

Cooock+ Optevar

Optimale eiwitvoorziening in varkensvoerders

Sophie Goethals, Sam Millet, Nico Peiren, Tim Van De Gucht
Paul Bikker, Alfons Jansman

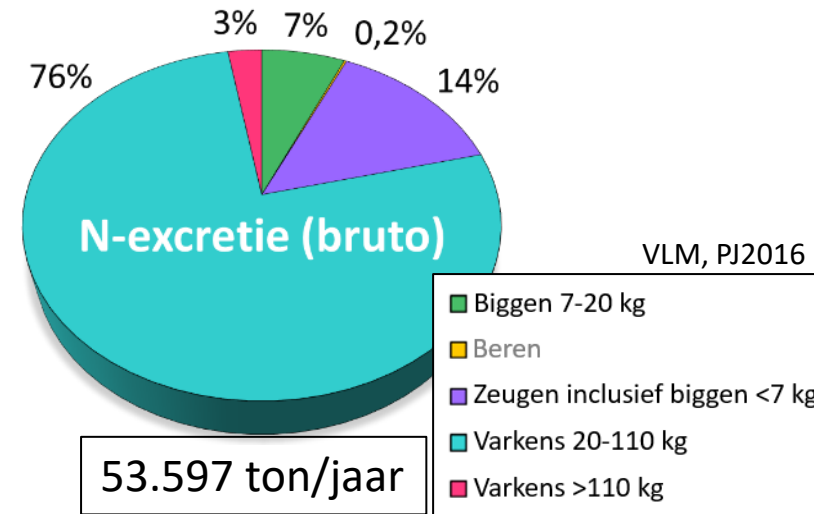
Augustin Dumoulin, Liesbeth Verheyen

Studienamiddag diervoeding
8 oktober 2024

Startpagina > Stikstof

Stikstofdecreet gepubliceerd in Staatsblad

Het veelbesproken Vlaamse stikstofdecreet of het decreet 'over de programmatische aanpak stikstof' is vandaag (22 februari) gepubliceerd in het Belgisch Staatsblad.



Background

Viit alle nieuws dossiers agenda vacatures contact steun ons nieuwsbrief

Homepage > Nieuws > Het Vlaams regeerakkoord uitgespit: Waar gaat het landbouwbeleid naartoe?

Het Vlaams regeerakkoord uitgespit: Waar gaat het landbouwbeleid naartoe?

Er komt ook een convenant eiwitten in veevoeder, naar analogie met het convenant 'enterische emissies'. Daarin worden met de veevoedersector afspraken gemaakt om de hoeveelheid eiwitten in diervoeder waar relevant te verminderen. De behaalde

Less crude protein in the diet can reduce nitrogen excretion



Crude protein level

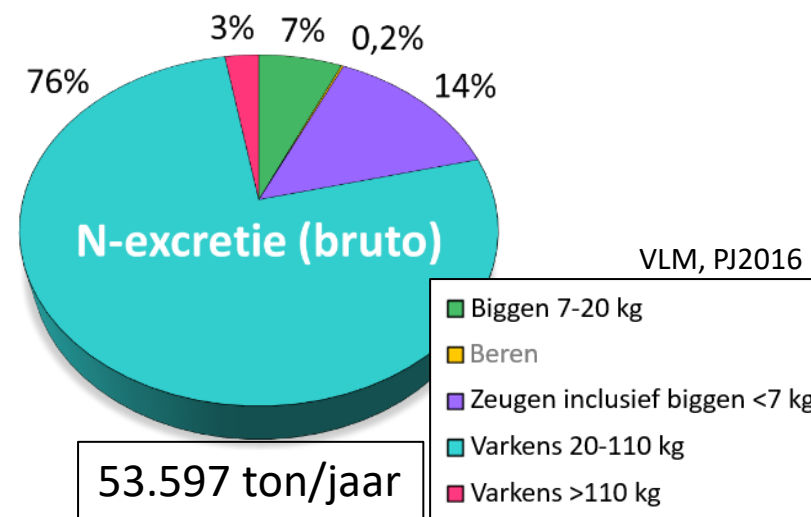


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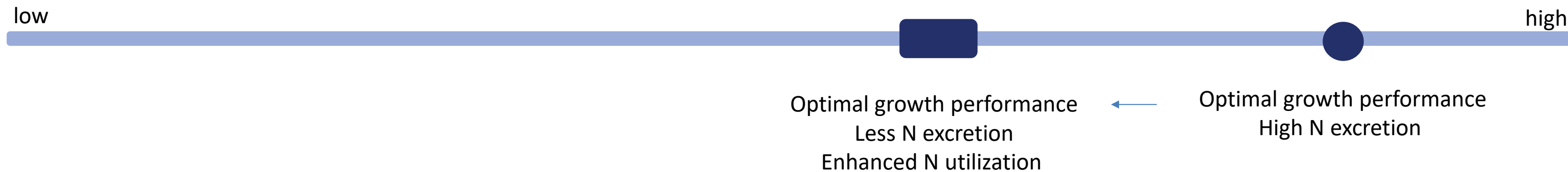


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Crude protein level

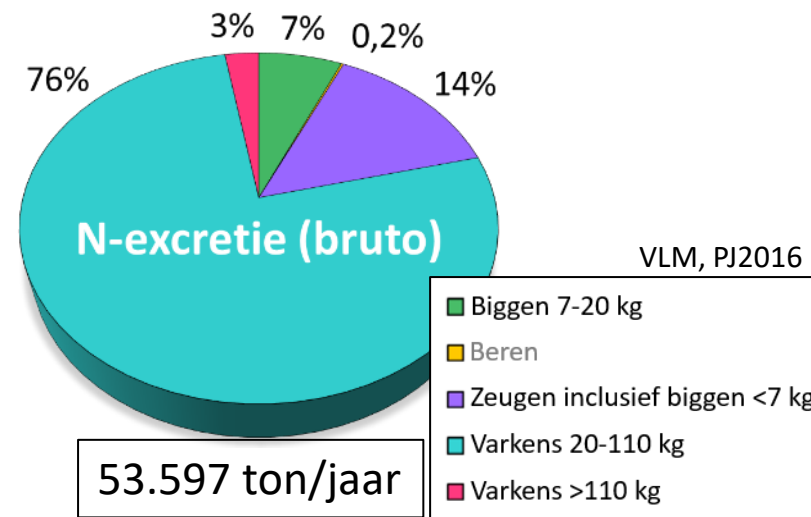


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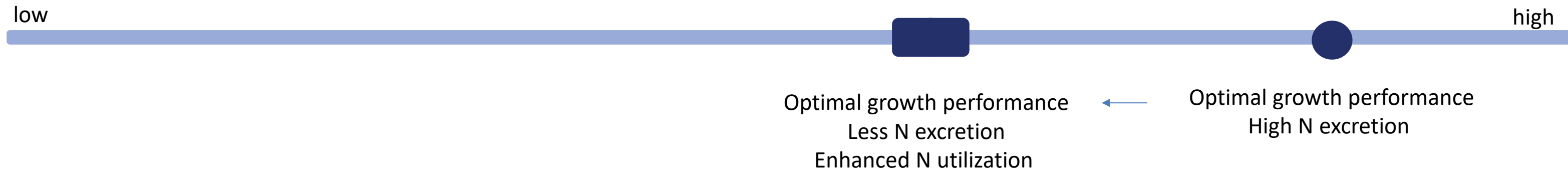


