



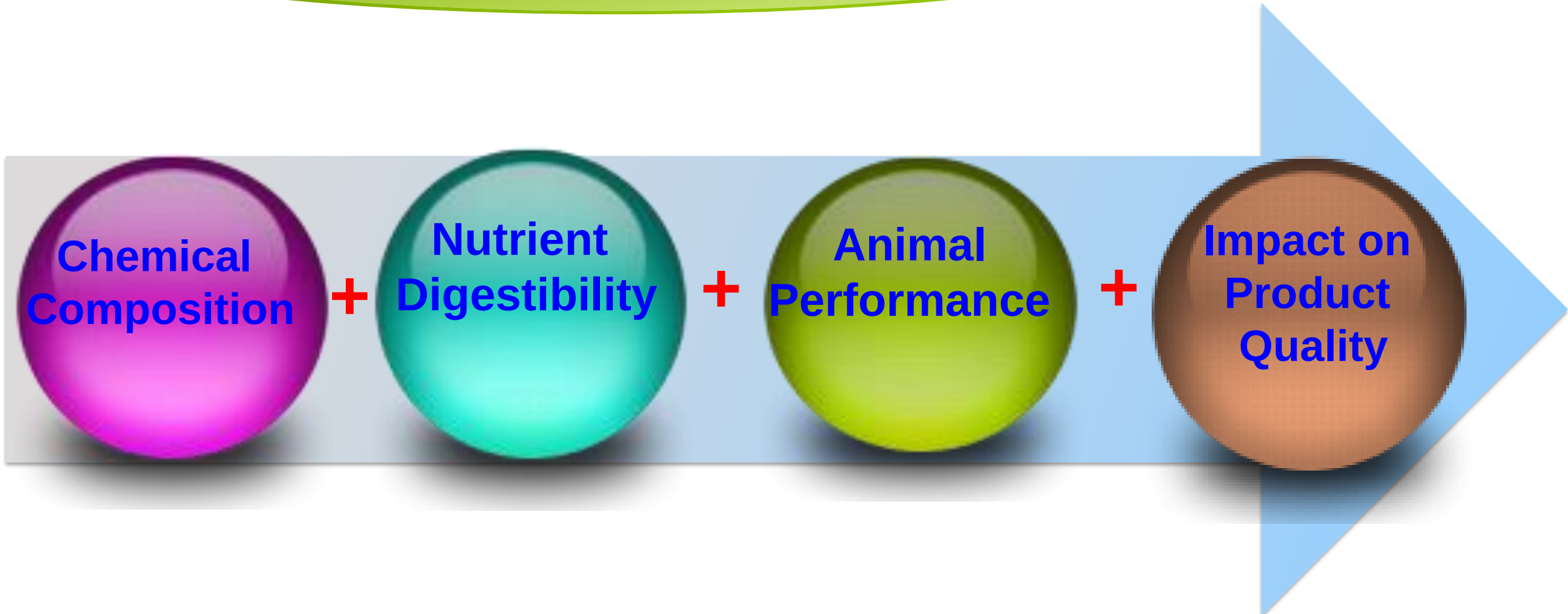
Hybrid rye for gestating and lactating sows

Molly L. McGhee and Hans H. Stein
University of Illinois Urbana-Champaign



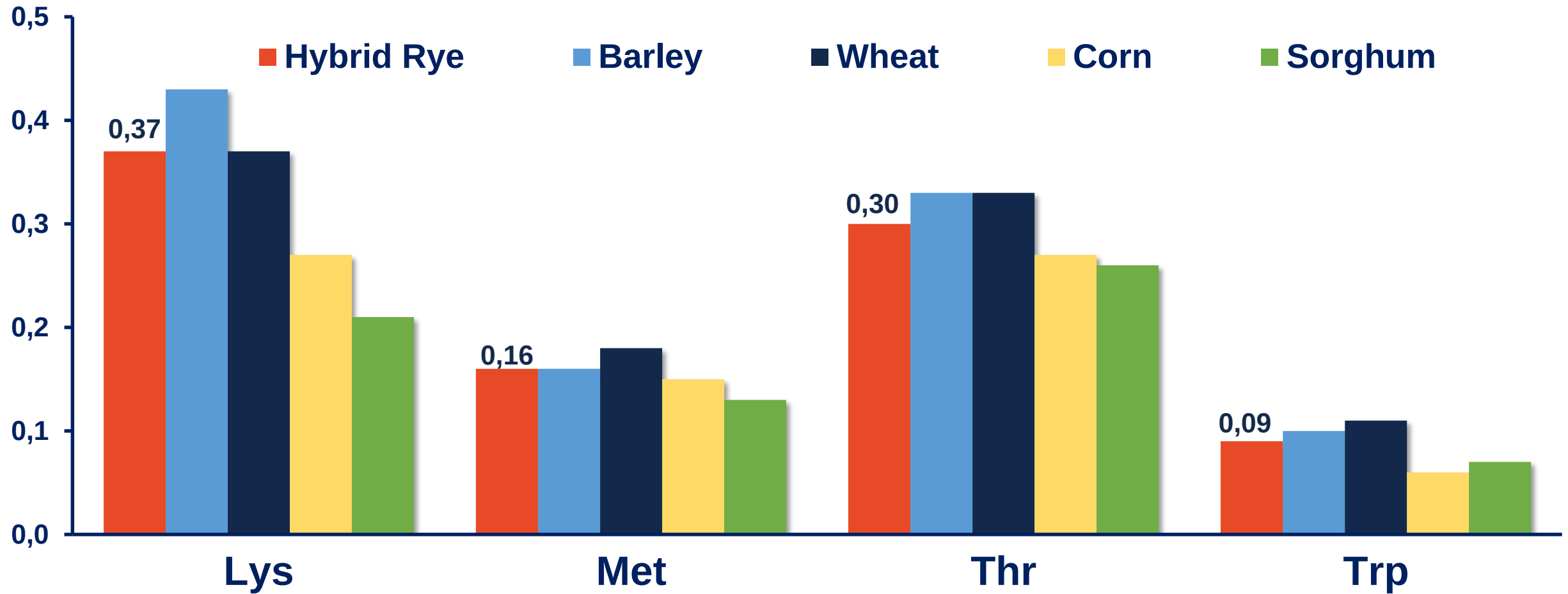
Molly McGhee

Feed Ingredient Evaluation



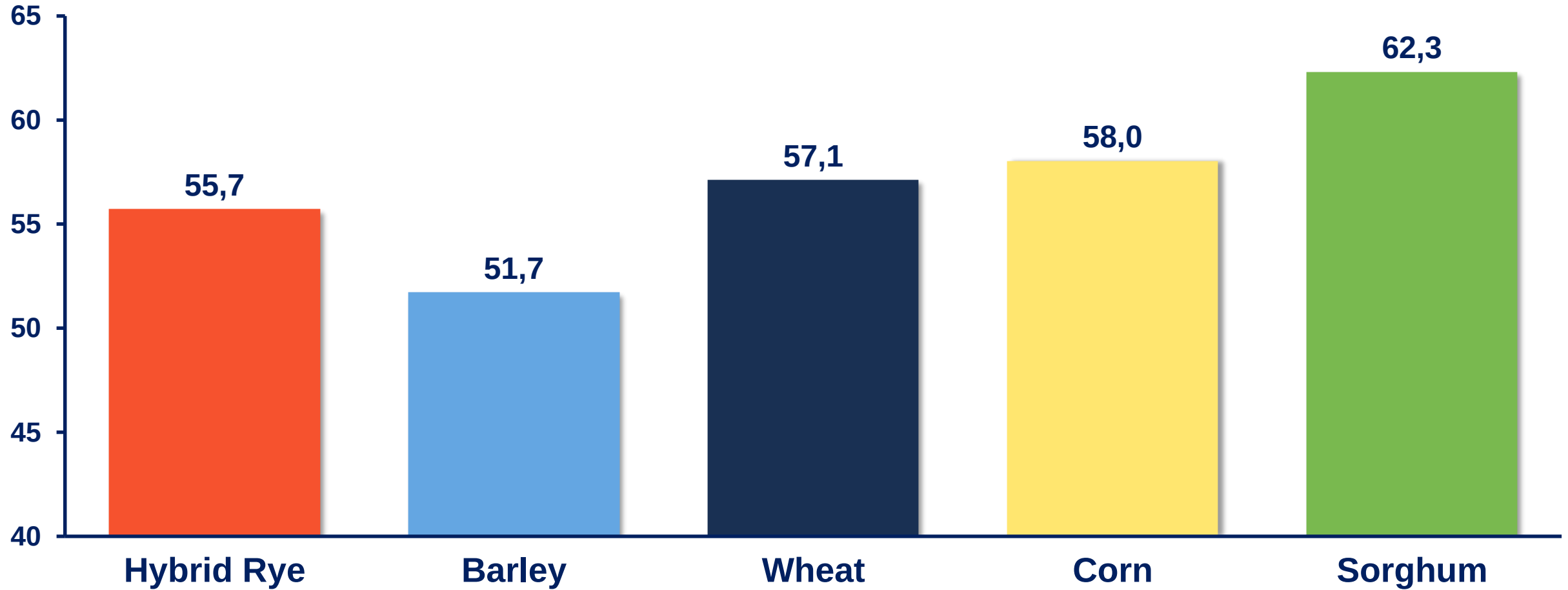
As-is basis.

Amino acids, %



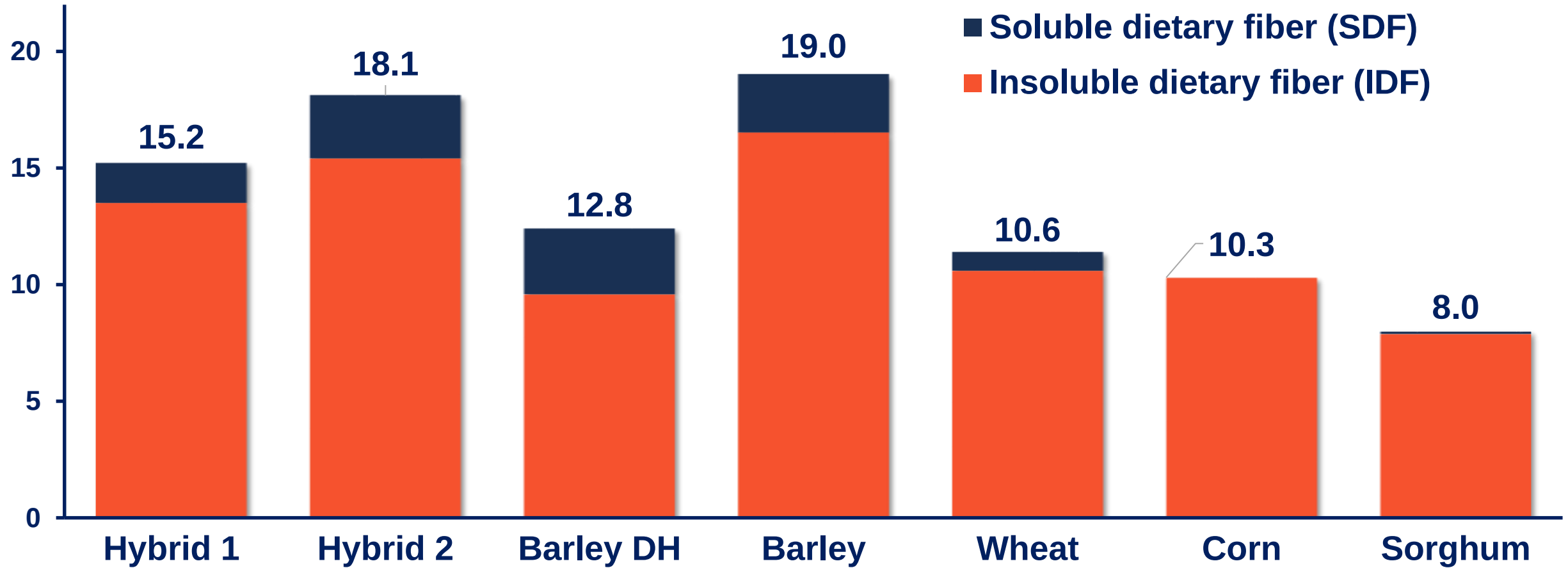
As-is basis.

Starch, %



As-is basis.

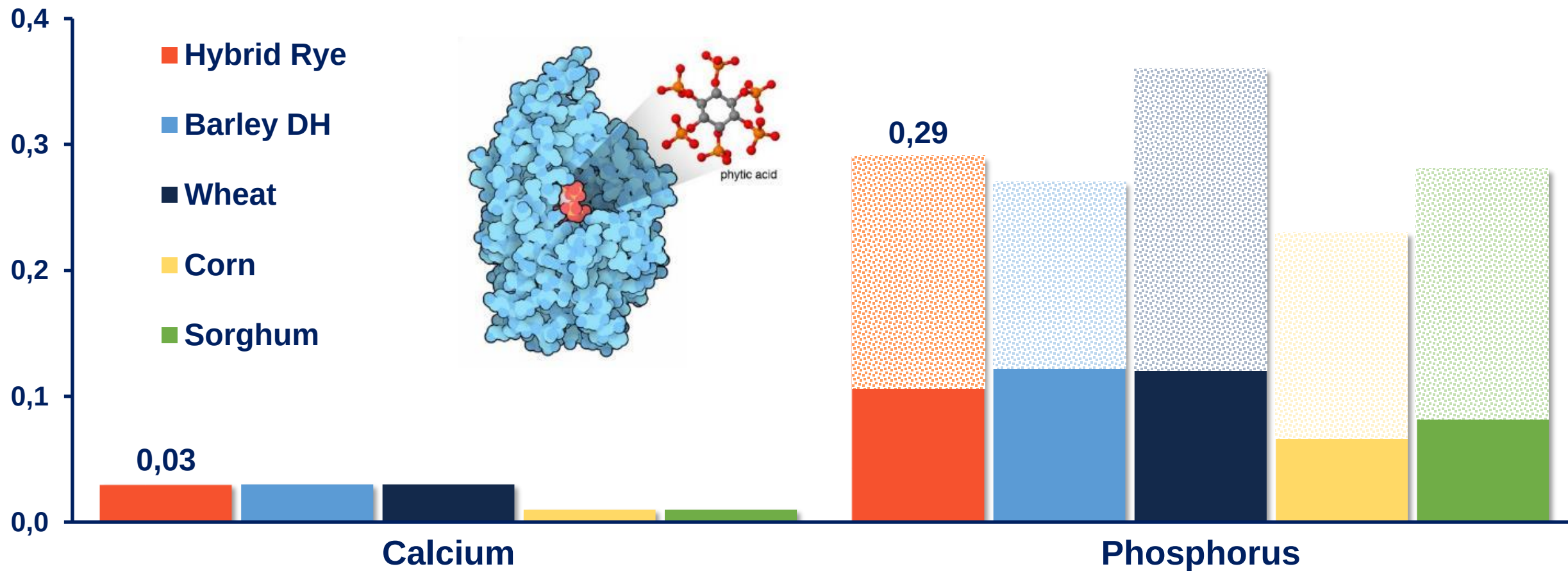
Total dietary fiber, %



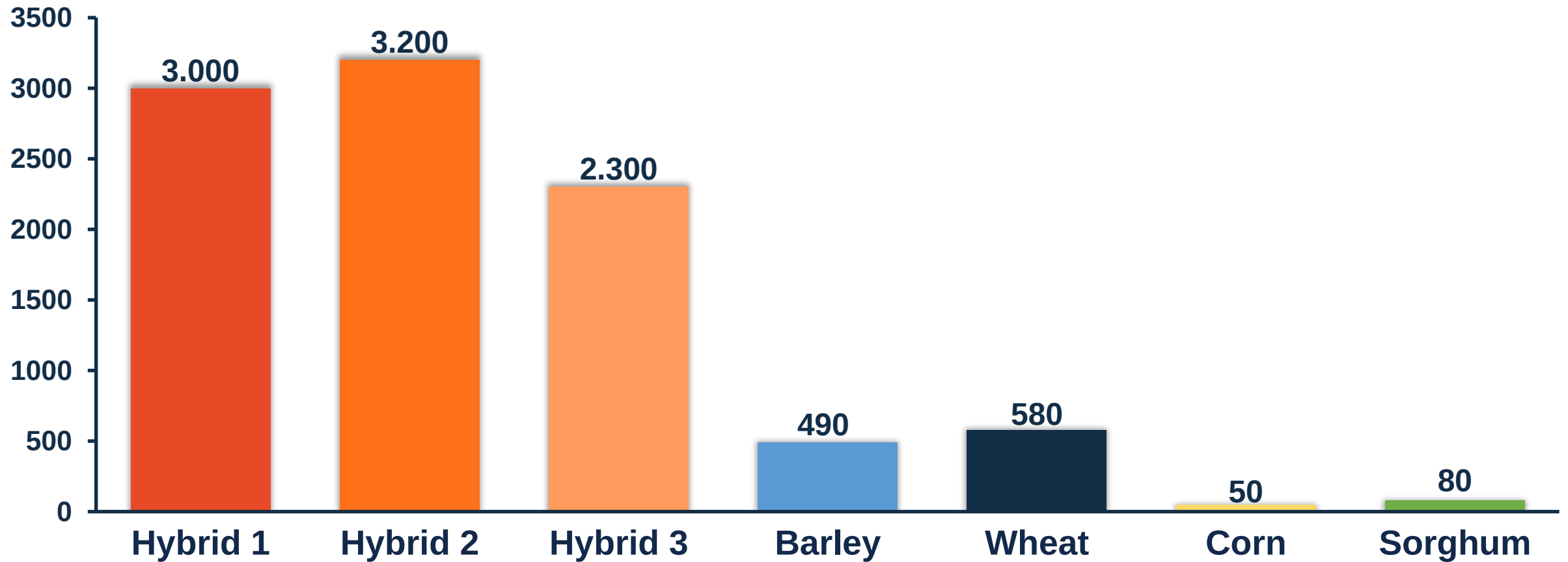
As-is basis.

