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Behov for Fordøjeligt Calcium til Smågrise og Slagtesvin

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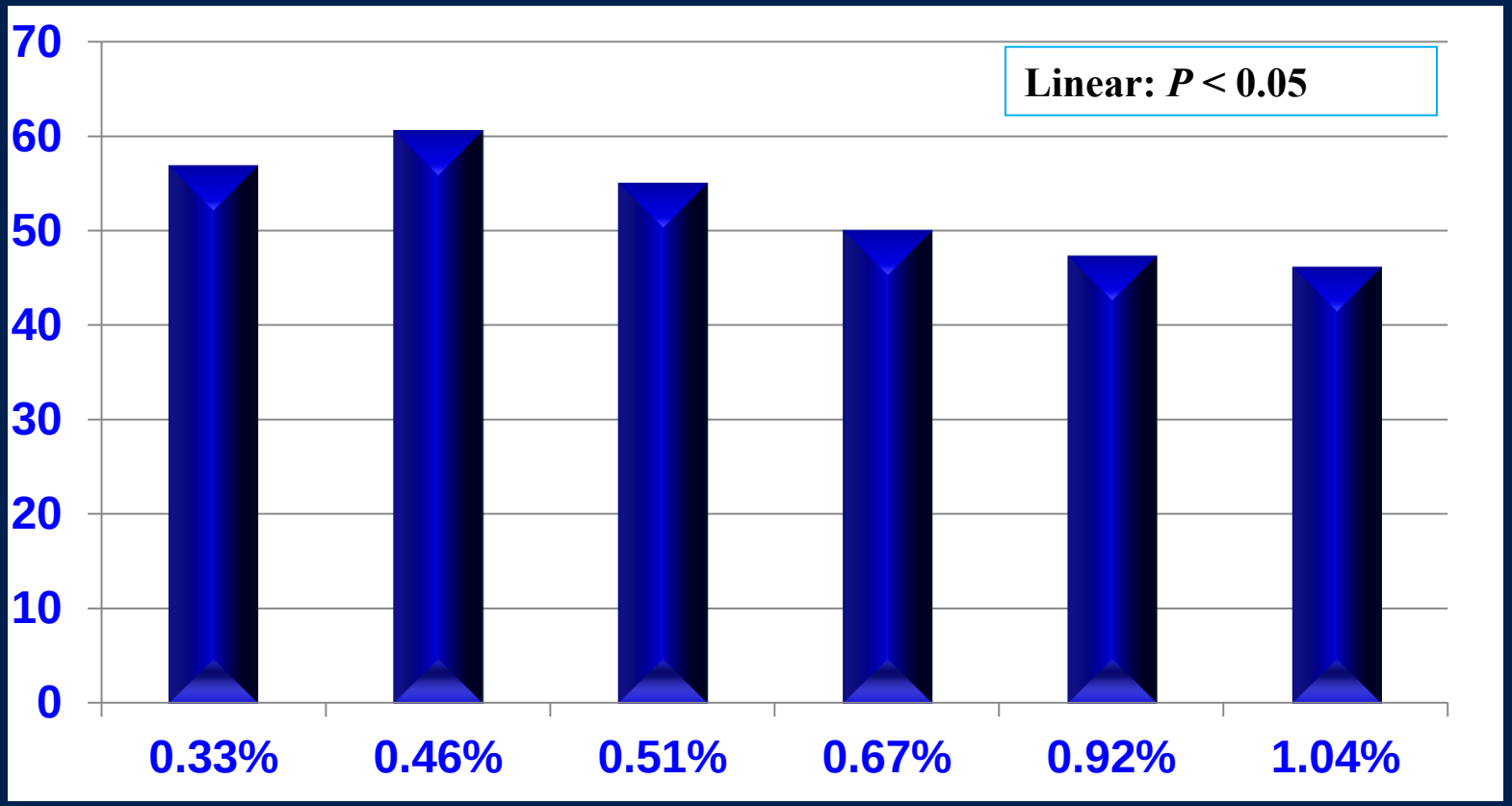
Konklusioner

1. Ca behov skal baseres på standardiseret fordøjeligt Ca
2. Fytase øger fordøjeligheden af Ca i mange fodermidler
3. Overskud af Ca reducerer tilvækst og foderoptag
4. Behov for Ca til vækst er mindre end behov for Ca til maximal knoglevækst

Effekt af Ca på fordøjelighed af P



Stein et al., 2011

Behov for Ca

Item	100 - 125 kg
Total Ca, %	0.46
STTD P, %	0.21

(NRC, 2012)

Protein i kroppen

↓

Fosfor i kroppen

↓

Behov for STTD P

↓ x 2.15

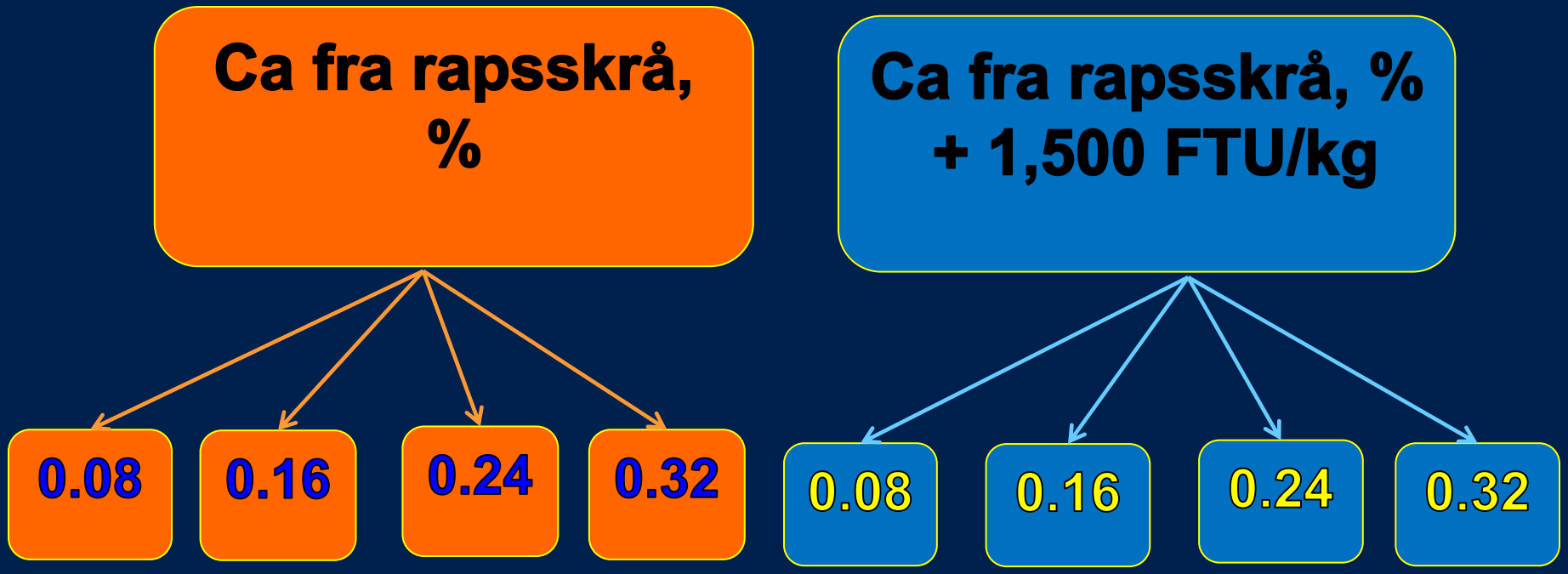
Behov for total Ca

Endogent tab af Ca?

Fytat, Fytase Fiber, Fedt?

Ileal eller fæcal fordøjelighed?