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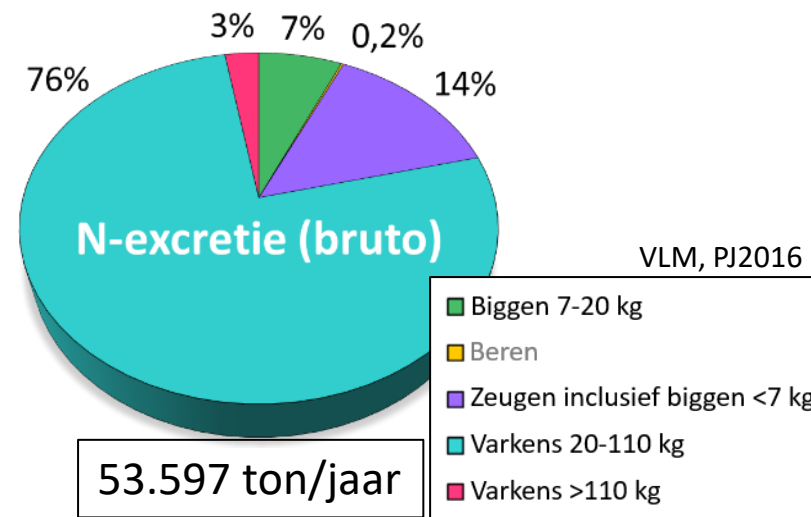
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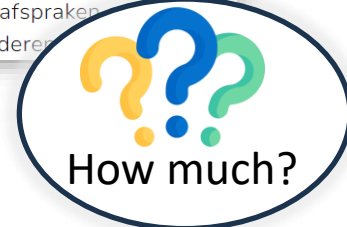
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Less crude protein in the diet can reduce nitrogen excretion



Crude protein level



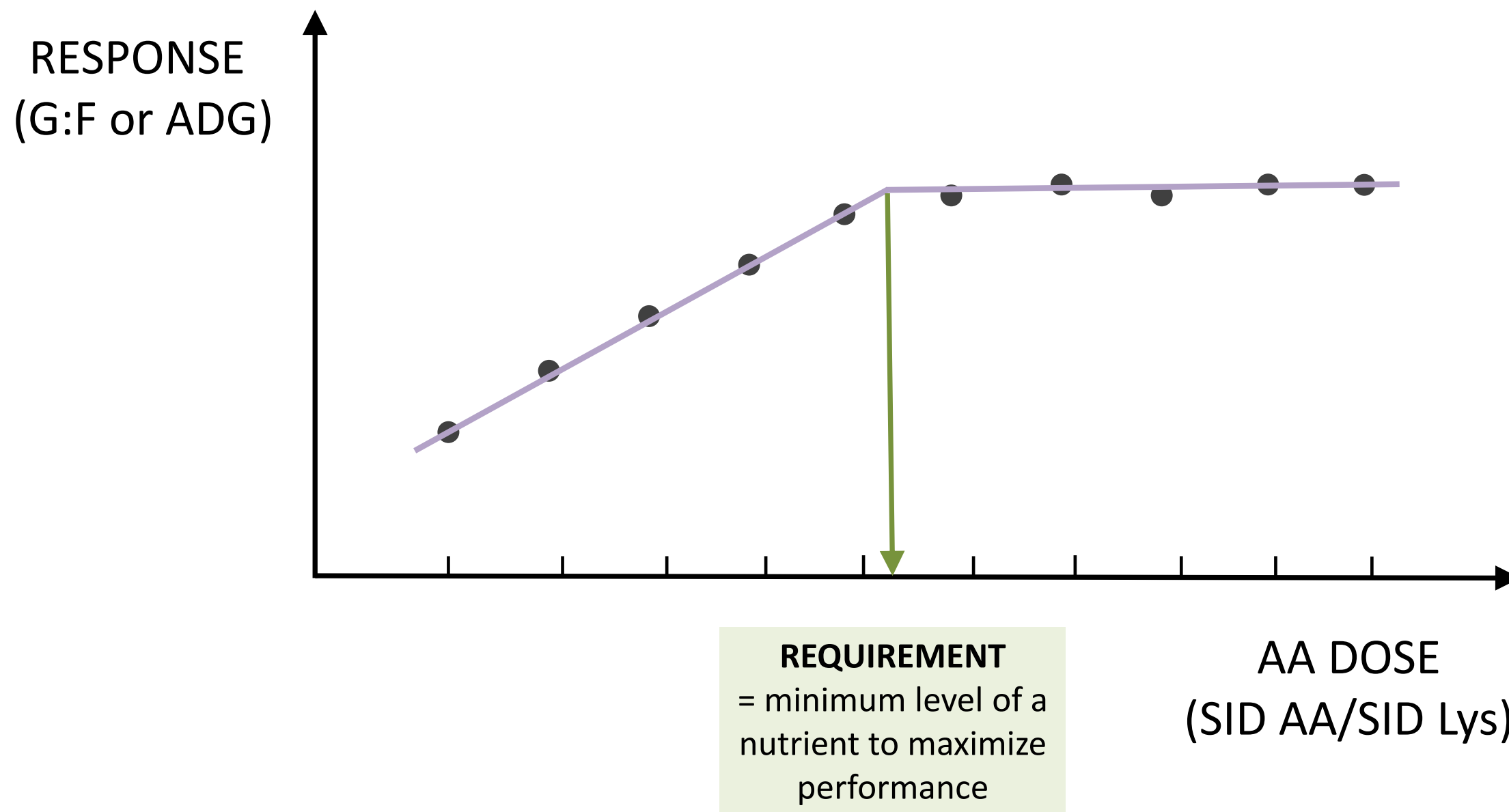
~~Deficiencies or imbalances of AA
 Lower growth performance
 Higher feed intake~~

Optimal growth performance
 Less N excretion
 Enhanced N utilization

Optimal growth performance
 High N excretion

Optimal growth performance
 Less N excretion
 Enhanced N utilization

Background



OPTIVAR

Background

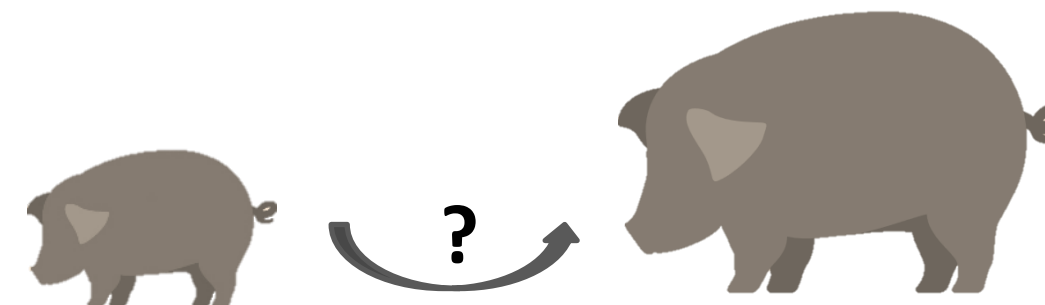
van der Peet-Schwering and Bikker, 2018

Amino acid requirement of growing and finishing pigs

Methionine + Cysteine	1 study in finishing pigs
Threonine	Few studies between 50 – 90 kg
Tryptofaan	Few studies in finishing pigs
Isoleucine	No studies in fattening pigs
Valine	1 study in finishing pigs
Leucine	No studies in grower-finishing pigs
Histidine	No studies in grower-finishing pigs
Phenylalanine + Tyrosine	No studies in grower-finishing pigs

Amino acid requirement of growing and finishing pigs

C.M.C. van der Peet-Schwering, P. Bikker



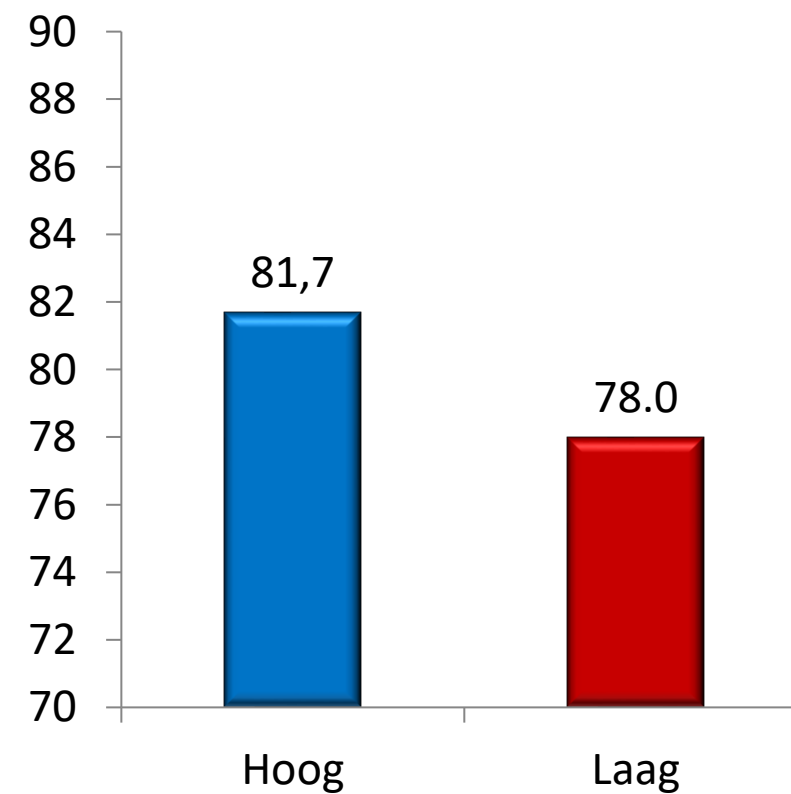
Background

Variation between farms

- Growth performance
- Nutrient utilisation (efficiency)
- Sanitary conditions
- Impact on AA requirements