Data are from 2016 crop.

Minerals, %



Intrinsic phytase, FTU



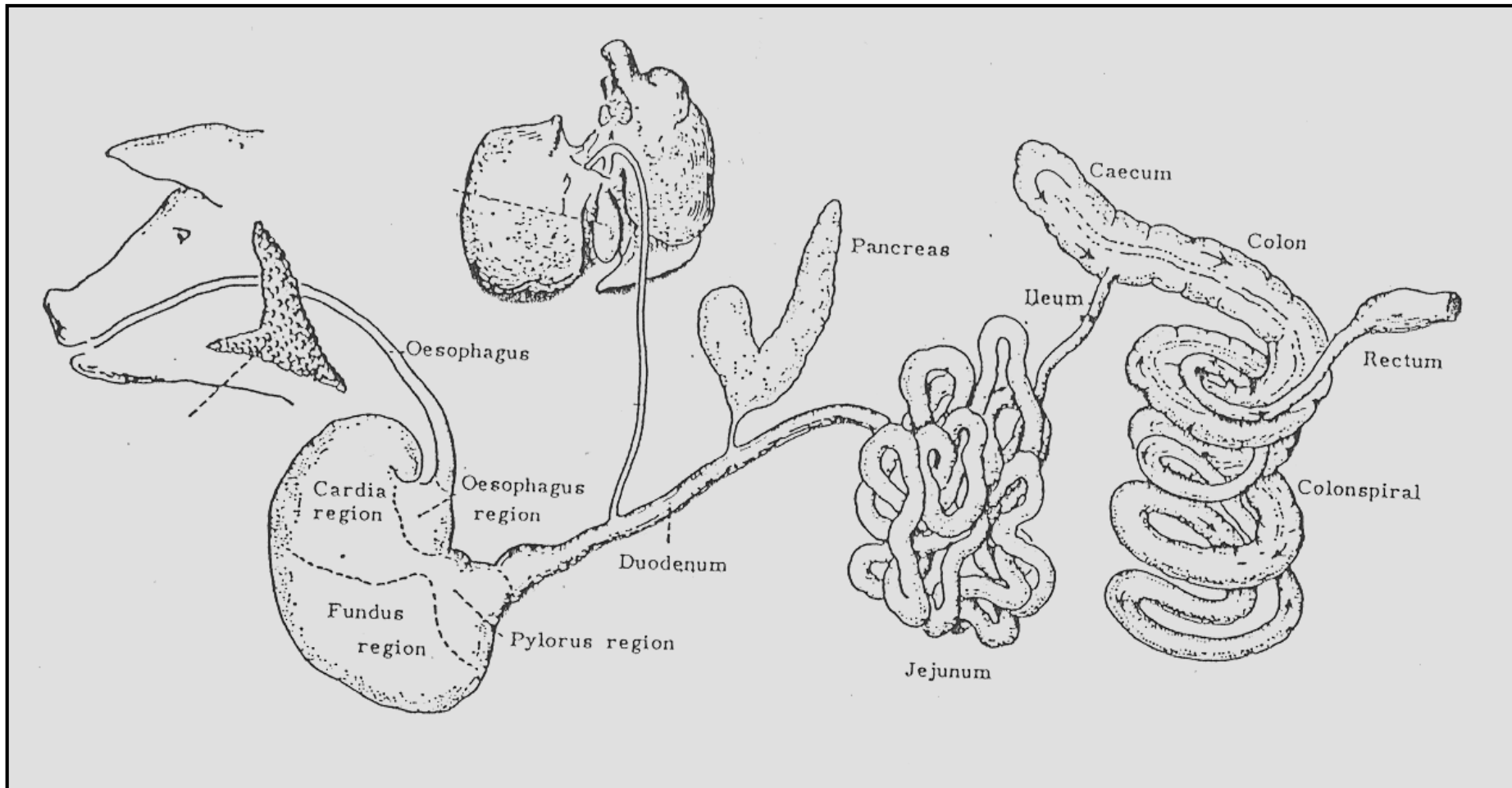
Metabolism Crate



Total Tract Digestibility



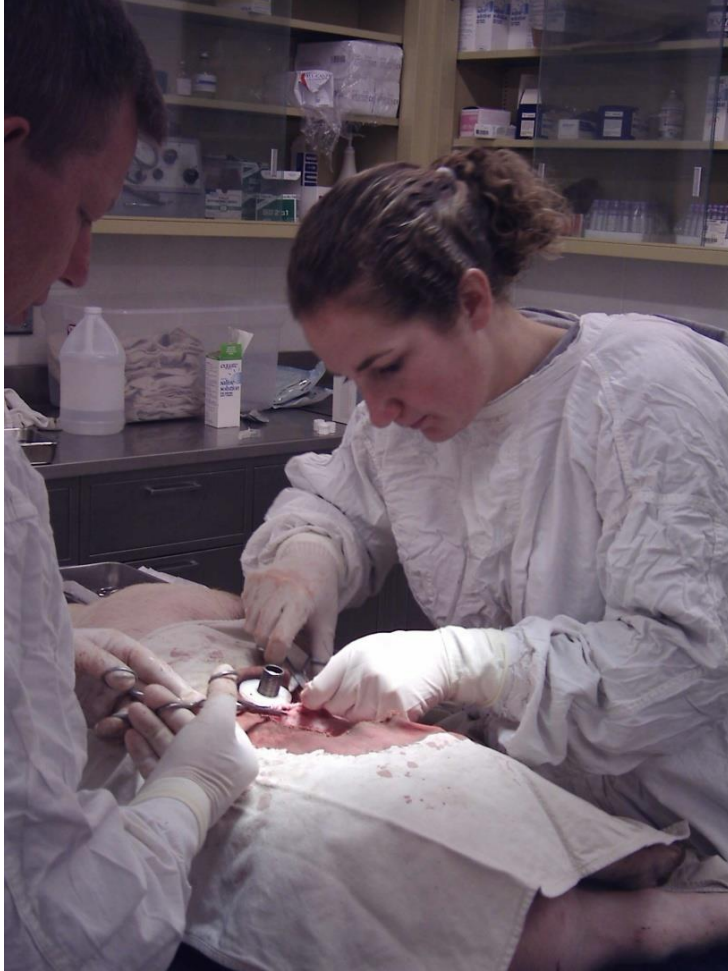
Ileal Digestibility In Pigs



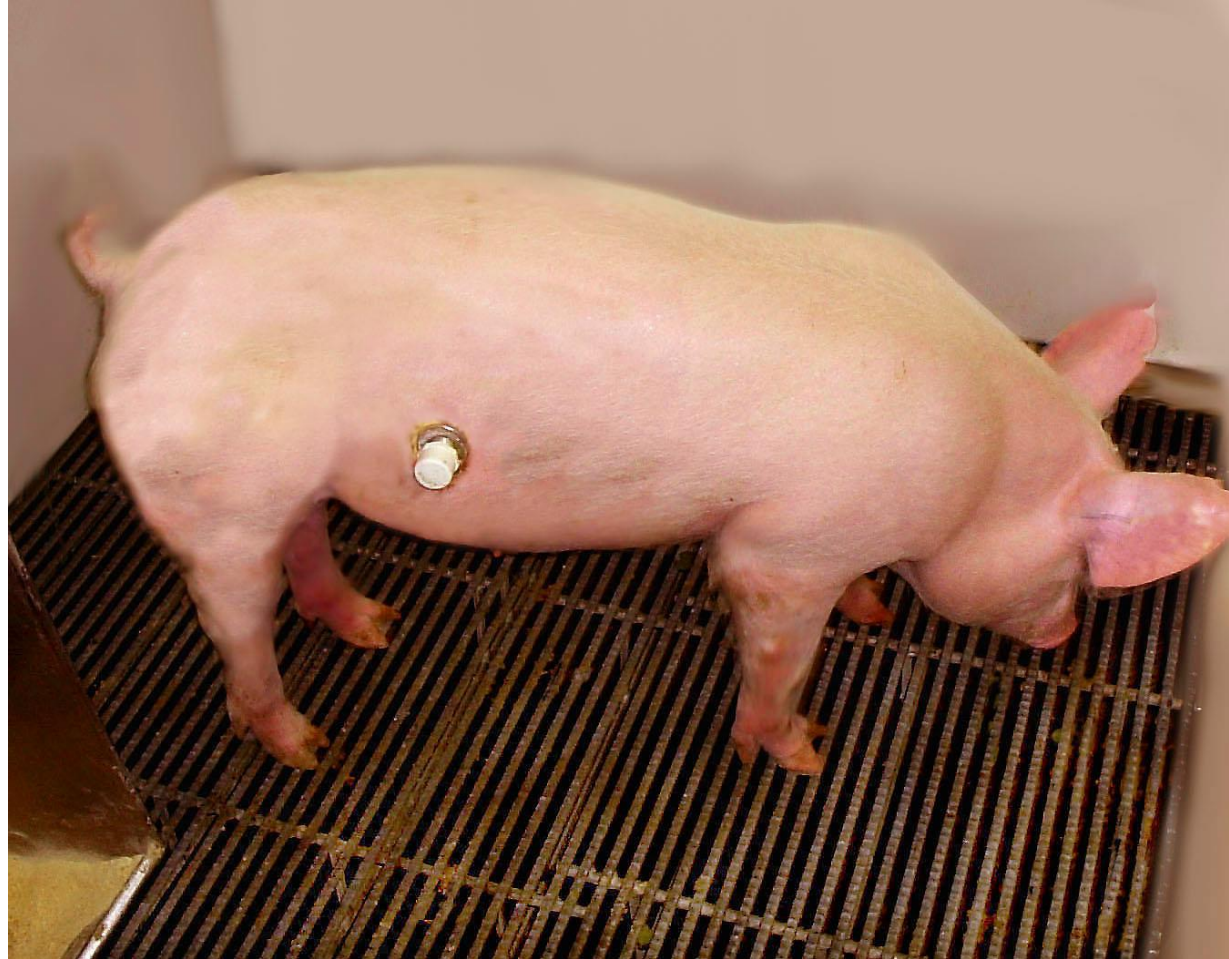
T-Cannula



Installing a Cannula



Ready for collection



Open Cannula



Bag full of Digesta



Amino Acid Digestibility



SID of Lysine, %

$P < 0.05$

Hybrid 1

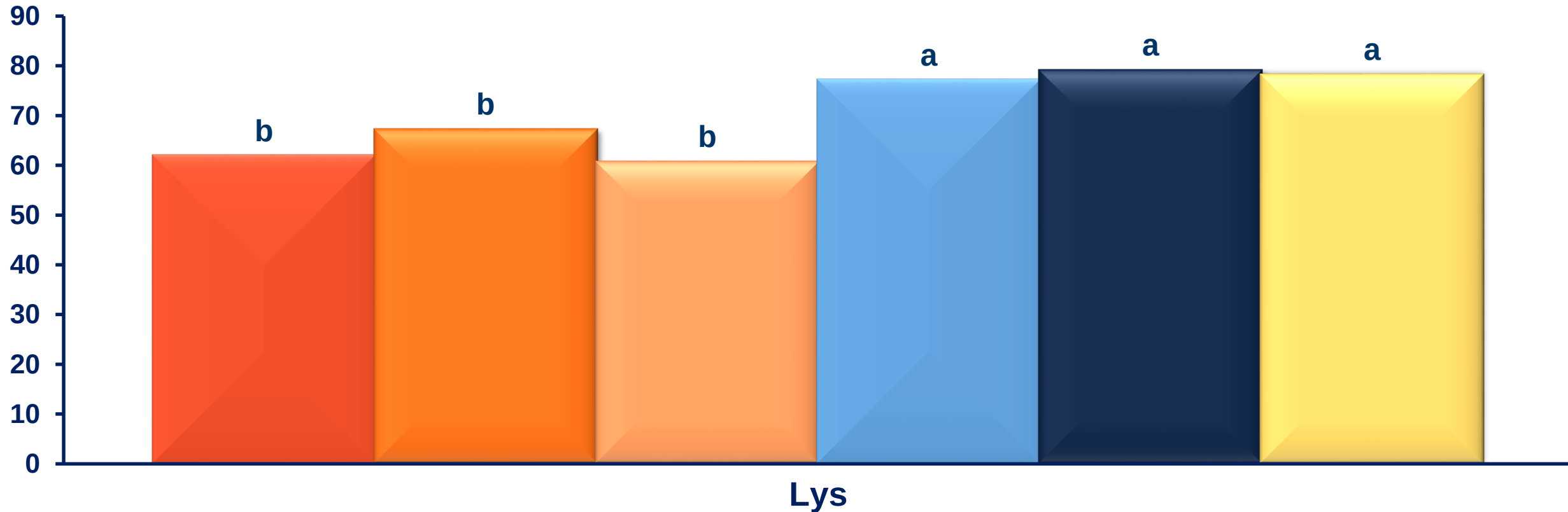
Hybrid 2

Hybrid 3

Barley DH

Wheat

Corn



SID of Methionine, %

$P < 0.05$

Hybrid 1

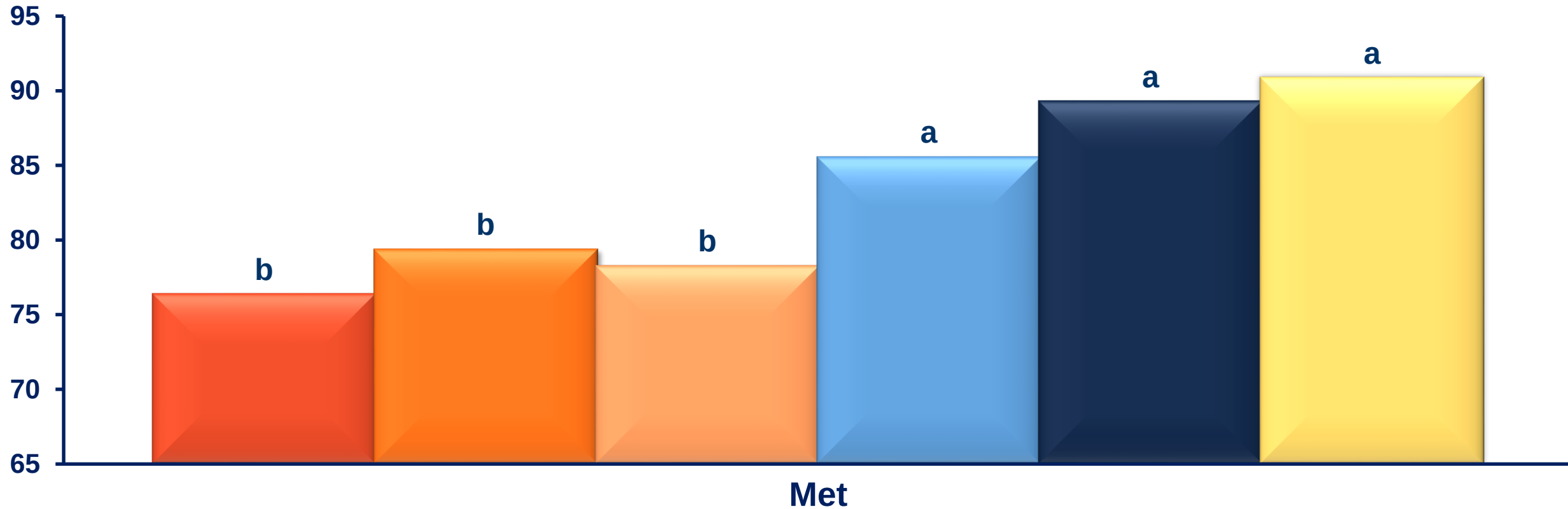
Hybrid 2

Hybrid 3

Barley DH

Wheat

Corn



SID of Threonine, %