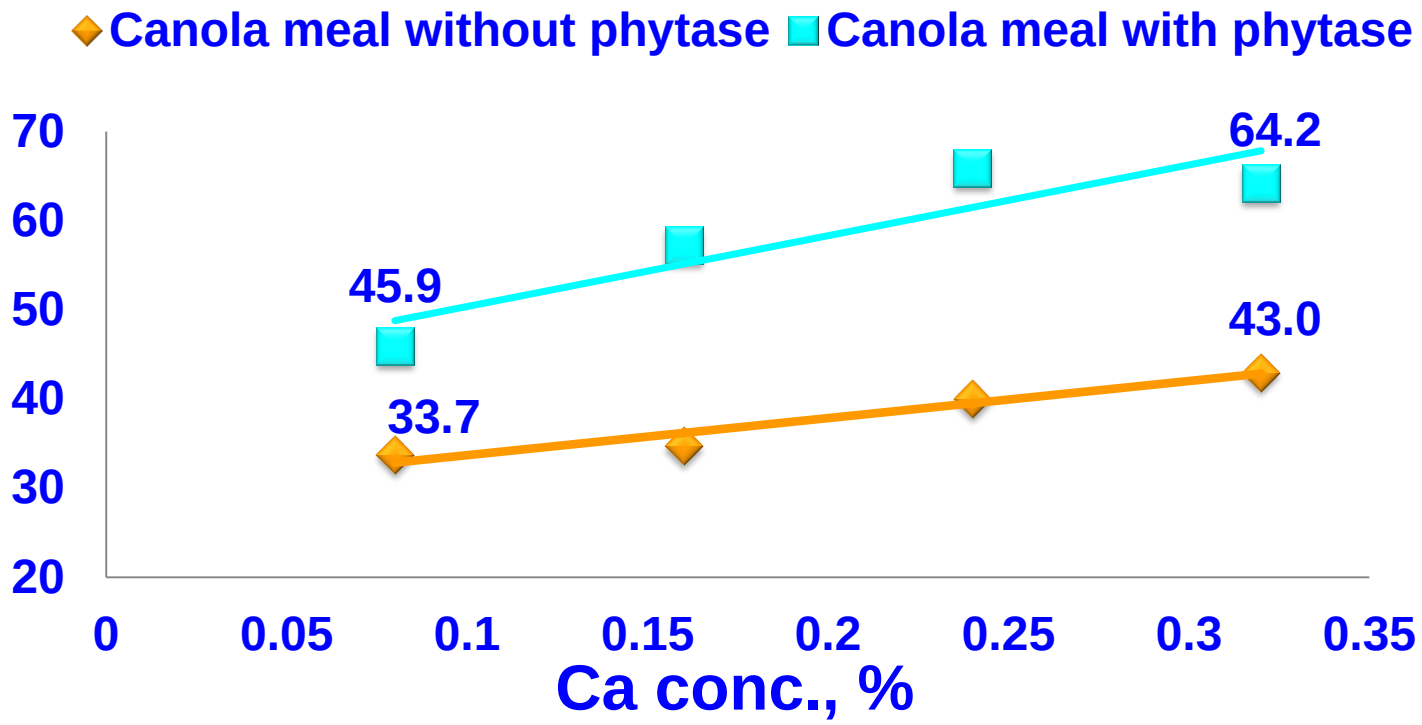
Endogent tab af Ca



Gonzalez-Vega et al., 2013

Tilsyneladende fordøjelighed af Ca %

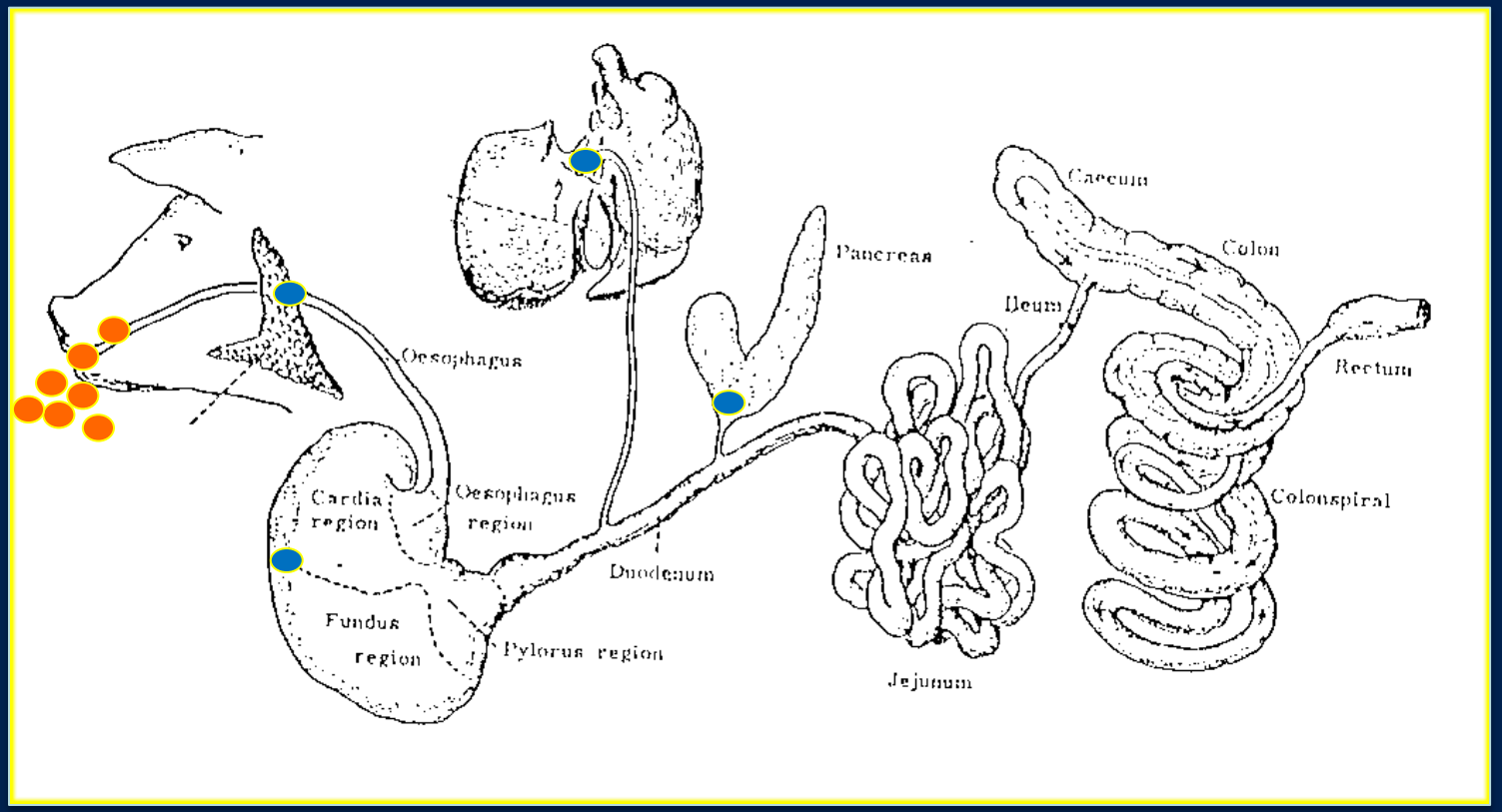
Ca conc: *P* = 0.03; Fytase: *P* < 0.01; Ca × Fytase: *P* = 0.56



