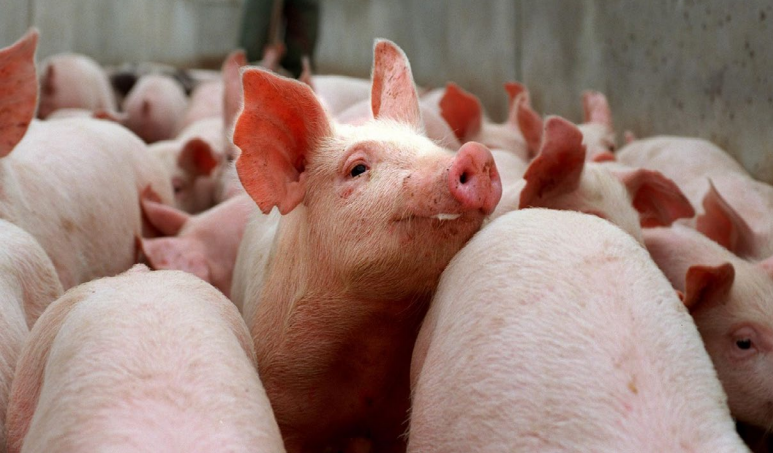




Soybean oil equivalency of soybean meal in diets fed to growing pigs

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Introduction

Soybean meal (SBM)



