

Application of less processed insect protein in broiler pelleted feed

75th EAAP Annual Meeting, Session 95. Insect as food & feed

Arya Rezaei Far - Sep 4, 2024



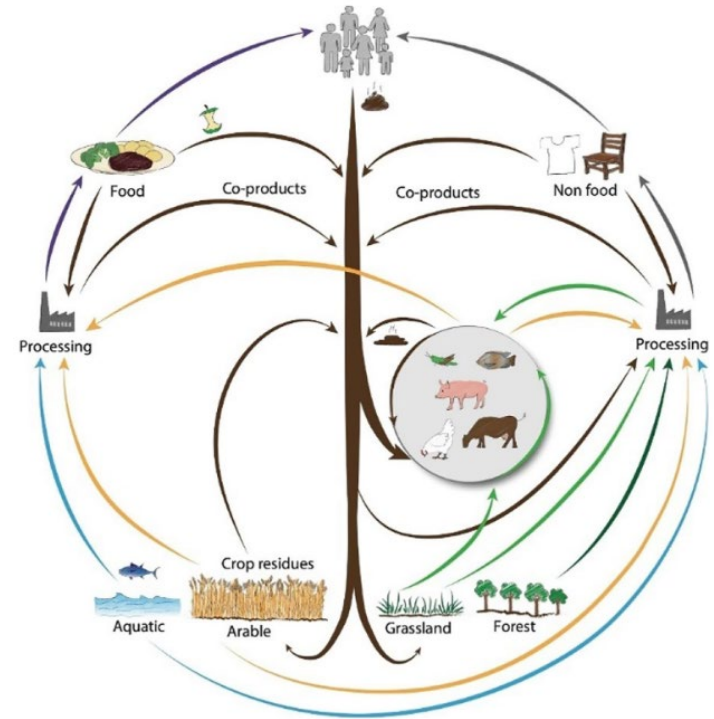
Content

- Background
- Study design
- Results



Circularity

1. Use arable land and water resources primarily to produce food for direct human consumption
2. Avoid or minimize food losses and waste
3. Recycle by-products, inevitable food losses, and waste streams back into the food system
4. Livestock as an important tool to unlock biomass low opportunity costs for humans into value-food, manure, and ecosystem service



Muscat, 2021

Wet ingredients

- Unlocks new biomass for feed
- Prevents drying step and its financial and environmental costs
- Negative effects of drying on nutritional value and functionality

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Challenges:

- Transportation and storage temperature of wet ingredients in feed factories
- Viscosity and mixing in the feed
- Adverse effects on pellet quality & hygiene

Wet insect products

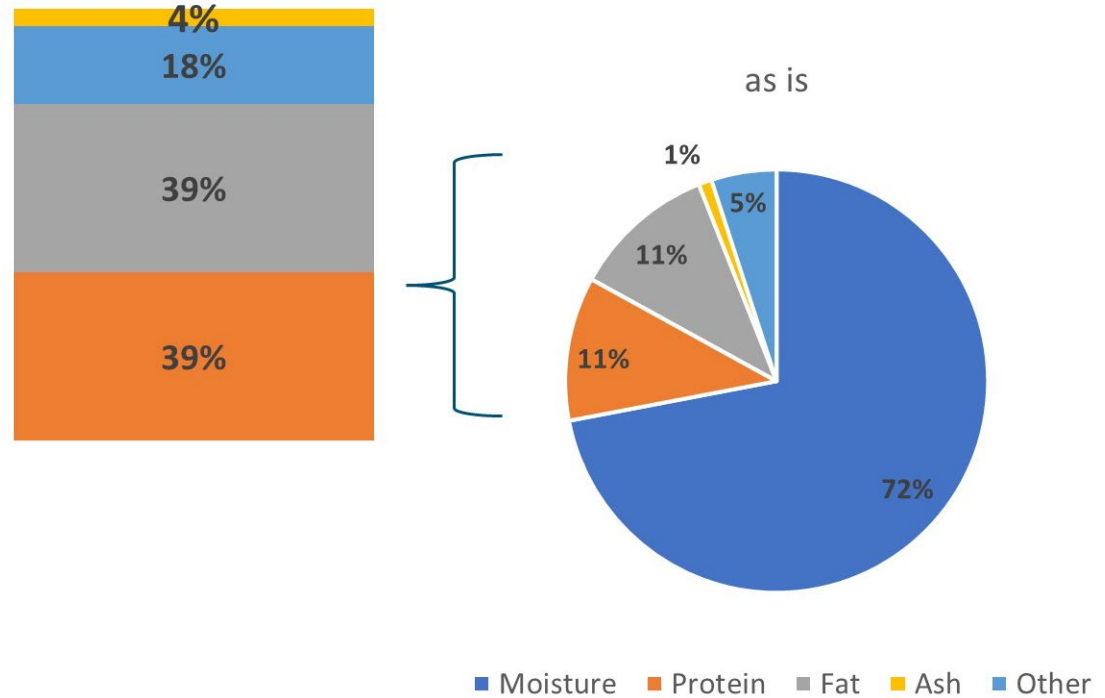
- Reduce environmental impact and production costs
- Maintain protein value
- Prevents the negative effects on functional activities
- Limitations for drying in developing markets