González-Vega et al., 2013

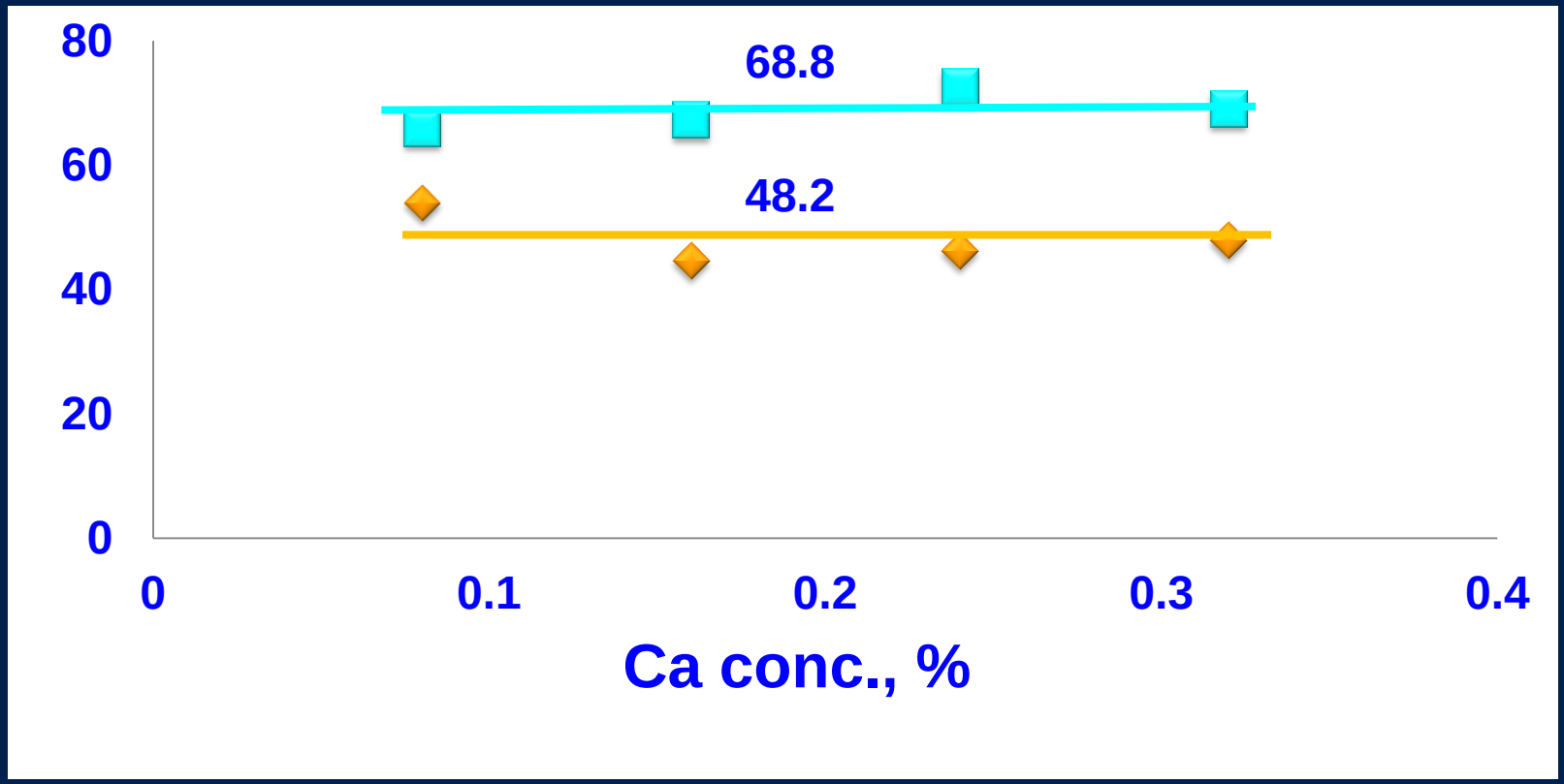
Endogent tab af Ca

- Ca fra foder
- Endogent Ca



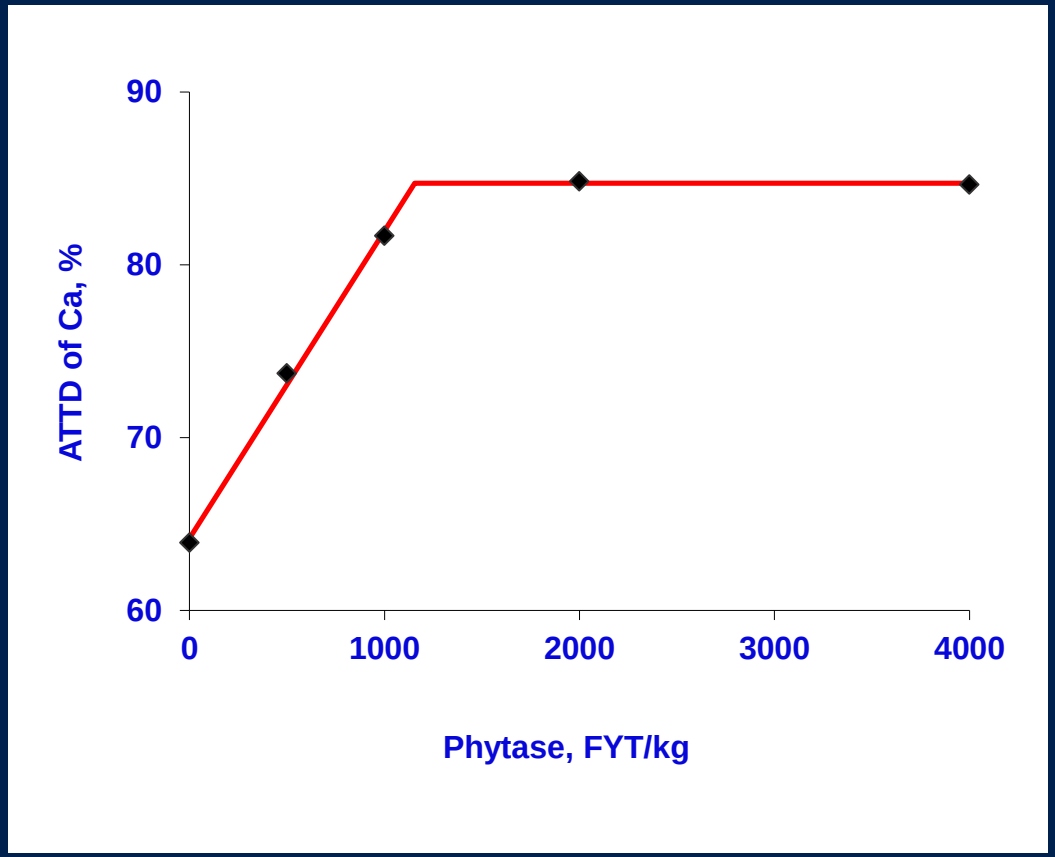
Standardiseret fordøjelighed af Ca, %

Ca conc.: *P* = 0.86; Fytase: *P* < 0.01; Ca × tase: *P* = 0.55



González-Vega et al., 2013

Fytase til smågrise



Almeida et al., 2013

Fytat

Fytat

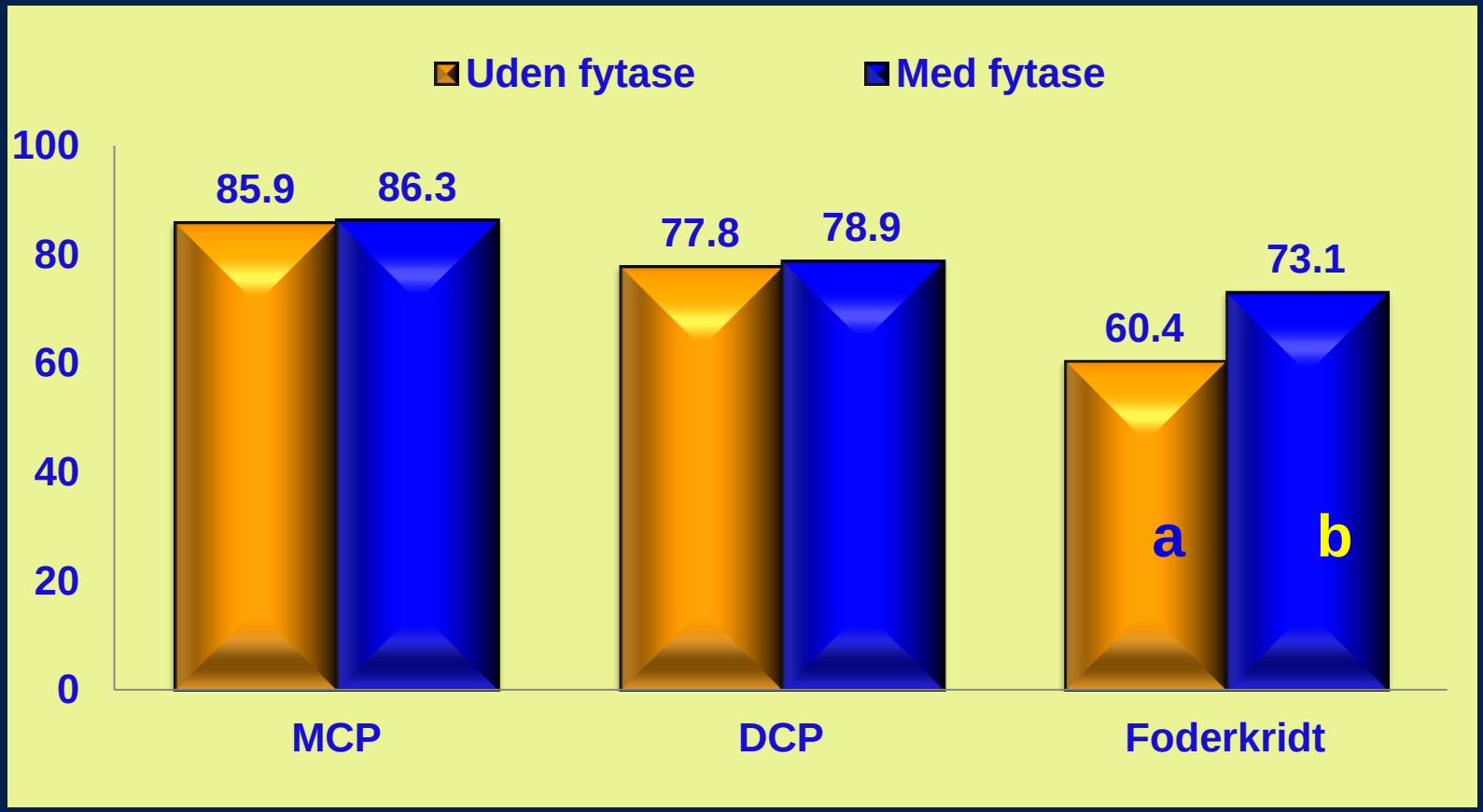
Fytat

Ca

Ca

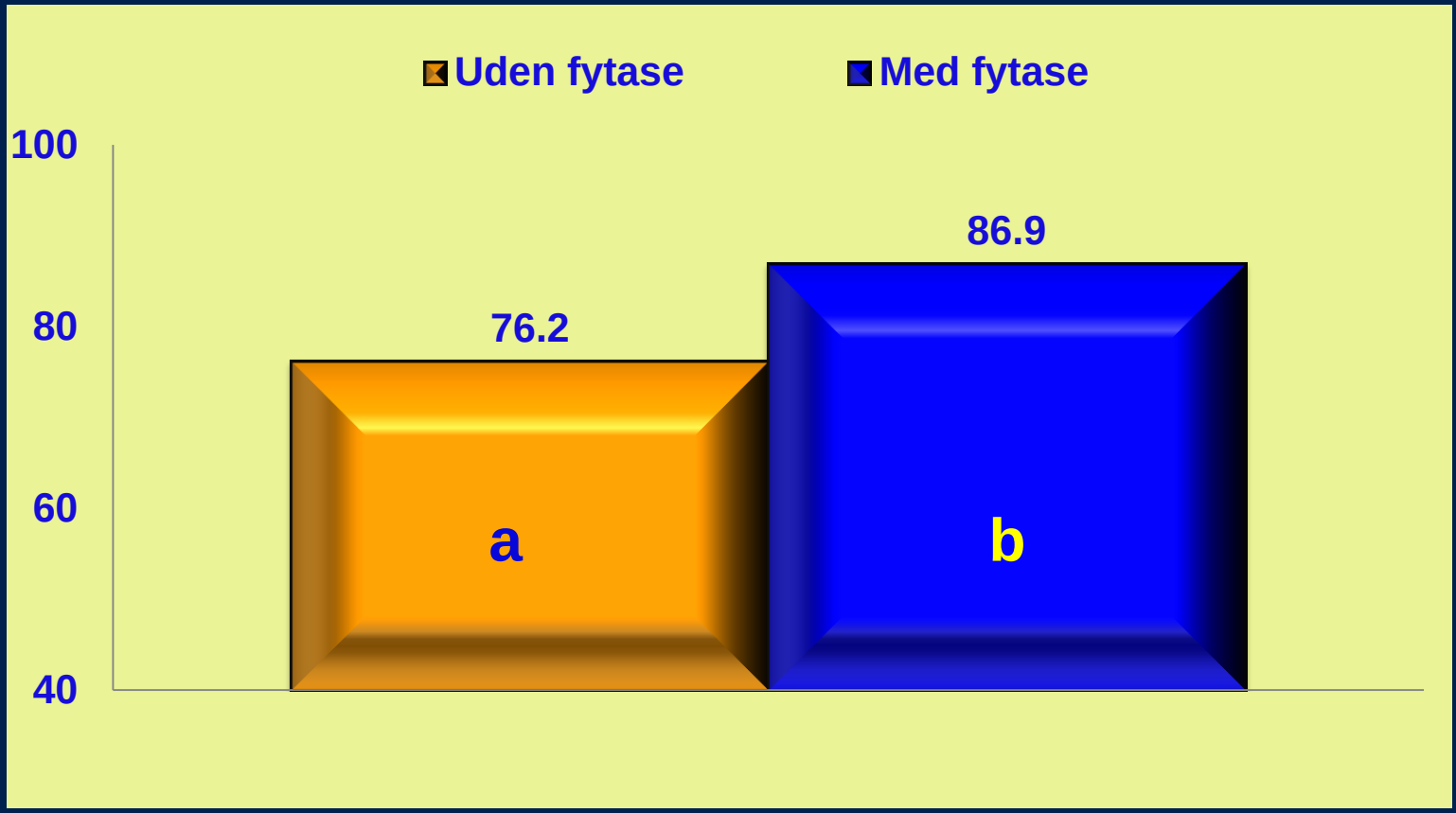
Ca

STTD af Ca (%) i Ca kilder



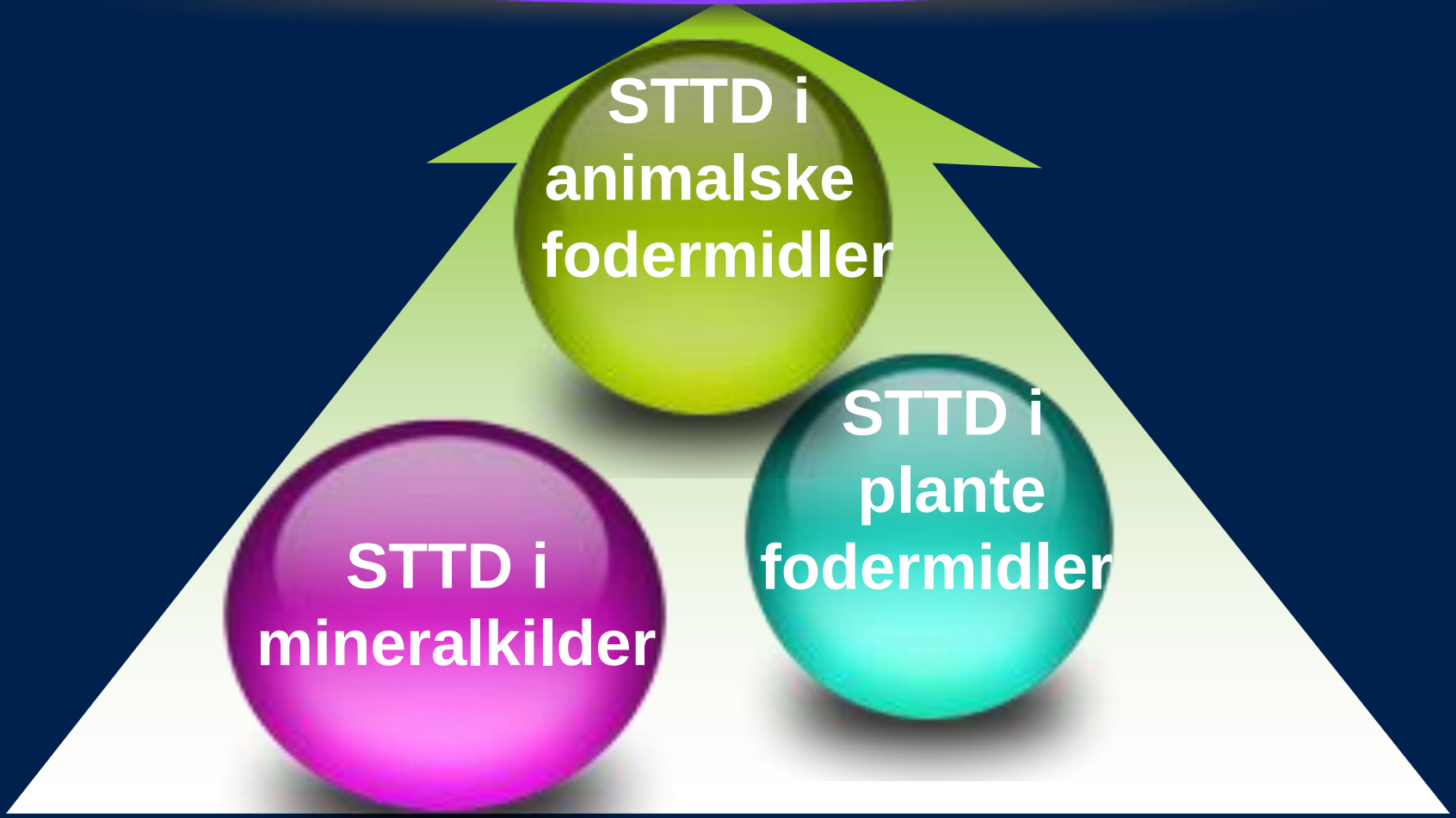
Gonzalez-Vega et al., 2015a

STTD af Ca (%) i fiskemel



Gonzalez-Vega et al., 2015b

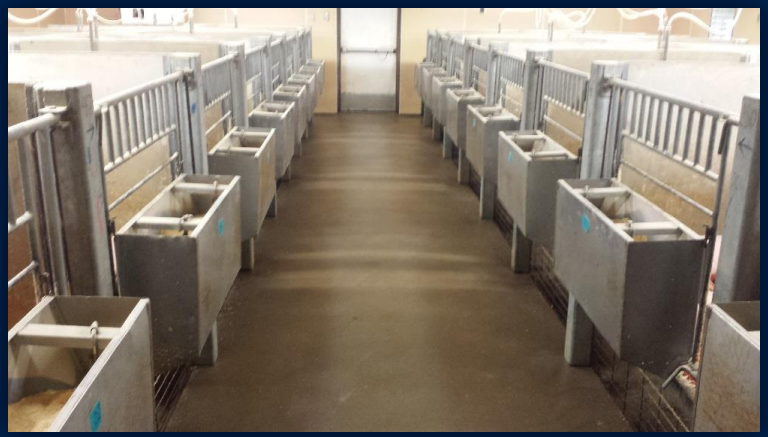
Foder optimering



Behov for Ca (11-25 kg)

