Substitution of lucerne silage by increasing levels of maize silage or maize grain results in a quadratic response in methane emissions from sheep

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Background

- Feeding concentrates and starch have been proposed to reduce CH_4 from ruminants
- However, level of supplement required to reduce CH_4 is not known.

Objective

To determine CH_4 emissions from sheep fed lucerne silage substituted with increasing levels of:

- Maize silage
- Maize grain

Conclusion

- **The CH_4 emission per unit of intake changed in a non-linear fashion with increasing substitution of lucerne silage by supplements in the diet.**

Figure 1 Substitution of lucerne silage by increasing levels of maize silage, and diet chemical composition. NDF = neutral detergent fibre.

Lucerne silage (%)	100	75	50	25	0
Maize silage (%)	0	25	50	75	100
Protein (g/kg DM)	177	140	113	115	116
Starch (g/kg DM)	5.3	127	190	284	330
NDF (g/kg DM)	439	422	434	424	423

8 sheep per diet

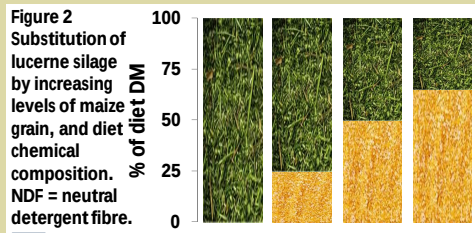

Figure 2 Substitution of lucerne silage by increasing levels of maize grain, and diet chemical composition. NDF = neutral detergent fibre.

Lucerne silage(%)	100	75	50	35
Maize grain(%)	0	25	50	65
Protein (g/kg DM)	177	163	128	145
Starch (g/kg DM)	5.3	129	335	375
NDF (g/kg DM)	439	383	320	288

Dry matter intake 1.1 kg/d for all diets (P>0.10)

Maize silage inclusion

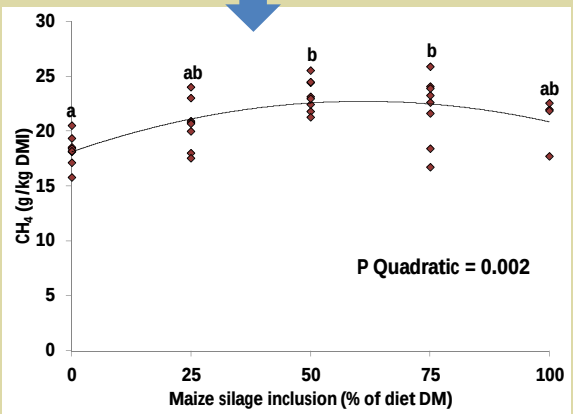

Figure 3 Effect of substituting lucerne silage by increasing levels of maize silage on methane (CH_4) emissions per unit of dry matter intake (DM). ab = P<0.05; Standard error of the difference = 1.17

Maize grain inclusion

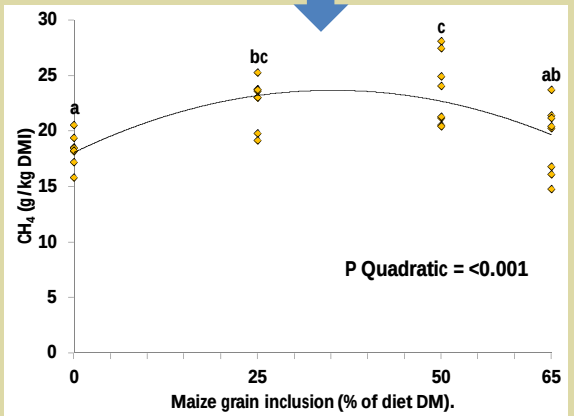

Figure 4 Effect of substituting lucerne silage by increasing levels of maize grain on methane (CH_4) emissions per unit of dry matter intake (DM). abc = P<0.05; Standard error of the difference = 1.27

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