Primary plant-protein
source



**Energy: the most
expensive component
in swine diets**



Gain to feed ratio



Growth performance

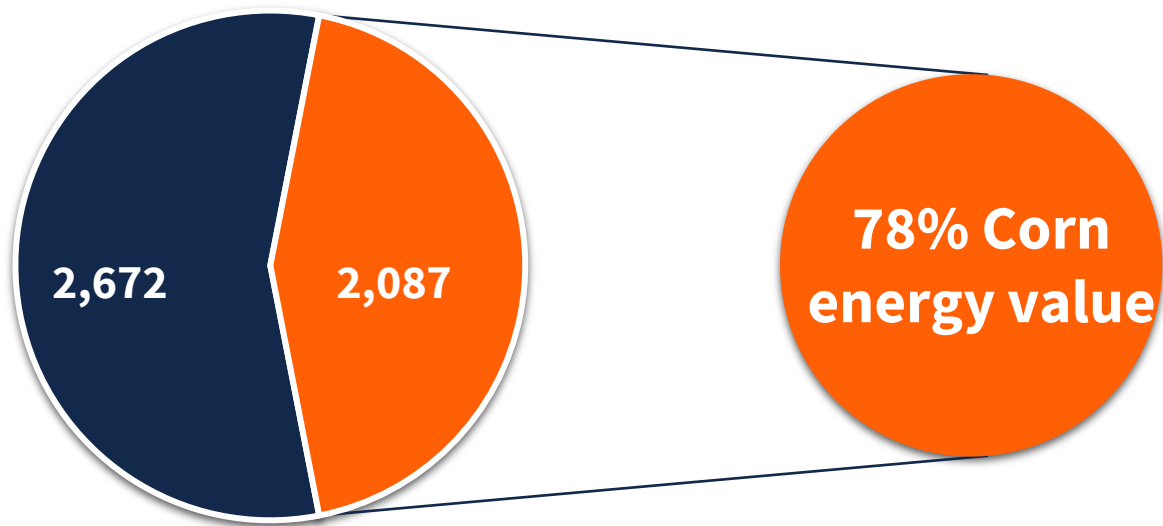


Cost of the diet

**Accuracy in
determination of the
energy value of
ingredients**



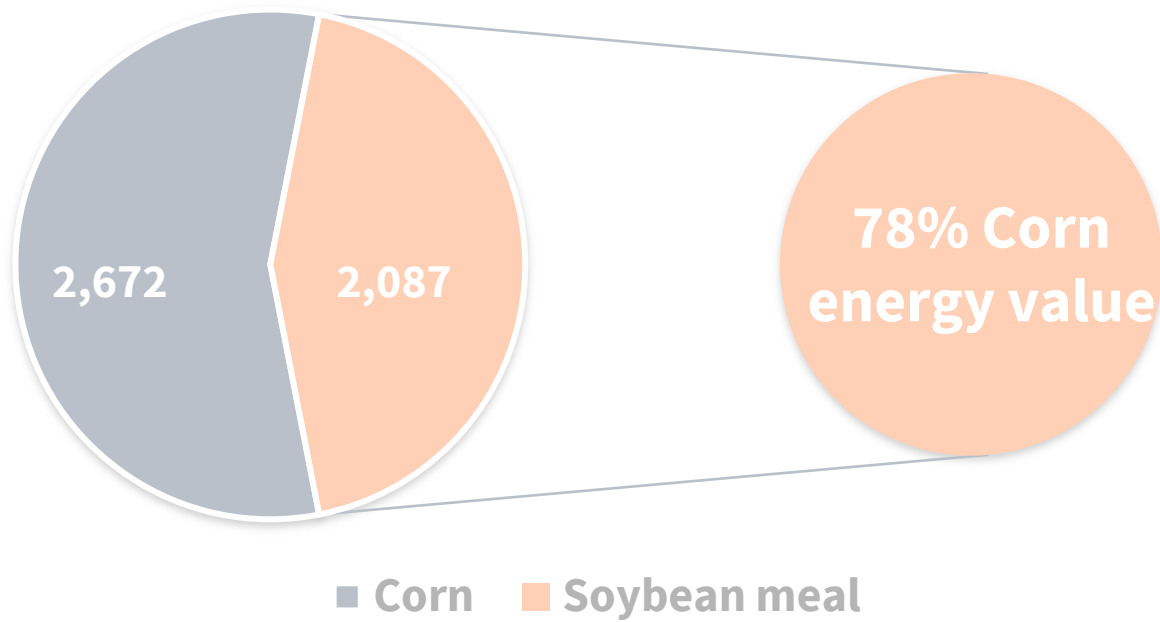
Net energy value, kcal/kg



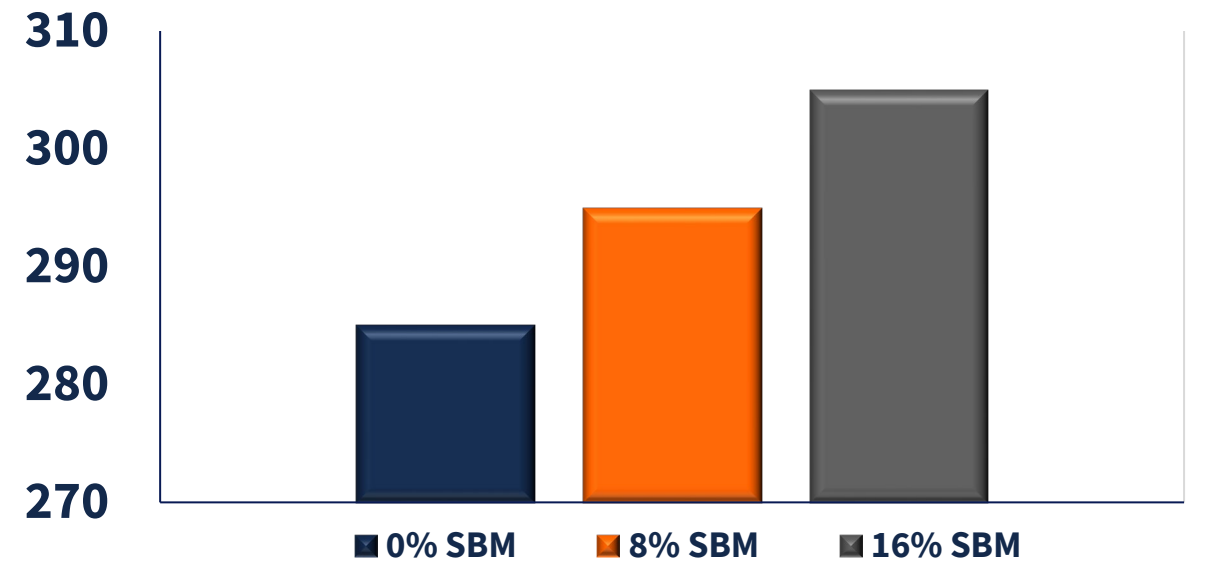
■ Corn ■ Soybean meal

NRC, 2012

Net energy value, kcal/kg

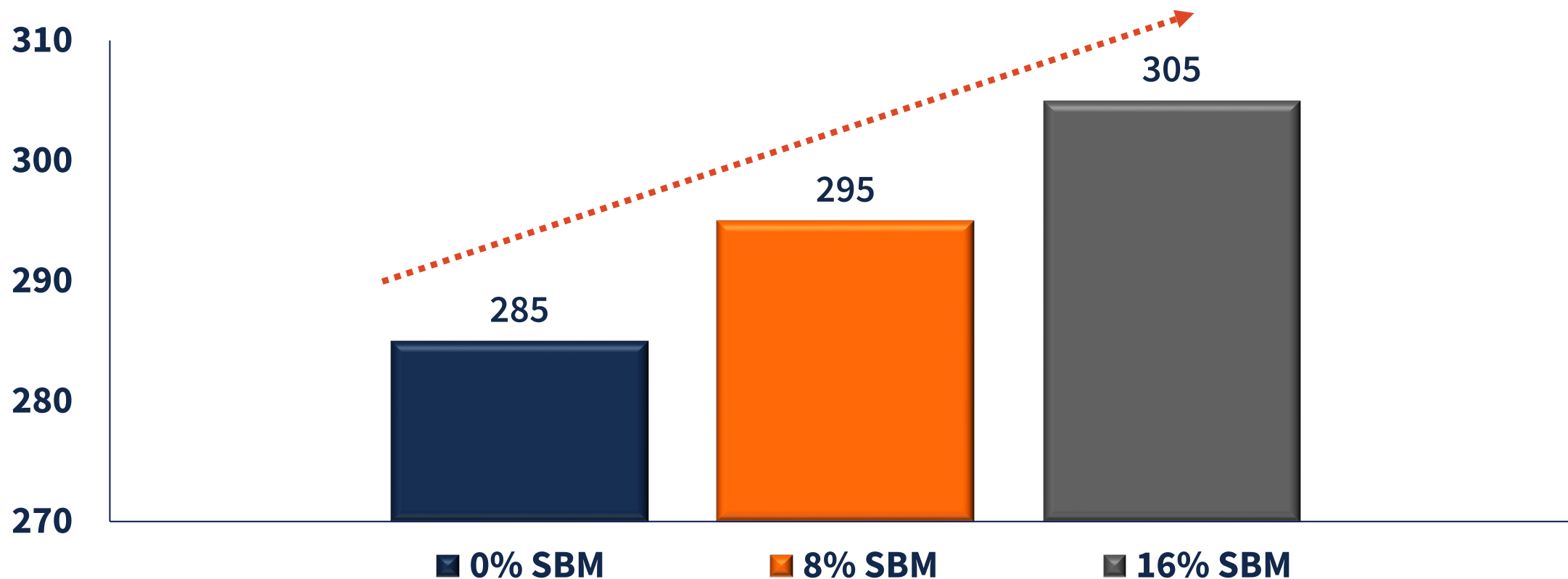


Gain to feed, g/kg



Holen, et al., 2022

Gain to feed ratio of late finishing pigs, g/kg



Holen, et al., 2022

A close-up photograph of a pig's snout, showing its pinkish-red skin and two dark, circular nostrils. The background is blurred, showing more of the pig's face and some indistinct colors.

Objective

To obtain a regression equation to predict the fat equivalence value of SBM based on different levels of dietary soybean oil added to diets.