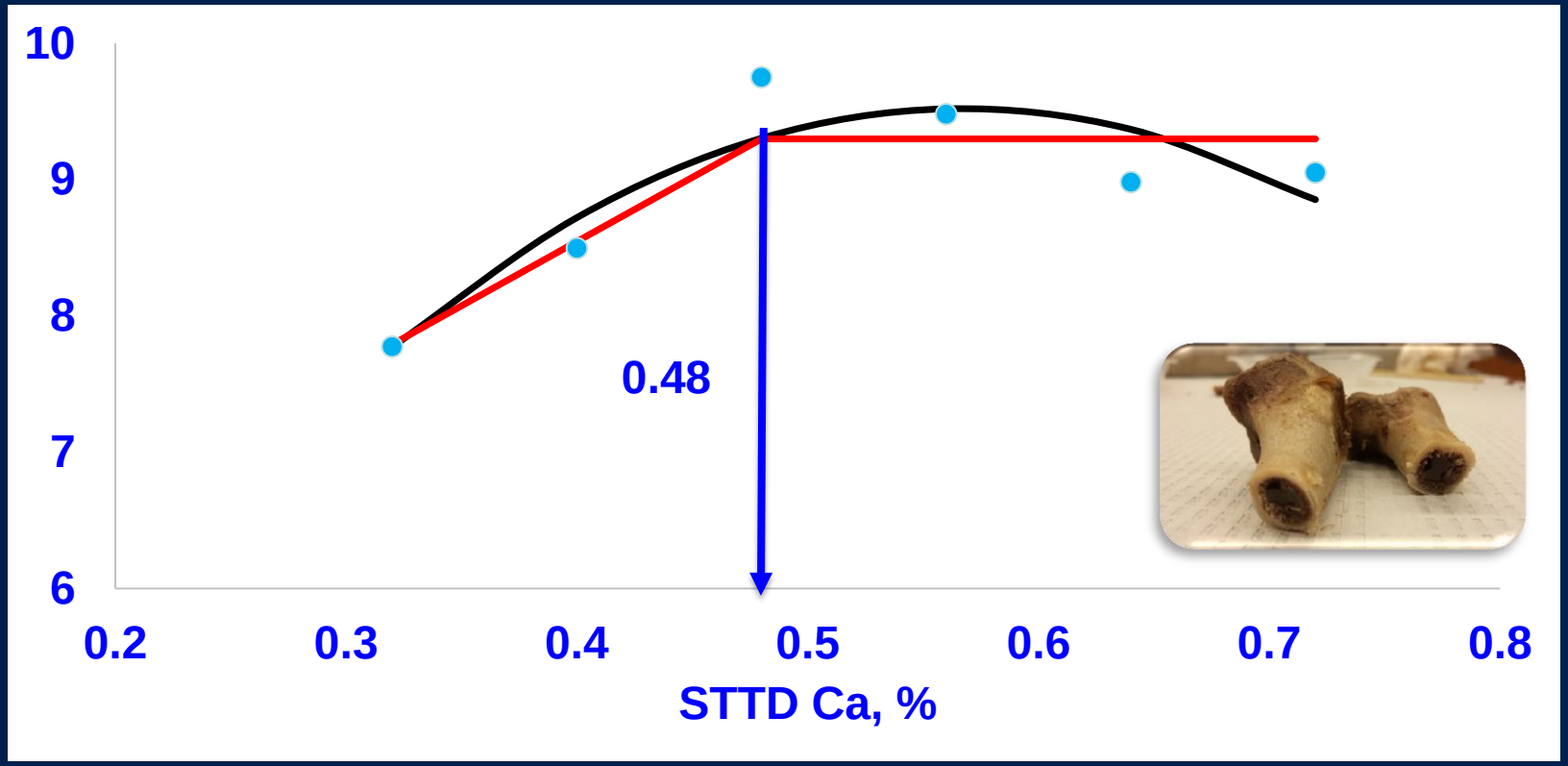
STTD Ca, %	0.32	0.40	0.48	0.56	0.64	0.72

