



PIONEER.
BRAND · PRODUCTS

MAIZE SILAGE

4 GREAT REASONS TO
INTRODUCE IT INTO
YOUR FARM SYSTEM

01.

GREAT
FOR NEW
ZEALAND

Page 1

02.

GREAT FOR
YOUR FARM
SYSTEM
AND PROFIT

Page 3

03.

GREAT FOR
YOUR COWS

Page 11

04.

GREAT FOR THE
ENVIRONMENT

Page 13



D1. GREAT FOR NEW ZEALAND

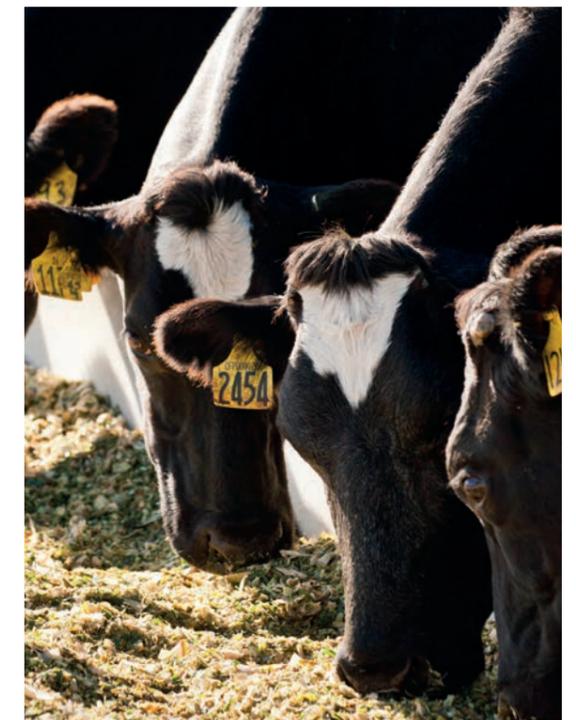
Agriculture has long been a cornerstone of the New Zealand economy and locally grown feed supplements such as maize silage deliver significant and growing contributions to this sector by providing employment and income for thousands of New Zealanders.

Kiwi feed for Kiwi cows

Pioneer® brand maize seed is grown right here on Gisborne farms - it's processed and distributed by a Kiwi family business.

Every Pioneer maize silage crop is supported and supplied by local merchants who provide all the inputs including seed, fertiliser, herbicides, inoculant and silage covers. Every hectare is cultivated, planted, sprayed, and harvested by local contractors.

Farmers underpin the financial success of New Zealand. The milk, meat and fibre produced by them is sold in global markets increasing New Zealand's export earnings and keeping our country financially viable for all New Zealanders now and in the future.





02.

GREAT FOR YOUR FARM SYSTEM AND PROFIT

Maize silage is a proven supplement and the ideal partner to New Zealand's pasture-based dairy farm feed systems.

More feed per hectare

One of the biggest drivers of on-farm profitability is the amount of feed harvested from every hectare. Because it is a forage, maize silage feeding levels can be altered to manipulate pasture cover preventing under or overgrazing and keeping pasture in the most active phase of its growth curve.

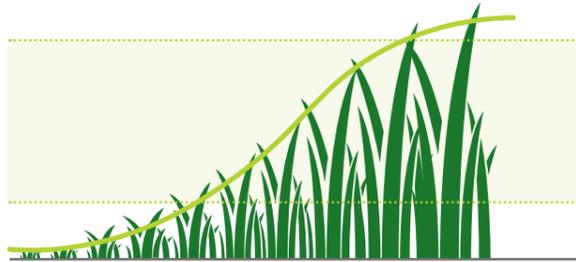


Grow more pasture

The key to maximising pasture yield is to keep the pasture sward in its most active growth phase by avoiding under or over grazing. If pasture is in danger of over grazing, stored maize silage can be fed out at any time to allow pasture recovery.

Pasture persistence is a continued challenge and grazing too soon and too hard is thought to be a contributing factor. Feeding maize silage can help prevent overgrazing extending the life of your pasture sward.