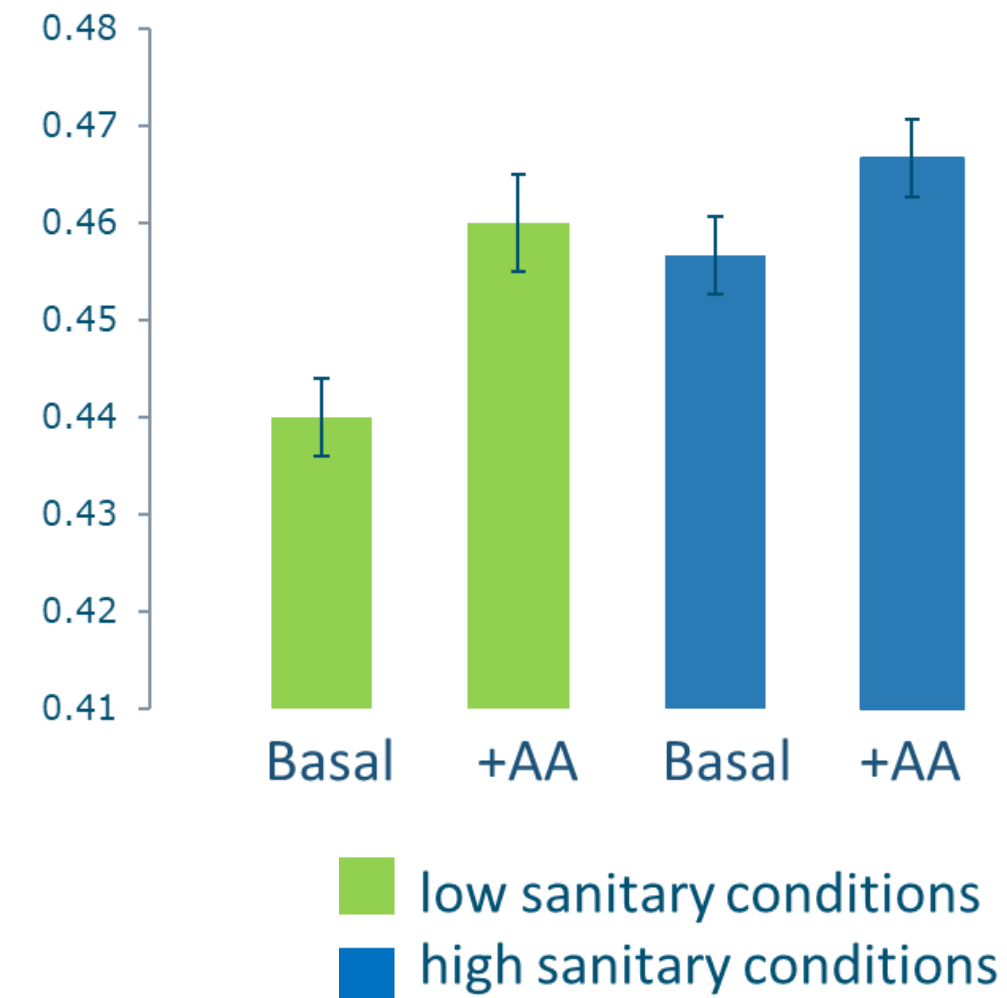
→ From general to farm specific AA requirements

N digestibility (%)



Kampman - van de Hoek et al. (2014)

G:F entire experiment

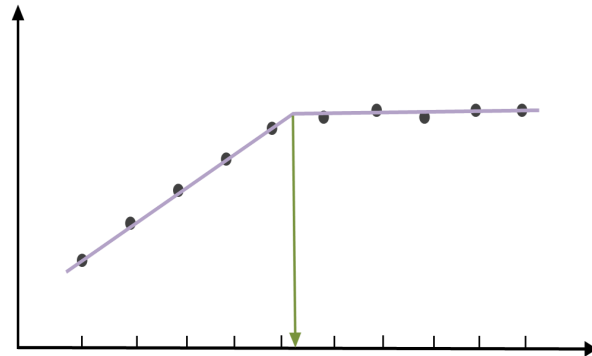


van der Meer et al. (2015)

Objective

Formulating recommendations for optimal amino acid composition of pig feed based on farm-specific conditions in combination with

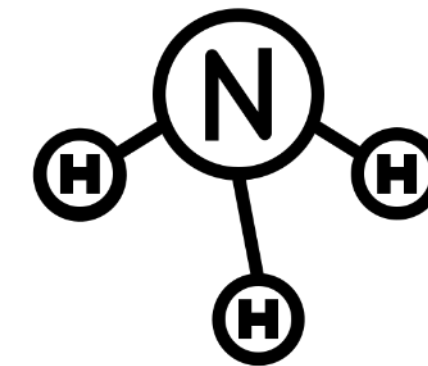
- a lower crude protein content
- a quantification of the environmental impact



1. Requirement of 4 AA's in finishing pigs



2. Classification of farms related to sanitary conditions and estimation of farm-specific AA requirements



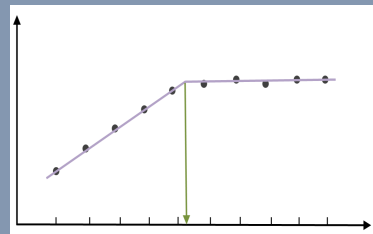
3. Quantification of N-excretion, NH₃-emissions and carbon footprint

Work packages

A – Knowledge acquisition, translation and dissemination

WP1 - Coordination

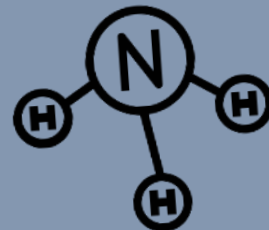
WP2 – Optimal AA ratio's for finishing pigs



WP4 – Tools for farm-specific AA requirement estimation



WP3 – Environmental impact



WP5 – Demonstration

WP6 – Dissemination



B – Enterprise-specific actions

Incorporation of new AA recommendations in feed formulation

Evaluating low-protein feeds on farms

Cost-benefit analysis of adjusted AA recommendations

Adapting feed recommendations for customers

DEEL A - kennisopbouw, vertaalonderzoek en kennisverspreiding

WP1 - Coördinatie

WP 2 – Vertaalonderzoek: optimale AZ verhoudingen van vleesvarkens in de afmestfase

WP 4 – Tools voor bedrijfsspecifieke inschatting van AZ behoefte

WP 5 – Demonstratie

WP 3 – Onderzoek: Relatie tussen eiwitgehalte – excreties, emissies en carbon footprint