$P < 0.05$

Hybrid 1

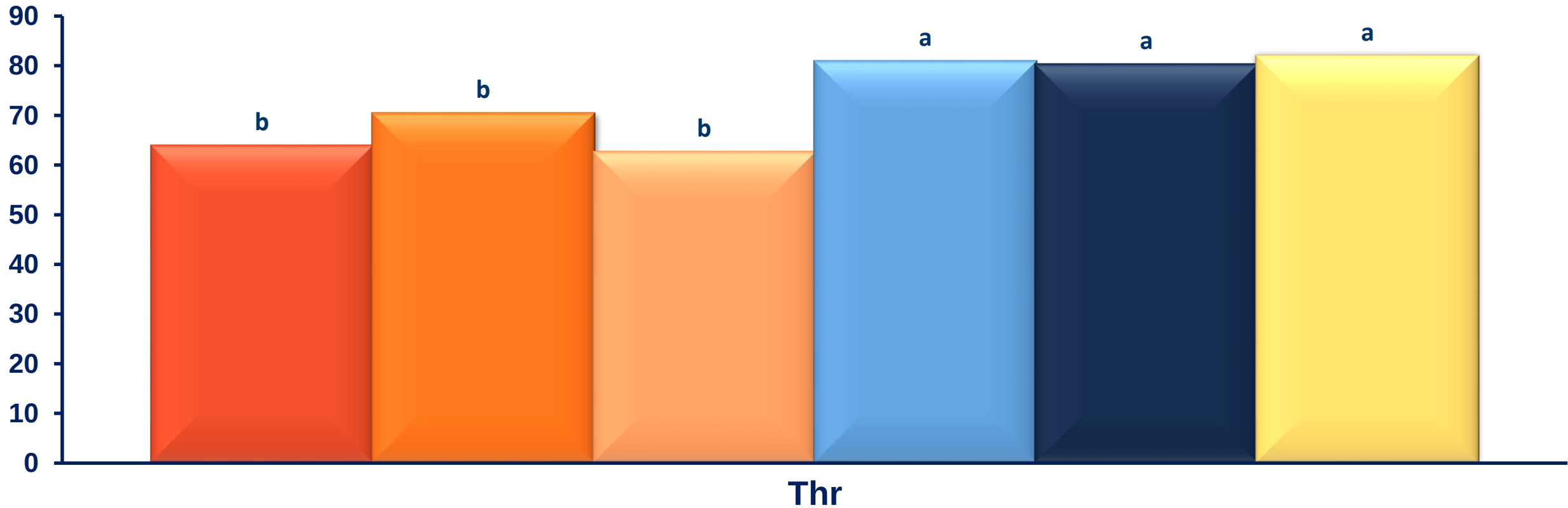
Hybrid 2

Hybrid 3

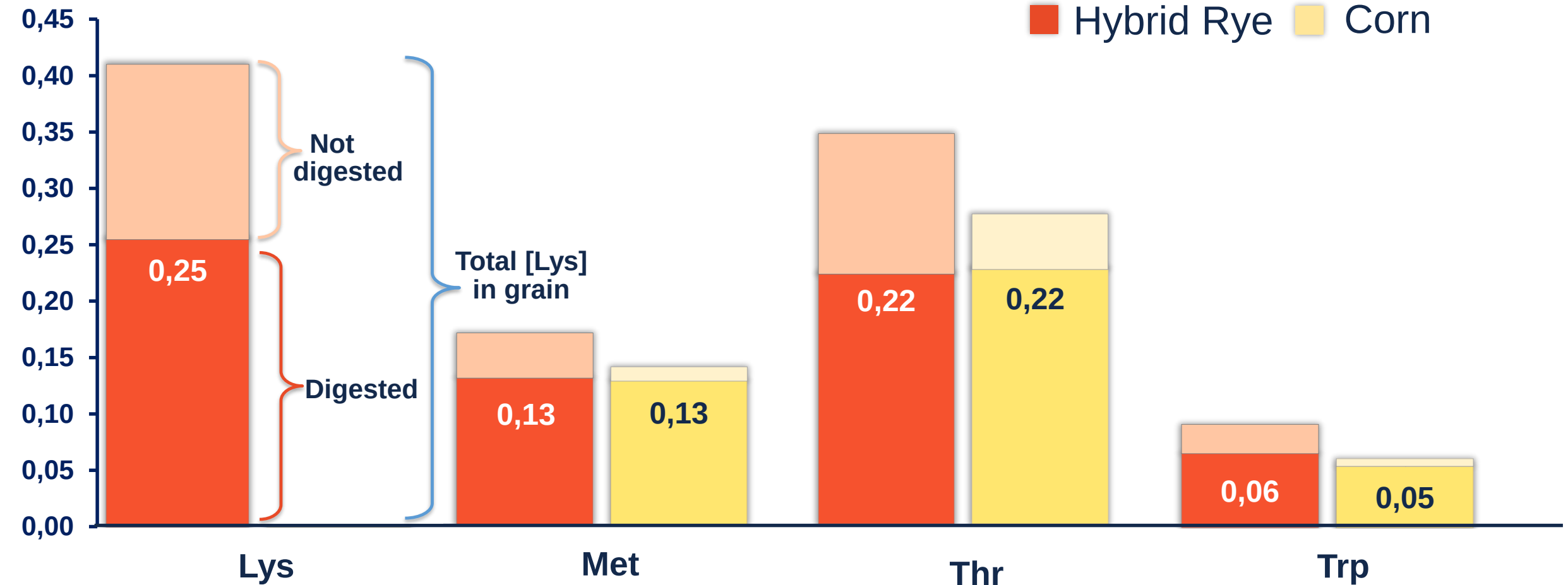
Barley DH

Wheat

Corn



Concentration of digestible AA, %



Phosphorus digestibility



P-digestibility

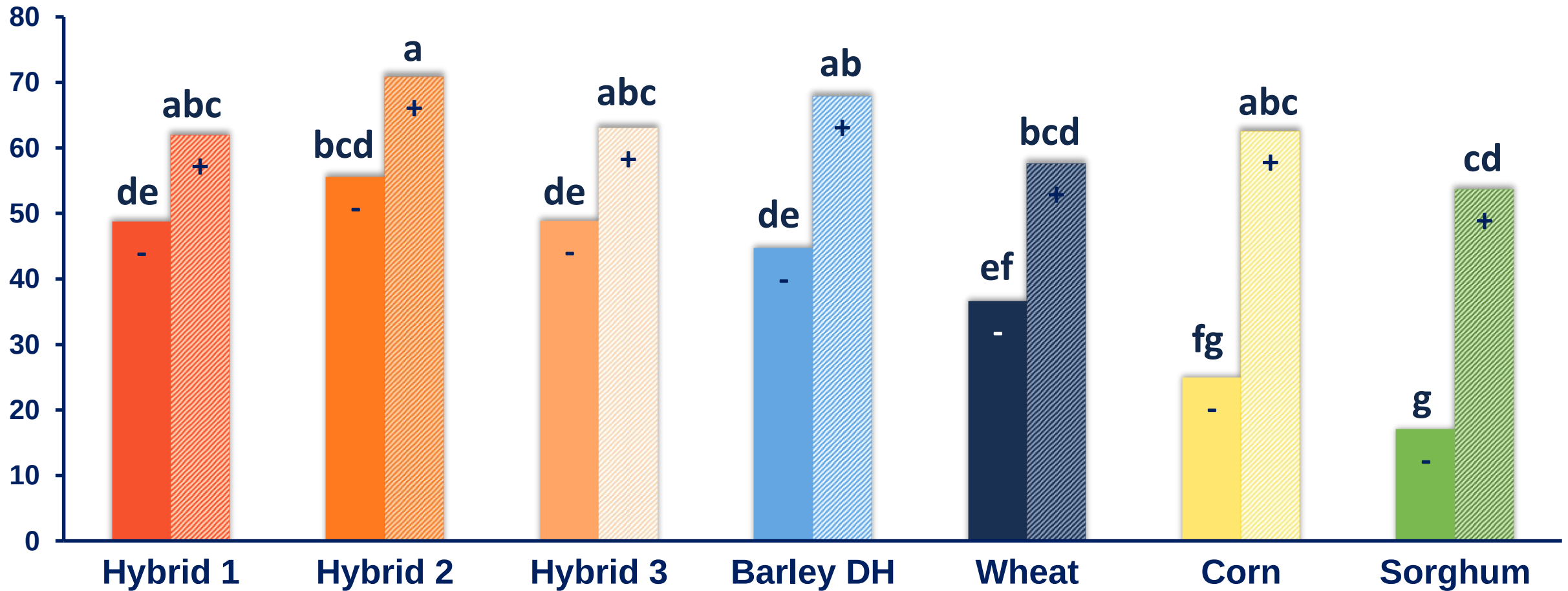


STTD of P, %

Grain*Phytase $P < 0.001$

Grain $P < 0.001$

Phytase $P < 0.001$

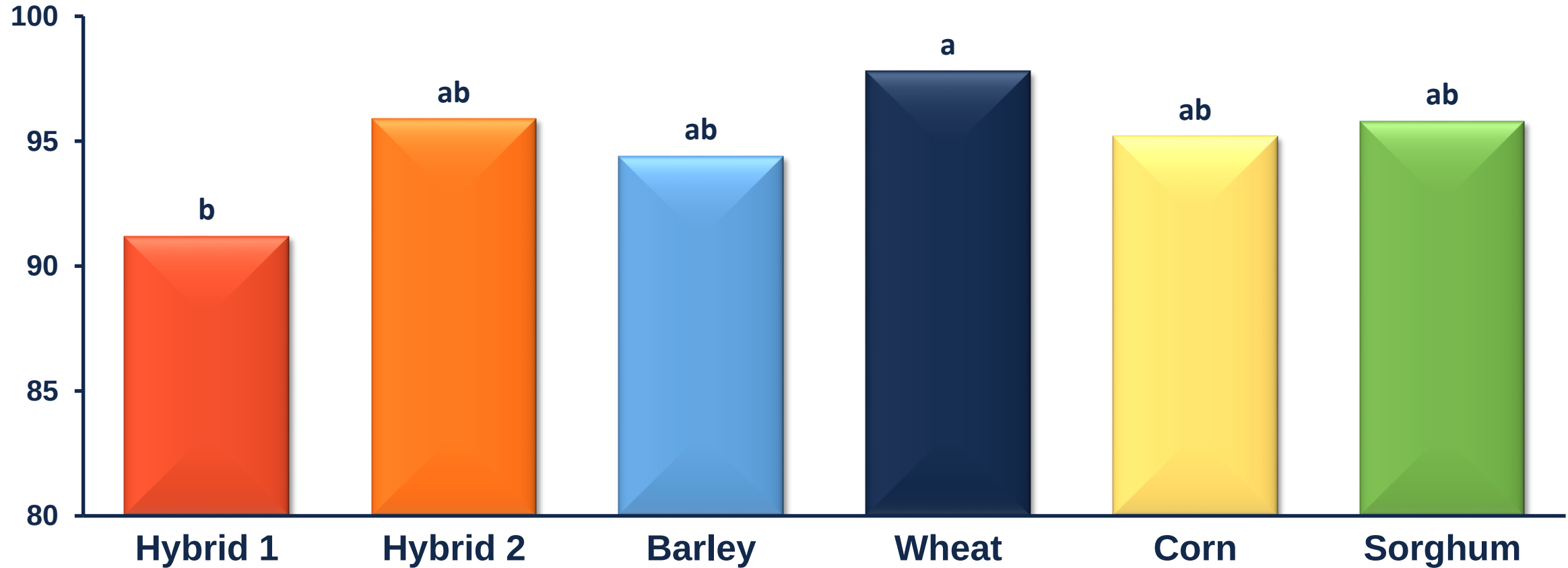


Starch Digestibility



AID of starch, %

$P < 0.05$

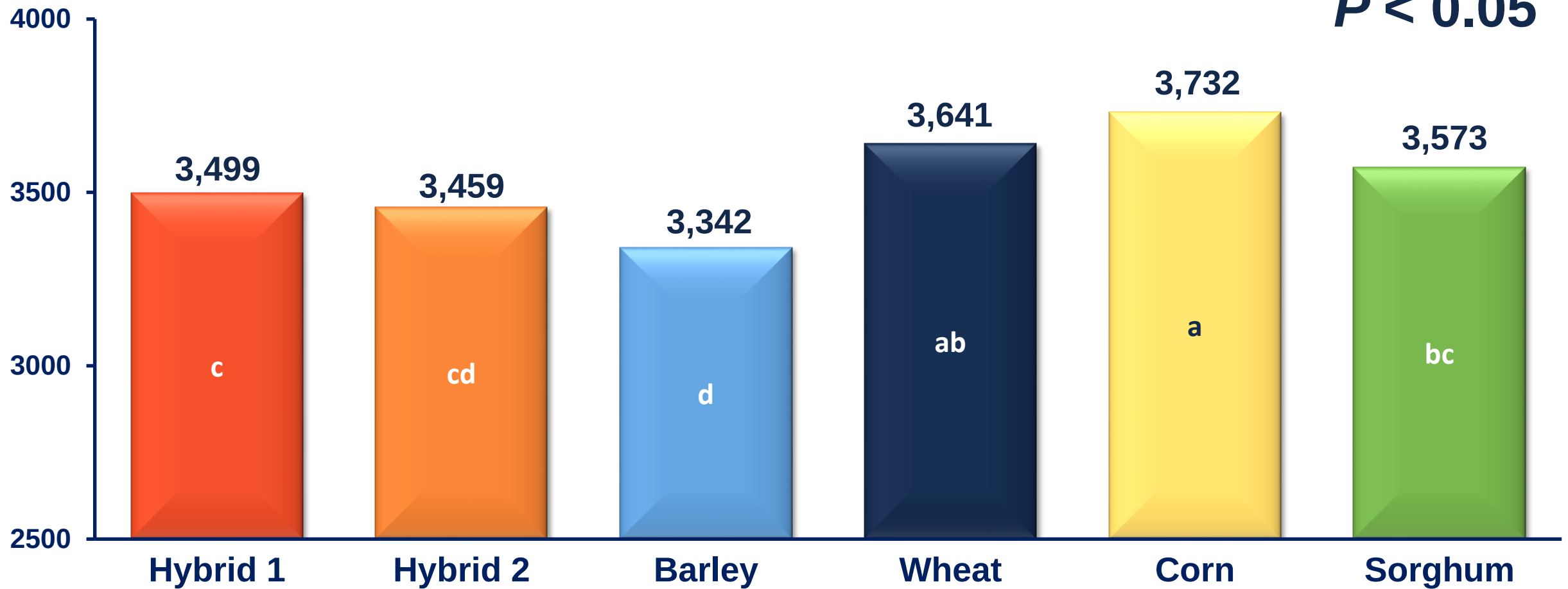


ATTD of Total Dietary Fiber

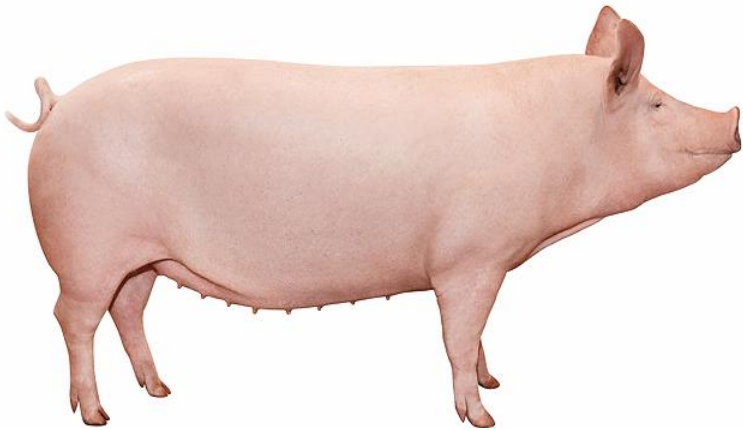
Grain	ATTD of TDF, %
Hybrid 1	66.1 ^a
Hybrid 2	70.2 ^a
Barley	55.4 ^b
Wheat	57.4 ^b
Corn	56.5 ^b
Sorghum	55.2 ^b