Figure 1: Using maize silage to manipulate pasture growth rates



Pasture cover levels too high (>3000 kgDM/ha). Reduce maize silage feeding rate to increase grazing pressure or plant maize silage on farm

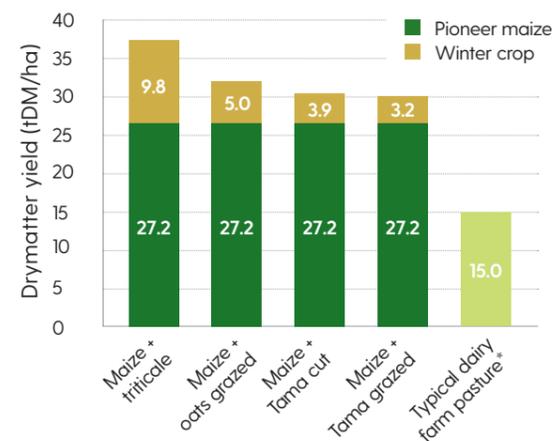
Optimum pasture cover levels. Vary maize silage feeding rate to maintain the desired rotation length

Pasture residual levels too low (<1500 -1600 kgDM/ha). Increase maize silage feeding rate to decrease grazing pressure

Get more from a hectare of maize

Maize silage yields are high and local research shows they are increasing each year. Growing a maize silage crop is a great way to get more drymatter off your lowest producing pasture paddocks. Alternatively dedicate an area of your farm to forage production and you will find that the combination of maize silage plus a winter annual crop can produce more than double the yield of a typical pasture paddock¹.

Figure 2: Annual drymatter yields from maize silage followed by a winter crop¹



* Trial did not include a pasture treatment



Establish new, higher yielding pastures

Research has shown that the highest yielding paddocks on a dairy farm will produce twice as much drymatter as the lowest yielding paddocks². Growing a maize crop is an important part of a successful pasture renewal program as it reduces the level of weeds, insect pests and carryover ryegrass seed.

Control feed costs

Whether you are growing a crop on the milking platform or run-off or buying it in, maize silage is a great way to control your supplementary feed costs.

Grow it yourself

Maize produces high drymatter yields and this means plenty of feed at a cost-effective price. Most dairy farmers can grow maize silage on-farm without the need for additional fertiliser, making the cost even lower.

Table 1: Home-grown maize silage drymatter and energy cost 2020-21³

		Maize silage drymatter costs			
		Low fertility paddock		High fertility paddock	
Maize silage yield (tDM) in the stack	tDM/ha	Maize silage cost per kgDM in the stack (c/kgDM)	Maize silage cost per MJME (c/kgDM)	Maize silage cost per kgDM in the stack (c/kgDM)	Maize silage cost per MJME (c/kgDM)
		16	25.5	2.36	-
	18	22.6	2.10	17.9	1.66
	20	20.4	1.89	16.1	1.49
	22	18.5	1.72	14.6	1.36
	24	17.0	1.57	13.4	1.24
	26	15.7	1.45	12.4	1.15
	28	14.6	1.35	11.5	1.06
	30	-	-	10.7	0.99



Buy it in

Most traded maize silage is sold as a standing crop and is contracted prior to planting in the spring. While the cost of buying in maize silage varies slightly between regions, it is

typically in the range 30 to 40 c/kgDM in the stack. This compares favourably with the cost per kgDM or per unit of energy of bought-in dairy meal blends.

Table 2: Cost of bought in maize silage compared to other commonly available supplements

Feed	Cost per unit (delivered)	Drymatter cost (c/kgDM)	Energy content (MJME/kgDM)	Energy cost (c/MJME)
Maize silage (bought in)*	-	30-40	10.8	2.8-3.7
Typical dairy meal blend	\$450-\$550/tonne**	51-63	11.0	4.6-5.7

*The price of bought in maize silage varies between regions and seasons. For up-to-date information on the price of bought in maize silage, contact your local maize silage supplier