WP 6 – Kennisverspreiding en -overdracht

DEEL B – bedrijfsspecifieke projecten

Incorporeren van de nieuwe normen in praktijkvoerders

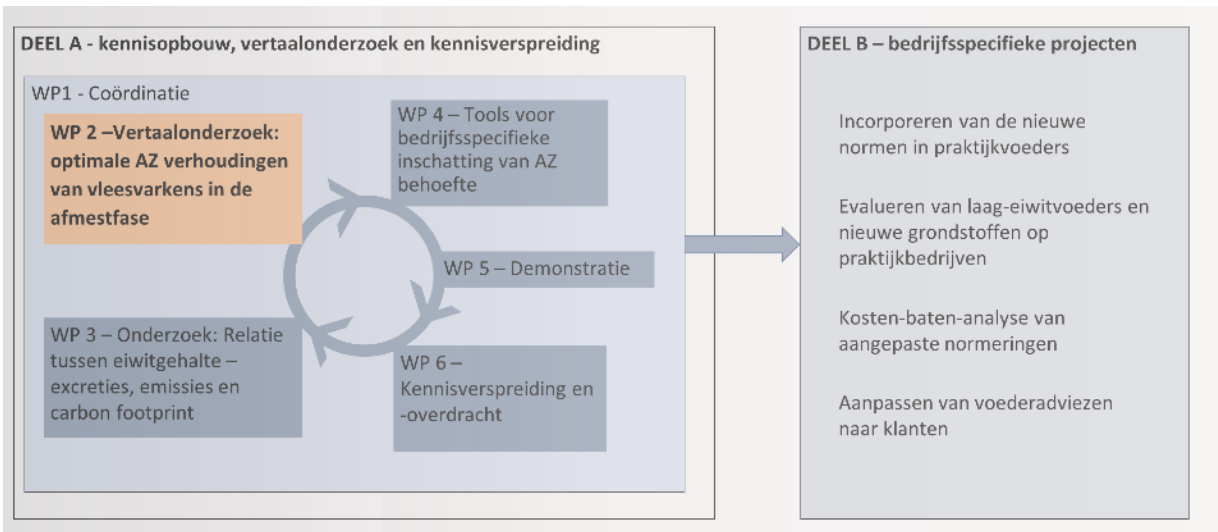
Evalueren van laag-eiwitvoerders en nieuwe grondstoffen op praktijkbedrijven

Kosten-baten-analyse van aangepaste normeringen

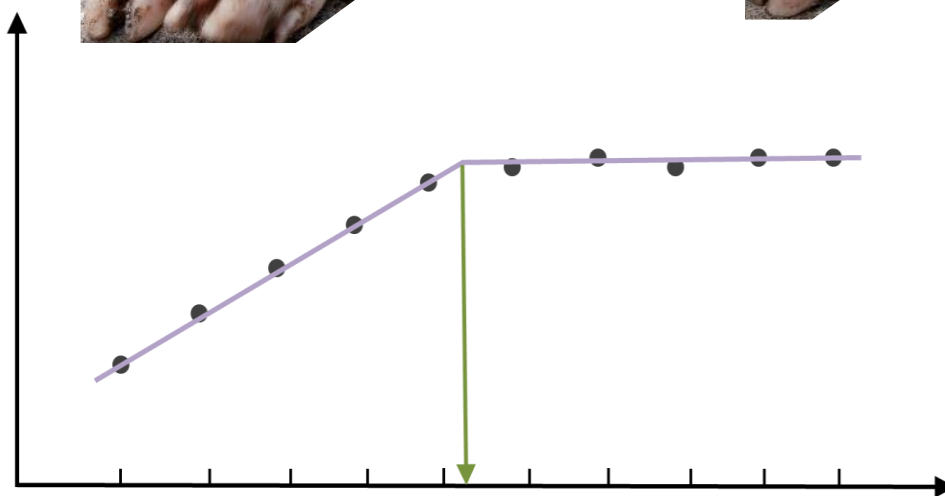
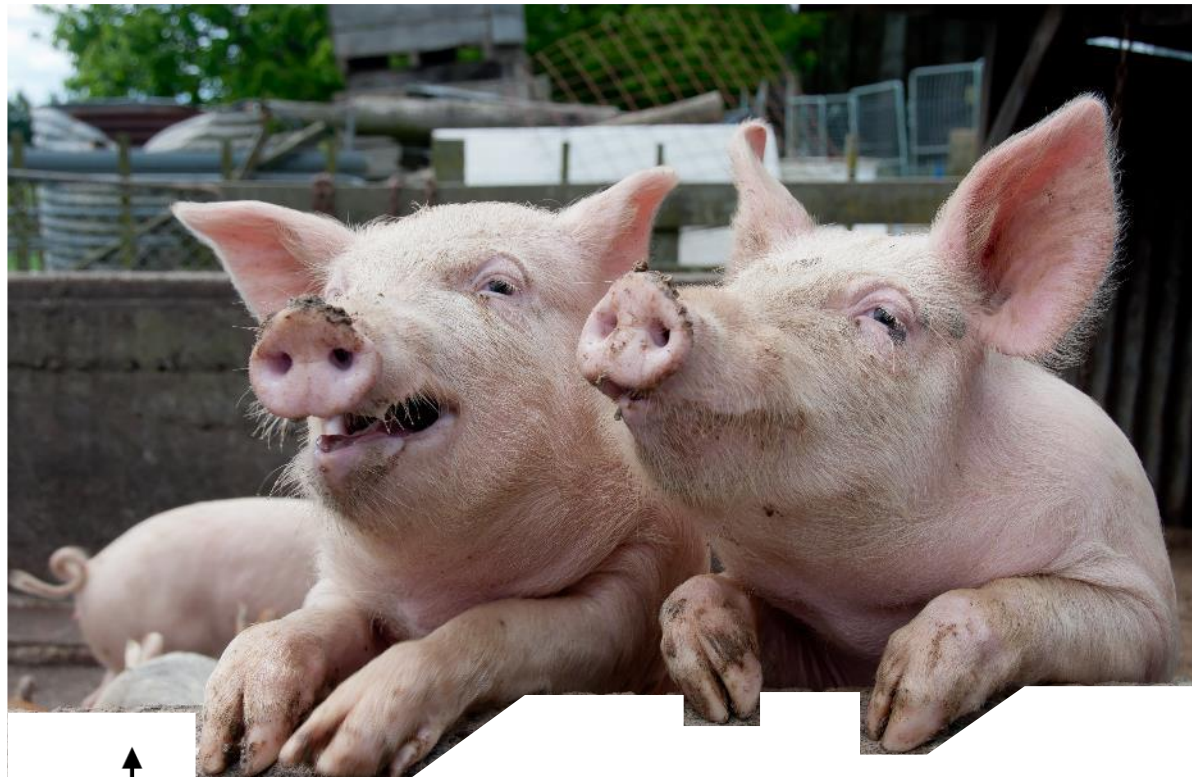
Aanpassen van voederadviezen naar klanten

WP1 - Coordination



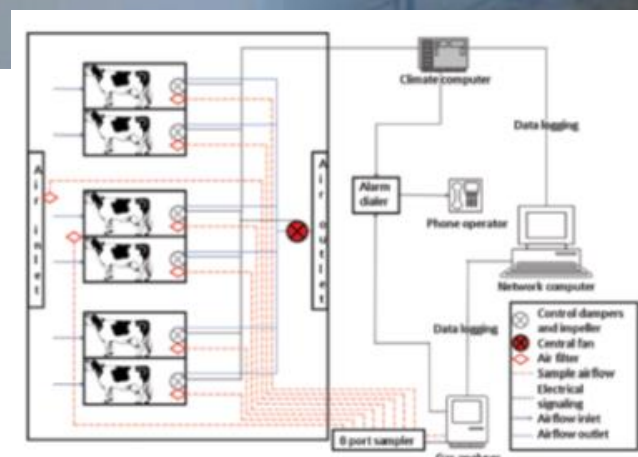
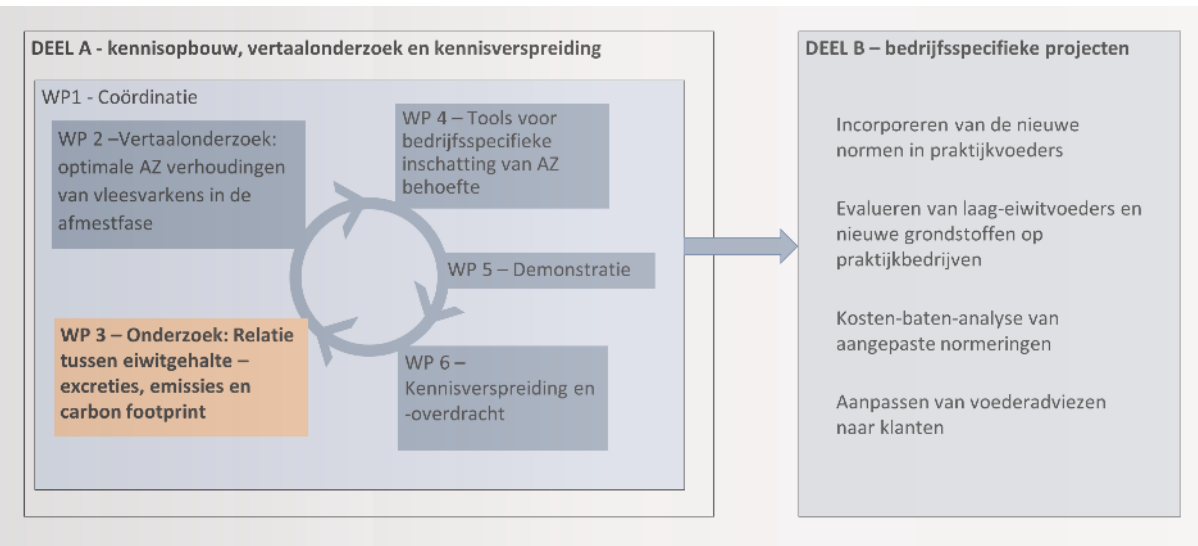