Total Ca, %	0.40	0.54	0.67	0.80	0.93	1.07



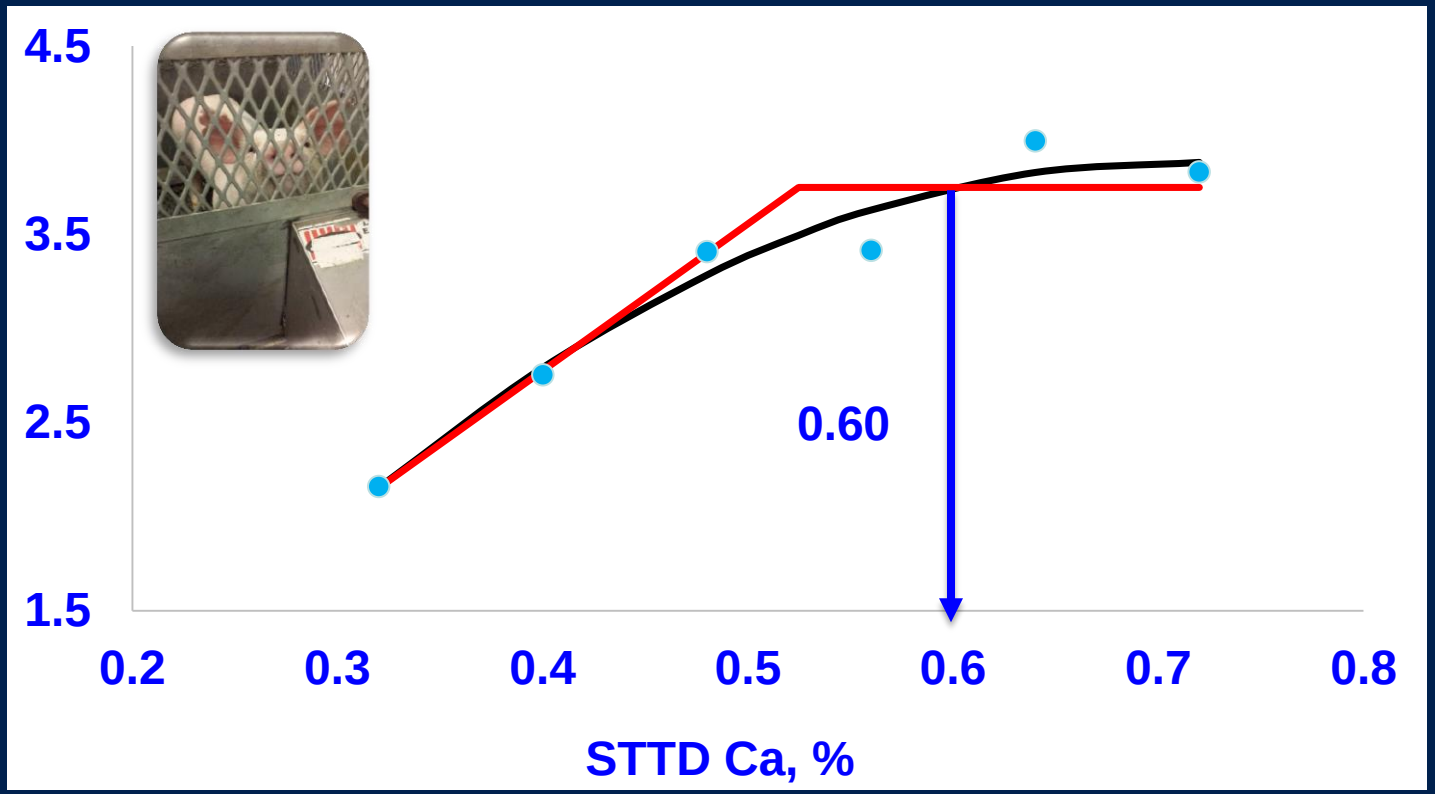
Gonzalez-Vega et al., 2016a

Aske i knogler, g



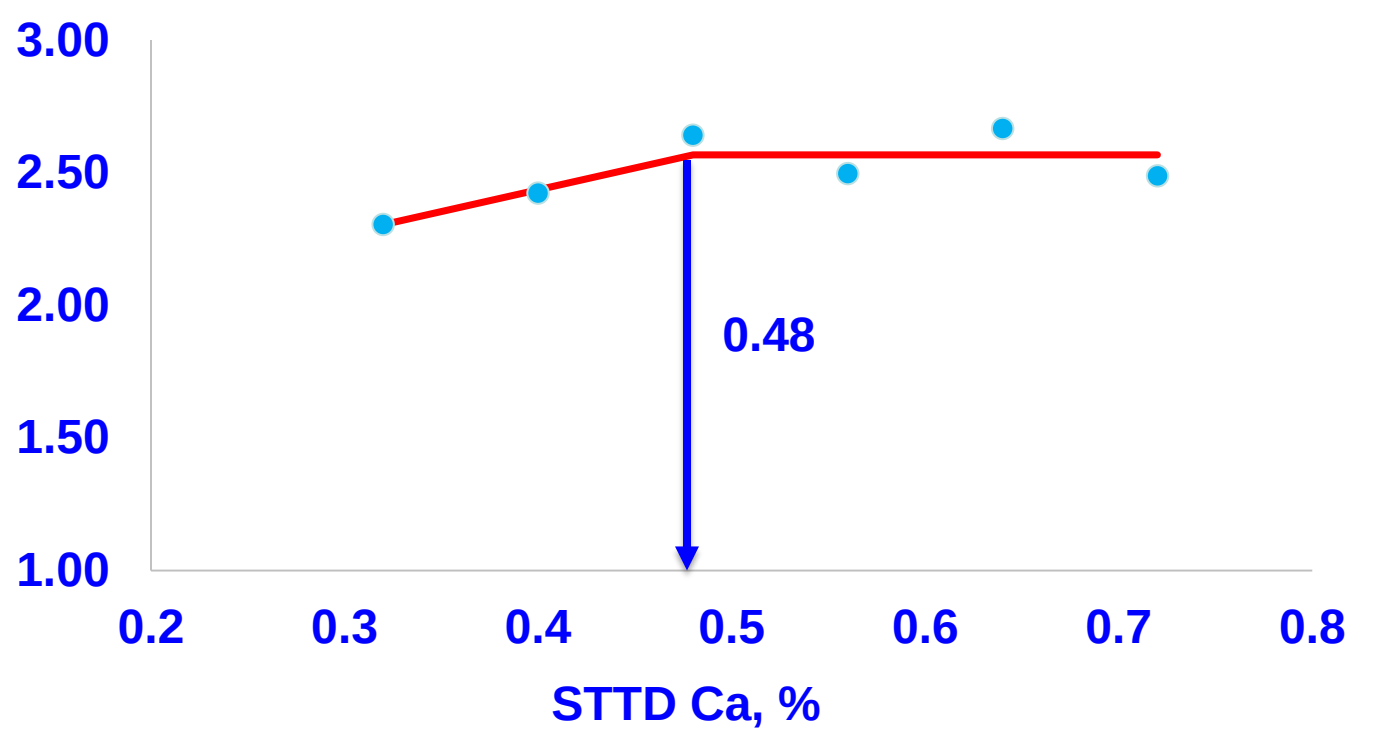
Gonzalez-Vega et al., 2016a

Ca indlejring, g/d



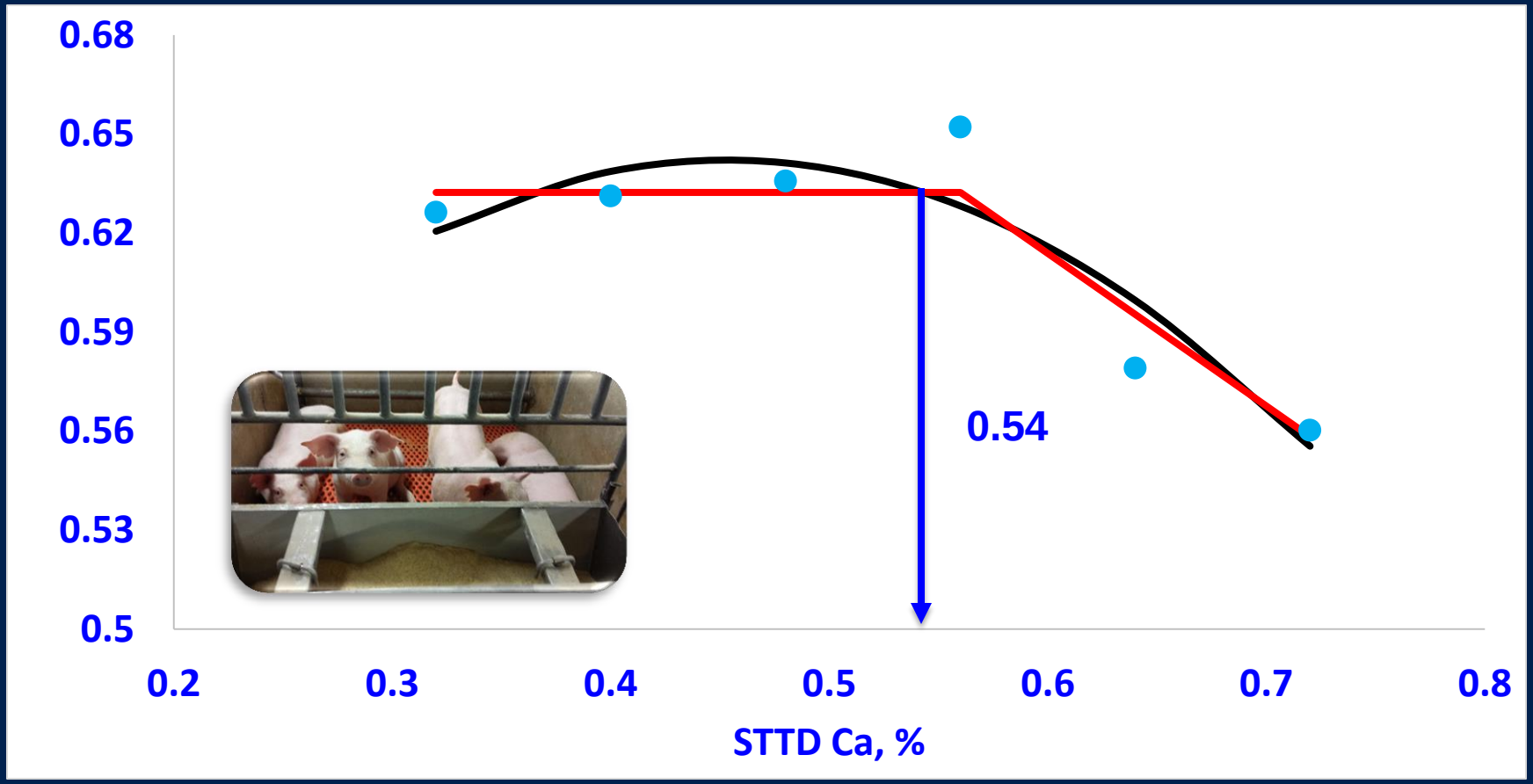
Gonzalez-Vega et al., 2016a

P indlejring, g/d



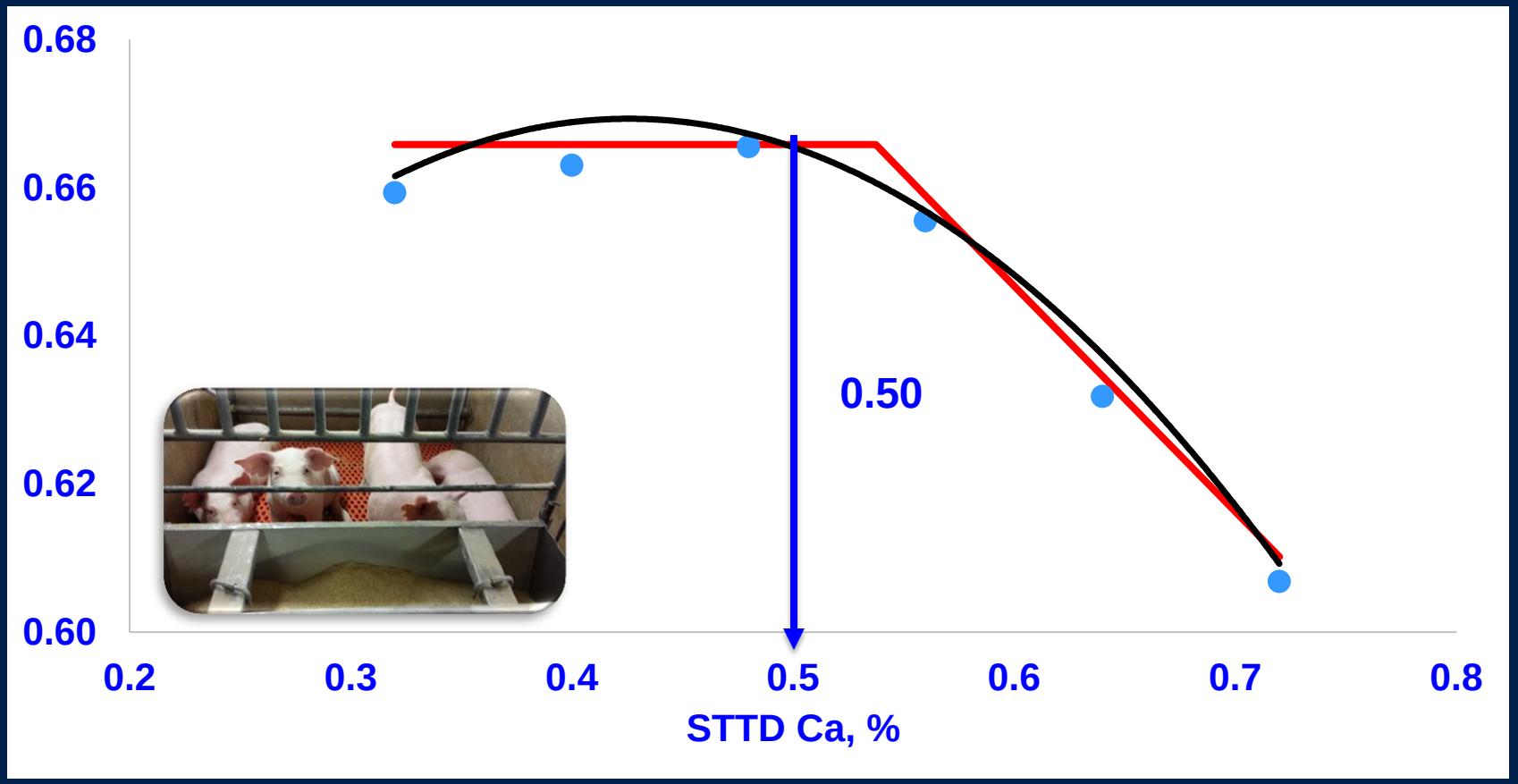
Gonzalez-Vega et al., 2016a

Tilvækst, kg/d



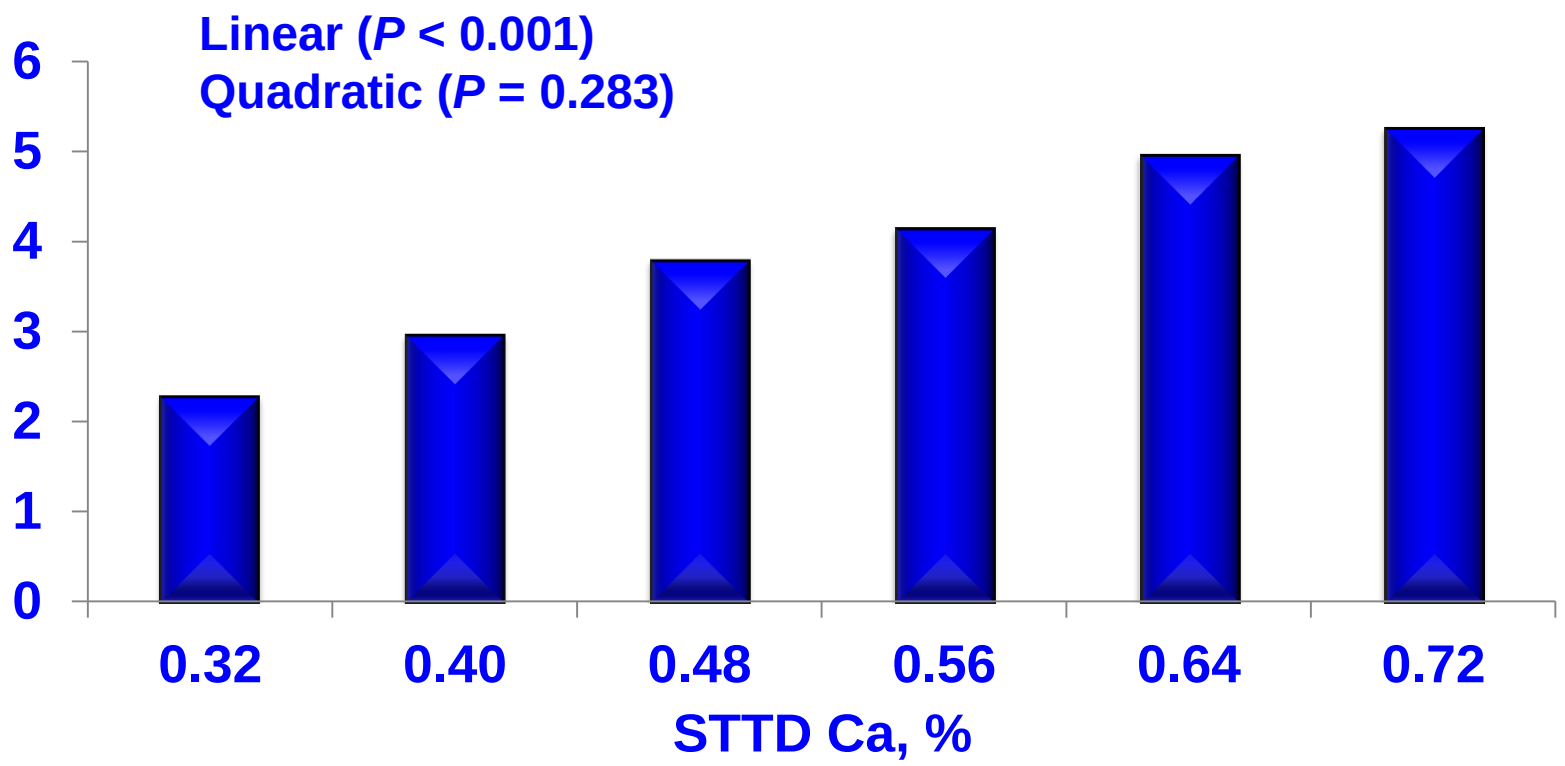
Gonzalez-Vega et al., 2016a