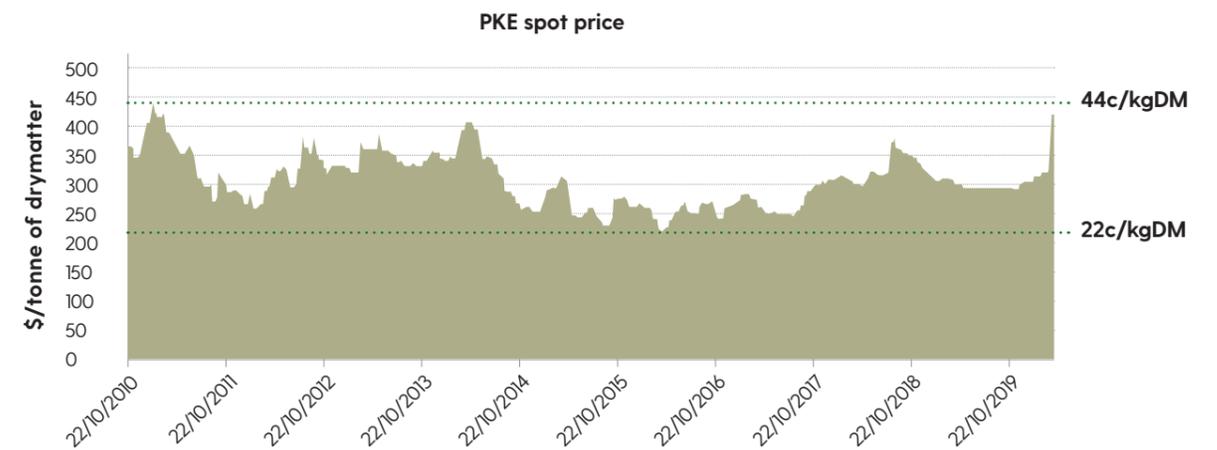
**Based on typical feed value and price

Keep a stack ahead of you

Provided it is well compacted and covered, maize silage can be stored on farm for months and even years without any loss in feed quality. The interest cost of carrying over maize silage is around 1c/kgDM per year.

Maize silage on hand can be fed exactly when needed (no waiting for a delivery or having to feed it to fulfill a contract) and you can avoid the price volatility associated with buying feed on the spot market.

Figure 3: shows the spot price for PKE has varied between 22 and 44c/kgDM during the past nine seasons⁴





Feed it when you need it

Grazed crops must be fed when they are ready regardless of whether the extra feed is needed, maize silage can be stored and fed when it is needed the most. This allows pasture cover levels to be manipulated and maize silage to be fed when it will generate the most economic response.

Maximise your response rate

DairyNZ research shows that the profitability of feeding supplement depends on the supplement price, the milk price and the milk response per unit of energy in the supplement⁵.

The milk response decreases significantly when the cow is well fed on pasture (i.e. post-grazing residuals are greater than 1500-1600 kgDM/ha).

In spring, feeding out supplements is much less profitable when there is enough pasture. This is because the pasture left behind is often wasted. High spring pasture levels can also result in a loss of feed quality. In autumn, supplements can be used to build cover and in these cases it can be profitable to feed supplements even when you have enough pasture.

With maize silage the message is simple - if you need it, feed it. If you don't need it, don't feed it.

Move a feed wedge

Taking paddocks out of the grazing round and planting maize on farm reduces the size of the spring pasture surplus, allowing farmers to better control feed quality. The maize silage crop can be fed in the autumn to extend lactation length, put condition on cows and build pasture cover levels prior to the winter.

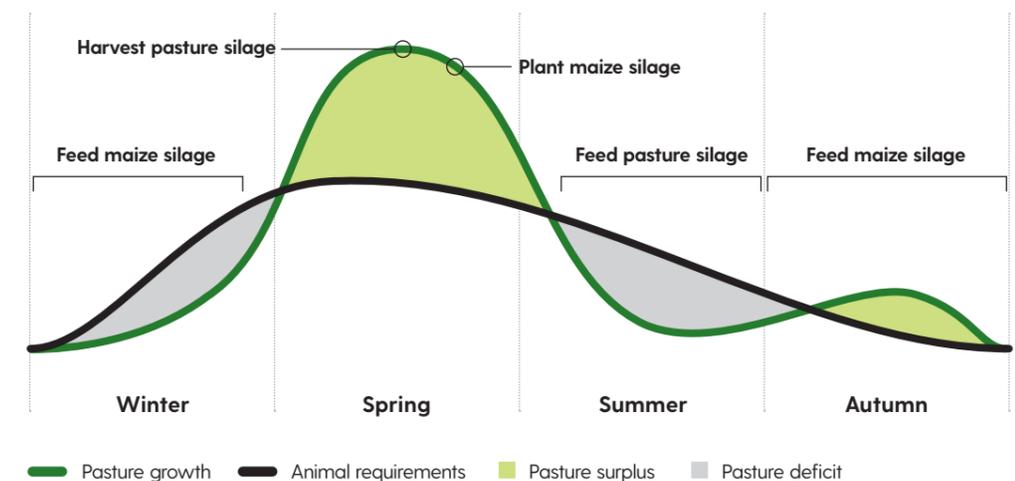
Simple and proven

Many Kiwi farmers have been growing and feeding maize silage for more than 30 years. Trials conducted at Waimate West Research Station in the 1990's demonstrated the profitability of using maize silage and helped define the fundamentals of how to make it work in farm systems.