WP2 – AA requirements



- **4 AA –Met, Val, Ile, Leu**
- ***In vivo* dose-response performance trials (4; 1 for each AA)**
6 AA levels, 8 pens (5 animals/pen)
Growth performance 80 kg – 115 kg
- **Requirement estimation** via non-linear models

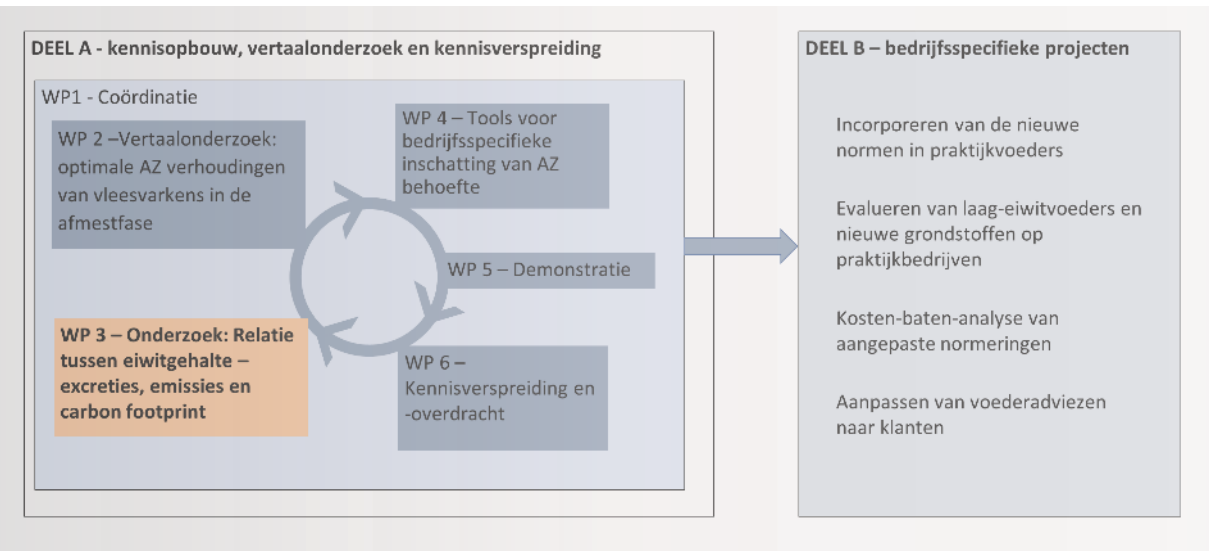
WP3 – Environmental impact



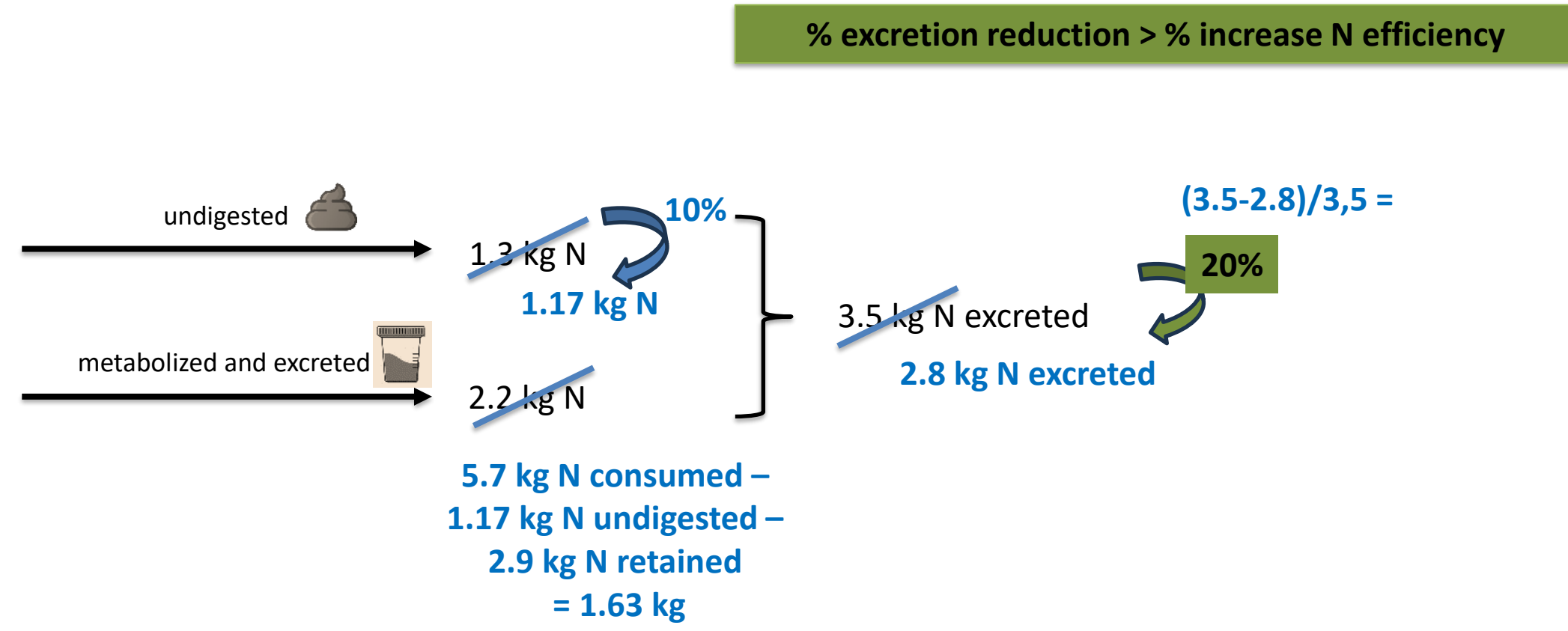
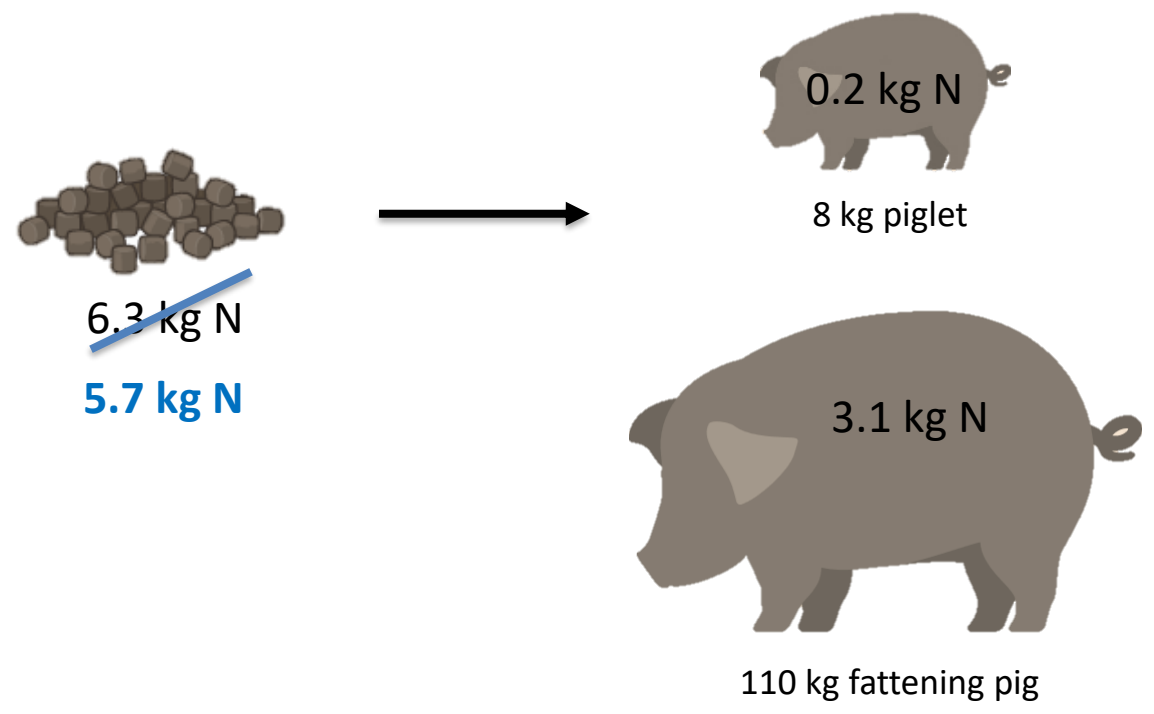
- **Scenario** selection based on differences in **N-efficiency**