- Challenges:

Hygiene, transportation and storage, mixing in the feed

PureeX©

- Minced Black soldier fly larvae
- Frozen paste with high viscosity with 72% moisture



Aim

to study the effects of including PureeX© in the pelleted broiler feed, on broiler performance, welfare, carcass characteristics, and sustainability

Study Design

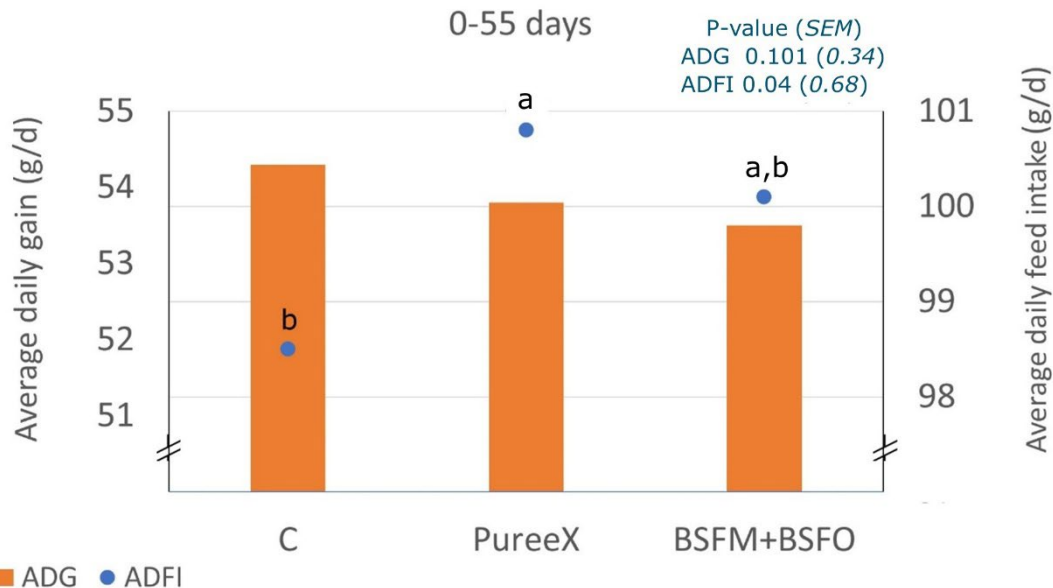
- Breed: Hubbard JA757
- Trial facility: WBVR, Lelystad
- Experimental period: 0-56 days
- 3 treatments X 8 replicates
- Experimental unit: Pen
- Number of broilers: 19/pen

Treatment	Description
A	Control
B	5% PureeX©
C	0.8% BSFM and 0.6% BSFO and 3.5% water

- Iso-caloric
- Same digestible content of most limiting amino acids

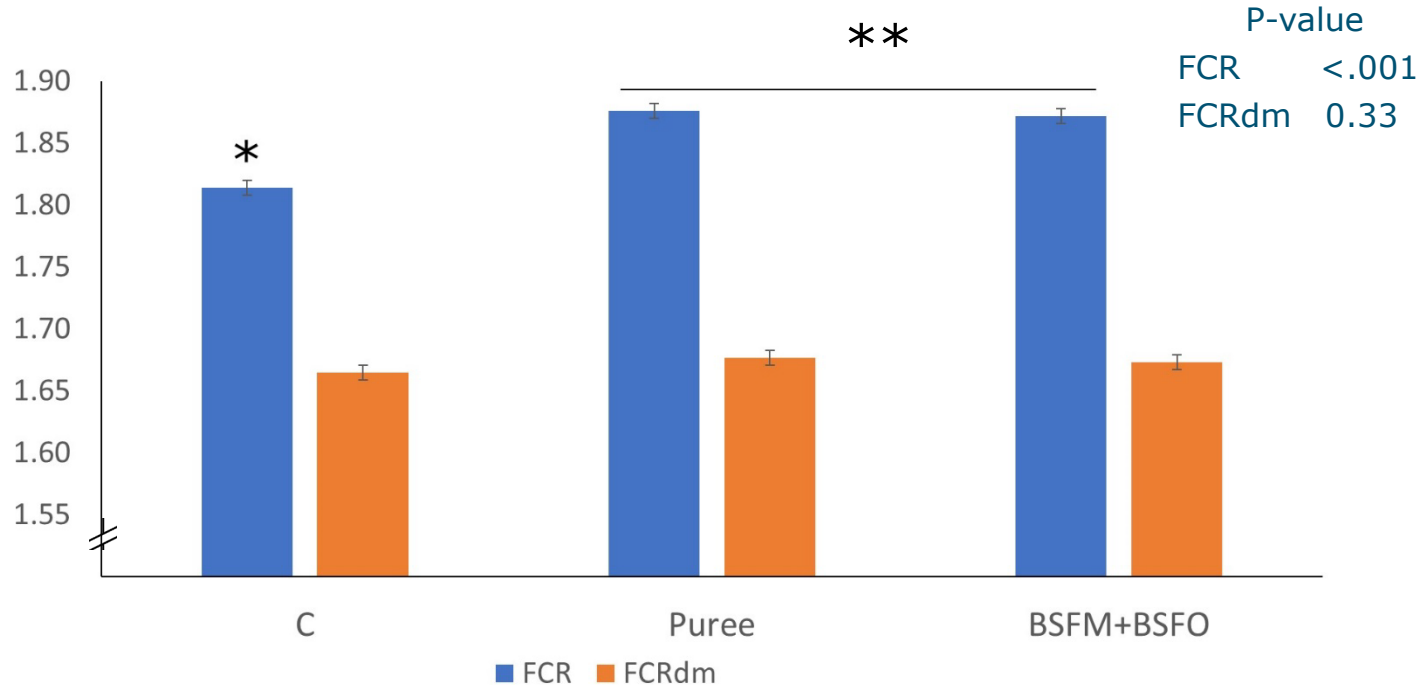
- SBM substitution: starter and grower I (6%), grower II (8%), Finisher (11%)

