18.8% N - 2% P - 13.5% K)</p>	<p><b>Nitram 140</b> (22.2 % N - 2% P - 15% K)</p>
<p><b>Cal-Gran 140</b> (18.7% N - 2% P - 12.5% K)</p>		<p><b>Nitram 140 (S)</b> (22.2% N - 2% P - 13.9% K)</p>
<p><b>Cal-Gran 150</b> (18.6% N - 3% P - 12.5% K)</p>	<p><b>Cal-Am 150</b> (18.7% N - 2.8% P - 13% K)</p>	<p><b>Nitram 150</b> 21.4% N - 3% P - 15% K)</p>
<p><b>Cal-Gran 160</b> (19.7% N - 2% P - 10% K)</p>	<p><b>Green 1</b> (19.6% N - 1.8% P - 10.5% K)</p> <p><b>Green 2</b> (20.5% N - 2.4% P - 10% K)</p>	<p><b>Nitram 160</b> (23.2% N - 2% P - 13.5% K)</p> <p><b>Nitram Hi N Ratooner</b> (23.1% N - 3% P 11.2% K)</p>

## Cal-Gran, an alternative to straight Cal-Am

With the introduction of the Cal-Gran range of NPK blends, straight Cal-Am will be the only fertiliser classified as SSAN on the Incitec Pivot product range in the sugarcane market.

Farmers who wish to use Cal-Am will need to obtain a SSAN license.

As an alternative to Cal-Am, a blend comprising 55% Cal-Am and 45% Gran-am will be offered, under the name of Cal-Gran. The analysis of Cal-Gran, compared with that of the ingredients it is made from, is shown in Table 6.

**Table 6. Analyses of Cal-Am, Cal-Gran and Gran-am**

Product	% N	% S	% Ca
Cal-Am	27		8
<b>Cal-Gran</b>	<b>23.9</b>	<b>10.8</b>	<b>4.4</b>
Gran-am	20.2	24	

Cal-Gran contains 23.9% N, 16.5% N in the ammonium form, and 7.4% N as nitrate.

## Where to Use Cal-Gran Blends

Ammonium nitrate based fertilisers are recommended where volatilisation losses from surface applied urea may be excessive.

Volatilisation losses are greatest where urea is applied to a green cane trash blanket without incorporation.

They are minimised where the fertiliser is applied through the trash into the soil, is irrigated in by overhead sprinkler irrigation on the same day, or rain falls soon after application.

Cal-Am and Gran-am are both less subject to volatilisation loss from a green cane trash blanket than urea.

Cal-Gran Blends should be considered in ratoon cane where fertiliser is applied to the trash without incorporation, and irrigation is not possible.

Cal-Gran is not necessary in plant cane, where side-dress fertiliser is applied into the drill and covered with soil.

## Application Rates

Cal-Gran Blend application rates in ratoon sugarcane may range from 500 kg/ha to over 1 000 kg/ha.

The following tables detail the amount of nutrient applied at various product application rates.

# PRODUCT & NUTRIENT RATES

## Product Application Rate: 500 kg/ha

Product	Nutrient - kg/ha				
	N	P	K	S	Ca
Cal-Gran	120			41	17
Cal-Gran 50/50	90		75	18	22
Cal-Gran Nitra King	95		63	24	22
Cal-Gran 130	94	5	63	19	22
Cal-Gran 140	94	10	63	13	22
Cal-Gran 150	93	15	63	7	22
Cal-Gran 160	99	10	50	19	22

## Product Application Rate: 625 kg/ha

Product	Nutrient - kg/ha				
	N	P	K	S	Ca
Cal-Gran	149			68	28
Cal-Gran 50/50	112		94	23	28
Cal-Gran Nitra King	118		78	30	28
Cal-Gran 130	118	6	78	23	28
Cal-Gran 140	117	13	78	16	28
Cal-Gran 150	116	19	78	9	28
Cal-Gran 160	123	13	63	24	28

## Product Application Rate: 750 kg/ha

Product	Nutrient - kg/ha				
	N	P	K	S	Ca
Cal-Gran	179			81	33
Cal-Gran 50/50	134		113	27	33
Cal-Gran Nitra King	142		94	36	33
Cal-Gran 130	141	8	94	28	33
Cal-Gran 140	140	15	94	20	33
Cal-Gran 150	140	23	94	11	33
Cal-Gran 160	148	15	75	29	33

## Product Application Rate: 875 kg/ha

Product	Nutrient - kg/ha				
	N	P	K	S	Ca
Cal-Gran	209			95	39
Cal-Gran 50/50	157		131	32	39
Cal-Gran Nitra King	165		109	42	39
Cal-Gran 130	165	9	109	32	39
Cal-Gran 140	164	18	109	23	39
Cal-Gran 150	163	26	109	12	39
Cal-Gran 160	172	18	88	33	39

