

# Salt for Optimum Nutrition, Appetite, Health and Productivity

Sodium (Na) and chloride (Cl) are essential for all livestock and required on a continuous basis especially when low Na and high starch supplements are fed. Sodium requirements are highest for growth and milk production.

Salt research shows the following productivity and health benefits:

FEED	COWS	Soil and Grazing Management
Improves fibre digestibility	Increased DM degradation	Less luxury Potassium (K) uptake
Re-balances high Potassium (K) pastures and feeds	Faster rumen outflow rates	More even post grazing residuals
Less acidosis risk from starch	Safer rumen pH range	Better total DM intakes
Feeds are more palatable	Increased feed intake	Less fertility patch problems
Masks non-palatable zinc, magnesium oxide, rumensin, tapioca	More milk production and better persistency	Less clumpy, stemmy grass patches
Improved magnesium and sugar absorption	Less metabolic problems as downer cows, bloat, grass staggers	Better total paddock or break grazing by stock
More Sodium Bicarbonate is made	Less lameness and laminitis (hoof health)	
Less need for expensive pH buffers	Anti-apathy nutrient	
	Balancing K:Na and K:Cl helps to excrete excess Potassium (K)	

Failure to balance or optimise the ideal K:Na and K:Cl ratio, will result in **reduced feed intake and milk production**. When the cow becomes overloaded with Potassium (K) (1% vs 3-6%K), **feed intake is suppressed by 2-4 kgDM**.

Loss of milk production always ensues and mating is affected also. The health problems caused by excess Potassium (K) to Salt (NaCl) include increased bloat, grass staggers and more metabolic problems (downer cows).

**"Best practice" nutritional balancing** is about ideal ratios of opposing nutrients than just about minimum or maximum percentages in the overall ration. What is beneficial for leafy pastures with high clover content may not support optimum feed intake, production, breeding, hooves, and overall health in dairy cows and other livestock. By ensuring balanced ratios of nutrients like Potassium (K), Sodium (Na), and Chloride (Cl), animals can better tolerate excess Potassium (K) while meeting the distinct needs of clover and cows through effective salt supplementation.



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# Actual and Ideal Ratios of Minerals for Pasture, Cows and Feed Supplements

	K: Na	K: Cl	K%	Na%	Cl%
Milking Cow Ideal	<5-10:1	<1.4:1	1%	0.3-0.5% min	0.75% min
Pasture + Clover range	5-200:1	2-70:1	2.5-3.5% ideal	Nil	Nil
Effluent Pasture	120-20:1	30-8:1	4-6%	0.05-0.2%	0.2-0.7%
Feed Type	K: Na	K: Cl	Starch/Sugar	DM/Fibre	Protein
Maize Silage	25-200:1	2.4-4:1	✓	✓	
Soyabean Meal	214:1	37:1			✓
Soy Hulls Pellet	151:1	30:1		✓	
Sunflower Pellet	37:1	4.7:1			✓
Canola Meal	20:1	35:1			✓
DDG	6.8:1	6.3:1			✓
Maize	60:1	6:1	✓		
Wheat	57:1	3:1	✓		
PKE	22:1	6.3:1		✓	
Barley	19:1	2.2:1	✓		
Citrus Pulp Pellet	18.3:1	14:1		✓	
Molasses	11.4:1	3.3:1	✓		
Tapioca	5.7:1	8.4:1	✓		
Risk Issue			Acidosis	Digestibility/K	Hi K

Based on NRC2001 and Feeding the Dairy Cow collated research, trials and meta-analysis, the following tables of practical salt requirements and ideal mineral ratios have been designed specifically for the NZ pastoral and supplement feeding environment.

## Salt Feeding Guidelines for K% Range and Total Supplement Quantity Fed (Starch+Fibre)

Supplement Feeding Range	1-2kgs		3-4kgs		5-6kgs		7-10kgs	
Pasture K (%)	2.5-3.5%	4-6%	2.5-3.5%	4-6%	2.5-3.5%	4-6%	2.5-3.5%	4-6%
Salt Feed rate (gms/cow/day)	60-70	90-110	70-90	100-110	100-120	130-140	130-140	150+
Sodium (Na%) (min%)	0.3%	0.35%	0.35%	0.4%	0.4%	0.45%	0.5%	0.55%

## General Salt Feeding and Fertiliser Guidelines

- Do not feed salt to transition springer cows unless professionally advised. Salt can cause udder oedema. Salt has zero DCAD (K+Na-Cl+S) so 15-20 gms can be fed but is not advised routinely without good advice.
- Feed salt to dry cows on fodder beet at 25-30gms per cow per day to improve rumen pH buffering and reduce acidosis risk.
- Always allow free choice fed salt for young stock, dry stock. Innate wisdom allows stock to meet their own demand for salt. Extra care is needed when offering salt for the first time to very salt deficient stock. Grass staggers can be worse for growing dry stock than milking animals.
- Always allow on-going access to clean fresh water for all stock classes both lactating and non-lactating livestock.
- Provide salt (5-20gms) and limeflour with PKE when used as a feed source for replacement stock.
- Do not salt paddocks without seeking expert professional advice.