Materials and methods



A total of 120 growing pigs
Initial body weight:
 24.75 ± 3.6 kg

Materials and methods



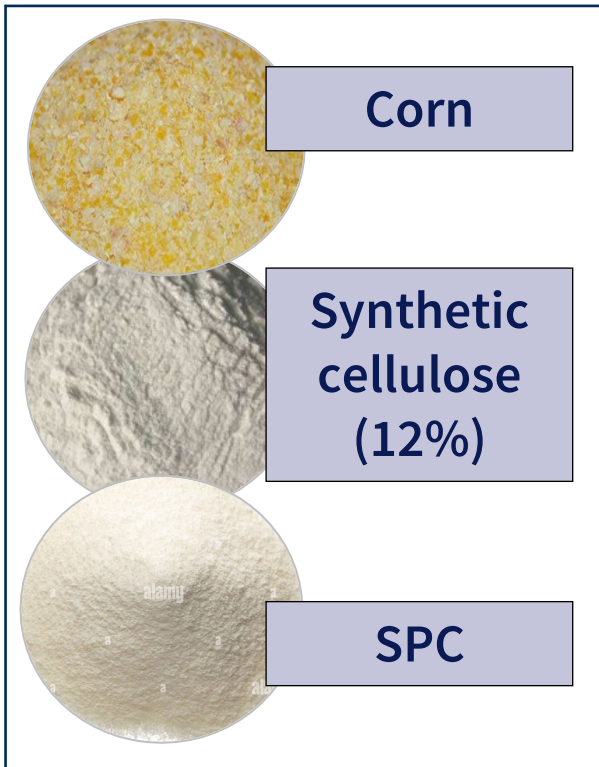
A total of 120 growing pigs
Initial body weight:
 24.75 ± 30.6 kg

Two pigs per pen
(e.g., one gilt, one barrow)
12 replicates pens per treatment

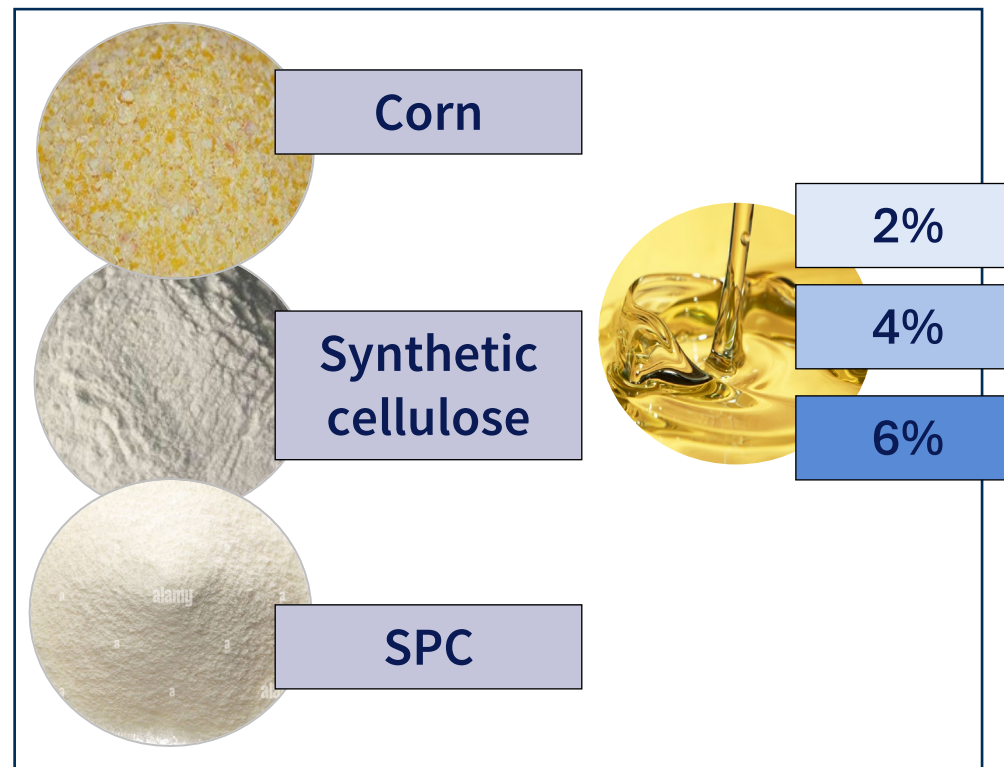
A 4-week experiment

Diets

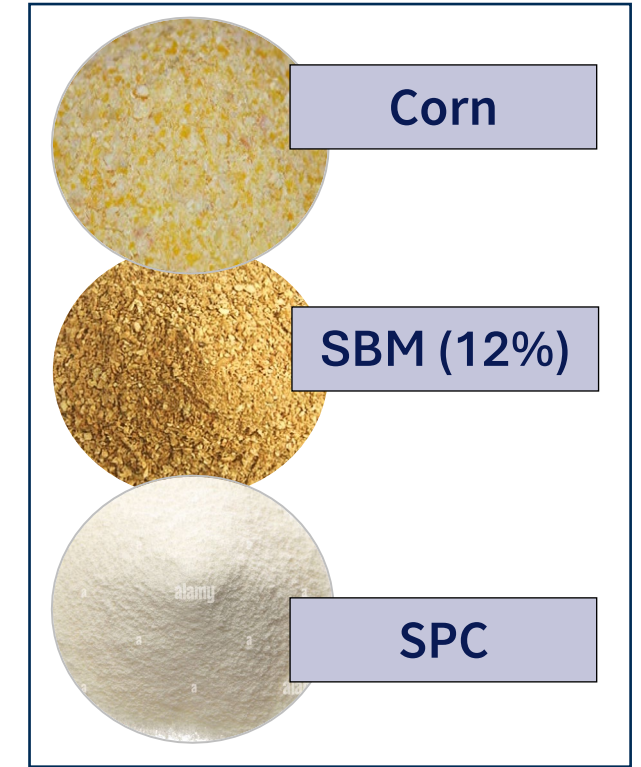
Basal diet



Three diets with soybean oil



Soybean meal diet



Materials and methods

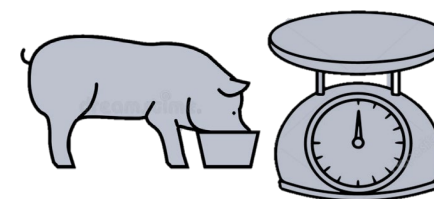
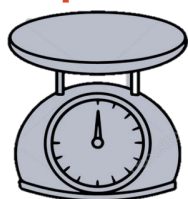
Body weight of pigs
Feed addition
Feed left in the feeder