Kg tilvækst per kg foder



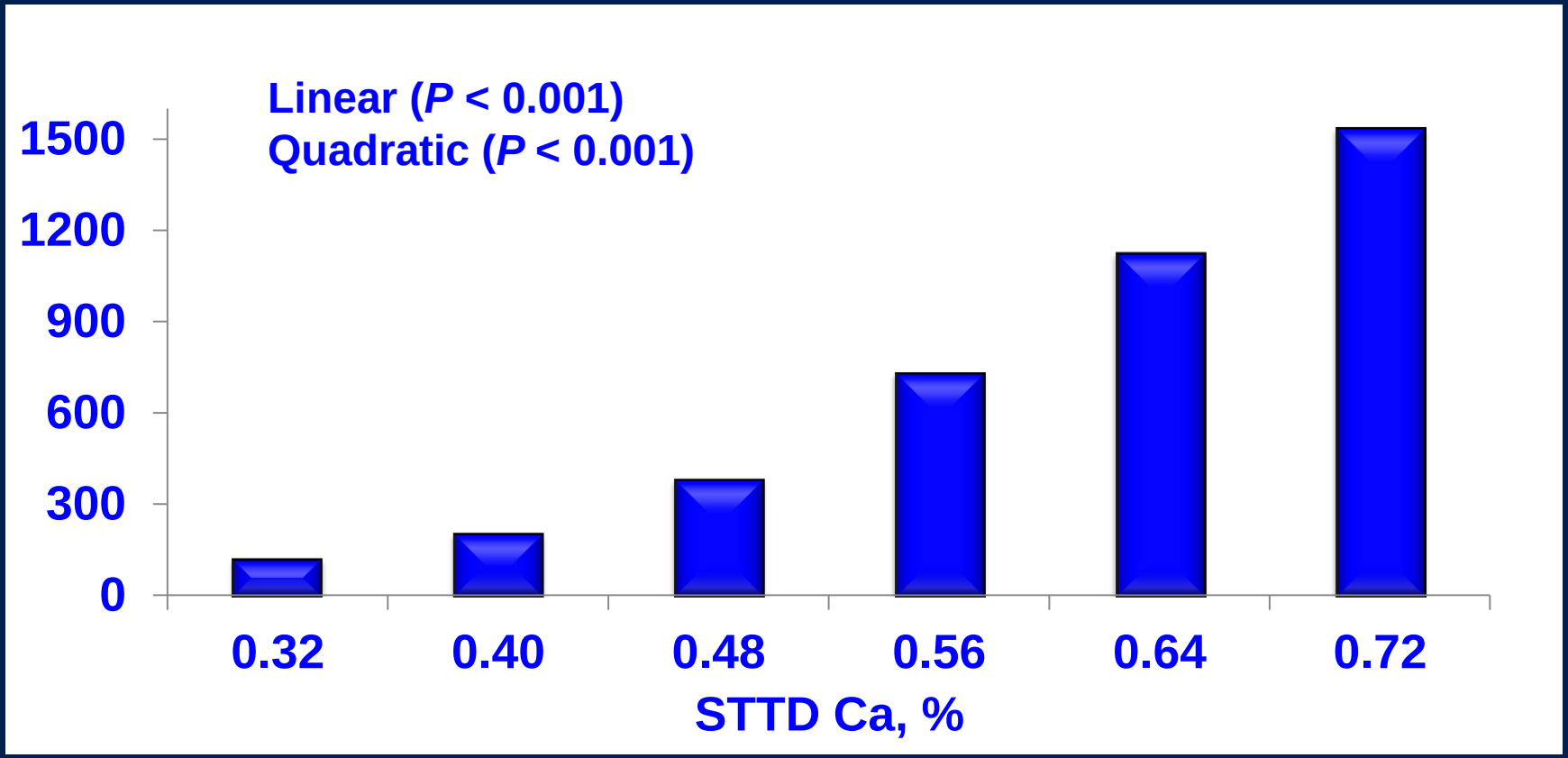
Gonzalez-Vega et al., 2016a

Absorberet Ca, g/d



Gonzalez-Vega et al., 2016a

Ca i urin, mg/d



Gonzalez-Vega et al., 2016a

Behov for STTD Ca, 25 - 50 kg

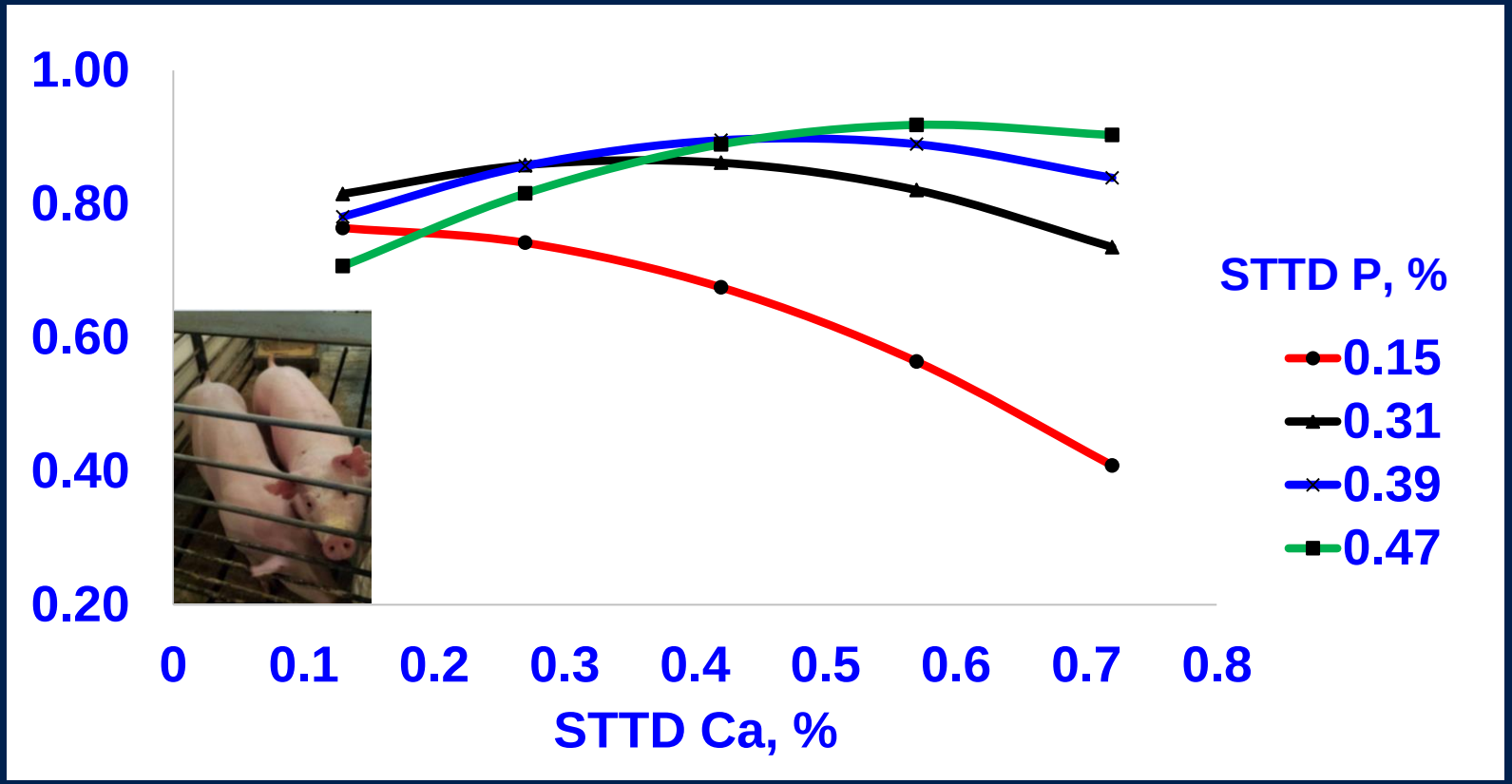
STTD Ca:STTD P forhold

		STTD Ca, %				
		0.13	0.27	0.42	0.57	0.72
STTD P, %	0.15	0.87	1.80	2.80	3.80	4.80
	0.31	0.42	0.87	1.35	1.84	2.32
	0.39	0.33	0.69	1.08	1.46	1.85
	0.47	0.28	0.57	0.89	1.21	1.53