Metabolizable energy, kcal/kg DMB

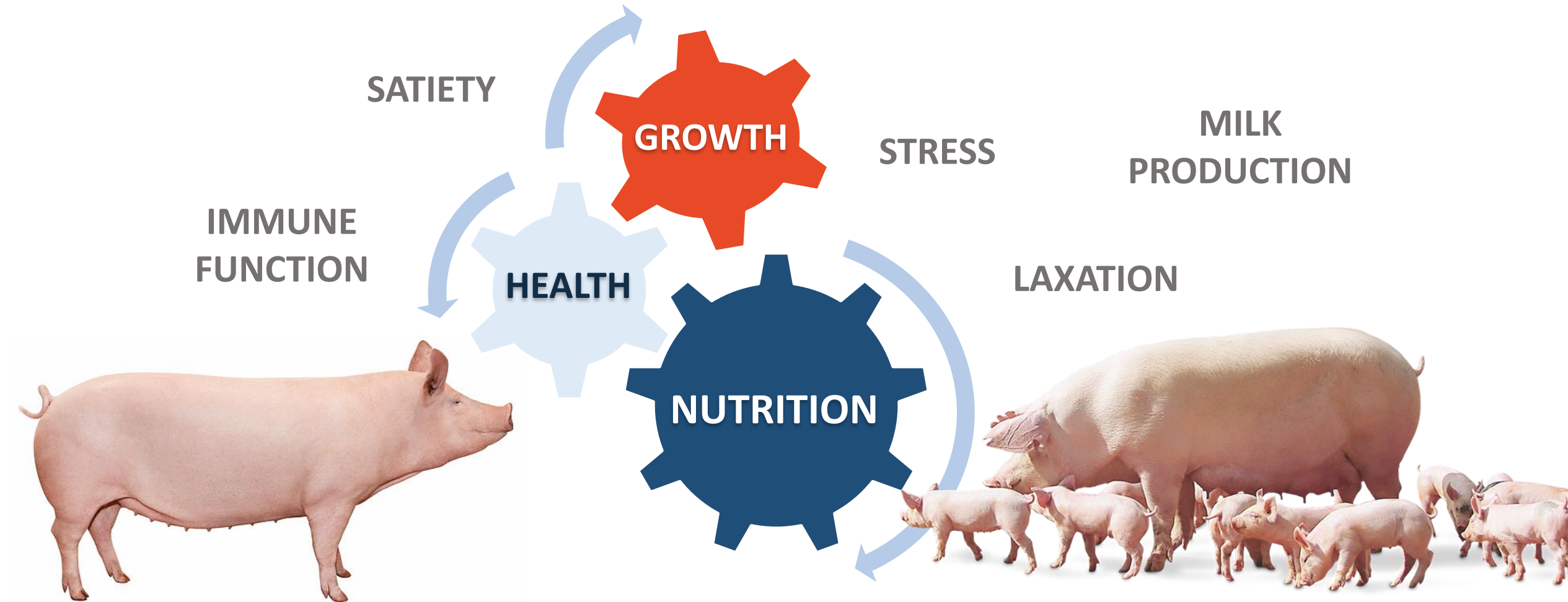
$P < 0.05$



Hybrid rye for sows



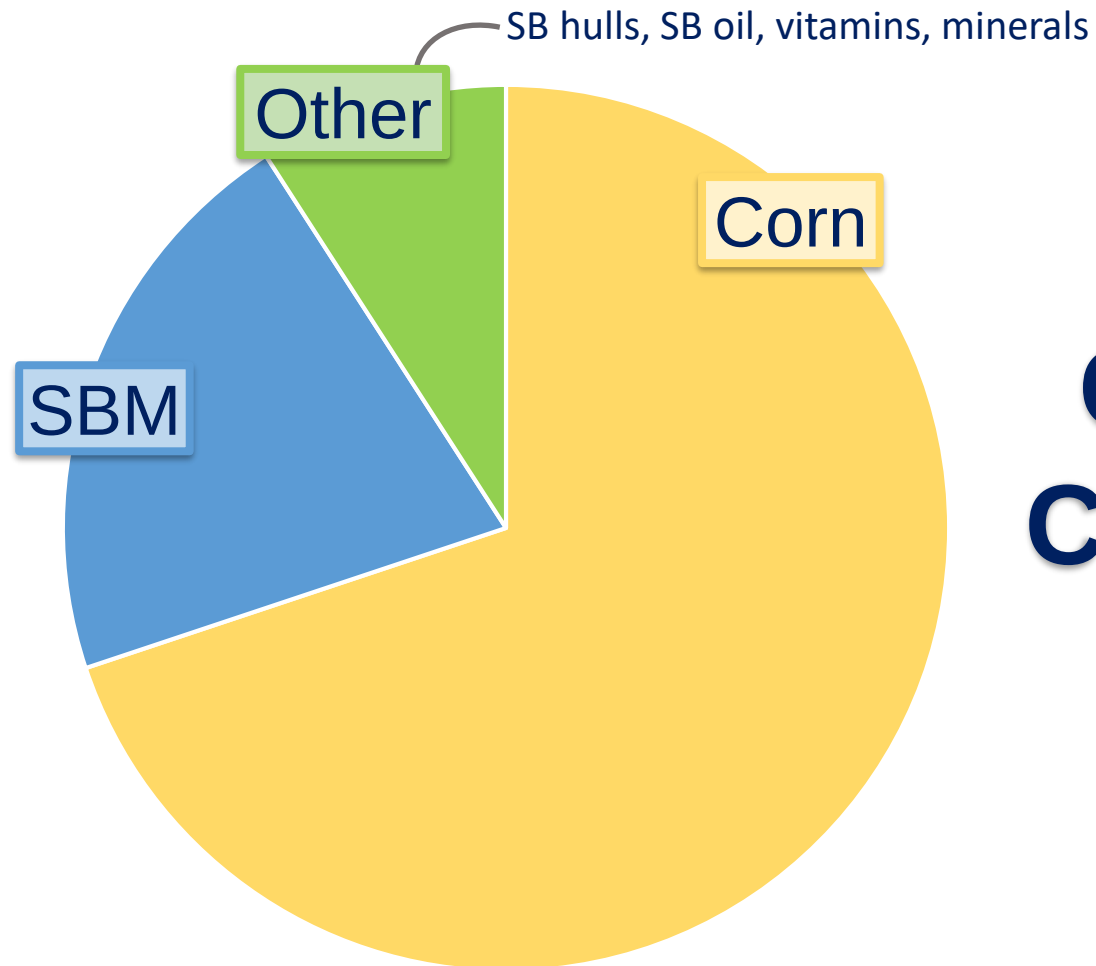
Hybrid rye for sows





Sow dietary treatments

FORMULATED FOR GESTATION + LACTATION

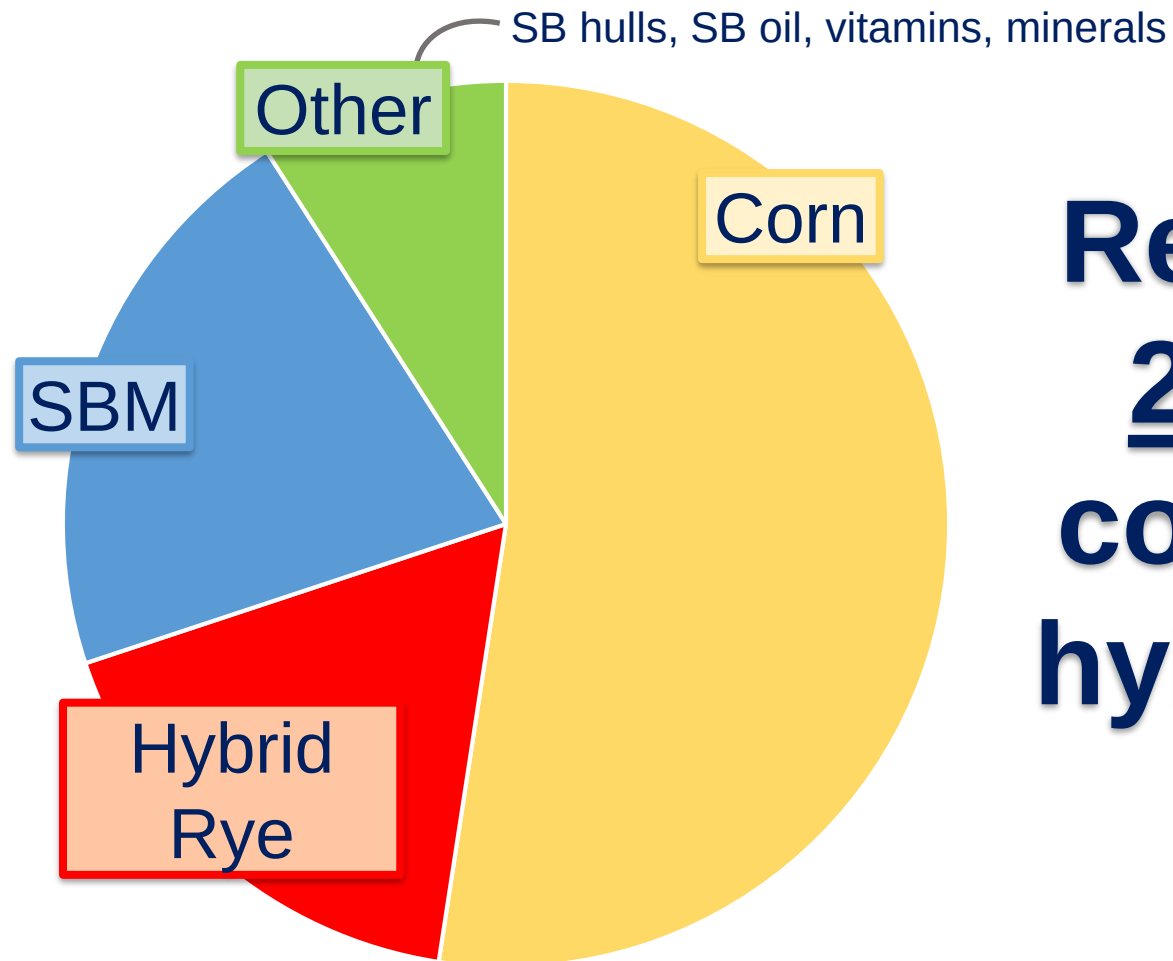


**Control:
Corn/SBM**



Sow dietary treatments

FORMULATED FOR GESTATION + LACTATION

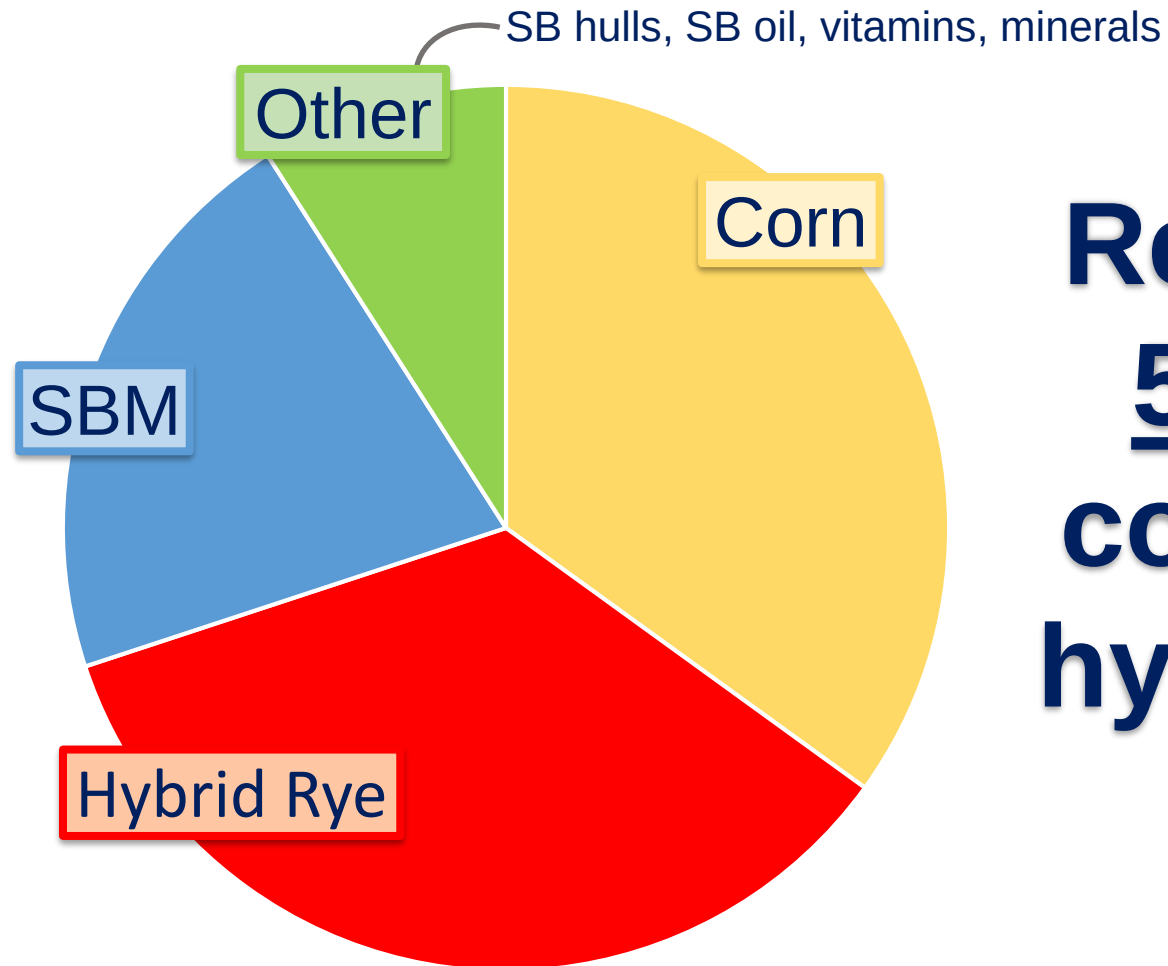


**Replaces
25% of
corn with
hybrid rye**



Sow dietary treatments

FORMULATED FOR GESTATION + LACTATION

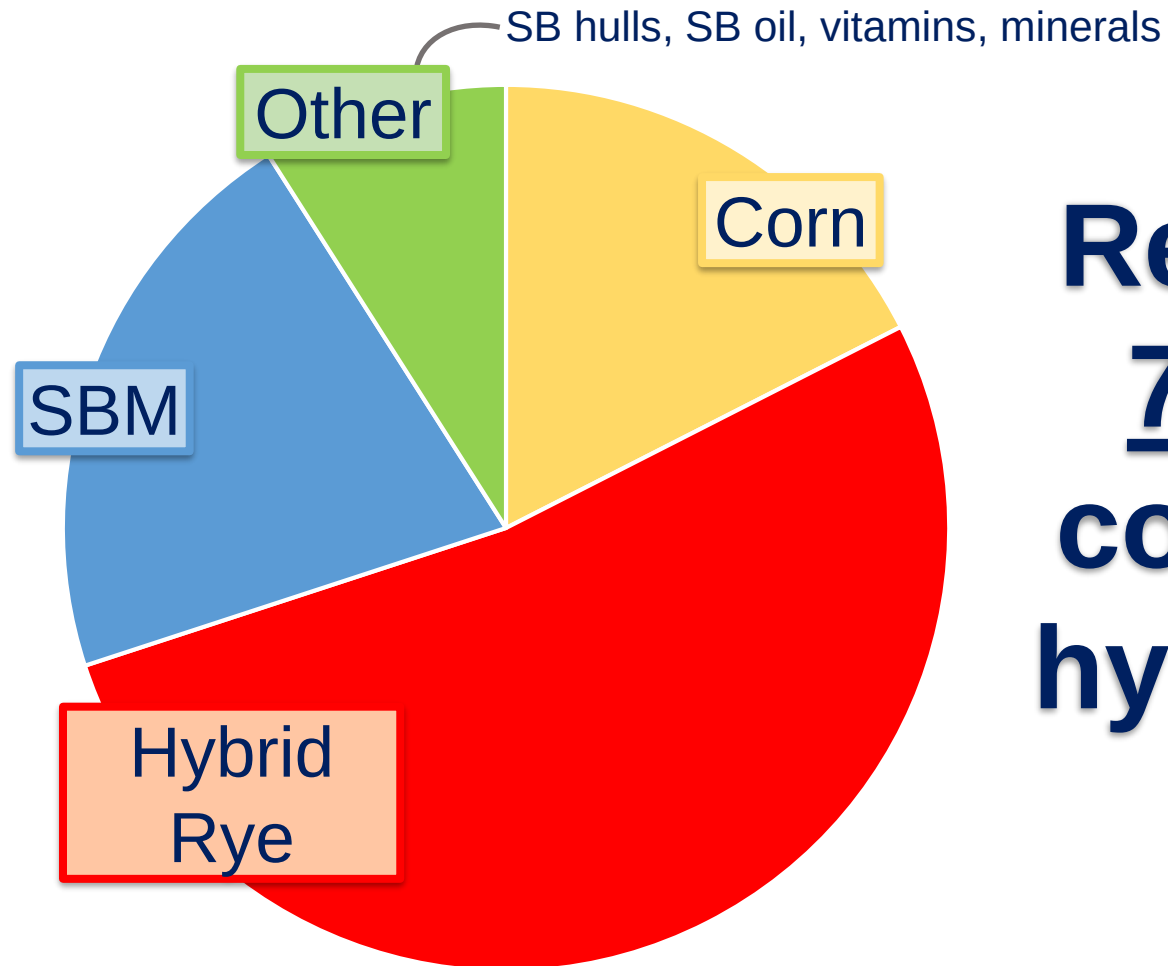


**Replaces
50% of
corn with
hybrid rye**



Sow dietary treatments