-
- ***In vivo* respiration chambers trial**
NH₃ and GHG emissions

- **Manure emission** measurement
- **Carbon footprint** calculation of feed



WP3 – Environmental impact



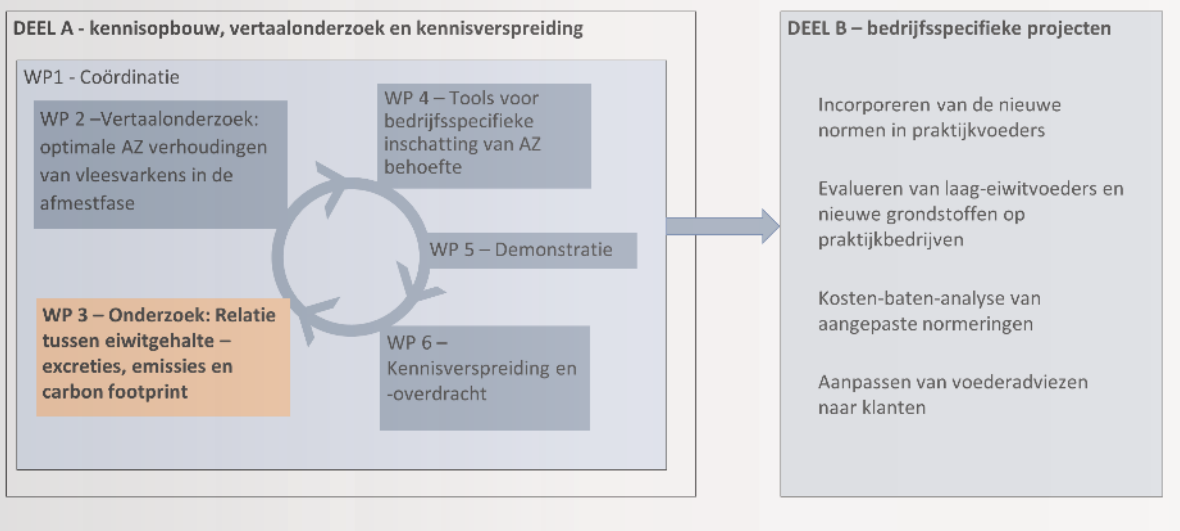
3.1 kg N – 0.2 kg N = 2.9 kg N retained

N-efficiency: $2.9 \text{ kg N retained} / 6.3 \text{ kg N consumed} = 46\%$ efficiency

2.9 kg N retained / 5.7 kg N consumed = 51% efficiency

10% efficiency increase

WP3 – Environmental impact



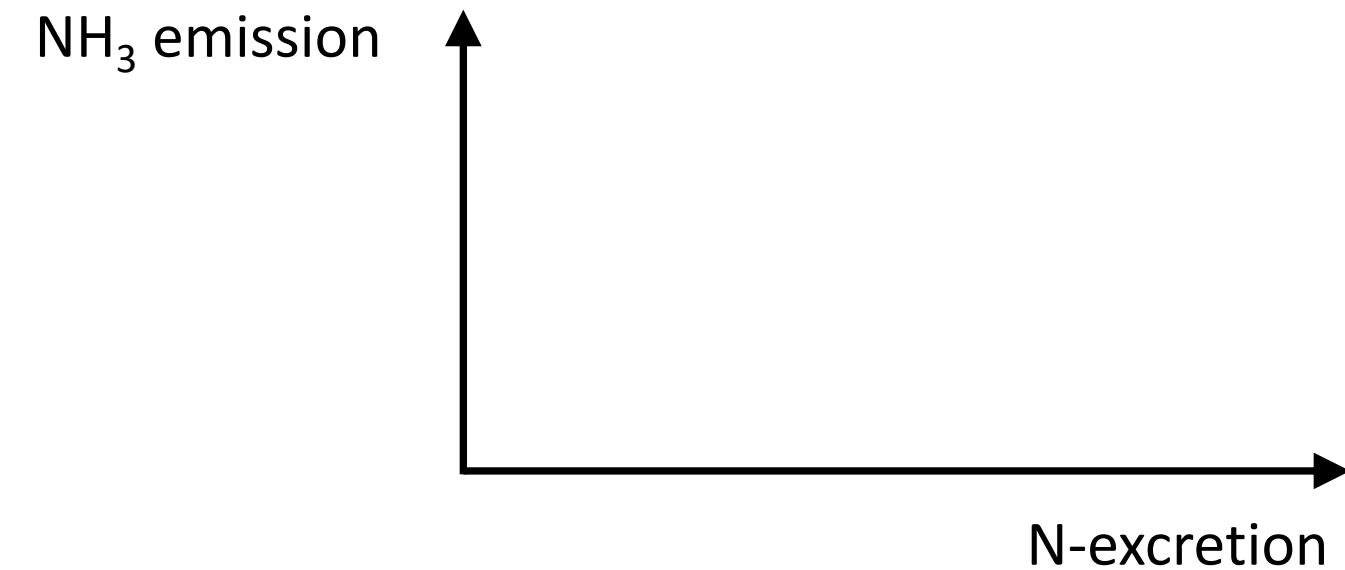
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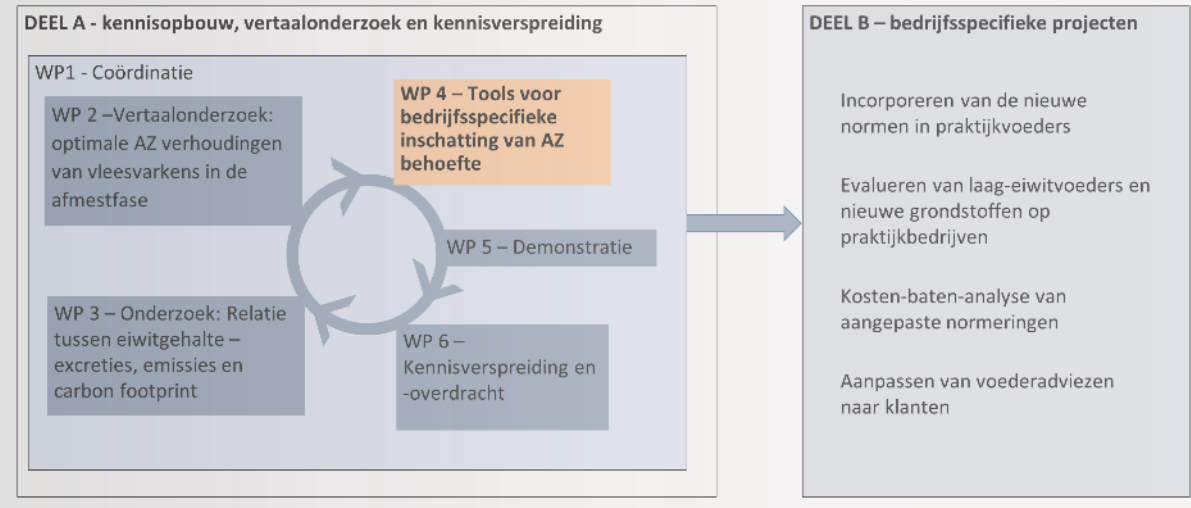
Nitrogen utilisation efficiency is related to

- Feed conversion ratio or residual feed intake
- Lean meat content



- Different sexes
- Different slaughter weights
- Different dietary CP and AA contents
-

