

GETTING THE FULL VALUE FROM MILL MUD



Banded mill mud application in Mackay

The benefits of mill mud and mud/ash are well known but you must question; are you getting the full value out of your mill products? With low sugar prices and average crops, the available nutrients in mill mud and mud/ash can be assessed to reduce your fertiliser bill.

Mill products are beneficial because they:

- Supply a decent amount of nutrients (carbon, nitrogen, phosphorus, potassium, sulphur, calcium, magnesium, zinc, copper and manganese) to the soil
- Improve soil texture and structure
- Improve soil water holding capacity
- Increase soil pH

Not all the nutrients found in mill products are available to the crop straight away. The table below shows the nutrients the cane can use in the first year and their dollar value.

Nutrients	Nutrient value/kg	MILL MUD		MUD/ASH	
		Available nutrients in 150t mud	Nutrient value in first year	Available nutrients in 150t mud/ash	Nutrient value in first year
Nitrogen	\$1.90	80	\$152	50	\$95
Phosphorus	\$3.11	120	\$373	100	\$311
Potassium	\$1.76	40	\$70	120	\$211
Sulphur	\$1.40	10	\$14	10	\$14
Calcium	\$0.50	360	\$180	270	\$135
			= \$789		= \$766

If the soil test for your fallow plant states that you need, for example: nitrogen at 140kg/ha, phosphorus at 20kg/ha and potassium (potash) at 100kg/ha, this could cost \$504/ha. If you were to use mill mud at 150t/ha, then you could cut your fertiliser back to supply nitrogen at 60kg/ha, phosphorus at 0kg/ha and potassium (potash) at 60kg/ha. This would save you approximately \$284/ha.

Note that more of the nutrients in mill products become available throughout the crop cycle. Also note that if you apply more than 100t/ha of mill mud, it must be accounted for under Reef Regulations.

The following table provides additional information on estimated available nutrients in mill mud when applied at 50t/ha banded on the row and 150t/ha broadcast and incorporated in the fallow.

MILL MUD 50T/HA			
Nutrients	Estimated available nutrients (kg/ha)		
	1st crop	2nd crop	3rd and 4th crop
Nitrogen	25	15	0
Phosphorus	140	sufficient	sufficient
Potassium	15	0	0
Sulphur	5	0	0
Calcium	280 (0.7t/ha lime)		

MILL MUD 150T/HA				
Nutrients	Estimated available nutrients (kg/ha)			
	1st crop	2nd crop	3rd crop	4th crop
Nitrogen	80	40	20	0
Phosphorus	420 (sufficient for 2 crop cycles)			
Potassium	40	0	0	0
Sulphur	10	10	10	0
Calcium	840 (2t/ha lime)			

Note:

- If using banded mud or mud/ash as a source of phosphorus for plant cane, when soil BSES P is less than 20mg/kg, seek advice before planting.
- If soil BSES P is greater than 50mg/kg, do NOT apply phosphorus fertiliser, mill mud or mud/ash. Seek advice if soil test PBI is very high.

If expressing the available nutrients in mud (applied at 50t/ha) as fertiliser equivalents, these nutrients are worth approximately \$700/ha. However, mud also contains useful quantities of magnesium, zinc, copper and manganese which have not been assigned a dollar value. Meaning that mill mud is a very good product; providing growers account for its available nutrients and reduce the “top-up” fertiliser they use.

Mill mud for soil health

Calcium is very important for crop yield and soil health. Because mil mud contains calcium carbonate (lime) it can assist with overcoming cane deficiency and will increase soil pH which improves soil chemistry (making nutrients more available) and the environment for soil biology. Aim to achieve a soil pH of at least 5.5. This encourages the bacteria which allow soybean to capture free-nitrogen and promotes earth worm activity.

Mill mud also contains cane fibre which equates to about 28% carbon content in dry matter. 50 wet t/ha of mud dries down to about 12 dry t/ha, which contributes about 3.5t/ha of carbon to the soil and 150 wet t/ha of mud gives over 10t/ha of carbon. What dollar value can we put on this carbon? The important point is that improving soil carbon encourages soil animals and plants, improves fertility, soil structure and water holding capacity which leads to better crop growth and production.

Matching row spacing to haul-out track width, reducing cultivation, growing good legume fallow crops and retaining trash blanket must also be practiced if we are serious about improving soil health.