Gonzalez-Vega et al., 2016b

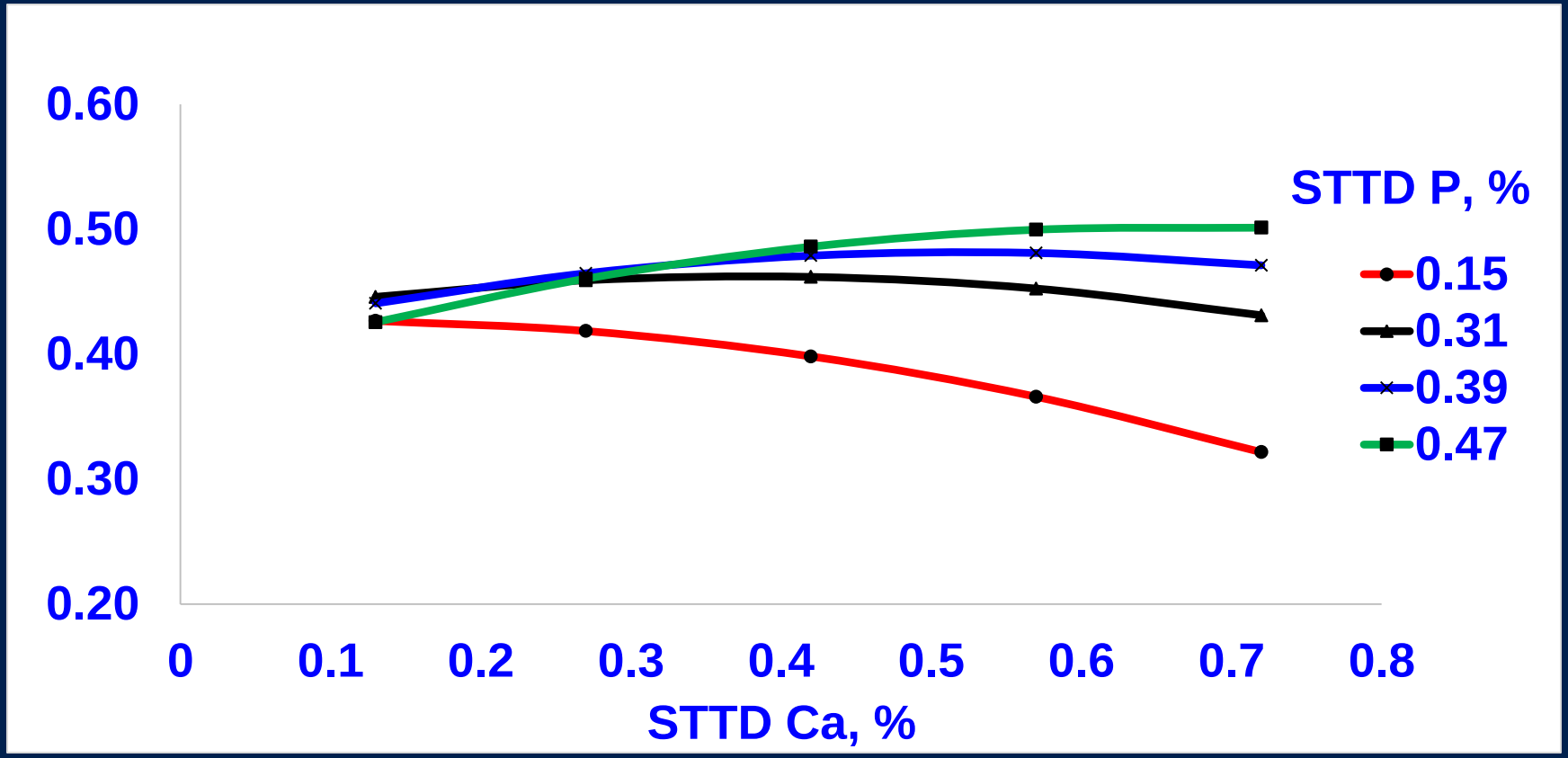
Højt Ca **Lavt Ca**

Daglig Tilvækst, d 0-28, kg



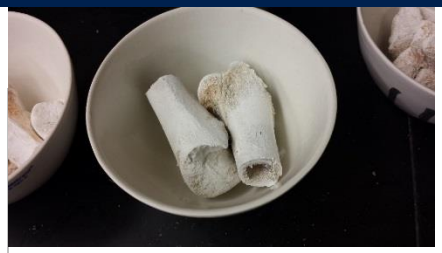
Gonzalez-Vega et al., 2016b

Kg tilvækst per kg foder



Gonzalez-Vega et al., 2016b

Aske i knogler, g



Gonzalez-Vega et al., 2016b

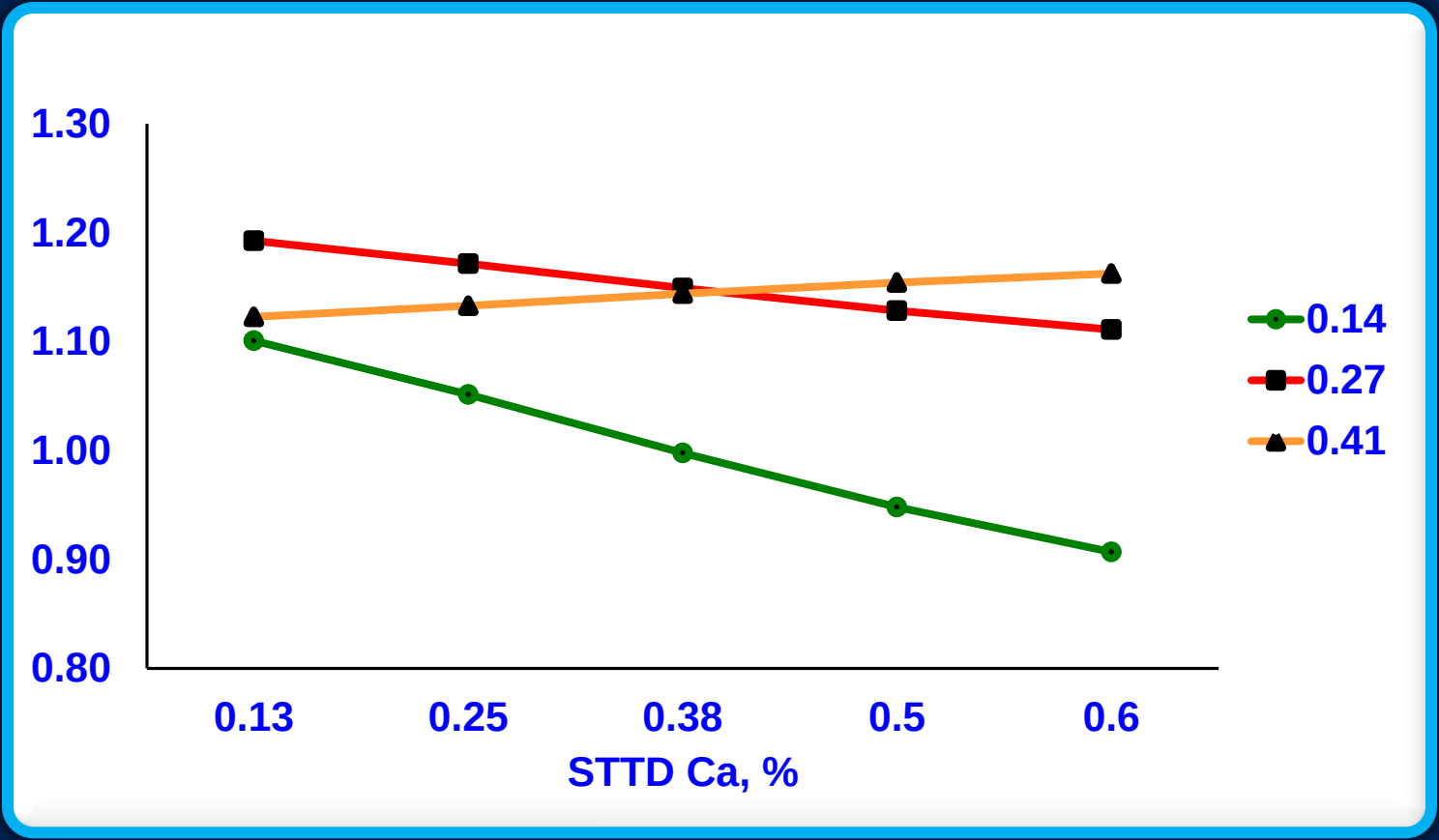
Behov for STTD Ca, 50 - 85 kg

Forsøgsblandinger
STTD Ca : STTD P

	Total Ca, %	0.18	0.38	0.59	0.80	1.00
	STTD Ca, %	0.13	0.25	0.38	0.5	0.60
STTD P, %	0.14	0.93:1	1.79:1	2.64:1	3.57:1	4.50:1
	0.27	0.48:1	0.93:1	1.41:1	1.85:1	2.33:1
	0.41	0.32:1	0.61:1	0.93:1	1.22:1	1.54:1