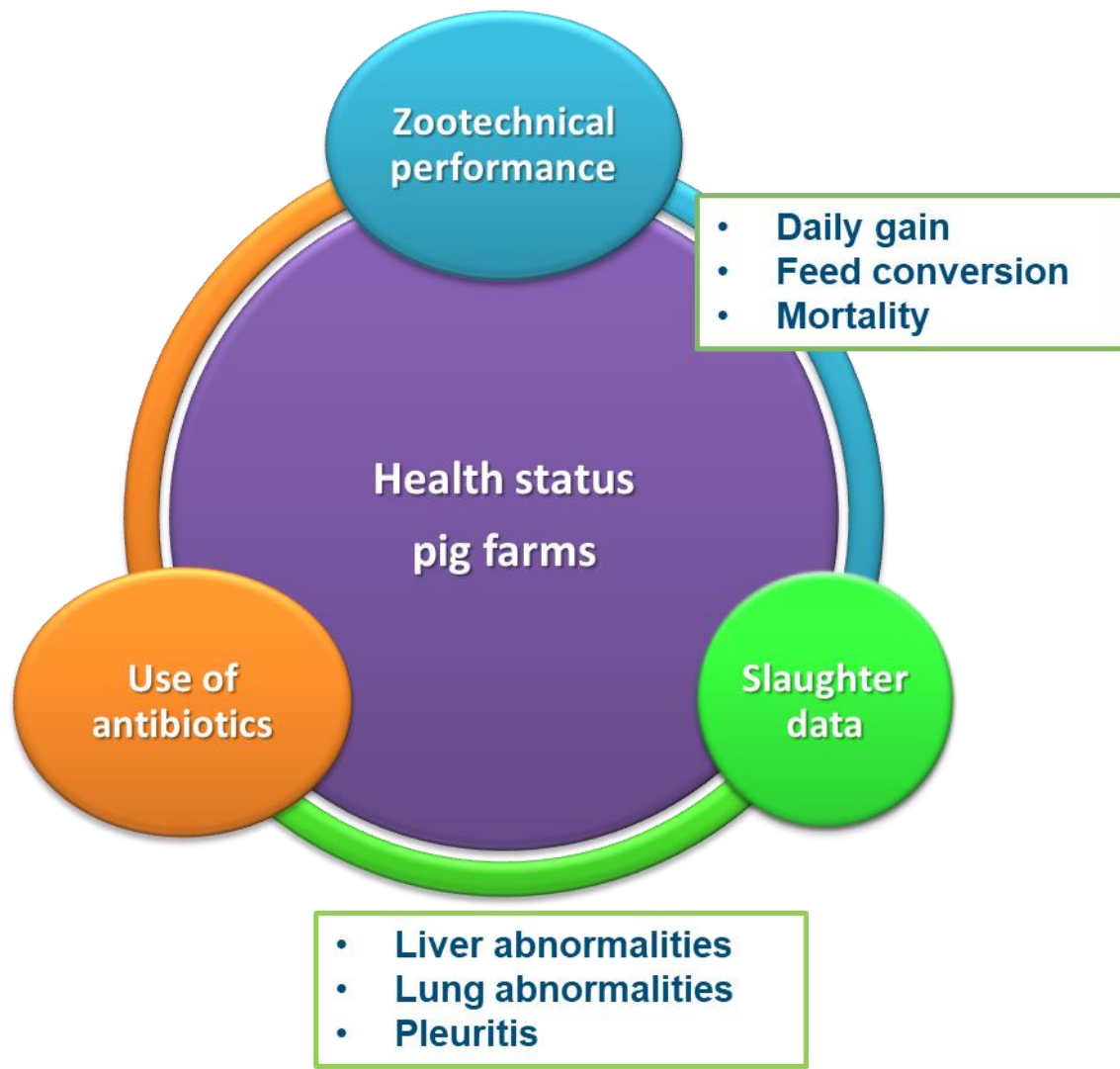


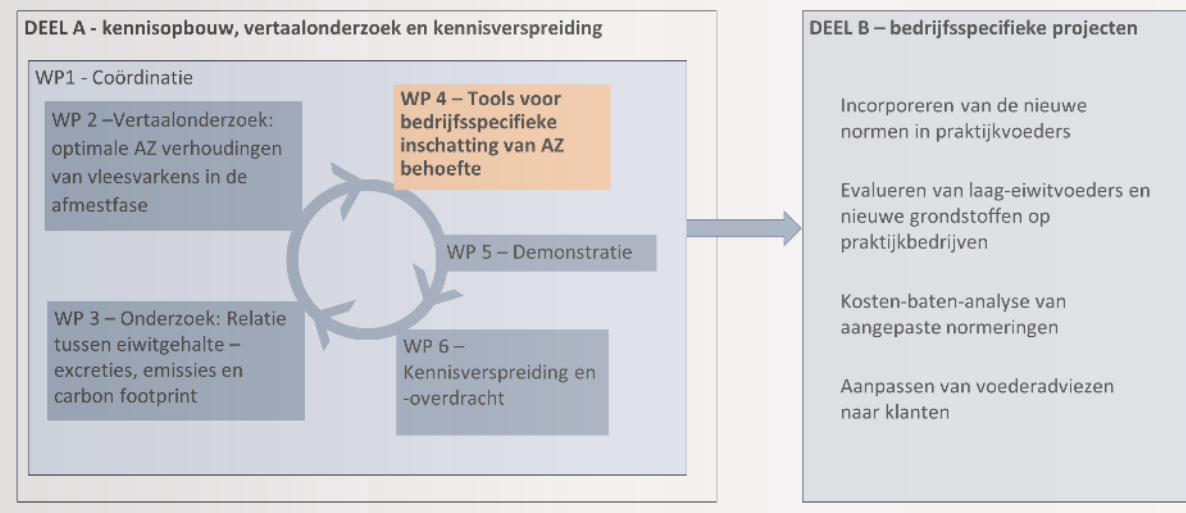


WP4 – Farm-specific AA requirement

1) Classification of pigs farms (growing-finishing pigs)

- Factors that influence performance and AA requirements
- Characteristics that can be estimated for practical farms