**Your Pioneer Area
Representative
supported by your local
merchant, contractor
and farm consultant
can help you get the
most out of your maize
silage investment.**



Figure 4: Using maize silage to move a feed wedge





GREAT FOR YOUR COWS

More milk

While keeping control of costs is an important part of a profitable dairy farm system, keeping production up is also important because it dilutes fixed costs (e.g. labour and debt servicing). Maize silage can be used to increase milk production throughout the season by:

Extending lactation

Feed maize silage in the autumn to get more days in milk or use it to fill the feed deficit created by earlier calving. The latter can be particularly effective in summer-dry regions as more of the milk production can be achieved pre-Christmas.

Filling feed deficits

Maize silage can be used to fill feed deficits caused by below-average pasture growth rates. Whether the weather is too hot, too cold, too wet or too dry, you can rely on maize silage to provide cost-effective, quality drymatter.

Maintaining consistent milk quality

Maize silage is a locally grown forage that contains the perfect balance of fibre and carbohydrate to maintain rumen health. Milk produced from maize silage is consistently high in quality unlike milk produced from PKE, which can have a negative impact on Fonterra's Fat Evaluation Index (FEI) and milk returns.

Improving cow condition

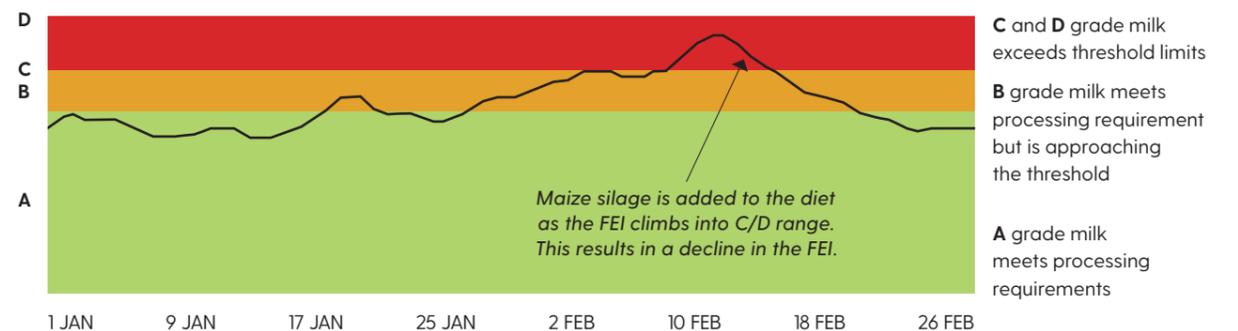
Meeting cow condition score targets of 5.5 for first and second calvers or 5.0 for mature cows is a fundamental driver of production and profit. Cows that are in better condition at calving produce more milk and cycle faster, meaning improved reproductive performance and a tighter calving spread. The energy in maize silage is used 20% more efficiently than the energy in autumn pasture for gaining condition.

Improving animal health

Lush, rapidly growing pasture contains excessive levels of potassium which can increase the incidence of milk fever. The problem is usually greater on paddocks which have a history of effluent application. Growing maize utilises excess soil potassium, whilst feeding high rates of maize silage (a low potassium feed) to dry cows can help reduce milk fever risk.

Maize is free from the fungal spores that cause facial eczema and is the ideal carrier for zinc as well as macro-minerals such as magnesium, calcium, phosphorus and sodium.

Figure 5: Typical summer FEI graph showing penalties associated with high PKE feeding rates



The penalties for a C grade are two demerits and 10% deduction per collection day while a D grade penalty is four demerits and 20% deduction per collection day.

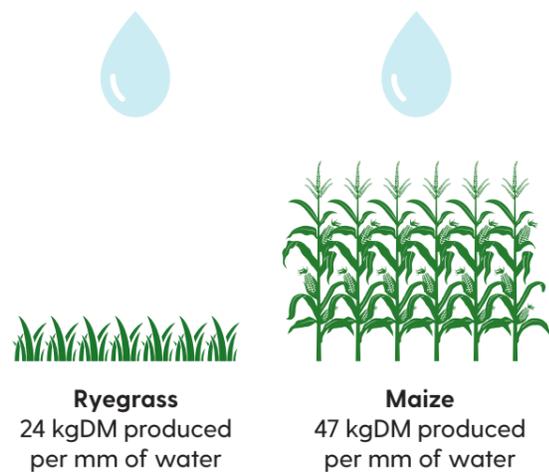


The proven environmental benefits of maize silage make it the crop for the future. Whether it is using water efficiently, diluting urinary nitrogen or making the most of dairy shed effluent, growing and feeding maize silage is a winner.

More drymatter from every drop

The maize plant produces more drymatter from every drop of water it receives. Its extensive rooting system allows it to capture water at depths up to three times greater than perennial ryegrass⁶.