FORMULATED FOR GESTATION + LACTATION



**Replaces
75% of
corn with
hybrid rye**

Methods



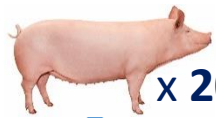
Body weights: Sows and/or piglets



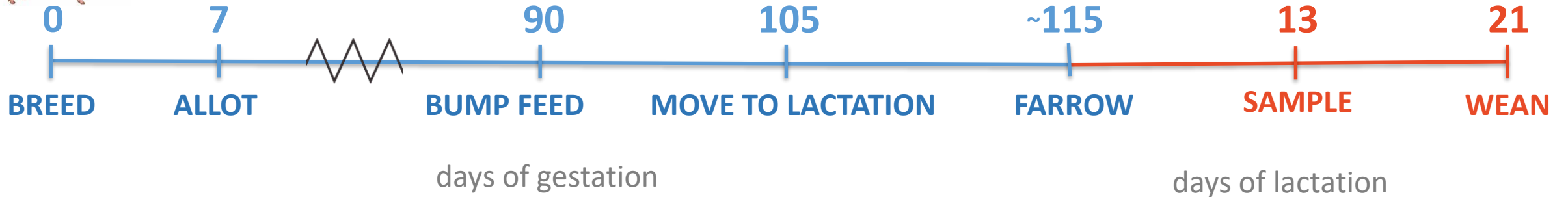
Serum: IgG, IgA, IL-1 β , IL-6, TNF- α



Milk: IgG, IgA, SCC, MUN, fat, protein, lactose

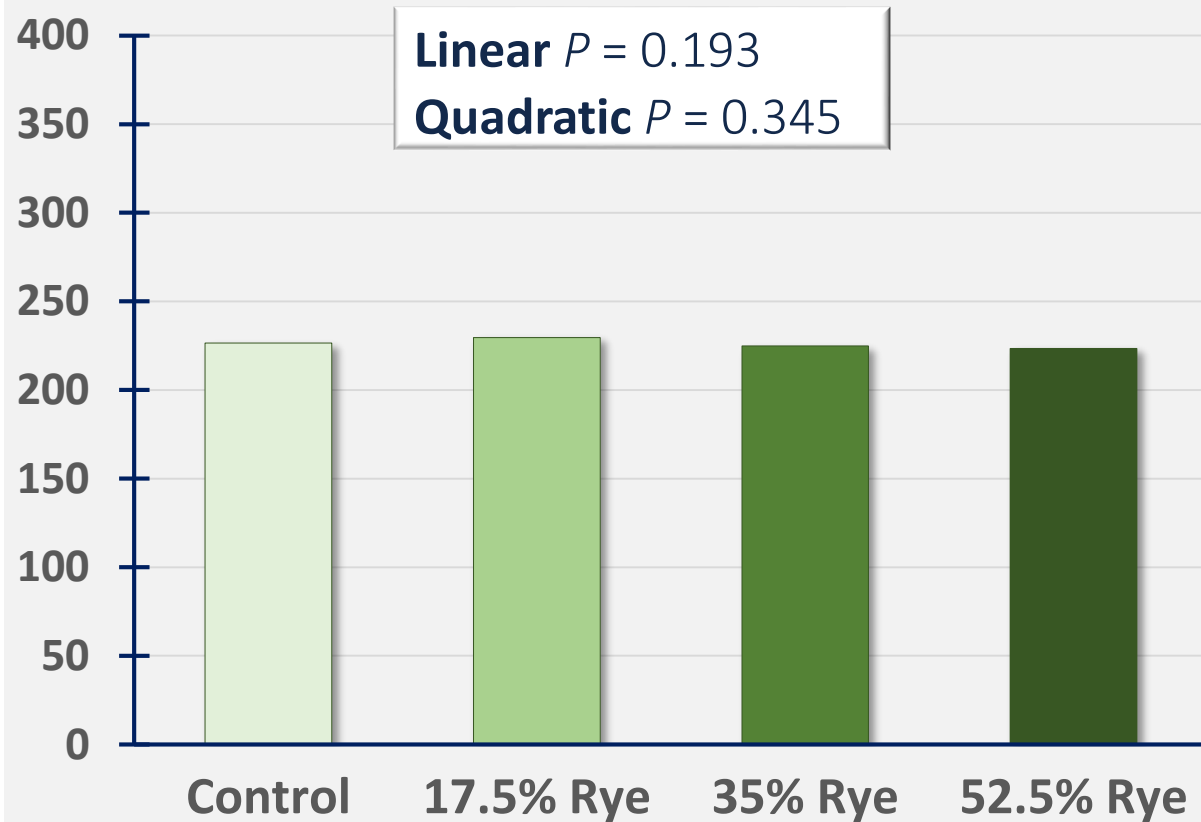


x 200

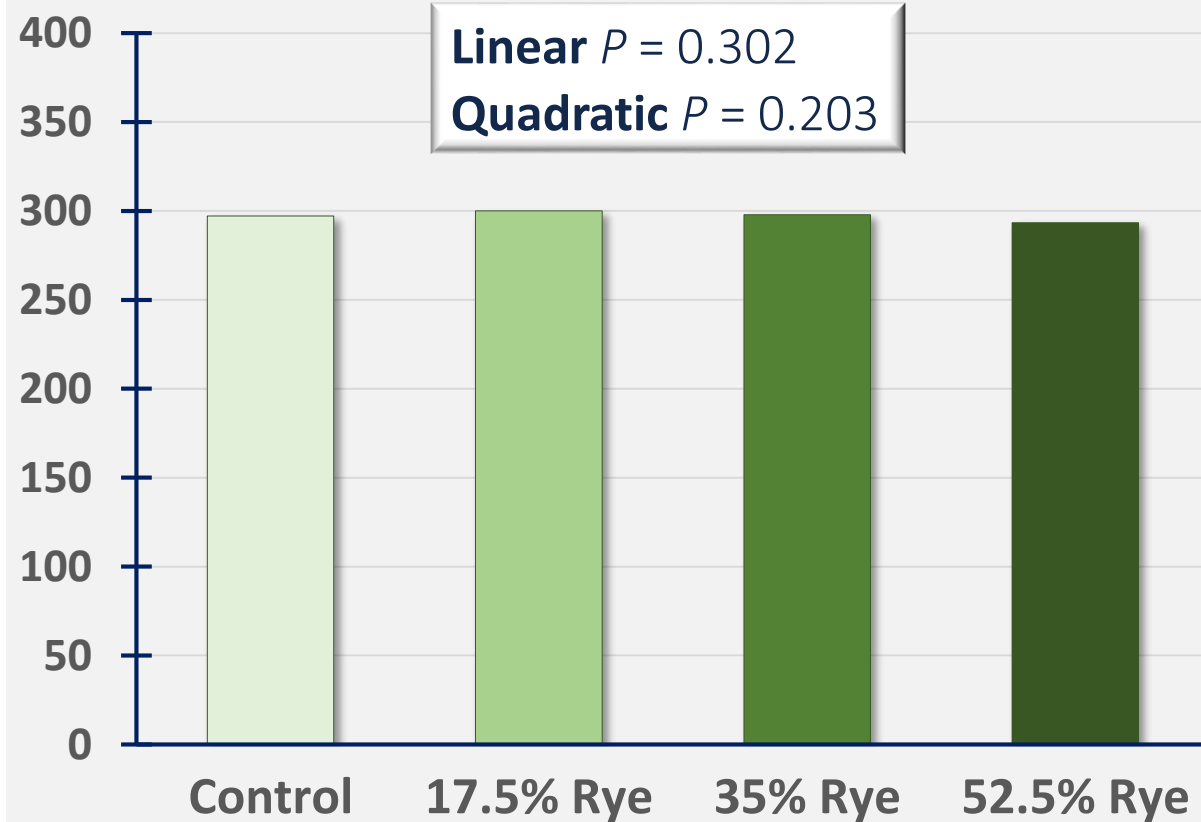


No Differences in BW

Initial BW, kg

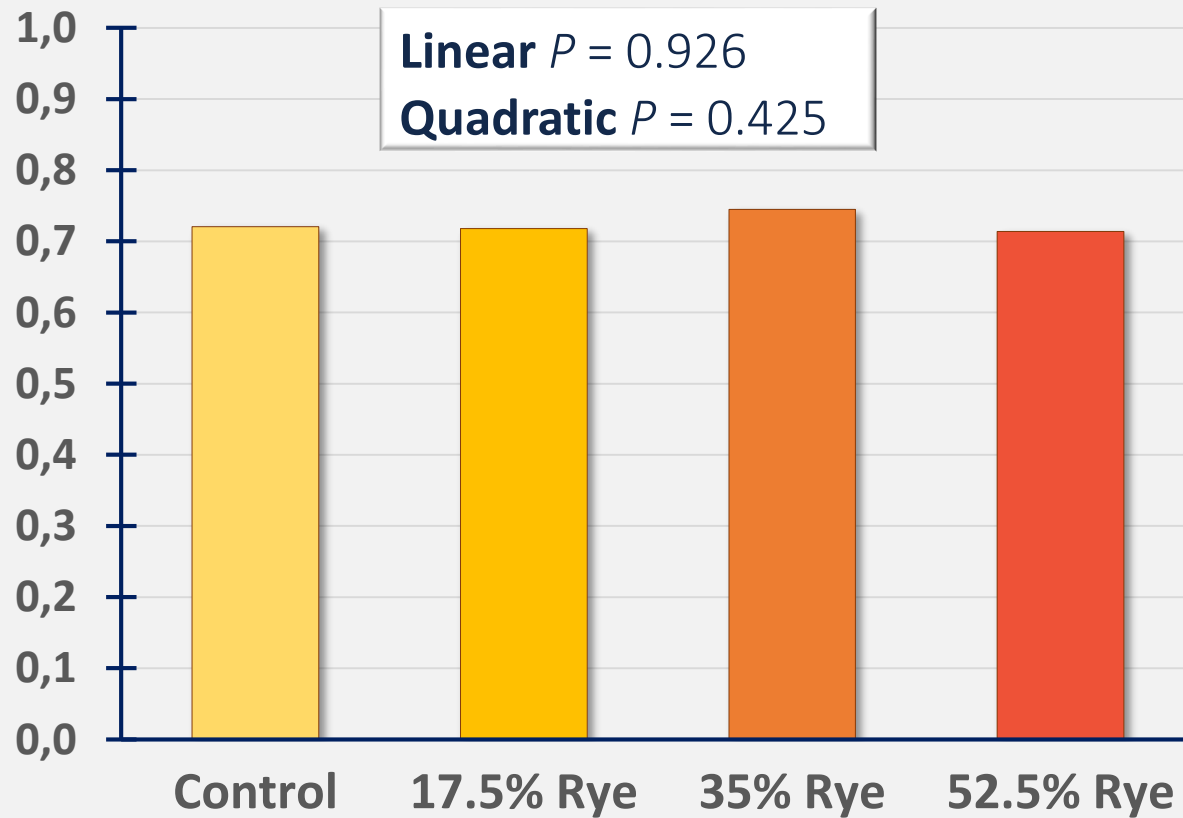


Day 105 BW, kg

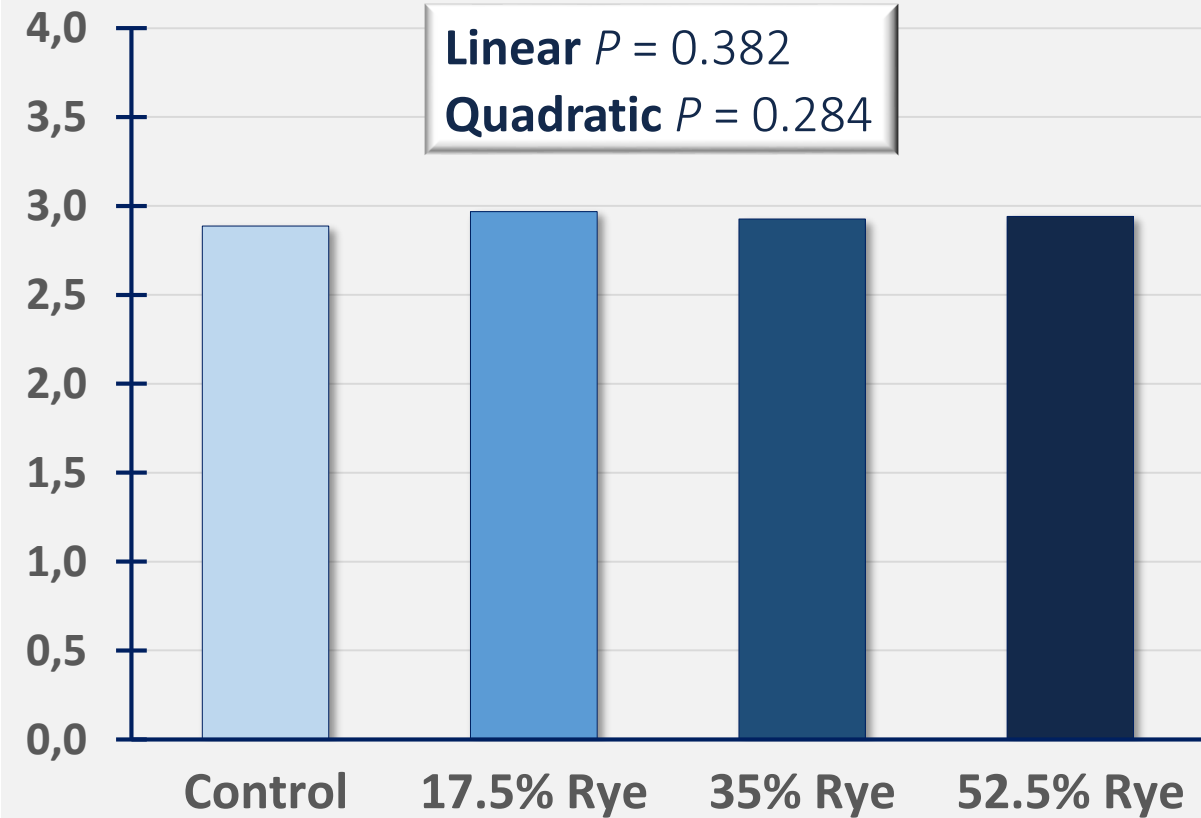


No Differences in ADG and ADFI

ADG, kg

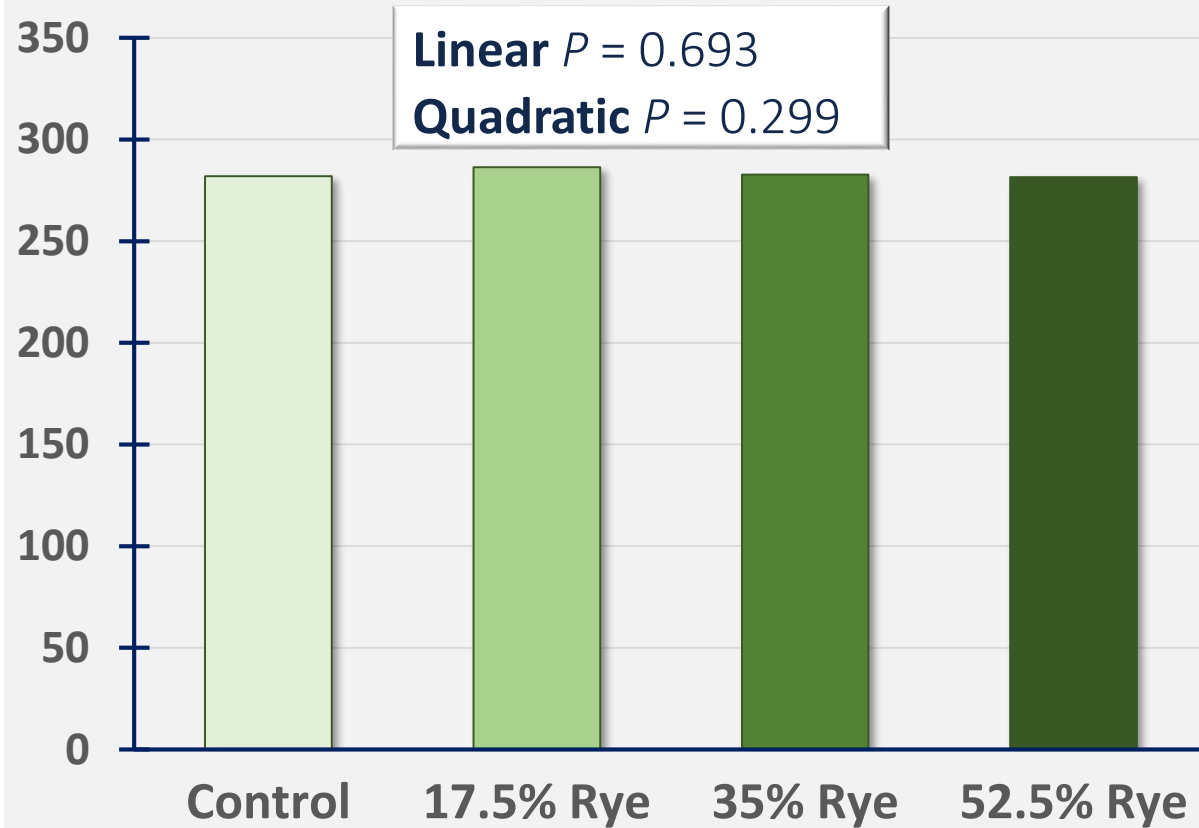


ADFI, kg