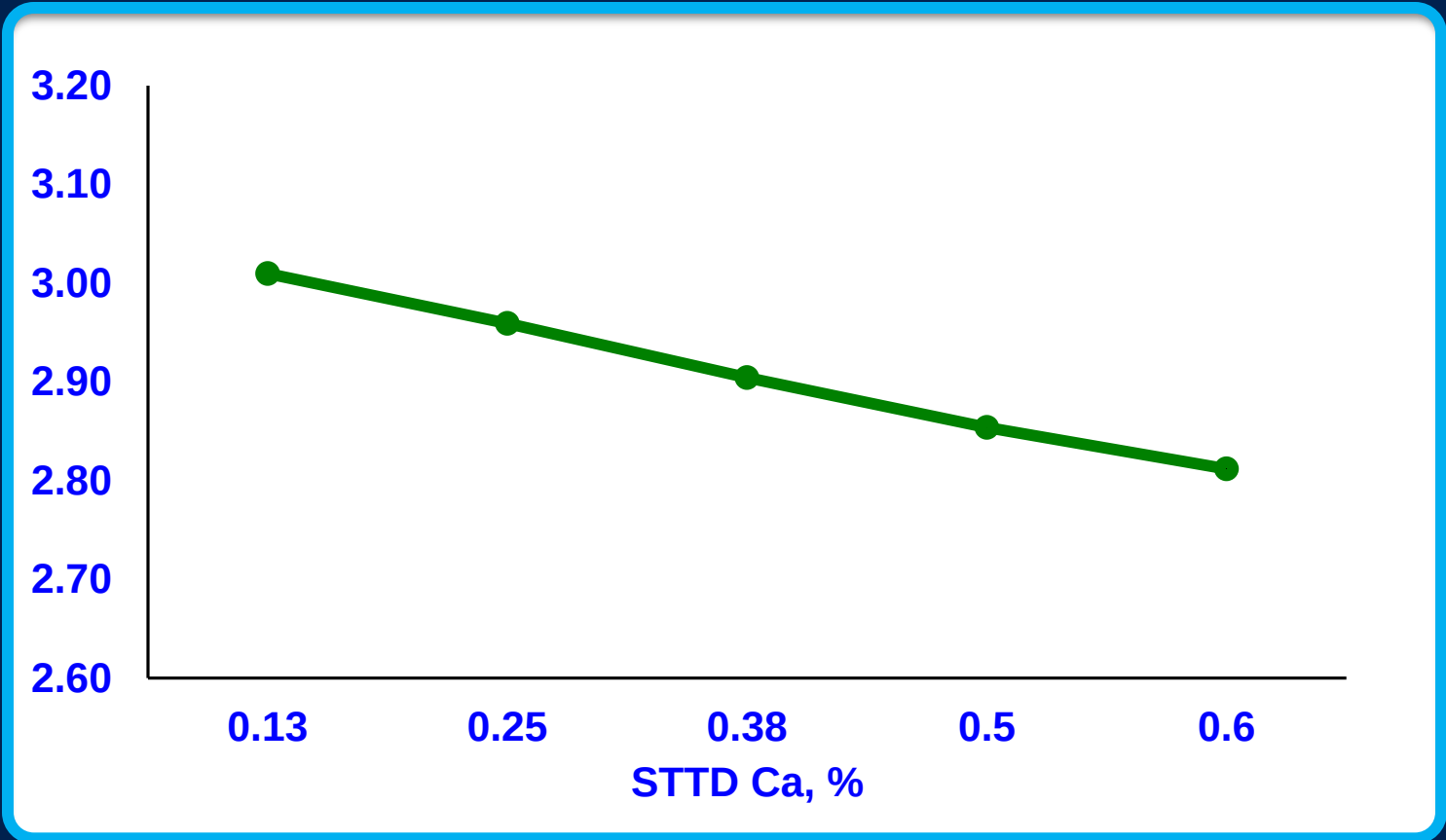
Lagos et al., 2017, unpublished

Tilvækst, kg/dag



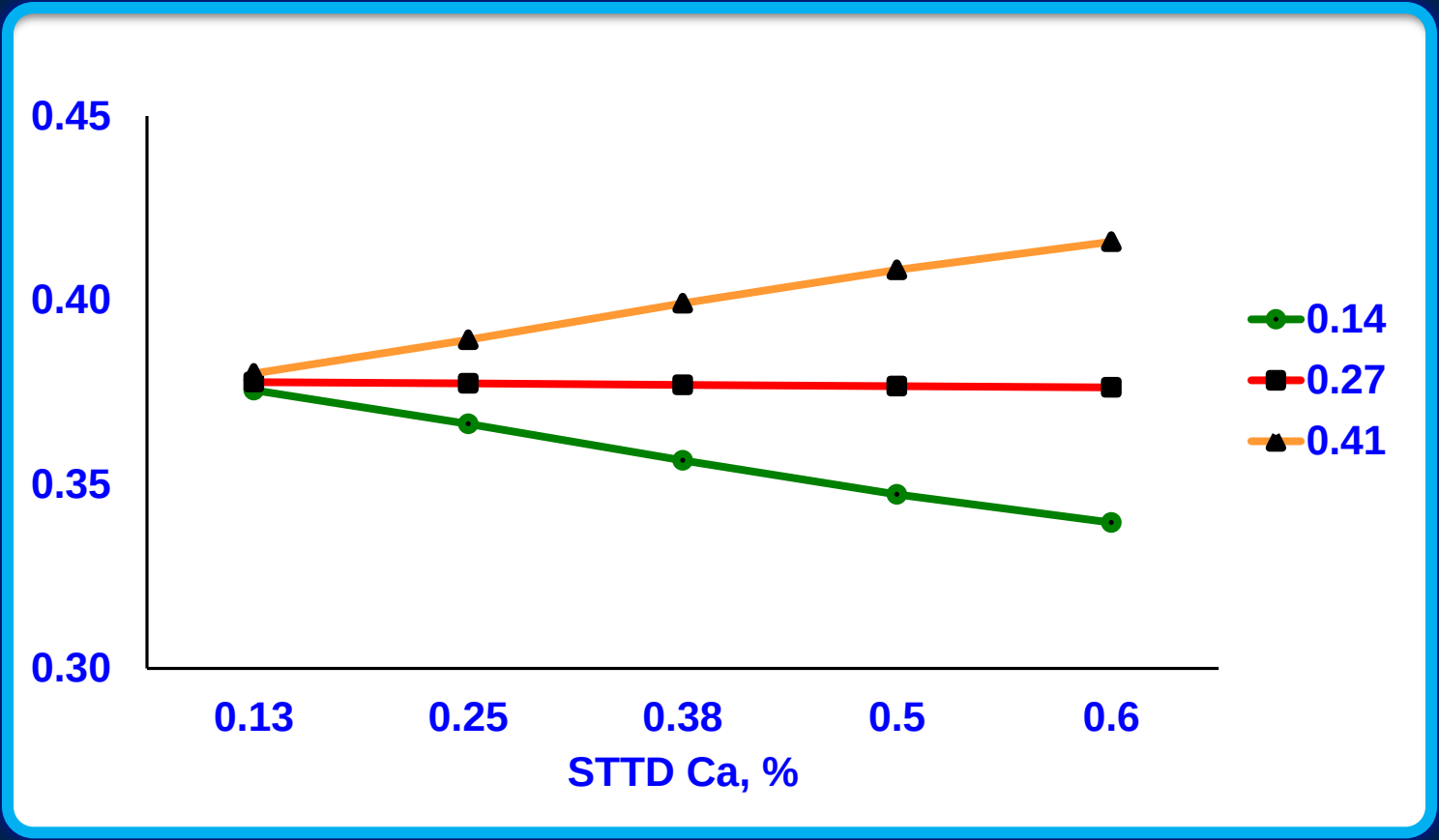
Lagos et al., 2017, unpublished

Foderoptagelse, kg/dag



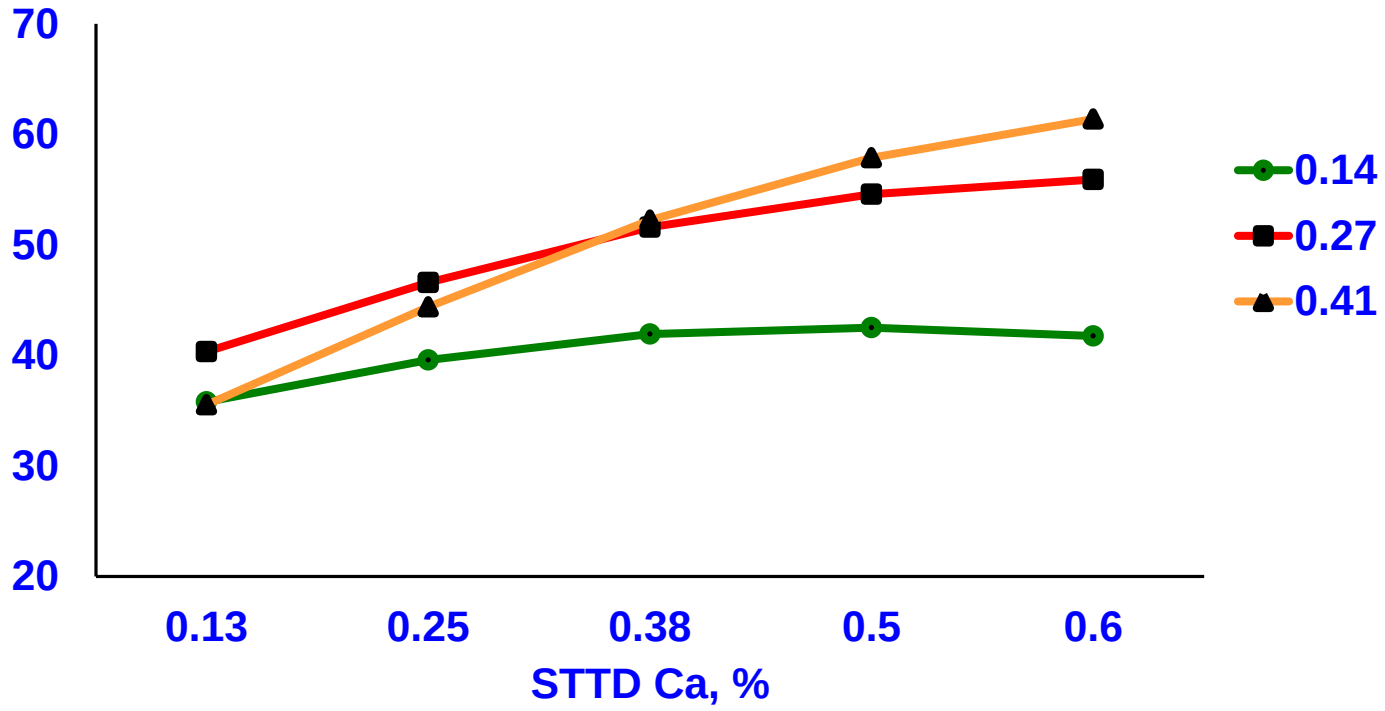
Lagos et al., 2017, unpublished

Kg tilvækst per kg foder



Lagos et al., 2017, unpublished

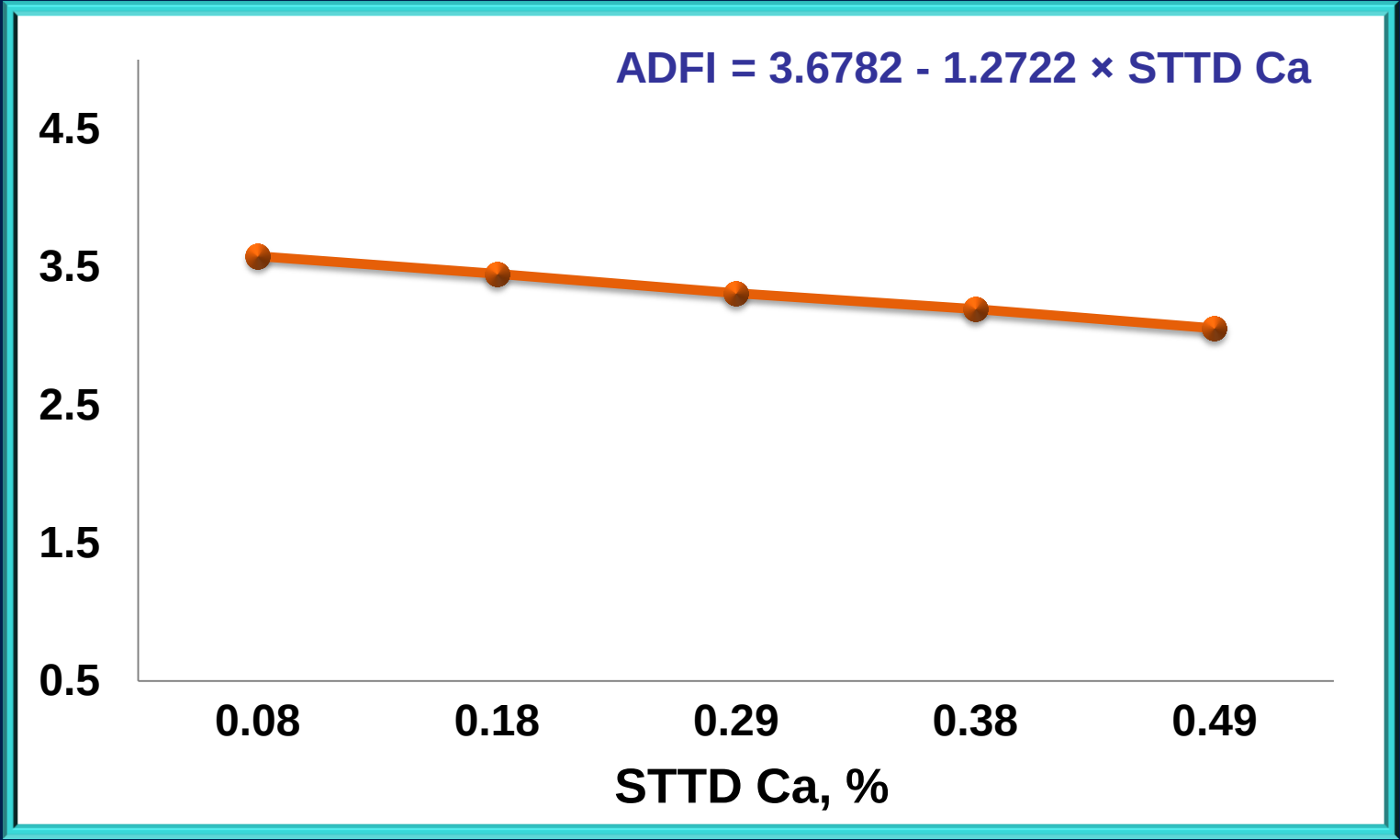
Aske i knogler, g



Lagos et al., 2017, unpublished

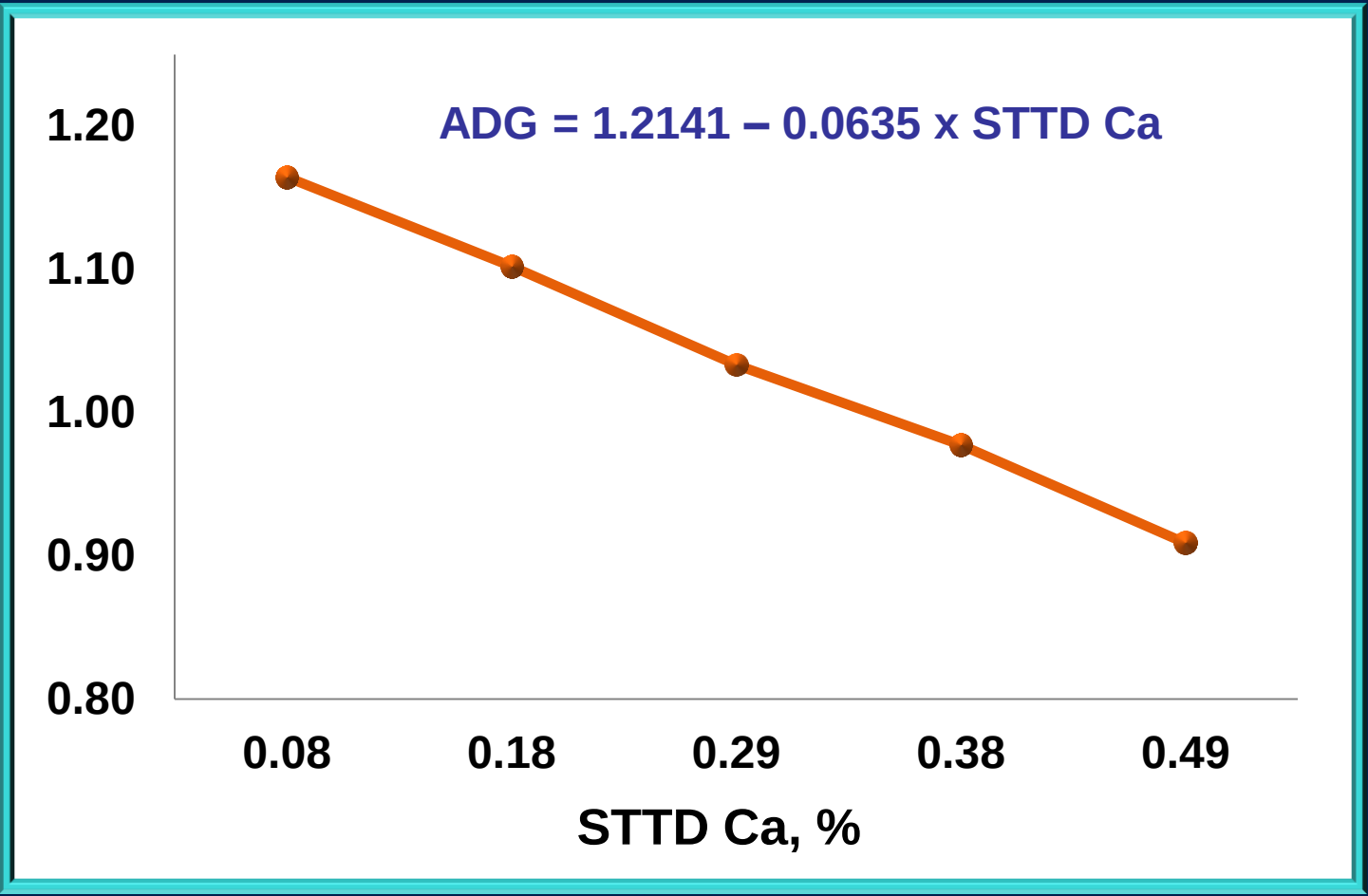
Behov for STTD Ca til slagtesvin (100 to 130 kg)

Foderoptagelse, kg



Merriman et al., 2016

Tilvækst, kg/dag



Merriman et al., 2016

Konklusioner

1. For meget Ca reducerer foderoptagel-se og tilvækst
2. Mest negativ effekt hvis STTD P er lavt eller marginalt
3. Behov for at maximere knogle aske er højere end behov for max tilvækst

Anbefalinger

Grise <50 kg: Forhold mellem STTD Ca og STTD P < 1.25:1

Grise > 50 kg: Forhold mellem STTD Ca og STTD P < 1.10:1

Polte og orner har formentlig højere behov end slagtesvin

Næste skridt

- Lave forsøg fra fravænning til slagtning
- Flere data for fordøjelighed og effekt af fytase
- Fordøjelighed og behov for polte og søer

Ca Anbefalinger

Finansiering

ABVista
Feed Ingredients

http://nutrition.ansci.illinois.edu

Hans H. Stein
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