Figure 6: Ryegrass vs maize water use efficiency⁶



Mine excess soil nutrients

Dairy-shed effluent paddocks lose more nitrogen to groundwater than most other paddocks on your farm. Maize is the perfect solution. Because maize silage grows a large amount of drymatter, it also requires a large

amount of nutrients especially nitrogen and potassium. The good news is that the nutrient requirement of a maize silage crop very closely matches the nutrients supplied by typical dairy-shed effluent.

Table 3: Maize silage nutrient removal rates and the nutrient composition of typical dairy shed effluent

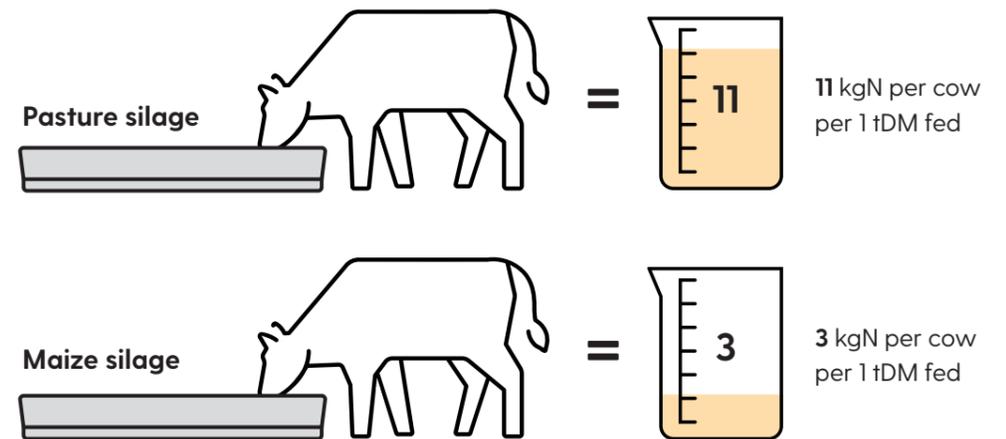
	Nitrogen (N)	Phosphorus (P)	Potassium (K)
Typical Dairy Shed Effluent (kg/m ³) ⁷	0.45	0.06	0.35
Maize Silage Crop Removal (kg/tDM) ⁸	12.8	2.6	12.0

Dilute urinary nitrogen

For most of the year the protein content of pasture is higher than cow requirements. Surplus dietary protein is excreted in the urine and is a major source of nitrogen in waterways. Maize

silage contains excellent levels of carbohydrate in the form of starch, but low levels of protein. It can be used to decrease the amount of nitrogen in cow urine by more than 70%⁹.

Figure 7: Urinary nitrogen output of cows eating high protein pasture silage vs maize silage⁹



Keep animals off pasture

One of the most effective ways for dairy farmers to decrease nitrogen leaching is to stand animals off pasture especially during the winter months when pasture nitrogen demand is low and rainfall is high. A stack

of maize silage and a stand-off pad with feeding facilities, you can look after your cows while also protecting the environment. Pasture pugging and overgrazing can be eliminated so you will also grow more grass in the long run.



talk to us
0800 746 633



more online at
pioneer.nz



PIONEER[®]
BRAND · PRODUCTS

References

1. Densley et al, 2006. Maize silage and winter crop options to maximise drymatter and energy for NZ dairy systems. Proceedings of the NZ Grassland Association 68:193-197. **2.** Clark et al. 2010. Inter-paddock annual dry matter yield variability for dairy farms in the Waikato region of New Zealand. New Zealand Journal of Agricultural Research 53: 187-191. **3.** Pioneer[®] brand maize silage 2020-21 **4.** NZX PKE spot prices **5.** DairyNZ Milksolids Response see <https://www.dairynz.co.nz/feed/supplements/milksolids-response-to-supplements/> **6.** Williams et al. 2010. Using maize silage to reduce the impact of dairy farm systems on water use and quality in New Zealand: A review. Proceedings of the 4th Australasian Science Symposium **7.** Waikato Regional Council. Applying effluent to land. <https://www.waikatoregion.govt.nz/Community/Your-community/For-Farmers/Effluent-management/Applying-effluent-to-land/> **8.** <https://www.pioneer.co.nz/maize-silage/product-information/silage-technical-insights/fertiliser-application-for-maize-crops.html> **9.** Ledgard, 2006. Nitrogen management – why is it important and what can we do about it? Pp22-31 In Proceedings of the 2006 Dairy3 Conference **4.**