Average daily gain
Average daily feed intake
Gain to feed ratio

Day 1



Day 28



4-week experiment

Materials and methods

**Statistical Analysis:
Proc. Mixed SAS**

**Experimental unit: Pen
Linear and Quadratic effects in
the SBO diets**

**A regression equation for
estimation of G:F as SBO
increases.**

**Calculation of SBO level that was
equivalent to 12% SBM.**



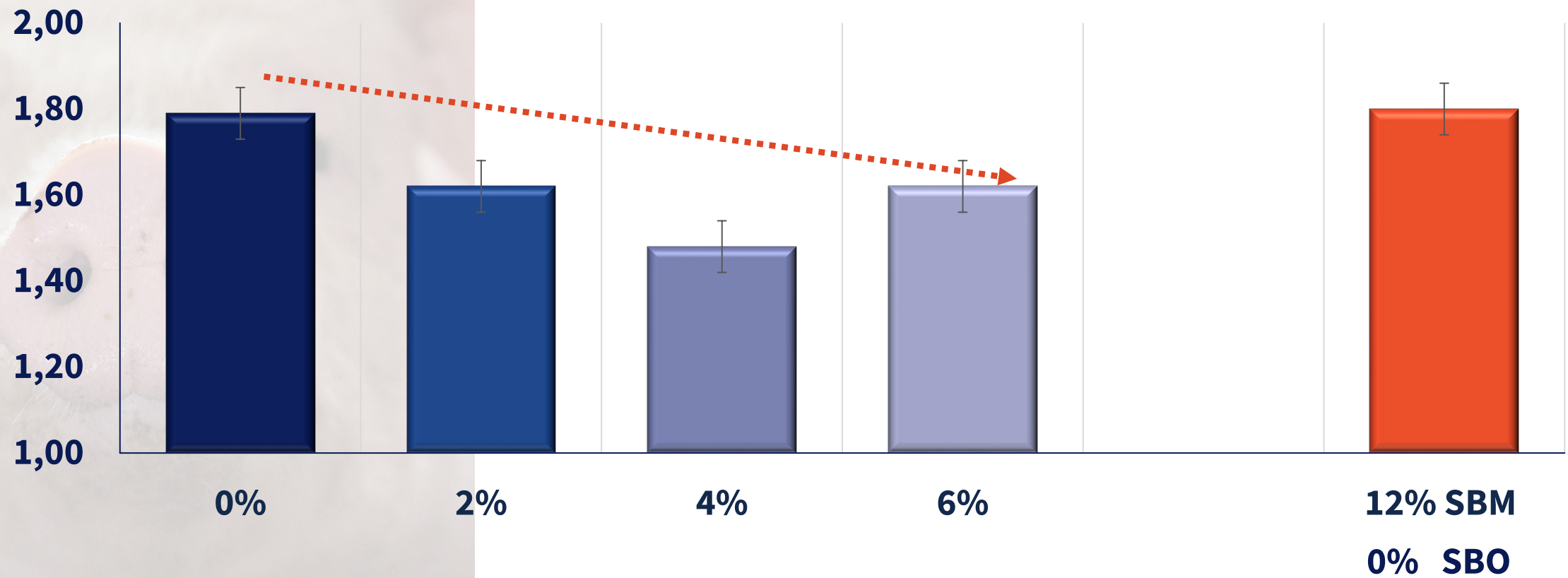


Results

Growth performance

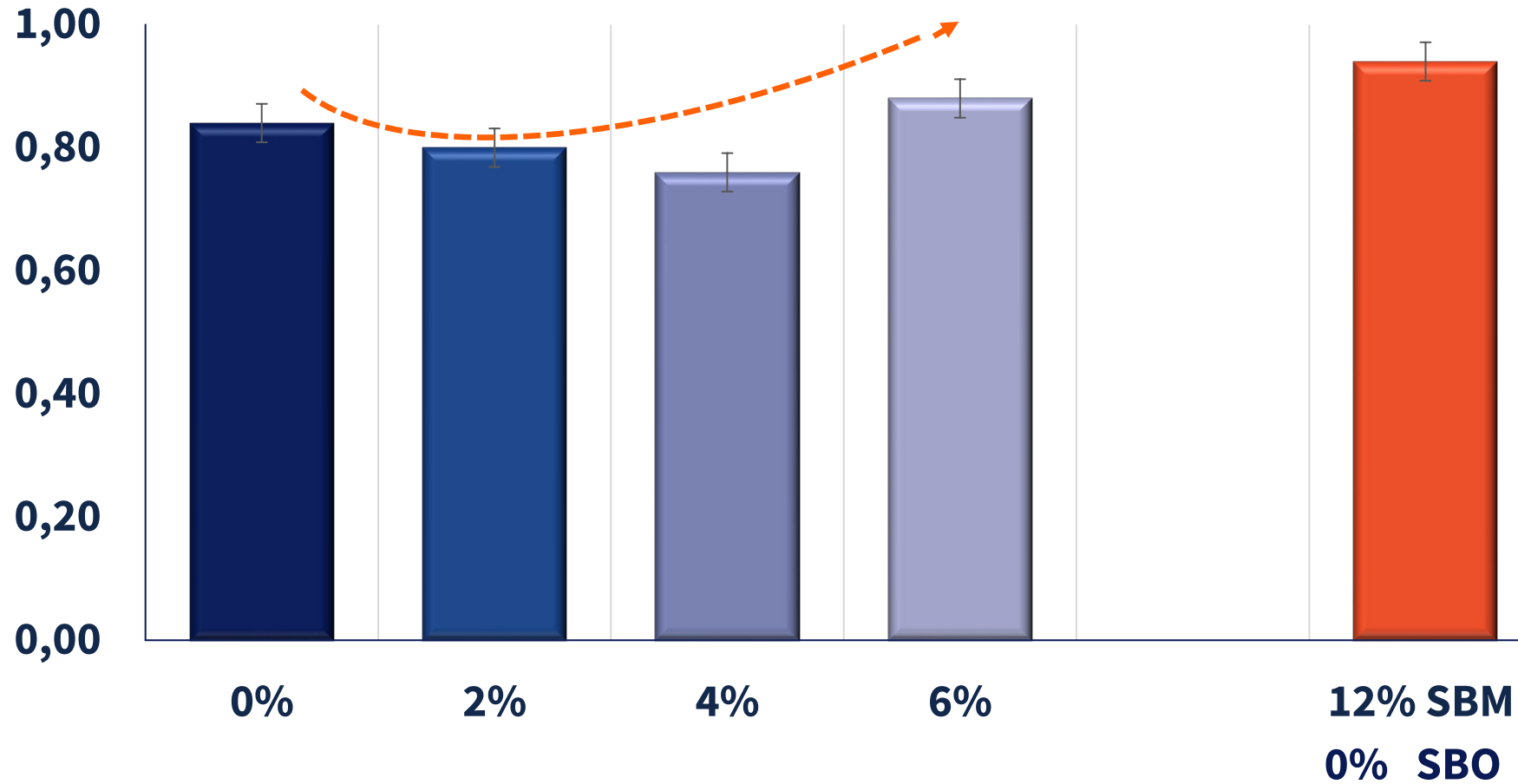
Average daily feed intake, kg

Linear & Quadratic: $P < 0.05$
0% SBO: $P > 0.05$



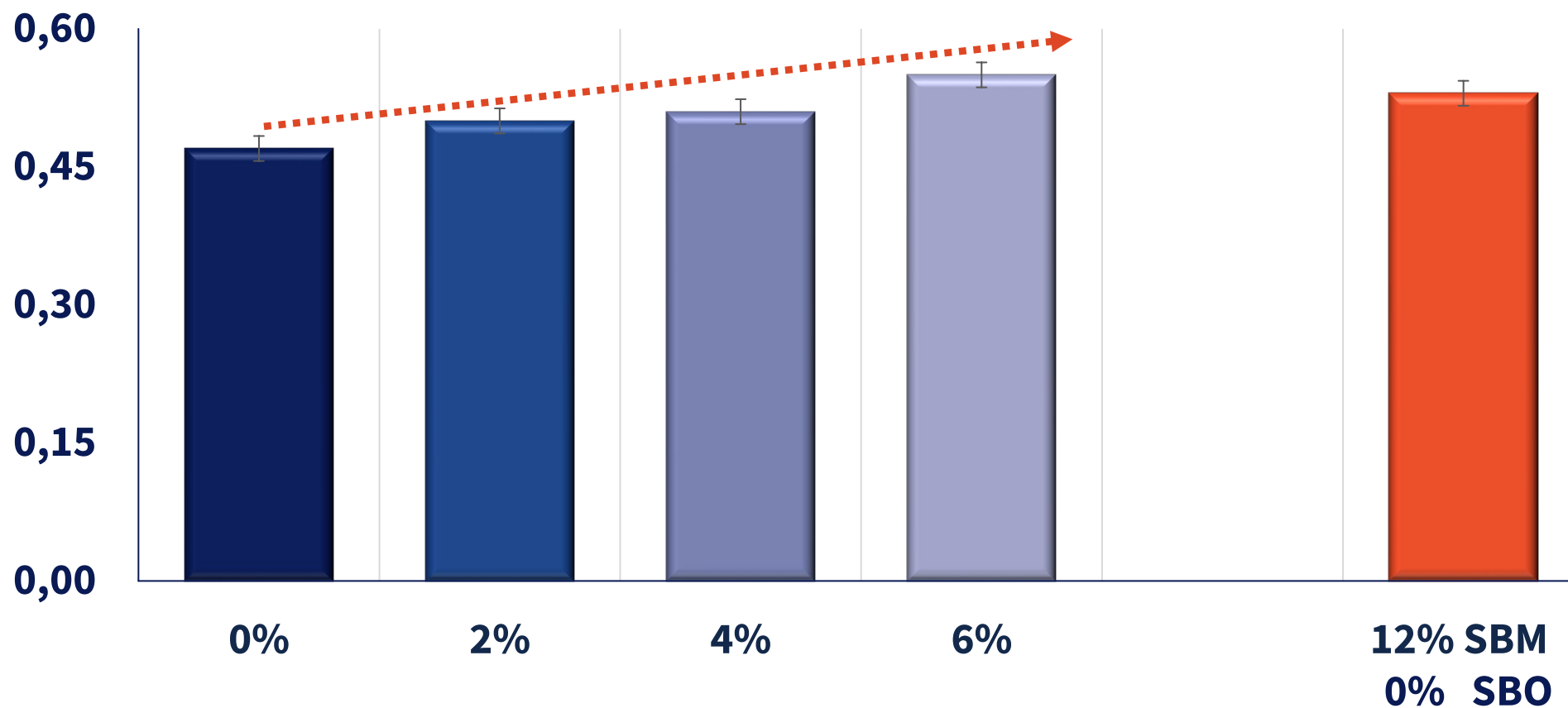
Average daily gain, kg

