



41ª CONFERÊNCIA
FACTA WPSA-BR 2025

GESTÃO
INOVACÃO E
EXCELÊNCIA
NA PRODUÇÃO
DE ALIMENTOS
SEGUROS.



PROCEEDINGS PRÊMIO LAMAS 2025 LAMAS AWARD 2025

02 E 03 DE SETEMBRO DE 2025

facta@facta.org.br

Dados Internacionais de Catalogação na Publicação (CIP)
(Câmara Brasileira do Livro, SP, Brasil)

Conferência FACTA WPSA-Brasil 2025 (41. : 2025 :
On-line)

41º Conferência Facta WPSA-BR 2025 [livro
eletrônico] : gestão inovação e excelência na
produção de alimentos seguros / [organizadores
Rodrigo Garófallo Garcia...[et al.]. -- 1. ed. --
Campinas, SP : Facta, 2025.

PDF

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Outros organizadores: Ibiara C. L. A. Paz, Neyre
Shiroma, Marcelo F. Zuanaze.

Bibliografia.

ISBN 978-65-991079-6-2

1. Alimentos - Produção 2. Alimentos -
Qualidade 3. Artigos - Coletâneas 4. Divulgação
científica 5. Tecnologia de alimentos 6. Trabalhos
científicos 7. Pesquisa científica I. Garcia,
Rodrigo Garófallo. II. Paz, Ibiara C. L. A.
III. Shiroma, Neyre. VI. Zuanaze, Marcelo F.

25-294061.0

CDD-664

Índices para catálogo sistemático:

1. Tecnologia de alimentos 664

Aline Grazielle Benitez - Bibliotecária - CRB-1/3129

Can the Animal Feed Industry Overcome the Challenges of Poor Soybean Meal Pelletizability? (NU-56 - Honorable Mention)

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HONORABLE MENTION



NUTRITION

Abstract:

The composition of soybean meal varies according to the supplier, and some production processes remove lecithin, which has a significant impact on the production of pelleted diets and may result in losses in production capacity. This is all aggravated by the tendency to reduce the metabolizable energy content. The objective of this research was to evaluate, through an alternative specification of pelleting die, compensating the negative effects of these variables while maintaining production capacity and without compromising the quality of the pellets. A mixing and pelletizing line from Embrapa Swine and Poultry was used. The pelletizer used was a Kopper Junior C40/50 HP/37 kW/380 V/71.4 A/1,180 rpm. Two types of soybean meal x two AME levels x two different pelleting die specifications were evaluated, comprising eight treatments. The two types of soybean meal (SM) differed in ether extract (EE), with SM "A" = 2.9% EE and SM "B" = 2.2% EE; the AME levels were according to the nutritional requirements of the birds in the pre-starter phase (standard 2850 kcal/kg) and a decrease of 50 kcal. The diets were composed of diet 1 = Diet with less 50 kcal + SM "B"; diet 2 = Standard feed + SM "B"; diet 3 = Feed with less than 50 kcal + FS "A"; diet 4 = Standard Feed + FS "A". The tested dies were: standard die with hole diameter 4.76 mm x thickness 50 mm, relief only in the two outer rows and the relieved matrix with hole diameter 4.76 mm x 50 mm, with relief in all holes of 8 mm. During pelleting, 10 samples of each treatment were collected and pellet quality parameters were evaluated: Percentage of fines in the sample, Pellet Durability Index (PDI), Pellet Hardness. A loss of production capacity (approx. 25%) was observed when the soybean meal used had low EE content and a conventional die was used ($p < 0.05$), a condition that was overcome by using a alleviated dies, which is desired by the industry. Regarding the pellet quality results, in all treatments the quality was considered good ($> 90\%$). It was observed that the use of the alleviated die in combination with soybean meal "B" with lower ether extract, presented a higher PDI in relation to the diets that used FS "A", thus demonstrating a lower % of fines. A high PDI means that the feed maintains its integrity, minimizing the production of fines (smaller particles). The formulation containing soybean meal with low ether extract and a 50 kcal reduction in the diet had a significant impact on the decrease of pelleting capacity, approximately 25%. The change in the die specification proved to be effective in maintaining production and with a small reduction in quality measured by the PDI from 96% to 94%, when using soybean meal with lower ether extract and diets formulated with less than 50 kcal.

Keywords: Pellet, Processing, Lecithin, Soybean