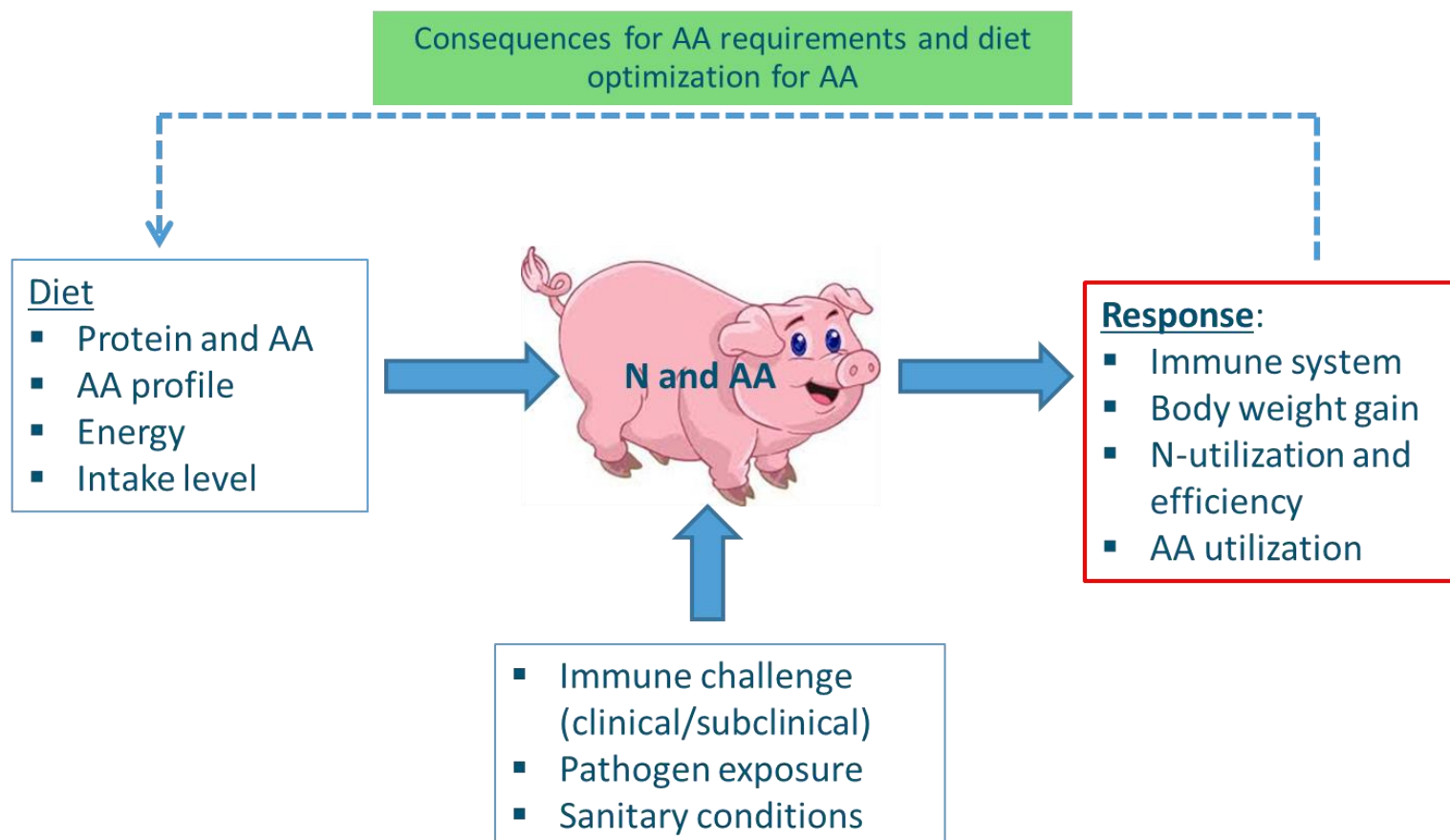




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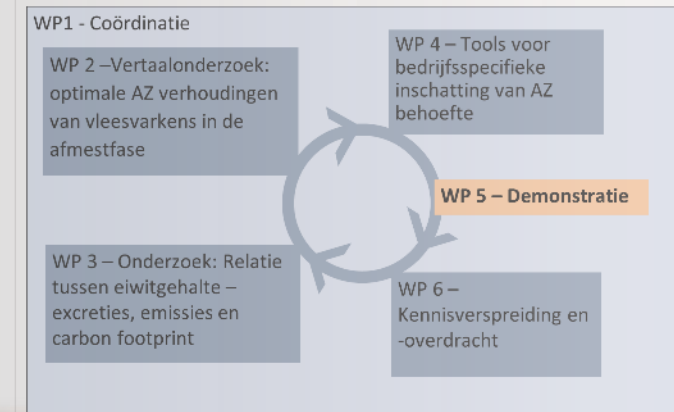


2) Tool to estimate AA requirements in relation to farm conditions

- Previous studies WUR/ILVO, scientific literature
- Quantification and integration in tool

3) Practical application and validation

- Identify and characterise farms of interest
- Calculate farm specific AA requirements
- Apply standard and farm specific AA recommendations



- Incorporeren van de nieuwe normen in praktijkvoerders
- Evalueren van laag-eiwitvoerders en nieuwe grondstoffen op praktijkbedrijven
- Kosten-baten-analyse van aangepaste normeringen
- Aanpassen van voederadviezen naar klanten

WP5 – Demonstration

In vivo feeding trial

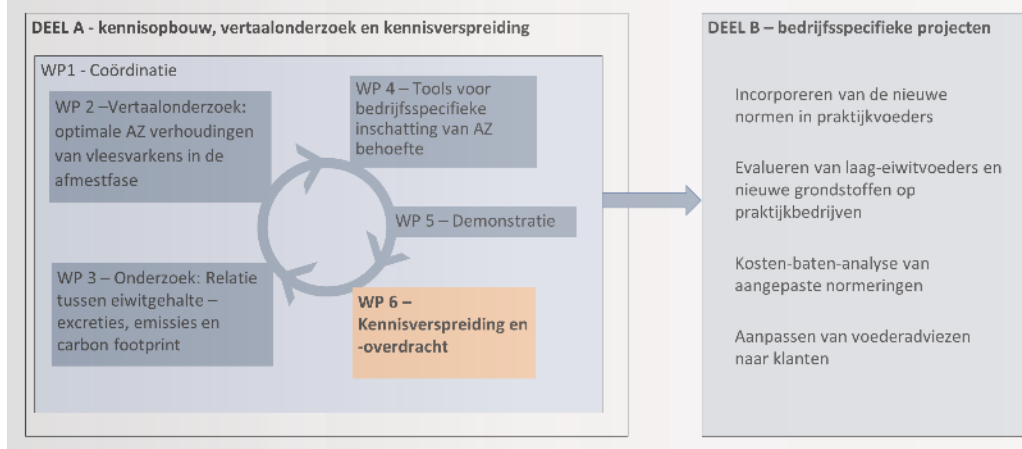
➔ Demonstrating that a low-protein diet (with adjusted AA profile) can result in (equally) good performance with reduced emissions and carbon footprint compared to standard feed

Measurements: growth performance, carcass quality

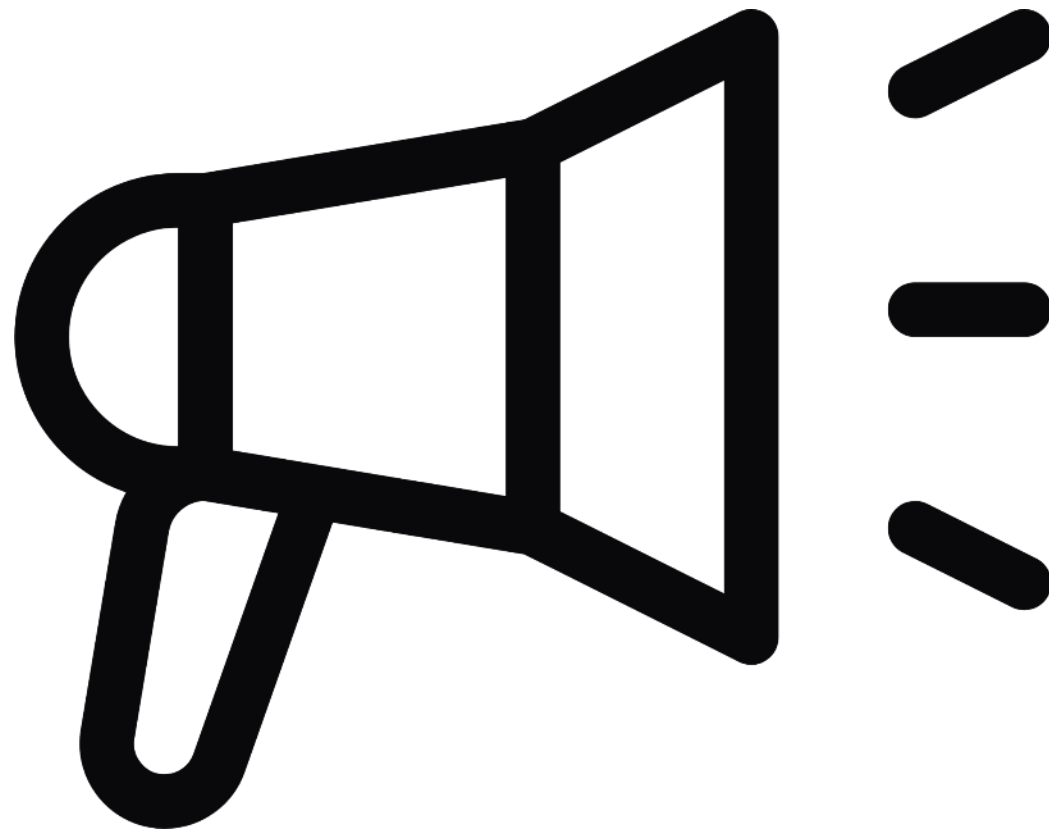
Calculation: N-efficiency, carbon footprint

Estimation: NH₃ emission





WP6 – Disseminatie



- Workshops
- Newsletters and email
- Trade press
- Presentations at ILVO/BFA events
- Scientific papers

Thank you

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ILVO

 **WAGENINGEN**
UNIVERSITY & RESEARCH

 **BFA** Belgian
Feed
Association