**Product Application Rate: 1 000 kg/ha**

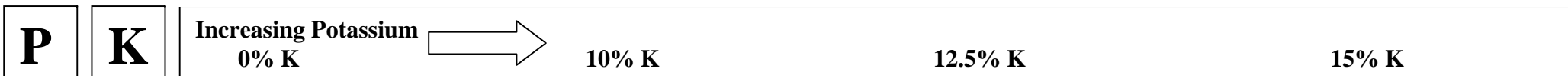
Product	Nutrient - kg/ha				
	N	P	K	S	Ca
Cal-Gran	239			108	44
Cal-Gran 50/50	179		150	36	44
Cal-Gran Nitra King	189		125	48	44
Cal-Gran 130	188	10	125	37	44
Cal-Gran 140	187	20	125	26	44
Cal-Gran 150	186	30	125	14	44
Cal-Gran 160	197	20	100	38	44

**Product Application Rate: 1 125 kg/ha**

Product	Nutrient - kg/ha				
	N	P	K	S	Ca
Cal-Gran 50/50	201		169	41	50
Cal-Gran Nitra King	213		141	54	50
Cal-Gran 130	212	11	141	42	50
Cal-Gran 140	210	23	141	29	50
Cal-Gran 150	209	34	141	16	50
Cal-Gran 160	222	23	113	43	50

<b>Rate Conversion Chart</b>	
kg/ha	50 kg bags per acre
375	3
500	4
625	5
750	6
875	7
1 000	8
1 125	9

# Cal-Gran Blends Ready Reckoner



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Nil P

Cal-Gran					
23.9% N - 0% P - 0% K - 10.8% S - 4.4% Ca					
kg/ha	N	P	K	S	Ca
375	90			41	17
500	120			54	22
625	149			68	28
750	179			81	33
875	209			95	39

Cal-Gran Nitra King					
18.9% N - 0% P - 12.5% K - 4.8% S - 4.4% Ca					
kg/ha	N	P	K	S	Ca
500	95		63	24	22
625	118		78	30	28
750	142		94	36	33
875	165		109	42	39
1 000	189		125	48	44
1 125	213		141	54	50

Cal-Gran 50/50					
17.9% N - 0% P - 15% K - 3.6% S - 4.4% Ca					
kg/ha	N	P	K	S	Ca
500	90		75	18	22
625	112		94	23	28
750	134		113	27	33
875	157		131	32	39
1 000	179		150	36	44
1 125	201		169	41	50

Nil P

1% P

Cal-Gran 130					
18.8% N - 1% P - 12.5% K - 3.7% S - 4.4% Ca					
kg/ha	N	P	K	S	Ca
500	94	5	63	19	22
625	118	6	78	23	28
750	141	8	94	28	33
875	165	9	109	32	39
1 000	188	10	125	37	44
1 125	212	11	141	42	50

1% P

2% P

Cal-Gran 160					
19.7% N - 2% P - 10% K - 3.8% S - 4.4% Ca					
kg/ha	N	P	K	S	Ca
500	99	10	50	19	22
625	123	13	63	24	28
750	148	15	75	29	33
875	172	18	88	33	39
1 000	197	20	100	38	44
1 125	222	23	113	43	50

Cal-Gran 140					
18.7% N - 2% P - 12.5% K - 2.6% S - 4.4% Ca					
kg/ha	N	P	K	S	Ca
500	94	10	63	13	22
625	117	13	78	16	28
750	140	15	94	20	33
875	164	18	109	23	39
1 000	187	20	125	26	44
1 125	210	23	141	29	50

2% P

3% P

Cal-Gran 150					
18.6% N - 3% P - 12.5% K - 1.4% S - 4.4% Ca					
kg/ha	N	P	K	S	Ca
500	93	15	63	7	22
625	116	19	78	9	28
750	140	23	94	11	33
875	163	26	109	12	39
1 000	186	30	125	14	44
1 125	209	34	141	16	50

3% P

## **WARNING**

This information is for use as a guide only. The use of fertilisers is not the only factor involved in producing a top yielding crop. Local soil, climatic and other conditions should also be taken into account, as these could affect crop or pasture response to applied fertiliser.

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**Incitec Pivot Limited**  
**PO Box 1322L**  
**Melbourne**  
**Vic 3001**  
**Phone 03 8695 4400**  
**[www.incitecpivot.com.au](http://www.incitecpivot.com.au)**