Quadratic & 0% SBO: $P < 0.05$
Linear : $P > 0.05$



Gain to feed ratio

Linear & 0% SBO: $P < 0.05$
Quadratic: $P > 0.05$

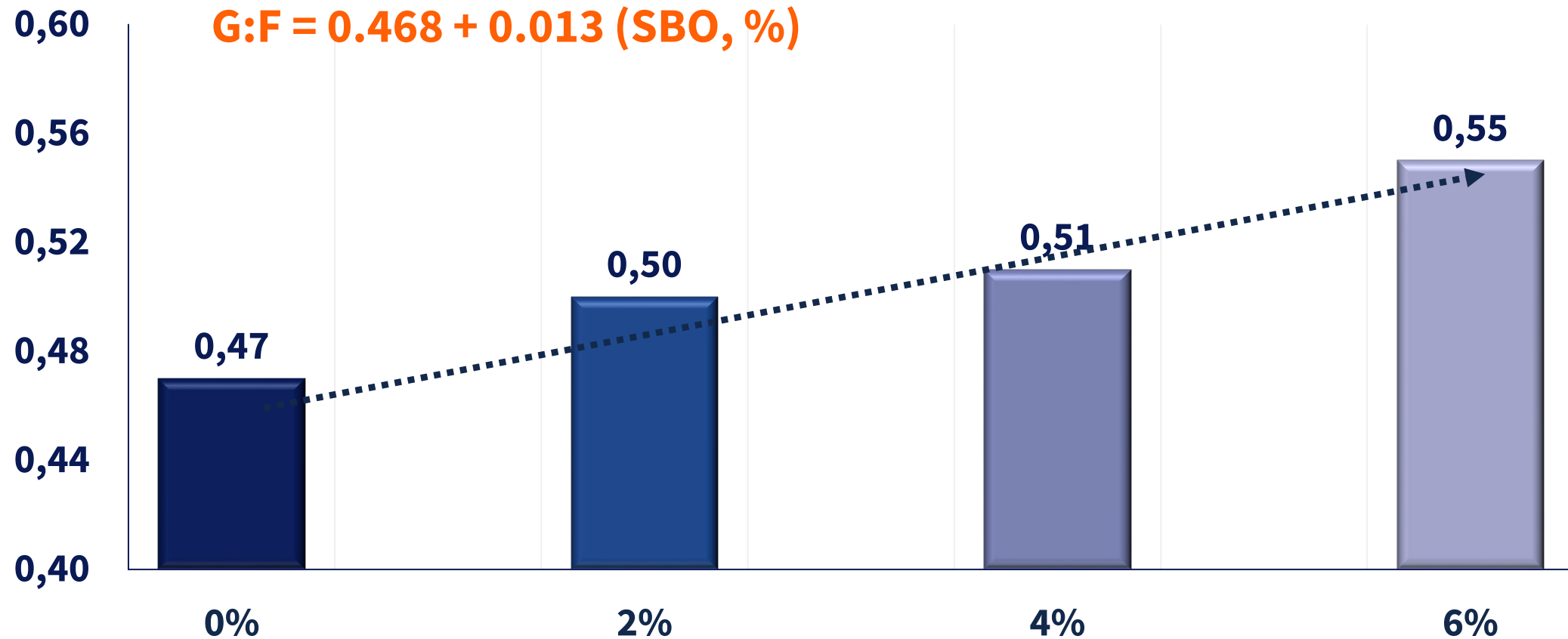




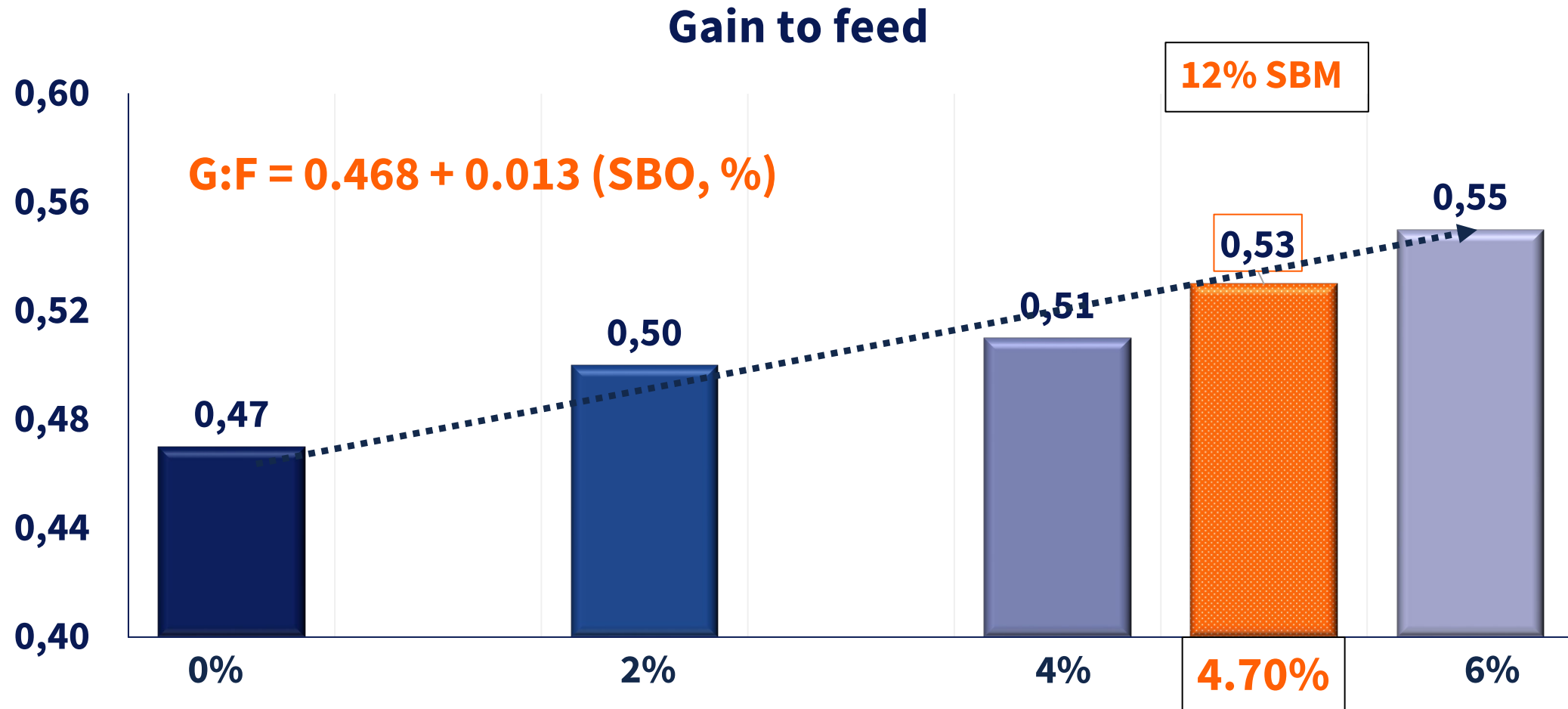
Results

Soybean oil equivalency

Fat equivalency of soybean meal



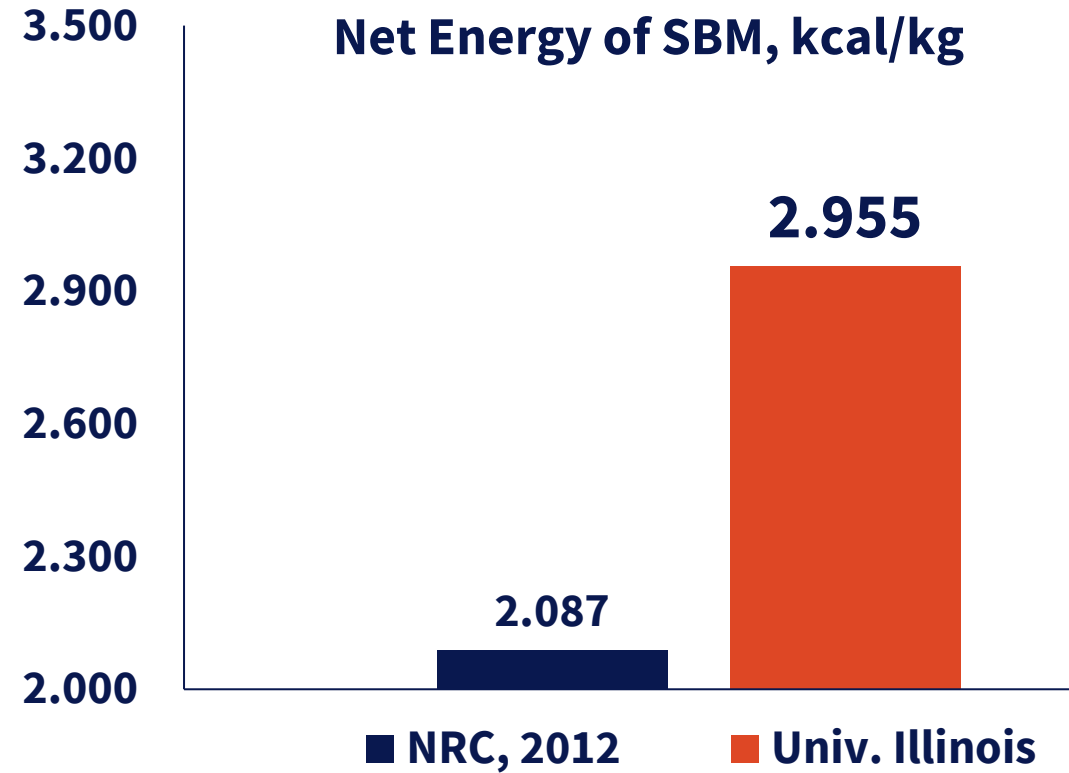
Fat equivalency of soybean meal