Day 0-55



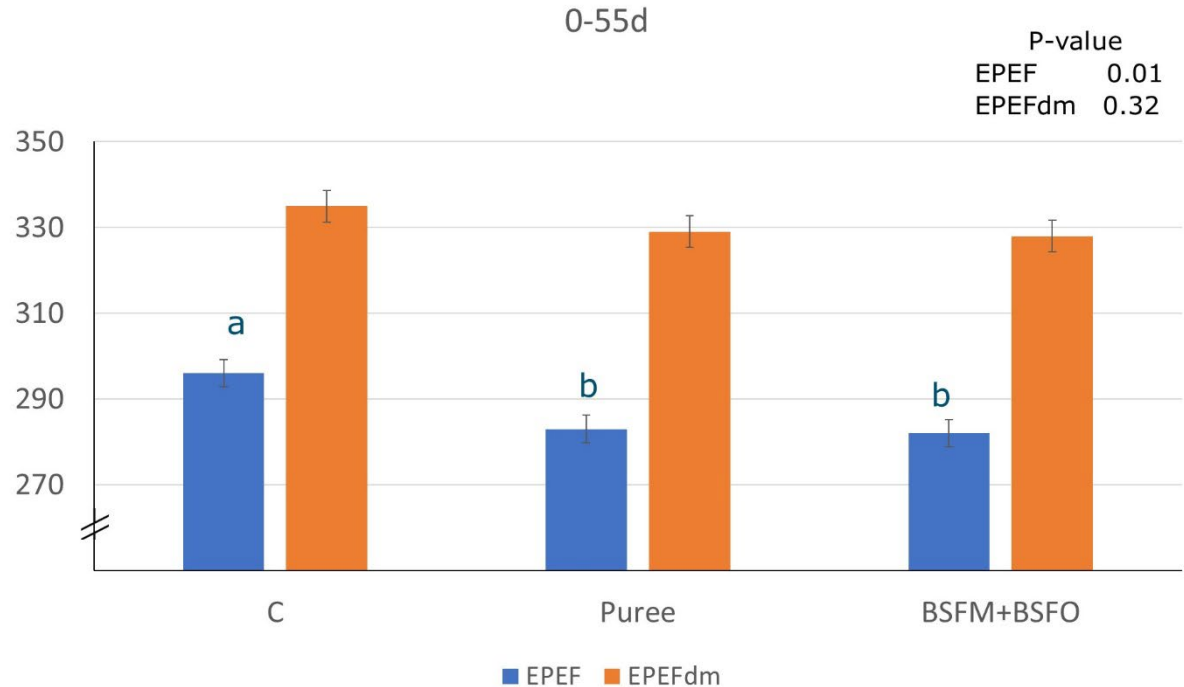
- Rise in feed intake
- Decline in body weight gain was not significant
- Lower EPEF (296 vs 283)
- Lower CFP/kg BW (2247 vs 2195 and 2178 g CO₂-eq/kg)

FCR vs FCRdm 0-55days



- Effects of diet on dry matter feed intake was not significant.
- No difference in FCR based on dry matter feed intake!

Results



- The effects of diet on EPEF based on dry matter feed intake was not significant.
- No meaningful effects on welfare

Conclusion

- Potential for including less-processed insect products and reducing SBM in pelleted broiler feed without negative effects on growth performance.

Further investigations:

- Technical challenges for feed factories; Are we ready?
- Further study the effects on digestive tract development and functionality
- A growth efficiency indicator considering the environmental impact of the feed

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Thank you for your attention

arya.rezaeifar@wur.nl

Researcher Poultry Nutrition

Wageningen Livestock Research, WUR (The Netherlands)