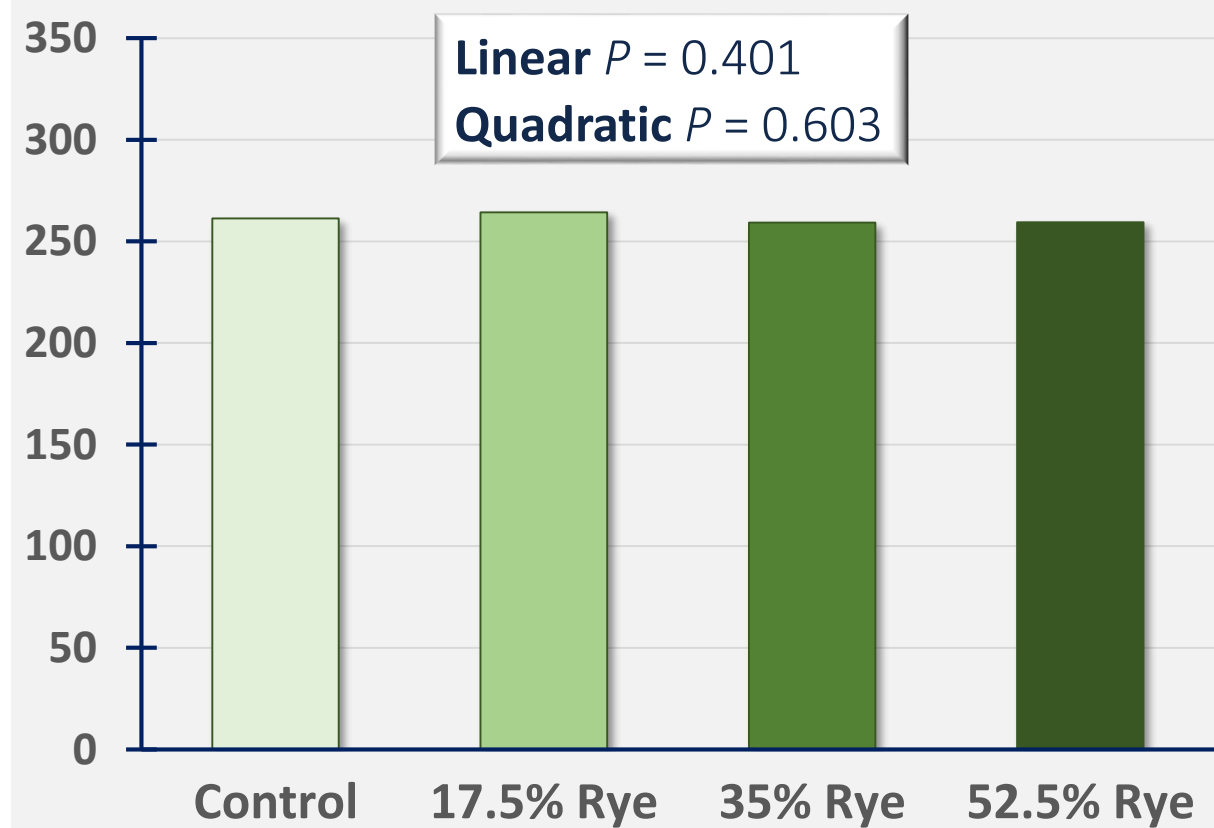


BW after Farrowing and at Weaning not Different

Farrow BW, kg

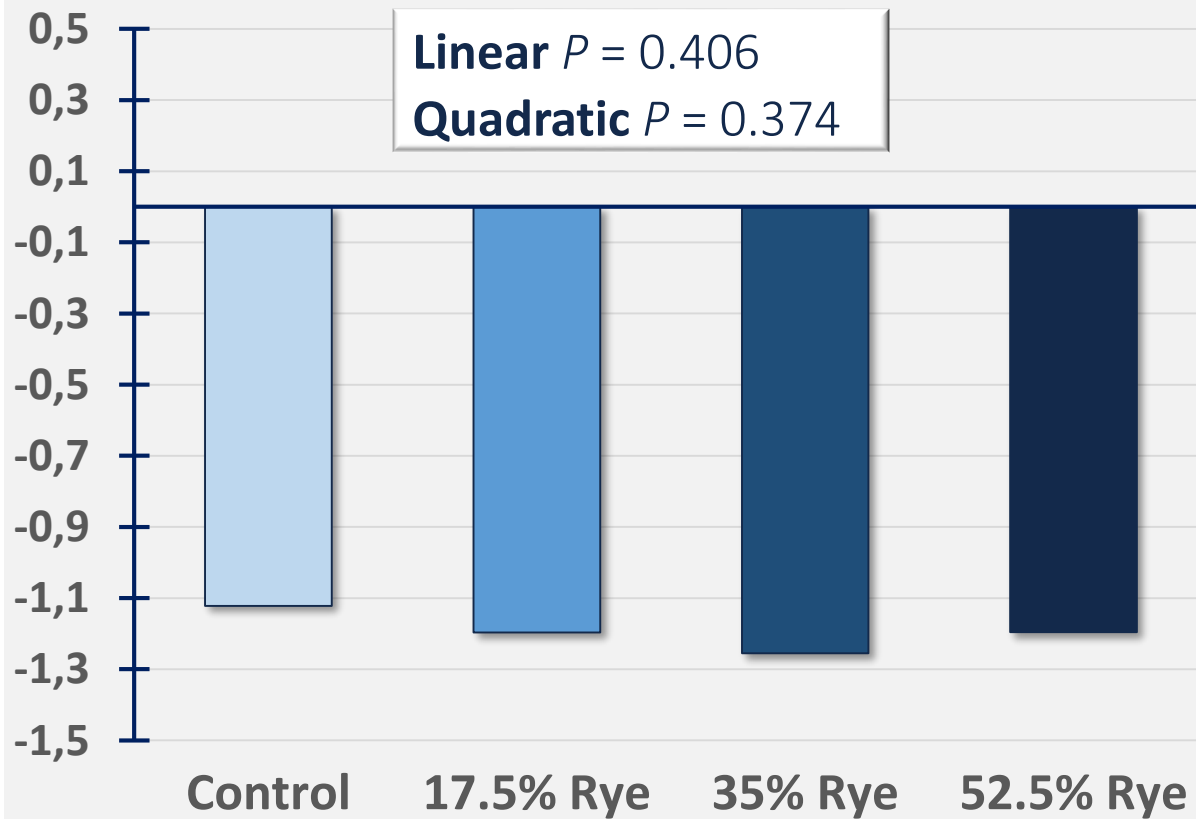


Wean BW, kg

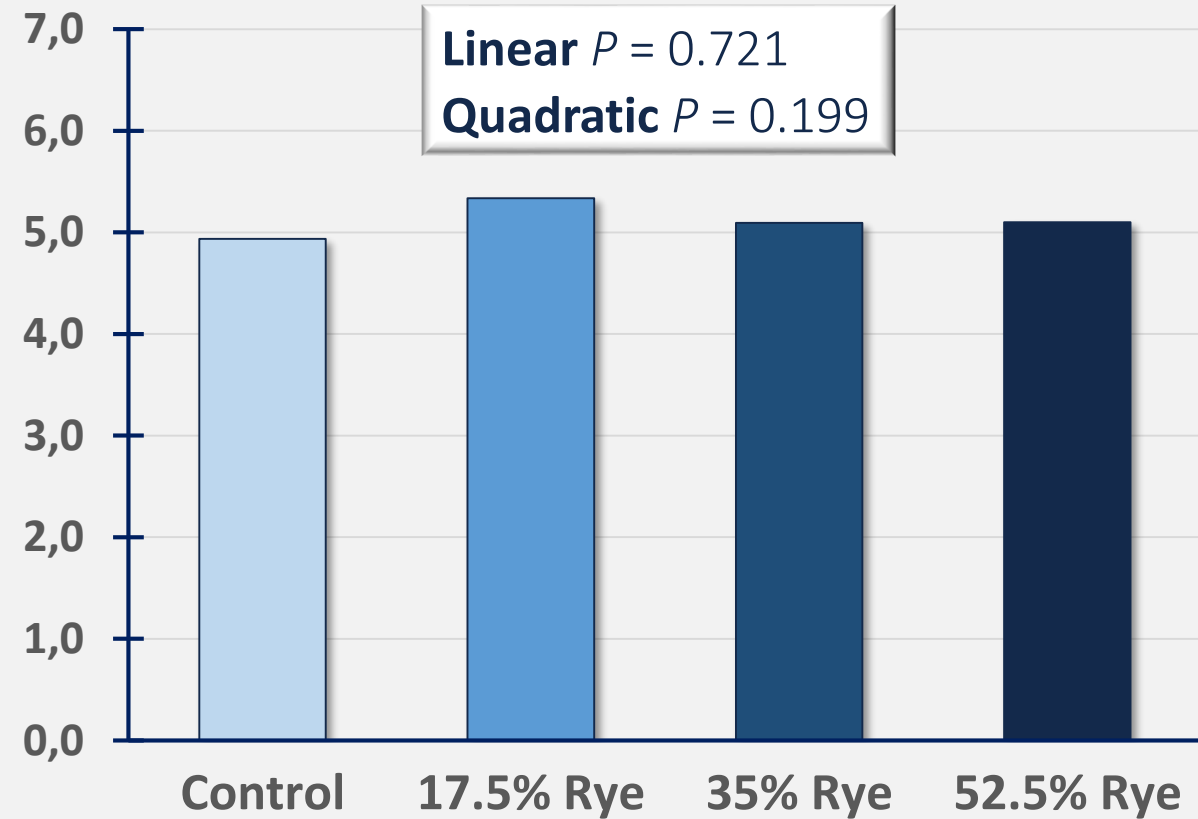


ADG and ADFI in lactation not different

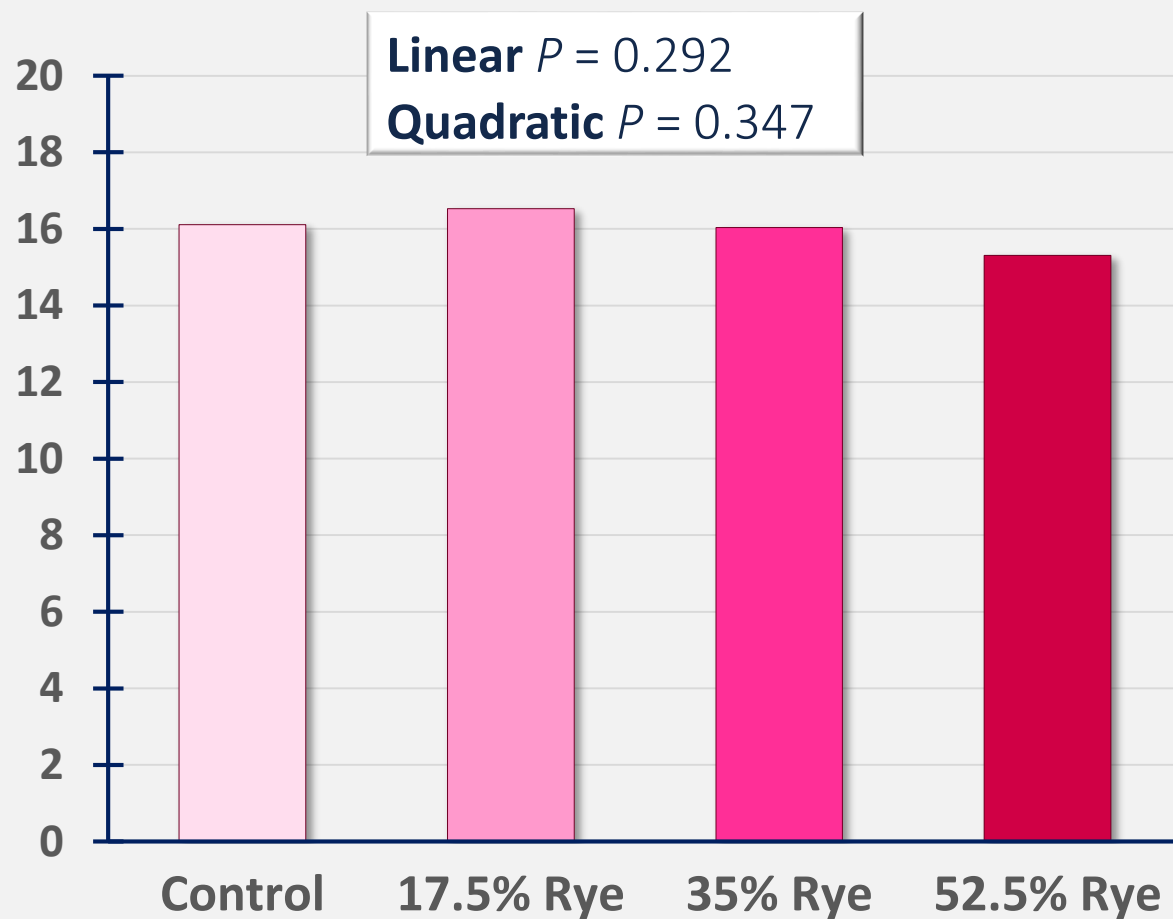
ADG, kg



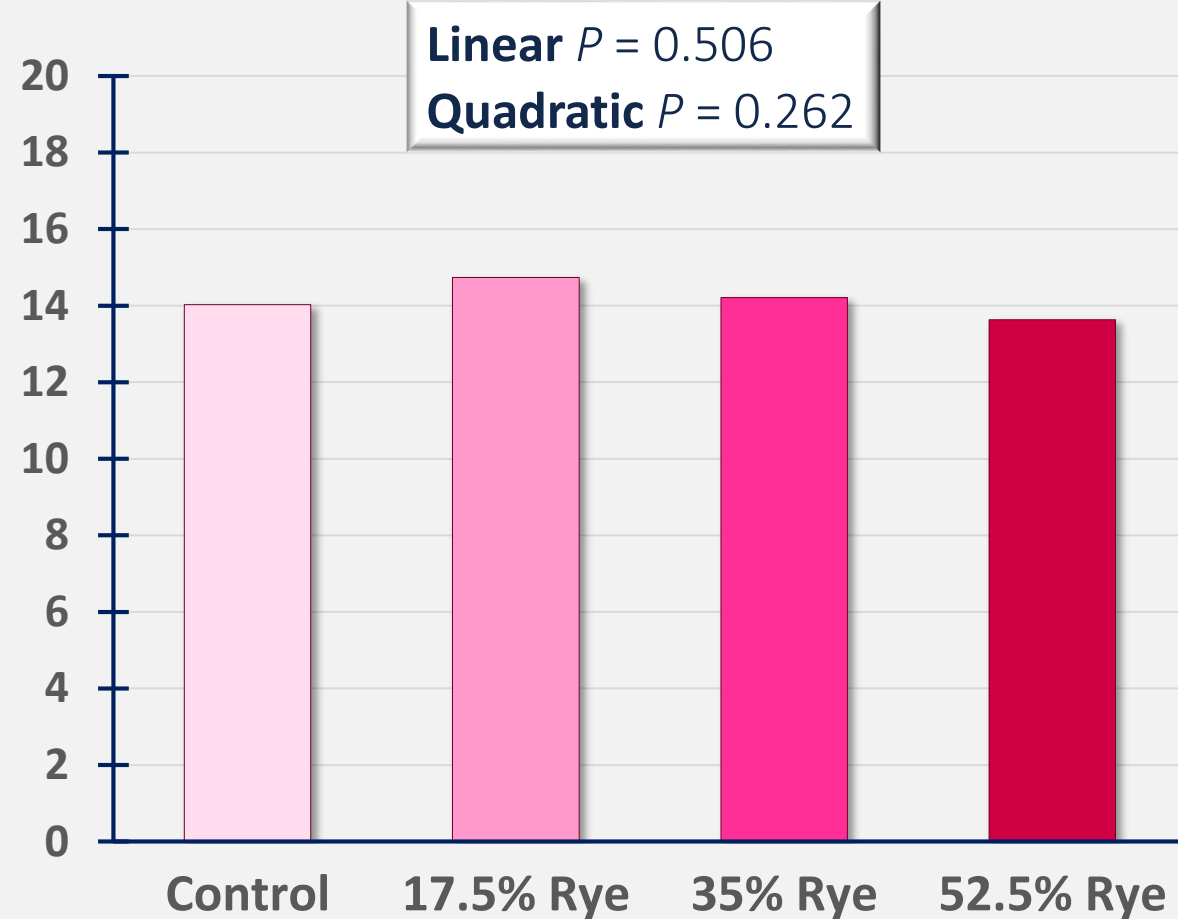
ADFI, kg



Total born, pigs



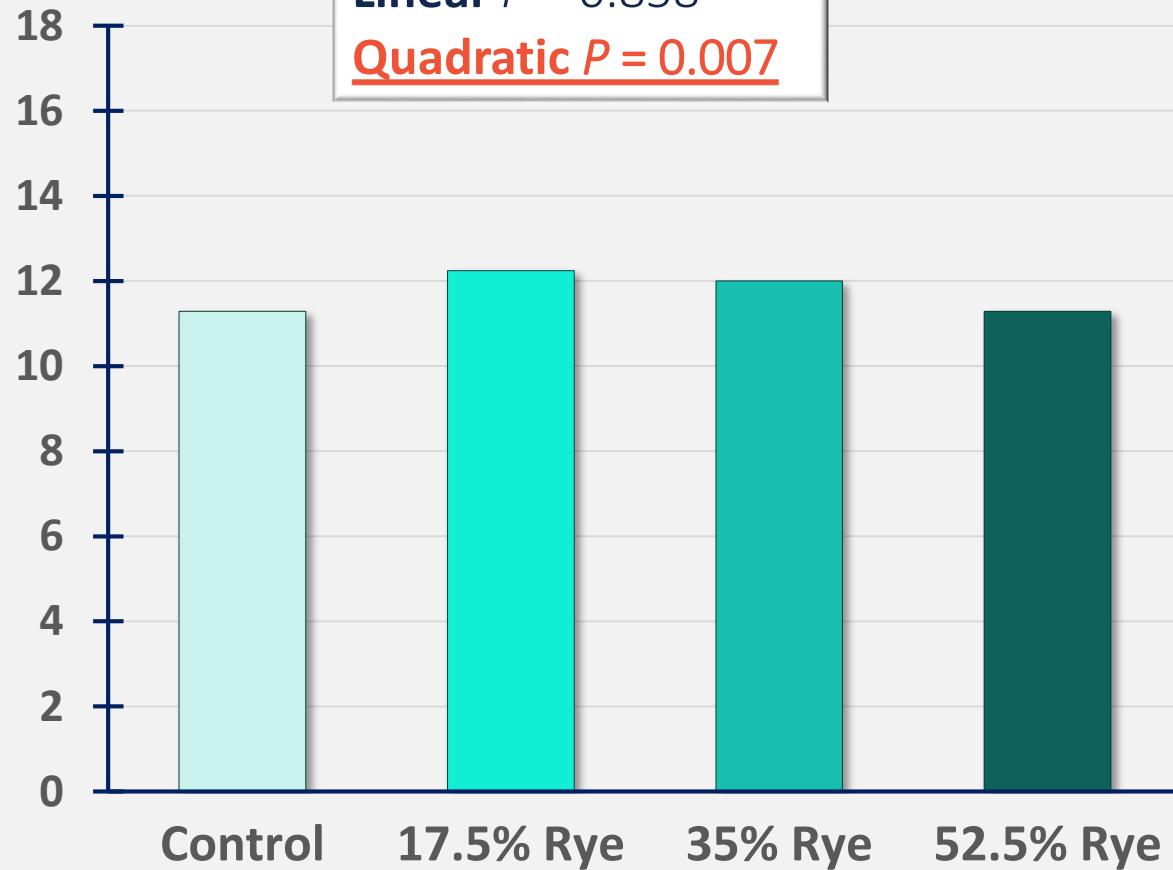
Live born, pigs



Weaned, pigs

Linear $P = 0.858$

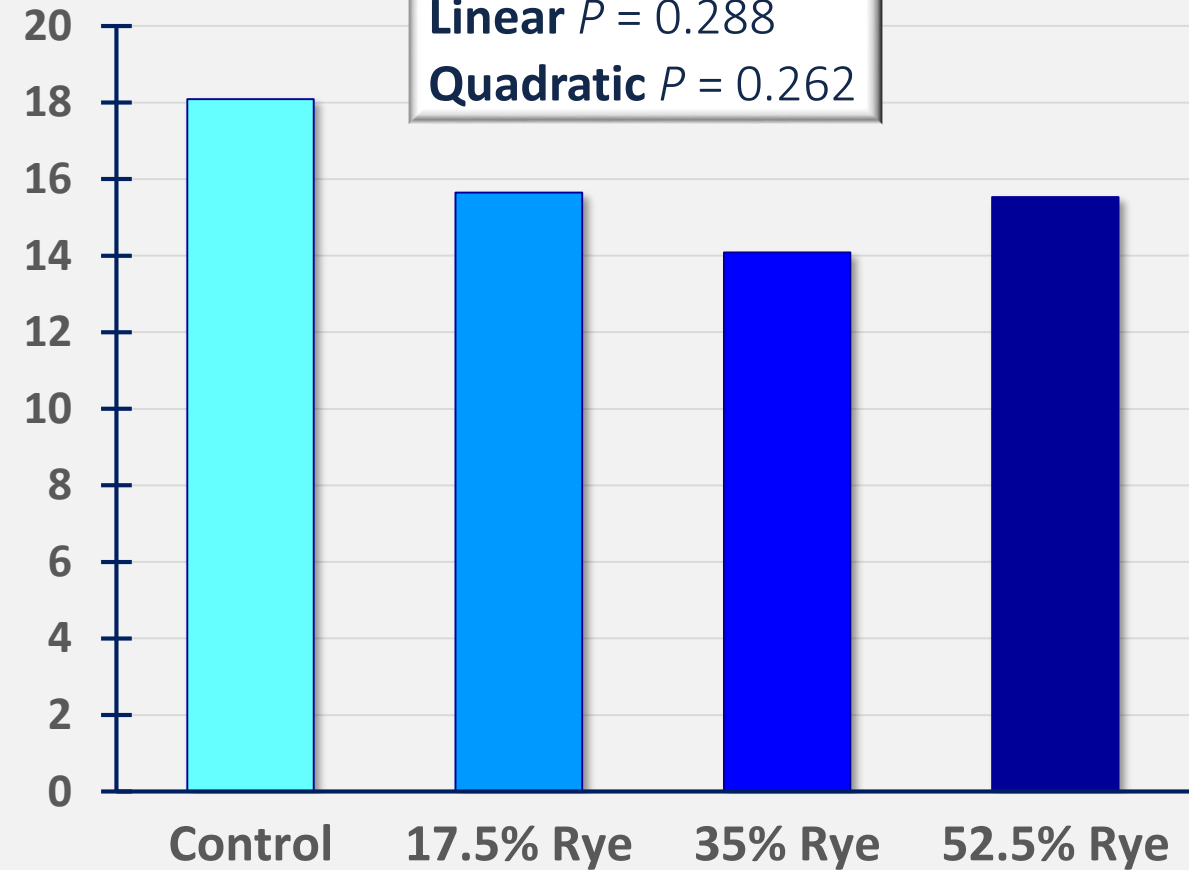
Quadratic $P = 0.007$



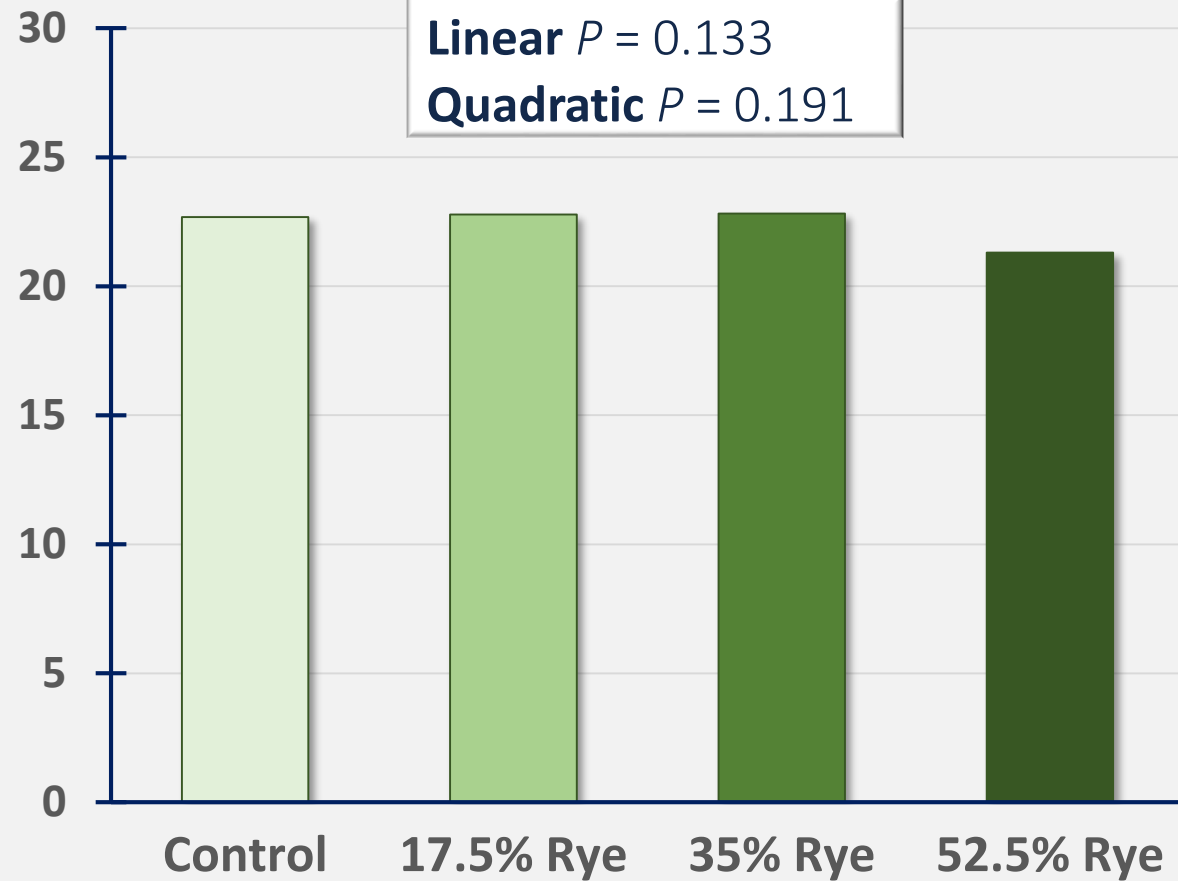
Mortality, %

Linear $P = 0.288$