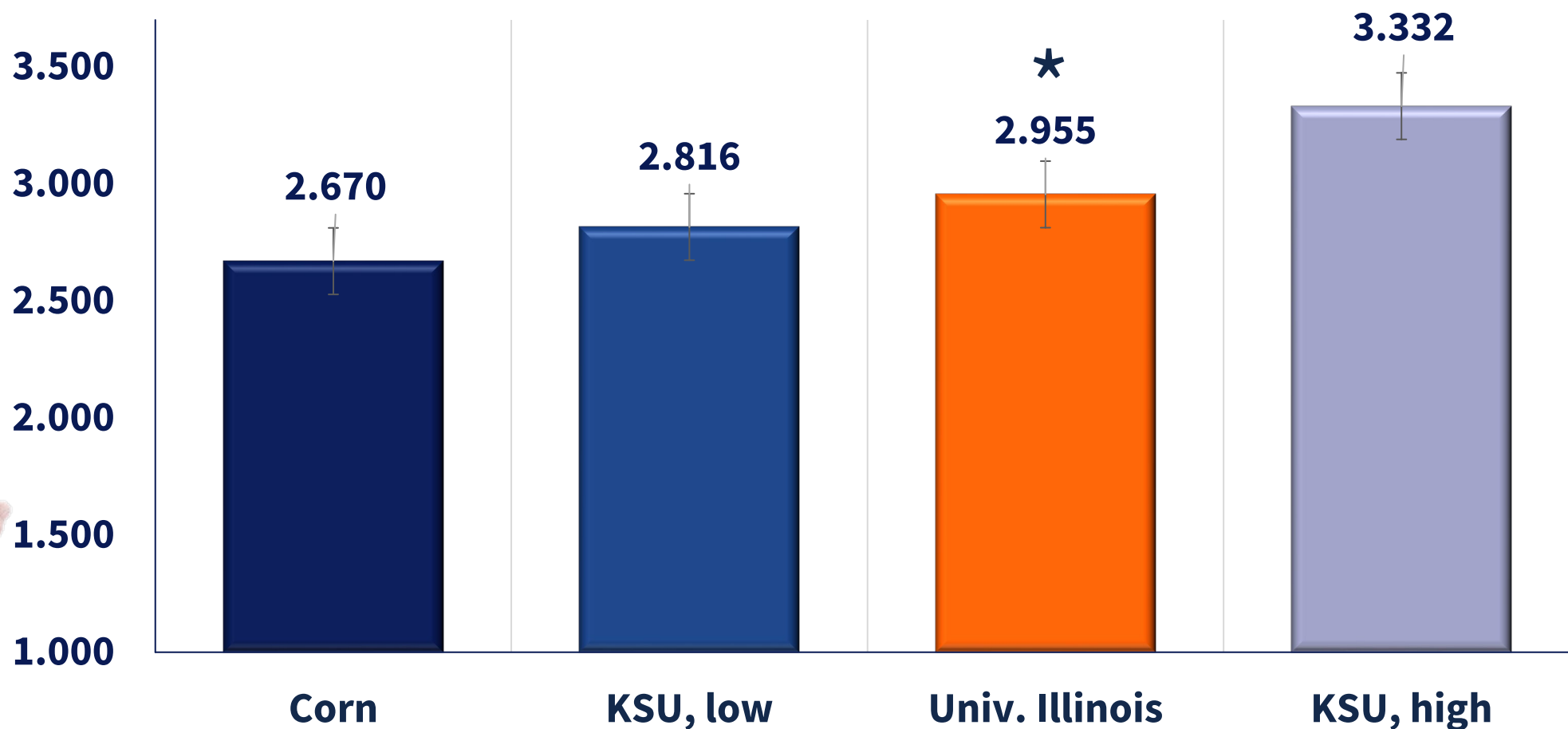
Soybean oil 7,545
kcal/kg NE

4.70% SBO = 35,462
kcal/kg NE = 12% SBM

Increase in G:F by
adding SBM to the diet
= 2,955 kcal/kg

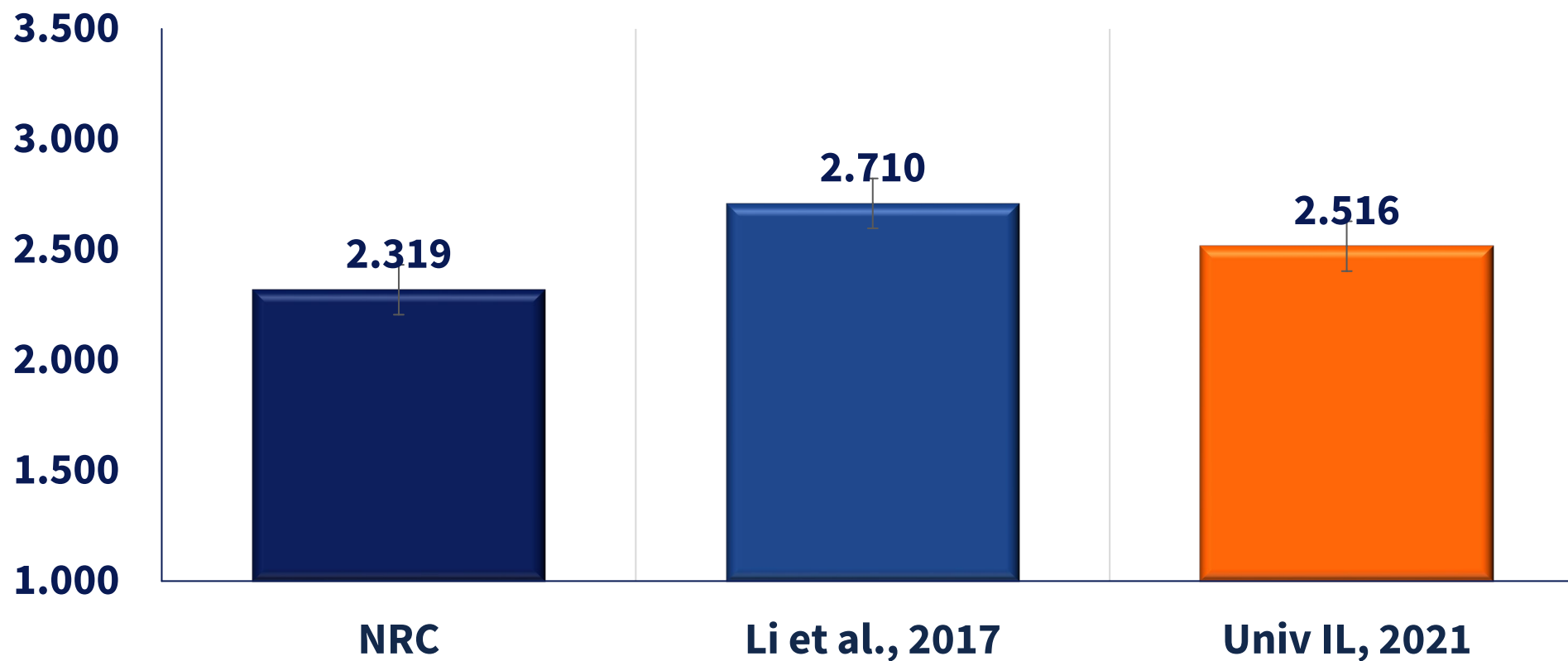


NE in SBM estimated from gain to feed ratio, kcal/kg



Cemin et al., 2020; NRC, 2012

NE in soybean meal from indirect calorimetry, kcal/kg DM



Conclusions and Implications

Productive energy of SBM is around 110% of corn energy or 2,955 kcal/kg.



This may indicate that we get more energy from SBM than previously expected.

Acknowledgment



Acknowledgment



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