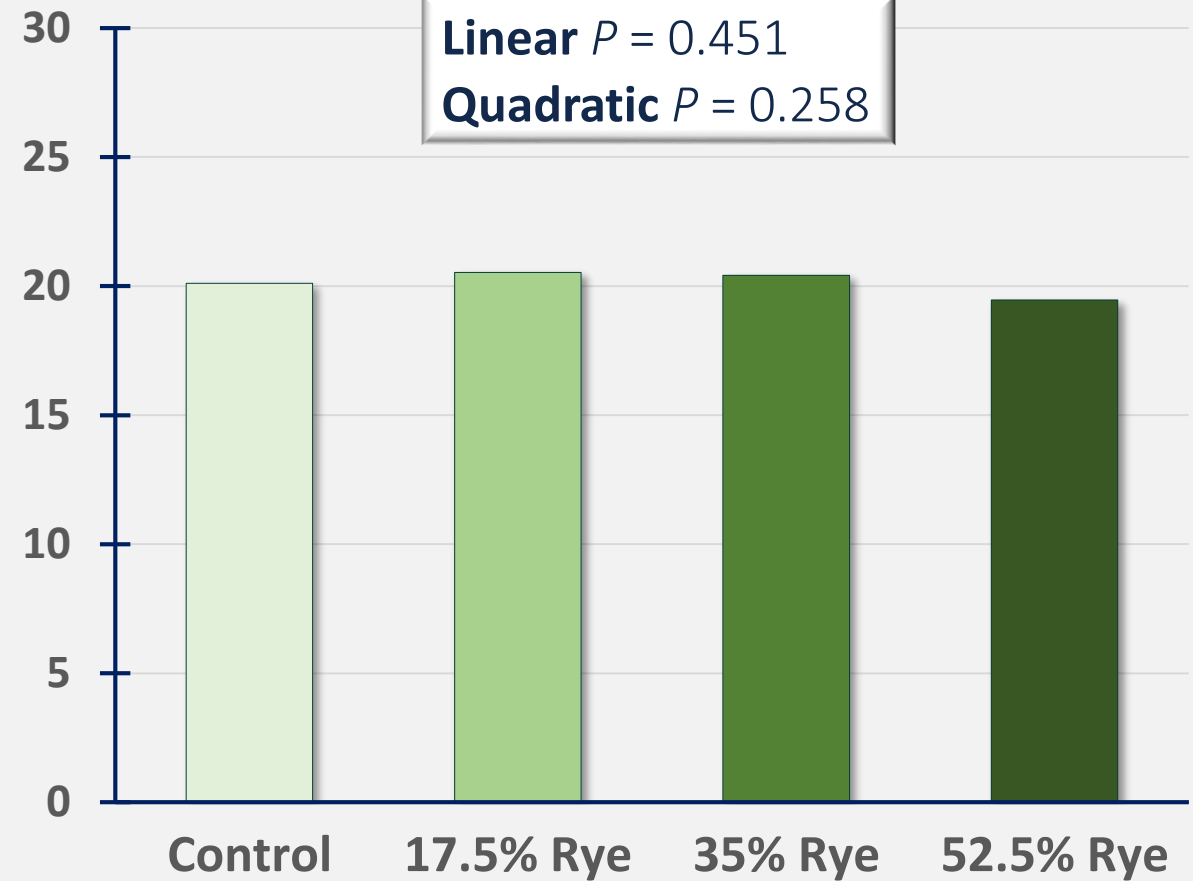
Quadratic $P = 0.262$



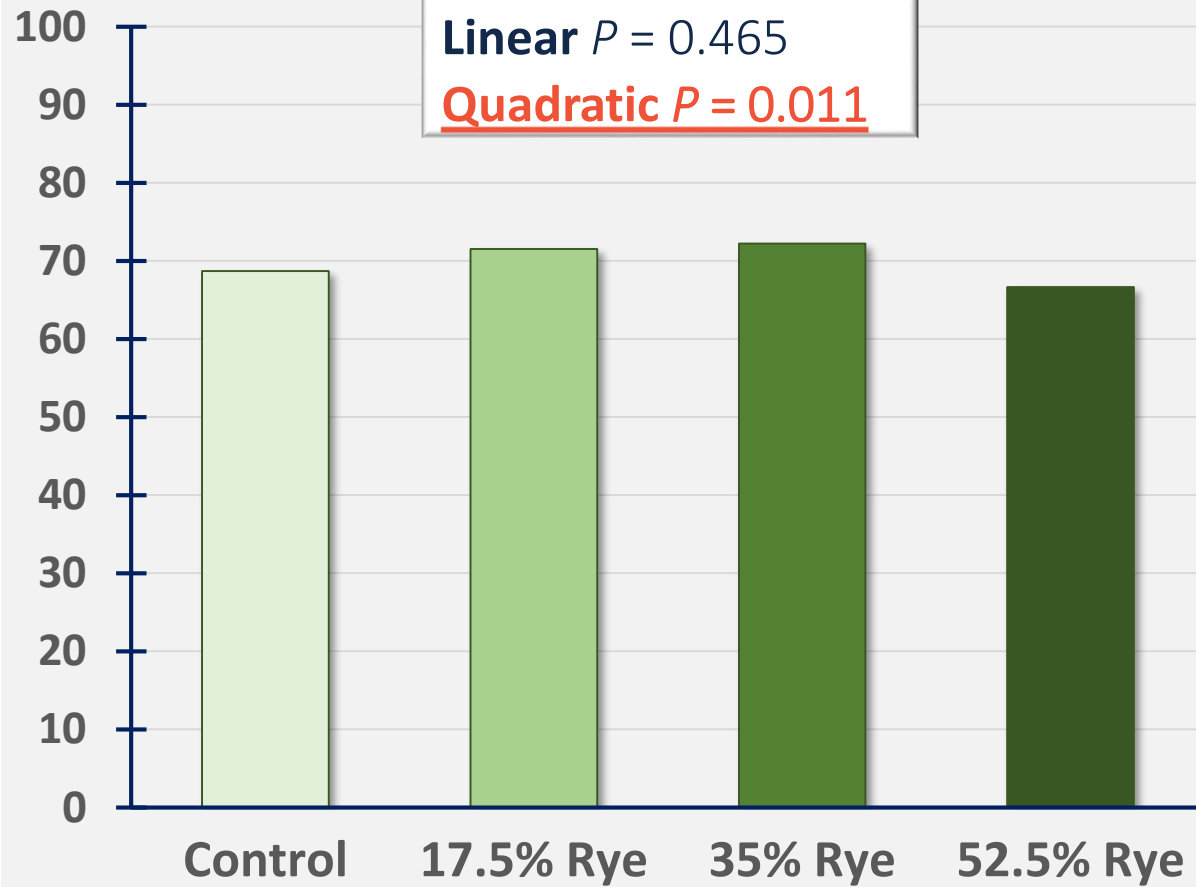
Litter wt., kg



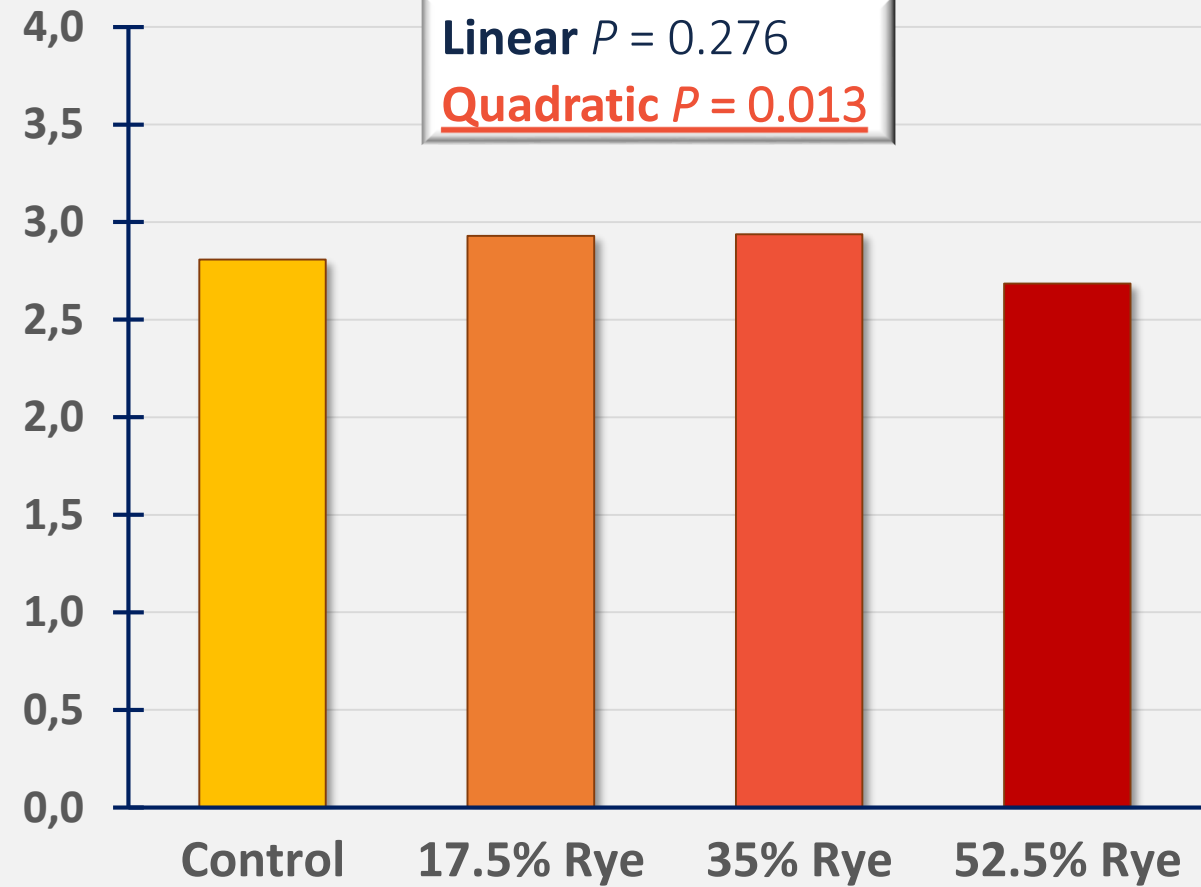
Live litter wt., kg



Litter wean wt., kg

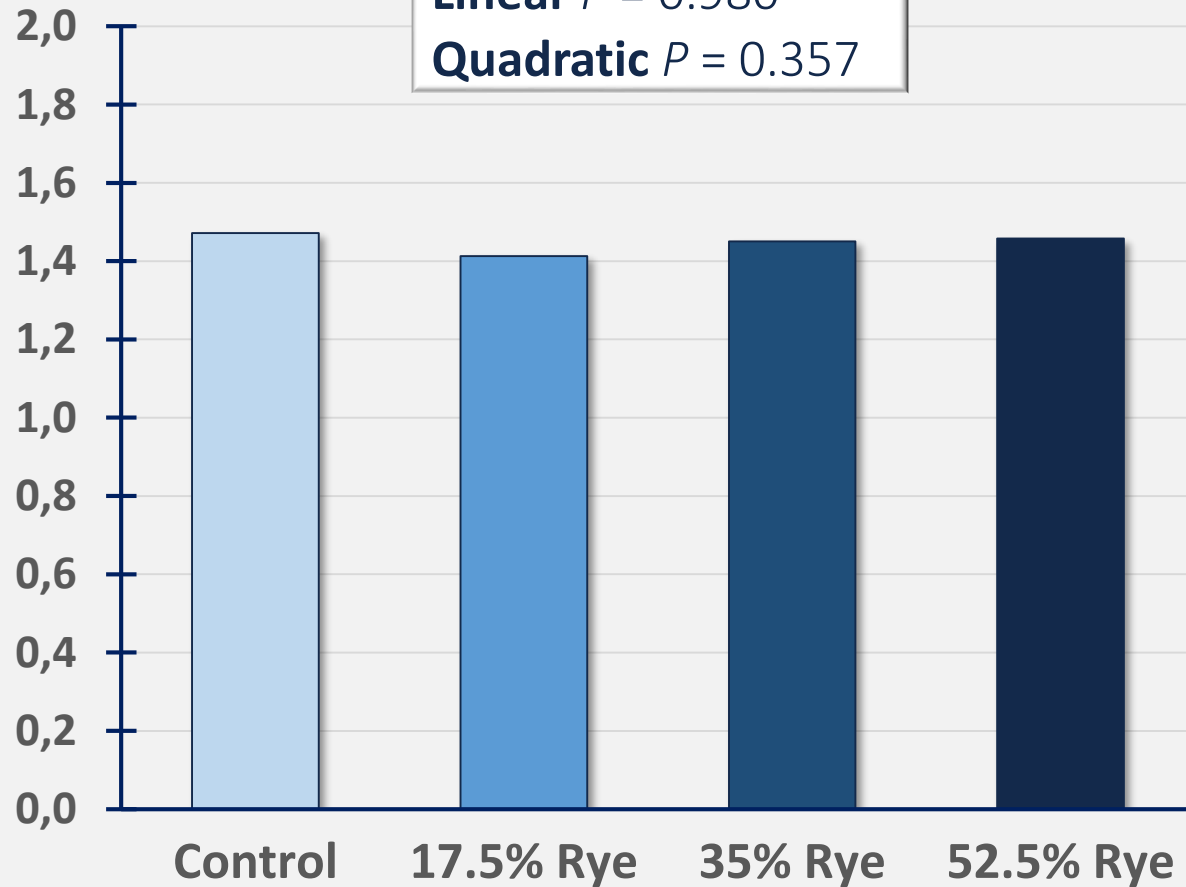


Litter ADG, kg



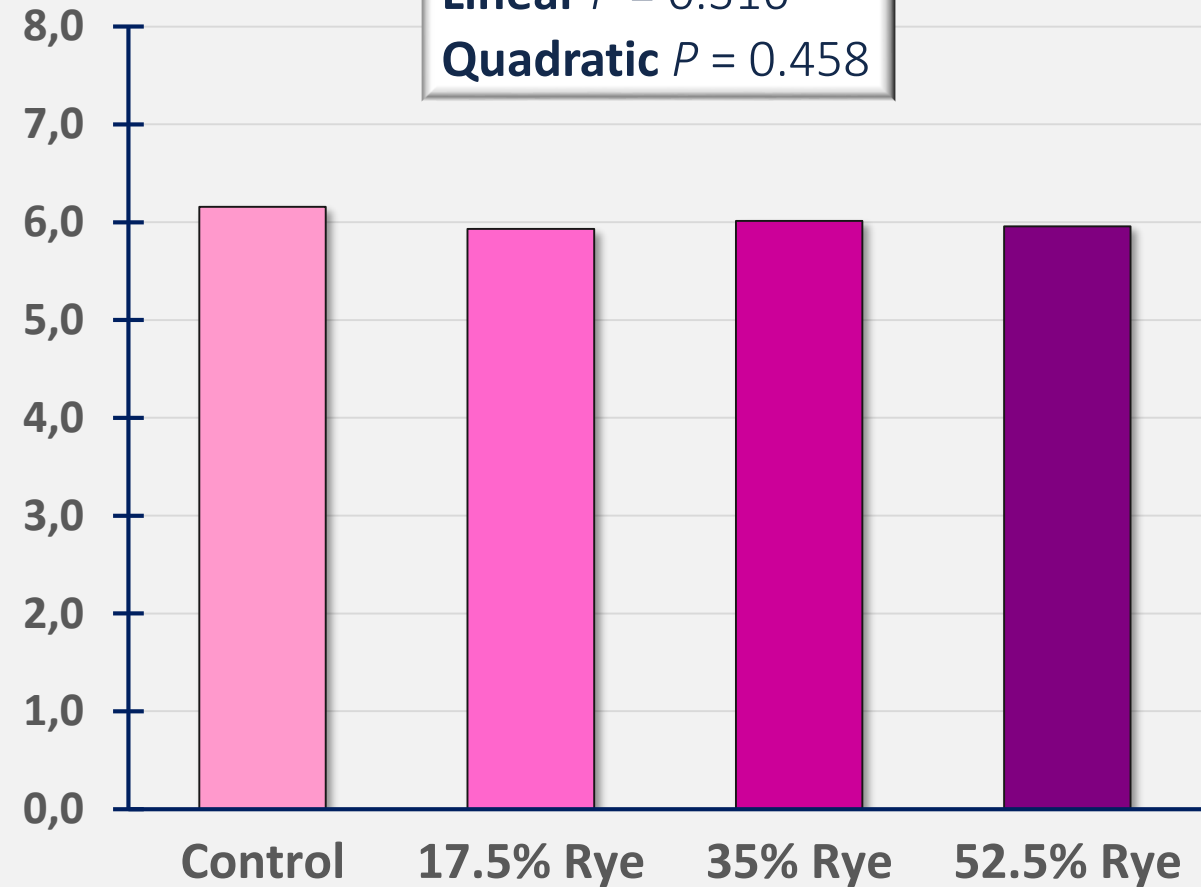
Avg. live wt., kg

Linear $P = 0.980$
Quadratic $P = 0.357$



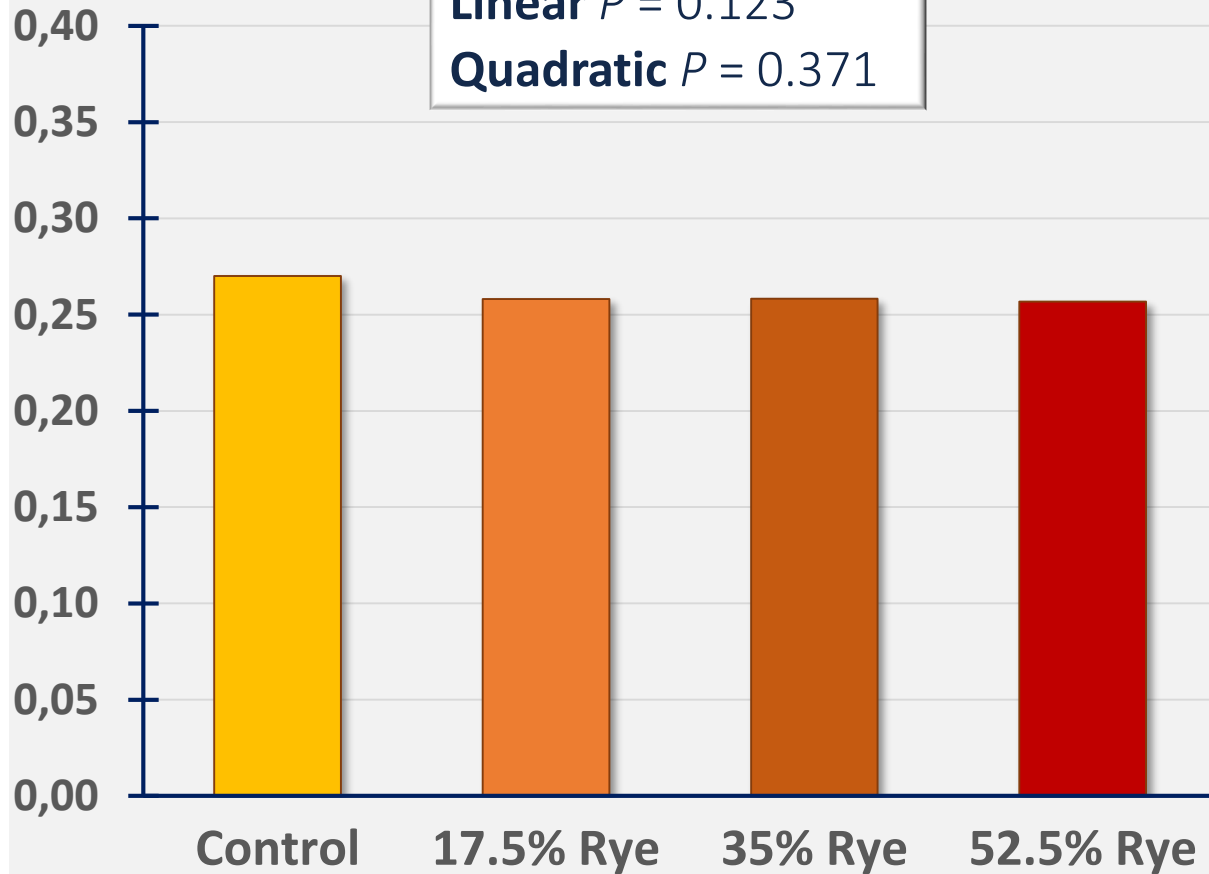
Avg. wean wt., kg

Linear $P = 0.316$
Quadratic $P = 0.458$



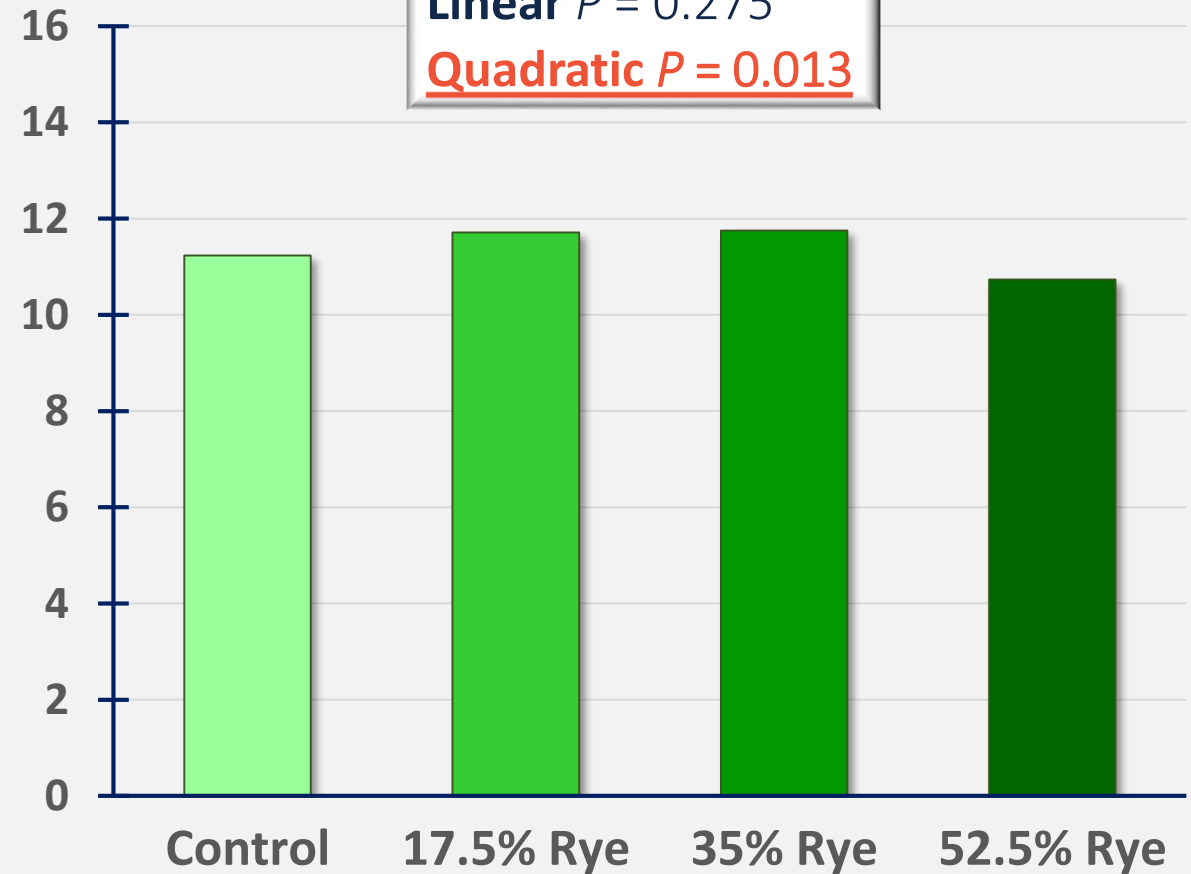
Avg. pig ADG, kg

Linear $P = 0.123$
Quadratic $P = 0.371$



Est. milk/d, kg

Linear $P = 0.275$
Quadratic $P = 0.013$



Conclusions, Hybrid Rye

1

**Distinct
different
composition**

2

**Digestibility
similar to
corn**

3

**May also
improve
intestinal
health**

Hybrid Rye For Sows

2

Possible that
greater inclusion
is OK

4

Milk yield appears
to be greater with
moderate levels of
hybrid rye

1

No negative impact
of 52.5% hybrid rye
in sow diets

3

Increase in
weaned pigs per
litter with hybrid
rye

Future Work

Growth performance of
weaned pigs and growing
finishing pigs

Impact of hybrid rye on
Diet palatability

Impact of hybrid rye
on carcass quality

*Improved Pig
Performance*





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